PUNCHES

PUNCHES

Product name Catalog No.	SHOULDER PUNCHES	SHOULDER PUNCHES —Dicoat® treatment—	SHOULDER PUNCHES —TiCN coating—	SHOULDER PUNCHES —WPC® treatment·HW coating—
Page	55	57	59	61

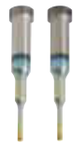
SHOULDER PUNCHES —RW coating—	SHOULDER PUNCHES —DLC coating—	SHOULDER PUNCHES —Lapping—	JECTOR PUNCHES	JECTOR PUNCHES —Dicoat® treatment—
63	65	67	69	71

JECTOR PUNCHES —TiCN coating—	JECTOR PUNCHES —WPC® treatment·HW coating—	JECTOR PUNCHES —RW coating—	JECTOR PUNCHES —DLC coating—	JECTOR PUNCHES —Lapping—
73	75	77	79	81

JECTOR PUNCHES —Configurable full length. Fixed B type—	JECTOR PUNCHES —Configurable full length, fixed B type, WPC®treatment—	JECTOR PUNCHES —Large diameter pin—	JECTOR PUNCHES —Large diameter pin, lapping—	SHOULDER PUNCHES —Quill type—
83	83	85	85	87

SHOULDER PUNCHES —Quill type, lapping·TiCN coating·HW coating—	SHOULDER PUNCHES —Quill type·RW coating—	SHOULDER PUNCHES —Quill type·DLC coating—	SHOULDER PUNCHES —Short type—
87	89	89	91

SHOULDER PUNCHES —Short type·TiCN coating·HW coating—	SHOULDER PUNCHES —Short type·DLC coating—	DOUBLE-STEPPED SHOULDER PUNCHES —Normal·TiCN coating·HW coating—	DOUBLE-STEPPED SHOULDER PUNCHES —RW coating—
93	93	95	97



DOUBLE-STEPPED SHOULDER PUNCHES —DLC coating—	DOUBLE-STEPPED SHOULDER PUNCHES —Quill type—	KEY FLAT SHANK SHOULDER PUNCHES —Normal·TiCN coating—	KEY FLAT SHANK SHOULDER PUNCHES —WPC® treatment·HW coating—	KEY FLAT SHANK SHOULDER PUNCHES —RW coating—
97	99	101	103	105

KEY FLAT SHANK SHOULDER PUNCHES —DLC coating—	KEY FLAT SHANK JECTOR PUNCHES —Normal·TiCN coating—	KEY FLAT SHANK JECTOR PUNCHES —WPC® treatment·HW coating—	KEY FLAT SHANK JECTOR PUNCHES —RW coating—
105	107	109	111

KEY FLAT SHANK JECTOR PUNCHES —DLC coating—	PUNCHES WITH LOCATING DOWEL HOLES	PUNCHES WITH LOCATING DOWEL HOLES —Dicoat®treatment—	PUNCHES WITH LOCATING DOWEL HOLES —TiCN coating—	PUNCHES WITH LOCATING DOWEL HOLES —WPC® treatment·HW coating—
111	113	115	117	119

PUNCHES WITH LOCATING DOWEL HOLES —RW coating—	PUNCHES WITH LOCATING DOWEL HOLES —DLC coating—	JECTOR PUNCHES WITH LOCATING DOWEL HOLES	JECTOR PUNCHES WITH LOCATING DOWEL HOLES —Dicoat® treatment—
121	123	125	127

JECTOR PUNCHES WITH LOCATING DOWEL HOLES —TiCN coating—	JECTOR PUNCHES WITH LOCATING DOWEL HOLES —WPC® treatment·HW coating—	JECTOR PUNCHES WITH LOCATING DOWEL HOLES —RW coating—	JECTOR PUNCHES WITH LOCATING DOWEL HOLES —DLC coating—
129	131	133	135

PUNCHES FOR HEAVY LOAD	PUNCHES FOR HEAVY LOAD —Dicoat® treatment—	PUNCHES FOR HEAVY LOAD —TiCN coating—	PUNCHES FOR HEAVY LOAD —WPC®treatment·HW coating—
137	139	141	143

PUNCHES

PUNCHES FOR HEAVY LOAD —RW coating— 145

PUNCHES FOR HEAVY LOAD —Lapping— 147

JECTOR PUNCHES FOR HEAVY LOAD 149

JECTOR PUNCHES FOR HEAVY LOAD —Dicoat®treatment— 151

JECTOR PUNCHES FOR HEAVY LOAD —TiCN coating— 153

JECTOR PUNCHES FOR HEAVY LOAD —WPC© treatment・HW coating— 155

JECTOR PUNCHES FOR HEAVY LOAD —RW coating— 157

JECTOR PUNCHES FOR HEAVY LOAD —Lapping— 159

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type— 161

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type, TiCN coating— 163

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type, WPC© treatment— 165

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type,HW coating— 165

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type,RW coating— 167

TAPERED HEAD PUNCHES 169

TAPERED HEAD PUNCHES —TiCN coating— 169

TAPERED HEAD PUNCHES —HW coating— 169

TAPERED HEAD PUNCHES —RW coating— 171

TAPERED HEAD JECTOR PUNCHES 173

TAPERED HEAD JECTOR PUNCHES —WPC© treatment— 173

TAPERED HEAD JECTOR PUNCHES —TiCN coating— 173

TAPERED HEAD JECTOR PUNCHES —HW coating— 173

TAPERED HEAD JECTOR PUNCHES —RW coating— 175

PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES 177

PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES —TiCN coating— 179

PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES —WPC© treatment・HW coating— 181

PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES —RW coating— 183

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES 185

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES —TiCN coating— 187

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES —WPC© treatment・HW coating— 189

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES —RW coating— 191

DOUBLE-STEPPED SHOULDER PUNCHES FOR HEAVY LOAD —Normal・TiCN coating・HW coating— 193

DOUBLE-STEPPED SHOULDER PUNCHES FOR HEAVY LOAD —RW coating— 195

TAPPED PUNCHES 197

TAPPED PUNCHES —TiCN coating— 199

TAPPED PUNCHES —Dicoat® treatment— 199

TAPPED PUNCHES —WPC© treatment・HW coating— 201

TAPPED PUNCHES —RW coating— 203

TAPPED PUNCHES —DLC coating— 203

TAPPED JECTOR PUNCHES 205

TAPPED JECTOR PUNCHES —WPC© treatment— 205

DOUBLE-STEPPED TAPPED PUNCHES —Normal・TiCN coating・HW coating— 207

KEY FLAT SHANK TAPPED PUNCHES —Normal・TiCN coating・HW coating— 209

KEY FLAT SHANK TAPPED PUNCHES —DLC coating— 209

PUNCHES WITH KEY GROOVES 211

PUNCHES WITH KEY GROOVES —TiCN coating— 213

PUNCHES WITH KEY GROOVES —WPC© treatment・HW coating— 215

PUNCHES WITH KEY GROOVES —RW coating— 217

PUNCHES WITH KEY GROOVES —DLC coating— 219

JECTOR PUNCHES WITH KEY GROOVES 221

JECTOR PUNCHES WITH KEY GROOVES —WPC© treatment— 221

ROUND PUNCHES —Normal・TiCN coating・HW coating・DLC coating— 223

STRAIGHT PUNCHES 224

STRAIGHT PUNCHES —Lapping— 224

STRAIGHT PUNCHES —TiCN coating— 225

PUNCHES

STRAIGHT PUNCHES —DLC coating—	JECTOR STRAIGHT PUNCHES	JECTOR STRAIGHT PUNCHES —Lapping—	TAPPED STRAIGHT PUNCHES
226	227	227	228

TAPPED STRAIGHT PUNCHES —Lapping—	STRAIGHT PUNCHES FOR HEAVY LOAD —Normal・Lapping—	STRAIGHT PUNCHES FOR HEAVY LOAD —TiCN coating—	BLANKING PUNCHES
228	229	230	231

MINI PUNCHES	MINI STRAIGHT PUNCHES	PUNCH BLANKS	PUNCH BLANKS —With locating dowel holes—	JECTOR PUNCH BLANKS
233	234	235	235	236

JECTOR PUNCH BLANKS —With locating dowel holes—	PUNCH BLANKS FOR HEAVY LOAD	TAPPED PUNCH BLANKS	FOR HEAVY LOAD PUNCH BLANKS WITH DOWEL HOLES	FOR HEAVY LOAD JECTOR PUNCH BLANKS
236	237	237	237	238

TAPPED JECTOR PUNCH BLANKS	FOR HEAVY LOAD, WITH DOWEL HOLE JECTOR PUNCH BLANKS	JECTOR PIN SETS	PUSHING PINS JP JPW JPWH
238	238	239 242	242

PUNCH HOLDERS BBPH BBPHC	BBPHW BBPHWA	KBPH KBPHC	PUNCH SPACERS PWA	PUNCH SHIMS PWB
243	243	243	244	244

SPACERS FOR TAPPED PUNCHES PWC
244

FIXING KEYS FOR PUNCHES WITH KEY GROOVES
245

FIXING KEYS FOR PUNCHES WITH KEY GROOVES —Long type—
245

KEYS FOR PUNCHES KE KED KES KEG
246

PUNCH LIST①
—GUIDE—

Shank type		Ⓜ	Standdiameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		RW coating		DLC coating (upper) DLC foundation WPC® (lower)		Lapping	
Shoulder		Equivalent to SKD11	D_{m5}	SP□□	P.55	T—SP□□	P.57		P.59	W—SP□□	P.61		P.63		P.65	L—SP□□	P.67
			$D^{+0.005}_{0}$	A—SP□□		AT—SP□□				AW—SP□□						AL—SP□□	
		Equivalent to SKH51	D_{m5}	SH□□				H—SH□□		W—SH□□ HW—SH□□		RW—SH□□		N—SH□□ NW—SH□□		L—SH□□	
			$D^{+0.005}_{0}$	A—SH□□				AH—SH□□		AW—SH□□ AHW—SH□□		ARW—SH□□		AN—SH□□ ANW—SH□□		AL—SH□□	
		Powdered high-speed steel	D_{m5}	PH□□		T—PH□□	P.57	H—PH□□		W—PH□□ HW—PH□□		RW—PH□□		N—PH□□ NW—PH□□		L—PH□□	
			$D^{+0.005}_{0}$	A—PH□□		AT—PH□□		AH—PH□□		AW—PH□□ AHW—PH□□		ARW—PH□□		AN—PH□□ ANW—PH□□		AL—PH□□	
Shoulder jector ＊: Spring reinforced type		Equivalent to SKD11 (D4~6 Equivalent to SKH51	D_{m5}	SJ□□ (＊SJV□□)	P.69	T—SJ□□ ＊T—SJV□□	P.71		P.73	W—SJ□□ ＊W—SJV□□	P.75		P.77		P.79	L—SJ□□ ＊L—SJV□□	P.81
			$D^{+0.005}_{0}$	A—SJ□□ ＊A—SJV□□		AT—SJ□□ ＊AT—SJV□□				AW—SJ□□ ＊AW—SJV□□						AL—SJ□□ ＊AL—SJV□□	
		Powdered high-speed steel	D_{m5}	PJ□□ (＊PJV□□)		T—PJ□□ ＊T—PJV□□		H—PJ□□ ＊H—PJV□□		W—PJ□□ HW—PJ□□ ＊W—PJV□□ ＊HW—PJV□□		RW—PJ□□ ＊RW—PJV□□		N—PJ□□ ＊N—PJV□□ NW—PJ□□ ＊NW—PJV□□		L—PJ□□ ＊L—PJV□□	
			$D^{+0.005}_{0}$	A—PJ□□ ＊A—PJV□□		AT—PJ□□ ＊AT—PJV□□		AH—PJ□□ ＊AH—PJV□□		AW—PJ□□ AHW—PJ□□ ＊AW—PJV□□ ＊AHW—PJV□□		ARW—PJ□□ ＊ARW—PJV□□		AN—PJ□□ ＊AN—PJV□□ ANW—PJ□□ ＊ANW—PJV□□		AL—PJ□□ ＊AL—PJV□□	
Shoulder jector (fixed B type) ＊: Spring reinforced type		Equivalent to SKD11	D_{m5}	LFSJ□□ ＊LFSJV□□	P.83					W—LFSJ□□ ＊W—LFSJV□□	P.83					Alteration SC	P.84
			$D^{+0.005}_{0}$	A—LFSJ□□ ＊A—LFSJV□□						AW—LFSJ□□ ＊AW—LFSJV□□							
Shoulder jector (Large dia. pin type)		Equivalent to SKD11	D_{m5}	SJF□□	P.85											L—SJF□□	P.85
Shoulder Quill type		Equivalent to SKH51	D_{m5}	SH□□	P.87			H—SH□□	P.87	HW—SH□□	P.87	RW—SH□□	P.89	N—SH□□ NW—SH□□	P.89	L—SH□□	P.87
			$D^{+0.005}_{0}$	A—SH□□				AH—SH□□		AHW—SH□□		ARW—SH□□		AN—SH□□ ANW—SH□□		AL—SH□□	
		Powdered high-speed steel	D_{m5}	PH□□				H—PH□□		HW—PH□□		RW—PH□□		N—PH□□ NW—PH□□		L—PH□□	
			$D^{+0.005}_{0}$	A—PH□□				AH—PH□□		AHW—PH□□		ARW—PH□□		AN—PH□□ ANW—PH□□		AL—PH□□	
Shoulder Quill type (Head thickness 5 mm)		Equivalent to SKH51	D_{m5}	SHLT□□	P.87			H—SHLT□□	P.87	HW—SHLT□□	P.87	RW—SHLT□□	P.89	N—SHLT□□ NW—SHLT□□	P.89	L—SHLT□□	P.87
			$D^{+0.005}_{0}$	A—SHLT□□				AH—SHLT□□		AHW—SHLT□□		ARW—SHLT□□		AN—SHLT□□ ANW—SHLT□□		AL—SHLT□□	
		Powdered high-speed steel	D_{m5}	PHLT□□				H—PHLT□□		HW—PHLT□□		RW—PHLT□□		N—PHLT□□ NW—PHLT□□		L—PHLT□□	
			$D^{+0.005}_{0}$	A—PHLT□□				AH—PHLT□□		AHW—PHLT□□		ARW—PHLT□□		AN—PHLT□□ ANW—PHLT□□		AL—PHLT□□	
Shoulder Short type		Equivalent to SKD11	D_{m5}	SS□□	P.91				P.93		P.93				P.93	Alteration SC	P.92 P.94
			$D^{+0.005}_{0}$	A—SS□□				H—SSH□□		HW—SSH□□				N—SSH□□ NW—SSH□□			
		Equivalent to SKH51	D_{m5}	SSH□□				AH—SSH□□		AHW—SSH□□				AN—SSH□□ ANW—SSH□□			
			$D^{+0.005}_{0}$	A—SSH□□				H—SSP□□		HW—SSP□□				N—SSP□□ NW—SSP□□			
		Powdered high-speed steel	D_{m5}	SSP□□				AH—SSP□□		AHW—SSP□□				AN—SSP□□ ANW—SSP□□			
			$D^{+0.005}_{0}$	A—SSP□□													
Shoulder Double stepped		Equivalent to SKD11	D_{m5}	SPTW□	P.95				P.95		P.95		P.97		P.97	Alteration SC	P.96 P.98
			$D^{+0.005}_{0}$	A—SPTW□				H—SHTW□		HW—SHTW□		RW—SHTW□		N—SHTW□ NW—SHTW□			
		Equivalent to SKH51	D_{m5}	SHTW□				AH—SHTW□		AHW—SHTW□		ARW—SHTW□		AN—SHTW□ ANW—SHTW□			
			$D^{+0.005}_{0}$	A—SHTW□				H—PHTW□		HW—PHTW□		RW—PHTW□		N—PHTW□ NW—PHTW□			
		Powdered high-speed steel	D_{m5}	PHTW□				AH—PHTW□		AHW—PHTW□		ARW—PHTW□		AN—PHTW□ ANW—PHTW□			
			$D^{+0.005}_{0}$	A—PHTW□													

Shank type		Ⓜ	Standdiameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		RW coating		DLC coating (upper) DLC foundation WPC® (lower)		Lapping	
Shoulder quill type, double stepped		Equivalent to SKH51	D_{m5}	SHTWA	P.99											Alteration SC	P.100
			$D^{+0.005}_{0}$	A—SHTWA													
		Powdered high-speed steel	D_{m5}	PHTWA													
			$D^{+0.005}_{0}$	A—PHTWA													
Key flat shank shoulder		Equivalent to SKD11	$D^{+0.005}_{0}$	G—SP□□	P.101				P.101	GW—SP□□	P.103		P.105		P.105		
		Equivalent to SKH51		G—SH□□				GH—SH□□		GW—SH□□ GHW—SH□□		GRW—SH□□		GN—SH□□ GNW—SH□□			
		Powdered high-speed steel		G—PH□□				GH—PH□□		GW—PH□□ GHW—PH□□		GRW—PH□□		GN—PH□□ GNW—PH□□			
Key flat shank jector		Equivalent to SKD11 (D4~6 SKH51)	$D^{+0.005}_{0}$	G—SJ□□	P.107				P.107	GW—SJ□□	P.109		P.111		P.111		
		Powdered high-speed steel	$D^{+0.005}_{0}$	G—PJ□□				GH—PJ□□		GW—PJ□□ GHW—PJ□□		GRW—PJ□□		GN—PJ□□ GNW—PJ□□			
Key flat shank jector (Spring-reinforced type)		Equivalent to SKD11	$D^{+0.005}_{0}$	G—SJV□□	P.107				P.107	GW—SJV□□	P.109		P.111		P.111		
		Powdered high-speed steel	$D^{+0.005}_{0}$	G—PJV□□				GH—PJV□□		GW—PJV□□ GHW—PJV□□		GRW—PJV□□		GN—PJV□□ GNW—PJV□□			
With locating dowel hole		Equivalent to SKD11	D_{m5}	SP□□—C	P.113	T—SP□□—C	P.115	H—SP□□—C	P.117	W—SP□□—C HW—SP□□—C	P.119	RW—SP□□—C	P.121	N—SP□□—C NW—SP□□—C	P.123	Alteration SC	P.114
Jector with locating dowel hole		Equivalent to SKD11	D_{m5}	SJ□□—C	P.125	T—SJ□□—C	P.127	H—SJ□□—C	P.129	W—SJ□□—C HW—SJ□□—C	P.131	RW—SJ□□—C	P.133	N—SJ□□—C NW—SJ□□—C	P.135	Alteration SC	P.126 P.130
Jector with locating dowel hole (Spring-reinforced type)		Equivalent to SKD11	D_{m5}	SJV□□—C	P.125	T—SJV□□—C	P.127	H—SJV□□—C	P.129	W—SJV□□—C HW—SJV□□—C	P.131	RW—SJV□□—C	P.133	N—SJV□□—C NW—SJV□□—C	P.135	Alteration SC	P.126 P.130
For heavy load		Equivalent to SKH51	D_{m5}	AP□□	P.137			H—AP□□	P.141	W—AP□□ HW—AP□□	P.143	RW—AP□□	P.145			L—AP□□	P.147
			$D^{+0.005}_{0}$	A—AP□□				AH—AP□□		AW—AP□□ AHW—AP□□		ARW—AP□□				AL—AP□□	
		Powdered high-speed steel	D_{m5}	APH□□		T—APH□□	P.139	H—APH□□		W—APH□□ HW—APH□□		RW—APH□□				L—APH□□	
			$D^{+0.005}_{0}$	A—APH□□		AT—APH□□		AH—APH□□		AW—APH□□ AHW—APH□□		ARW—APH□□				AL—APH□□	
Jector for heavy load ＊: Spring and pin reinforced type		Powdered high-speed steel	D_{m5}	APJ□□ ＊APJV□□	P.149	T—APJ□□ ＊T—APJV□□	P.151	H—APJ□□ ＊H—APJV□□	P.153	W—APJ□□ HW—APJ□□ ＊W—APJV□□ ＊HW—APJV□□	P.155	RW—APJ□□ RW—APJV□□	P.157			L—APJ□□ ＊L—APJV□□	P.159
			$D^{+0.005}_{0}$	A—APJ□□ ＊A—APJV□□		AT—APJ□□ ＊AT—APJV□□		AH—APJ□□ ＊AH—APJV□□		AW—APJ□□ AHW—APJ□□ ＊AW—APJV□□ ＊AHW—APJV□□		ARW—APJ□□ ARW—APJV□□				AL—APJ□□ ＊AL—APJV□□	
Jector for heavy load (Fixed B type) ＊: Spring and pin reinforced type		Powdered high-speed steel	D_{m5}	LFAPJ□□ ＊LFAPJV□□	P.161			H—LFAPJ□□ ＊H—LFAPJV□□	P.163	W—LFAPJ□□ HW—LFAPJ□□ ＊W—LFAPJV□□ ＊HW—LFAPJV□□	P.165	RW—LFAPJ□□ ＊RW—LFAPJV□□	P.167			Alteration SC	P.162 P.164
			$D^{+0.005}_{0}$	A—LFAPJ□□ ＊A—LFAPJV□□				AH—LFAPJ□□ ＊AH—LFAPJV□□		AW—LFAPJ□□ AHW—LFAPJ□□ ＊AW—LFAPJV□□ ＊AHW—LFAPJV□□		ARW—LFAPJ□□ ＊ARW—LFAPJV□□					
Tapered head		Equivalent to SKH51	D_{m5}	TSSHA□	P.169			H—TSSHA□	P.169	HW—TSSHA□	P.169	RW—TSSHA□	P.171			Alteration SC	P.170
		Powdered high-speed steel		TSPHA□				H—TSPHA□		HW—TSPHA□		RW—TSPHA□					
Tapered head jector		Equivalent to SKH51	D_{m5}	TSSJA□	P.173			H—TSSJA□	P.173	W—TSSJA□ HW—TSSJA□	P.173	RW—TSSJA□	P.175			Alteration SC	P.174
		Powdered high-speed steel		TSPJA□				H—TSPJA□		W—TSPJA□ HW—TSPJA□		RW—TSPJA□					

PUNCHES

PUNCH LIST②
—GUIDE—

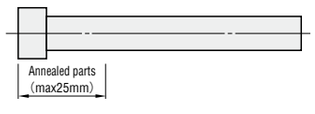
Shank type		M	Shank diameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		RW coating		DLC coating (upper) DLC foundation WPC® (lower)		Lapping	
For heavy load with dowel hole		Equivalent to SKH51	D_{m5}	AP□□—C	P.177			H—AP□□—C	P.179	W—AP□□—C HW—AP□□—C	P.181	RW—AP□□—C	P.183			Alteration SC	P.178 P.180
		Powdered high-speed steel	$D^{+0.005}_{0}$	APH□□—C				H—APH□□—C		W—APH□□—C HW—APH□□—C		RW—APH□□—C					
Jector for heavy load with dowel hole ✻ : Spring and pin reinforced type		Equivalent to SKH51	D_{m5}	AHJ□□—C ✻AHJV□□—C	P.185			H—AHJ□□—C ✻H—AHJV□□—C	P.187	W—AHJ□□—C ✻W—AHJV□□—C HW—AHJ□□—C ✻HW—AHJV□□—C	P.189	RW—AHJ□□—C ✻RW—AHJV□□—C	P.191			Alteration SC	P.186 P.188
For heavy load double stepped		Equivalent to SKH51	D_{m5}	APTW□	P.193			H—APTW□	P.193	HW—APTW□	P.193	RW—APTW□	P.195			Alteration SC	P.194
			$D^{+0.005}_{0}$	A—APTW□				AH—APTW□		AHW—APTW□		ARW—APTW□					
		Powdered high-speed steel	D_{m5}	APHTW□				H—APHTW□		HW—APHTW□		RW—APHTW□					
			$D^{+0.005}_{0}$	A—APHTW□				AH—APHTW□		AHW—APHTW□		ARW—APTW□					
Tapped		Equivalent to SKD11	D_{m5}	MP□□ MPL□□	P.197	T—MP□□	P.199			W—MP□□	P.201					Alteration SC	P.198 P.204
			$D^{+0.005}_{0}$	A—MP□□		AT—MP□□				AW—MP□□							
		Powdered high-speed steel	D_{m5}	MPH□□		T—MPH□□		H—MPH□□	P.199	W—MPH□□ HW—MPH□□		RW—MPH□□	P.203	N—MPH□□ NW—MPH□□	P.203		
			$D^{+0.005}_{0}$	A—MPH□□		AT—MPH□□		AH—MPH□□		AW—MPH□□ AHW—MPH□□		ARW—MPH□□		AN—MPH□□ ANW—MPH□□			
Tapped jector		Equivalent to SKD11	D_{m5}	MJ□□	P.205					W—MJ□□	P.205					Alteration SC	P.206
			$D^{+0.005}_{0}$	A—MJ□□						AW—MJ□□							
Tapped, double stepped		Equivalent to SKD11	D_{m5}	MPTW□	P.207											Alteration SC	P.208
			$D^{+0.005}_{0}$	A—MPTW□													
		Powdered high-speed steel	D_{m5}	MPHTW□				H—MPHTW□	P.207	HW—MPHTW□	P.207						
			$D^{+0.005}_{0}$	A—MPHTW□				AH—MPHTW□		AHW—MPHTW□							
Key flat shank, tapped		Equivalent to SKD11	$D^{+0.005}_{0}$	G—MP□□	P.209											Alteration SC	P.210
		Powdered high-speed steel		G—MPH□□				GH—MPH□□	P.209	GHW—MPH□□	P.209			GN—MPH□□ GNW—MPH□□	P.209		
With key groove		Equivalent to SKD11	D_{m5}	SK□□	P.211					W—SK□□	P.215					Alteration SC	P.212 P.214
			$D^{+0.005}_{0}$	A—SK□□						AW—SK□□							
		Equivalent to SKH51	D_{m5}	SHK□□				H—SHK□□	P.213	W—SHK□□ HW—SHK□□		RW—SHK□□	P.217	N—SHK□□ NW—SHK□□	P.219		
			$D^{+0.005}_{0}$	A—SHK□□				AH—SHK□□		AW—SHK□□ AHW—SHK□□		ARW—SHK□□		AN—SHK□□ ANW—SHK□□			
		Powdered high-speed steel	D_{m5}	PK□□				H—PK□□		W—PK□□ HW—PK□□		RW—PK□□		N—PK□□ NW—PK□□			
			$D^{+0.005}_{0}$	A—PK□□				AH—PK□□		AW—PK□□ AHW—PK□□		ARW—PK□□		AN—PK□□ ANW—PK□□			
Jector with key groove		Equivalent to SKD11	D_{m5}	SKJ□□	P.221					W—SKJ□□	P.221					Alteration SC	P.222
			$D^{+0.005}_{0}$	A—SKJ□□						AW—SKJ□□							
Flange stopper		Powdered high-speed steel	$D^{+0.005}_{0}$	PHTAL	P.223			H—PHTAL	P.223	HW—PHTAL	P.223			N—PHTAL NW—PHTAL	P.223	Alteration SC	P.223
Straight		Equivalent to SKD11	—	SPC	P.224											L—SPC	P.224
		Equivalent to SKH51	—	SHC				H—SHC	P.225					N—SHC	P.226	L—SHC	
		Powdered high-speed steel	—	PHC				H—PHC						N—PHC		L—PHC	

Shank type		M	Shank diameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		RW coating		DLC coating (upper) DLC foundation WPC (lower)		Lapping	
Straight jector		Equivalent to SKD11 (No.5-Equivalent to SKH51)	—	SJC	P.227											L—SJC	P.227
Tapped straight		Equivalent to SKD11	—	MSPC	P.228											L—MSPC	P.228
Straight for heavy load		Equivalent to SKH51	—	AHC	P.229			H—AHC	P.230							L—AHC	P.229
		Powdered high-speed steel	—	APHC				H—APHC								L—APHC	
Blanking punch		Equivalent to SKD11	D_{m5}	SPCPD	P.231												
Mini		Equivalent to SKH51	—	SHCL	P.233												
Mini straight		Equivalent to SKH51	—	SH	P.234												
Punoh blanks		Equivalent to SKD11	D_{m5}	SPB	P.235	✻Typical types of Punch Blanks are shown. Please refer to product page for detail.											
			$D^{+0.005}_{0}$	A—SPB													
		Equivalent to SKH51	D_{m5}	SHB													
			$D^{+0.005}_{0}$	A—SHB													
		Powdered high-speed steel	D_{m5}	PHB													
			$D^{+0.005}_{0}$	A—PHB													

■Guide to jector punches

		Type of jector						
		Standard type				Configurable full length type		
		Standard type	Spring reinforced type	Spring and pin reinforced type	Large-diameter pin type	Standard type	Spring reinforced type	Spring and pin reinforced type
Features		These are the most commonly used punches for scrap removal.	The spring constant is twice that of the standard type.The large spring load results in more effective scrap removal.	The spring constant is twice that of the standard type, and the improved strength of the pin shaft under the flange prevents breakage below the flange.	This type has a thicker jector pin than the standard type. It provides excellent strength and rigidity.	The tip length B remains constant even when the full length L changes.	The tip length B remains constant even when the full length L changes.The spring constant is twice that of the standard type, and results in more effective scrap removal.	The tip length B remains constant even when the full length L changes.The spring constant is twice that of the standard type, and the improved strength of the pin shaft under the flange prevents breakage below the flange.
Shank type	Surface treatment							
Shoulder	Normal	P.69	P.69		P.85	P.83	P.83	
	Lapping	P.81	P.81			P.86 Alteration SC	P.86 Alteration SC	
	Dicoat® treatment	P.71	P.71					
	TiCN coating	P.73	P.73					
	WPC® treatment	P.75	P.75			P.83	P.83	
	HW coating							
	RW coating	P.77	P.77					
	DLC coating	P.79	P.79					
Key flat shank	Normal	P.107	P.107					
	TiCN coating							
	WPC® treatment	P.109	P.109					
	HW coating							
	RW coating	P.111	P.111					
	DLC coating							
With locating dowel hole	Normal	P.125	P.125					
	Lapping	P.126 Alteration SC	P.126 Alteration SC					
	Dicoat® treatment	P.127	P.127					
	TiCN coating	P.129	P.129					
	WPC® treatment	P.131	P.131					
	HW coating							
	RW coating	P.133	P.133					
	DLC coating	P.135	P.135					
For heavy load	Normal	P.149		P.149		P.161		P.161
	Lapping	P.159		P.159		P.162 Alteration SC		P.162 Alteration SC
	Dicoat® treatment	P.151		P.151				
	TiCN coating	P.153		P.153		P.163		P.163
	WPC® treatment	P.155		P.155		P.165		P.165
	HW coating							
	RW coating	P.157		P.157		P.167		P.167
Tapered head	Normal					P.173		
	Lapping					P.174 Alteration SC		
	TiCN coating							
	WPC® treatment					P.173		
	HW coating							
	RW coating					P.175		
For heavy load with dowel hole	Normal	P.185		P.185				
	Lapping	P.186 Alteration SC		P.186 Alteration SC				
	TiCN coating	P.187		P.187				
	WPC® treatment	P.189		P.189				
	HW coating							
	RW coating	P.191		P.191				
Tapped	Normal	P.205						
	Lapping	P.206 Alteration SC						
	WPC® treatment	P.205						
With key groove	Normal	P.221						
	Lapping	P.222 Alteration SC						
	WPC® treatment	P.221						
	RW coating							
	DLC coating							
Straight	Normal	P.227						
	Lapping	P.227						
	RW coating							
	DLC coating							

■ Because punches and punch blanks made from powdered high-speed steel are annealed at the head, the hardness is lower.(45～55 HRC)
✻ However, the following types are not annealed.
- Flange stopper type
- Short type
- Shank diameter (D dimension) 1.6, 2.0, 2.5

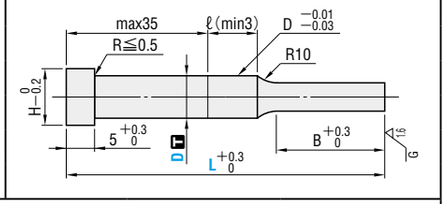


SHOULDER PUNCHES

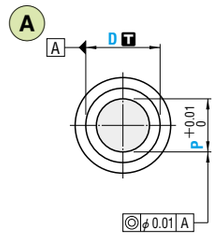
Punch tip shear angle alterations P.232	1F	2F	3F	4F	5F	6F	7F

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKD11 60～63HRC	SP	A D R E G	S
		Equivalent to SKH51 61～64HRC	SH		
		Powdered high-speed steel 64～67HRC	PH		
	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63HRC	A—SP		L
		Equivalent to SKH51 61～64HRC	A—SH		
		Powdered high-speed steel 64～67HRC	A—PH		X Tip length (B) X>L>S

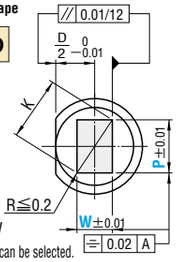
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape A

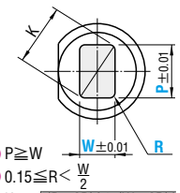


Tip shape D



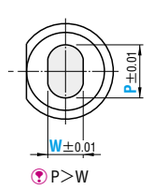
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



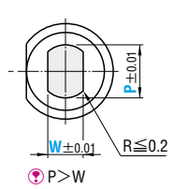
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01 mm increments Ⓐ min. P max.	DREG P-Kmax.	DREG P-Wmin.	R R	B	H
(D_{m5}) SP SH PH	A D R E G	S	3	40 50 60 70 80 90 100	1.00～ 2.99	(☞P.87)		W/2 (R only) 0.15≦R<	8	5
			4	40 50 60 70 80 90 100	1.00～ 3.99	3.97	1.00			7
			5	40 50 60 70 80 90 100	2.00～ 4.99	4.97	1.20			8
			6	40 50 60 70 80 90 100	2.00～ 5.99	5.97	1.50			9
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			13
			(12)	70 80 90 100	5.00～ 11.99	—				15
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
			25	(40) 50 60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) A—SP A—SH A—PH		L	3	50 60 70 80 90 100	1.00～ 2.99	(☞P.87)			13	5
			4	50 60 70 80 90 100	1.00～ 3.99	3.97	2.00			7
			5	50 60 70 80 90 100	2.00～ 4.99	4.97	2.00			8
			6	50 60 70 80 90 100	2.00～ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50		19	11
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			13
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00		25	19
			20	60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
			25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
		X	3	50 60 70 80 90 100	1.20～ 2.99	—			19	5
			4	50 60 70 80 90 100	1.20～ 3.99	3.97	2.00			7
			5	60 70 80 90 100	2.00～ 4.99	4.97	3.50		25	8
			6	60 70 80 90 100	2.00～ 5.99	5.97	3.50			9
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00		30	11
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00			13
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00			16
			16	70 80 90 100	10.00～ 15.99	—			40	19
			20	70 80 90 100	13.00～ 19.99					23
			25	70 80 90 100	18.00～ 24.99					28

- Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D(12) is orderable only in MiSUMi India.
- DREG: P・K>(D−0.05)⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- L(40)⋯B=8 If full length is (40), tip length is 8 mm in all cases.

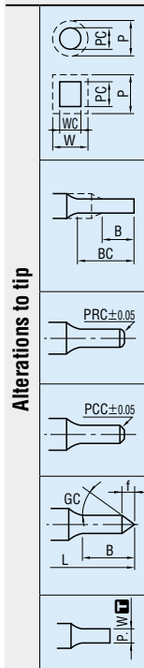
Order

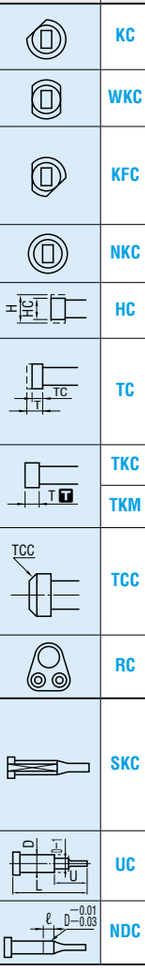
Catalog No.	L	P	W	R (Ⓡ only)
A—PHDL13	80	P10.50	W7.34	

- For a smaller diameter than listed: Shoulder Punches —Quill— P.87
- For a shorter L dimension: Shoulder Punches —Short Type— P.89

Days to Ship Quotation

Alterations Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC, etc.)
SPDS10 — LC72 — PC1.9 — WC1.9 — BC8—KC45

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip 	PC WC	Tip dimension change PC≧$\frac{Pmin.}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax.: 0.500～0.799 / 10; 0.800～0.999 / 13; 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～4.999 / 45; 5.000～5.999 / 50; 6.000～ / 60	Tip dimension change PC, WC≧$\frac{P・Wmin.}{2}$≧0.80 0.01 mm increments ⊗Cannot be used for tip X. P(PC)・W(WC) / Bmax.: 0.80～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments (?) Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments (?) Full length L must be at least 30 mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−0.2)/2 ⊗Cannot be combined with PCC・GC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (?) PCC≦(P−0.2)/2 ⊗Cannot be combined with PRC・GC.	——	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) ⊗Cannot be used for P<1.0. ⊗Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC.	——	
	PKC	Tip tolerance change P $^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (?) (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments (?) If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length - 25 mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments (?) If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length - 30 mm).	
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC: Head thickness tolerance change T $^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC: +Full length change+ Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM: Head thickness tolerance change T $^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: +Full length change+ Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
	LKZ	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

Alteration	Code	Ⓐ	DREG	1Code
Alterations to head 	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0°and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	Double key flats at 0°and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (?) Full length L is shortened by (5−TC). If combined with LC/LCT/LMT, full length remains as specified.		
	TKC	Head thickness tolerance change T $^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change T $^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. ☞P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (?) If H≦5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗Cannot be used for D $^{+0.005}_{0}$ types.		
Alterations to shank	SKC	Single key flat on shank Ⓐ DREG ・D3～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗Cannot be combined with KC・WKC・KFC.		
	UC	Modification for urethane stripper (USN) installation (?) For details ☞P.750. (?) Can be used for D10～25.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

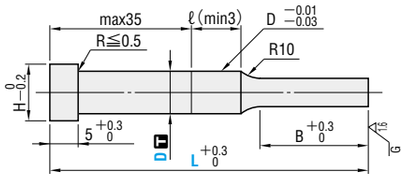
SHOULDER PUNCHES
—DICOAT® TREATMENT—

PRODUCTS DATA P.1599

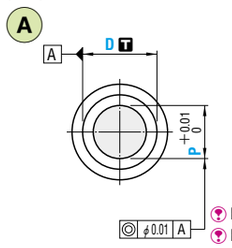
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS	D_{m5} (D3~25)	Equivalent to SKD11 60~63HRC Surface 3000HV	T—SP	A D R E G	S L X
		Powdered high-speed steel 62~64HRC Surface 3000HV	T—PH		
	$D^{+0.005}_{0}$ (D3~13)	Equivalent to SKD11 60~63HRC Surface 3000HV	AT—SP		
		Powdered high-speed steel 62~64HRC Surface 3000HV	AT—PH		

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A~G in the figure below.

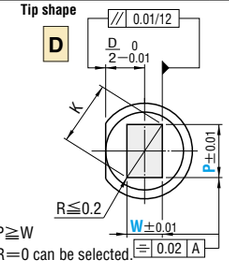


Tip shape A

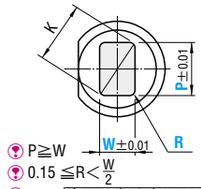


P≧W
R=0 can be selected.
K= $\sqrt{P^2+W^2}$

Tip shape D

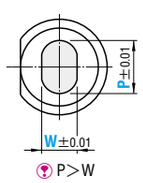


Tip shape R



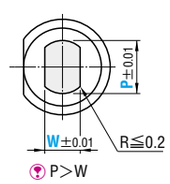
P≧W
0.15≦R< $\frac{W}{2}$
K= $\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01 mm increments Ⓐ min. P max.	0.01 mm increments DREG P·Kmax.	0.01 mm increments DREG P·Wmin.	R R	B	H
(D_{m5}) T—SP T—PH	A D R E G	S	3	40 50 60 70 80	1.00~ 2.99	—	—	0.15≦R< $\frac{W}{2}$ (R only)	8	5
			4	40 50 60 70 80	1.00~ 3.99	3.97	1.00			7
			5	40 50 60 70 80	2.00~ 4.99	4.97	1.20			8
			6	40 50 60 70 80	2.00~ 5.99	5.97	1.50			9
			8	(40) 50 60 70 80 90 100	3.00~ 7.99	7.97	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00~ 9.99	9.97	2.50			13
			13	(40) 50 60 70 80 90 100	6.00~ 12.99	12.97	3.00			16
			16	(40) 50 60 70 80 90 100	10.00~ 15.99	15.97	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00~ 19.99	19.97	5.00			23
			25	(40) 50 60 70 80 90 100	18.00~ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) (D3 ~ 13) AT—SP AT—PH	A D R E G	L	3	50 60 70 80	1.00~ 2.99	—	—		13	5
			4	50 60 70 80	1.00~ 3.99	3.97	2.00			7
			5	50 60 70 80	2.00~ 4.99	4.97	2.00			8
			6	50 60 70 80	2.00~ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00~ 7.99	7.97	2.50		19	11
			10	50 60 70 80 90 100	3.00~ 9.99	9.97	2.50			13
			13	50 60 70 80 90 100	6.00~ 12.99	12.97	3.00			16
			16	60 70 80 90 100	10.00~ 15.99	15.97	4.00		25	19
			20	60 70 80 90 100	13.00~ 19.99	19.97	5.00			23
			25	60 70 80 90 100	18.00~ 24.99	24.97	6.00			28
	A	X	3	50 60 70 80	2.00~ 2.99	—			19	5
			4	50 60 70 80	2.00~ 3.99					7
			5	60 70 80	2.00~ 4.99				25	8
			6	60 70 80	2.00~ 5.99					9
			8	60 70 80 90 100	3.00~ 7.99				30	11
			10	60 70 80 90 100	3.00~ 9.99					13
			13	60 70 80 90 100	6.00~ 12.99					16
			16	70 80 90 100	10.00~ 15.99				40	19
			20	70 80 90 100	13.00~ 19.99					23
			25	70 80 90 100	18.00~ 24.99					28

Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05⋯ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)⋯B=8 If full length is (40), tip length is 8 mm in all cases.

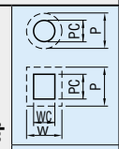
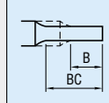
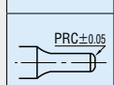
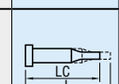
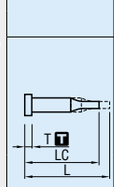
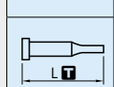
Order

Catalog No.	L	P	W	R (R only)
T—SPEL 16	70	P12.00	W6.00	

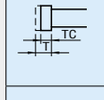
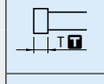
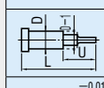
Days to Ship Quotation

Alterations

Catalog No.	L (LC·LCT·LMT)	P (PC)	W (WC)	R	(BC·HC·TC, etc.)
T—SPEL 16	LC65	P12.00	W6.00		KC90

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ $\frac{Pmin.}{2}$ ≧1.00 0.01 mm increments	Tip dimension change $\frac{PC}{WC}$≧ $\frac{P \cdot Wmin.}{2}$ ≧1.00 0.01 mm increments	
			P(PC) / Bmax.: 1.00~1.99 / 20; 2.00~3.99 / 35; 4.00~5.99 / 40; 6.00~ / 45	P(PC)·W(WC) / Bmax.: 1.00~1.49 / 8; 1.50~1.99 / 13; 2.00~3.49 / 19; 3.50~4.99 / 25; 5.00~ / 30	
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments (?) Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments (?) Full length L must be at least 30 mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−0.2)/2.	——	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments (?) If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments (?) If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length−30 mm).	Quotation
			(If combined with LKC, 0.01 mm increments can be selected.)		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 LC +Full length change+ Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 LC +Full length change+ Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	

Price Quotation

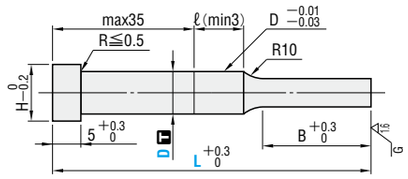
Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KFC	Double key flats at 0° and a selected angle 1° increments. ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments. ⊗ Cannot be combined with KC·WKC.	Quotation
		NKC	——	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) (?) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (?) If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ DREG •D3~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) •D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		UC	Modification for urethane stripper (USN) installation (?) For details P.750. (?) Can be used for D10~25.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

SHOULDER PUNCHES
—TiCN COATING—

PRODUCTS DATA
P.1601-1604

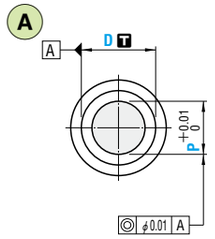
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61~64HRC Surface 3000HV	H—SH	A D R E G	S L X
		Powdered high-speed steel 64~67HRC Surface 3000HV	H—PH		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61~64HRC Surface 3000HV	AH—SH		
		Powdered high-speed steel 64~67HRC Surface 3000HV	AH—PH		

The tip shape can be selected from Tip shape A~G in the figure below.



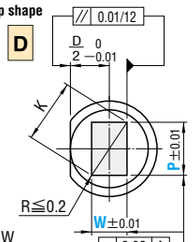
The tip end is ground before the coating is applied.

Tip shape A

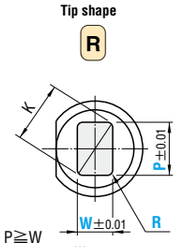


P≧W
R=0 can be selected.
K=$\sqrt{P^2+W^2}$

Tip shape D

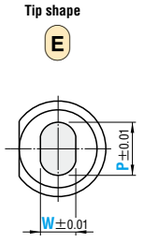


Tip shape R



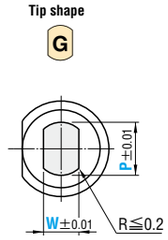
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01 mm increments Ⓐ min. P max.	0.01 mm increments D R E G P-Kmax.	0.01 mm increments D R E G P-Wmin.	R R	B	H
(D_{m5}) H—SH H—PH	A D R E G	S	3	40 50 60 70 80 90 100	1.00~ 2.99	—	—	0.15≦R<$\frac{W}{2}$ (R only)	8	5
			4	40 50 60 70 80 90 100	1.00~ 3.99	3.97	1.00			7
			5	40 50 60 70 80 90 100	2.00~ 4.99	4.97	1.20			8
			6	40 50 60 70 80 90 100	2.00~ 5.99	5.97	1.50			9
			8	(40) 50 60 70 80 90 100	3.00~ 7.99	7.97	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00~ 9.99	9.97	2.50			13
			13	(40) 50 60 70 80 90 100	6.00~ 12.99	12.97	3.00			16
			16	(40) 50 60 70 80 90 100	10.00~ 15.99	15.97	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00~ 19.99	19.97	5.00			23
			25	(40) 50 60 70 80 90 100	18.00~ 24.99	24.97	6.00			28
		L	3	50 60 70 80 90 100	1.00~ 2.99	—	—		13	5
			4	50 60 70 80 90 100	1.00~ 3.99	3.97	2.00			7
			5	50 60 70 80 90 100	2.00~ 4.99	4.97	2.00			8
			6	50 60 70 80 90 100	2.00~ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00~ 7.99	7.97	2.50		19	11
			10	50 60 70 80 90 100	3.00~ 9.99	9.97	2.50			13
			13	50 60 70 80 90 100	6.00~ 12.99	12.97	3.00			16
($D^{+0.005}_{0}$) AH—SH AH—PH			16	60 70 80 90 100	10.00~ 15.99	15.97	4.00		25	19
			20	60 70 80 90 100	13.00~ 19.99	19.97	5.00			23
			25	60 70 80 90 100	18.00~ 24.99	24.97	6.00			28
		X	3	50 60 70 80 90 100	1.20~ 2.99	—	—		19	5
			4	50 60 70 80 90 100	1.20~ 3.99	3.97	2.00			7
			5	60 70 80 90 100	2.00~ 4.99	4.97	3.50		25	8
			6	60 70 80 90 100	2.00~ 5.99	5.97	3.50			9
			8	60 70 80 90 100	3.00~ 7.99	7.97	5.00		30	11
			10	60 70 80 90 100	3.00~ 9.99	9.97	5.00			13
			13	60 70 80 90 100	6.00~ 12.99	12.97	5.00			16
			16	70 80 90 100	10.00~ 15.99	—			40	19
			20	70 80 90 100	13.00~ 19.99					23
			25	70 80 90 100	18.00~ 24.99					28

Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P·K>D−0.05…ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)…B=8 If full length is (40), tip length is 8 mm in all cases.

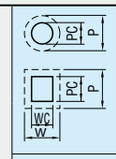
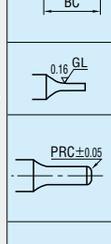
Order

Catalog No.	L	P	W	R (R only)
AH—SHEL16	70	P12.00	W6.00	

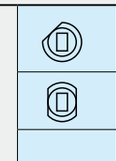
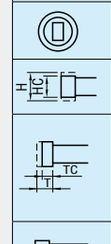
Days to Ship: Quotation

Alterations

Catalog No.	L (LC·LCT·LMT)	P (PC)	W (WC)	R	(BC·HC·TC, etc.)
H—SHAL 10	LC72	PC2.80		BC8	

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip 	PC WC	Tip dimension change PC≧$\frac{P_{min.}}{2}$ ≧1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax.: 1.000~1.999 / 20; 2.000~3.999 / 35; 4.000~4.999 / 45; 5.000~5.999 / 50; 6.000~ / 60	Tip dimension change PC≦$\frac{P-W_{min.}}{2}$ ≧1.00 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)·W(WC) / Bmax.: 1.00~1.49 / 8; 1.50~1.99 / 13; 2.00~3.49 / 19; 3.50~4.99 / 25; 5.00~ / 30	
	BC	Tip length change 2≦BC≦Bmax.≦L/2 0.1 mm increments Ⓡ Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax.≦L/2 0.1 mm increments Ⓡ Full length L must be at least 30 mm longer than tip length BC.	
	SC	Lapping of tip Ⓡ P dimension tolerance and increment are the same. The base material is finished befor the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments Ⓡ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓡ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC.	——	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓡ If combined with SC, tip edgesare rounded. ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LCT·LMT·PRC·PCC.	——	
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ Ⓡ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length 	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length−30 mm). (If combined with LKC, 0.01 mm increments can be selected.)	
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC +Full length change+ Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC +Full length change+ Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Quotation

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to head 	KC	Addition of single key flat to head	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Ⓡ Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 Ⓡ If H≦5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank 	SKC	Single key flat on shank Ⓐ D R E G • D3~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) • D8 and larger P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
	UC	Modification for urethane stripper (USN) installation Ⓡ For details P.750 Ⓡ Can be used for D10~25.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Quotation

Price: Quotation

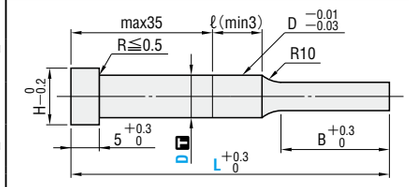
SHOULDER PUNCHES
—WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1601・1605

Type	M / H	Catalog No. Type: Shank dia. T D m5	Catalog No. Type: Shank dia. T D +0.005 0	Tip shape	B Tip length
—WPC® treatment— RoHS	Equivalent to SKD11 60～63HRC Surface 1000～1100HV	W—SP	AW—SP	A	S
	Equivalent to SKH51 61～64HRC Surface 1000～1100HV	W—SH	AW—SH	D	
	Powdered high-speed steel 64～67HRC Surface 1000～1100HV	W—PH	AW—PH	R	L
—HW coating—	Equivalent to SKH51 61～64HRC Surface 3000HV	HW—SH	AHW—SH	E	X
	Powdered high-speed steel 64～67HRC Surface 3000HV	HW—PH	AHW—PH	G	Tip length (B) X>L>S

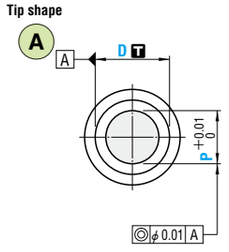
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.

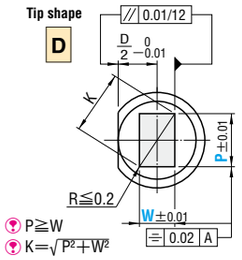


The tip edges are very slightly rounded.

Tip shape A



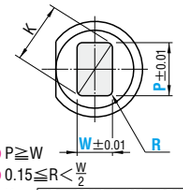
Tip shape D



P≧W

K=√(P²+W²)

Tip shape R

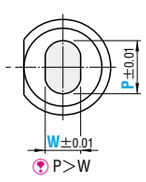


P≧W

0.15≦R<W/2

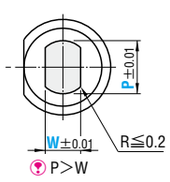
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01 mm increments Ⓐ min. P max.	0.01 mm increments DREG P・Kmax.	0.01 mm increments DREG P・Wmin.	R	B	H
(Dm5) —WPC® treatment— W—SP	A D R E G	S	3	40 50 60 70 80 90 100	1.00～ 2.99	—	—	0.15≦R<W/2 (R only)	8	5
			4	40 50 60 70 80 90 100	1.00～ 3.99	3.97	1.00			7
			5	40 50 60 70 80 90 100	2.00～ 4.99	4.97	1.20			8
			6	40 50 60 70 80 90 100	2.00～ 5.99	5.97	1.50			9
W—SH			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			13
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
W—PH			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
			25	(40) 50 60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
—HW coating— HW—SH		L	3	50 60 70 80 90 100	1.00～ 2.99	—	—		13	5
			4	50 60 70 80 90 100	1.00～ 3.99	3.97	2.00			7
			5	50 60 70 80 90 100	2.00～ 4.99	4.97	2.00			8
HW—PH			6	50 60 70 80 90 100	2.00～ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50		19	11
(D +0.005 0) —WPC® treatment— AW—SP			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			13
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00		25	19
AW—SH			20	60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
			25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
AW—PH		X	3	50 60 70 80 90 100	1.20～ 2.99	—	—		19	5
			4	50 60 70 80 90 100	1.20～ 3.99	3.97	2.00			7
—HW coating— AHW—SH			5	60 70 80 90 100	2.00～ 4.99	4.97	3.50		25	8
			6	60 70 80 90 100	2.00～ 5.99	5.97	3.50			9
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00		30	11
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00			13
AHW—PH			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00			16
			16	70 80 90 100	10.00～ 15.99	—			40	19
			20	70 80 90 100	13.00～ 19.99					23
			25	70 80 90 100	18.00～ 24.99					28

Ⓐ:P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

L(40)…B=8 If full length is (40), tip length is 8 mm in all cases.

Order

Catalog No.	L	P	W	R (R only)
AW—PHDL 13	80	P10.50	W7.34	

Days to Ship Quotation

Alterations

Catalog No.	L (LC・LCT・LMT)	P (PC)	W (WC)	R	(BC/HC, etc.)
W—SPDS 10	LC72	PC1.90	WC1.90		BC8—KC45

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip: PC WC	PC WC	Tip dimension change PC≧Pmin./2, 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) Bmax.: 0.500～0.799 10; 0.800～0.999 13; 1.000～1.999 20; 2.000～3.999 35; 4.000～4.999 45; 5.000～5.999 50; 6.000～ 60	Tip dimension change PC/WC≧P・Wmin./2≧0.80, 0.01 mm increments. ⊗ Cannot be used for tip X. P(PC)・W(WC) Bmax.: 0.80～1.49 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments. Full length L must be at least 25 mm longer than tip length BC. ⊗ PC・WC<1.00 Cannot be used with HW coating.	Tip length change 2≦BC≦Bmax 0.1 mm increments. Full length L must be at least 30 mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments. PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments. PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC. ⊗ Cannot be used with HW coating.	——	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ D>13 Cannot be used with HW coating.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
Alterations to full length: LC	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments. If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments. If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length−30 mm).	
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC (Full length change) + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC (Full length change) + Full length tolerance change L +0.3 0 ⇨ +0.1 0		

Price Quotation

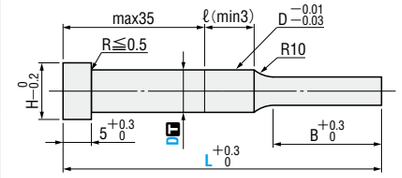
Alteration	Code	Ⓐ	DREG	1Code
Alterations to head: Alterations to full length	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
	KC	Addition of single key flat to head	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments. ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments. ⊗ Cannot be combined with KC・WKC.	
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		Quotation
	TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
	TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for D +0.005 0 types.		
Alterations to shank	SKC	Single key flat on shank. Ⓐ: D3～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5); D8～ P≦D−2.2 W≦D−2.2 (Machining width 1). ⊗ Cannot be combined with KC・WKC・KFC.	DREG	
	UC	Modification for urethane stripper (USN) installation For details P.750. Can be used for D10～25.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

SHOULDER PUNCHES
—RW COATING—

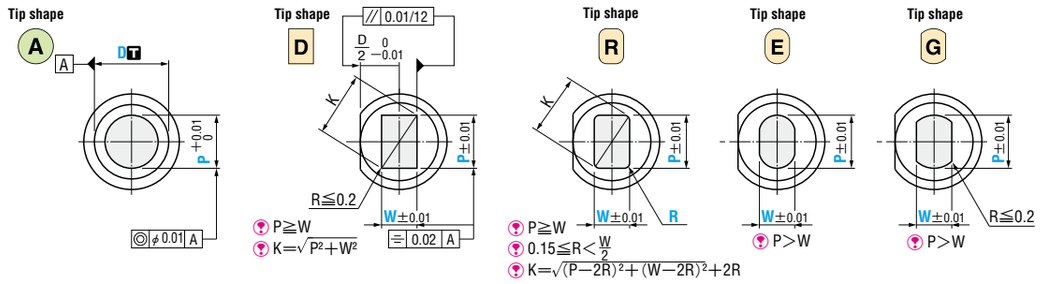
PRODUCTS DATA P.1607

Type	M H	Catalog No. Type: Shank dia. T D_{m5}	Type: Shank dia. T $D^{+0.005}_{0}$	Shape Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5・$^{+0.005}_{0}$.	Equivalent to SKH51 61～64HRC Surface 3100HV	RW—SH	ARW—SH	A D R E G	S L X
	Powdered highspeed steel 64～67HRC Surface 3100HV	RW—PH	ARW—PH		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.



The tip edges are very slightly rounded.



Catalog No. Type	Shape Tip shape	Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R	B	H
(D_{m5}) RW—SH RW—PH ($D^{+0.005}_{0}$) ARW—SH ARW—PH	A D R E G	S	3	40 50 60 70 80 90 100	1.00～2.99	—	—	R≦0.5	8	5
			4	40 50 60 70 80 90 100	1.00～3.99	3.97	1.00			7
			5	40 50 60 70 80 90 100	2.00～4.99	4.97	1.20			8
			6	40 50 60 70 80 90 100	2.00～5.99	5.97	1.50			9
			8	(40) 50 60 70 80 90 100	3.00～7.99	7.97	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～9.99	9.97	2.50			13
			13	(40) 50 60 70 80 90 100	6.00～12.99	12.97	3.00			16
			16	(40) 50 60 70 80 90 100	10.00～15.99	15.97	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00～19.99	19.97	5.00			23
			25	(40) 50 60 70 80 90 100	18.00～24.99	24.97	6.00			28
		L	3	50 60 70 80 90 100	1.00～2.99	—	—	0.15≦R< W/2 (Ⓡ only)	13	5
			4	50 60 70 80 90 100	1.00～3.99	3.97	2.00			7
			5	50 60 70 80 90 100	2.00～4.99	4.97	2.00			8
			6	50 60 70 80 90 100	2.00～5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00～7.99	7.97	2.50		19	11
			10	50 60 70 80 90 100	3.00～9.99	9.97	2.50			13
			13	50 60 70 80 90 100	6.00～12.99	12.97	3.00			16
			16	60 70 80 90 100	10.00～15.99	15.97	4.00		25	19
			20	60 70 80 90 100	13.00～19.99	19.97	5.00			23
			25	60 70 80 90 100	18.00～24.99	24.97	6.00			28
		X	3	50 60 70 80 90 100	1.20～2.99	—	—		19	5
			4	50 60 70 80 90 100	1.20～3.99	3.97	2.00			7
			5	60 70 80 90 100	2.00～4.99	4.97	3.50		25	8
			6	60 70 80 90 100	2.00～5.99	5.97	3.50			9
			8	60 70 80 90 100	3.00～7.99	7.97	5.00		30	11
			10	60 70 80 90 100	3.00～9.99	9.97	5.00			13
			13	60 70 80 90 100	6.00～12.99	12.97	5.00			16
			16	70 80 90 100	10.00～15.99	———			40	19
			20	70 80 90 100	13.00～19.99					23
			25	70 80 90 100	18.00～24.99					28

Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)⋯B=8 If full length is (40), tip length is 8mm in all cases.

Order: Catalog No. — L — P — W — R (Ⓡ only)
RW—PHDL 13 — 80 — P10.50 — W7.34

Days to Ship: Quotation

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
See the product data for details. P.1607

Alterations: Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC⋯etc.)
RW—SHDS 10 — LC72 — PC1.90 — WC1.90 — BC8—KC45

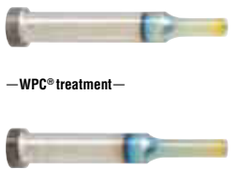
Alterations	Code	Ⓐ	DREG	1Code
Alterations to tip: PC WC	PC WC	Tip dimension change PC≧Pmin./2 ≧1.00, 0.01mm increments. P(PC) 1.000～1.999 20; 2.000～3.999 35; 4.000～4.999 45; 5.000～5.999 50; 6.000～ 60	Tip dimension change PC・WC≧P・Wmin./2 ≧1.00, 0.01mm increments. ⊗ Cannot be used for tip X. P(PC)・W(WC) 1.00～1.49 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	
	BC	Tip length change 2≦BC≦Bmax 0.1mm increments. Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax 0.1mm increments. Full length L must be at least 30mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments. PRC≦(P−0.2)/2	———	
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1mm increments. If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1mm increments. If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	Quotation
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (▽) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ LC Full length + change $+L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (▽) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ LC Full length + change $+L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to shank	UC	Modification for urethane stripper (USN) installation. For details P.750 ⊗ Can be used for D10～25.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Alterations	Code	Ⓐ	DREG	1Code
Alterations to head	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
	NKC	———	No key flat	
	HC	Head diameter change D≦HC<H 0.1mm increments ⊗ Cannot be used for retainer set products		
	TC	Head thickness change 2≦TC<5 0.1mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified. ⊗ Cannot be used for retainer set products		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$		

Price: Quotation

SHOULDER PUNCHES
—DLC COATING—

PRODUCTS DATA P.1605・1609

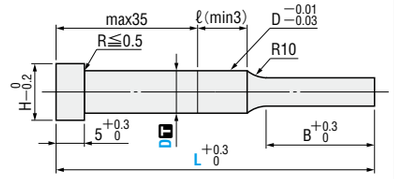
Type	M H	Catalog No. Type: Shank dia. T D_{m5}	Catalog No. Type: Shank dia. T $D^{+0.005}_{0}$
RoHS  —WPC® treatment— For shank diameter tolerance D T, select either m5・$^{+0.005}_{0}$	Equivalent to SKH51 61 ～ 64HRC Surface 3000HV and above	N—SH	AN—SH
	Powdered highspeed steel 64 ～ 67HRC Surface3000HV and above	N—PH	AN—PH
	Equivalent to SKH51 61 ～ 64HRC Surface3000HV and above	NW—SH	ANW—SH
	Powdered highspeed steel 64 ～ 67HRC Surface 3000HV and above	NW—PH	ANW—PH

Catalog No. Shape Tip shape: A D R E G

B Tip length: S L X

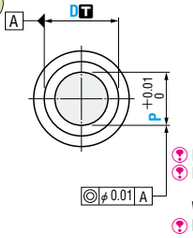
Tip length (B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.



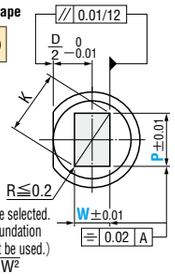
- The tip end is ground before the coating is applied.
- The tip edges of substrate WPC® treatment are slightly rounded.

Tip shape A

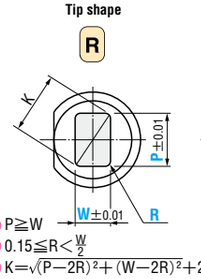


- P≧W
- R=0 can be selected. (However, foundation WPC® cannot be used.)
- K=√(P²+W²)

Tip shape D

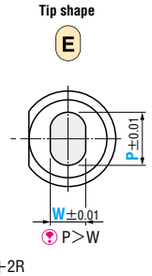


Tip shape R



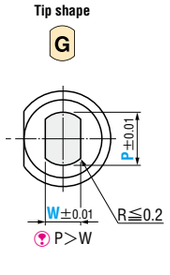
- P≧W
- 0.15≦R<W/2
- K=√(P−2R)²+(W−2R)²+2R

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Shape Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	ⒹⓇⒺⒼ P・Kmax.	ⒹⓇⒺⒼ P・Wmin.	R	B	H
(Dm5) N—SH, N—PH, —Foundation WPC®— NW—SH, NW—PH, (D +0.005 0) AN—SH, AN—PH, —Foundation WPC®— ANW—SH, ANW—PH	A D R E G	S	3	40 50 60 70 80 90 100	1.00 ～ 2.99	—	—	0.15≦R<W/2 (Ⓡ only)	8	5
			4	40 50 60 70 80 90 100	1.00 ～ 3.99	3.97	1.00			7
			5	40 50 60 70 80 90 100	2.00 ～ 4.99	4.97	1.20			8
			6	40 50 60 70 80 90 100	2.00 ～ 5.99	5.97	1.50			9
			8	(40) 50 60 70 80 90 100	3.00 ～ 7.99	7.97	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00 ～ 9.99	9.97	2.50			13
			13	(40) 50 60 70 80 90 100	6.00 ～ 12.99	12.97	3.00			16
			16	(40) 50 60 70 80 90 100	10.00 ～ 15.99	15.97	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00 ～ 19.99	19.97	5.00			23
			25	(40) 50 60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			28
		L	3	50 60 70 80 90 100	1.00 ～ 2.99	—	—		13	5
			4	50 60 70 80 90 100	1.00 ～ 3.99	3.97	2.00			7
			5	50 60 70 80 90 100	2.00 ～ 4.99	4.97	2.00			8
			6	50 60 70 80 90 100	2.00 ～ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00 ～ 7.99	7.97	2.50		19	11
			10	50 60 70 80 90 100	3.00 ～ 9.99	9.97	2.50			13
			13	50 60 70 80 90 100	6.00 ～ 12.99	12.97	3.00			16
			16	60 70 80 90 100	10.00 ～ 15.99	15.97	4.00		25	19
			20	60 70 80 90 100	13.00 ～ 19.99	19.97	5.00			23
			25	60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			28
		X	3	50 60 70 80 90 100	1.20 ～ 2.99	—	—		19	5
			4	50 60 70 80 90 100	1.20 ～ 3.99	3.97	2.00			7
			5	60 70 80 90 100	2.00 ～ 4.99	4.97	3.50		25	8
			6	60 70 80 90 100	2.00 ～ 5.99	5.97	3.50			9
			8	60 70 80 90 100	3.00 ～ 7.99	7.97	5.00		30	11
			10	60 70 80 90 100	3.00 ～ 9.99	9.97	5.00			13
			13	60 70 80 90 100	6.00 ～ 12.99	12.97	5.00			16
			16	70 80 90 100	10.00 ～ 15.99				40	19
			20	70 80 90 100	13.00 ～ 19.99	—	—			23
			25	70 80 90 100	18.00 ～ 24.99					28

- Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- ⒹⓇⒺⒼ: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- L(40)…B=8 If full length is (40), tip length is 8mm in all cases.

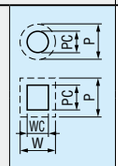
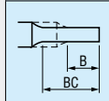
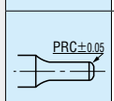
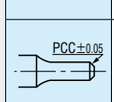
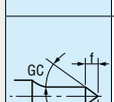
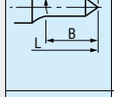
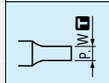
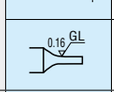
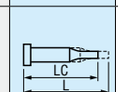
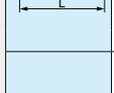
Order

Catalog No.	L	P	W	R (Ⓡ only)
AN—SHEL 16	70	P12.00	W6.00	

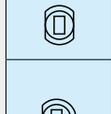
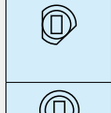
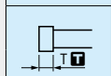
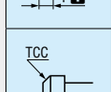
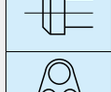
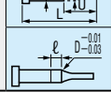
Days to Ship Quotation

■**Effects of DLC coating**
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

Alterations Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC…etc.)
N—SHDS 10 — LC72 — P2.8 — W2.7 — BC8—KC45

Alterations		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin./2≧1.00 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) 1.000～1.999 Bmax 20; 2.000～3.999 35; 4.000～4.999 45; 5.000～5.999 50; 6.000～ 60	Tip dimension change PC・WC≧P・Wmin./2≧1.00 0.01mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) 1.00～1.49 Bmax 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	
		BC	Tip length change 2≦BC≦Bmax 0.1mm increments Ⓨ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax 0.1mm increments Ⓨ Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments Ⓨ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC. ⊗ It is PRC±0.1 for substrate WPC® treatment.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments Ⓨ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC. ⊗ Cannot be used for foundation WPC®.	——	Quotation
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓨ If combined with SC, tip edgesare rounded. ⊗ Cannot be combined with LKC・LCT・LMT・PRC・PCC. ⊗ Cannot be used for foundation WPC®.	——	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 ⊗ (P dimension can be selected in 0.001mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
		SC	Tip lapping Ⓨ P dimension tolerance & increments remain unchanged. ⊗ Cannot be combined with foundation WPC®. ⊗ Tip Ⓓ shape corner R=0 cannot be selected		
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1mm increments Ⓨ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1mm increments Ⓨ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓨ) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓨ) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		

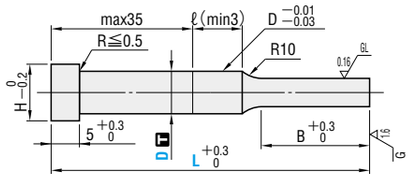
Price Quotation

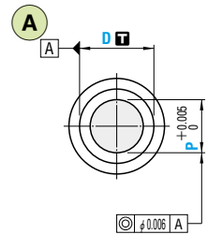
Alterations		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to full length		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	Quotation
		HC	Head diameter change D≦HC<H 0.1mm increments ⊗ Cannot be used for retainer set products		
		TC	Head thickness change 2≦TC<5 0.1mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) Ⓨ Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified. ⊗ Cannot be used for retainer set products		
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2 Ⓨ If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04 ～ 0 relative to the retainer surface. ⊗ Cannot be used for D +0.005 0		
Alterations to shank		UC	Modification for urethane stripper (USN) installation Ⓨ For details P.750 ⊗ Can be used for D10 ～ 25.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

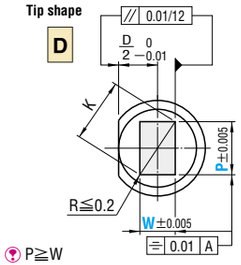
SHOULDER PUNCHES
—LAPPING—

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKD11 60～63HRC	L—SP	A D R E G	S
		Equivalent to SKH51 61～64HRC	L—SH		L
		Powdered high-speed steel 64～67HRC	L—PH		X
	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63HRC	AL—SP		Tip length (B) X>L>S
		Equivalent to SKH51 61～64HRC	AL—SH		
		Powdered high-speed steel 64～67HRC	AL—PH		

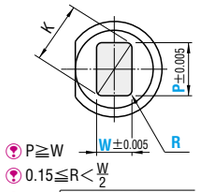
The tip shape can be selected from Tip shape A～G in the figure below.



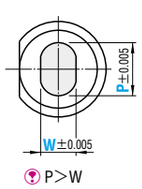
Tip shape A


Tip shape D


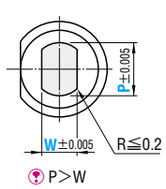
P≧W
K=$\sqrt{P^2+W^2}$

Tip shape R


P≧W
0.15≦R<$\frac{W}{2}$

Tip shape E


P>W

Tip shape G


P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.001 mm increments Ⓐ min. P max.	0.001 mm increments D R E G P·Kmax.	0.001 mm increments D R E G P·Wmin.	0.01 mm R	B	H
(D_{m5}) L—SP L—SH L—PH ($D^{+0.005}_{0}$) AL—SP AL—SH AL—PH	A D R E G	S	3	40 50 60 70 80 90 100	1.000～ 2.990	(☞ P.87)		0.15≦R<$\frac{W}{2}$ (Ⓡ only)	8	5
			4	40 50 60 70 80 90 100	1.000～ 3.990	3.970	1.000			7
			5	40 50 60 70 80 90 100	2.000～ 4.990	4.970	1.200			8
			6	40 50 60 70 80 90 100	2.000～ 5.990	5.970	1.500			9
			8	(40) 50 60 70 80 90 100	3.000～ 7.990	7.970	2.000		13	11
			10	(40) 50 60 70 80 90 100	3.000～ 9.990	9.970	2.500			13
			13	(40) 50 60 70 80 90 100	6.000～ 12.990	12.970	3.000			16
			16	(40) 50 60 70 80 90 100	10.000～ 15.990	15.970	4.000		19	19
			20	(40) 50 60 70 80 90 100	13.000～ 19.990	19.970	5.000			23
			25	(40) 50 60 70 80 90 100	18.000～ 24.990	24.970	6.000			28
		L	3	50 60 70 80 90 100	1.000～ 2.990	(☞ P.87)			13	5
			4	50 60 70 80 90 100	1.000～ 3.990	3.970	2.000			7
			5	50 60 70 80 90 100	2.000～ 4.990	4.970	2.000			8
			6	50 60 70 80 90 100	2.000～ 5.990	5.970	2.000			9
			8	50 60 70 80 90 100	3.000～ 7.990	7.970	2.500		19	11
			10	50 60 70 80 90 100	3.000～ 9.990	9.970	2.500			13
			13	50 60 70 80 90 100	6.000～ 12.990	12.970	3.000			16
			16	60 70 80 90 100	10.000～ 15.990	15.970	4.000		25	19
			20	60 70 80 90 100	13.000～ 19.990	19.970	5.000			23
			25	60 70 80 90 100	18.000～ 24.990	24.970	6.000			28
		X	3	50 60 70 80 90 100	1.200～ 2.990	—			19	5
			4	50 60 70 80 90 100	1.200～ 3.990	3.970	2.000			7
			5	60 70 80 90 100	2.000～ 4.990	4.970	3.500		25	8
			6	60 70 80 90 100	2.000～ 5.990	5.970	3.500			9
			8	60 70 80 90 100	3.000～ 7.990	7.970	5.000		30	11
			10	60 70 80 90 100	3.000～ 9.990	9.970	5.000			13
			13	60 70 80 90 100	6.000～ 12.990	12.970	5.000			16
			16	70 80 90 100	10.000～ 15.990	—			40	19
			20	70 80 90 100	13.000～ 19.990					23
			25	70 80 90 100	18.000～ 24.990					28

Ⓐ:P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P·K>D−0.05⋯ℓ=0 If P·K>D−0.05 for a shaped punch, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)⋯B=8 If full length is (40), tip length is 8 mm in all cases.

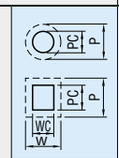
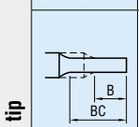
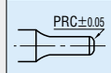
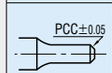
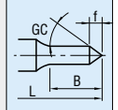
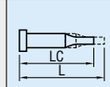
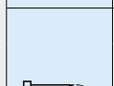
Order

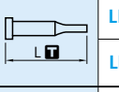
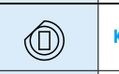
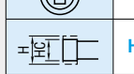
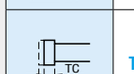
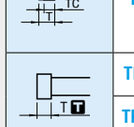
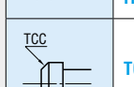
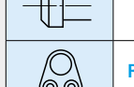
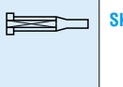
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
L—SHAS 10	—	70	—	P9.500				
AL—PHDL 13	—	80	—	P10.500	—	W7.340		

Days to Ship: Quotation

Alterations

Catalog No. — L(LC·LCT·LMT) — P(PC) — W(WC) — R — (BC·HC·TC, etc.)
AL—SPAS 10 — LC72 — PC2.800 — BC8

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip: 	PC WC	Tip dimension change PC≧$\frac{Pmin.}{2}$ 0.001 mm increments P(PC) / Bmax.: 0.500～0.799 / 10; 0.800～0.999 / 13; 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～4.999 / 45; 5.000～5.999 / 50; 6.000～ / 60	Tip dimension change PC WC≧$\frac{P·Wmin.}{2}$≧0.800 ⊗ Cannot be used for tip X. 0.001 mm increments P(PC)·W(WC) / Bmax.: 0.800～1.499 / 8; 1.500～1.999 / 13; 2.000～3.499 / 19; 3.500～4.999 / 25; 5.000～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30 mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC.	——	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Tip edges are rounded. ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.	——	
Alterations to full length: 	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length−30 mm).	
		(If combined with LKC·LKZ, 0.01 mm increments can be selected.)		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (☞) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (☞) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length: 	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
	LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		
Alterations to head: 	KC	Addition of single key flat to head	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		Quotation
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. ☞ P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank:	SKC	Single key flat on shank ·D3～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price: Quotation

JECTOR PUNCHES

RELATED PRODUCTS P.83

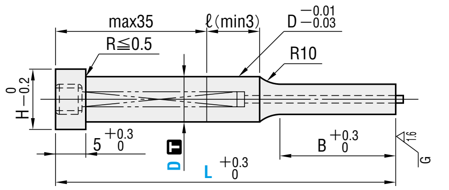
Calculating the projection length of the jector pin (reference value) P.241

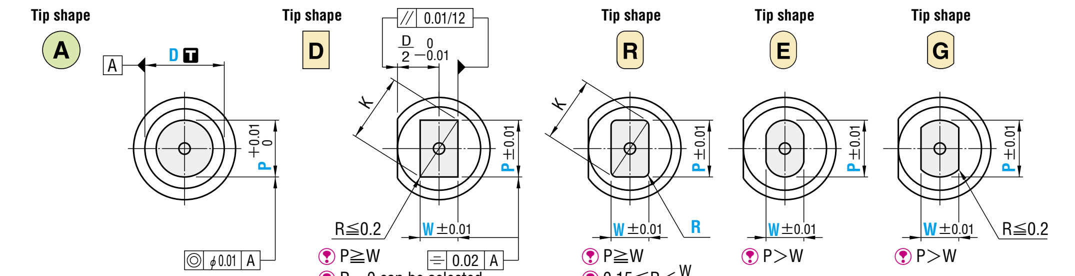
- For details of jector holes, refer to Jector Punch Blanks P.236
- For details of jector pins, refer to Jector Pin Sets P.241

Type	Shank diameter D tolerance	M / H	Catalog No. Type	Tip shape	Tip length (B)
RoHS	Dm5	D4～6 Equivalent to SKH51 61～64HRC; D8～25 Equivalent to SKD11 60～63HRC	SJ, SJV	A, D, R, E, G	S, L, X
		Powdered high-speed steel 64～67HRC	PJ, PJV		
	$D^{+0.005}_{0}$	D4～6 Equivalent to SKH51 61～64HRC; D8～25 Equivalent to SKD11 60～63HRC	A—SJ, A—SJV		Tip length (B) X>L>S
		Powdered high-speed steel 64～67HRC	A—PJ, A—PJV		

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.





Tip shape D: P≧W; R=0 can be selected; $K=\sqrt{P^2+W^2}$

Tip shape R: P≧W; $0.15≦R<\frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Type	Tip shape	Tip length (B)	D	L	Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	R R	B	H
(Dm5) SJ, PJ; Spring reinforced type (D8～25) SJV, PJV; ($D^{+0.005}_{0}$) A—SJ, A—PJ; Spring reinforced type (D8～25) A—SJV, A—PJV	A D R E G	S	(4)	40 50 60 70 80	1.00～3.99	3.97	1.00	0.15≦R<W/2 (R only)	8	7
			(5)	40 50 60 70 80	2.00～4.99	4.97	2.00		8	8
			(6)	40 50 60 70 80	2.00～5.99	5.97	2.00		8	9
			8	(40) 50 60 70 80 90 100	3.00～7.99	7.97	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～9.99	9.97	3.00		13	13
			13	(40) 50 60 70 80 90 100	6.00～12.99	12.97	6.00		13	16
			16	(40) (50) 60 70 80 90 100	10.00～15.99	15.97	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00～19.99	19.97	6.00		19	23
			25	(40) (50) 60 70 80 90 100	18.00～24.99	24.97	6.00		19	28
		L	(4)	50 60 70 80	1.00～3.99	3.97	2.00		13	7
			(5)	50 60 70 80	2.00～4.99	4.97	2.00		13	8
			(6)	50 60 70 80	2.00～5.99	5.97	2.00		13	9
			8	50 60 70 80 90 100	3.00～7.99	7.97	3.00		19	11
			10	50 60 70 80 90 100	3.00～9.99	9.97	3.00		19	13
			13	50 60 70 80 90 100	6.00～12.99	12.97	6.00		19	16
			16	60 70 80 90 100	10.00～15.99	15.97	6.00		25	19
			20	60 70 80 90 100	13.00～19.99	19.97	6.00		25	23
			25	60 70 80 90 100	18.00～24.99	24.97	6.00		25	28
(Dm5) SJ; Spring reinforced type (D8～25) SJV; ($D^{+0.005}_{0}$) A—SJ; Spring reinforced type (D8～25) A—SJV		X	(5)	60 70 80	2.00～4.99	4.97	3.50		25	8
			(6)	60 70 80	2.00～5.99	5.97	3.50		25	9
			8	70 80 90 100	3.00～7.99	7.97	5.00		30	11
			10	70 80 90 100	3.00～9.99	9.97	6.00		30	13
			13	70 80 90 100	6.00～12.99	12.97	6.00		30	16
			16	80 90 100	10.00～15.99	—		—	40	19
			20	80 90 100	13.00～19.99				40	23
			25	80 90 100	18.00～24.99				40	28

(P·Kmax., P·Wmin. and R values are in 0.01 mm increments.)

- The spring constants of SJV, PJV, A—SJV, and A—PJV are twice those of SJ, PJ, A—SJ, and A—PJ respectively.
- L(40)⋯B=6 If full length is (40), tip length is 6 mm in all cases.
- L(50)⋯B=13 If full length is (50), tip length is 13 mm in all cases.
- Ⓐ: P>D—0.03⋯ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P·K>D—0.05⋯ℓ=0 If P·K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D(4), (5), and (6) are specifications available for SJ, PJ, A—SJ, and A—PJ only. Spring reinforced types are available for D8～25 only.

Order

Catalog No.	—	L	—	P	—	W	—	R (R only)
SJDS 6	—	60	—	P3.00	—	W2.80		
A—SJEL 10	—	70	—	P8.50	—	W4.25		

Days to Ship Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations

Catalog No.	—	L (LC·LCT·LMT)	—	P (PC)	—	W (WC)	—	R	—	(BC·HC·TC, etc.)
SJDS 6	—	LC58	—	P3.00	—	W2.80			—	HC8—KC45

	Code	Ⓐ	DREG	1Code
Alterations to tip	PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin.: 4 0.900; 5 1.800; 6 1.800; 8 2.500; 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000	Tip dimension change PC·WC≧PC·WCmin. 0.01 mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X. D / PC·WCmin.: 5 1.80; 6 1.80; 8 2.50; 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00	Quotation
	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments. The following restriction applies to SJAX, A—SJAX with D dimension 5 or 6. PC 1.80～1.99: Bmax. 20		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments; PRC≦(P—d_1—0.5)/2; d_1 dimension P.236; ⊗ Cannot be combined with PCC.	———	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments; PCC≦(P—d_1—0.5)/2; d_1 dimension P.236; ⊗ Cannot be combined with PRC.	———	
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments. Tip length B is reduced by (L—LC). (If combined with LKC·LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
	LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

Price Quotation

	Code	Ⓐ	DREG	1Code
Alterations to head	KC	Addition of single key flat to head	Key flat position change 1° increments (0°, 90°, 180°, 270°)	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel. Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments. ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments. ⊗ Cannot be combined with KC·WKC.	
	NKC	———	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC·LCT·LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head. This improves the strength of the punch head P.1611. 0.1 mm increments 0.5≦TCC≦(H—D)/2. If H≦5, then TCC is 0.5		
	RC	Head thickness is machined to a tolerance of —0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank	SKC	Single key flat on shank. Ⓐ / DREG: ·D4～6 P≦D—1.2 W≦D—1.2 (Machining width 0.5); ·D8～ P≦D—2.2 W≦D—2.2 (Machining width 1). $\frac{D}{2}-0.5^{0}_{-0.01}$, $\frac{D}{2}-1^{0}_{-0.01}$ ⊗ Cannot be combined with KC·WKC·KFC.		
	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

JECTOR PUNCHES
—DICOAT® TREATMENT—

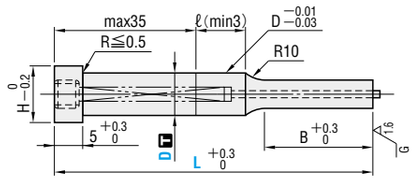
PRODUCTS DATA P.1599

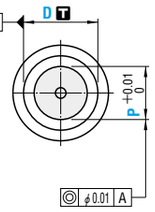
● For details of jector holes, refer to Jector Punch Blanks. P.236
● For details of jector pins, refer to Jector Pin Sets. P.241

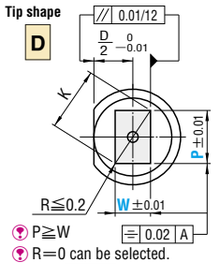
Calculating the projection length of the jector pin (reference value) P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5} (D4～25)	Equivalent to SKD11 60～63HRC Surface 3000HV	T—SJ T—SJV	A D R E G	S L Tip length (B) L>S
		Powdered high-speed steel 62～64HRC Surface 3000HV	T—PJ T—PJV		
	$D^{+0.005}_{0}$ (D4～13)	Equivalent to SKD11 60～63HRC Surface 3000HV	AT—SJ AT—SJV		
		Powdered high-speed steel 62～64HRC Surface 3000HV	AT—PJ AT—PJV		

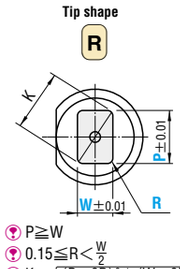
The tip shape can be selected from Tip shape A～G in the figure below.



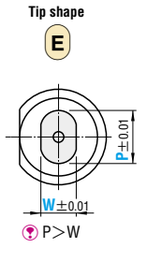
Tip shape A


Tip shape D


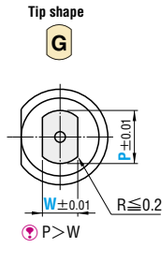
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R


P≧W
0.15≦R<W/2
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E


P>W

Tip shape G


P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01 mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	R R	B	H
(D_{m5}) T—SJ T—PJ Spring reinforced type (D8—25) T—SJV T—PJV	A D R E G	S	(4)	40 50 60 70 80	1.00～ 3.99	3.97	1.00	0.15≦R<W/2 (R only)	8	7
			(5)	40 50 60 70 80	2.00～ 4.99	4.97	2.00			8
			(6)	40 50 60 70 80	2.00～ 5.99	5.97	2.00			9
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	3.00			13
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	6.00			16
			16	(40) (50) 60 70 80 90 100	10.00～ 15.99	15.97	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00～ 19.99	19.97	6.00			23
			25	(40) (50) 60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) (D4～13) AT—SJ AT—PJ Spring reinforced type (D8—13) AT—SJV AT—PJV		L	(4)	50 60 70 80	1.00～ 3.99	3.97	2.00		13	7
			(5)	50 60 70 80	2.00～ 4.99	4.97	2.00			8
			(6)	50 60 70 80	2.00～ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	3.00		19	11
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	3.00			13
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	6.00			16
			16	60 70 80 90 100	10.00～ 15.99	15.97	6.00		25	19
			20	60 70 80 90 100	13.00～ 19.99	19.97	6.00			23
			25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			28

The spring constants of T—SJV, T—PJV, AT—SJV, and AT—PJV are twice those of T—SJ, T—PJ, AT—SJ, and AT—PJ respectively.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05⋯ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L (40)⋯B=6 If full length is (40), tip length is 6 mm in all cases.
L (50)⋯B=13 If full length is (50), tip length is 13 mm in all cases.
D (4), (5), and (6) are specifications available for T—SJ, T—PJ, AT—SJ, and AT—PJ only. T—SJV and T—PJV are available for D8～25 only. AT—SJV and AT—PJV are available for D8～13 only.

Order

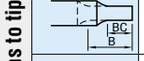
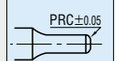
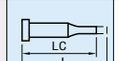
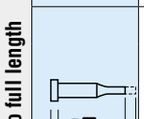
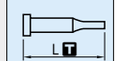
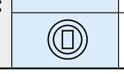
Catalog No.	L	P	W	R (R only)
T—SJES 6	50	P5.48	W3.20	

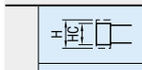
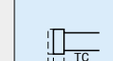
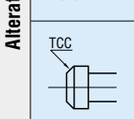
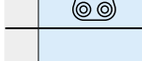
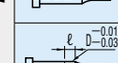
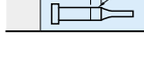
Days to Ship Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations

Catalog No.	L (LC·LCT·LMT)	P	W	R	(BC·HC·TC, etc.)
T—SJES 6	50	P5.48	W3.20		HC8.0—TC4.0

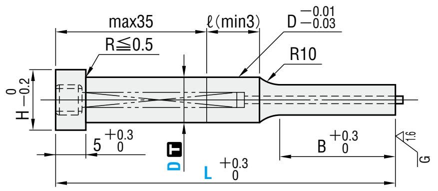
Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.236	———	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of the jector pin is 2 mm.		Quotation
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$⇨$^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$⇨$^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$⇨$^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$⇨$^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$⇨$^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	

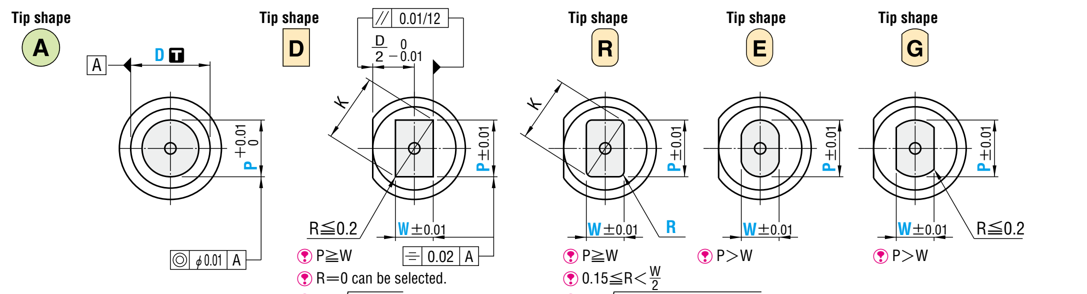
Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$⇨$^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$⇨$^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ DREG $\frac{D}{2}-0.5^{\ 0}_{-0.01}$ ·D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) $\frac{D}{2}-1^{\ 0}_{-0.01}$ ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with ⊗ KC·WKC·KFC.		
		AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3⇨ℓ=0		

Price Quotation

Calculating the projection length of the jector pin (reference value) P.241

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D [T] tolerance	[M] [H]	Catalog No. Type	Tip shape	Tip length (B)	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D [T], select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64~67HRC	H—PJ H—PJV	A D R E G	S L Tip length (B) L>S	 The tip end is ground before the coating is applied.
	$D^{+0.005}_{0}$	Powdered high-speed steel 64~67HRC	AH—PJ AH—PJV			



- D: P≧W
- D: R=0 can be selected.
- D: $K=\sqrt{P^2+W^2}$
- R: P≧W
- R: $0.15≦R<\frac{W}{2}$
- R: $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- E: P>W
- G: P>W

Catalog No. Type	Tip shape	Tip length (B)	D	L							0.01 mm increments Ⓐ min. P max.	[D][R][E][G] P・Kmax.	[D][R][E][G] P・Wmin.	Ⓡ R	B	H
(D_{m5}) H—PJ Spring reinforced type (D8~25) H—PJV	A D R E G	S	(4)	40	50	60	70	80			1.00~ 3.99	3.97	1.00	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40	50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)	40	50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16	(40)	(50)	60	70	80	90	100	10.00~ 15.99	15.97	6.00		19	19
			20	(40)	(50)	60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25	(40)	(50)	60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) AH—PJ Spring reinforced type (D8~25) AH—PJV		L	(4)		50	60	70	80			1.00~ 3.99	3.97	2.00		13	7
			(5)		50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)		50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		19	11
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16			60	70	80	90	100	10.00~ 15.99	15.97	6.00		25	19
			20			60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25			60	70	80	90	100	18.00~ 24.99	24.97	6.00			28

- The spring constants of H—SJV, H—PJV, AH—SJV, and AH—PJV are twice those of H—SJ, H—PJ, AH—SJ, and AH—PJ respectively.
- L(40)…B= 6 If full length is (40), tip length is 6 mm in all cases.
- L(50)…B=13 If full length is (50), tip length is 13 mm in all cases.
- Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- [D][R][E][G]: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D(4), (5), and (6) are specifications available for H—SJ, H—PJ, AH—SJ, and AH—PJ only. Spring reinforced types are available for D8~25 only.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—PJEL16	—	70	—	P12.00	—	W6.00		

■Effect of spring reinforced type
Spring constant is twice that of a standard jector punch. The large spring load results in more effective scrap removal.

Days to Ship Quotation

Alterations

Catalog No.	—	L (LC・LCT・LMT)	—	P (PC)	—	W (WC)	—	R	—	(BC・HC・TC, etc.)
H—PJDS 6	—	LC58	—	P3.00	—	W2.80			—	HC8

Alteration	Code	Ⓐ	[D][R][E][G]	1Code
Alterations to tip	PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) ⊗ Cannot be used for D4. D / PCmin.: 5 1.800; 6 1.800; 8 2.500; 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000	Tip dimension change PC・WC≧PC・WCmin. 0.01 mm increments ⊗ Cannot be used for D4. D / PC・WCmin.: 5 1.80; 6 1.80; 8 2.50; 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00	
	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
	SC	Lapping of tip. P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape [D] corners.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments. PRC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PCC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments. PCC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PRC.	——	
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	Quotation
Alterations to full length	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments. Tip length B is shortened by (L−LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head	KC	Addition of single key flat to head	Key flat position change 1° increments (0°, 90°, 180°, 270°)	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
	NKC	——	No key flat	

Alteration	Code	Ⓐ	[D][R][E][G]	1Code
Alterations to head	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC/LCT/LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head. This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2. If H≦5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		Quotation
Alterations to shank	SKC	Single key flat on shank. Ⓐ / [D][R][E][G]: ・D4~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ($\frac{D}{2}-0.5^{0}_{-0.01}$) ・D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) ($\frac{D}{2}-1^{0}_{-0.01}$) ⊗ Cannot be combined with KC・WKC・KFC.		
	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

JECTOR PUNCHES
—WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1601・1605

PUNCHES

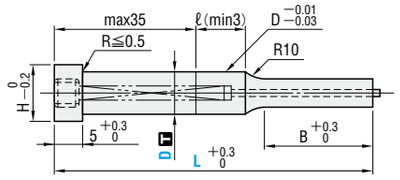
Calculating the projection length of the jector pin (reference value) P.241

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

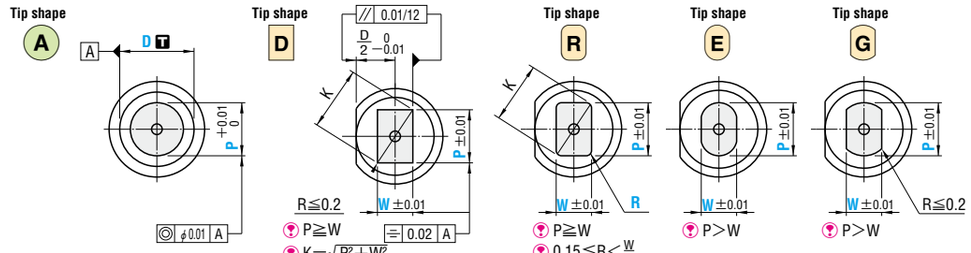
Type	M H	Catalog No. Type: Shank dia. T D m5	Catalog No. Type: Shank dia. T D +0.005 0	Tip shape	B Tip length
—WPC® treatment— RoHS	D4~6 Equivalent to SKH51 61~64HRC Surface 1000~1100HV	W—SJ W—SJV	AW—SJ AW—SJV	A D R E G	S
	D8~25Equivalent to SKD11 60~63HRC Surface 1000~1100HV				L
—HW coating—	Powdered high-speed steel 64~67HRC Surface 1000 HV~1100HV	W—PJ W—PJV	AW—PJ AW—PJV		X
	Powdered high-speed steel 64~67HRC Surface 3000HV	HW—PJ HW—PJV	AHW—PJ AHW—PJV		Tip length (B) X>L>S

For shank diameter tolerance D T, select either m5 or +0.005 0.

The tip shape can be selected from Tip shape A~G in the figure below.



The tip edges are very slightly rounded.



P≧W
K=√(P²+W²)
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R
P>W
P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P・Kmax.	0.01mm increments D R E G P・Wmin.	0.01mm increments R	B	H
(Dm5) —WPC® treatment— W—SJ W—PJ Spring reinforced type (D8~25) W—SJV W—PJV —HW coating— HW—PJ Spring reinforced type (D8~25) HW—PJV	A D R E G	S	(4)	40 50 60 70 80	1.00~ 3.99	3.97	1.00	0.15≦R<W/2 (R only)	8	7
			(5)	40 50 60 70 80	2.00~ 4.99	4.97	2.00			8
			(6)	40 50 60 70 80	2.00~ 5.99	5.97	2.00			9
			8	(40) 50 60 70 80 90 100	3.00~ 7.99	7.97	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00~ 9.99	9.97	3.00			13
			13	(40) 50 60 70 80 90 100	6.00~ 12.99	12.97	6.00			16
			16	(40) (50) 60 70 80 90 100	10.00~ 15.99	15.97	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00~ 19.99	19.97	6.00			23
			25	(40) (50) 60 70 80 90 100	18.00~ 24.99	24.97	6.00			28
(D +0.005 0) —WPC® treatment— AW—SJ AW—PJ Spring reinforced type (D8~25) AW—SJV AW—PJV —HW coating— AHW—PJ Spring reinforced type (D8~25) AHW—PJV		L	(4)	50 60 70 80	1.00~ 3.99	3.97	2.00		13	7
			(5)	50 60 70 80	2.00~ 4.99	4.97	2.00			8
			(6)	50 60 70 80	2.00~ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00~ 7.99	7.97	3.00		19	11
			10	50 60 70 80 90 100	3.00~ 9.99	9.97	3.00			13
			13	50 60 70 80 90 100	6.00~ 12.99	12.97	6.00			16
			16	60 70 80 90 100	10.00~ 15.99	15.97	6.00		25	19
			20	60 70 80 90 100	13.00~ 19.99	19.97	6.00			23
			25	60 70 80 90 100	18.00~ 24.99	24.97	6.00			28
(Dm5) —WPC® treatment— W—SJ Spring reinforced type (D8~25) W—SJV (D +0.005 0) —WPC® treatment— AW—SJ Spring reinforced type (D8~25) AW—SJV		X	(5)	60 70 80	2.00~ 4.99	4.97	3.50		25	8
			(6)	60 70 80	2.00~ 5.99	5.97	3.50			9
			8	70 80 90 100	3.00~ 7.99	7.97	5.00		30	11
			10	70 80 90 100	3.00~ 9.99	9.97	6.00			13
			13	70 80 90 100	6.00~ 12.99	12.97	6.00			16
			16	80 90 100	10.00~ 15.99	—		—	40	19
			20	80 90 100	13.00~ 19.99					23
			25	80 90 100	18.00~ 24.99					28

The spring constants of W—SJV, W—PJV, HW—PJV, AW—SJV, AW—PJV, and AHW—PJV are twice those of W—SJ, W—PJ, HW—PJ, AW—SJ, AW—PJ, and AHW—PJ respectively.
L(40)···B=6 If full length is (40), tip length is 6mm in all cases.
L(50)···B=13 If full length is (50), tip length is 13mm in all cases.
Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, D −0.01 −0.03 (press-in lead) is not included.
D R E G: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, D −0.01 −0.03 (press-in lead) is not included.
D(4), (5), and (6) are specifications available for W—SJ, W—PJ, HW—PJ, AW—SJ, AW—PJ, AHW—PJ, W—SJ, and AW—SJ only. Spring reinforced types are available for D8~25 only.

Order

Catalog No.	L	P	W	R (R only)
W—SJDS 6	60	P3.00	W2.80	
HW—PJEL 10	70	P8.50	W4.25	

Days to Ship Quotation

■**Effect of spring reinforced type**
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC・TC, etc.)
W—SJDS 6 — LC58 — P3.00 — W2.80 — HC8—KC45

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin.: 4 0.900; 5 1.800; 6 1.800; 8 2.500; 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000. ⊗PC<1.00 Cannot be used with HW coating.	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗Cannot be used for D4. ⊗Cannot be used for tip X. D / PC・WCmin.: 5 1.80; 6 1.80; 8 2.50; 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00.	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments The following restriction applies to tip type X with D dimension of 5 or 6. PC・WC / Bmax.: 1.80 ~ 1.99 / 20		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗Cannot be combined with PRC.	——	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗Cannot be used with HW coating.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L − LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC・LCT・LMT, full length remains as specified.		
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04 ~ 0 relative to the retainer surface. ⊗Cannot be used for D +0.005 0 types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ D/2 −0.5 −0.01 ・D4~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗Cannot be combined with KC・WKC・KFC.	D R E G D/2 −1 0 −0.01	
		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

JECTOR PUNCHES
—RW COATING—

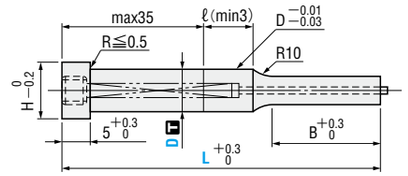
PRODUCTS DATA P.1607

Calculating the projection length of the jector pin (reference value) P.241

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

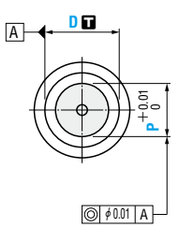
Type	M H	Catalog No. Type: Shank dia. Dm5	Catalog No. Type: Shank dia. D +0.005 0	Shape Tip shape	B Tip length
For shank diameter tolerance DT, select either m5 or +0.005 0.	Powdered highspeed steel 64～67HRC Surface 3100HV	RW—PJ RW—PJVJ	ARW—PJ ARW—PJVJ	A D R E G	S L Tip length (B) L>S

The tip shape can be selected from Tip shape A～G in the figure below.

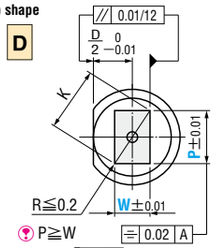


The tip edges are very slightly rounded.

Tip shape A

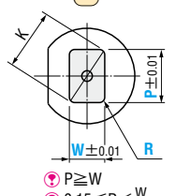


Tip shape D



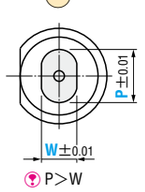
P≧W
K=√(P²+W²)

Tip shape R



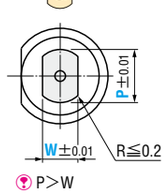
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Type	Shape Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P·Kmax.	0.01mm increments DREG P·Wmin.	R	B	H
(Dm5) RW—PJ Spring reinforced type RW—PJV (D +0.005 0) ARW—PJ Spring reinforced type ARW—PJV	A D R E G	S	(4)	40 50 60 70 80	1.00 ～ 3.99	3.97	1.00	R≦W/2 (Ⓡ only)	8	7
			(5)	40 50 60 70 80	2.00 ～ 4.99	4.97	2.00			8
			(6)	40 50 60 70 80	2.00 ～ 5.99	5.97	2.00			9
			8	(40) 50 60 70 80 90 100	3.00 ～ 7.99	7.97	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00 ～ 9.99	9.97	3.00			13
			13	(40) 50 60 70 80 90 100	6.00 ～ 12.99	12.97	6.00			16
			16	(40) (50) 60 70 80 90 100	10.00 ～ 15.99	15.97	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00 ～ 19.99	19.97	6.00			23
			25	(40) (50) 60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			28
		L	(4)	50 60 70 80	1.00 ～ 3.99	3.97	2.00		13	7
			(5)	50 60 70 80	2.00 ～ 4.99	4.97	2.00			8
			(6)	50 60 70 80	2.00 ～ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00 ～ 7.99	7.97	3.00		19	11
			10	50 60 70 80 90 100	3.00 ～ 9.99	9.97	3.00			13
			13	50 60 70 80 90 100	6.00 ～ 12.99	12.97	6.00			16
			16	60 70 80 90 100	10.00 ～ 15.99	15.97	6.00		25	19
			20	60 70 80 90 100	13.00 ～ 19.99	19.97	6.00			23
			25	60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			28

- The spring constants of RW—PJV, ARW—PJV are twice those of RW—PJ, ARW—PJ respectively.
- L(40)···B=6 If full length is (40), tip length is 6mm in all cases.
- L(50)···B=13 If full length is (50), tip length is 13mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, D −0.01 −0.03 (press-in lead) is not included.
- DREG: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, D −0.01 −0.03 (press-in lead) is not included.
- D(4), (5), and (6) are specifications available for RW—PJ, ARW—PJ only. Spring reinforced types are available for D8～25 only.

Order

Catalog No.	L	P	W	R (Ⓡ only)
RW—PJEL 10	70	P8.50	W4.25	

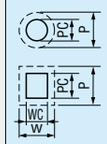
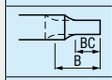
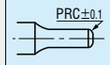
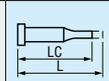
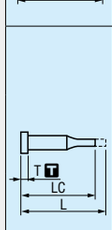
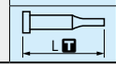
Days to Ship: Quotation

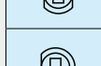
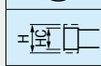
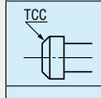
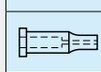
■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

Alterations

Catalog No.	L(LC·LCT·LMT)	P(PC)	W(WC)	R	(BC·HC·TC···etc.)
RW—PJDS 6	LC58	P3.00	W2.80		HC8—KC45

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin 0.01mm increments D / PCmin: 4 1.000; 5 1.800; 6 1.800; 8 2.500; 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000	Tip dimension change PC·WC≧PC·WCmin 0.01mm increments ⊗ Cannot be used for D4. D / PC·WCmin: 5 1.80; 6 1.80; 8 2.50; 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d1−0.5)/2 d1 dimension P.236	———	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1mm increments Tip length B is reduced by (L − LC). (If combined with LKC, 0.01mm increments can be selected.) Projection length of jector pin is 2mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1mm increments ⊗ Cannot be used for retainer set products		
		TC	Head thickness change 3.5≦TC<5 0.1mm increments (If combined with TKC·TKM·LCT·LMT, 0.01mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified. ⊗ Cannot be used for retainer set products		Quotation
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
		RC	0 −0.04 Head thickness is machined to a tolerance of −0.04 ～ 0 relative to the retainer surface. ⊗ Cannot be used for D +0.005 0		
Alterations to shank		AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price: Quotation

JECTOR PUNCHES
—DLC COATING—

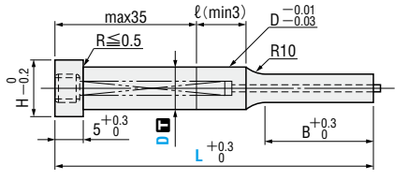
PRODUCTS DATA P.1604～1605

Calculating the projection length of the jector pin (reference value) P.241

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

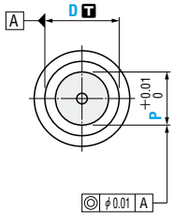
Type	Shank diameter D T tolerance	M H	Catalog No. Type: Without foundation	Type: Foundation WPC®	Shape Tip shape	B Tip length
RoHS —WPC® treatment— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered highspeed steel 64～67HRC Surface 3000HV and above	N—PJ Spring reinforced type N—PJV	NW—PJ Spring reinforced type NW—PJV	A D R E G	S L
	$D^{+0.005}_{0}$	Powdered highspeed steel 64～67HRC Surface 3000HV and above	AN—PJ Spring reinforced type AN—PJV	ANW—PJ Spring reinforced type ANW—PJV		Tip length (B) L>S

The tip shape can be selected from Tip shape A～G in the figure below.

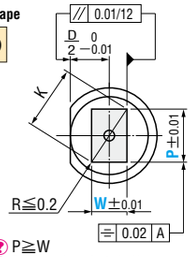


- The tip end is ground before the coating is applied.
- The tip edges of foundation WPC® are slightly rounded.

Tip shape A

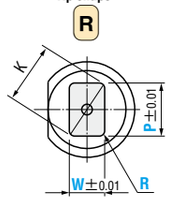


Tip shape D



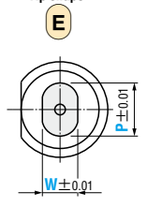
- P≧W
- R=0 can be selected (However, not for foundation WPC®)
- $K=\sqrt{P^2+W^2}$

Tip shape R



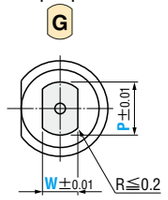
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Shape Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R	B	H
(Dm5) N—PJ Spring reinforced type (D8～25) N—PJV (D$^{+0.005}_{0}$) AN—PJ Spring reinforced type (D8～25) AN—PJV —Foundation WPC® — (Dm5) NW—PJ Spring reinforced type NW—PJV (D$^{+0.005}_{0}$) ANW—PJ Spring reinforced type ANW—PJV	A D R E G	S	(4)	40 50 60 70 80	1.00 ～ 3.99	3.97	1.00	R≧0.15 W/2 (R only)	8	7
			(5)	40 50 60 70 80	2.00 ～ 4.99	4.97	2.00			8
			(6)	40 50 60 70 80	2.00 ～ 5.99	5.97	2.00			9
			8	(40) 50 60 70 80 90 100	3.00 ～ 7.99	7.97	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00 ～ 9.99	9.97	3.00			13
			13	(40) 50 60 70 80 90 100	6.00 ～ 12.99	12.97	6.00			16
			16	(40) (50) 60 70 80 90 100	10.00 ～ 15.99	15.97	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00 ～ 19.99	19.97	6.00			23
			25	(40) (50) 60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			28
		L	(4)	50 60 70 80	1.00 ～ 3.99	3.97	2.00		13	7
			(5)	50 60 70 80	2.00 ～ 4.99	4.97	2.00			8
			(6)	50 60 70 80	2.00 ～ 5.99	5.97	2.00			9
			8	50 60 70 80 90 100	3.00 ～ 7.99	7.97	3.00		19	11
			10	50 60 70 80 90 100	3.00 ～ 9.99	9.97	3.00			13
			13	50 60 70 80 90 100	6.00 ～ 12.99	12.97	6.00			16
			16	60 70 80 90 100	10.00 ～ 15.99	15.97	6.00		25	19
			20	60 70 80 90 100	13.00 ～ 19.99	19.97	6.00			23
			25	60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			28

- The spring constants of N—PJV, NW—PJV, AN—PJV, ANW—PJV are twice those of N—PJ, NW—PJ, AN—PJ, ANW—PJ respectively.
- L(40)···B=6 If full length is (40), tip length is 6mm in all cases.
- L(50)···B=13 If full length is (50), tip length is 13mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D(4), (5), and (6) are specifications available for N—PJ, NW—PJ, AN—PJ, ANW—PJ only. Spring reinforced types are available for D8～25 only.

Order

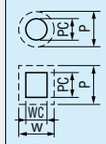
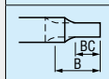
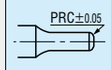
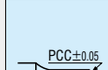
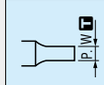
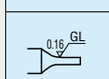
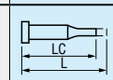
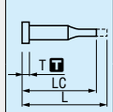
Catalog No.	L	P	W	R (R only)
NW—PJEL 10	70	P8.50	W4.25	

Days to Ship Quotation

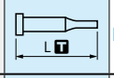
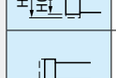
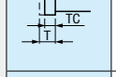
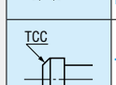
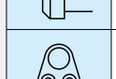
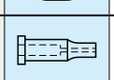
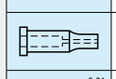
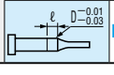
■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal. See the product data for details. P.1609

Alterations

Catalog No. — L(LC·LCT·LMT) — P(PC) — W(WC) — R — (BC·HC·TC···etc.)
N—PJDS 6 — LC58 — P3.00 — W2.80 — HC8—KC45

Alterations		Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) D / PCmin: 5 1.800; 6 1.800; 8 2.500; 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000 ⊗ Cannot be used for D4.	Tip dimension change PC·WC≧PC·WCmin 0.01mm increments ⊗ Cannot be used for D4. D / PC·WCmin: 5 1.80; 6 1.80; 8 2.50; 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00	
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1mm increments PC·WC / Bmax: 1.80～1.99 / 20		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗ Cannot be combined with PCC. ⊗ It is PRC±0.1 for foundation WPC®	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗ Cannot be combined with PRC. ⊗ Cannot be used for foundation WPC®	——	Quotation
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in the 0.001mm increments.)	Tip tolerance change P·W±0.01 ⇨ +0.01 0	
		SC	Tip lapping P dimension tolerance & increments remain unchanged. Raw material before coating is treated. ⊗ Tip D shape corner R=0 cannot be selected ⊗ Cannot be combined with foundation WPC®		
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1mm increments Tip length B is reduced by (L−LC). (If combined with LKC, 0.01mm increments can be selected.) Projection length of jector pin is 2mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		

Price Quotation

Alterations		Code	Ⓐ	D R E G	1Code
Full length		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	——	No key flat	
		HC	Head diameter change D≦HC<H 0.1mm increments ⊗ Cannot be used for retainer set products		Quotation
		TC	Head thickness change 3.5≦TC<5 0.1mm increments (If combined with TKC·TKM·LCT· LMT, 0.01mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified. ⊗ Cannot be used for retainer set products		
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04 ～ 0 relative to the retainer surface. ⊗ Cannot be used for D +0.005 0		
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

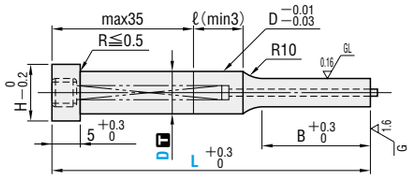
JECTOR PUNCHES
—LAPPING—

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

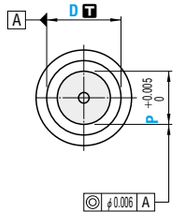
Calculating the projection length of the jector pin (reference value) P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D, select either T m5 or $^{+0.005}_{0}$.	D_{m5}	D4–6 Equivalent to SKH51 61–64HRC	L—SJ L—SJV	A D R E G	S L X
		D8–25 Equivalent to SKD11 60–63HRC			
		Powdered high-speed steel 64~67 HRC	L—PJ L—PJV		
	$D^{+0.005}_{0}$	D4–6 Equivalent to SKH51 61–64HRC	AL—SJ AL—SJV		
		D8–25 Equivalent to SKD11 60–63HRC			
		Powdered high-speed steel 64~67 HRC	AL—PJ AL—PJV		Tip length (B) X>L>S

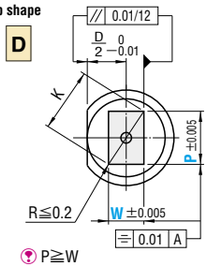
The tip shape can be selected from Tip shape A ~ G in the figure below.



Tip shape A



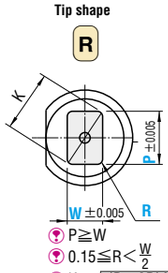
Tip shape D



P≧W

K=$\sqrt{P^2+W^2}$

Tip shape R

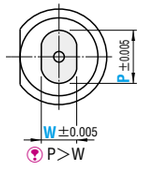


P≧W

0.15≦R<$\frac{W}{2}$

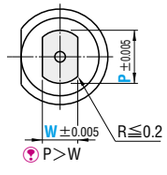
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.001 mm increments Ⓐ min. P max.	0.001 mm increments DREG P·Kmax.	0.001 mm increments DREG P·Wmin.	0.01 mm R R	B	H
(D_{m5}) L—SJ L—PJ Spring reinforced type (D8 ~ 25) L—SJV L—PJV	A D R E G	S	(4)	40 50 60 70 80	1.000~ 3.990	3.970	1.000	0.15≦R< $\frac{W}{2}$ (R only)	8	7
			(5)	40 50 60 70 80	2.000~ 4.990	4.970	2.000			8
			(6)	40 50 60 70 80	2.000~ 5.990	5.970	2.000			9
			8	(40) 50 60 70 80 90 100	3.000~ 7.990	7.970	3.000		13	11
			10	(40) 50 60 70 80 90 100	3.000~ 9.990	9.970	3.000			13
			13	(40) 50 60 70 80 90 100	6.000~ 12.990	12.970	6.000			16
			16	(40) (50) 60 70 80 90 100	10.000~ 15.990	15.970	6.000		19	19
			20	(40) (50) 60 70 80 90 100	13.000~ 19.990	19.970	6.000			23
			25	(40) (50) 60 70 80 90 100	18.000~ 24.990	24.970	6.000			28
($D^{+0.005}_{0}$) AL—SJ AL—PJ Spring reinforced type (D8 ~ 25) AL—SJV AL—PJV		L	(4)	50 60 70 80	1.000~ 3.990	3.970	2.000		13	7
			(5)	50 60 70 80	2.000~ 4.990	4.970	2.000			8
			(6)	50 60 70 80	2.000~ 5.990	5.970	2.000			9
			8	50 60 70 80 90 100	3.000~ 7.990	7.970	3.000		19	11
			10	50 60 70 80 90 100	3.000~ 9.990	9.970	3.000			13
			13	50 60 70 80 90 100	6.000~ 12.990	12.970	6.000			16
			16	60 70 80 90 100	10.000~ 15.990	15.970	6.000		25	19
			20	60 70 80 90 100	13.000~ 19.990	19.970	6.000			23
			25	60 70 80 90 100	18.000~ 24.990	24.970	6.000			28
(D_{m5}) L—SJ Spring reinforced type (D8 ~ 25) L—SJV ($D^{+0.005}_{0}$) AL—SJ Spring reinforced type (D8 ~ 25) AL—SJV		X	(5)	60 70 80	2.000~ 4.990	4.970	3.500		25	8
			(6)	60 70 80	2.000~ 5.990	5.970	3.500			9
			8	70 80 90 100	3.000~ 7.990	7.970	5.000		30	11
			10	70 80 90 100	3.000~ 9.990	9.970	6.000			13
			13	70 80 90 100	6.000~ 12.990	12.970	6.000			16
			16	80 90 100	10.000~ 15.990	—	—		40	19
			20	80 90 100	13.000~ 19.990					23
			25	80 90 100	18.000~ 24.990					28

The spring constants of L—SJV, L—PJV, AL—SJV, and AL—PJV are twice those of L—SJ, L—PJ, AL—SJ, and AL—PJ respectively.
L(40)···B= 6 If full length is (40), tip length is 6 mm in all cases.
L(50)···B=13 If full length is (50), tip length is 13mm in all cases.
Ⓐ: P>D − 0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D(4), (5), and (6) are specifications available for L—SJ, L—PJ, AL—SJ, and AL—PJ only. Spring reinforced types are available for D8 ~ 25 only.

Order

Catalog No.	L	P	W	R (R only)
L—SJDS16	60	P9.000	W6.800	
AL—SJEL10	70	P8.500	W4.250	

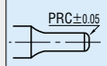
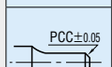
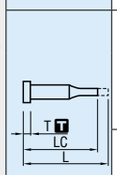
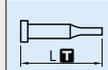
Days to Ship Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

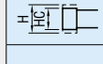
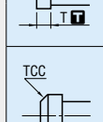
Alterations

Catalog No.	L(LC·LCT·LMT)	P(PC)	W(WC)	R	(BC·HC·TC, etc.)
L—SJDS 6	LC58	P3.000	W2.800		HC8

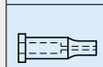
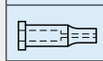
Alterations to tip

Alteration	Code	Ⓐ	DREG	1Code
	PC WC	Tip dimension change PC≧PCmin. 0.001mm increments	Tip dimension change PC·WC≧PC·WCmin. 0.001mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X.	Quotation
	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments ? The following restriction applies to L—SJAX or AL—SJAX with D dimension 5 or 6.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ? PRC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PCC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ? PCC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PRC.	——	
	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments ? Tip length B is reduced by (L—LC). (If combined with LKC·LKZ, 0.01 mm increments can be selected.) ? Projection length of jector pin is 2 mm.		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC + Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC + Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
	LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

Alterations to head

Alteration	Code	Ⓐ	DREG	1Code
	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) ? Full length L is shortened by (5—TC). If combined with LC·LCT·LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H −D)/2 ? If H≦5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		

Alterations to shank

Alteration	Code	Ⓐ	DREG	1Code
	SKC	Single key flat on shank Ⓐ $\frac{D}{2}-0.5-\frac{0}{0.01}$ ·D4~6 P≦D−1.2 DREG W≦D−1.2 (Machining width 0.5) ·D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.	$\frac{D}{2}-1-\frac{0}{0.01}$	
	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
	NDC	No press-in lead ℓ≧3⇨ℓ=0		

Price Quotation

JECTOR PUNCHES

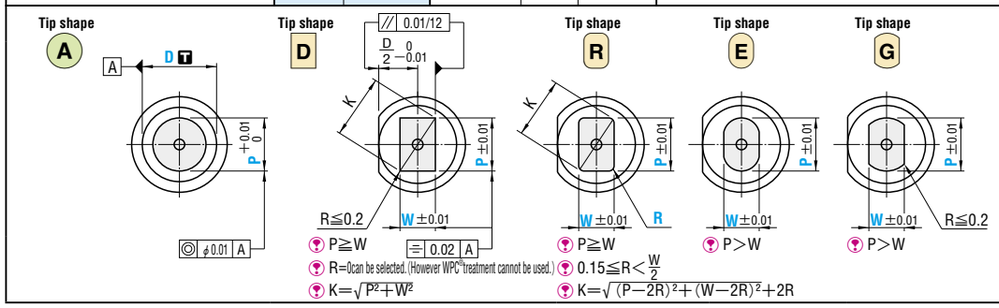
—CONFIGURABLE FULL LENGTH, FIXED B TYPE, NORMAL・WPC® TREATMENT・SPRING REINFORCED TYPE—

PRODUCTS DATA P.1605

※ Jector punch which maintains the same tip length B even when L is changed.
(?) Projection length of the jector pin is 2mm.

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A～G in the figure below.
RoHS —WPC® treatment— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	D5～6 Equivalent to SKH51 61～64HRC D8～25 Equivalent to SKD11 60～63HRC —WPC® treatment— Surface 1000～1100HV	LFSJ LFSJV WPC® treatment W—LFSJ W—LFSJV A—LFSJ A—LFSJV WPC® treatment AW—LFSJ AW—LFSJV	A D R E G	S L Tip length (B) L>S	(?) For a WPC® type punch, the tip end is ground before the coating is applied. (?) The tip edge of a WPC® treatment punch is very slightly rounded.
	$D^{+0.005}_{0}$					



Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P・Kmax.	0.01mm increments D R E G P・Wmin.	0.01mm increments Ⓡ R	B	H
(D_{m5}) LFSJ W—LFSJ Spring reinforced type (D8～25) LFSJV W—LFSJV	A D R E G	S	(5)	40.0～ 80.0	2.00～ 4.99	4.97	2.00	0.15≦R<W/2 (Ⓡ only)	8	8
			(6)		2.00～ 5.99	5.97	2.00			9
			8	60.0～ 100.0	3.00～ 7.99	7.97	3.00		13	11
			10		3.00～ 9.99	9.97	3.00			13
			13		6.00～ 12.99	12.97	6.00			16
			16	50.0～ 100.0	10.00～ 15.99	15.97	6.00		19	19
			20		13.00～ 19.99	19.97	6.00			23
			25		18.00～ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) A—LFSJ AW—LFSJ Spring reinforced type (D8～25) A—LFSJV AW—LFSJV		L	(5)	40.0～ 80.0	2.00～ 4.99	4.97	2.00		13	8
			(6)		2.00～ 5.99	5.97	2.00			9
			8	50.0～ 100.0	3.00～ 7.99	7.97	3.00		19	11
			10		3.00～ 9.99	9.97	3.00			13
			13		6.00～ 12.99	12.97	6.00			16
			16		10.00～ 15.99	15.97	6.00		25	19
			20		13.00～ 19.99	19.97	6.00			23
			25	60.0～ 100.0	18.00～ 24.99	24.97	6.00			28

(?) The spring constants of LFSJV, W—LFSJV, A—LFSJV, and AW—LFSJV are twice those of LFSJ, W—LFSJ, A—LFSJ and AW—LFSJ respectively. (?) Jector holes are based on the jector punch blanks. P.236
(?) If the tip shape is D R E G and the difference between full length and tip length is 30mm or less, the tip length is adjusted to (Full length−30 mm).
(?) Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
(?) D R E G: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
(?) D (5) and (6) are specifications available for LFSJ, W—LFSJ, A—LFSJ, and AW—LFSJ only. Spring reinforced types are available for D8～25 only.

Order

Catalog No.	L	P	W	R (Ⓡ only)
LFSJDS 6	60	P3.00	W2.80	
A—LFSJEL 10	75.3	P8.50	W4.25	

Days to Ship Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch.The large spring load results in more effective scrap removal.

Alterations

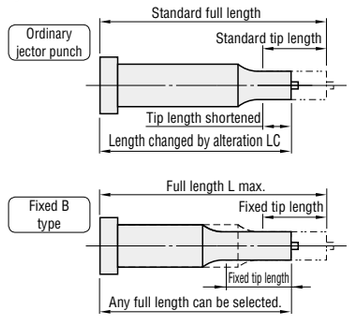
Catalog No.	L	P (PC)	W (WC)	R	(BC・HC・TC, etc.)
LFSJDS 6	58	P3.00	W2.80		— HC8—KFC225

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC・WC≧PC・WCmin. 0.01 mm increments	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip (?) P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners. ⊗ Cannot be used with WPC® treatment.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PCC. (?) For a WPC® treatment, the tolerance is PRC±0.1.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (?) PCC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PRC. (?) For a WPC® treatment, the tolerance is PCC±0.1.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (?) (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{0.01}_{0}$ ⊗ Cannot be used with WPC® treatment.		

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1mm increments (If combined with TKC・TKM, 0.01mm increments can be selected.) (?) The full length L remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (?) If H≦5, TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ D R E G •D5～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) •D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NC	The jector pin is removed.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

■Features

・Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.



・Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

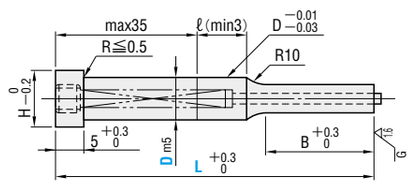
Price Quotation

JECTOR PUNCHES

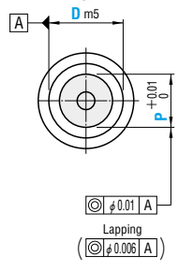
—NORMAL AND LAPPING TYPES WITH LARGE DIAMETER PINS— ※Jector punches with thicker jector pins (compared with other MISUMI jector punches)

Calculating the projection length of the jector pin (reference value) P.241

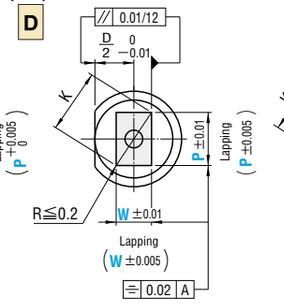
- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—Normal— RoHS —Lapping—	D_{m5}	Equivalent to SKD 11 60~63HRC	SJF / Lapping L—SJF	A D R E G	S L Tip length (B) L>S	

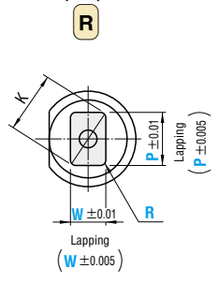
Tip shape A



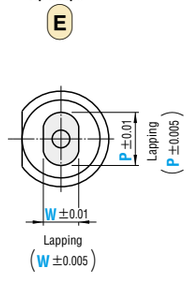
Tip shape D



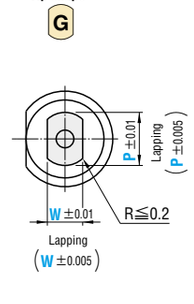
Tip shape R



Tip shape E



Tip shape G



- P≧W
- R=0 can be selected. (However lapping cannot be used.)
- K=$\sqrt{P^2+W^2}$

- P≧W
- 0.15≦R<$\frac{W}{2}$
- K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments (0.001mm increments for lapping) Ⓐ min. P max.	DREG P-Kmax.	DREG P-Wmin.	R R	B	H
(D_{m5}) SJF / Lapping L—SJF	A D R E G	S	8	50 60 70 80 90 100	5.00~ 7.99	7.97	5.00	0.15≦R<$\frac{W}{2}$ (R only)	13	11
			10	50 60 70 80 90 100	5.00~ 9.99	9.97	5.00			13
			13	50 60 70 80 90 100	8.00~ 12.99	12.97	8.00			16
			16	(50) 60 70 80 90 100	10.00~ 15.99	15.97	8.00		19	19
			20	(50) 60 70 80 90 100	13.00~ 19.99	19.97	10.00			23
			25	(50) 60 70 80 90 100	18.00~ 24.99	24.97	10.00			28
		L	8	50 60 70 80 90 100	5.00~ 7.99	7.97	5.00		19	11
			10	50 60 70 80 90 100	5.00~ 9.99	9.97	5.00			13
			13	50 60 70 80 90 100	8.00~ 12.99	12.97	8.00			16
			16	60 70 80 90 100	10.00~ 15.99	15.97	8.00		25	19
			20	60 70 80 90 100	13.00~ 19.99	19.97	10.00			23
			25	60 70 80 90 100	18.00~ 24.99	24.97	10.00			28

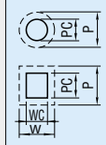
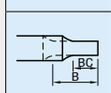
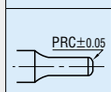
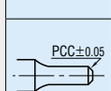
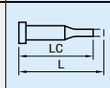
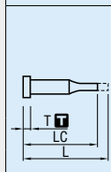
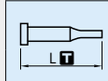
- L (50)···B=13 If full length is (50), tip length is 13 mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

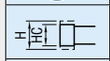
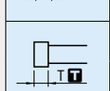
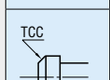
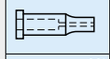
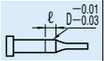
Catalog No.	L	P	W	R (R only)
SJFDS 16	60	P12.50	W9.35	
L—SJFEL 10	70	P8.50	W6.75	

Days to Ship Quotation

Alterations Catalog No. SJFDS 13 — L (LC·LCT·LMT) LC58 — P P10.50 — W W9.50 — R (BC·HC·TC, etc.) HC15—KC45

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (For a lapping combined with PKC, 0.001 mm increments can be selected.) D / PCmin.: 8 4.500; 10 4.500; 13 7.000; 16 7.000; 20 9.000; 25 9.000	Tip dimension change PC·WC≧PC·WCmin. 0.01 mm increments (For a lapping, 0.001mm increments can be selected.) D / PC·WCmin.: 8 4.500; 10 4.500; 13 7.000; 16 7.000; 20 9.000; 25 9.000	
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (?) PCC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗ Cannot be combined with PRC.	——	Quotation
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (?) If dimension can be selected in 0.001 mm increments. ⊗ Cannot be used with lapping.	Tip tolerance change P·W±0.01 ⇨ +0.01 0 ⊗ Cannot be used with lapping.	
		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments (?) Tip length B is reduced by (L−LC). (If combined with LKC·LKZ, 0.01 mm increments can be selected.) (?) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		

Price Quotation

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	——	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) (?) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		Quotation
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2		
		RC	Head thickness is machined to a tolerance of −0.04 ~ 0 relative to the retainer surface.		
Alterations to shank		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

■Features

- With a standard type, scraps inside the die may rotate, resulting in scrap lifting. This product has a larger diameter pin, which expands the area of contact with scraps and improves the scrap removal effect.
- Because of the pin diameter that is larger than the standard type, this pin type features superior strength and rigidity.

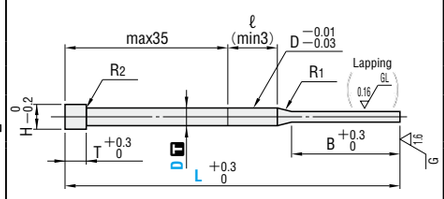
SHOULDER PUNCHES
—QUILL PUNCHES, NORMAL・TiCN COATING・LAPPING・HW COATING—

PRODUCTS DATA
P.1601・1604・1605

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Type Head thickness 5mm	Tip shape	B Tip length
—Normal— RoHS	D_{m5}	Equivalent to SKH51 61～64HRC	SH Lapping L—SH	SHLT Lapping L—SHLT	A D R E G	S
		Equivalent to SKH51 61～64HRC Surface 3000HV	TiCN coating H—SH —HW coating— HW—SH	TiCN coating H—SHLT —HW coating— HW—SHLT		
—Lapping—		Powdered high-speed steel 64～67HRC	PH Lapping L—PH	PHLT Lapping L—PHLT		
		Powdered high-speed steel 64～67HRC Surface 3000HV	TiCN coating H—PH —HW coating— HW—PH	TiCN coating H—PHLT —HW coating— HW—PHLT		
—TiCN coating— —HW coating—	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC	A—SH Lapping AL—SH	A—SHLT Lapping AL—SHLT		L
		Equivalent to SKH51 61～64HRC Surface 3000HV	TiCN coating AH—SH —HW coating— AHW—SH	TiCN coating AH—SHLT —HW coating— AHW—SHLT		Tip length (B) L>S
		Powdered high-speed steel 64～67HRC	A—PH Lapping AL—PH	A—PHLT Lapping AL—PHLT		
		Powdered high-speed steel 64～67HRC Surface 3000HV	TiCN coating AH—PH —HW coating— AHW—PH	TiCN coating AH—PHLT —HW coating— AHW—PHLT		

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

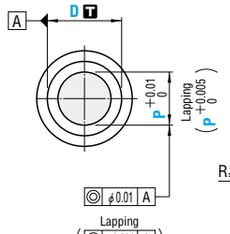
The tip shape can be selected from Tip shape A～G in the figure below.



D	R_1 Ⓐ	R_1 D R E G	R_2
1.6	2～3	—	≦0.2
2.0		≦16	
2.5			
3	—		≦0.5

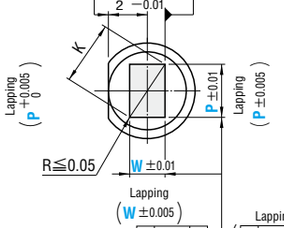
- The tip end of a TiCN coating punch is ground before the coating is applied.
- The tip edge of an HW coating punch is very slightly rounded.

Tip shape A



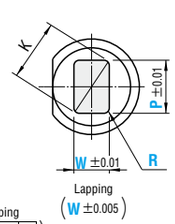
P≧W
R=0 can be selected. (However lapping and HW coating cannot be used.)

Tip shape D



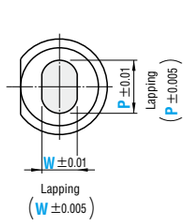
$K=\sqrt{P^2+W^2}$

Tip shape R



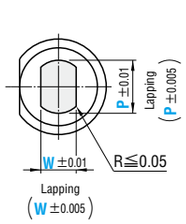
P≧W
$0.05 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Type	Tip shape	B Tip length	D	L	0.01mm increments (0.001mm increments for lapping) Ⓐ min. P max.	B	D R E G P·Kmax.	D R E G P·Wmin.	B	R	H	T
(D_{m5}) ($D^{+0.005}_{0}$) SH A—SH PH A—PH —Lapping— L—SH AL—SH L—PH AL—PH —TiCN coating— H—SH AH—SH H—PH AH—PH —HW coating— HW—SH AHW—SH HW—PH AHW—PH	A D R E G	S	1.6	(20) (25) 30 35 40 50 60	0.30 (1.00) ～1.59	6	—	—	—	$0.05 \leqq R < \frac{W}{2}$ (Ⓡ only)	2.6	3
			2.0	(20) (25) 30 35 40 50 60	0.50 (1.00) ～1.99	8	1.97	0.30 (1.00)	4		3.0	
			2.5	(20) (25) 30 35 40 50 60	0.80 (1.00) ～2.49		2.47	0.50 (1.00)	6		3.5	
			3	40 50 60 70 80	(P.55, 59, 67)	—	2.97	0.70 (1.00)			5	5
		L	1.6	30 35 40 50 60	0.50 (1.00) ～1.59	8	—	—	—		2.6	3
			2.0	30 35 40 50 60	0.80 (1.00) ～1.99	10	1.97	0.30 (1.00)	6		3.0	
			2.5	30 35 40 50 60	0.80 (1.00) ～2.49	13	2.47	0.50 (1.00)	8		3.5	
			3	50 60 70 80	(P.55, 59, 67)	—	2.97	0.70 (1.00)			5	5
(D_{m5}) ($D^{+0.005}_{0}$) SHLT A—SHLT PHLT A—PHLT —Lapping— L—SHLT AL—SHLT L—PHLT AL—PHLT —TiCN coating— H—SHLT AH—SHLT H—PHLT AH—PHLT —HW coating— HW—SHLT AHW—SHLT HW—PHLT AHW—PHLT	A D R E G	S	1.6	(20) (25) 30 35 40 50 60	0.30 (1.00) ～1.59	6	—	—	—	$0.05 \leqq R < \frac{W}{2}$ (Ⓡ only)	2.6	5
			2.0	(20) (25) 30 35 40 50 60	0.50 (1.00) ～1.99	8	1.97	0.30 (1.00)	4		3.0	
			2.5	(20) (25) 30 35 40 50 60	0.80 (1.00) ～2.49		2.47	0.50 (1.00)	6		3.5	
		L	1.6	30 35 40 50 60	0.50 (1.00) ～1.59	8	—	—	—		2.6	5
			2.0	30 35 40 50 60	0.80 (1.00) ～1.99	10	1.97	0.30 (1.00)	6		3.0	
			2.5	30 35 40 50 60	0.80 (1.00) ～2.49	13	2.47	0.50 (1.00)	8		3.5	

- L (20)/(25)⋯→B=4 If full length is (20) or (25), tip length is 4mm in all cases.
- Ⓐ: P>D−0.03 ⋯→ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P・K>D−0.05⋯→ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- P・W (1.00)⋯For TiCN coating/HW coating, P・Wmin. is 1.00.

Order: Catalog No. — L — P — W — R (Ⓡ only)
SHAS 1.6 — 30 — P1.31
L—PHDL 2.0 — 40 — P1.240 — W0.830

Days to Ship: Quotation

Alterations: Catalog No. — L (LC・LCT・LMT) — P — W — R — (BC・HC・TC, etc.)
PHDL 2.0 — LC42 — P1.24 — W0.83 — HC2.8

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip (?) P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners. ⊗ Can be used for TiCN coating types only.		
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments (?) PRC≦(P−0.2)/2 (?) For HW coating, the tolerance is PRC±0.1 ⊗ Cannot be combined with PCC・GC.	—	
	PCC±0.05	PCC	Chamfering to tip side edge. 0.3≦PCC≦1 0.1mm increments (?) PCC≦(P−0.2)/2 (?) For HW coating, the tolerance is PCC±0.1 ⊗ Cannot be combined with PRC・GC.	—	
	GC, f, L, B	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) (?) When combined with SC, tip edges are rounded. ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC. ⊗ Cannot be used with HW coating.	—	Quotation
	P, W	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow ^{+0.005}_{0}$ (?) (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with Lapping.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow ^{+0.01}_{0}$	
Alterations to full length	LC, L	LC	Full length change Can be changed within the following range. 0.1 mm increments D: 1.6～2.5 / 3; S: 20<LC<60 / 36<LC<80; L: 30<LC<60 / 50<LC<80 (?) If LC is 25 or less, tip length B is 4mm in all cases. (If combined with LKC・LKZ, 0.01mm increments can be selected.)		
	T T, LC, L	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow ^{+0.02}_{0}$ + LC + Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow ^{0}_{-0.02}$ + LC + Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.1}_{0}$		

Price: Quotation

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length	L T	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.01}_{0}$ ⊗ Cannot be used with TiCN・HW coating.		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
	HC	HC	Head diameter change D≦HC<H 0.1 mm increments		Quotation
	TC	TC	Head thickness change 2≦TC<T 0.1 mm increments (If combined with TKC/TKM/LCT/LMT, 0.01 mm increments can be selected.) (?) Full length L is shortened by (T−TC). If combined with LC・LCT・LMT, full length remains as specified.		
	T T	TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow ^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow ^{0}_{-0.02}$		
	TCC	TCC	Chamfering of head (C0.5) This improves the strength of the punch head. P.1611 Ordering method TCC 0.5 ⊗ Cannot be used for H<2.6.		
Alterations to shank		SKC	—	Single key flat on shank ・D3 W≦D−1.2 (Machining width 0.5) $\frac{D}{2}-0.5^{\ 0}_{-0.01}$ (?) Only D3 can be used. ⊗ Cannot be combined with KC・WKC・KFC. ⊗ HW coating cannot be used.	
	ℓ, D	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

PUNCHES

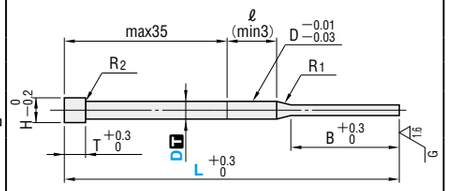
SHOULDER PUNCHES
—QUILL TYPE・RW COATING・DLC COATING—

PRODUCTS DATA P.1605 ～ 1609

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Type Head thickness 5mm	Tip shape	B Tip length
RoHS —RW coating—	Dm5	Equivalent to SKH51 61～64HRC	RW—SH	RW—SHLT	A D R E G	S
		Equivalent to SKH51 61～64HRC Surface 3000HV	N—SH —Foundation WPC®— NW—SH	N—SHLT —Foundation WPC®— NW—SHLT		
		Powdered high-speed steel 64～67HRC	RW—PH	RW—PHLT		
		Powdered high-speed steel 64～67HRC Surface 3000HV	N—PH —Foundation WPC®— NW—PH	N—PHLT —Foundation WPC®— NW—PHLT		
—DLC coating—	D +0.005 0	Equivalent to SKH51 61～64HRC	ARW—SH	ARW—SHLT		L
		Equivalent to SKH51 61～64HRC Surface 3000HV	AN—SH —Foundation WPC®— ANW—SH	AN—SHLT —Foundation WPC®— ANW—SHLT		
		Powdered high-speed steel 64～67HRC	ARW—PH	ARW—PHLT		
		Powdered high-speed steel 64～67HRC Surface 3000HV	AN—PH —Foundation WPC®— ANW—PH	AN—PHLT —Foundation WPC®— ANW—PHLT		

For shank diameter tolerance D T , select either m5 or +0.005 0 .

The tip shape can be selected from Tip shape A～G in the figure below.

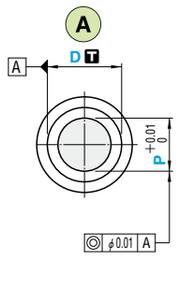


D	R1 Ⓐ	R1 D R E G	R2
1.6	2～3	—	≦0.2
2.0		≦16	
2.5			≦0.5
3	—		

Tip length (B) L>S

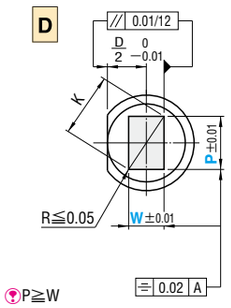
The tip end of a coating punch is ground before the coating is applied.
The tip edge of a RW coating or DLC foundation WPC® are very slightly rounded.

Tip shape A



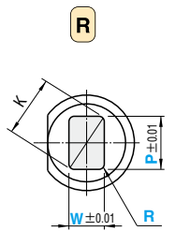
P≧W
R=0 can be selected. (However RW coating・Foundation WPC® cannot be used.)

Tip shape D



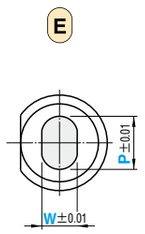
P≧W
K=√(P²+W²)

Tip shape R



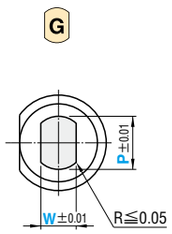
P≧W
0.05≦R< W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments (0.001mm increments for lapping) Ⓐ min. P max.	B	D R E G P・Kmax.	D R E G P・Wmin.	D R E G B	R	H	T
(Dm5) (D +0.005 0) —RW coating— RW—SH ARW—SH RW—PH ARW—PH —DLC coating— N—SH AN—SH N—PH AN—PH —DLC coating foundation WPC®— NW—SH ANW—SH NW—PH ANW—PH	A D R E G	S	1.6	(20) (25) 30 35 40 50 60	1.00～1.59	6	—	—	—	0.05≦R< W/2 (Ⓡ only)	2.6	3
			2.0	(20) (25) 30 35 40 50 60	1.00～1.99	8	1.97	1.00	4		3.0	
			2.5	(20) (25) 30 35 40 50 60	1.00～2.49		2.47	1.00	6		3.5	
			3	40 50 60 70 80	(P.55・59・67)	—	2.97	1.00			5	5
		L	1.6	30 35 40 50 60	1.00～1.59	8	—	—	—		2.6	3
			2.0	30 35 40 50 60	1.00～1.99	10	1.97	1.00	6		3.0	
			2.5	30 35 40 50 60	1.00～2.49	13	2.47	1.00	8		3.5	
			3	50 60 70 80	(P.55・59・67)	—	2.97	1.00			5	5
(Dm5) (D +0.005 0) —RW coating— RW—SHLT ARW—SHLT RW—PHLT ARW—PHLT —DLC coating— N—SHLT AN—SHLT N—PHLT AN—PHLT —DLC coating foundation WPC®— NW—SHLT ANW—SHLT NW—PHLT ANW—PHLT	A D R E G	S	1.6	(20) (25) 30 35 40 50 60	1.00～1.59	6	—	—	—	0.05≦R< W/2 (Ⓡ only)	2.6	5
			2.0	(20) (25) 30 35 40 50 60	1.00～1.99	8	1.97	1.00	4		3.0	
			2.5	(20) (25) 30 35 40 50 60	1.00～2.49		2.47	1.00	6		3.5	
		L	1.6	30 35 40 50 60	1.00～1.59	8	—	—	—		2.6	5
			2.0	30 35 40 50 60	1.00～1.99	10	1.97	1.00	6		3.0	
			2.5	30 35 40 50 60	1.00～2.49	13	2.47	1.00	8		3.5	

L (20)/(25)…B=4 If full length is (20) or (25), tip length is 4mm in all cases.
Ⓐ: P>D−0.03 …ℓ=0 If P>D−0.03 for a round punch, D −0.01 −0.03 (press-in lead) is not included.
D R E G: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, D −0.01 −0.03 (press-in lead) is not included.

Order: Catalog No. — L — P — W — R (Ⓡ only)
R —PHDL 2.0 — 40 — P1.240 — W0.830

Days to Ship: Quotation

Alterations: Catalog No. — L (LC・LCT・LMT) — P — W — R — (BC・HC・TC…etc.)
RW—PHDL 2.0 — LC42 — P1.24 — W0.83 — HC2.8

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before the coating is applied. R=0 cannot be selected for the tip shape D corners. Can be used for TiCN coating types only.		
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2 For HW coating, the tolerance is PRC±0.1 Cannot be combined with PCC・GC.	——	
	PCC±0.05	PCC	Chamfering to tip side edge. 0.3≦PCC≦1 0.1mm increments PCC≦(P−0.2)/2 For HW coating, the tolerance is PCC±0.1 Cannot be combined with PRC・GC.	——	
	GC, f, L, B	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) When combined with SC, tip edges are rounded. Cannot be used for P<1.0. Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC. Cannot be used with HW coating.	——	Quotation
	P, W	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 P dimension can be selected in 0.001 mm increments.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
			Cannot be used with Lapping.		
Alterations to full length	LC, L	LC	Full length change Can be changed within the following range. 0.1 mm increments: D 1.6～2.5: S 20<LC<60, L 30<LC<60; D 3: S 36<LC<80, L 50<LC<80. If LC is 25 or less, tip length B is 4mm in all cases. (If combined with LKC・LKZ, 0.01mm increments can be selected.)		
	T, LC, L	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		

Price: Quotation

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head	Alterations to full length	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		Quotation
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 Cannot be used with TiCN・HW coating.		
		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments. Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments. Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
	HC	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	TC	Head thickness change 2≦TC<T 0.1 mm increments (If combined with TKC/TKM/LCT/LMT, 0.01 mm increments can be selected.) Full length L is shortened by (T−TC). If combined with LC・LCT・LMT, full length remains as specified.		
	T T	TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
	TCC	TCC	Chamfering of head (C0.5) This improves the strength of the punch head. P.1611 Ordering method TCC 0.5 Cannot be used for H<2.6.		
Alterations to shank		SKC	——	Single key flat on shank ・D3 W≦D−1.2 (Machining width 0.5) D/2 −0.5 0 −0.01 Only D3 can be used. Cannot be combined with KC・WKC・KFC. HW coating cannot be used.	
	ℓ D −0.01 −0.03	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

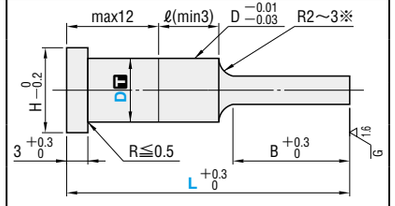
■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

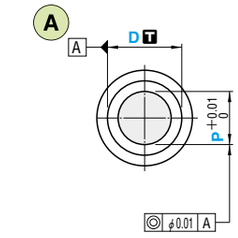
SHOULDER PUNCHES
—SHORT TYPE—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Equivalent to SKD11 60～63HRC	SS	A D R E G	S L Tip length (B) L>S
		Equivalent to SKH51 61～64HRC	SSH		
		Powdered high-speed steel 64～67HRC	SSP		
	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63HRC	A—SS		
		Equivalent to SKH51 61～64HRC	A—SSH		
		Powdered high-speed steel 64～67HRC	A—SSP		

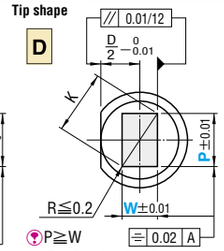
The tip shape can be selected from Tip shape A～G in the figure below.



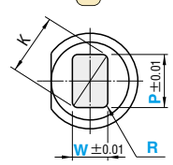
※If W<3 for shapes R E, R13 is selected.

Tip shape A


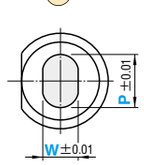
Ⓟ P≧W
Ⓟ R=0 can be selected.
Ⓟ K=√(P²+W²)

Tip shape D


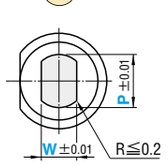
Ⓟ P≧W
Ⓟ R=0 can be selected.
Ⓟ K=√(P²+W²)

Tip shape R


Ⓟ P≧W
Ⓟ 0.15≦R<W/2
Ⓟ K=√((P−2R)²+(W−2R)²)+2R

Tip shape E


Ⓟ P>W

Tip shape G


Ⓟ P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01 mm increments Ⓐ min. P max.	Ⓐ P·Kmax.	Ⓐ P·Wmin.	R R	B	H
(Dm5) (D +0.005 0)	A D R E G	S	3	25 30 35 40	1.00～2.99	2.95	1.00	0.15≦R<W/2 (R only)	8	5
			4		2.00～3.99	3.95	1.20			7
			5		2.00～4.99	4.95	1.20			8
			6		2.50～5.99	5.95	1.50			9
			8		5.00～7.99	7.95	2.00			11
			10		7.00～9.99	9.95	2.50			13
SS A—SS		L	3	30 35 40	1.00～2.99	2.95	1.00		13	5
SSH A—SSH			4		2.00～3.99	3.95	1.20			7
SSP A—SSP			5		2.00～4.99	4.95	1.20			8
			6		2.50～5.99	5.95	1.50			9
			8		5.00～7.99	7.95	2.00			11
			10		7.00～9.99	9.95	2.50			13

Ⓟ Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	R (R only)
SSDS 4	30	P2.00	W1.20	
A—SSAL 5	40	P3.65		

Days to Ship Quotation

Alterations Catalog No. SSAS 4 — L(LC·LCT·LMT) LC28 — P(PC) P3.02 — W — R — (BC·HC·TC…etc.) BC10

Alterations	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC	Tip dimension change PC≧Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	——	
	BC	P(PC) / Bmax: 0.500～0.999 / 10; 1.000～ / 20. Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓟ Full length L must be at least 15 mm longer than tip length BC.	P·W / Bmax: 1.00～1.19 / 15; 1.20～ / 20. Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓟ Full length L must be at least 15 mm longer than tip length BC.	
	SC	Lapping of tip Ⓟ P dimension tolerance and increment are the same. ⊗R=0 cannot be selected for the tip shape + corners.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓟ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓟ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC.	——	Quotation
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.	——	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓟ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01 ⇨ +0.01 0	
Alterations to full length	LC	15+B(BC)≦LC<L 0.1 mm increments Ⓟ If difference between full length and tip length is 15 mm or less, tip length is adjusted to (Full length - 15 mm). (If combined with LKC·LKZ, 0.01mm increments can be selected.)		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓟ) are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓟ) are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		

Alterations	Code	Ⓐ	D R E G	1Code
Alterations to full length	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
	LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		
Alterations to head	KC	Addition of single key flat to head	Key flat 0°/90°/180°/270° position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
	NKC	——	No key flat	Quotation
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Ⓟ Full length L is shortened by (5−TC). If combined with LC/LCT/LMT, full length remains as specified.		
	TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
	TKM	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 Ⓟ If H≦5, then TCC is 0.5.		
Alterations to shank	SKC	Single key flat on shank Ⓐ D R E G ·D3～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
	NDC	No press-in lead ℓ≧3⇨ℓ=0		

Price Quotation

PUNCHES

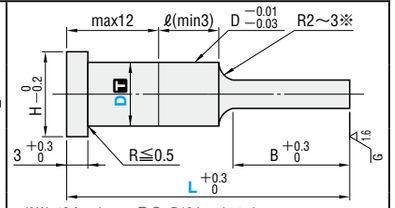
SHOULDER PUNCHES

—SHORT TYPE・TiCN COATING・HW COATING・DLC COATING—

PRODUCTS DATA P.1601～1606・1609

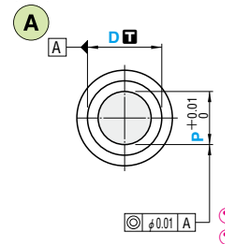
Type	Shank diameter D T tolerance	M H	Type: TiCN coating Surface 3000HV	HW coating Surface 3000HV	DLC coating Surface 3000HV	Tip shape	B Tip length
—TiCN coating— RoHS	Dm5	Equivalent to SKH51 61～64HRC	H—SSH	HW—SSH	N—SSH —WPC® treatment— NW—SSH	A D R E G	S
—HW coating—		Powdered high-speed steel 64～67HRC	H—SSP	HW—SSP	N—SSP —WPC® treatment— NW—SSP		
—DLC coating—	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC	AH—SSH	AHW—SSH	AN—SSH —WPC® treatment— ANW—SSH		L
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.		Powdered high-speed steel 64～67HRC	AH—SSP	AHW—SSP	AN—SSP —WPC® treatment— ANW—SSP		Tip length (B) L>S

The tip shape can be selected from Tip shape A～G in the figure below.

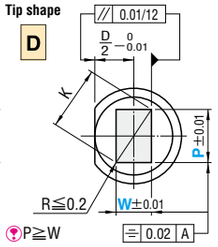


※If W<3 for shapes R E, R13 is selected.
The tip end is ground before the coating is applied.
The tip edges of a RW coating or DLC foundatinon WPC® are slightly rounded.

Tip shape A

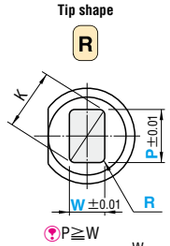


Tip shape D



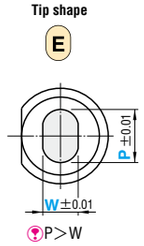
P≧W
R=0 can be selected. (However,HW coating・DLC foundation WPC® cannot be used)
K=√(P²+W²)

Tip shape R



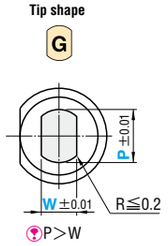
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
(Dm5) ($D^{+0.005}_{0}$) —TiCN coating— H—SSH AH—SSH H—SSP AH—SSP —HW coating— HW—SSH AHW—SSH HW—SSP AHW—SSP —DLC coating— N—SSH AN—SSH N—SSP AN—SSP —DLC foundation WPC®— NW—SSH ANW—SSH NW—SSP ANW—SSP	A D R E G	S	3	25 30 35 40	1.00～2.99	2.95	1.00	0.15≦R<W/2 (R only)	8	5
			4		2.00～3.99	3.95	1.20			7
			5		2.00～4.99	4.95	1.20			8
			6		2.50～5.99	5.95	1.50			9
			8		5.00～7.99	7.95	2.00			11
			10		7.00～9.99	9.95	2.50			13
		L	3	30 35 40	1.00～2.99	2.95	1.00		13	5
			4		2.00～3.99	3.95	1.20			7
			5		2.00～4.99	4.95	1.20			8
			6		2.50～5.99	5.95	1.50			9
			8		5.00～7.99	7.95	2.00			11
			10		7.00～9.99	9.95	2.50			13

Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—SSHDS 4	—	30	—	P2.00	—	W1.20		
NW—SSHAL 5	—	40	—	P3.65				

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC・LCT・LMT)	—	P(PC)	—	W	—	R	— (BC・HC・TC…etc.)
H—SSHAS 4	—	LC28	—	P3.02					— BC10

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip — PC	PC	Tip dimension change PC≧Pmin./2≧1.00 ⊗ TiCN coating cannot be used for D3. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	——	
BC	BC	P(PC) 1.000～ Bmax. 20. Tip length change 2≦BC≦Bmax. 0.1 mm increments ? Full length L must be at least 15mm longer than tip length BC.	P・W 1.00～1.19 Bmax. 15; 1.20～ 20. Tip length change 2≦BC≦Bmax. 0.1 mm increments ? Full length L must be at least 15mm longer than tip length BC.	
SC	SC	Lapping of tip ? P dimension tolerance and increment are the same. ? With TiCN coating, the base material is finished before the coating is applied. ⊗ Cannot be used with TiCN coating・DLC fuoudation WPC® ⊗ R=0 cannot be selected for the tip shape D corners.		
PRC	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ? PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC. ? For HW coating and DLC foundation WPC®,the tolerance is PRC±0.1.	——	
PCC	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ? PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC. ? HW coating・DLC foundation WPC® cannot be used.	——	Quotation
GC	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC. ? HW coating・DLC foundation WPC® cannot be used.	——	
PKC	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 ? (P dimension can be selected in 0.001 mm increments.) ⊗ When D>13,cannot be used with TiCN coating and HW coating.	Tip tolerance change P・W±0.01⇨ +0.01 0	
Alterations to full length — LC	LC	15+B(BC)≦LC<L 0.1 mm increments ? If difference between full length and tip length is 15mm or less, tip length is adjusted to (Full length−15mm). (If combined with LKC・LKZ, 0.01 mm increments can be selected for LC.)		
LCT	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ? are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
LMT	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ? are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		

Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length — LKC	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to shank — KC	KC	Addition of single key flat to head	Key flat 90° 180° 270° position change 1° increments	
WKC	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
KFC	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
NKC	NKC	——	No key flat	
HC	HC	Head diameter change D≦HC<H 0.1 mm increments		
TC	TC	Head thickness change 2≦TC<3 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) ? Full length L is shortened by (3−TC). If combined with LC・LCT・LMT, full length remains as specified.		Quotation
TKC	TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
TKM	TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 ? If H≦5, then TCC is 0.5.		
Alterations to head — SKC	SKC	Single key flat on shank Ⓐ DREG ・D3～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
NDC	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

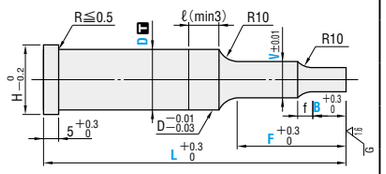
DOUBLE-STEPPED SHOULDER PUNCHES
—NORMAL・TiCN COATING・HW COATING—

PRODUCTS DATA P.1604

Type	Shank diameter D T tolerance	M H	Catalog No. Type: Normal	TiCN coating Surface 3000HV	HW coating Surface 3000HV	Tip shape
—Normal— RoHS	D_{m5}	Equivalent to SKD11 60～63 HRC	SPTW	—	—	A D R E G
		Equivalent to SKH51 61～64 HRC	SHTW	H—SHTW	HW—SHTW	
		Powdered high-speed steel 64～67 HRC	PHTW	H—PHTW	HW—PHTW	
	$D^{+0.005}_{0}$	Equivalent to SKD 11 60～63HRC	A—SPTW	—	—	
		Equivalent to SKH51 61～64 HRC	A—SHTW	AH—SHTW	AHW—SHTW	
		Powdered high-speed steel 64～67 HRC	A—PHTW	AH—PHTW	AHW—PHTW	

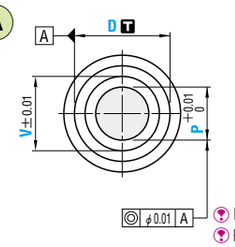
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.



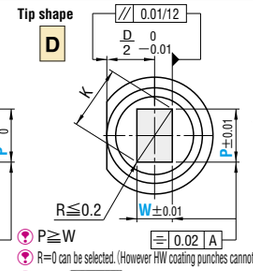
- The tip end of a punch is ground before the coating is applied.
- The tip edge of an HW coating punch is very slightly rounded.
- P・W min is 1.00 for coating punches.

Tip shape A



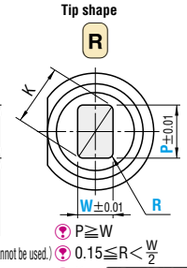
- P≧W
- R=0 can be selected. (However HW coating punches cannot be used.)
- $K=\sqrt{P^2+W^2}$

Tip shape D



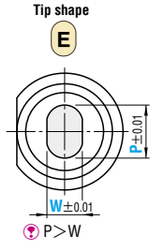
- P≧W
- R=0 can be selected. (However HW coating punches cannot be used.)
- $K=\sqrt{P^2+W^2}$

Tip shape R



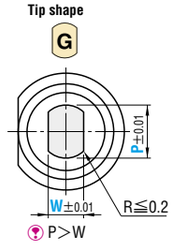
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	D	L (Selection)	0.01mm increments Ⓐ P	Ⓐ B	Diagonal Kmax.	0.01mm increments DREG P・W	R R	DREG B	0.01mm increments V	0.1mm increments F	H
(D_{m5}) SPTW SHTW PHTW —TiCN coating— H—SHTW H—PHTW —HW coating— HW—SHTW HW—PHTW	A D R E G	3	40・50・60・70・80	(0.50～0.999)	2.0～10.0	2.96	0.70(1.00)～1.49	0.15≦R<W/2 (R only)	2.0～8.0	Ⓐ: D>V>P+0.01 DREG: D>V>(P, K)+0.03	B+f+2<F≦Fmax. & Ⓐ: F≦L−25 DREG: F≦L−30	5
				1.00～1.999	2.0～20.0		1.50～1.99		2.0～13.0			
				2.00～2.98	2.0～35.0		2.00～2.96		2.0～19.0			
		4	40・50・60・70・80	(0.50～0.999)	2.0～10.0	3.96	0.80(1.00)～1.49		2.0～8.0			7
				1.00～1.999	2.0～20.0		1.50～1.99		2.0～13.0			
				2.00～3.98	2.0～35.0		2.00～3.49		2.0～19.0			
				2.00～3.98	2.0～35.0		3.50～3.96		2.0～25.0			
		5	40・50・60・70・80	1.00～1.999	2.0～20.0	4.96	0.80(1.00)～1.49		2.0～8.0			8
				2.00～3.999	2.0～35.0		1.50～1.99		2.0～13.0			
				4.00～4.98	2.0～45.0		2.00～3.49		2.0～19.0			
				4.00～4.98	2.0～45.0		3.50～4.96		2.0～25.0			
		6	40・50・60・70・80	1.00～1.999	2.0～20.0	5.96	0.80(1.00)～1.49		2.0～8.0			9
				2.00～3.999	2.0～35.0		1.50～1.99		2.0～13.0			
				4.00～5.98	2.0～45.0		2.00～3.49		2.0～19.0			
				4.00～5.98	2.0～45.0		3.50～4.99		2.0～25.0			
				4.00～5.98	2.0～45.0		5.00～5.96		2.0～30.0			
		8	40・50・60・70・80・90・100	1.00～1.999	2.0～20.0	7.96	1.00～1.49		2.0～8.0			11
				2.00～3.999	2.0～35.0		1.50～1.99		2.0～13.0			
				4.00～5.999	2.0～45.0		2.00～3.49		2.0～19.0			
				6.00～7.98	2.0～60.0		3.50～4.99		2.0～25.0			
				6.00～7.98	2.0～60.0		5.00～7.96		2.0～30.0			
($D^{+0.005}_{0}$) A—SPTW A—SHTW A—PHTW —TiCN coating— AH—SHTW AH—PHTW —HW coating— AHW—SHTW AHW—PHTW		10	40・50・60・70・80・90・100	1.50～1.999	2.0～20.0	9.96	1.25～1.49		2.0～8.0			13
				2.00～3.999	2.0～35.0		1.50～1.99		2.0～13.0			
				4.00～5.999	2.0～45.0		2.00～3.49		2.0～19.0			
				6.00～9.98	2.0～60.0		3.50～4.99		2.0～25.0			
				6.00～9.98	2.0～60.0		5.00～9.96		2.0～30.0			
		13	40・50・60・70・80・90・100	3.00～3.999	2.0～35.0	12.96	1.50～1.99		2.0～13.0			16
				4.00～5.999	2.0～45.0		2.00～3.49		2.0～19.0			
				6.00～12.98	2.0～60.0		3.50～4.99		2.0～25.0			
				6.00～12.98	2.0～60.0		5.00～12.96		2.0～30.0			
		16	40・50・60・70・80・90・100	5.00～5.999	2.0～45.0	15.96	2.00～3.49		2.0～19.0			19
				6.00～15.98	2.0～60.0		3.50～4.99		2.0～25.0			
				6.00～15.98	2.0～60.0		5.00～15.96		2.0～30.0			
		20	40・50・60・70・80・90・100	6.50～19.98	2.0～60.0	19.96	2.50～3.49		2.0～19.0			23
				6.50～19.98	2.0～60.0		3.50～4.99		2.0～25.0			
				6.50～19.98	2.0～60.0		5.00～19.96		2.0～30.0			
		25	40・50・60・70・80・90・100	9.00～24.98	2.0～60.0	24.96	3.00～3.49		2.0～19.0			28
				9.00～24.98	2.0～60.0		3.50～4.99		2.0～25.0			
				9.00～24.98	2.0～60.0		5.00～24.96		2.0～30.0			

If V>D−0.03 ⋯>ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included. P・W(1.00) ⋯>For TiCN coating/HW coating, P・Wmin. is 1.00.

Order

Catalog No.	L	P	W	B	V	F	R (R only)
SPTWA 10	80	P9.50		B30	V9.80	F45	
A—PHTWR13	80	P10.50	W7.34	B25	V12.00	F45	R0.5

Days to Ship: Quotation

Alterations

Catalog No.	L (LC・LCT・LMT)	P	W	B	V	F	R (R only)	(HC・TC・KC, etc.)
SPTWA 10	LC72	P4.80		B10	V6.80	F40		HC12

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		SC	Lapping of tip P dimension tolerance and increment are the same. With TiCN coating, the base matellial is finished before coating is applied. R=0 cannot be selected for tip shape D corners. Cannot be used with HW coating.		
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 For HW coating, the tolerance is PRC±0.1 Cannot be combined with PCC・GC.	——	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 For HW coating, the tolerance is PCC±0.1 Cannot be combined with PRC・GC.	——	
	GC, g, L, B	GC	20°≦GC<90° 1° increments Tip length B≧g+2 g=P/2×tan(90°−GC°) When combined with SC, tip edges are rounded. Cannot be used for P<1.0. Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC. Cannot be used with TiCN・HW coating	——	
	P・W	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) When D>13, cannot be used with TiCN・HW coating.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	Quotation
	V	VKC	Tip tolerance change V±0.01 ⇨ $^{+0.005}_{0}$ (V dimension can be selected in 0.001 mm increments.) When D>13, cannot be used with TiCN・HW coating.	Tip tolerance change V±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length	LC, L	LC	Full length change 25+F≦LC<L 0.1mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	Full length change 30+F≦LC<L 0.1mm increments	
	T, LC, L	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ LC: +Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance andfull length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ LC: +Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	L T	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$ Cannot be used with TiCN・HW coating.		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
	H, HC	HC	Head diameter change D≦HC<H 0.1 mm increments		
	T, TC	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC) . If combined with LC・LCT・LMT, full length remains as specified.		Quotation
	T	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	T	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04 ～0 relative to the retainer surface. Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank ・D3～6 V≦D−1.2 (Machining width 0.5) ・D8～ V≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
	ℓ, D	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price: Quotation

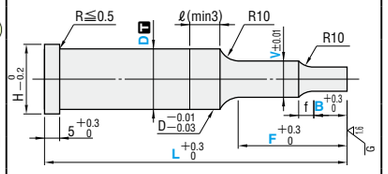
PUNCHES

DOUBLE-STEPPED SHOULDER PUNCHES
—RW COATING・DLC COATING—

PRODUCTS DATA P.1605 ～ 1609

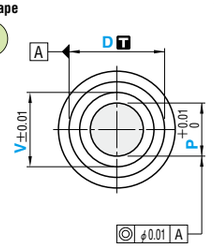
Type	Shank diameter D T tolerance	M H	Catalog No. Type: RW coating surface 3100HV	Catalog No. Type: DLC coating surface 3000HV ～	Tip shape
—RW coating— RoHS —DLC coating— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Equivalent to SKH51 61 ～ 64HRC	RW—SHTW	N—SHTW —Foundation WPC®— NW—SHTW	A D R E G
		Powderd high-speed steel 64 ～ 67HRC	RW—PHTW	N—PHTW —Foundation WPC®— NW—PHTW	
	$D^{+0.005}_{0}$	Equivalent to SKH51 61 ～ 64HRC	ARW—SHTW	AN—SHTW —Foundation WPC®— ANW—SHTW	
		Powderd high-speed steel 64 ～ 67HRC	ARW—PHTW	AN—PHTW —Foundation WPC®— ANW—PHTW	

The tip shape can be selected from Tip shape A～G in the figure below.

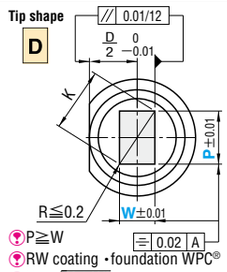


- The tip end is ground before the coating is applied.
- The tip edge of a RW coating or DLC foundation WPC® are slightly rounded.

Tip shape A

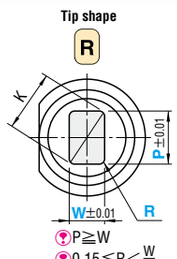


Tip shape D



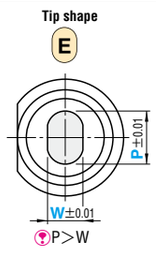
- P≧W
- RW coating・foundation WPC®
- $K=\sqrt{P^2+W^2}$

Tip shape R



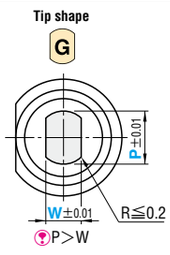
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	D	L (Selection)	0.01mm increments Ⓐ P	0.1mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments DREG P・W	R R	0.01mm increments DREG B	0.01mm increments V	0.1mm increments F	H
(Dm5) —RW coating— RW—SHTW RW—PHTW —DLC coating— N—SHTW N—PHTW —DLC coating— Foundation WPC® NW—SHTW NW—PHTW	A D R E G	3	40・50・60・70・80	(0.50～ 0.999)	2.0～10.0	2.96	1.00～ 1.49	0.15≦R< W/2 (R only)	2.0～ 8.0	Ⓐ: D>V>P+0.01 DREG: D>V>(P,K)+0.03	8+f+2<F≦Fmax & Ⓐ: F≦L−25 DREG: F≦L−30	5
				1.00～ 1.999	2.0～20.0		1.50～ 1.99		2.0～ 13.0			
				2.00～ 2.98	2.0～35.0		2.00～ 2.96		2.0～ 19.0			
		4	40・50・60・70・80	(0.50～ 0.999)	2.0～10.0	3.96	1.00～ 1.49		2.0～ 8.0			7
				1.00～ 1.999	2.0～20.0		1.50～ 1.99		2.0～ 13.0			
				2.00～ 3.98	2.0～35.0		2.00～ 3.49		2.0～ 19.0			
				2.00～ 3.98	2.0～35.0		3.50～ 3.96		2.0～ 25.0			
		5	40・50・60・70・80	1.00～ 1.999	2.0～20.0	4.96	1.00～ 1.49		2.0～ 8.0			8
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 4.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 4.98	2.0～45.0		3.50～ 4.96		2.0～ 25.0			
($D^{+0.005}_{0}$) —RW coating— ARW—SHTW ARW—PHTW —DLC coating— AN—SHTW AN—PHTW —DLC coating— Foundation WPC® ANW—SHTW ANW—PHTW		6	40・50・60・70・80	1.00～ 1.999	2.0～20.0	5.96	1.00～ 1.49		2.0～ 8.0			9
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 5.98	2.0～45.0		3.50～ 4.99		2.0～ 25.0			
				4.00～ 5.98	2.0～45.0		5.00～ 5.96		2.0～ 30.0			
		8	40・50・60・70・80 90・100	1.00～ 1.999	2.0～20.0	7.96	1.00～ 1.49		2.0～ 8.0			11
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 7.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 7.98	2.0～60.0		5.00～ 7.96		2.0～ 30.0			
		10	40・50・60・70・80 90・100	1.50～ 1.999	2.0～20.0	9.96	1.20～ 1.49		2.0～ 8.0			13
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 9.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 9.98	2.0～60.0		5.00～ 9.96		2.0～ 30.0			
		13	40・50・60・70・80 90・100	3.00～ 3.999	2.0～35.0	12.96	1.50～ 1.99		2.0～ 13.0			16
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～12.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～12.98	2.0～60.0		5.00～ 12.96		2.0～ 30.0			
		16	40・50・60・70・80 90・100	5.00～ 5.999	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			19
				6.00～15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	40・50・60・70・80 90・100	6.50～19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			23
				6.50～19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	40・50・60・70・80 90・100	9.00～24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			28
				9.00～24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			

- V>D−0.03 C ℓ=0　If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.

V	Fmax
0.51～0.999	10
1.00～1.999	20
2.00～3.999	35
4.00～5.999	45
6.00～	60

For dimension f, refer to the punch R length in [Products data] on P.1592 and verify the following.
Ⓐ: (V−P)/2=X
DREG: (V−W)/2=X

Order

Catalog No.	L	P	W	B	V	F	R (R only)
RW—SHTWA 10	80	P9.50		B30	V9.80	F45	
AN—PHTWR13	80	P10.50	W7.34	B25	V12.00	F45	R0.5

Days to Ship: Quotation

Alterations: Catalog No. — L(LC・LCT・LMT) — P — W — B — V — F — R(R only) — (HC・TC・KC…etc.)
RW—SHTWA 10 — LC72 — P4.80 — B10 — V6.80 — F40 — HC12

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 For RW coating・DLC foundation WPC®, the tolerance is PRC±0.1 Cannot be combined with PCC・GC.	——	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 For RW coating・DLC foundation WPC®, the tolerance is PCC±0.1 Cannot be combined with PRC・GC.	——	
	GC, g, L, B	GC	20°≦GC<90° 1° increments Tip length B≧g+2 g=P/2×tan(90°−GC°) When combined with SC, tip edges are rounded. Cannot be used for P<1.0. Cannot be combined with LKC・LCT・LMT・PRC・PCC. Cannot be used with RW coating・DLC foundation WPC®.	——	
	P.W T	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) Cannot be used with RE coating.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	Quotation
	0.16 GL	SC	Lapping of tip P dimension tolerance and increment are the same. With coating, the base material is finished before coating is applied. R=0 cannot be selected for tip shape D corners. Cannot be used with RW coating・DLC foundation WPC®.		
Alterations to full length	LC, L	LC	Full length change 25+F≦LC<L 0.1mm increments (If combined with LKC 0.01 mm increments can be selected.)	Full length change 30+F≦LC<L 0.1mm increments	
	T T, LC, L	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC: Full length change + $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$ Full length tolerance change		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: Full length change + $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$ Full length tolerance change		
	LT	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

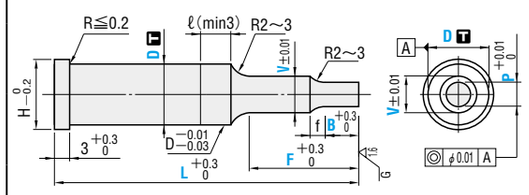
Price: Quotation

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
	HC	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		Quotation
	T T	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04 ～0 relative to the retainer surface. Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank ・D3～6 V≦D−1.2 (Machining width 0.5) ・D8～ V≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
	ℓ D −0.01 −0.03	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

DOUBLE-STEPPED SHOULDER PUNCHES
—QUILL TYPE—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Tip shape	Shape
RoHS	D_{m5}	Equivalent to SKH51 61～64HRC	SHTW	A	
		Powdered high-speed steel 64～67HRC	PHTW		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC	A—SHTW		
		Powdered high-speed steel 64～67HRC	A—PHTW		

Catalog No. Type	Tip shape	D	L	0.01mm increments Ⓐ P	0.1mm increments Ⓐ B	0.01mm increments V	0.1mm increments F	H
(D_{m5}) SHTW PHTW	A	1.6	20 25 30 35 40 50 60	0.30～0.49	1.0～ 3.0	D>V>P+0.01	B+f+1<F≦Fmax. F<L−12	2.6
				0.50～0.79	1.0～ 5.0			
				0.80～0.99	1.0～ 8.0			
				1.00～1.56	1.0～ 10.0			
($D^{+0.005}_{0}$) A—SHTW A—PHTW		2.0		0.50～0.79	1.0～ 5.0			3.0
				0.80～0.99	1.0～ 8.0			
				1.00～1.96	1.0～ 10.0			
		2.5		0.80～0.99	1.0～ 8.0			3.5
				1.00～2.46	1.0～ 10.0			

V	Fmax.
0.31～0.49	6
0.50～0.79	8
0.80～0.99	10
1.00～1.99	20
2.00～	35

For dimension f, refer to the punch R length in [Products data] on P.1592 and verify that (V−P)/2=X.

If V>D−0.03 ···ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.

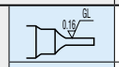
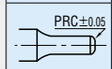
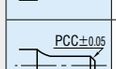
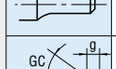
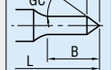
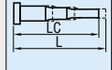
Order

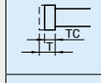
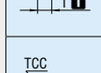
Catalog No.	L	P	B	V	F
A—SHTWA2.0	40	P0.85	B2	V1.50	F10

Days to Ship Quotation

Alterations

Catalog No.	L(LC・LCT・LMT)	P	B	V	F	(HC・TC・KC, etc.)
A—SHTWA2.0	LC45	P0.76	B3	V1.2	F10	HC2.8

Alteration		Code	Ⓐ	1Code
Alterations to tip		SC	Lapping of tip (P) P dimension tolerance and increment are the same.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	
		GC	20°≦GC<90° 1° increments Tip length B≧g+2 g=P/2×tan(90°−GC°) ⊗ Cannot be used for P<1.0. (P) When combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC.	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Quotation
Alterations to full length		LC	Full length change Can be changed within the following range. 0.1 mm increments D: 1.6～2.5 / LC: 20<LC<60 (P) If LC is 25 or less, tip length B is 4mm in all cases. (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Quotation
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$	
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{0.01}_{0}$	

Alteration		Code	Ⓐ	1Code
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		HC	Head diameter change D≦HC<H 0.1 mm increments	
		TC	Head thickness change 2≦TC<3 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (P) Full length L is shortened by (3−TC). If combined with LC・LCT・LMT, full length remains as specified.	Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$	
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$	
		TCC	Chamfering of head (C0.5) This improves the strength of the punch head. P.1611 Ordering method TCC 0.5 ⊗ Cannot be used for H<2.6.	
Shank		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

Price Quotation

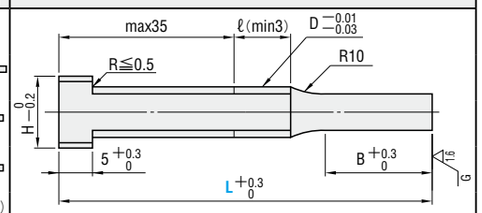
KEY FLAT SHANK SHOULDER PUNCHES
—NORMAL・TiCN COATING—

PRODUCTS DATA P.1601・1604

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—Normal— RoHS	$D^{+0.005}_{0}$	Equivalent to SKD 11 60～63HRC	G—SP	A D R E G	S L X
		Equivalent to SKH51 61～64HRC	G—SH		
		Powdered high-speed steel 64～67HRC	G—PH		
		Equivalent to SKH51 61～64HRC Surface 3000HV	TiCN coating GH—SH		
		Powdered high-speed steel 64～67HRC Surface 3000HV	TiCN coating GH—PH		

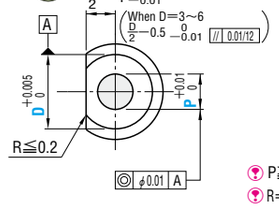
Tip length(B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.

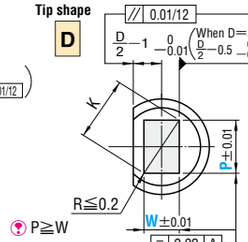


The tip end of a TiCN coating punch is ground before the coating is applied.

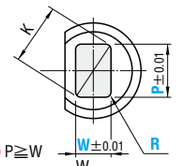
Tip shape A



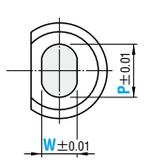
Tip shape D



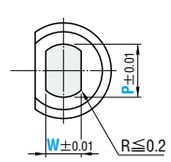
Tip shape R



Tip shape E



Tip shape G



P≧W
R=0 can be selected.
K=$\sqrt{P^2+W^2}$

P≧W
0.15≦R< W/2
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

P>W

P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G W max.	D R E G P・Wmin.	R R	B	H
G—SP G—SH G—PH —TiCN coating— GH—SH GH—PH	A D R E G	S	3	40 50 60 70 80 90 100	1.00～ 1.80		——		0.15≦R< W/2 (R only)	8	5
			4	40 50 60 70 80 90 100	1.00～ 2.80	3.97	2.80	1.00			7
			5	40 50 60 70 80 90 100	2.00～ 3.80	4.97	3.80	1.20			8
			6	40 50 60 70 80 90 100	2.00～ 4.80	5.97	4.80	1.50			9
			8	(40) 50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	2.50			13
			13	(40) 50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	3.00			16
			16	(40) 50 60 70 80 90 100	10.00～ 13.80	15.97	13.80	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00～ 17.80	19.97	17.80	5.00			23
			25	(40) 50 60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
		L	3	40 50 60 70 80 90 100	1.00～ 1.80		——			13	5
			4	50 60 70 80 90 100	1.00～ 2.80	3.97	2.80	2.00			7
			5	50 60 70 80 90 100	2.00～ 3.80	4.97	3.80	2.00			8
			6	50 60 70 80 90 100	2.00～ 4.80	5.97	4.80	2.00			9
			8	50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	2.50		19	11
			10	50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	2.50			13
			13	50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	3.00			16
			16	60 70 80 90 100	10.00～ 13.80	15.97	13.80	4.00		25	19
			20	60 70 80 90 100	13.00～ 17.80	19.97	17.80	5.00			23
			25	60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
		X	3	50 60 70 80 90 100	1.20～ 1.80		——			19	5
			4	50 60 70 80 90 100	1.20～ 2.80	3.97	2.80	2.00			7
			5	60 70 80 90 100	2.00～ 3.80	4.97	3.80	3.50		25	8
			6	60 70 80 90 100	2.00～ 4.80	5.97	4.80	3.50			9
			8	60 70 80 90 100	3.00～ 5.80	7.97	5.80	5.00		30	11
			10	60 70 80 90 100	3.00～ 7.80	9.97	7.80	5.00			13
			13	60 70 80 90 100	6.00～ 10.80	12.97	10.80	5.00			16
			16	70 80 90 100	10.00～ 13.80		——		—	40	19
			20	70 80 90 100	13.00～ 17.80						23
			25	70 80 90 100	18.00～ 22.80						28

L(40)…B=8 If full length is (40), tip length is 8mm in all cases.
D R E G: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D=3～ 6…a=0.5 When D dimension is 3～6, a dimension is 0.5mm.
D=8～25…a=1 When D dimension is 8～25, a dimension is 1mm.

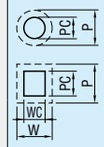
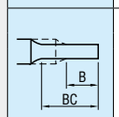
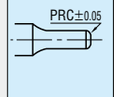
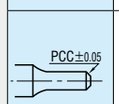
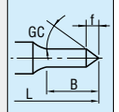
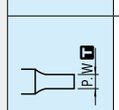
Order

Catalog No.	L	P	W	R(R only)
G—PHDL 13	80	P10.50	W7.34	

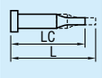
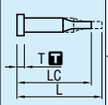
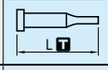
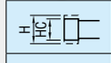
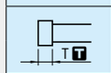
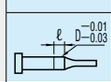
Days to Ship **Quotation**

Alterations

Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC・TC, etc.)
G—SPAS 10 — LC72 — PC2.80 — BC8

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01mm increments (P) For TiCN coating,PC> Pmin./2>1.00 (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax.: 0.500～0.799 / 10; 0.800～0.999 / 13; 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～4.999 / 45; 5.000～5.999 / 50; 6.000～ / 60	Tip dimension change PC≧ P・Wmin./2 ≧0.80 WC≧ P・Wmin./2 ≧1.00 0.01 mm increments (P) For TiCN coating type: ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax.: 0.80～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments (P) Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments (P) Full length L must be at least 30mm longer than tip length BC.	
		SC	Lapping of tip (P) P dimension tolerance and increment are the same. (P) With TiCN coating The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	——	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) (P) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC.	——	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P) (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating cannot be used for D>13.	Tip tolerance change P・W±0.01⇨ +0.01 0	

Price **Quotation**

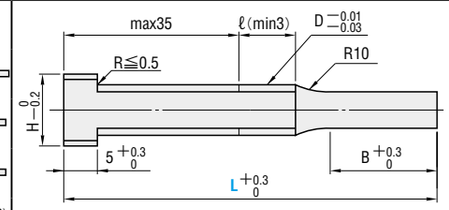
Alteration		Code	Ⓐ	D R E G	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments (P) If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm). (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments (P) If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	Quotation
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ((P)) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ((P)) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used with TiCN coating.		
Alterations to head		WKC	Addition of double key flats in parallel		
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (P) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (P) If H≦5, then TCC is 0.5.		
Alterations to shank		SKF	Single key flat on shank, configurable size SKF $^{0}_{-0.01}$ Ⓐ P≦2(SKF−0.1) 0.1mm increments D R E G W≦2(SKF−0.1) 0.1mm increments 0.3D≦SKF≦D/2−0.1 ⊗ Cannot be combined with WKC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

KEY FLAT SHANK SHOULDER PUNCHES
—WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1605

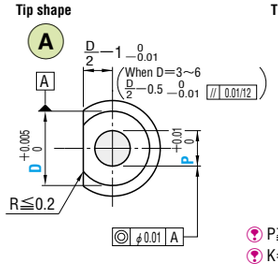
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63 HRC Surface 1000～1100HV	GW—SP	A D R E G	S
		Equivalent to SKH51 61～64 HRC Surface 1000～1100HV	GW—SH		L
		Powdered high-speed steel 64～67 HRC Surface 1000 HV～1100HV	GW—PH		X
—HW coating—		Equivalent to SKH51 61～64 HRC Surface 3000 HV	GHW—SH		Tip length (B) X>L>S
		Powdered high-speed steel 64～67 HRC Surface 3000 HV	GHW—PH		

The tip shape can be selected from Tip shape A～G in the figure below.

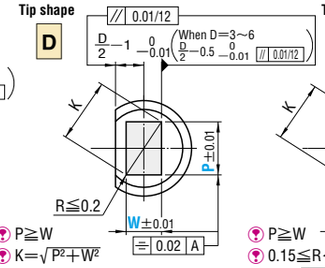


The tip edges are very slightly rounded.

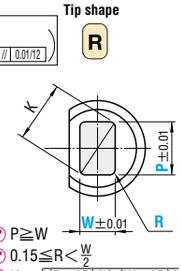
Tip shape A



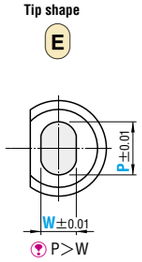
Tip shape D



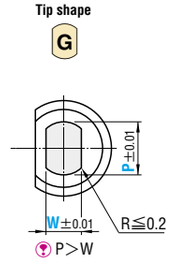
Tip shape R



Tip shape E



Tip shape G



P≧W
K=√(P²+W²)

P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

P>W

P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG W max.	DREG P・Wmin.	R R	B	H
—WPC® treatment— GW—SP	A D R E G	S	3	40	50	60	70	80	90	100	1.00～ 1.80		——		0.15≦R<W/2 (R only)	8	5
GW—SH			4	40	50	60	70	80	90	100	1.00～ 2.80	3.97	2.80	1.00			7
GW—PH			5	40	50	60	70	80	90	100	2.00～ 3.80	4.97	3.80	1.20			8
			6	40	50	60	70	80	90	100	2.00～ 4.80	5.97	4.80	1.50			9
—HW coating— GHW—SH			8	(40)	50	60	70	80	90	100	3.00～ 5.80	7.97	5.80	2.00		13	11
GHW—PH			10	(40)	50	60	70	80	90	100	3.00～ 7.80	9.97	7.80	2.50			13
			13	(40)	50	60	70	80	90	100	6.00～ 10.80	12.97	10.80	3.00			16
			16	(40)	50	60	70	80	90	100	10.00～ 13.80	15.97	13.80	4.00		19	19
			20	(40)	50	60	70	80	90	100	13.00～ 17.80	19.97	17.80	5.00			23
			25	(40)	50	60	70	80	90	100	18.00～ 22.80	24.97	22.80	6.00			28
		L	3	40	50	60	70	80	90	100	1.00～ 1.80		——			13	7
			4		50	60	70	80	90	100	1.00～ 2.80	3.97	2.80	2.00			7
			5		50	60	70	80	90	100	2.00～ 3.80	4.97	3.80	2.00			8
			6		50	60	70	80	90	100	2.00～ 4.80	5.97	4.80	2.00			9
			8		50	60	70	80	90	100	3.00～ 5.80	7.97	5.80	2.50		19	11
			10		50	60	70	80	90	100	3.00～ 7.80	9.97	7.80	2.50			13
			13		50	60	70	80	90	100	6.00～ 10.80	12.97	10.80	3.00			16
			16			60	70	80	90	100	10.00～ 13.80	15.97	13.80	4.00			19
			20			60	70	80	90	100	13.00～ 17.80	19.97	17.80	5.00		25	23
			25			60	70	80	90	100	18.00～ 22.80	24.97	22.80	6.00			28
		X	3		50	60	70	80	90	100	1.20～ 1.80		——			19	5
			4		50	60	70	80	90	100	1.20～ 2.80	3.97	2.80	2.00			7
			5			60	70	80	90	100	2.00～ 3.80	4.97	3.80	3.50		25	8
			6			60	70	80	90	100	2.00～ 4.80	5.97	4.80	3.50			9
			8			60	70	80	90	100	3.00～ 5.80	7.97	5.80	5.00			11
			10			60	70	80	90	100	3.00～ 7.80	9.97	7.80	5.00		30	13
			13			60	70	80	90	100	6.00～ 10.80	12.97	10.80	5.00			16
			16				70	80	90	100	10.00～ 13.80		——				19
			20				70	80	90	100	13.00～ 17.80				—	40	23
			25				70	80	90	100	18.00～ 22.80						28

L(40)…B=8 If the full length is (40), the tip length is 8mm in all cases.

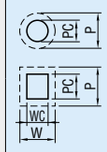
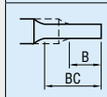
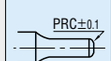
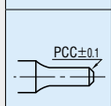
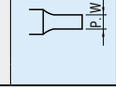
DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

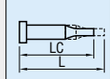
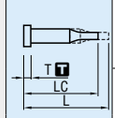
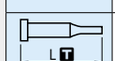
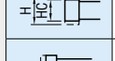
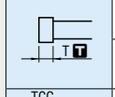
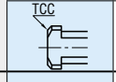
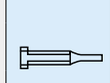
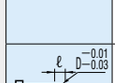
D=3～6…a=0.5 When D dimension is 3～6, dimension a is 0.5mm.
D=8～25…a=1 When D dimension is 8～25, dimension a is 1mm.

Order Catalog No. — L — P — W — R (R only)
GW—PHDL 13 — 80 — P10.50 — W7.34

Days to Ship Quotation

Alterations — Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC・TC, etc.)
GW—SPAS 10 — LC72.0 — PC2.80 — BC8

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P (PC) / Bmax.: 0.500～0.799 10; 0.800～0.999 13; 1.000～1.999 20; 2.000～3.999 35; 4.000～4.999 45; 5.000～5.999 50; 6.000～ 60. ⊗ PC<1.00 Cannot be used with HW coating.	Tip dimension change PC/WC≧P・Wmin./2≧0.80 0.01 mm increments ⊗ Cannot be used for tip length X. P(PC)・W(WC) / Bmax.: 0.80～1.49 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30.	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments ⓨ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments ⓨ Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓨ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓨ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ ⓨ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
			⊗ Cannot be used with HW coating.		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments ⓨ If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments ⓨ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm). (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	Quotation
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (ⓨ) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ LC +Full length change+ Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (ⓨ) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ LC +Full length change+ Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head		WKC	Addition of double key flats in parallel		
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) ⓨ Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 ⓨ If H≦5, then TCC is 0.5.		
Alterations to shank		SKF	Single key flat on shank, configurable size $SKF^{0}_{-0.01}$ Ⓐ P≦2(SKF−0.1) 0.1mm increments DREG W≦2(SKF−0.1) 0.1mm increments 0.3D≦SKF≦D/2−0.1 ⊗ Cannot be combined with WKC.		
		NDC	No press-in lead ℓ≧3 ⇨ℓ=0		

Price Quotation

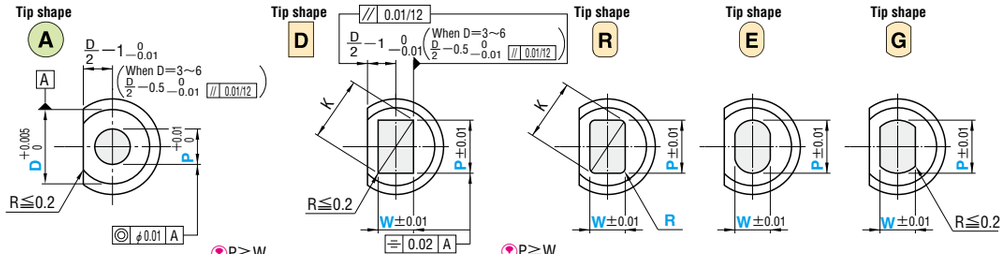
KEY FLAT SHANK SHOULDER PUNCHES
—RW COATING・DLC COATING—

PRODUCTS DATA P.1605～1609

Type	Shank diameter D Tolerance	M H	Catalog No. Type: RW coating surface 3100HV	DLC coating surface 3000HV～	Tip shape	B Tip length
—RW coating— RoHS —DLC coating—	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC	GRW-SH	GN-SH —Foundation WPC®— GNW-SH	A D R E G	S L X
		Powdered high-speed steel 64～67HRC	GRW-PH	GN-PH —Foundation WPC®— GNW-PH		

The tip shape can be selected from Tip shape A～G in the figure below.

- tip edges of a RW coating or DLC foundation WPC® are very slightly rounded.
- The tip end is ground before the coating is applied.



- P≧W
- R=0 can be selected. (However,RW coating・foundation WPC® cannot be used.)
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	Ⓐ P・Kmax.	DREG W max.	DREG P・Wmin.	R R	B	H
—RW coating— GRW—SH GRW—PH	A D R E G	S	3	40 50 60 70 80 90 100	1.00～ 1.80		——		0.15≦R< W/2 (R only)	8	5
			4	40 50 60 70 80 90 100	1.00～ 2.80	3.97	2.80	1.00			7
			5	40 50 60 70 80 90 100	2.00～ 3.80	4.97	3.80	1.20			8
			6	40 50 60 70 80 90 100	2.00～ 4.80	5.97	4.80	1.50			9
			8	(40) 50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	2.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	2.50			13
			13	(40) 50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	3.00			16
			16	(40) 50 60 70 80 90 100	10.00～ 13.80	15.97	13.80	4.00		19	19
			20	(40) 50 60 70 80 90 100	13.00～ 17.80	19.97	17.80	5.00			23
			25	(40) 50 60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
—DLC coating— GN—SH GN—PH		L	3	40 50 60 70 80 90 100	1.00～ 1.80		——			13	7
			4	50 60 70 80 90 100	1.00～ 2.80	3.97	2.80	2.00			7
			5	50 60 70 80 90 100	2.00～ 3.80	4.97	3.80	2.00			8
			6	50 60 70 80 90 100	2.00～ 4.80	5.97	4.80	2.00			9
			8	50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	2.50		19	11
			10	50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	2.50			13
			13	50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	3.00			16
			16	60 70 80 90 100	10.00～ 13.80	15.97	13.80	4.00		25	19
			20	60 70 80 90 100	13.00～ 17.80	19.97	17.80	5.00			23
			25	60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
—DLC coating— foundation WPC® GNW—SH GNW—PH		X	3	50 60 70 80 90 100	1.20～ 1.80		——			19	5
			4	50 60 70 80 90 100	1.20～ 2.80	3.97	2.80	2.00			7
			5	60 70 80 90 100	2.00～ 3.80	4.97	3.80	3.50		25	8
			6	60 70 80 90 100	2.00～ 4.80	5.97	4.80	3.50			9
			8	60 70 80 90 100	3.00～ 5.80	7.97	5.80	5.00		30	11
			10	60 70 80 90 100	3.00～ 7.80	9.97	7.80	5.00			13
			13	60 70 80 90 100	6.00～ 10.80	12.97	10.80	5.00			16
			16	70 80 90 100	10.00～ 13.80		——		—	40	19
			20	70 80 90 100	13.00～ 17.80						23
			25	70 80 90 100	18.00～ 22.80						28

- L(40)…B=6 If full length is(40), tip length is 8 mm in all cases.
- DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$(press-in lead) is not included.

D=3～6…a=0.5 When D dimension is 3～6, dimension a is 0.5mm.
D=8～25…a=1 When D dimension is 8～25, dimension a is 1mm.

Order: Catalog No. — L — P — W — R(Ⓡonly)
RW—PHDL 13 — 80 — P10.50 — W7.34

Days to Ship: Quotation

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

Alterations — Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC・TC…etc.)
GRW—SHAS 10 — LC72.0 — PC2.80 — BC8

Alterations	Code	Ⓐ	DREG	1Code
Alterations to tip	PC WC	Tip dimension change PC≧Pmin./2≧1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) 1.000～1.999 20; 2.000～3.999 35; 4.000～4.999 45; 5.000～5.999 50; 6.000～ 60	Tip dimension change PC≧P・Wmin./2≧1.00 WC≧P・Wmin./2≧1.00 0.01mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) 1.00～1.49 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	Quotation
	BC	Tip length change 2≦BC≦Bmax 0.1 mm increments (P) Full length must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax 0.1 mm increments (P) Full length must be at least 30mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P−d1−0.5)/2 ⊗ Cannot be combined with PCC. ⊗ For RW coating and DLC foundation WPC®,the tolerance is PRC±0.1.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC. ⊗ RW coating and DLC foundation WPC® cannot be used.	——	
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P) (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
		⊗ RW coating cannot be used.		
	SC	Lapping of tip (P) P dimension tolerance and increment are the same. ⊗ Cannot be combined with RW coating and DLC foundation WPC®. ⊗ R=0 cannot be selected for the tip shape ＋ corners.		

Alterations	Code	Ⓐ	DREG	1Code
Alterations to full length	LC	Full length change 25＋B(BC)≦LC＜L 0.1 mm increments (P) If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm).	Full length change 30＋B(BC)≦LC＜L 0.1 mm increments (P) If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	Quotation
		(If combined with LKC・LKZ, 0.01 mm increments can be selected.)		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ ＋ LC Full length change ＋ Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ ＋ LC Full length change ＋ Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head	WKC	Addition of double key flats in parallel		
	HC	Head diameter change D≦HC＜H 0.1 mm increments		
	TC	Head thickness change 2≦TC＜5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) (P) Full length L is shortened by(5−TC). If combined with LC・LCT・LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (P) If H≦5, then TCC is 0.5.		
Alterations to shank	SKF	Single key flat on shank, configurable size $SKF\ ^{0}_{-0.01}$ Ⓐ P≦2(SKF−0.1) 0.1mm increments DREG W≦2(SKF−0.1) 0.1mm increments D4～6 D/2−0.5≦SKF≦D/2−0.1 D8～25 D/2−1.0≦SKF≦D/2−0.1 ⊗ Cannot be combined with WKC.		
	NDC	No press-in lead ℓ≧3 ⇨ℓ=0		

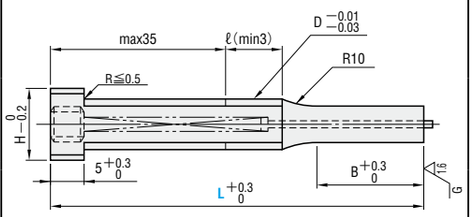
Price: Quotation

KEY FLAT SHANK JECTOR PUNCHES
—NORMAL・TiCN COATING—

PRODUCTS DATA P.1601・1604

Calculating the projection length of the jector pin (reference value) P.241

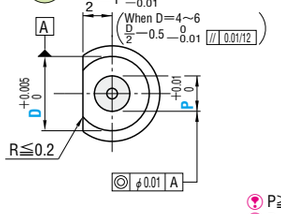
- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A～G in the figure below.
—Normal— RoHS	$D^{+0.005}_{0}$	D4～6 Equivalent to SKH51 61～64HRC D8～25 Equivalent to SKD11 60～63HRC	G—SJ G—SJV	A D R E G	S L X	
		Powdered high-speed steel 64～67HRC	G—PJ G—PJV			
		Powdered high-speed steel 64～67HRC Surface 3000HV	TiCN coating GH—PJ GH—PJV			

Tip length (B) X>L>S

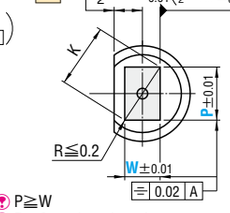
The tip end of a TiCN coating punch is ground before the coating is applied.

Tip shape A



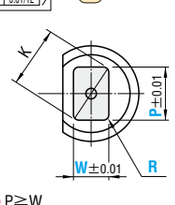
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape D



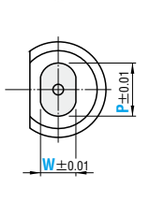
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R



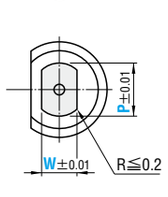
P>W

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	ⒹⓇⒺⒼ P·Kmax.	ⒹⓇⒺⒼ W max.	ⒹⓇⒺⒼ P·Wmin.	Ⓡ R	B	H
G—SJ G—PJ	A D R E G	S	(4)	40 50 60 70 80	1.00～ 2.80	3.97	2.80	1.00	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40 50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	40 50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
			8	(40) 50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	3.00			13
Spring reinforced type (D8～25) G—SJV G—PJV			13	(40) 50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
			16	(40) (50) 60 70 80 90 100	10.00～ 13.80	15.97	13.80	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00～ 17.80	19.97	17.80	6.00			23
			25	(40) (50) 60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
—TiCN coating— GH—PJ		L	(4)	50 60 70 80	1.00～ 2.80	3.97	2.80	2.00		13	7
			(5)	50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
			8	50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	3.00		19	11
			10	50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	3.00			13
Spring reinforced type (D8～25) GH—PJV			13	50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
			16	60 70 80 90 100	10.00～ 13.80	15.97	13.80	6.00		25	19
			20	60 70 80 90 100	13.00～ 17.80	19.97	17.80	6.00			23
			25	60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
G—SJ		X	(5)	60 70 80	2.00～ 3.80	4.97	3.80	3.50		25	8
			(6)	60 70 80	2.00～ 4.80	5.97	4.80	3.50			9
			8	70 80 90 100	3.00～ 5.80	7.97	5.80	5.00		30	11
			10	70 80 90 100	3.00～ 7.80	9.97	7.80	6.00			13
Spring reinforced type (D8～25) G—SJV			13	70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
			16	80 90 100	10.00～ 13.80	—			—	40	19
			20	80 90 100	13.00～ 17.80						23
			25	80 90 100	18.00～ 22.80						28

The spring constants of G—SJV, G—PJV, and GH—PJV are twice those of G—SJ, G—PJ, and G—SJ respectively.
L (40)⋯B=6 If full length is (40), tip length is 6 mm in all cases.
L (50)⋯B=13 If full length is (50), tip length is 13mm in all cases.
ⒹⓇⒺⒼ: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D=4～6⋯a=0.5 When D dimension is 4 ～ 6, dimension a is 0.5mm.
D=8～25⋯a=1 When D dimension is 8 ～ 25, dimension a is 1mm.

D (4), (5), and (6) are specifications available for G—SJ, G—PJ, and GH—PJ only.
Spring reinforced types are available for D8～25 only.

Order

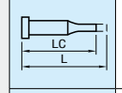
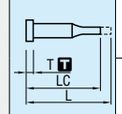
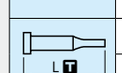
Catalog No.	L	P	W	R (Ⓡ only)
G—SJDS 6	60	P3.00	W2.80	

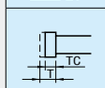
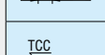
■**Effect of spring reinforced type**
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Days to Ship: Quotation

Alterations

Catalog No.	L (LC・LCT・LMT)	P (PC)	W (WC)	R	(BC・HC・TC, etc.)
G—SJDS 6	LC58	P3.00	W2.80		HC8

Alteration		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to tip		PC WC	Tip dimension change PC ≧ PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) ⊗ D4 cannot be used with TiCN coating.	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X.	
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments (The following restriction applies to tip type X with D dimension of 5 or 6.)		
		SC	Lapping of tip (P dimension tolerance and increment are the same. With TiCN coating, The base material is finished before the coating is applied.) ⊗ R=0 cannot be selected for the tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (PRC≦(P−d_1−0.5)/2 d_1 dimension P.236) ⊗ Cannot be combined with PCC.	——	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (PCC≦(P−d_1−0.5)/2 d_1 dimension P.236) ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments (Tip length B is reduced by (L−LC). (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (⚲) are the same as for LC. TKC (Head thickness tolerance change) $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC (Full length change) + (Full length tolerance change) $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (⚲) are the same as for LC. TKM (Head thickness tolerance change) $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC (Full length change) + (Full length tolerance change) $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating.		

Alteration		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to head		WKC	Addition of double key flats in parallel		
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) (⚲) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (⚲) If H≦5, then TCC is 0.5.		
Alterations to shank		SKF	Single key flat on shank, configurable size $SKF^{0}_{-0.01}$ Ⓐ P≦2(SKF−0.1) 0.1mm increments ⒹⓇⒺⒼ W≦2(SKF−0.1) 0.1mm increments D4～6 D/2−0.5≦SKF≦D/2−0.1 D8～25 D/2−1.0≦SKF≦D/2−0.1 ⊗ Cannot be combined with WKC.		
		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price: Quotation

KEY FLAT SHANK JECTOR PUNCHES
—WPC® TREATMENT・HW COATING—

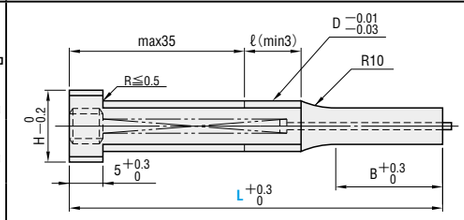
PRODUCTS DATA P.1605

Calculating the projection length of the jector pin (reference value) P.241

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

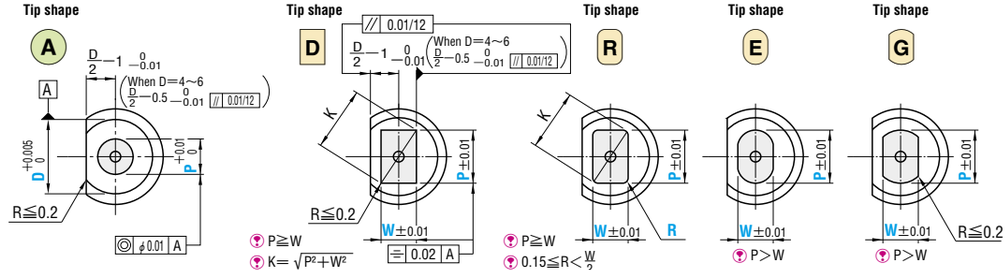
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS —HW coating—	$D^{+0.005}_{0}$	D4～6 SKH51 61～64HRC Surface 1000～1100HV	GW—SJ GW—SJV	A D R E G	S
		D8～25 Equivalent to SKD11 60～63HRC Surface 1000～1100HV			L
		Powdered high-speed steel 64～67HRC Surface 1000～1100HV	GW—PJ GW—PJV		X
		Powdered high-speed steel 64～67HRC Surface 3000HV	GHW—PJ GHW—PJV		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.



The tip edges are very slightly rounded.

Tip shape



Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min.P max.	ⒹⓇⒺⒼ P・Kmax.	ⒹⓇⒺⒼ Wmax.	ⒹⓇⒺⒼ P・Wmin.	Ⓡ R	B	H
—WPC® treatment— GW—SJ GW—PJ	A D R E G	S	(4)	40 50 60 70 80	1.00～ 2.80	3.97	2.80	1.00	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40 50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	40 50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
Spring reinforced type (D8—25) GW—SJV GW—PJV			8 (40) 50 60 70 80 90 100		3.00～ 5.80	7.97	5.80	3.00		13	11
			10 (40) 50 60 70 80 90 100		3.00～ 7.80	9.97	7.80	3.00			13
			13 (40) 50 60 70 80 90 100		6.00～ 10.80	12.97	10.80	6.00			16
			16 (40) (50) 60 70 80 90 100		10.00～ 13.80	15.97	13.80	6.00		19	19
			20 (40) (50) 60 70 80 90 100		13.00～ 17.80	19.97	17.80	6.00			23
			25 (40) (50) 60 70 80 90 100		18.00～ 22.80	24.97	22.80	6.00			28
—HW coating— GHW—PJ		L	(4)	50 60 70 80	1.00～ 2.80	3.97	2.80	2.00		13	7
			(5)	50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
Spring reinforced type (D8—25) GHW—PJV			8	50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	3.00		19	11
			10	50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	3.00			13
			13	50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
			16	60 70 80 90 100	10.00～ 13.80	15.97	13.80	6.00		25	19
			20	60 70 80 90 100	13.00～ 17.80	19.97	17.80	6.00			23
			25	60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
—WPC® treatment— GW—SJ		X	(5)	60 70 80	2.00～ 3.80	4.97	3.80	3.50		25	8
			(6)	60 70 80	2.00～ 4.80	5.97	4.80	3.50			9
			8	70 80 90 100	3.00～ 5.80	7.97	5.80	5.00		30	11
			10	70 80 90 100	3.00～ 7.80	9.97	7.80	6.00			13
Spring reinforced type (D8—25) GW—SJV			13	70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
			16	80 90 100	10.00～ 13.80	—			—	40	19
			20	80 90 100	13.00～ 17.80						23
			25	80 90 100	18.00～ 22.80						28

- The spring constants of GW—SJV, GW—PJV, and GHW—PJV are twice those of GW—SJ, GW—PJ, and GHW—PJ respectively.
- L(40)⋯B=6 If full length is (40), tip length is 6 mm in all cases.
- L(50)⋯B=13 If full length is (50), tip length is 13mm in all cases.
- ⒹⓇⒺⒼ: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D=4～6 ⋯a=0.5 When D dimension is 4～6, dimension a is 0.5mm. D=8～25⋯a=1 When D dimension is 8～25, dimension a is 1mm.
- D(4), (5), and (6) are specifications available for GW—SJ, GW—PJ, and GHW—PJ only. Spring reinforced types are available for D8～25 only.

Order

Catalog No.	L	P	W	R (Ⓡ only)
GW—SJDS 6	60	P3.00	W2.80	

Days to Ship: Quotation

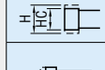
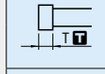
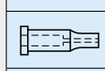
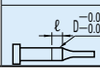
■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch.The large spring load results in more effective scrap removal.

Alterations

Catalog No.	L (LC・LCT・LMT)	P (PC)	W (WC)	R	(BC・HC・TC, etc.)
GW—SJDS 6	LC58	P3.00	W2.80		HC8

Alteration	Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to tip —	PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin.: 4 0.900; 5 1.800; 6 1.800; 8 2.500; 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000. ⊗PC<1.00 Cannot be used with HW coating.	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗Cannot be used for D4. ⊗Cannot be used for tip X. D / PC・WCmin.: 5 1.80; 6 1.80; 8 2.50; 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00	
	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments The following restriction applies to tip type X with D dimension of 5 or 6. PC / Bmax.: 1.80～1.99 / 20		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗Cannot be combined with PCC.	——	Quotation
	PCC	Chamfering to tip side edge. 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P−d_1−0.5)/2 d_1 dimension P.236 ⊗Cannot be combined with PRC.	——	
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗Cannot be used with HW coating.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length —	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments (P) Tip length B is reduced by (L−LC). (If combined with LKC・LKZ, 0.01 mm increments can be selected.) (P) Projection length of jector pin is 2 mm.		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (P) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Price: Quotation

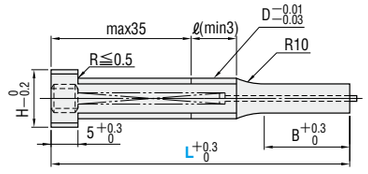
Alteration	Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to head —	WKC	Addition of double key flats in parallel		Quotation
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (P) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (P) If H≦5, then TCC is 0.5.		
Alterations to shank —	SKF	Single key flat on shank, configurable size Ⓐ SKF $^{0}_{-0.01}$ P≧2(SKF−0.1) 0.1mm increments ⒹⓇⒺⒼ W≦2(SKF−0.1) 0.1mm increments D4～6 D/2−0.5≦SKF≦D/2−0.1 D8～25 D/2−1.0≦SKF≦D/2−0.1 ⊗Cannot be combined with WKC.		
	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	The jector pin is removed. ⊗Cannot be combined with AC.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

KEY FLAT SHANK JECTOR PUNCHES
—RW COATING・DLC COATING—

PRODUCTS DATA P.1605～1609

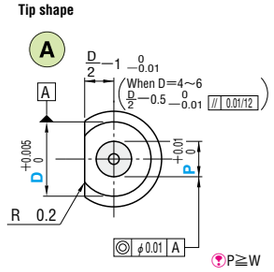
- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

Calculating the projection length of the jector pin (reference value) P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A～G in the figure below.
—RW coating— RoHS —DLC coating—	$D^{+0.005}_{0}$	Powdered high-speed steel 64～67HRC Surface 3000HV	GRW—PJ GRW—PJV	A D R E G	S L	
		Powdered high-speed steel 64～67HRC Surface 3000HV～	GN—PJ GN—PJV —Foundation WPC®— GNW—PJ GNW—PJV		Tip length (B) L>S	

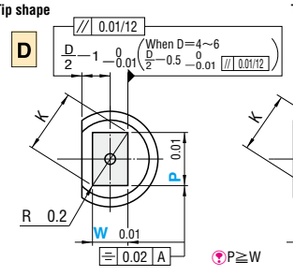
The tip edge of a RW coating or DLC foundation WPC® are very slightly rounded.
The tip end is ground before the coating is applied.

Tip shape A



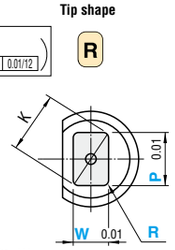
P≧W
R=0 can be selected. (However,RW coating and Foundation WPC® cannot be used.)
K=$\sqrt{P^2+W^2}$

Tip shape D



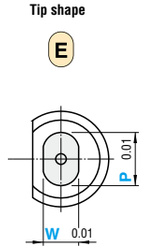
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R



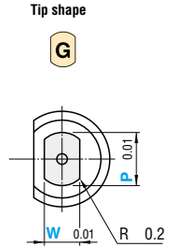
P>W

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min.P max.	ⒹⓇⒺⒼ P・Kmax.	ⒹⓇⒺⒼ Wmax.	ⒹⓇⒺⒼ P・Wmin.	Ⓡ R	B	H
—RW coating— GRW—PJ Spring reinforced type (D8～25) GRW—PJV	A D R E G	S	(4)	40 50 60 70 80	1.00～ 2.80	3.97	2.80	1.00	W/2 (Ⓡ only) 0.15≦R<W/2	8	7
			(5)	40 50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	40 50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
			8	(40) 50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	3.00			13
			13	(40) 50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
			16	(40) (50) 60 70 80 90 100	10.00～ 13.80	15.97	13.80	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00～ 17.80	19.97	17.80	6.00			23
			25	(40) (50) 60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
—DLC coating— GN—PJ Spring reinforced type (D8～25) GN—PJV		L	(4)	50 60 70 80	1.00～ 2.80	3.97	2.80	2.00		13	7
			(5)	50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
—DLC foundation WPC®— GNW—PJ Spring reinforced type (D8～25) GNW—PJV			8	50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	3.00		19	11
			10	50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	3.00			13
			13	50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
			16	60 70 80 90 100	10.00～ 13.80	15.97	13.80	6.00		25	19
			20	60 70 80 90 100	13.00～ 17.80	19.97	17.80	6.00			23
			25	60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28

The spring constants of GRW—PJV, GN—PJV, and GNW—PJV are twice those of GRW—PJ, GN—PJ, and GNW—PJ respectively.
L(40)…B=6 If full length is (40), tip length is 6 mm in all cases.
L(50)…B=13 If full length is (50), tip length is 13mm in all cases.
ⒹⓇⒺⒼ: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D=4～6…a=0.5 When D dimension is 4 ～ 6, dimension a is 0.5mm.
D=8～25…a=1 When D dimension is 8 ～ 25, dimension a is 1mm.
D(4), (5), and (6) are specifications available for GRW—PJ, GN—PJ, and GNW—PJ only. Spring reinforced types are available for D8～25 only.

Order

Catalog No.	L	P	W	R (Ⓡonly)
GRW—PJDS 6	60	P3.00	W2.80	

Days to Ship: Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

Alterations

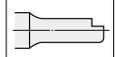
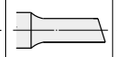
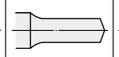
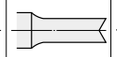
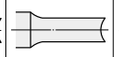
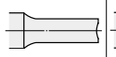
Catalog No.	L(LC・LCT・LMT)	P(PC)	W(WC)	R	(BC・HC・TC…etc.)
GNW—PJDS 6	LC58	P3.00	W2.80		HC8

Alterations	Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to tip	PC WC	Tip dimension change PC ≧ PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin: 4 1.000; 5 1.800; 6 1.800; 8 2.500; 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗Cannot be used for D4. D / PC・WCmin: 5 1.80; 6 1.80; 8 2.50; 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00	
	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗Cannot be combined with PCC. For RW coating and DLC foundation WPC®,the tolerance is PRC±0.1.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (?) PCC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗Cannot be combined with PRC. RW coating and DLC foundation WPC® cannot be used.	——	Quotation
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (?) (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
		⊗RW coating cannot be used.		
	SC	Lapping of tip (?) P dimention tolerance and increments are the same. ⊗Cannot be combined with for substrate WPC® treatment. ⊗Tip D shape corner R=0 cannot be selected.		
Alterations to full length	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments (?) Tip length B is reduced by (L−LC). (If combined with LKC・LKZ, 0.01 mm increments can be selected.) (?) Projection length of jector pin is 2 mm.		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC (Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$) + LC (+Full length change) + (Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$)		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM (Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$) + LC (+Full length change) + (Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$)		
	LKC	Full length tolerance change	$L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$	

Alterations	Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to head	WKC	Addition of double key flats in parallel		Quotation
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) (?) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		
	TKC	Head thickness tolerance change	$T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$	
	TKM	Head thickness tolerance change	$T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$	
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2 (?) If H≦5, then TCC is 0.5.		
Alterations to shank	SKF	Single key flat on shank, configurable size Ⓐ $SKF^{0}_{-0.01}$ P≦2(SKF−0.1) 0.1mm increments / ⒹⓇⒺⒼ W≦2(SKF−0.1) 0.1mm increments D4～6 D/2−0.5≦SKF≦D/2−0.1 D8～25 D/2−1.0≦SKF≦D/2−0.1 ⊗Cannot be combined with WKC.		
	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	The jector pin is removed. ⊗Cannot be combined with AC.		
	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price: Quotation

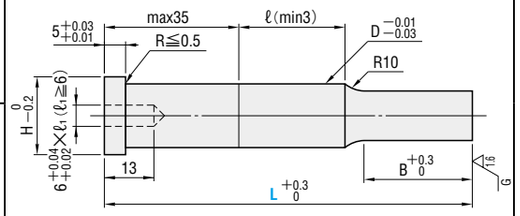
PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS—

Punch tip shear angle alterations P.232	1F	2F	3F	4F	5F	6F	7F
							

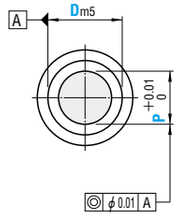
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	Tip length B	With dowel hole
With locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKD11 60～63HRC	SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

RoHS

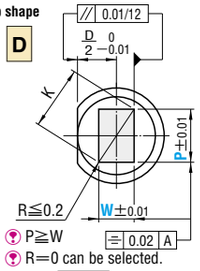
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape Ⓐ

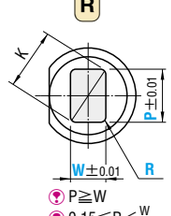


Tip shape Ⓓ



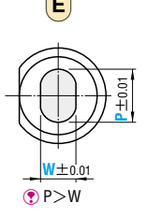
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape Ⓡ



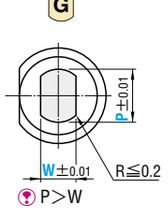
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape Ⓔ



P>W

Tip shape Ⓖ



P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P·Kmax.	0.01mm increments DREG P·Wmin.	0.01mm increments R R	B	H
S SPAS—C SPDS—C SPRS—C SPES—C SPGS—C	10	(40) 50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	$W/2$ (Ⓡ only) $0.15 \leqq R < W/2$	13	13
	13	(40) 50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
	16	(40) 50 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	19
	20	(40) 50 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
	25	(40) 50 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
	32	(40) (50) 60 70 80 90 100 110 120 130 140 150	20.00～ 31.99	31.97	7.00			35
	38	(40) (50) 60 70 80 90 100 110 120 130 140 150	28.00～ 37.99	37.97	8.00			41
	45	(40) (50) 60 70 80 90 100 110 120 130 140 150	35.00～ 44.99	44.97	9.00			48
L SPAL—C SPDL—C SPRL—C SPEL—C SPGL—C	10	50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	13
	13	50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
	16	60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	19
	20	60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
	25	60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
	32	60 70 80 90 100 110 120 130 140 150	20.00～ 31.99	31.97	7.00			35
	38	60 70 80 90 100 110 120 130 140 150	28.00～ 37.99	37.97	8.00			41
	45	60 70 80 90 100 110 120 130 140 150	35.00～ 44.99	44.97	9.00			48
X SPAX—C SPDX—C SPRX—C SPEX—C SPGX—C	10	70 80 90 100 110 120 130 140 150	6.00～ 9.99	9.97	5.00		30	13
	13	70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	5.00			16
	16	80 90 100 110 120 130 140 150	10.00～ 15.99	—		—	40	19
	20	80 90 100 110 120 130 140 150	13.00～ 19.99					23
	25	80 90 100 110 120 130 140 150	18.00～ 24.99					28
	32	80 90 100 110 120 130 140 150	20.00～ 31.99					35
	38	80 90 100 110 120 130 140 150	28.00～ 37.99					41
	45	80 90 100 110 120 130 140 150	35.00～ 44.99					48

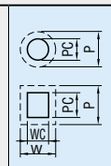
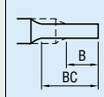
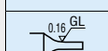
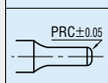
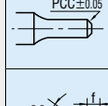
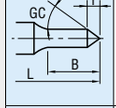
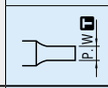
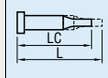
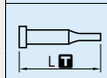
- L(40): D10～25⋯B=8 If full length is (40) and D dimension is 10～25, tip length is 8mm in all cases.
  D32～45⋯B=6 If full length is (40) and D dimension is 32～45, tip length is 6mm in all cases.
- L(50) ⋯B=13 If full length is (50), tip length is 13mm in all cases.
- Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
- DREG: P·K>D−0.05⋯ℓ=0 If P·K>D−0.05 for a shaped punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.

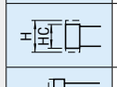
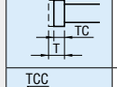
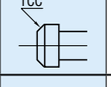
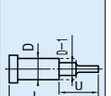
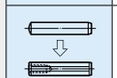
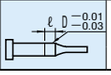
Order Catalog No. — L — P — W — R(Ⓡ only)
SPAS—C 25 — 100 — P18.05

Example
■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.These punches are particularly effective when used for die machining with NC machines.This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Days to Ship Quotation

Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC·HC·TC, etc.)
SPAS—C 25 — LC95 — P18.05 — BC30

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change $PC \geqq \frac{Pmin.}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax.: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change $PC \geqq \frac{P \cdot Wmin.}{2}$ $WC \geqq \frac{2}{2}$ 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)·W(WC) / Bmax.: 1.25～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 30mm longer than tip length BC.	
		SC	Lapping of tip Ⓨ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓨ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC.	—	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓨ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC.	—	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓨ If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC·LKZ·PRC·PCC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ Ⓨ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC·LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$ ⊗ Cannot be used for D>25.		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Quotation
		NKC	—	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1mm increments Ⓨ Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank		UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN UC40 / 37 / L≧80 / USN40 UC50 / 47 / L≧90 / USN50 Ⓨ P·Kmax.=D−1.1 Ⓨ Details P.750 Ⓨ Can be used for L≧80 or L≧90. Ⓨ Can be used for D10～32.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38·45.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

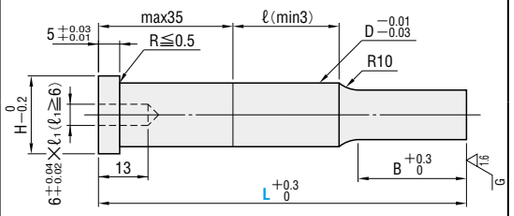
PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS・DICOAT® TREATMENT—

PRODUCTS DATA P.1599

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
Dicoat® treatment with locating dowel hole	Dowel pin MS6—25	Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	T—SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

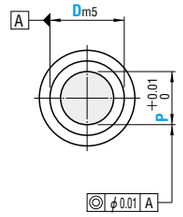
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

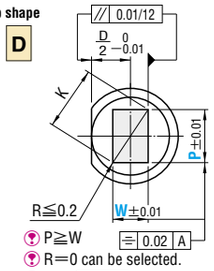


Tip length(B) X>L>S

Tip shape A

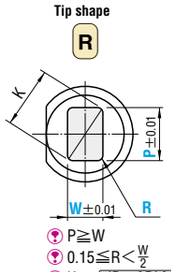


Tip shape D



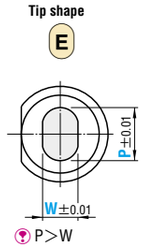
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



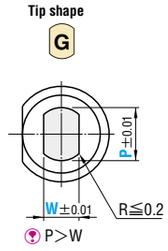
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments Ⓐ P・Kmax.	0.01mm increments Ⓐ P・Wmin.	0.01mm increments DREG R	B	H
S T—SPAS—C T—SPDS—C T—SPRS—C T—SPES—C T—SPGS—C	10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50	0.15≦R<W/2 (R only)	13	13
	13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
	16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00		19	19
	20	(40) 50 60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
	25	(40) 50 60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
	32	(40) (50) 60 70 80 90 100 110 120	20.00～ 31.99	31.97	7.00			35
	38	(40) (50) 60 70 80 90 100 110 120	28.00～ 37.99	37.97	8.00			41
	45	(40) (50) 60 70 80 90 100 110 120	35.00～ 44.99	44.97	9.00			48
L T—SPAL—C T—SPDL—C T—SPRL—C T—SPEL—C T—SPGL—C	10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50		19	13
	13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
	16	60 70 80 90 100	10.00～ 15.99	15.97	4.00		25	19
	20	60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
	25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
	32	60 70 80 90 100 110 120	20.00～ 31.99	31.97	7.00			35
	38	60 70 80 90 100 110 120	28.00～ 37.99	37.97	8.00			41
	45	60 70 80 90 100 110 120	35.00～ 44.99	44.97	9.00			48
X T—SPAX—C	10	70 80 90 100	6.00～ 9.99	——		–	30	13
	13	70 80 90 100	6.00～ 12.99					16
	16	80 90 100	10.00～ 15.99				40	19
	20	80 90 100	13.00～ 19.99					23
	25	80 90 100	18.00～ 24.99					28
	32	80 90 100 110 120	20.00～ 31.99					35
	38	80 90 100 110 120	28.00～ 37.99					41
	45	80 90 100 110 120	35.00～ 44.99					48

- L(40): D10～25⋯B=8 If full length is(40) and D dimension is 10～25, tip length is 8mm in all cases.
  D32～45⋯B=6 If full length is(40) and D dimension is 32～45, tip length is 6mm in all cases.
- L(50)⋯B=13 If full length is(50), tip length is 13mm in all cases.
- Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D_{-0.03}^{-0.01}$(press-in lead) is not included.
- DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D_{-0.03}^{-0.01}$(press-in lead) is not included.

Order Catalog No. — L — P — W — R(Ⓡ only)
T—SPAS—C 25 — 100 — P18.05

Days to Ship Quotation

Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・HC・TC, etc.)
T—SPAS—C 25 — LC95 — P18.05 — BC30

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip	PC WC	Tip dimension change PC≧Pmin./2 0.01mm increments (P(PC) / Bmax.: 1.50～1.99 / 20; 2.00～3.99 / 35; 4.00～5.99 / 40; 6.00～ / 45)	Tip dimension change PC≧P・Wmin./2 WC≧P・Wmin./2 0.01mm increments (P(PC)・W(WC) / Bmax.: 1.25～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 2.50～4.99 / 25; 5.00～ / 30)	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2	——	
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to(Full length−25mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to(Full length−30mm).	
		(If combined with LKC, 0.01 mm increments can be selected.)		
	LKC	Full length tolerance $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$ change		
Alterations to head	KC	Addition of single key flat to head	Key flat position 0°～180° change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	

Alteration	Code	Ⓐ	DREG	1Code
Alterations to head	KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Quotation
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1mm increments Full length L is shortened by(5−TC). If combined with LC, full length is equal to LC.		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank	UC	Modification for urethane stripper(USN) installation For details P.750 Can be used with D 10 ～ 32.		
	TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). Cannot be used for D38・45.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

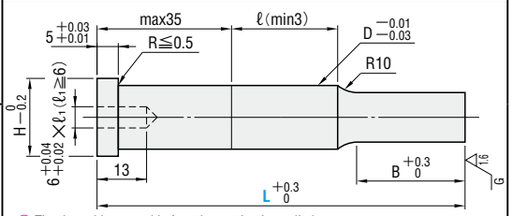
PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS・TiCN COATING—

PRODUCTS DATA P.1604

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	H—SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

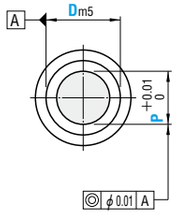
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

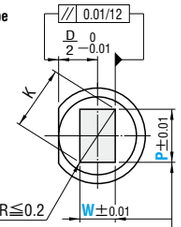


The tip end is ground before the coating is applied.
Tip length (B) X>L>S

Tip shape Ⓐ

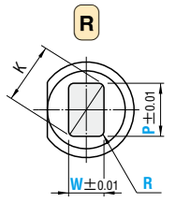


Tip shape Ⓓ



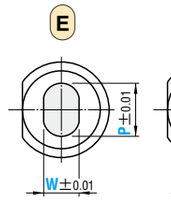
P≧W
R=0 can be selected.
K=√(P²+W²)

Tip shape Ⓡ



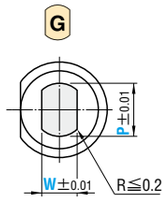
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape Ⓔ



P>W

Tip shape Ⓖ



P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P・Kmax.	0.01mm increments DREG P・Wmin.	0.01mm increments Ⓡ R	B	H
S H—SPAS—C	10	(40) 50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	0.15≦R<W/2 (Ⓡ only)	13	13
H—SPDS—C	13	(40) 50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
H—SPRS—C	16	(40) 50 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	19
H—SPES—C	20	(40) 50 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
H—SPGS—C	25	(40) 50 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
L H—SPAL—C	10	50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	13
H—SPDL—C	13	50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
H—SPRL—C	16	60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	19
H—SPEL—C	20	60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
H—SPGL—C	25	60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
X H—SPAX—C	10	70 80 90 100 110 120 130 140 150	6.00～ 9.99	9.97	5.00		30	13
H—SPDX—C	13	70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	5.00			16
H—SPRX—C	16	80 90 100 110 120 130 140 150	10.00～ 15.99	——		—	40	19
H—SPEX—C	20	80 90 100 110 120 130 140 150	13.00～ 19.99					23
H—SPGX—C	25	80 90 100 110 120 130 140 150	18.00～ 24.99					28

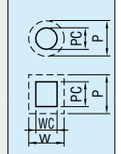
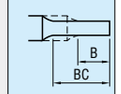
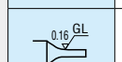
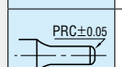
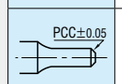
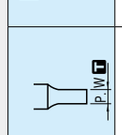
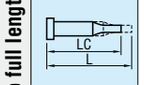
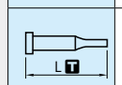
L (40)⋯B=8 If full length is (40) and D dimension is 10 ～ 25, tip length is 8mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order Catalog No. — L — P — W — R (Ⓡ only)
H—SPAS—C 25 — 100 — P18.05

Days to Ship Quotation

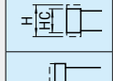
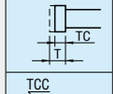
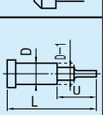
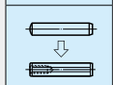
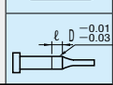
Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・HC・TC, etc.)
H—SPAS—C 25 — LC95 — P18.05 — BC30

Alterations to tip

Alteration	Code	Ⓐ	DREG	1Code
	PC WC	Tip dimension change PC≧Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) 1.500～1.999 Bmax. 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Tip dimension change PC≧P・Wmin./2 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) 1.25～1.49 Bmax. 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip Ⓨ P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓨ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓨ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ Ⓨ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length				
	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Price Quotation

Alterations to head

Alteration	Code	Ⓐ	DREG	1Code
	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1mm increments Ⓨ Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		
	TCC	Chamfering of head This improves the strength of the punch head P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank				
	UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN UC40 / 37 / L≧80 / USN40 UC50 / 47 / L≧90 / USN50 Ⓨ P・Kmax.=D−1.1 Ⓨ Details P.750 Ⓨ Can be used for L≧80 or L≧90.		
	TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

PUNCHES WITH LOCATING DOWEL HOLES

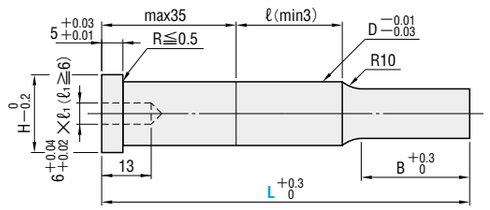
—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1605

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin D10～32 MS6—25 D38/45 SJB—CMS	Dm5	Equivalent to SKD11 60～63HRC Surface 1000～1100HV	W—SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C
HW coating with locating dowel hole		Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	HW—SP			

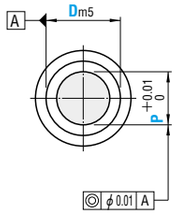
—WPC® treatment— —HW coating— RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

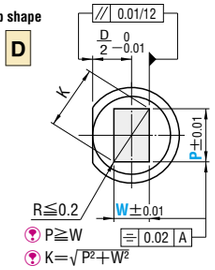


The tip edges are very slightly rounded.
Tip length (B) X>L>S

Tip shape A

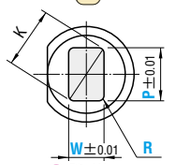


Tip shape D



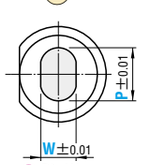
P≧W
K=√(P²+W²)

Tip shape R



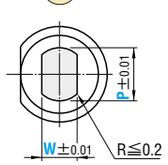
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P・Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P・Wmin.	R R	B	H
S —WPC® treatment— W—SP□S—C —HW coating— HW—SP□S—C	10	(40) 50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	W/2 (Ⓡ only) 0.15≦R<	13	13
	13	(40) 50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
	16	(40) 50 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	19
	20	(40) 50 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
	25	(40) 50 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
	(32)	(40) (50) 60 70 80 90 100 110 120 130 140 150	20.00～ 31.99	31.97	7.00			35
	(38)	(40) (50) 60 70 80 90 100 110 120 130 140 150	28.00～ 37.99	37.97	8.00			41
	(45)	(40) (50) 60 70 80 90 100 110 120 130 140 150	35.00～ 44.99	44.97	9.00			48
L —WPC® treatment— W—SP□L—C —HW coating— HW—SP□L—C	10	50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	13
	13	50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
	16	60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	19
	20	60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
	25	60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
	(32)	60 70 80 90 100 110 120 130 140 150	20.00～ 31.99	31.97	7.00			35
	(38)	60 70 80 90 100 110 120 130 140 150	28.00～ 37.99	37.97	8.00			41
	(45)	60 70 80 90 100 110 120 130 140 150	35.00～ 44.99	44.97	9.00			48
X —WPC® treatment— W—SP□X—C —HW coating— HW—SP□X—C	10	70 80 90 100 110 120 130 140 150	6.00～ 9.99	9.97	5.00		30	13
	13	70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	5.00			16
	16	80 90 100 110 120 130 140 150	10.00～ 15.99	—		—	40	19
	20	80 90 100 110 120 130 140 150	13.00～ 19.99					23
	25	80 90 100 110 120 130 140 150	18.00～ 24.99					28
	(32)	80 90 100 110 120 130 140 150	20.00～ 31.99					35
	(38)	80 90 100 110 120 130 140 150	28.00～ 37.99					41
	(45)	80 90 100 110 120 130 140 150	35.00～ 44.99					48

Ⓡ L(40): D10～25⋯B=8 If full length is (40) and D dimension is 10～25, tip length is 8mm in all cases.
D32～45⋯B=6 If full length is (40) and D dimension is 32～45, tip length is 6mm in all cases.
Ⓡ L(50)⋯B=13 If full length is (50), tip length is 13mm in all cases.
Ⓡ Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓡ Ⓓ Ⓡ Ⓔ Ⓖ: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓡ D (32), (38), and (45) are specifications available for W—SP□□—C only.

Order Catalog No. — L — P — W — R (Ⓡ only)
W—SPAS—C25 — 100 — P18.05

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.These punches are particularly effective when used for die machining with NC machines.This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Days to Ship Quotation

Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・HC・TC, etc.)
W—SPAS—C25 — LC95 — P18.05 — BC30

Alteration	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip	PC WC	Tip dimension change PC≧Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax.: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC≧P・Wmin./2 WC≧P・Wmin./2 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax.: 1.25～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 30mm longer than tip length BC.	
	PRC	Rounding of side edge 0.3≦PRC≦1 0.1mm increments Ⓡ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments Ⓡ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	—	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓡ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm). (If combined with LKC, 0.01 mm increments can be selected.)	
	LKC	Full length tolerance L +0.3 0 ⇨ +0.05 0 change		

Alteration	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to head	KC	Addition of single key flat to head	Key flat position 0°～180° 90° 270° change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 0°～180° 90° 270° 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 0°～180° 90° 270° 1° increments ⊗ Cannot be combined with KC・WKC.	
	NKC	—	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1mm increments Ⓡ Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank	UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN: UC40 / 37 / L≧80 / USN40; UC50 / 47 / L≧90 / USN50 Ⓡ P・Kmax.=D−1.1 Ⓡ Details P.750 Ⓡ Can be used for L≧80 or L≧90. Ⓡ Can be used for D10 ～ 32.		
	TPC	Dowel pin change MS6−25 that comes with the product is changed to MSTP6−25 (tapped type). ⊗ Cannot be used for D38・45.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

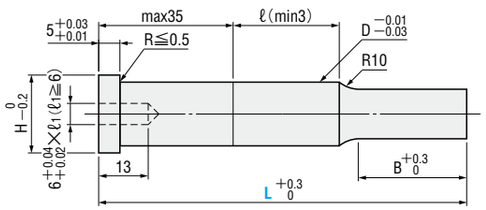
PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS・RW COATING—

PRODUCTS DATA P.1607

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Shape Tip shape	B Tip length	with dowel hole
With locating dowel hole RW coating	Dowel pin D10～32 MS6—25 D38・45 SJB—CMS	Dm5	Equivalent to SKD11 60 ～ 63HRC Surface 3100HV	RW—SP	A D R E G	S L X	—C

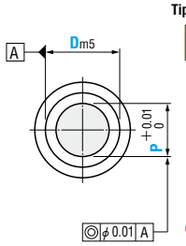
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

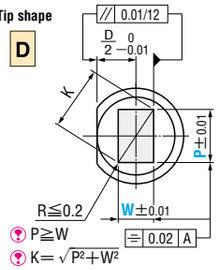


The tip edges are very slightly rounded.
Tip length (B)　X>L>S

Tip shape A

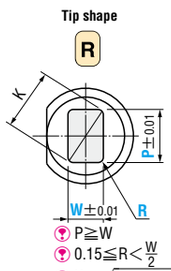


Tip shape D



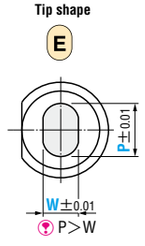
P≧W
K= $\sqrt{P^2+W^2}$

Tip shape R



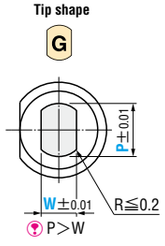
P≧W
0.15≦R< W/2
K= $\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P・Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P・Wmin.	Ⓡ R	B	H
RW—SP□S—C	10	(40) 50 60 70 80 90 100 110 120 130 140 150	3.00 ～ 9.99	9.97	2.50	W/2 (Ⓡ only) ≦R< W/2	13	13
	13	(40) 50 60 70 80 90 100 110 120 130 140 150	6.00 ～ 12.99	12.97	3.00			16
	16	(40) 50 60 70 80 90 100 110 120 130 140 150	10.00 ～ 15.99	15.97	4.00		19	19
	20	(40) 50 60 70 80 90 100 110 120 130 140 150	13.00 ～ 19.99	19.97	5.00			23
	25	(40) 50 60 70 80 90 100 110 120 130 140 150	18.00 ～ 24.99	24.97	6.00			28
RW—SP□L—C	10	50 60 70 80 90 100 110 120 130 140 150	3.00 ～ 9.99	9.97	2.50		19	13
	13	50 60 70 80 90 100 110 120 130 140 150	6.00 ～ 12.99	12.97	3.00			16
	16	60 70 80 90 100 110 120 130 140 150	10.00 ～ 15.99	15.97	4.00		25	19
	20	60 70 80 90 100 110 120 130 140 150	13.00 ～ 19.99	19.97	5.00			23
	25	60 70 80 90 100 110 120 130 140 150	18.00 ～ 24.99	24.97	6.00			28
RW—SP□X—C	10	70 80 90 100 110 120 130 140 150	6.00 ～ 9.99	9.97	5.00		30	13
	13	70 80 90 100 110 120 130 140 150	6.00 ～ 12.99	12.97	5.00			16
	16	80 90 100 110 120 130 140 150	10.00 ～ 15.99	——		—	40	19
	20	80 90 100 110 120 130 140 150	13.00 ～ 19.99					23
	25	80 90 100 110 120 130 140 150	18.00 ～ 24.99					28

L (40): If full length is (40), tip length is 8mm in all cases.
Ⓐ: P>D−0.03 ⋯ℓ=0　If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓓ Ⓡ Ⓔ Ⓖ: P・K>D−0.05 ⋯ℓ=0　If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No. — L — P — W — R (Ⓡ only)
RW—SPAS—C 25 — 100 — P18.05

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

Example

■Uses of punches with locating dowel holes⋯⋯
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy. These punches are particularly effective when used for die machining with NC machines. This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Days to Ship: Quotation

Alterations: Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・HC・TC⋯etc.)
RW—SPAS—C 25 — LC95 — P18.05 — BC30

Alterations		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip	PC WC	PC WC	Tip dimension change PC≧ Pmin./2 0.01mm increments P(PC) / Bmax: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC/WC≧ P・Wmin./2 0.01mm increments ⊗Cannot be used for tip X. P(PC)・W(WC) / Bmax: 1.25～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
	BC	BC	Tip length change 2≦BC≦Bmax 0.1mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax 0.1mm increments Full length L must be at least 30mm longer than tip length BC.	
	PRC	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2	——	
Alterations to full length	LC	LC	Full length change 25+B(BC)≦LC<L 0.1mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm).	Full length change 30+B(BC)≦LC<L 0.1mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
			(If combined with LKC, 0.01mm increments can be selected.)		
	LKC	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		

Alterations		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
		HC	Head diameter change D≦HC<H 0.1mm increments ⊗Cannot be used for retainer set products		
		TC	Head thickness change 2≦TC<5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC. ⊗Cannot be used for retainer set products		Quotation
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank		UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN: UC40 / 37 / L≧80 / USN40; UC50 / 47 / L≧90 / USN50 P・Kmax.=D−1.1　Details P.750 Can be used for L≧80 or L≧90.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead　ℓ≧3 ⇨ ℓ=0		

Price: Quotation

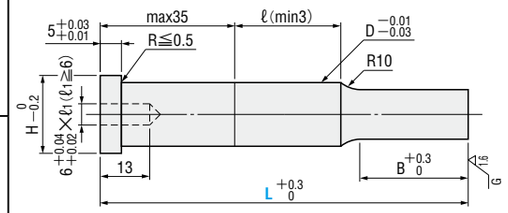
PUNCHES WITH LOCATING DOWEL HOLES
—DLC COATING—

PRODUCTS DATA P.1605～1609

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Shape Tip shape	B Tip length	with dowel hole
With locating dowel hole DLC coating	Dowel pin MS6—25	D_{m5}	Equivalent to SKD11 60～63HRC Surface 3000HV and above	N—SP NW—SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

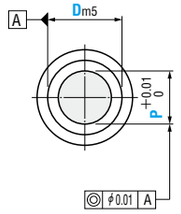
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

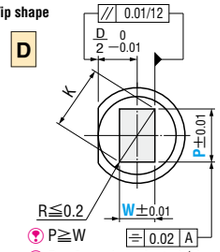


Ⓥ The tip end is ground before the coating is applied.
Tip length (B) X>L>S
Ⓥ The tip edges of foundation WPC® are slightly rounded.

Tip shape A

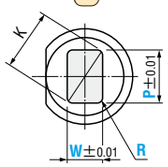


Tip shape D



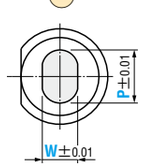
Ⓥ P≧W
Ⓥ R=0 can be selected (However, foundation WPC® cannot be used.)
Ⓥ $K=\sqrt{P^2+W^2}$

Tip shape R



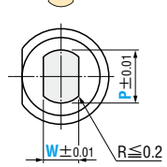
Ⓥ P≧W
Ⓥ $0.15 \leqq R < \frac{W}{2}$
Ⓥ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



Ⓥ P>W

Tip shape G



Ⓥ P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P·Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P·Wmin.	Ⓡ R	B	H
S N—SP□S—C	10	(40) 50 60 70 80 90 100 110 120 130 140 150	3.00～9.99	9.97	2.50	W(Ⓡ only) 0.15≦R< 2	13	13
	13	(40) 50 60 70 80 90 100 110 120 130 140 150	6.00～12.99	12.97	3.00			16
—Foundation WPC®— NW—SP□S—C	16	(40) 50 60 70 80 90 100 110 120 130 140 150	10.00～15.99	15.97	4.00		19	19
	20	(40) 50 60 70 80 90 100 110 120 130 140 150	13.00～19.99	19.97	5.00			23
	25	(40) 50 60 70 80 90 100 110 120 130 140 150	18.00～24.99	24.97	6.00			28
L N—SP□L—C	10	50 60 70 80 90 100 110 120 130 140 150	3.00～9.99	9.97	2.50		19	13
	13	50 60 70 80 90 100 110 120 130 140 150	6.00～12.99	12.97	3.00			16
—Foundation WPC®— NW—SP□L—C	16	60 70 80 90 100 110 120 130 140 150	10.00～15.99	15.97	4.00		25	19
	20	60 70 80 90 100 110 120 130 140 150	13.00～19.99	19.97	5.00			23
	25	60 70 80 90 100 110 120 130 140 150	18.00～24.99	24.97	6.00			28
X N—SP□X—C	10	70 80 90 100 110 120 130 140 150	6.00～9.99	9.97	5.00		30	13
	13	70 80 90 100 110 120 130 140 150	6.00～12.99	12.97	5.00			16
—Foundation WPC®— NW—SP□X—C	16	80 90 100 110 120 130 140 150	10.00～15.99	———		—	40	19
	20	80 90 100 110 120 130 140 150	13.00～19.99					23
	25	80 90 100 110 120 130 140 150	18.00～24.99					28

Ⓥ L(40)···B=8 If full length is (40) and D dimension is 10～25, tip length is 8mm in all cases.
Ⓥ Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓥ Ⓓ Ⓡ Ⓔ Ⓖ: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order: Catalog No. — L — P — W — R(Ⓡ only)
N—SPAS—C 25 — 100 — P18.05

Days to Ship: Quotation

■**Effects of DLC coating**
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal. See the product data for details. P.1609

Alterations: Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC·HC·TC···etc.)
N—SPAS—C 25 — LC95 — P18.05 — BC30

Alterations	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip	PC WC	Tip dimension change $PC \geqq \frac{Pmin}{2}$ 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change $PC, WC \geqq \frac{P \cdot Wmin}{2}$ 0.01mm increments Ⓧ Cannot be used for tip X. P(PC)·W(WC) / Bmax: 1.25～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax 0.1mm increments Ⓥ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax 0.1mm increments Ⓥ Full length L must be at least 30mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments Ⓥ PRC≦(P−0.2)/2 Ⓧ Cannot be combined with PCC. Ⓧ It is PRC±0.1 for foundation WPC®.	———	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments Ⓥ PCC≦(P−0.2)/2 Ⓧ Cannot be combined with PRC. Ⓧ Can not be used for foundation WPC®.	———	
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ Ⓥ (P dimension can be selected in 0.001mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
	SC	Tip lapping Ⓥ P dimension tolerance & increments remain unchanged. Raw material before coating is treated. Ⓧ Tip Ⓓ shape corner R=0 cannot be selected Ⓧ Cannot be combined with for foundation WPC®.		
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1mm increments Ⓥ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm).	Full length change 30+B(BC)≦LC<L 0.1mm increments Ⓥ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm). (If combined with LKC, 0.01mm increments can be selected.)	
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		

Alterations	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to head	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments Ⓧ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments Ⓧ Cannot be combined with KC·WKC.	
	NKC	———	No key flat	
	HC	Head diameter change D≦HC<H 0.1mm increments Ⓧ Cannot be used for retainer set products		
	TC	Head thickness change 2≦TC<5 0.1mm increments Ⓥ Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC. Ⓧ Cannot be used for retainer set products		
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank	UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN UC40 / 37 / L≧80 / USN40 UC50 / 47 / L≧90 / USN50 Ⓥ P·Kmax.=D−1.1 Ⓥ Details P.750 Ⓥ Can be used for L≧80 or L≧90.		
	TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price: Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS—

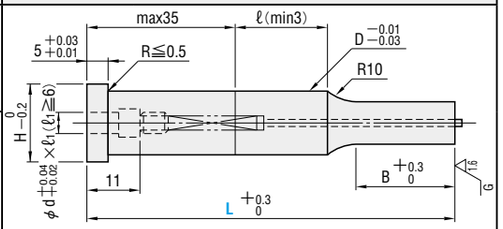
Calculating the projection length of the jector pin (reference value) P.241

● For details of jector holes, refer to Jector Punch Blanks. P.236
● For details of jector pins, refer to Jector Pin Sets. P.241

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
With locating dowel hole	Dowel pin D10 ～ 32 MS6—25 D38/45 SJB—CMS	D_{m5}	Equivalent to SKD 11 60 ～ 63HRC	SJ —Spring reinforced type— SJV	A D R E G	S L X	—C

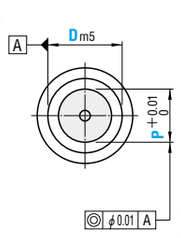
RoHS

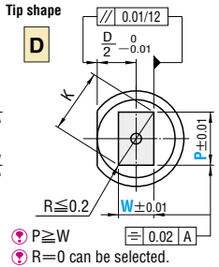
The tip shape can be selected from Tip shape A～G in the figure below.



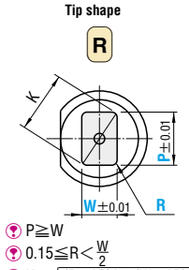
D	d
10～32	6
38・45	10

Tip length (B) X>L>S

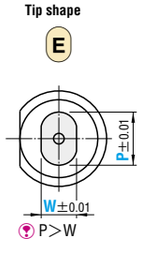
Tip shape A


Tip shape D


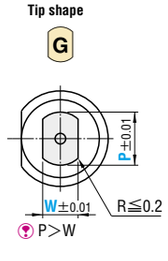
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R


P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E


P>W

Tip shape G


P>W

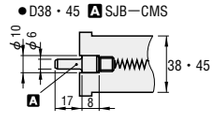
Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P・Kmax.	0.01mm increments D R E G P・Wmin.	0.01mm increments R	B	H
S Spring reinforced type (D10 ～ 32) SJAS—C SJDS—C SJRS—C SJES—C SJGS—C	10	60 70 80 90 100 110 120	3.00～ 9.99	9.97	3.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	13
	13	60 70 80 90 100 110 120	6.00～ 12.99	12.97	6.00			16
SJVAS—C SJVDS—C SJVRS—C SJVES—C SJVGS—C	16	(60) 70 80 90 100 110 120	10.00～ 15.99	15.97	6.00		19	19
	20	(60) 70 80 90 100 110 120	13.00～ 19.99	19.97	6.00			23
	25	(60) 70 80 90 100 110 120	18.00～ 24.99	24.97	6.00			28
	32	(60) 70 80 90 100 110 120	20.00～ 31.99	31.97	7.00			35
	(38)	(60) 70 80 90 100 110 120	28.00～ 37.99	37.97	8.00			41
	(45)	(60) 70 80 90 100 110 120	35.00～ 44.99	44.97	9.00			48
L Spring reinforced type (D10 ～ 32) SJAL—C SJDL—C SJRL—C SJEL—C SJGL—C	10	70 80 90 100 110 120	3.00～ 9.99	9.97	3.00		19	13
	13	70 80 90 100 110 120	6.00～ 12.99	12.97	6.00			16
SJVAL—C SJVDL—C SJVRL—C SJVEL—C SJVGL—C	16	70 80 90 100 110 120	10.00～ 15.99	15.97	6.00		25	19
	20	70 80 90 100 110 120	13.00～ 19.99	19.97	6.00			23
	25	70 80 90 100 110 120	18.00～ 24.99	24.97	6.00			28
	32	70 80 90 100 110 120	20.00～ 31.99	31.97	7.00			35
	(38)	70 80 90 100 110 120	28.00～ 37.99	37.97	8.00			41
	(45)	70 80 90 100 110 120	35.00～ 44.99	44.97	9.00			48
X Spring reinforced type SJAX—C SJDX—C SJRX—C SJEX—C SJGX—C	10	80 90 100 110 120	6.00～ 9.99	9.97	6.00		30	13
	13	80 90 100 110 120	6.00～ 12.99	12.97	6.00			16
SJVAX—C SJVDX—C SJVRX—C SJVEX—C SJVGX—C	16	100 110 120	10.00～ 15.99	—	—	—	40	19
	20	100 110 120	13.00～ 19.99					23
	25	100 110 120	18.00～ 24.99					28
	32	100 110 120	20.00～ 31.99					35

The spring constant of SJV□□—C is as twice that of SJ□□—C.
L(60)⋯→B=13 If the full length is (60), the tip length is 13 mm in all cases.
Ⓐ: P>D−0.03⋯→ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P・K>D−0.05⋯→ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D (38) and (45) are specifications available for SJ□□—C only. Spring reinforced types are available for D10 ～ 32 only.

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch.The large spring load results in more effective scrap removal.

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

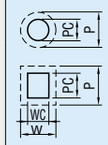
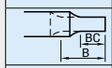
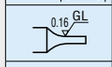
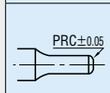
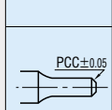
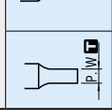
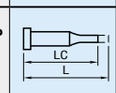
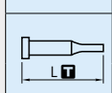
● D38・45 A SJB—CMS


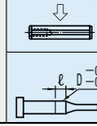
・Finished for retainer
・For details on retainers **P.731** and later pages.
・Optional backing plates are available. Only the backing plates for ϕ38・ϕ45 punches have a ϕ10.2 hole for a stepped dowel pin. **P.236**

Order Catalog No. — L — P — W — R (R only)
SJDS—C 38 — 100 — P30.00 — W18.00

Days to Ship Quotation

Alterations Catalog No. — L (LC) — P (PC) — W (WC) — R — (BC・HC・TC, etc.)
SJAS—C 25 — LC95 — P18.05 — PKC

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for tip X.	
			D / PCmin.: 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000; 32 15.000; 38 23.000; 45 30.000	D / PC・WCmin.: 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00; 32 6.00; 38 7.00; 45 8.00	
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip ⓟ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓟ PRC≦(P−d_1−0.5)/2 d_1 dimension details P.236 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓟ PCC≦(P−d_1−0.5)/2 d_1 dimension details P.236 ⊗ Cannot be combined with PRC.	—	Quotation
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ ⓟ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments ⓟ Tip length B is reduced by (L−LC). (If combined with LKC・LKZ, 0.01 mm increments can be selected.) ⓟ Projection length of jector pin is 2 mm.		
		LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change L+0.3 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>25.		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head		NKC	——	No key flat	Quotation
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1mm increments ⓟ Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38・45.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS・DICOAT® TREATMENT—

PRODUCTS DATA P.1599

PUNCHES

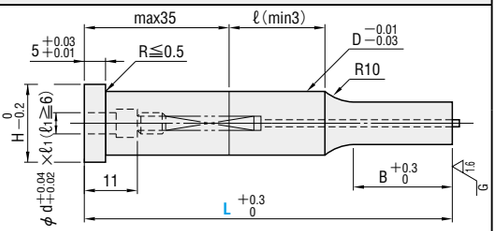
Calculating the projection length of the jector pin (reference value) P.241

● For details of jector holes, refer to Jector Punch Blanks. P.236
● For details of jector pins, refer to Jector Pin Sets. P.241

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
Jector with locating dowel hole, Dicoat® treatment	Dowel pin D10～32 MS6—25 D38・45 SJB—CMS	Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	T—SJ —Spring reinforced type— T—SJV	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L	—C

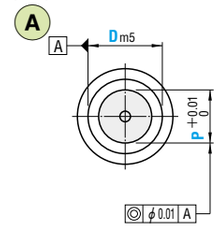
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

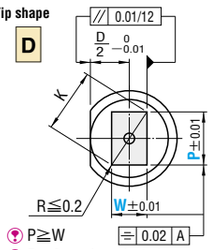


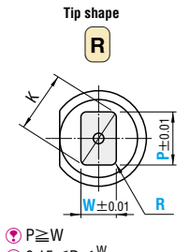
D	d
10～32	6
38・45	10

Tip length (B) L＞S

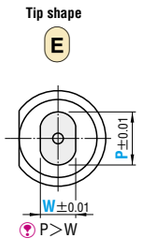
Tip shape A


Ⓟ P≧W
Ⓟ R=0 can be selected.
Ⓟ K=√(P²+W²)

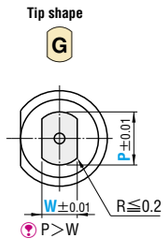
Tip shape D


Tip shape R


Ⓟ P≧W
Ⓟ 0.15≦R＜W/2
Ⓟ K=√((P−2R)²+(W−2R)²+2R

Tip shape E


Ⓟ P＞W

Tip shape G


Ⓟ P＞W

Catalog No. Type	D	L							0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P・Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P・Wmin.	Ⓡ R	B	H
S Spring reinforced type (D10～32)	10	60	70	80	90	100			3.00～ 9.99	9.97	3.00	0.15≦R＜W/2 (Ⓡ only)	13	13
	13	60	70	80	90	100			6.00～ 12.99	12.97	6.00			16
T—SJAS—C T—SJVAS—C	16	(60)	70	80	90	100			10.00～ 15.99	15.97	6.00		19	19
T—SJDS—C T—SJVDS—C	20	(60)	70	80	90	100			13.00～ 19.99	19.97	6.00			23
T—SJRS—C T—SJVRS—C	25	(60)	70	80	90	100			18.00～ 24.99	24.97	6.00			28
T—SJES—C T—SJVES—C	32	(60)	70	80	90	100	110	120	20.00～ 31.99	31.97	7.00			35
T—SJGS—C T—SJVGS—C	(38)	(60)	70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)	(60)	70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48
L Spring reinforced type (D10～32)	10		70	80	90	100			3.00～ 9.99	9.97	3.00		19	13
	13		70	80	90	100			6.00～ 12.99	12.97	6.00			16
T—SJAL—C T—SJVAL—C	16		70	80	90	100			10.00～ 15.99	15.97	6.00		25	19
T—SJDL—C T—SJVDL—C	20		70	80	90	100			13.00～ 19.99	19.97	6.00			23
T—SJRL—C T—SJVRL—C	25		70	80	90	100			18.00～ 24.99	24.97	6.00			28
T—SJEL—C T—SJVEL—C	32		70	80	90	100	110	120	20.00～ 31.99	31.97	7.00			35
T—SJGL—C T—SJVGL—C	(38)		70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)		70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48

Ⓟ The spring constant of T—SJV□□—C is twice that of T—SJ□□—C.
Ⓟ L(60)⋯B=13 If the full length is (60), the tip length is 13 mm in all cases.
Ⓟ Ⓐ: P＞D—0.03⋯ℓ=0 If P＞D—0.03 for a round punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
Ⓟ Ⓓ Ⓡ Ⓔ Ⓖ: P・K＞D—0.05⋯ℓ=0 If P・K＞D—0.05 for a shaped punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
Ⓟ D(38) and (45) are specifications available for T—SJ□□—C only. Spring reinforced types are available for D10～32 only.

Order

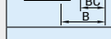
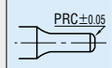
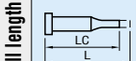
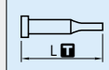
Catalog No.	L	P	W	R (Ⓡ only)
T—SJAS—C 25	100	P18.05		

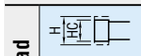
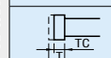
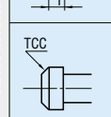
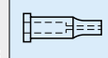
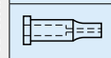
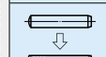
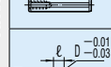
Days to Ship: Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations

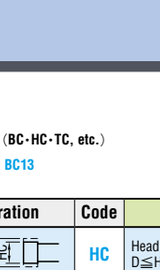
Catalog No.	L (LC)	P	W	R	(BC・HC・TC, etc.)
T—SJDS—C 38	100	P20.00	W10.00		BC13

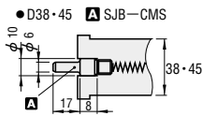
Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓟ PRC≦(P—d_1—0.5)/2 d_1 dimension details P236	——	
Alterations to full length		LC	Full length change (reduction in tip length) LC＜L 0.1 mm increments Ⓟ Tip length B is reduced by (L—LC). (If combined with LKC, 0.01 mm increments can be selected.) Ⓟ Projection length of jector pin is 2mm.		
		LKC	Full length tolerance change $L\ ^{+0.3}_{0} \Rightarrow\ ^{+0.05}_{0}$		Quotation
Alterations to head		KC	Addition of single key flat to head	90°/180°/270° Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90°/180°/270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90°/180°/270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to head		HC	Head diameter change D≦HC＜H 0.1 mm increments		Quotation
		TC	Head thickness change 3.5≦TC＜5 0.1mm increments Ⓟ Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H—D)/2		
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38・45.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.





- Finished for retainer
- For details on retainers **P.731** and later pages.
- Optional backing plates are available. Only the backing plates for ϕ38・ϕ45 punches have a ϕ10.2 hole for a stepped dowel pin. **P.236**

Price: Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS・TiCN COATING—

PRODUCTS DATA P.1604

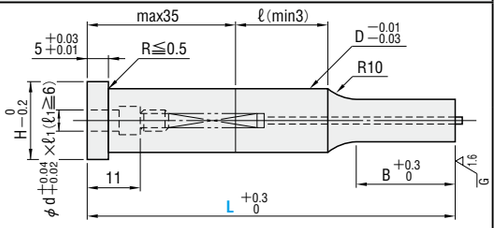
Calculating the projection length of the jector pin (reference value) P.241

- For details of jector holes, refer to Jector Punch Blanks. P.236
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKD11 60～63HRC Surface 3000HV	H—SJ —Spring reinforced type— H—SJV	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

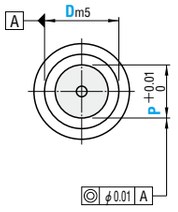
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.



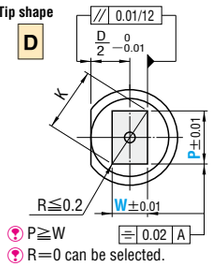
The tip end is ground before the coating is applied.
Tip length (B) X>L>S

Tip shape A

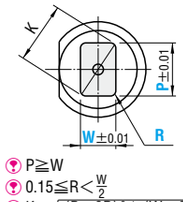


P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape D

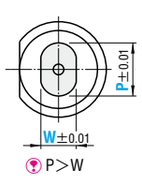


Tip shape R



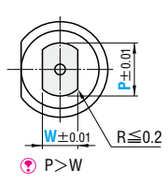
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type		D	L							0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P·Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P·Wmin.	Ⓡ R	B	H
S	Spring reinforced type														
H—SJAS—C	H—SJVAS—C	10	60	70	80	90	100	110	120	3.00～ 9.99	9.97	3.00	$\frac{W}{2}$ (Ⓡ only)	13	13
H—SJDS—C	H—SJVDS—C	13	60	70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
H—SJRS—C	H—SJVRS—C	16	(60)	70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		19	19
H—SJES—C	H—SJVES—C	20	(60)	70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
H—SJGS—C	H—SJVGS—C	25	(60)	70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
L	Spring reinforced type														
H—SJAL—C	H—SJVAL—C	10		70	80	90	100	110	120	3.00～ 9.99	9.97	3.00		19	13
H—SJDL—C	H—SJVDL—C	13		70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
H—SJRL—C	H—SJVRL—C	16		70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		25	19
H—SJEL—C	H—SJVEL—C	20		70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
H—SJGL—C	H—SJVGL—C	25		70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
X	Spring reinforced type														
H—SJAX—C	H—SJVAX—C	10			80	90	100	110	120	6.00～ 9.99	9.97	6.00		30	13
H—SJDX—C	H—SJVDX—C	13			80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
H—SJRX—C	H—SJVRX—C	16					100	110	120	10.00～ 15.99	———		—	40	19
H—SJEX—C	H—SJVEX—C	20					100	110	120	13.00～ 19.99					23
H—SJGX—C	H—SJVGX—C	25					100	110	120	18.00～ 24.99					28

The spring constant of H—SJV□□—C is twice that of H—SJ□□—C.
L(60)⋯B=13 If the full length is (60), the tip length is 13 mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓓ Ⓡ Ⓔ Ⓖ: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	R (Ⓡ only)
H—SJEL—C 16	70	P12.00	W6.00	

Days to Ship: Quotation

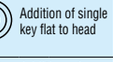
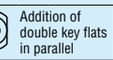
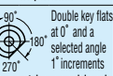
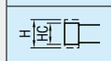
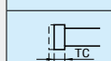
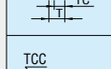
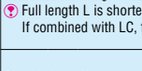
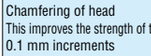
■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

- Finished for retainer
- For details on retainers, refer to **P.731** and later pages.

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC・HC・TC, etc.)
H—SJAS—C 10	LC95	P9.50			PKC

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin.: 10 2.800; 13 5.000; 16 8.000; 20 9.000; 25 9.000	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for tip length X. D / PC・WCmin.: 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00	
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape Ⓓ corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P236 ⊗ Cannot be combined with PCC.	———	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension details P236 ⊗ Cannot be combined with PRC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change $P・W\pm0.01$ ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to head		KC	Addition of single key flat to head	 Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	 Double key flats in parallel Can be combined with KC.	
		KFC	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0°and a selected angle 1°increments ⊗ Cannot be combined with KC・WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		Quotation
		TCC	Chamfering of head This improves the strength of the punch head. P1611 0.1 mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price: Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1605

● For details of jector holes, refer to Jector Punch Blanks. P.236
● For details of jector pins, refer to Jector Pin Sets. P.241

Calculating the projection length of the jector pin (reference value) P.241

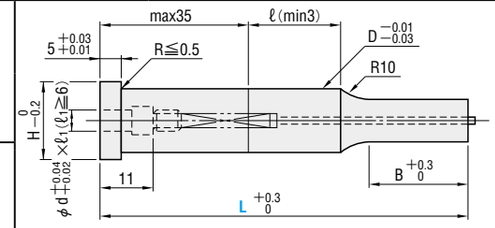
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin D10～32 MS6—25 / D38・45 SJB—CMS	D_{m5}	Equivalent to SKD11 60～63HRC Surface 1000～1100HV	W—SJ Spring reinforced type W—SJV	A D R E G	S L X	—C
HW coating with locating dowel hole			Equivalent to SKD11 60～63HRC Surface 3000HV	HW—SJ Spring reinforced type HW—SJV			

—WPC® treatment—

—HW coating—

RoHS

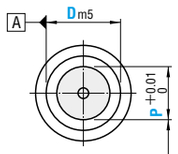
The tip shape can be selected from Tip shape A～G in the figure below.



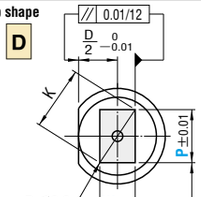
D	d
10～32	6
38・45	10

The tip edges are very slightly rounded.
Tip length (B) X>L>S

Tip shape A

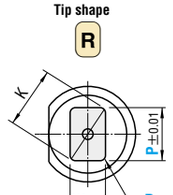


Tip shape D



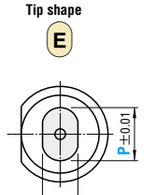
P≧W
K=√(P²+W²)

Tip shape R



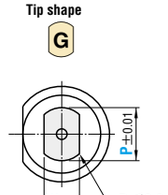
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²)+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L							0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
S —WPC® treatment— W—SJ□S—C	10	60	70	80	90	100	110	120	3.00～ 9.99	9.97	3.00	0.15≦R<W/2 (R only)	13	13
Spring reinforced type (D10～32) W—SJ□S—C	13	60	70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
	16	(60)	70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		19	19
W—SJV□S—C —HW coating— (D10～25)	20	(60)	70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
	25	(60)	70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
HW—SJ□S—C	(32)	(60)	70	80	90	100	110	120	20.00～ 31.99	31.97	7.00		19	35
Spring reinforced type (D10～25) HW—SJV□S—C	(38)	(60)	70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)	(60)	70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48
L —WPC® treatment— W—SJ□L—C	10		70	80	90	100	110	120	3.00～ 9.99	9.97	3.00		19	13
Spring reinforced type (D10～32) W—SJ□L—C	13		70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
	16		70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		25	19
W—SJV□L—C —HW coating— (D10～25)	20		70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
	25		70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
HW—SJ□L—C	(32)		70	80	90	100	110	120	20.00～ 31.99	31.97	7.00			35
Spring reinforced type (D10～25) HW—SJV□L—C	(38)		70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)		70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48
X —WPC® treatment— W—SJ□X—C	10			80	90	100	110	120	6.00～ 9.99	9.97	6.00		30	13
Spring reinforced type W—SJV□X—C	13			80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
—HW coating— (D10～25)	16					100	110	120	10.00～ 15.99	—	—	—	40	19
HW—SJ□X—C	20					100	110	120	13.00～ 19.99					23
Spring reinforced type (D10～25) HW—SJV□X—C	25					100	110	120	18.00～ 24.99					28
	(32)					100	110	120	20.00～ 31.99					35

The spring constants of W—SJV□□—C and HW—SJV□□—C are twice those of W—SJ□□—C and HW—SJ□□—C respectively.
L (60)…B=13 If full length is (60), tip length is 13 mm in all cases.
Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05, for a shaped punch, $D^{0.01}_{-0.03}$ (press-in lead) is not included.
D (32) is a specification available for W—SJ and W—SJV only.
D (38) and (45) are specifications available for W—SJ only.
W—SJV is available for D10—32 only, and HW—SJV is available for D10～25 only.

Order: Catalog No. — L — P — W — R (R only)
W—SJDS—C 38 — 100 — P30.00 — W18.00

Days to Ship: Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations: Catalog No. — L (LC) — P (PC) — W (WC) — R — (BC・HC・TC, etc.) — PKC
W—SJAS—C 25 — LC95 — P18.05

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip	PC WC	PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for tip X.	Quotation
	BC	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
	PRC±0.1	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−d_1−0.5)/2 d_1 dimension details P.236 ⊗ Cannot be combined with PCC.	—	
	PCC±0.1	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (?) PCC≦(P−d_1−0.5)/2 d_1 dimension details P.236 ⊗ Cannot be combined with PRC.	—	Quotation
	P W	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (?) (P dimension can be selected in 0.001 mm increments.) ⊗ HW coating cannot be used for D>13	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
Alterations to full length	LC	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments (?) Tip length B is reduced by (L—LC). (If combined with LKC, 0.01 mm increments can be selected.) (?) Projection length of jector pin is 2 mm.		
	LT	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and 180° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and 180° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		NKC	—	No key flat	Quotation
	HC	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	TC	Head thickness change 3.5≦TC<5 0.1mm increments (?) Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.		
	TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H—D)/2		
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38・45.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price: Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS・RW COATING—

PRODUCTS DATA P.1607

Calculating the projection length of the jector pin (reference value) P.241

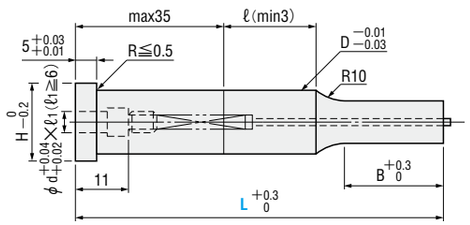
● For details of jector holes, refer to Jector Punch Blanks. P.236
● For details of jector pins, refer to Jector Pin Sets. P.241

Type	A	Shank diameter D tolerance	M H
RW coating with locating dowel hole	Dowel pin D10～32 MS6—25 D38・45 SJB—CMS	D m5	Equivalent to SKD11 60～63HRC Surface 3100HV

Catalog No. Type	Tip shape	B Tip length	with dowel hole
RW—SJ Spring reinforced type RW—SJV	A D R E G	S L X	—C

RoHS

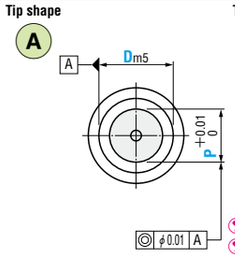
The tip shape can be selected from Tip shape A～G in the figure below.



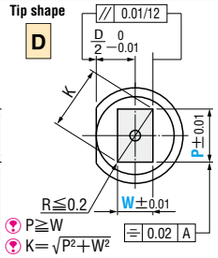
D	d
10～32	6
38・45	10

The tip edges are very slightly rounded.
Tip length (B) X>L>S

Tip shape A

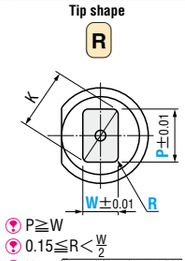


Tip shape D



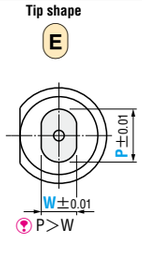
P≧W
K=√(P²+W²)

Tip shape R



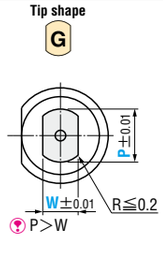
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L							0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
RW—SJ□S—C Spring reinforced type RW—SJV□S—C (S)	10	60	70	80	90	100	110	120	3.00～9.99	9.97	3.00	0.15≦R<W/2 (Ⓡ only)	13	13
	13	60	70	80	90	100	110	120	6.00～12.99	12.97	6.00			16
	16	(60)	70	80	90	100	110	120	10.00～15.99	15.97	6.00		19	19
	20	(60)	70	80	90	100	110	120	13.00～19.99	19.97	6.00			23
	25	(60)	70	80	90	100	110	120	18.00～24.99	24.97	6.00			28
RW—SJ□L—C Spring reinforced type RW—SJV□L—C (L)	10		70	80	90	100	110	120	3.00～9.99	9.97	3.00		19	13
	13		70	80	90	100	110	120	6.00～12.99	12.97	6.00			16
	16		70	80	90	100	110	120	10.00～15.99	15.97	6.00		25	19
	20		70	80	90	100	110	120	13.00～19.99	19.97	6.00			23
	25		70	80	90	100	110	120	18.00～24.99	24.97	6.00			28
RW—SJ□X—C Spring reinforced type RW—SJV□X—C (X)	10			80	90	100	110	120	6.00～9.99	9.97	6.00		30	13
	13			80	90	100	110	120	6.00～12.99	12.97	6.00			16
	16					100	110	120	10.00～15.99	———		—	40	19
	20					100	110	120	13.00～19.99					23
	25					100	110	120	18.00～24.99					28

The spring constant of RW—SJV□□—C is as twice that of RW—SJ□□—C.
L(60)…B=13 If full length is (60), tip length is 13mm in all cases.
Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	R (Ⓡ only)
RW—SJDS—C25	100	P30.00	W18.00	

Days to Ship Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch.The large spring load results in more effective scrap removal.

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

Alterations

Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・HC・TC…etc.)
RW—SJAS—C 25 — LC95 — P18.05 — HC27

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin 0.01mm increments	Tip dimension change PC・WC≧PC・WCmin 0.01mm increments ⊗Cannot be used for tip X.	Quotation

D	PCmin
10	2.800
13	5.000
16	8.000
20	9.000
25	9.000
32	15.000
38	23.000
45	30.000

D	PC・WCmin
10	2.80
13	5.00
16	5.00
20	5.00
25	5.00
32	6.00
38	7.00
45	8.00

Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d1−0.5)/2 d1 dimension P.236	———	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1mm increments Tip length B is reduced by (L—LC). (If combined with LKC, 0.01mm increments can be selected.) Projection length of jector pin is 2mm.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		NKC	———	No key flat	Quotation
		HC	Head diameter change D≦HC<H 0.1mm increments ⊗Cannot be used for retainer set products		
		TC	Head thickness change 3.5≦TC<5 0.1mm increments Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC. ⊗Cannot be used for retainer set products		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H—D)/2		
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS・DLC COATING—

PRODUCTS DATA P.1605～P.1609

● For details of jector holes, refer to Jector Punch Blanks. P.236
● For details of jector pins, refer to Jector Pin Sets. P.241

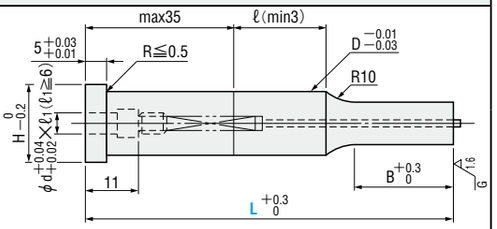
Calculating the projection length of the jector pin (reference value) P.241

Type	A	Shank diameter D tolerance	M H
DLC coating with locating dowel hole	Dowel pin MS6—25	D m5	Equivalent to SKD11 60～63HRC Surface 3000HV and above

Catalog No. Type	Tip shape	B Tip length	with dowel hole
N—SJ	Ⓐ	S	—C
NW—SJ	D		
–Spring reinforced type–			
N—SJV	R	L	
NW—SJV	E	X	
	G		

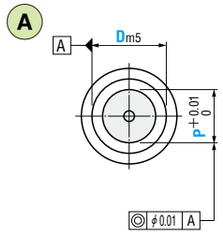
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

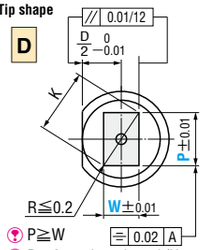


The tip end is ground before the coating is applied.
Tip length (B) X>L>S
The tip edges of foundation WPC® are slightly rounded.

Tip shape A

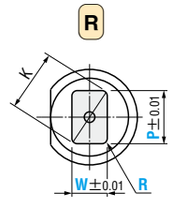


Tip shape D



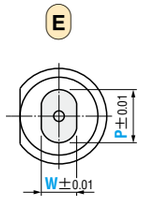
P≧W
R=0 can be selected (However, foundation WPC® cannot be used.)
$K=\sqrt{P^2+W^2}$

Tip shape R



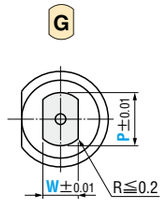
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L							0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
S	10	60	70	80	90	100	110	120	3.00 ～ 9.99	9.97	3.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	13
Spring reinforced type	13	60	70	80	90	100	110	120	6.00 ～ 12.99	12.97	6.00			16
N—SJ□S—C N—SJV□S—C	16	(60)	70	80	90	100	110	120	10.00 ～ 15.99	15.97	6.00		19	19
–Foundation WPC®–	20	(60)	70	80	90	100	110	120	13.00 ～ 19.99	19.97	6.00			23
NW—SJ□S—C NW—SJV□S—C	25	(60)	70	80	90	100	110	120	18.00 ～ 24.99	24.97	6.00			28
L	10		70	80	90	100	110	120	3.00 ～ 9.99	9.97	3.00		19	13
Spring reinforced type	13		70	80	90	100	110	120	6.00 ～ 12.99	12.97	6.00			16
N—SJ□L—C N—SJV□L—C	16		70	80	90	100	110	120	10.00 ～ 15.99	15.97	6.00		25	19
–Foundation WPC®–	20		70	80	90	100	110	120	13.00 ～ 19.99	19.97	6.00			23
NW—SJ□L—C NW—SJV□L—C	25		70	80	90	100	110	120	18.00 ～ 24.99	24.97	6.00			28
X	10			80	90	100	110	120	6.00 ～ 9.99	9.97	6.00		30	13
Spring reinforced type	13			80	90	100	110	120	6.00 ～ 12.99	12.97	6.00			16
N—SJ□X—C N—SJV□X—C	16					100	110	120	10.00 ～ 15.99	———		—	40	19
–Foundation WPC®–	20					100	110	120	13.00 ～ 19.99					23
NW—SJ□X—C NW—SJV□X—C	25					100	110	120	18.00 ～ 24.99					28

The spring constants of N—SJV□□—C・NW—SJV□□—C are twice those of N—SJ□□—C・NW—SJ□□—C respectively.
L(60)…B=13 If full length is (60), tip length is 13mm in all cases.
Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	R (R only)
N—SJEL—C16	70	P12.00	W6.00	

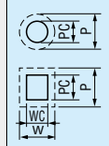
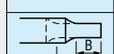
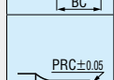
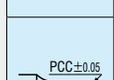
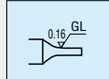
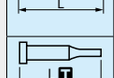
Days to Ship: Quotation

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal. See the product data for details. P.1609

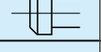
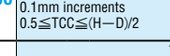
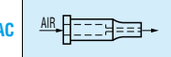
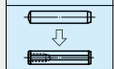
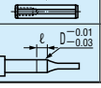
・Finished for retainer
・For details on retainers **P.731** and later pages.

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・HC・TC…etc.)
N—SJAS—C10	LC95	P9.50			HC12

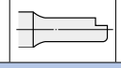
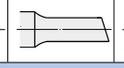
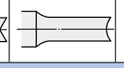
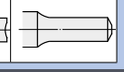
Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin 0.01mm increments (If combined with PKC, 0.001mm increments.)	Tip dimension change PC・WC≧PC・WCmin 0.01mm increments ⊗Cannot be used for tip length X.	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗Cannot be combined with PCC. ⊗It is PRC±0.1 for foundation WPC®.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−d1−0.5)/2 d1 dimension P.236 ⊗Cannot be combined with PRC. ⊗Can not be used for foundation WPC®.	———	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
		SC	Tip lapping P dimension tolerance & increments remain unchanged. Raw material before coating is treated. ⊗Tip D shape corner R=0 cannot be selected ⊗Can not be used for foundation WPC®.		
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1mm increments Tip length B is reduced by (L−LC). (If combined with LKC, 0.01mm increments can be selected.) Projection length of jector pin is 2mm.		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		

Price: Quotation

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC・WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1mm increments ⊗Cannot be used for retainer set products		
		TC	Head thickness change 3.5≦TC<5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC. ⊗Cannot be used for retainer set products		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2		
Alterations to shank		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

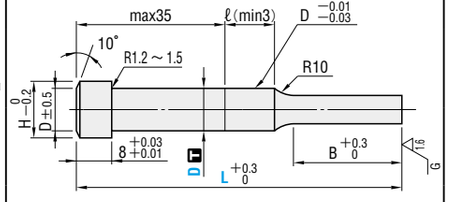
PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS—

PRODUCTS DATA P.1611

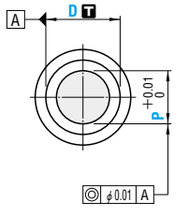
Punch tip shear angle alterations P.232	1F	2F	3F	4F	5F	6F	7F
							

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61～64HRC	AP	A D R E G	S
		Powdered high-speed steel 64～67HRC	APH		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC	A—AP		L
		Powdered high-speed steel 64～67HRC	A—APH		Tip length (B) L>S

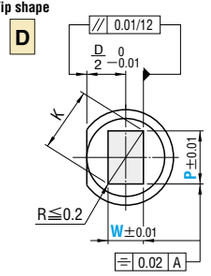
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape A

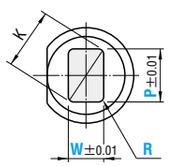


Tip shape D



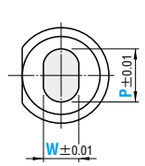
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



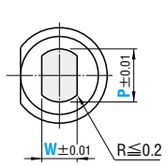
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P·Kmax.	0.01mm increments DREG P·Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) AP APH ($D^{+0.005}_{0}$) A—AP A—APH	A D R E G	S	5	50 60 70 80 90 100	2.00～ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	(50) 60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	(50) 60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	(50) 60 70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	(50) 60 70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30
		L	5	60 70 80 90 100	2.00～ 4.99	4.97	1.20		13	10
			6	60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		19	13
			10	60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		25	21
			20	70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30

- L(50)⋯→B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D−0.03⋯→ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P·K>D−0.05⋯→ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

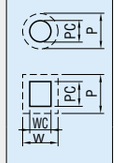
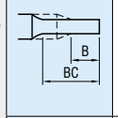
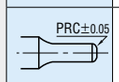
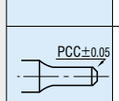
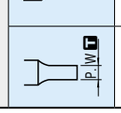
Order

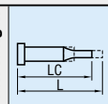
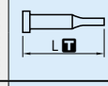
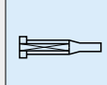
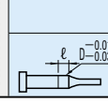
Catalog No.	L	P	W	R (Ⓡ only)
APAS 20	80	P15.00		

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC, etc.)
APAS 20	LC82	PC12.00		BC13	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin. 2 For D5・6, PC≧1.50 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax.: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC≧ P・Wmin. WC 2 For D5・6, PC WC≧1.00 0.01 mm increments P(PC)・W(WC) / Bmax.: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P $^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨ $^{+0.01}_{0}$	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm).	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
			(If combined with LKC・LKZ, 0.01 mm increments can be selected.)		
		LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ DREG ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・DICOAT® TREATMENT—

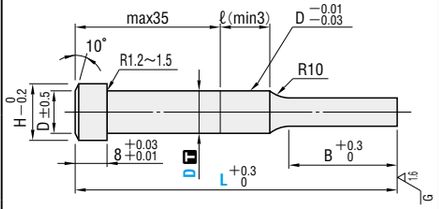
PRODUCTS DATA P.1599・1611

Type	Shank diameter D T tolerance	M H
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 62～64HRC Surface 3000HV
	$D^{+0.005}_{0}$ (D5～13)	

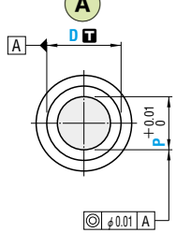
Catalog No. Type	Tip shape	B Tip length
T—APH	A D R E G	S
AT—APH	A D R E G	L

Tip length (B) L>S

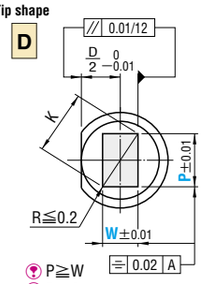
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape A

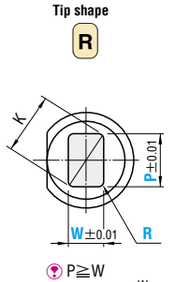


Tip shape D



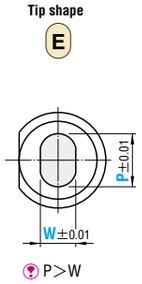
Ⓨ P≧W
Ⓨ R=0 can be selected.
Ⓨ $K=\sqrt{P^2+W^2}$

Tip shape R



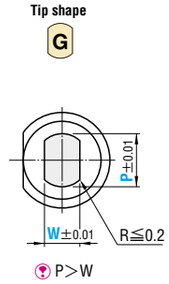
Ⓨ P≧W
Ⓨ $0.15 \leqq R < \frac{W}{2}$
Ⓨ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



Ⓨ P>W

Tip shape G



Ⓨ P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P·Kmax.	0.01mm increments DREG P·Wmin.	0.01mm increments Ⓡ R	B	H
(D_{m5}) T—APH	A D R E G	S	5	50 60 70 80	2.00～ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80	2.00～ 5.99	5.97	1.50			11
			8	(50) 60 70 80 90 100	3.00～ 7.99	7.97	2.00		13	13
			10	(50) 60 70 80 90 100	3.00～ 9.99	9.97	2.50			15
			13	(50) 60 70 80 90 100	6.00～ 12.99	12.97	3.00			18
			16	(50) 60 70 80 90 100	10.00～ 15.99	15.97	4.00		19	21
			20	(50) 60 70 80 90 100	13.00～ 19.99	19.97	5.00			25
			25	(50) 60 70 80 90 100	18.00～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AT—APH (D5～13)	A D R E G	L	5	60 70 80	2.00～ 4.99	4.97	1.20		13	10
			6	60 70 80	2.00～ 5.99	5.97	1.50			11
			8	60 70 80 90 100	3.00～ 7.99	7.97	2.00		19	13
			10	60 70 80 90 100	3.00～ 9.99	9.97	2.50			15
			13	60 70 80 90 100	6.00～ 12.99	12.97	3.00			18
			16	70 80 90 100	10.00～ 15.99	15.97	4.00		25	21
			20	70 80 90 100	13.00～ 19.99	19.97	5.00			25
			25	70 80 90 100	18.00～ 24.99	24.97	6.00			30

Ⓨ L(50)⋯B=8 If full length is (50), tip length is 8mm in all cases.
Ⓨ Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓨ DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

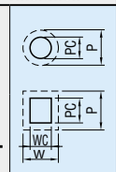
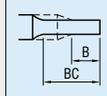
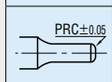
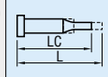
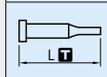
Order

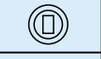
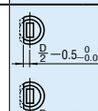
Catalog No.	L	P	W	R (Ⓡ only)
T—APHDS 25	80	P18.00	W10.00	

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC・KC, etc.)
T—APHAS 20	LC82	PC12.00			BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change $PC \geqq \frac{P\text{min.}}{2}$ Ⓨ For D5・6, PC≧1.50 0.01mm increments P(PC) / Bmax.: 1.50～1.99 / 20; 2.00～3.99 / 35; 4.00～5.99 / 45; 6.00～ / 50	Tip dimension change $PC, WC \geqq \frac{P \cdot W\text{min.}}{2}$ Ⓨ For D5・6, $PC_{WC} \geqq 1.00$ 0.01 mm increments P(PC)・W(WC) / Bmax.: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓨ PRC≦(P−0.2)/2	—	
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.05}_{0}$		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	 Single key flat on shank Ⓐ DREG ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

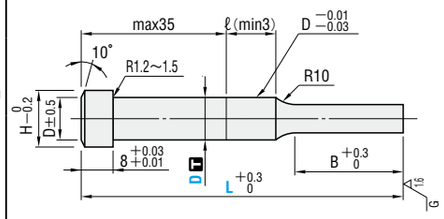
Price Quotation

PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS・TiCN COATING—

PRODUCTS DATA P.1601・1604・1611

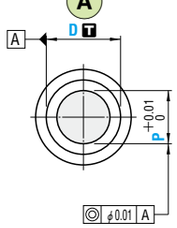
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3000HV	H—AP	A D R E G	S L
		Powdered high-speed steel 64～67HRC Surface 3000HV	H—APH		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC Surface 3000HV	AH—AP		Tip length (B) L>S
		Powdered high-speed steel 64～67HRC Surface 3000HV	AH—APH		

The tip shape can be selected from Tip shape A～G in the figure below.

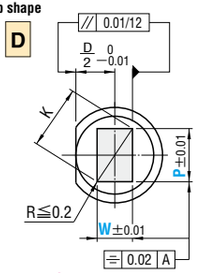


The tip end is ground before the coating is applied.

Tip shape A

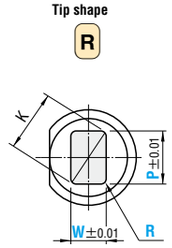


Tip shape D



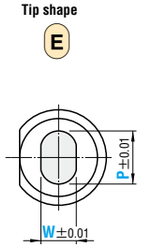
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



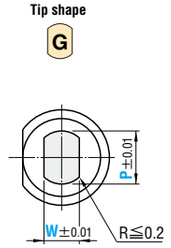
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
(D_{m5}) H—AP H—APH	A D R E G	S	5	50 60 70 80 90 100	2.00～ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (R only)	8	10
			6	50 60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	(50) 60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	(50) 60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	(50) 60 70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	(50) 60 70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AH—AP AH—APH		L	5	60 70 80 90 100	2.00～ 4.99	4.97	1.20		13	10
			6	60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		19	13
			10	60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		25	21
			20	70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30

- L(50)…B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D−0.03 …ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order Catalog No. — L — P — W — R (R only)
H—APAS 20 — 80 — P15.00

Days to Ship Quotation

Alterations — Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・KC, etc.)
H—APAS 20 — LC82 — PC12.00 — BC13

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip: PC WC	PC WC	Tip dimension change $PC \geqq \frac{Pmin.}{2}$ For D5・6, PC≧1.50 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax.: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change $\frac{PC}{WC} \geqq \frac{P・Wmin.}{2}$ For D5・6, $\frac{PC}{WC} \geqq 1.00$ 0.01mm increments P(PC)・W(WC) / Bmax.: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
	SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before the coating is applied. R=0 cannot be selected for the tip shape D corners.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow ^{+0.005}_{0}$ P dimension can be selected in 0.001 mm increments. Cannot be used for D>13.	Tip tolerance change $P・W \pm 0.01 \Rightarrow ^{+0.01}_{0}$ Cannot be used for D>13.	

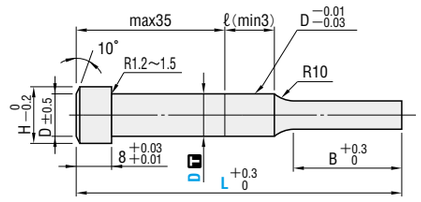
Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length: LC	LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
LKC	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.05}_{0}$		
Alterations to head: KC	KC	Addition of single key flat to head	Key flat position change 1° increments	
WKC	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
KFC	KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Quotation
NKC	NKC	—	No key flat	
Alterations to shank: SKC	SKC	Single key flat on shank Ⓐ DREG ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
NDC	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

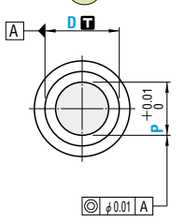
PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

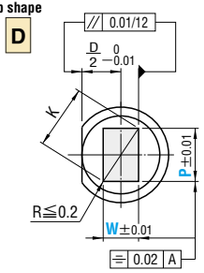
PRODUCTS DATA P.1601・1605・1611

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A～G in the figure below.
—WPC® treatment— RoHS —HW coating— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61～64HRC Surface 1000～1100HV	W—AP	A D R E G	S L Tip length (B) L>S	 The tip edges are very slightly rounded.
		Powdered high-speed steel 64～67HRC Surface 1000～1100HV	W—APH			
		Equivalent to SKH51 61～64HRC Surface 3000HV	HW—AP			
		Powdered high-speed steel 64～67HRC Surface 3000HV	HW—APH			
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC Surface 1000～1100HV	AW—AP			
		Powdered high-speed steel 64～67HRC Surface 1000～1100HV	AW—APH			
		Equivalent to SKH51 61～64HRC Surface 3000HV	AHW—AP			
		Powdered high-speed steel 64～67HRC Surface 3000HV	AHW—APH			

Tip shape A

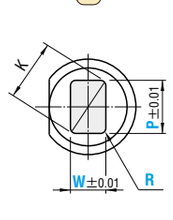


Tip shape D



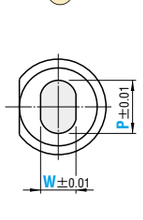
Ⓡ P≧W
Ⓡ $K=\sqrt{P^2+W^2}$

Tip shape R



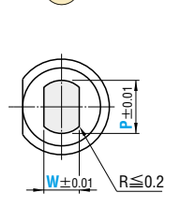
Ⓡ P≧W
Ⓡ $0.15 \leqq R < \frac{W}{2}$
Ⓡ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



Ⓡ P>W

Tip shape G



Ⓡ P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P·Kmax.	0.01mm increments DREG P·Wmin.	0.01 mm R	B	H
(D_{m5}) —WPC® treatment— W—AP W—APH —HW coating— HW—AP HW—APH	A D R E G	S	5	50 60 70 80 90 100	2.00～ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	(50) 60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	(50) 60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	(50) 60 70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	(50) 60 70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) —WPC® treatment— AW—AP AW—APH —HW coating— AHW—AP AHW—APH		L	5	60 70 80 90 100	2.00～ 4.99	4.97	1.20		13	10
			6	60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		19	13
			10	60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		25	21
			20	70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30

Ⓡ L(50)⋯B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓡ Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓡ DREG: P・K>D−0.05 ⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

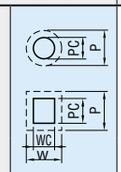
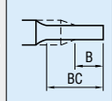
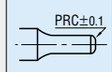
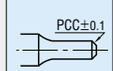
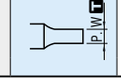
Order

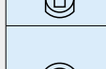
Catalog No.	L	P	W	R (Ⓡ only)
W—APAS 20	80	P15.00		
HW—APAS 20	80	P16.50		

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC, etc.)
W—APAS 20	LC82	PC12.00			BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change $PC \geqq \frac{P\text{min.}}{2}$ Ⓡ For D5・6, PC≧1.50 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax.: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change $\frac{PC}{WC} \geqq \frac{P\cdot W\text{min.}}{2}$ Ⓡ For 5・6, $\frac{PC}{WC} \geqq 1.00$ 0.01 mm increments P(PC)・W(WC) / Bmax.: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm inc rements Ⓡ Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments Ⓡ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments Ⓡ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ Ⓡ (P dimension can be selected in 0.001 mm increments.) ⊗ HW coating cannot be used for D>13	Tip tolerance change $P\cdot W\pm0.01 \Rightarrow {}^{+0.01}_{0}$	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	Quotation
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ DREG ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

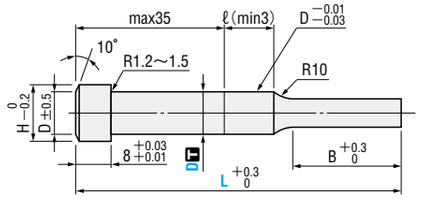
PUNCHES FOR HEAVY LOAD
—RW COATING—

PRODUCTS DATA P.1607

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3100HV	RW—AP	A D R E G	S L
		Powdered highspeed steel 64～67HRC Surface 3100HV	RW—APH		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC Surface 3100HV	ARW—AP		
		Powdered highspeed steel 64～67HRC Surface 3100HV	ARW—APH		

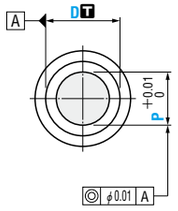
Tip length (B) L>S

The tip shape can be selected from Tip shape A～G in the figure below.

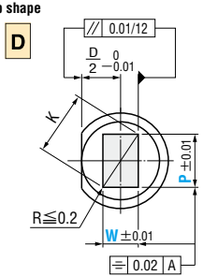


The tip edges are very slightly rounded.

Tip shape A

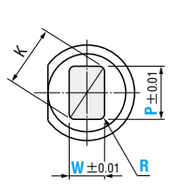


Tip shape D



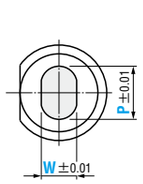
P≧W
K=$\sqrt{P^2+W^2}$

Tip shape R



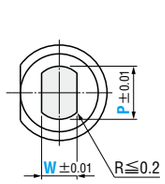
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Shape Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P-Kmax.	0.01mm increments DREG P-Wmin.	0.01mm Ⓡ R	B	H
(D_{m5}) RW—AP RW—APH	A D R E G	S	5	50 60 70 80 90 100	2.00 ～ 4.99	4.97	1.20	0.15≦R<$\frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80 90 100	2.00 ～ 5.99	5.97	1.50			11
			8	(50) 60 70 80 90 100 110 120 130	3.00 ～ 7.99	7.97	2.00		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.00 ～ 9.99	9.97	2.50			15
			13	(50) 60 70 80 90 100 110 120 130	6.00 ～ 12.99	12.97	3.00			18
			16	(50) 60 70 80 90 100 110 120 130	10.00 ～ 15.99	15.97	4.00		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.00 ～ 19.99	19.97	5.00			25
			25	(50) 60 70 80 90 100 110 120 130	18.00 ～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) ARW—AP ARW—APH		L	5	60 70 80 90 100	2.00 ～ 4.99	4.97	1.20		13	10
			6	60 70 80 90 100	2.00 ～ 5.99	5.97	1.50			11
			8	60 70 80 90 100 110 120 130	3.00 ～ 7.99	7.97	2.00		19	13
			10	60 70 80 90 100 110 120 130	3.00 ～ 9.99	9.97	2.50			15
			13	60 70 80 90 100 110 120 130	6.00 ～ 12.99	12.97	3.00			18
			16	70 80 90 100 110 120 130	10.00 ～ 15.99	15.97	4.00		25	21
			20	70 80 90 100 110 120 130	13.00 ～ 19.99	19.97	5.00			25
			25	70 80 90 100 110 120 130	18.00 ～ 24.99	24.97	6.00			30

L(50)⋯B=8 If full length is (50), tip length is 8mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05⋯ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	R (Ⓡ only)
RW—APAS 20	80	P15.00		

Days to Ship Quotation

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC·KC⋯etc.)
RW—APAS 20	—	LC82	—	PC12.00			—		— BC13

Alterations	Code	Ⓐ	DREG	1Code
Alterations to tip	PC WC	Tip dimension change PC≧$\frac{Pmin}{2}$ D5·6 PC≧1.50 0.01mm increments	Tip dimension change PC WC≧$\frac{P \cdot Wmin}{2}$ D5·6 PC WC≧1.00 0.01mm increments	Quotation
	BC	Tip length change 2≦BC≦Bmax 0.1mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax 0.1mm increments Full length L must be at least 40mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2	—	
Alterations to full length	LC	Full length change 35+B(BC)≦LC<L 0.1mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

P(PC)	Bmax
1.500～1.999	20
2.000～3.999	35
4.000～5.999	45
6.000～	60

P(PC)·W(WC)	Bmax
1.00～1.49	8
1.50～1.99	13
2.00～3.49	19
3.50～4.99	25
5.00～	30

Alterations	Code	Ⓐ	DREG	1Code
Alterations to head	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
	NKC	—	No key flat	
Alterations to shank	SKC	Single key flat on shank Ⓐ DREG ·D5·6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

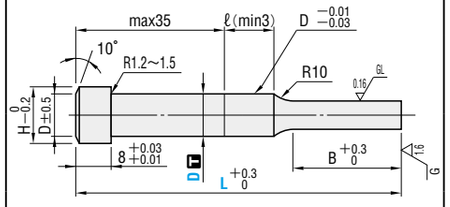
Price Quotation

PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS・LAPPING—

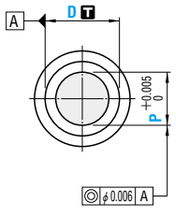
PRODUCTS DATA P.1611

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61～64HRC	L—AP	A D R E G	S
		Powdered high-speed steel 64～67 HRC	L—APH		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC	AL—AP		L
		Powdered high-speed steel 64～67 HRC	AL—APH		Tip length (B) L>S

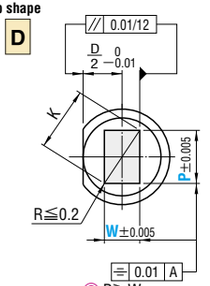
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape A

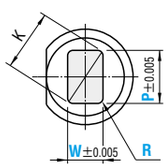


Tip shape D

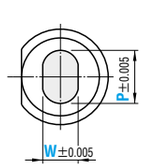


Ⓨ P≧W
Ⓨ $K=\sqrt{P^2+W^2}$

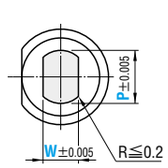
Tip shape R



Tip shape E



Tip shape G



Ⓨ P≧W
Ⓨ $0.15 \leqq R < \frac{W}{2}$
Ⓨ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Ⓨ P>W

Ⓨ P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.001 mm increments Ⓐ min. P max.	0.001 mm increments DREG P·Kmax.	0.001 mm increments DREG P·Wmin.	0.01 mm R R	B	H
(D_{m5}) L—AP L—APH	A D R E G	S	5	50 60 70 80 90 100	2.000～ 4.990	4.970	1.200	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80 90 100	2.000～ 5.990	5.970	1.500			11
			8	(50) 60 70 80 90 100 110 120 130	3.000～ 7.990	7.970	2.000		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.000～ 9.990	9.970	2.500			15
			13	(50) 60 70 80 90 100 110 120 130	6.000～ 12.990	12.970	3.000			18
			16	(50) 60 70 80 90 100 110 120 130	10.000～ 15.990	15.970	4.000		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.000～ 19.990	19.970	5.000			25
			25	(50) 60 70 80 90 100 110 120 130	18.000～ 24.990	24.970	6.000			30
($D^{+0.005}_{0}$) AL—AP AL—APH		L	5	60 70 80 90 100	2.000～ 4.990	4.970	1.200		13	10
			6	60 70 80 90 100	2.000～ 5.990	5.970	1.500			11
			8	60 70 80 90 100 110 120 130	3.000～ 7.990	7.970	2.000		19	13
			10	60 70 80 90 100 110 120 130	3.000～ 9.990	9.970	2.500			15
			13	60 70 80 90 100 110 120 130	6.000～ 12.990	12.970	3.000			18
			16	70 80 90 100 110 120 130	10.000～ 15.990	15.970	4.000		25	21
			20	70 80 90 100 110 120 130	13.000～ 19.990	19.970	5.000			25
			25	70 80 90 100 110 120 130	18.000～ 24.990	24.970	6.000			30

Ⓨ L(50)⋯→B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓨ Ⓐ: P>D−0.03⋯→ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓨ DREG: P・K>D−0.05⋯→ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

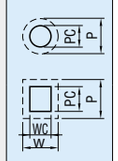
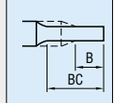
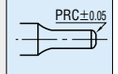
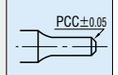
Order

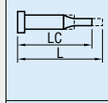
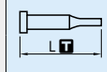
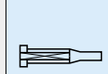
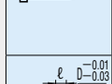
Catalog No.	L	P	W	R (Ⓡ only)
AL—APDS25	80	P18.000	W10.000	

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC, etc.)
L—APAS 20	LC82	PC12.000			BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧$\frac{Pmin.}{2}$ Ⓨ For D5・6, PC≧1.500 0.001mm increments P (PC) / Bmax.: 1.500～1.999 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Tip dimension change WC≧$\frac{P \cdot Wmin.}{2}$ Ⓨ For D5・6, PC/WC≧1.000 0.001mm increments P(PC)・W(WC) / Bmax.: 1.000～1.499 8; 1.500～1.999 13; 2.000～3.499 19; 3.500～4.999 25; 5.000～ 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓨ Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓨ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓨ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	—	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length −35mm). (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments Ⓨ If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length −40mm).	
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ D≦6 P≦D−0.5 $^{0}_{-0.01}$ D8～ P≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.	DREG D≦6 W≦D−1.2 D8～ W≦D−2.2 (Machining width 0.5)	
		NDC	No press-in lead	ℓ≧3⇨ℓ=0	

Price Quotation

JECTOR PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS・SPRING AND PIN REINFORCED TYPE—

PRODUCTS DATA P.1611
RELATED PRODUCTS P.161

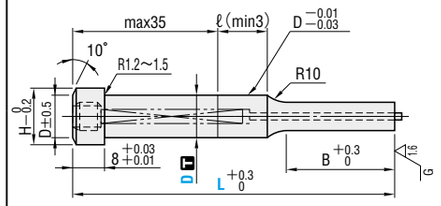
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

● For details of jector holes, refer to Jector Punch Blanks. P.238
● For details of jector pins, refer to Jector Pin Sets. P.241

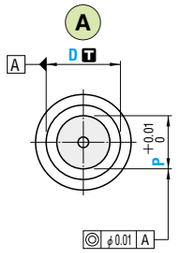
Type	Shank diameter D T tolerance	M H
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64 ～ 67HRC
	$D^{+0.005}_{0}$	

Catalog No. Type	Tip shape	B Tip length
APJ Spring and pin Reinforced type APJV	A D R E G	S
A—APJ Spring and pin Reinforced type A—APJV	A D R E G	L

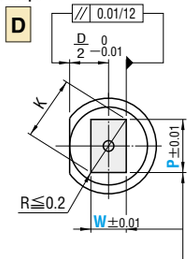
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape A

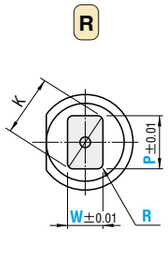


Tip shape D



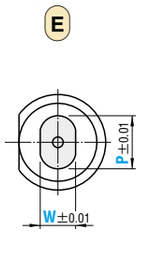
Ⓨ P≧W
Ⓨ R=0 can be selected.
Ⓨ $K=\sqrt{P^2+W^2}$

Tip shape R



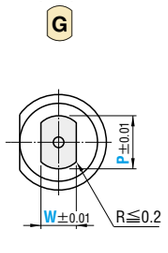
Ⓨ P≧W
Ⓨ $0.15 \leqq R < \frac{W}{2}$
Ⓨ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



Ⓨ P＞W

Tip shape G



Ⓨ P＞W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P・Kmax.	0.01mm increments D R E G P・Wmin.	0.01 mm R R	B	H
(Dm5) APJ —Spring and pin reinforced type— APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.00～ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00～ 9.99	9.97	5.00			15
			13		6.00～ 12.99	12.97	6.00			18
			16		10.00～ 15.99	15.97	6.00		19	21
			20		13.00～ 19.99	19.97	6.00			25
			25		18.00～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) A—APJ —Spring and pin reinforced type— A—APJV	A D R E G	L	8	60 70 80 90 100 (110) (120) (130)	4.00～ 7.99	7.97	4.00		19	13
			10		5.00～ 9.99	9.97	5.00			15
			13		6.00～ 12.99	12.97	6.00			18
			16	70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		25	21
			20		13.00～ 19.99	19.97	6.00			25
			25		18.00～ 24.99	24.97	6.00			30

Ⓨ The spring constants of APJV and A—APJV are twice those of APJ and A—APJ respectively.
⊗ L(110) (120) (130)…L110, 120, and 130 cannot be used for spring and pin reinforced types.
Ⓨ L(50)…B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓨ Ⓐ: P＞D−0.03…ℓ=0 If P＞D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓨ D R E G: P・K＞D−0.05…ℓ=0 If P・K＞D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

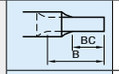
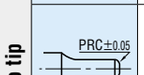
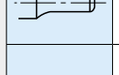
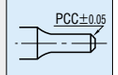
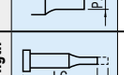
Catalog No.	L	P	W	R (Ⓡ only)
APJAS 20	80	P15.00		

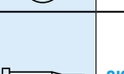
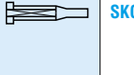
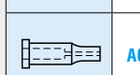
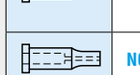
Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	L (LC)	P	W	R	(BC・KC, etc.)
APJDS 20	LC79	P15.00	W6.00		KFC225

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓨ PRC≦(P−d_1−0.5)/2 d_1 dimension P238 ⊗ Cannot be combined with PCC.	—	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓨ PCC≦(P−d_1−0.5)/2 d_1 dimension P238 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ Ⓨ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨ $^{+0.01}_{0}$	
Alterations to full length		LC	Full length change LC＜L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Ⓨ Tip length B is shortened by (L−LC). Ⓨ Projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	Quotation
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 D R E G W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

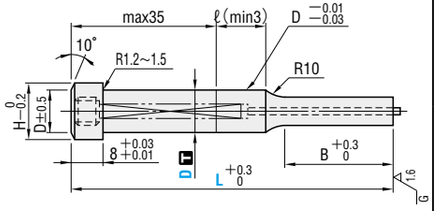
JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・DICOAT® TREATMENT・SPRING AND PIN REINFORCED TYPE—

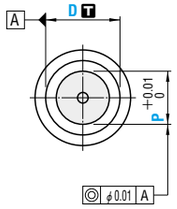
PRODUCTS DATA P.1599・1611

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

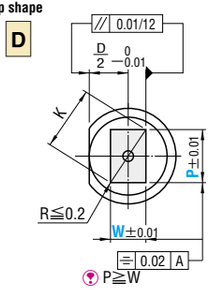
- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A～G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 62～64HRC Surface 3000HV	T—APJ Spring and pin reinforced type T—APJV	A D R E G	S L Tip length (B) L>S	
	$D^{+0.005}_{0}$ (D8～13)		AT—APJ Spring and pin reinforced type AT—APJV			

Tip shape A

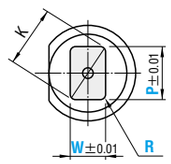


Tip shape D



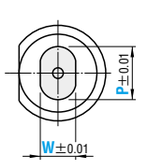
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



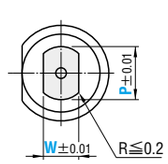
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
(D_{m5}) T—APJ —Spring and pin reinforced type— T—APJV	A D R E G	S	8	(50) 60 70 80 90 100	4.00～ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00～ 9.99	9.97	5.00			15
			13		6.00～ 12.99	12.97	6.00			18
			16		10.00～ 15.99	15.97	6.00		19	21
			20		13.00～ 19.99	19.97	6.00			25
			25		18.00～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AT—APJ (D8～13) —Spring and pin reinforced type— AT—APJV (D8～13)		L	8		4.00～ 7.99	7.97	4.00		19	13
			10	60 70 80 90 100	5.00～ 9.99	9.97	5.00			15
			13		6.00～ 12.99	12.97	6.00			18
			16		10.00～ 15.99	15.97	6.00		25	21
			20	70 80 90 100	13.00～ 19.99	19.97	6.00			25
			25		18.00～ 24.99	24.97	6.00			30

- The spring constants of T—APJV and AT—APJV are twice those of T—APJ and AT—APJ respectively.
- L(50)⋯B=8 If the full length is(50), the tip length is 8mm in all cases.
- Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

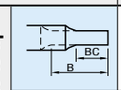
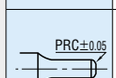
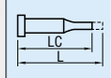
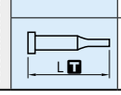
Catalog No.	L	P	W	R (Ⓡ only)
T—APJDS 25	80	P18.00	W10.00	

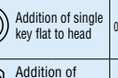
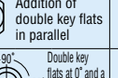
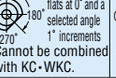
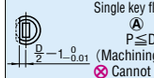
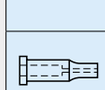
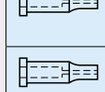
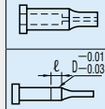
Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	L(LC)	P	W	R	(BC・KC・WKC, etc.)
T—APJDS 20	LC79	P15.00	W6.00		SKC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓡ PRC≦(P−d_1−0.5)/2 d_1 Dimension P.238	—	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) ⓡ Tip length B is shortened by (L−LC). ⓡ Projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	 Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	 Double key flats in parallel Can be combined with KC.	
		KFC	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	Quotation
Alterations to shank		SKC	 Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

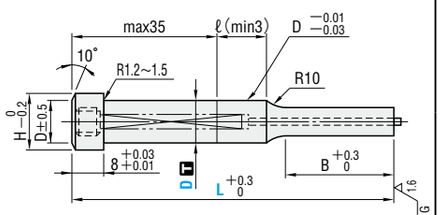
JECTOR PUNCHES FOR HEAVY LOAD

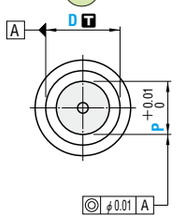
—FINISHED FOR RETAINERS・TiCN COATING・SPRING AND PIN REINFORCED TYPE—

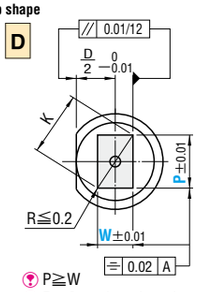
PRODUCTS DATA P.1601・1604・1611
RELATED PRODUCTS P.161

● For details of jector holes, refer to Jector Punch Blanks. P.238
● For details of jector pins, refer to Jector Pin Sets. P.241

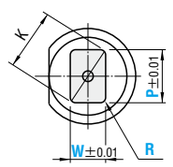
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $D^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64~67HRC Surface 3000HV	H—APJ Spring and pin reinforced type H—APJV	A D R E G	S L Tip length (B) L>S	 The tip end is ground before the coating is applied.
	$D^{+0.005}_{0}$		AH—APJ Spring and pin reinforced type AH—APJV			

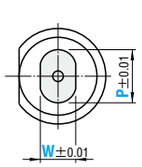
Tip shape A


Tip shape D


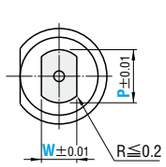
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R


P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E


P>W

Tip shape G


P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
(D_{m5}) H—APJ —Spring and pin reinforced type— H—APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16		10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AH—APJ —Spring and pin reinforced type— AH—APJV		L	8		4.00~ 7.99	7.97	4.00		13	13
			10	60 70 80 90 100 (110) (120) (130)	5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16		10.00~ 15.99	15.97	6.00		19	21
			20	70 80 90 100 (110) (120) (130)	13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00		25	30

The spring constants of H—APJV and AH—APJV are twice those of H—APJ and AH—APJ respectively.
L(50)⋯B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05 ⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
⊗ L(110) (120) (130)⋯L110, 120, and 130 cannot be used for spring and pin reinforced types.

Order

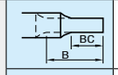
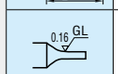
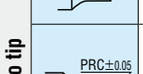
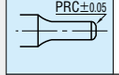
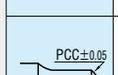
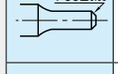
Catalog No.	L	P	W	R (Ⓡ only)
H—APJAS 20	80	P15.00		

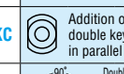
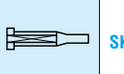
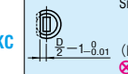
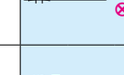
Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	L (LC)	P	W	R	(BC・KC・WKC, etc.)
H—APJDS 20	LC79	P15.00	W6.00		BC13

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments P PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments P PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ P (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) P Tip length B is shortened by (L—LC). P Projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	 Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING・SPRING AND PIN REINFORCED TYPE—

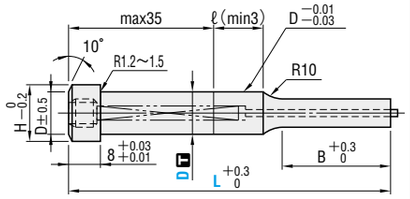
PRODUCTS DATA P.1601・1605・1611
RELATED PRODUCTS P.161

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

● For details of jector holes, refer to Jector Punch Blanks. P.238
● For details of jector pins, refer to Jector Pin Sets. P.241

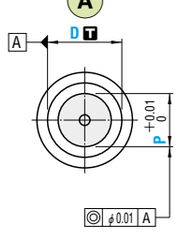
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS	D_{m5}	WPC® treatment Powdered high-speed steel 64～67 HRC Surface 1000～1100HV	W—APJ Spring and pin reinforced type W—APJV	A D R E G	S
		HW coating Powdered high-speed steel 64～67HRC Surface 3000 HV	HW—APJ Spring and pin reinforced type HW—APJV		
—HW coating— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	$D^{+0.005}_{0}$	WPC® treatment Powdered high-speed steel 64～67 HRC Surface 1000～1100HV	AW—APJ Spring and pin reinforced type AW—APJV		L
		HW coating Powdered high-speed steel 64～67HRC Surface 3000 HV	AHW—APJ Spring and pin reinforced type AHW—APJV		Tip length (B) L>S

The tip shape can be selected from Tip shape A～G in the figure below.

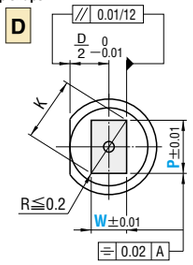


The tip edge are very slightly rounded.

Tip shape A

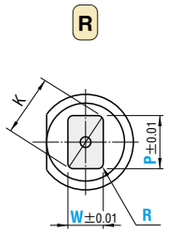


Tip shape D



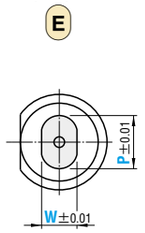
P≧W
K=$\sqrt{P^2+W^2}$

Tip shape R



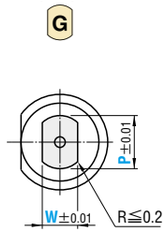
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P・Kmax.	0.01mm increments DREG P・Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) —WPC® treatment— W—APJ Spring and pin reinforced type W—APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.00～7.99	7.97	4.00	0.15≦R<$\frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00～9.99	9.97	5.00			15
			13		6.00～12.99	12.97	6.00			18
			16		10.00～15.99	15.97	6.00		19	21
			20		13.00～19.99	19.97	6.00			25
			25		18.00～24.99	24.97	6.00			30
($D^{+0.005}_{0}$) —WPC® treatment— AW—APJ Spring and pin reinforced type AW—APJV			8		4.00～7.99	7.97	4.00		13	13
			10		5.00～9.99	9.97	5.00			15
			13		6.00～12.99	12.97	6.00			18
			16		10.00～15.99	15.97	6.00		19	21
			20		13.00～19.99	19.97	6.00			25
			25		18.00～24.99	24.97	6.00			30
—HW coating— HW—APJ Spring and pin reinforced type HW—APJV		L	8	60 70 80 90 100 (110) (120) (130)	4.00～7.99	7.97	4.00		13	13
			10		5.00～9.99	9.97	5.00			15
			13		6.00～12.99	12.97	6.00		19	18
—HW coating— AHW—APJ Spring and pin reinforced type AHW—APJV			16	70 80 90 100 (110) (120) (130)	10.00～15.99	15.97	6.00			21
			20		13.00～19.99	19.97	6.00		25	25
			25		18.00～24.99	24.97	6.00			30

The spring constants of W—APJV, AW—APJV, HW—APJV, and AHW—APJV are twice those of W—APJ, AW—APJ, HW—APJ, and AHW—APJ respectively.
L(50)⋯B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(110) (120) (130)⋯L110, 120, and 130 cannot be used for spring and pin reinforced types.

Order — Catalog No. — L — P — W — R (Ⓡ only)
W—APJAS 20 — 80 — P15.00

■**Effect of spring and pin reinforced type**
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Days to Ship Quotation

Alterations — Catalog No. — L(LC) — P — W — R — (BC・KC, etc.)
W—APJDS 20 — LC79 — P15.00 — W6.00 — BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip	BC	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
	PRC±0.1	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ? PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PCC.	—	Quotation
	PCC±0.1	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ? PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PRC.	—	
	P W	PKC	Tip tolerance change P $^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ HW coating cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length	LC L	LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) ? Tip length B is shortened by (L−LC). ? The projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
	L T	LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
	AIR	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
	ℓ D −0.01 −0.03	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

JECTOR PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS・RW COATING—

PRODUCTS DATA P.1601・1605・1611
RELATED PRODUCTS P.161

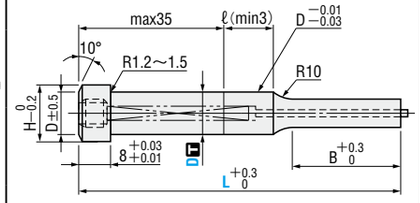
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H
RoHS	Dm5	Powdered highspeed steel 64～67HRC Surface 3100HV
	$D^{+0.005}_{0}$	

Catalog No. Type	Tip shape	B Tip length
RW—APJ Spring and pin reinforced type RW—APJV	A D R E G	S
ARW—APJ Spring and pin reinforced type ARW—APJV	A D R E G	L

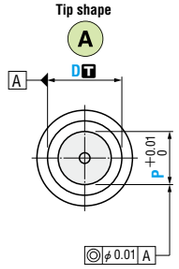
The tip shape can be selected from Tip shape A～G in the figure below.



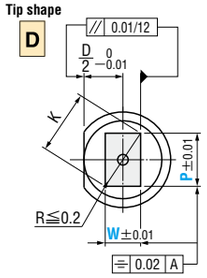
Tip length (B) L>S

The tip edges are very slightly rounded.

Tip shape A

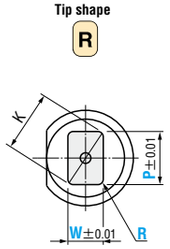


Tip shape D



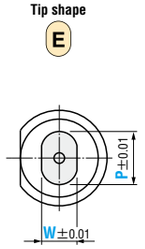
P≧W
K=√(P²+W²)

Tip shape R



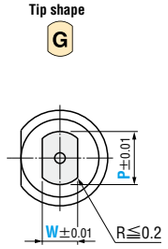
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Shape Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P·Kmax.	0.01mm increments DREG P·Wmin.	0.01mm R R	B	H
(Dm5) RW—APJ Spring and pin reinforced type RW—APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.00～7.99	7.97	4.00	0.15≦R<W/2 (R only)	13	13
			10		5.00～9.99	9.97	5.00			15
			13		6.00～12.99	12.97	6.00			18
			16		10.00～15.99	15.97	6.00		19	21
			20		13.00～19.99	19.97	6.00			25
			25		18.00～24.99	24.97	6.00			30
($D^{+0.005}_{0}$) ARW—APJ Spring and pin reinforced type ARW—APJV	A D R E G	L	8	60 70 80 90 100 (110) (120) (130)	4.00～7.99	7.97	4.00		19	13
			10		5.00～9.99	9.97	5.00			15
			13		6.00～12.99	12.97	6.00			18
			16	70 80 90 100 (110) (120) (130)	10.00～15.99	15.97	6.00		25	21
			20		13.00～19.99	19.97	6.00			25
			25		18.00～24.99	24.97	6.00			30

The spring constants of RW—APJV and ARW—APJV are twice those of RW—APJ and ARW—APJ respectively.
L(50)⋯B=8 If full length is (50), tip length is 8mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(110) (120) (130)⋯L110,120 and 130 cannot be used for spring and pin reinforced types.

Order

Catalog No. — L — P — W — R (R only)
RW—APJAS 20 — 80 — P15.00

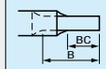
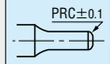
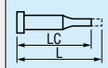
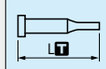
Days to Ship Quotation

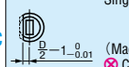
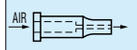
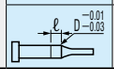
■Effect of spring and pin reinforced type
The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. P.1607

Alterations

Catalog No. — L(LC) — P — W — R — (BC・KC⋯etc.)
RW—APJDS 20 — LC79 — P15.00 — W6.00 — BC13

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d1−0.5)/2 d1 dimension P.238	—	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) Tip length B is reduced by (L−LC). Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	 Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

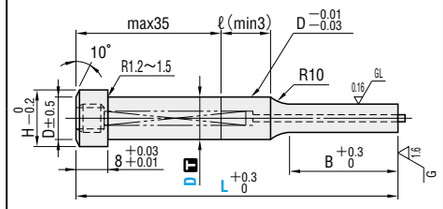
JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・LAPPING・SPRING AND PIN REINFORCED TYPE—

PRODUCTS DATA P.1611

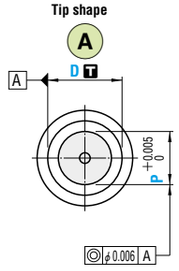
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

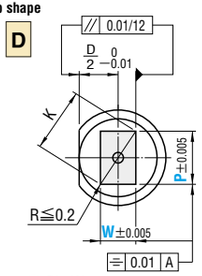
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64～67HRC	L—APJ Spring and pin Reinforced type L—APJV	A D R E G	S	
	$D^{+0.005}_{0}$		AL—APJ Spring and pin Reinforced type AL—APJV		L	

Tip length (B) L>S

Tip shape A



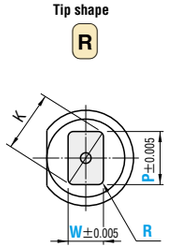
Tip shape D



P≧W

K=$\sqrt{P^2+W^2}$

Tip shape R

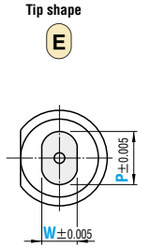


P≧W

0.15≦R<$\frac{W}{2}$

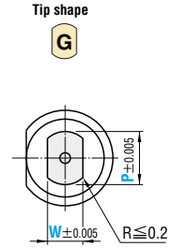
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.001 mm increments Ⓐ min. P max.	0.001 mm increments D R E G P・Kmax.	0.001 mm increments D R E G P・Wmin.	0.01 mm R R	B	H
(D_{m5}) L—APJ —Spring and pin reinforced type— L—APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.000～ 7.990	7.970	4.000	0.15≦R<$\frac{W}{2}$ (R only)	13	13
			10		5.000～ 9.990	9.970	5.000			15
			13		6.000～ 12.990	12.970	6.000			18
			16		10.000～ 15.990	15.970	6.000		19	21
			20		13.000～ 19.990	19.970	6.000			25
			25		18.000～ 24.990	24.970	6.000			30
($D^{+0.005}_{0}$) AL—APJ —Spring and pin reinforced type— AL—APJV		L	8	60 70 80 90 100 (110) (120) (130)	4.000～ 7.990	7.970	4.000		13	13
			10		5.000～ 9.990	9.970	5.000		19	15
			13		6.000～ 12.990	12.970	6.000			18
			16	70 80 90 100 (110) (120) (130)	10.000～ 15.990	15.970	6.000		25	21
			20		13.000～ 19.990	19.970	6.000			25
			25		18.000～ 24.990	24.970	6.000			30

The spring constants of L—APJV and AL—APJV are twice those of L—APJ and AL—APJ respectively.

⊗ L(110)(120)(130)…L110, 120, and 130 cannot be used for spring and pin reinforced types.

L(50) …B=8 If the full length is (50), the tip length is 8mm in all cases.

Ⓐ: P>D−0.03 …ℓ=0 If P>D−0.03 for a round punch, D$^{-0.01}_{-0.03}$ (press-in lead) is not included.

D R E G: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, D$^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	R (R only)
AL—APJDS 25	80	P18.000	W10.000	

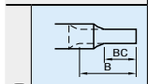
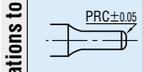
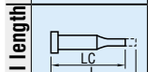
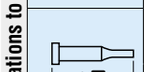
Days to Ship Quotation

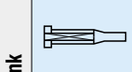
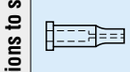
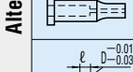
■Effect of spring and pin reinforced type

The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	L (LC)	P	W	R	(BC・KC, etc.)
L—APJDS 20	LC79	P15.000	W6.000		BC13

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓡ PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓡ PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PRC.	—	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) ⓡ Tip length B is shortened by (L−LC). ⓡ The projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	Quotation
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 D R E G W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

PUNCHES

JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・CONFIGURABLE FULL LENGTH・FIXED B TYPE・SPRING AND PIN REINFORCED TYPE—

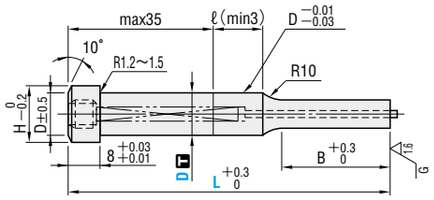
PRODUCTS DATA P.1611

※ Jector punch which maintains the same tip length B even when L is changed.

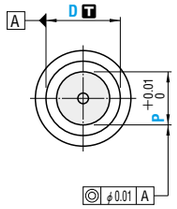
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

● For details of jector holes, refer to Jector Punch Blanks. P.238

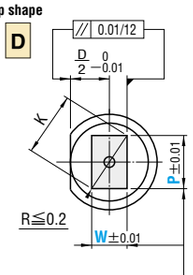
● For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64~67HRC	LFAPJ Spring and pin reinforced type LFAPJV	A D R E G	S	
	$D^{+0.005}_{0}$		A—LFAPJ Spring and pin reinforced type A—LFAPJV		L Tip length (B) L>S	

Tip shape A

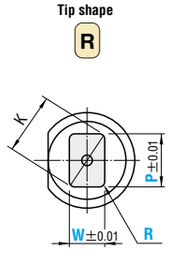


Tip shape D



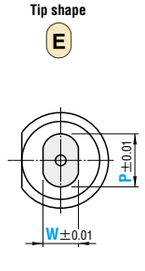
- P≧W ⫽ 0.02 A
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



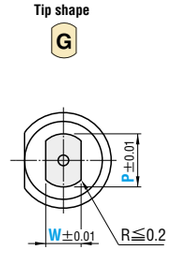
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P·Kmax.	0.01mm increments D R E G P·Wmin.	0.01 mm R	B	H
(Dm5) LFAPJ —Spring and pin reinforced type— LFAPJV	A D R E G	S	8	60.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	70.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) A—LFAPJ —Spring and pin reinforced type— A—LFAPJV		L	8	70.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00		19	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	80.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		25	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30

- The spring constants of LFAPJV and A—LFAPJV are twice those of LFAPJ and A—LFAPJ respectively.
- Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- Jector holes are based on the jector punch blanks for heavy load. P.238

Order

Catalog No.	L	P	W	R (Ⓡ only)
LFAPJAS 20	80	P15.00		

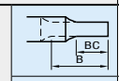
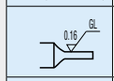
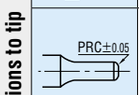
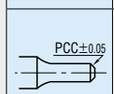
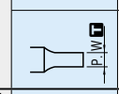
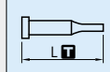
Days to Ship Quotation

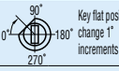
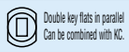
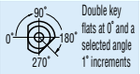
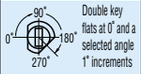
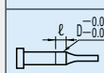
■Effect of spring and pin reinforced type

The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

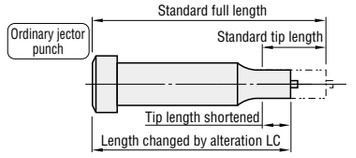
Catalog No.	L	P	W	R	(BC・KC, etc.)
LFAPJDS 20	79	P15.00	W6.00		KFC225

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		SC	Lapping of tip ⓟ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape D.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓟ PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓟ PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ ⓟ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length		LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	 Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	 Double key flats in parallel Can be combined with KC.	
		KFC	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 D R E G W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NC	The jector pin is removed.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

■Features



- Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.
- Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

JECTOR PUNCHES FOR HEAVY LOAD

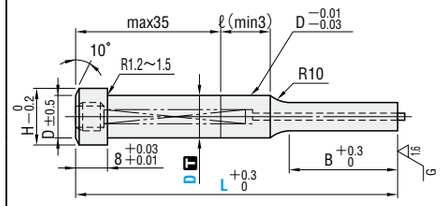
—FINISHED FOR RETAINERS・CONFIGURABLE FULL LENGTH・FIXED B TYPE・SPRING AND PIN REINFORCED TYPE・TiCN COATING—

PRODUCTS DATA P.1604・1611

※ Jector punch which maintains the same tip length B even when L is changed.

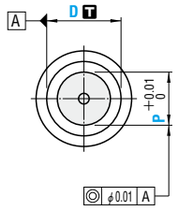
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

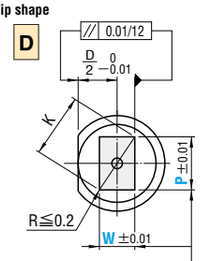
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64~67HRC Surface 3000HV	H—LFAPJ Spring and pin reinforced type H—LFAPJV	A D R E G	S	
	$D^{+0.005}_{0}$		AH—LFAPJ Spring and pin reinforced type AH—LFAPJV		L	

The tip end is ground before the coating is applied.

Tip shape A

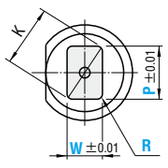


Tip shape D



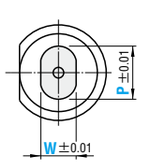
P≧W ⌯ 0.02 A
R=0 can be selected.
K=$\sqrt{P^2+W^2}$

Tip shape R



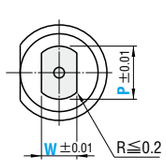
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P・Kmax.	0.01mm increments D R E G P・Wmin.	0.01 mm R	B	H
(D_{m5}) H—LFAPJ —Spring and pin reinforced type— H—LFAPJV	A D R E G	S	8	60.0~130.0	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10	Spring and pin reinforced type (70.0~100.0)	5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	70.0~130.0	10.00~ 15.99	15.97	6.00		19	21
			20	Spring and pin reinforced type (80.0~100.0)	13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AH—LFAPJ —Spring and pin reinforced type— AH—LFAPJV		L	8	70.0~130.0	4.00~ 7.99	7.97	4.00		13	13
			10	Spring and pin reinforced type (70.0~100.0)	5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	80.0~130.0	10.00~ 15.99	15.97	6.00		19	21
			20	Spring and pin reinforced type (80.0~100.0)	13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00		25	30

The spring constants of H—LFAPJV and AH—LFAPJV are twice those of H—LFAPJ and AH—LFAPJ respectively.

Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D R E G: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Jector holes are based on the jector punch blanks for heavy load. P.238

Order

Catalog No.	L	P	W	R (Ⓡ only)
H—LFAPJAS 20	80	P15.00		

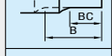
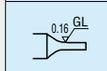
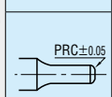
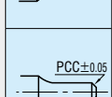
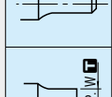
Days to Ship Quotation

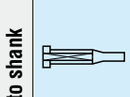
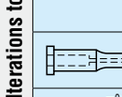
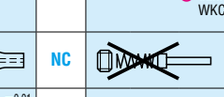
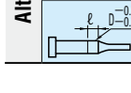
■Effect of spring and pin reinforced type

The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

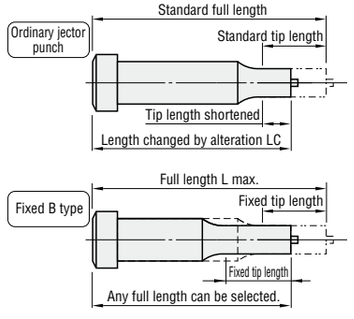
Catalog No.	L	P	W	R	(BC・KC, etc.)
H—LFAPJDS 20	79	P15.00	W6.00		BC13

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P238 ⊗ Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P238 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ D R E G P≦D−2.2 W≦D−2.2 D/2 −1 −0 −0.01 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NC	 The jector pin is removed.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

■Features



- Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.
- Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・CONFIGURABLE FULL LENGTH・FIXED B TYPE・SPRING AND PIN REINFORCED TYPE・WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1605・1611

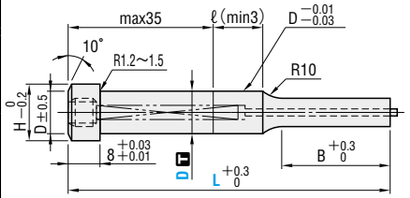
※ Jector punch which maintains the same tip length B even when L is changed.
Ⓡ Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—WPC® treatment— RoHS	D_{m5}	Powdered high-speed steel with WPC® treatment 64~67HRC Surface 1000~1100HV	W—LFAPJ Spring and pin reinforced type W—LFAPJV	A D R E G	S	
		Powdered high-speed steel with HW coating 64~67HRC Surface 3000HV	HW—LFAPJ Spring and pin reinforced type HW—LFAPJV			
—HW coating—	$D^{+0.005}_{0}$	Powdered high-speed steel with WPC® treatment 64~67HRC Surface 1000~1100HV	AW—LFAPJ Spring and pin reinforced type AW—LFAPJV		L	
		Powdered high-speed steel with HW coating 64~67HRC Surface 3000HV	AHW—LFAPJ Spring and pin reinforced type AHW—LFAPJV			

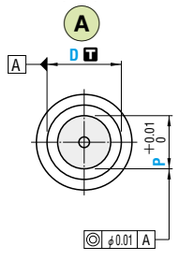
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

Tip length (B) L>S

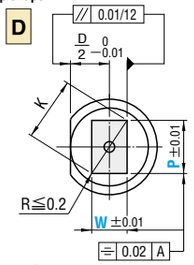


Ⓡ The tip edges are very slightly rounded.

Tip shape A

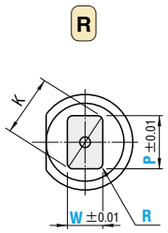


Tip shape D



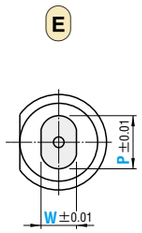
Ⓡ P≧W
Ⓡ $K=\sqrt{P^2+W^2}$

Tip shape R



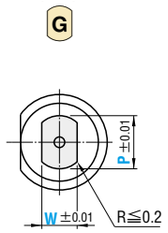
Ⓡ P≧W
Ⓡ $0.15 \leqq R < \frac{W}{2}$
Ⓡ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



Ⓡ P>W

Tip shape G



Ⓡ P>W

Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P·Kmax.	0.01mm increments D R E G P·Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) —WPC® treatment— W—LFAPJ Spring and pin reinforced type W—LFAPJV	A D R E G	S	8	60.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
($D^{+0.005}_{0}$) —WPC® treatment— AW—LFAPJ Spring and pin reinforced type AW—LFAPJV			16	70.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
—HW coating— HW—LFAPJ Spring and pin reinforced type HW—LFAPJV		L	8	70.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00		19	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
—HW coating— AHW—LFAPJ Spring and pin reinforced type AHW—LFAPJV			16	80.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		25	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30

Ⓡ The spring constants of W—LFAPJV, AW—LFAPJV, HW—LFAPJV, and AHW—LFAPJV are twice those of W—LFAPJ, AW—LFAPJ, HW—LFAPJ, and AHW—LFAPJ respectively.
Ⓡ Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓡ D R E G :P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Ⓡ Jector holes are based on the jector punch blanks for heavy load. P.238

Order

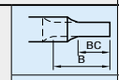
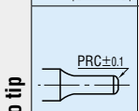
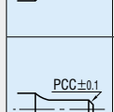
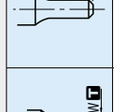
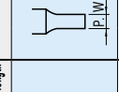
Catalog No.	L	P	W	R (Ⓡ only)
W—LFAPJAS 20	80	P15.00		

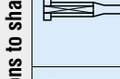
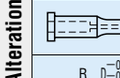
■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Days to Ship Quotation

Alterations

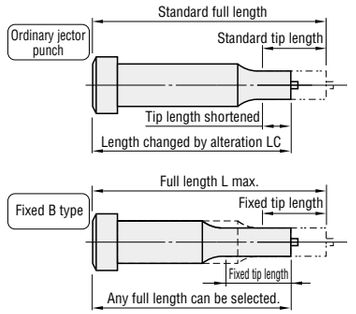
Catalog No.	L	P	W	R	(BC・KC, etc.)
W—LFAPJDS 20	79	P15.00	W6.00		BC13

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓡ PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PCC.	——	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓡ PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
			⊗ HW coating cannot be used for D>13.		
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 D R E G W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NC	The jector pin is removed.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

■Features



- Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.
- Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・CONFIGURABLE FULL LENGTH・FIXED B TYPE・RW COATING—

PRODUCTS DATA P.1607

※ Jector punch which maintains the same tip length B even when L is changed.

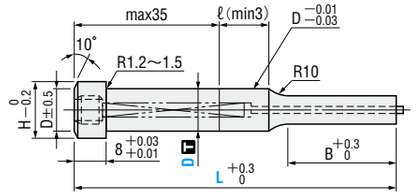
(?) Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Powdered highspeed steel 64～67HRC Surface 3100HV
	$D^{+0.005}_{0}$	

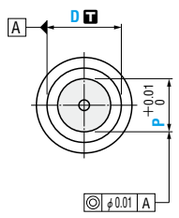
Catalog No. Type	Tip shape	B Tip length
RW—LFAPJ Spring and pin reinforced type RW—LFAPJV	A D R E G	S
ARW—LFAPJ Spring and pin reinforced type ARW—LFAPJV	A D R E G	L

The tip shape can be selected from Tip shape A～G in the figure below.

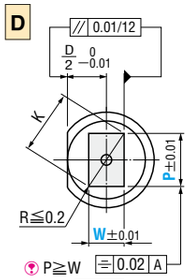


(?) The tip edges are very slightly rounded.

Tip shape A

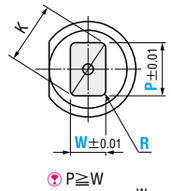


Tip shape D



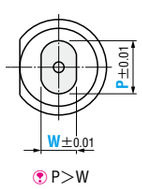
(?) P≧W
(?) $K=\sqrt{P^2+W^2}$

Tip shape R



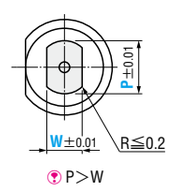
(?) P≧W
(?) $0.15 \leqq R < \frac{W}{2}$
(?) $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



(?) P>W

Tip shape G



(?) P>W

Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	0.01mm increments R	B	H
(Dm5) RW—LFAPJ Spring and pin reinforced type RW—LFAPJV	A D R E G	S	8	60.0～130.0 Spring and pin reinforced type (70.0～100.0)	4.00 ～ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00 ～ 9.99	9.97	5.00			15
			13		6.00 ～ 12.99	12.97	6.00			18
			16	70.0～130.0 Spring and pin reinforced type (80.0～100.0)	10.00 ～ 15.99	15.97	6.00		19	21
			20		13.00 ～ 19.99	19.97	6.00			25
			25		18.00 ～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) ARW—LFAPJ Spring and pin reinforced type ARW—LFAPJV	A D R E G	L	8	70.0～130.0 Spring and pin reinforced type (70.0～100.0)	4.00 ～ 7.99	7.97	4.00		19	13
			10		5.00 ～ 9.99	9.97	5.00			15
			13		6.00 ～ 12.99	12.97	6.00			18
			16	80.0～130.0 Spring and pin reinforced type (80.0～100.0)	10.00 ～ 15.99	15.97	6.00		25	21
			20		13.00 ～ 19.99	19.97	6.00			25
			25		18.00 ～ 24.99	24.97	6.00			30

(?) The spring constants of RW—LFAPJV and ARW—LFAPJV are twice those of RW—LFAPJ and ARW—LFAPJ respectively.
(?) Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
(?) DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
(?) Jector holes are based on the jector punch blanks for heavy load. P.238

Order

Catalog No. — L — P — W — R (Ⓡ only)
RW—LFAPJAS 20 — 80 — P15.00

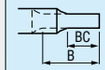
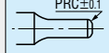
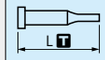
Days to Ship Quotation

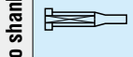
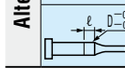
■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
See the product data for details. P.1607

Alterations

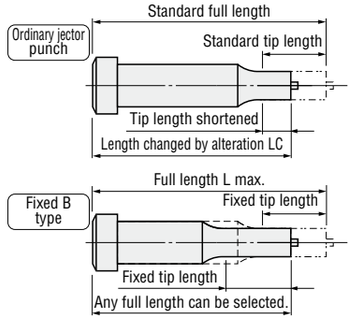
Catalog No. — L — P — W — R — (BC・KC…etc.)
RW—LFAPJDS 20 — 79 — P15.00 — W6.00 — BC13

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments (?) PRC≦(P−d1−0.5)/2 d1 dimension P.238	—	
Alterations to full length		LKC	Full length tolerance change	$L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC ⊗ Cannot be used for retainer set products		
		NC		The jector pin is removed.	
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

■Features

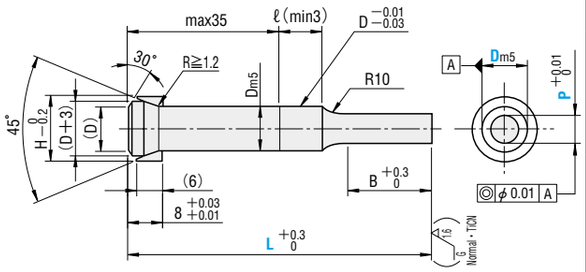


- Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.
- Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

PUNCHES

TAPERED HEAD PUNCHES
—NORMAL・TiCN COATING・HW COATING—

PRODUCTS DATA
P.1601・1604・1605・1611

Type	M H	Catalog No.	Shape
—Normal— RoHS —TiCN coating— —HW coating— 	Punch Equivalent to SKH51 61～64HRC TiCN coating Surface 3000HV HW coating Surface 3000HV Taper ring NAK80 37～43HRC	TSSHAS TSSHAL TiCN coating H—TSSHAS H—TSSHAL HW coating HW—TSSHAS HW—TSSHAL	 The tip end of a TiCN coating punch is ground before the coating is applied. The tip edge of an HW coating punch is very slightly rounded.
	Punch Powdered high-speed steel 64～67HRC TiCN coating Surface 3000HV HW coating Surface 3000HV Taper ring NAK80 37～43HRC	TSPHAS TSPHAL TiCN coating H—TSPHAS H—TSPHAL HW coating HW—TSPHAS HW—TSPHAL	

Catalog No. Type	D	L					0.01mm increments min. P max.	B	H
S TSSHAS TSPHAS —TiCN coating— H—TSSHAS H—TSPHAS —HW coating— HW—TSSHAS HW—TSPHAS	8	60	70	80	90	100	3.00～ 7.99	13	13
	10	60	70	80	90	100	3.00～ 9.99		15
	13	60	70	80	90	100	6.00～ 12.99		18
	16	60	70	80	90	100	10.00～ 15.99	19	21
	20	60	70	80	90	100	13.00～ 19.99		25
	25	60	70	80	90	100	18.00～ 24.99		30
L TSSHAL TSPHAL —TiCN coating— H—TSSHAL H—TSPHAL —HW coating— HW—TSSHAL HW—TSPHAL	8	60	70	80	90	100	3.00～ 7.99	19	13
	10	60	70	80	90	100	3.00～ 9.99		15
	13	60	70	80	90	100	6.00～ 12.99		18
	16	60	70	80	90	100	10.00～ 15.99	25	21
	20	60	70	80	90	100	13.00～ 19.99		25
	25	60	70	80	90	100	18.00～ 24.99		30

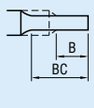
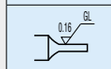
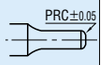
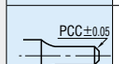
P>D—0.03⋯ℓ=0 If P>D—0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.

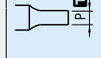
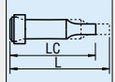
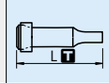
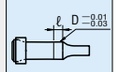
Order — Catalog No. — L — P
HW—TSSHAS 20 — 80 — P15.00

Days to Ship: Quotation

Price: Quotation

Alterations — Catalog No. — L(LC) — P(PC) — (BC・SC, etc.)
TSSHAS 20 — LC82 — PC12.00 — BC13

Alteration		Code	Spec.	1Code
Alterations to tip		PC	Tip dimension change PC≧Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P: 1.500～1.999 Bmax. 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. The base material bfinished before coating is applied Cannot be used with HW coating.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 Cannot be combined with PCC. For HW coating, the tolerance is PRC±0.1.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC. For HW coating, the tolerance is PCC±0.1.	

Alteration		Code	Spec.	1Code
Alterations to tip		PKC	Tip dimension change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) TiCN of HW coating cannot be used for D>13.	Quotation
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length—35mm).	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
Shank		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

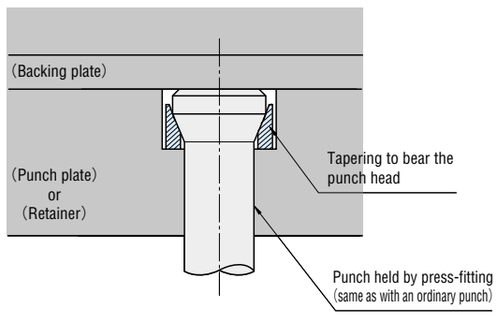
Example

■Features

- Tapered head punches relieve stress concentration, providing greater head strength than conventional heavy-load punches.
- These products were developed for heavy-load applications, such as punching of high-tensile steel sheets with tensile strength of 980 MPa (100 kgf/mm²) or higher, spring steel, and hardened steel.
- When used with the accessory taper rings, the tapered head punches eliminate the need for machining of tapered holes in the punch plates and for machining to align the thickness of the plate and punch head.
- Because the head of a tapered head punch is interchangeable with that of a heavy-load punch, the retainer for a heavy-load punch can be used.
- Guide to tapered head punches P.1611

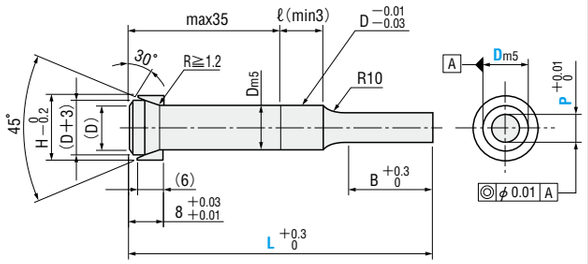
■Note

- The head thickness tolerance of a tapered head punch, $8^{+0.03}_{+0.01}$, is achieved by machining a match between the actual individual punch and its taper ring.
  Be sure to use a taper ring that has the same ID number as the punch.
  If the punch is combined with a tapered ring that has a different ID number, the head thickness may deviate from the tolerance listed in the catalog.
- When a punch is replaced, replace both punch and taper ring as a set.
  (The punch and taper ring are not sold individually.)



TAPERED HEAD PUNCHES
—RW COATING—

PRODUCTS DATA P.1607

Type	M H	Catalog No.	Shape
RoHS	punch Equivalent to SKH51 61～64HRC Surface 3100HV Taper ring NAK80 37～43HRC	RW—TSSHAS RW—TSSHAL	
	punch Powdered highspeed steel 64～67HRC Surface 3100HV Taper ring NAK80 37～43HRC	RW—TSPHAS RW—TSPHAL	

The tip edges are very slightly rounded.

Catalog No. Type	D	L					0.01mm increments min. P max.	B	H
S	8	60	70	80	90	100	3.00 ～ 7.99	13	13
	10	60	70	80	90	100	3.00 ～ 9.99		15
RW—TSSHAS RW—TSPHAS	13	60	70	80	90	100	6.00 ～ 12.99		18
	16	60	70	80	90	100	10.00 ～ 15.99	19	21
	20	60	70	80	90	100	13.00 ～ 19.99		25
	25	60	70	80	90	100	18.00 ～ 24.99		30
L	8	60	70	80	90	100	3.00 ～ 7.99	19	13
	10	60	70	80	90	100	3.00 ～ 9.99		15
RW—TSSHAL RW—TSPHAL	13	60	70	80	90	100	6.00 ～ 12.99		18
	16	60	70	80	90	100	10.00 ～ 15.99	25	21
	20	60	70	80	90	100	13.00 ～ 19.99		25
	25	60	70	80	90	100	18.00 ～ 24.99		30

P＞D—0.03…ℓ=0　If P＞D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

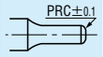
Catalog No.	—	L	—	P
RW—TSSHAS 20	—	80	—	P15.00

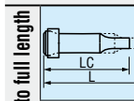
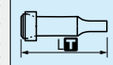
Days to Ship Quotation

Price Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	(BC･SC…etc.)
RW—TSSHAS 20	—	LC82	—	PC12.00	—	BC13

Alterations		Code	Spec.	1Code
Alterations to tip		PC	Tip dimension change PC≧P min / 2 0.01mm increments P: 1.500～1.999 Bmax 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Quotation
		BC	Tip length change 2≦BC≦Bmax 0.1mm increments Full length L must be at least 35mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1　0.1mm increments PRC≦(P—0.2)/2	

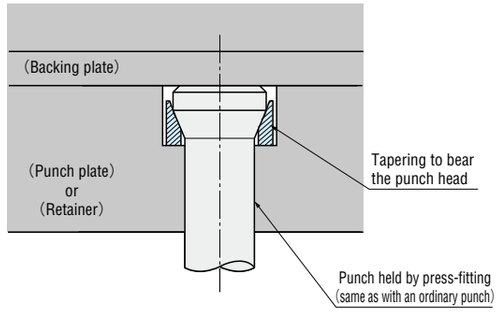
Alterations		Code	Spec.	1Code
Alterations to full length		LC	Full length change　35+B(BC)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length—35mm).	Quotation
		LKC	Full length tolerance change　$L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	
Shank		NDC	No press-in lead　ℓ≧3 ⇨ ℓ=0	

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
See the product data for details. P.1607

Example

■Features

- Tapered head punches relieve stress concentration, providing greater head strength than conventional heavyload punches.
- These products were developed for heavy-load applications, such as punching of high-tensile steel sheets with tensile strength of 980MPa (100kgf/mm^2) or higher, spring steel, and hardened steel.
- When used with the accessory taper rings, the tapered head punches eliminate the need for machining of tapered holes in the punch plates and for machining to align the thickness of the plate and punch head.
- Because the head of a tapered head punch is interchangeable with that of a heavy-load punch, the retainer for a heavy-load punch can be used.
- Guide to tapered head punches P.1611

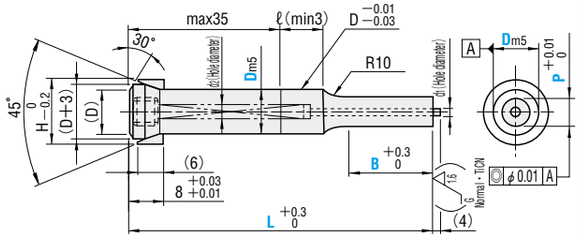


■Note

- The head thickness tolerance of a tapered head punch, $8^{+0.03}_{+0.01}$, is achieved by machining a match between the actual individual punch and its taper ring. Be sure to use a taper ring that has the same ID number as the punch. If the punch is combined with a tapered ring that has a different ID number, the head thickness may deviate from the tolerance listed in the catalog.
- When a punch is replaced, replace both punch and taper ring as a set.
(The punch and taper ring are not sold individually.)

TAPERED HEAD JECTOR PUNCHES
—NORMAL・WPC® TREATMENT・TiCN COATING・HW COATING—

PRODUCTS DATA P.1604・1605・1611

Type	M H	S	Catalog No.	Shape
—Normal— RoHS	Punch Equivalent to SKH51 61～64HRC	—	TSSJAS TSSJAL	
—WPC® treatment—		WPC® treatment Surface 1000～1100HV	W—TSSJAS W—TSSJAL	
	Taper ring NAK80 37～43HRC	TiCN coating Surface 3000HV	H—TSSJAS H—TSSJAL	
—TiCN coating—		HW coating Surface 3000HV	HW—TSSJAS HW—TSSJAL	
	Punch Powdered high-speed steel 64～67HRC	—	TSPJAS TSPJAL	
—HW coating—		WPC® treatment Surface 1000～1100HV	W—TSPJAS W—TSPJAL	
	Taper ring NAK80 37～43HRC	TiCN coating Surface 3000HV	H—TSPJAS H—TSPJAL	
		HW coating Surface 3000HV	HW—TSPJAS HW—TSPJAL	

The tip end of a TiCN coating punch is ground before the coating is applied.
The tip edges of a WPC® treatment or HW coating punch are very slightly rounded.

Catalog No. Type		D	0.1 mm increments L	0.01mm increments min. P max.	B	H	d_1	d_2
S	—WPC® treatment—							
TSSJAS TSPJAS	W—TSSJAS W—TSPJAS	8	50.0～ 80.0	4.00～ 7.99	13	13	1.5	3.4
		10	55.0～ 90.0	5.00～ 9.99		15	1.8	4.4
—TiCN coating—	—HW coating—	13	65.0～ 100.0	6.00～ 12.99		18	2.8	
H—TSSJAS H—TSPJAS	HW—TSSJAS HW—TSPJAS	16		10.00～ 15.99	19	21		
L	—WPC® treatment—	8	60.0～ 80.0	4.00～ 7.99	19	13	1.5	3.4
TSSJAL TSPJAL	W—TSSJAL W—TSPJAL	10	60.0～ 90.0	5.00～ 9.99		18	1.8	4.4
—TiCN coating—	—HW coating—	13	70.0～ 100.0	6.00～ 12.99		15	2.8	
H—TSSJAL H—TSPJAL	HW—TSSJAL HW—TSPJAL	16		10.00～ 15.99	25	21		

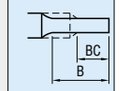
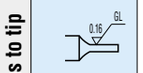
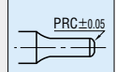
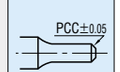
P>D—0.03…ℓ=0 If P>D—0.03, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Jector holes are based on the jector punch blanks for heavy load. P.238

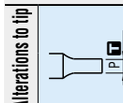
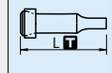
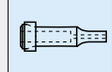
Order: Catalog No. — L — P
TSSJAS10 — 82 — P8.30

Days to Ship: Quotation

Price: Quotation

Alterations: Catalog No. — L — P — (BC・SC, etc.)
W—TSSJAL 10 — 82 — 8.60 — PRC0.3

Alteration		Code	Spec.	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC≦B 0.1 mm increments	
		SC	Lapping of tip ? P dimension tolerance and increment are the same. ⊗ Cannot be used with TiCN coating, WPC® treatment and HW coating.	Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ? PRC≦(P—d_1—0.5)/2 ⊗ Cannot be combined with PCC. ? For WPC® treatment or HW coating, the tolerance is PRC±0.1.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ? PCC≦(P—d_1—0.5)/2 ⊗ Cannot be combined with PRC. ? For WPC® treatment or HW coating, the tolerance is PCC±0.1.	

Alteration		Code	Spec.	1Code
Alterations to tip		PKC	Tip dimension change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$? (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN or HW coating cannot be used for D>13.	
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$	Quotation
Shank		NC	The jector pin is removed.	
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

Example

■Features
- Tapered head jector punches are designed for punching of stainless steel, high-tensile steel, and for general heavy loads.
  The strength and convenience are superior to conventional heavy-load jector punches due to improvements to the following points.

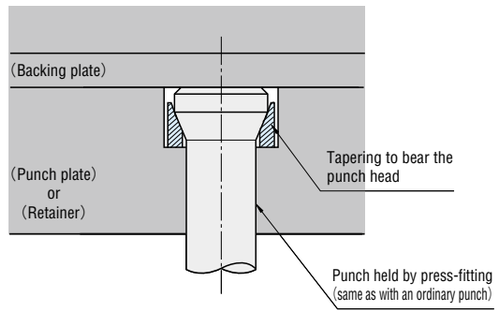
①There is no side hole on the shank. Such a hole can be a cause of punch breakage during punching for heavy loads.
②A problem with conventional jector punches is that the tip length B is shortened if an LC alteration is used. However tapered head jector punches are designed to maintain the same tip length B for any L dimension.

- When used with the accessory taper rings, the tapered head jector punches eliminate the need for machining of tapered holes in the punch plates and for machining to align the thickness of the plate and punch head.

- Guide to tapered head punches P.1611

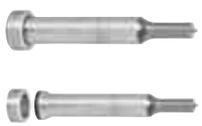
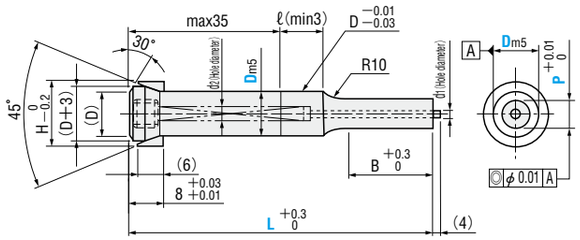
■Note
- The head thickness tolerance of a tapered head punch, $8^{+0.03}_{+0.01}$, is achieved by machining a match between the actual individual punch and its taper ring. Be sure to use a taper ring that has the same ID mark as the punch.
  If the punch is combined with a tapered ring that has a different ID number, the head thickness may deviate from the tolerance listed in the catalog.

- When a punch is replaced, replace both punch and taper ring as a set. (The punch and taper ring are not sold individually.)



TAPERED HEAD JECTOR PUNCHES
—RW COATING—

PRODUCTS DATA P.1607

Type	M H	Catalog No.	Shape
RoHS 	punch Equivalent to SKH51 61～64HRC Surface 3100HV Taper ring NAK80 37～43HRC	RW—TSSJAS	
		RW—TSSJAL	
	punch Powdered highspeed steel 64～67HRC Surface 3100HV Taper ring NAK80 37～43HRC	RW—TSPJAS	
		RW—TSPJAL	

The tip edges are very slightly rounded.

Catalog No. Type	D	0.1mm increments L	0.01mm increments min. P max.	B	H	d1	d2
S RW—TSSJAS RW—TSPJAS	8	50.0 ～ 80.0	4.00 ～ 7.99	13	13	1.5	3.4
	10	55.0 ～ 90.0	5.00 ～ 9.99		15	1.8	4.4
	13	65.0 ～100.0	6.00 ～12.99		18	2.8	
	16		10.00 ～15.99	19	21		
L RW—TSSJAL RW—TSPJAL	8	60.0 ～ 80.0	4.00 ～ 7.99	19	13	1.5	3.4
	10	60.0 ～ 90.0	5.00 ～ 9.99		18	1.8	4.4
	13	70.0 ～100.0	6.00 ～12.99		15	2.8	
	16		10.00 ～15.99	25	21		

P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, D$^{-0.01}_{-0.03}$ (press-in lead) is not included.
Jector holes are based on the jector punch blanks for heavy load. P.238

Order

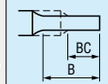
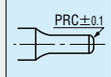
Catalog No.	L	P
RW—TSSJAS 10	82	P8.30

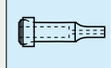
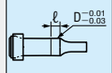
Days to Ship: Quotation

Price: Quotation

Alterations

Catalog No.	L	P	(BC・SC⋯etc.)
RW—TSSJAL 10	82	8.60	PRC0.3

Alterations		Code	Spec.	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC≦B 0.1mm increments	Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d1−0.5)/2	

Alterations		Code	Spec.	1Code
Alterations to full length		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	Quotation
Alterations to shank		NC	The jector pin is removed.	
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

Example

■Features

- Tapered head jector punches are designed for punching of stainless steel, high-tensile steel, and for general heavy loads. The strength and convenience are superior to conventional heavy-load jector punches due to improvements to the following points.

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- Guide to tapered head punches P.1611

■Note

- The head thickness tolerance of a tapered head punch, 8 +0.03 +0.01, is achieved by machining a match between the actual individual punch and its taper ring. Be sure to use a taper ring that has the same ID mark as the punch. If the punch is combined with a tapered ring that has a different ID number, the head thickness may deviate from the tolerance listed in the catalog.

- When a punch is replaced, replace both punch and taper ring as a set. (The punch and taper ring are not sold individually.)

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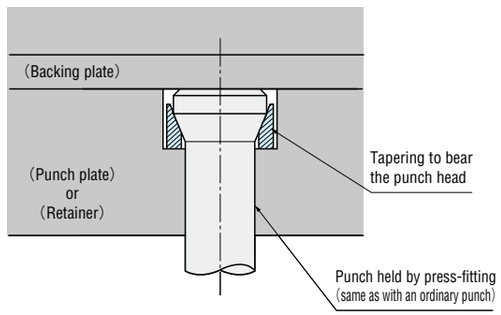
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
See the product data for details. P.1607

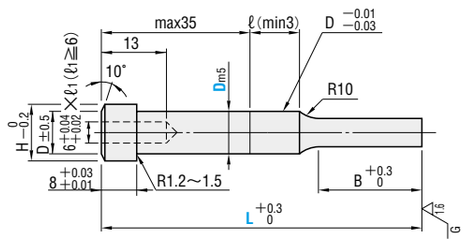


PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES
—FINISHED FOR RETAINERS—

PRODUCTS DATA P.1611

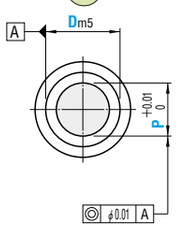
Type	Ⓐ	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
With locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKH51 61～64HRC	AP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S	—C
			Powdered high-speed steel 64～67HRC	APH		L	

RoHS

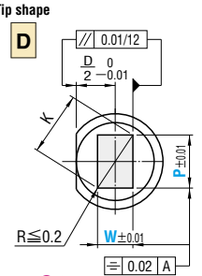


Tip length (B) L>S

Tip shape Ⓐ

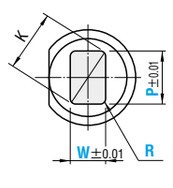


Tip shape Ⓓ



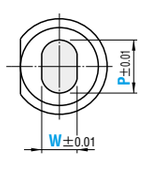
- Ⓟ P≧W
- Ⓟ R=0 can be selected.
- Ⓟ $K=\sqrt{P^2+W^2}$

Tip shape Ⓡ



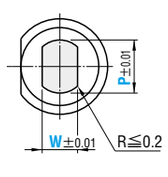
- Ⓟ P≧W
- Ⓟ $0.15 \leqq R < \frac{W}{2}$
- Ⓟ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape Ⓔ



- Ⓟ P>W

Tip shape Ⓖ



- Ⓟ P>W

Catalog No. Type		D	L	0.01mm increments Ⓐ min. P max.	Ⓐ P·Kmax.	Ⓐ P·Wmin.	Ⓡ R	B	H
S	APAS—C	10	(50) 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	15
	APHAS—C								
	APDS—C	13	(50) 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
	APHDS—C								
	APRS—C	16	(50) 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	21
	APHRS—C								
	APES—C	20	(50) 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
	APHES—C								
	APGS—C	25	(50) 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30
L	APAL—C	10	60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	15
	APHAL—C								
	APDL—C	13	60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
	APHDL—C								
	APRL—C	16	70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	21
	APHRL—C								
	APEL—C	20	70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
	APHEL—C								
	APGL—C	25	70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30
	APHGL—C								

- Ⓟ L(50)⋯B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓟ Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
- Ⓟ Ⓓ Ⓡ Ⓔ Ⓖ: P·K>D−0.05 ⋯ℓ=0 If P·K>D−0.05 for a shaped punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.

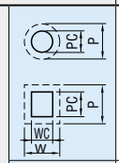
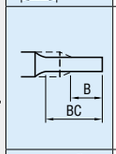
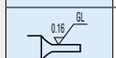
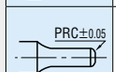
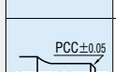
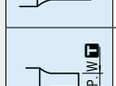
Order

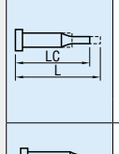
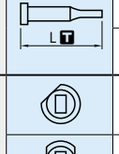
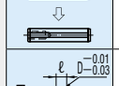
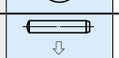
Catalog No.	L	P	W	R (Ⓡ only)
APAS—C20	80	P15.00		
APDS—C25	80	P18.00	W10.00	

Days to Ship Quotation

Alterations

Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC·KC, etc.)
APAS—C 20 — LC82 — PC12.00 — BC13

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip		PC WC	Tip dimension change $PC \geqq \frac{Pmin.}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) 1.500～1.999 Bmax. 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Tip dimension change $PC \geqq \frac{P \cdot Wmin.}{2}$ $WC \geqq \frac{P \cdot Wmin.}{2}$ 0.01mm increments P(PC)·W(WC) 1.25～1.49 Bmax. 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓟ Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓟ Full length L must be at least 40mm longer than tip length BC.	
		SC	Lapping of tip Ⓟ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip Ⓓ corner.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓟ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓟ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓟ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01 ⇨ +0.01 0	

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments Ⓟ If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC·LKZ, 0.01mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments Ⓟ If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	——	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

PUNCHES

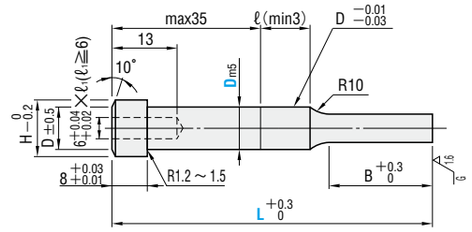
PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES
—FINISHED FOR RETAINERS・TiCN COATING—

PRODUCTS DATA P.1601・1604・1611

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3000HV	H—AP	A D R E G	S L	—C
			Powdered high-speed steel 64～67HRC Surface 3000HV	H—APH			

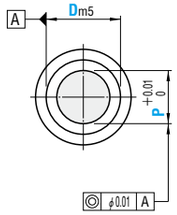
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.



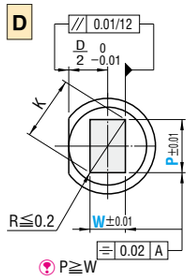
The tip end is ground before the coating is applied.
Tip length (B)　L>S

Tip shape A



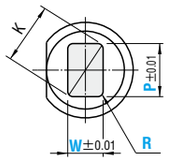
P≧W
R=0 can be selected.
K=$\sqrt{P^2+W^2}$

Tip shape D



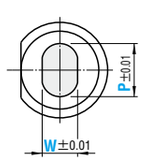
P≧W
R=0 can be selected.
K=$\sqrt{P^2+W^2}$

Tip shape R



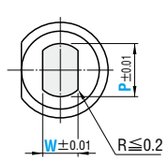
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type		D	L	0.01mm increments Ⓐ min. P max.	Ⓐ P・Kmax.	Ⓐ P・Wmin.	DREG R R	B	H
S H—APAS—C	H—APHAS—C	10	(50) 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	0.15≦R<$\frac{W}{2}$ (Ⓡ only)	13	15
H—APDS—C	H—APHDS—C	13	(50) 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
H—APRS—C	H—APHRS—C	16	(50) 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	21
H—APES—C	H—APHES—C	20	(50) 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
H—APGS—C	H—APHGS—C	25	(50) 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30
L H—APAL—C	H—APHAL—C	10	60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	15
H—APDL—C	H—APHDL—C	13	60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
H—APRL—C	H—APHRL—C	16	70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	21
H—APEL—C	H—APHEL—C	20	70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
H—APGL—C	H—APHGL—C	25	70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30

L(50)…B=8　If the full length is (50), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03…ℓ=0　If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0　If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	R (Ⓡ only)
H—APAS—C20	80	P15.00		
H—APDS—C25	80	P18.00	W10.00	

Days to Ship Quotation

Alterations　Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・KC, etc.)
H—APAS—C 20 — LC82 — PC12.00 — BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip	PC P	PC WC	Tip dimension change PC≧$\frac{P_{min.}}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) Bmax.: 1.500～1.999 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Tip dimension change PC≧$\frac{P \cdot W_{min.}}{2}$ 0.01mm increments P(PC)・W(WC) Bmax.: 1.25～1.49 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	Quotation
	B BC	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 40mm longer than tip length BC.	
	0.16 GL	SC	Lapping of tip Ⓡ P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.		
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓡ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓡ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
	P W T	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ Ⓡ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length	LC L	LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
	L T	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 0°, 90°, 180°, 270° 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
	ℓ $D^{-0.01}_{-0.03}$	NDC	No press-in lead　ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES
—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

PRODUCTS DATA
P.1601・1605・1611

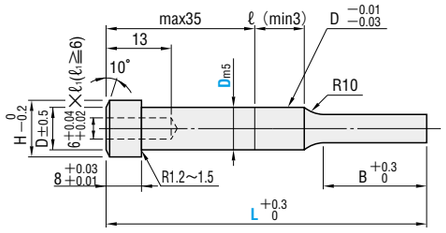
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin MS6—25	Dm5	Equivalent to SKH51 61～64HRC Surface 1000～1100HV	W—AP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L	—C
			Powdered high-speed steel 64～67HRC Surface 1000～1100HV	W—APH			
HW coating with locating dowel hole			Equivalent to SKH51 61～64HRC Surface 3000HV	HW—AP			
			Powdered high-speed steel 64～67HRC Surface 3000HV	HW—APH			

—WPC® treatment—

RoHS

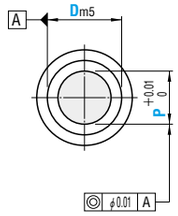
—HW coating—

The tip shape can be selected from Tip shape Ⓐ～Ⓖ in the figure below.



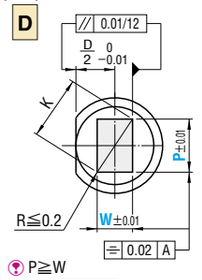
The tip edges are very slightly rounded.
Tip length (B) L>S

Tip shape Ⓐ



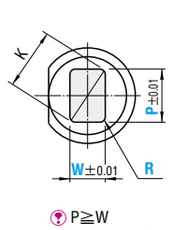
P≧W

Tip shape Ⓓ



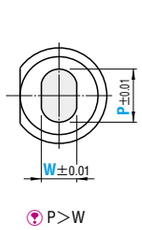
P≧W
$K=\sqrt{P^2+W^2}$

Tip shape Ⓡ



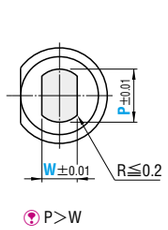
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2+2R}$

Tip shape Ⓔ



P>W

Tip shape Ⓖ



P>W

Catalog No. Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	ⒹⓇⒺⒼ P·Kmax.	ⒹⓇⒺⒼ P·Wmin.	Ⓡ R	B	H
WPC® treatment (SKH51) W—AP (Powdered high-speed steel) W—APH	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S	—C	10	(50) 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	$\frac{W}{2}$ (Ⓡ only) $0.15 \leqq R <$	13	15
				13	(50) 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
				16	(50) 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	21
				20	(50) 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
				25	(50) 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30
HW coating (SKH51) HW—AP (Powdered high-speed steel) HW—APH		L		10	60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	15
				13	60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
				16	70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	21
				20	70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
				25	70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30

Ⓠ L(50)⋯B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓠ Ⓐ: P>D−0.03 ⋯ℓ=0 If P>D−0.03 for a round punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
Ⓠ ⒹⓇⒺⒼ: P・K>D−0.05 ⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.

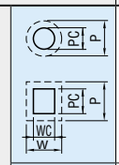
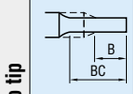
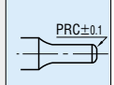
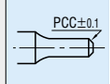
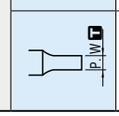
Order

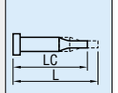
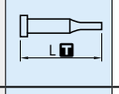
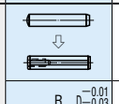
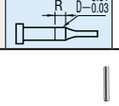
Catalog No.	L	P	W	R (Ⓡ only)
W—APAS—C20	80	P15.00		
HW—APDS—C25	80	P18.00	W10.00	

Days to Ship Quotation

Alterations

Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・KC, etc.)
W—APAS—C 20 — LC82 — PC12.00 — BC13

Alteration		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ P min. 2 0.01 mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax.: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC WC≧ P・W min. 2 0.01 mm increments P(PC)・W(WC) / Bmax.: 1.25～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓠ Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓠ Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓠ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓠ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓠ (P dimension can be selected in 0.001 mm increments.) ⊗ HW coating cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ +0.01 0 ⊗ HW coating cannot be used for D>13.	

Alteration		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments Ⓠ If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments Ⓠ If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

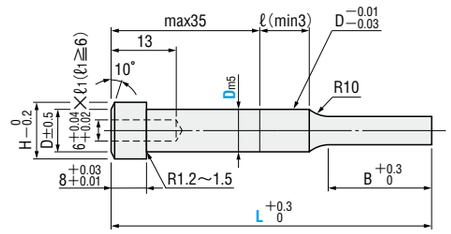
PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES
—(FINISHED FOR RETAINERS) RW COATING—

PRODUCTS DATA P.1607

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip Shape	B Tip length	with dowel hole
Locating with dowel hole RW coating	Dowel pin MS6—25	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3100HV	RW—AP	A D R E G	S L	—C
			Powdered highspeed steel 64～67HRC Surface 3100HV	RW—APH			

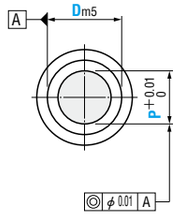
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

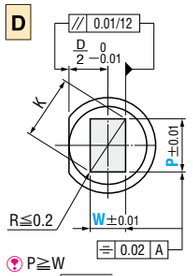


The tip edges are very slightly rounded.
Tip length (B) L>S

Tip shape A

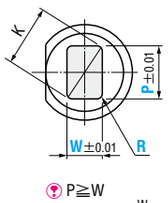


Tip shape D



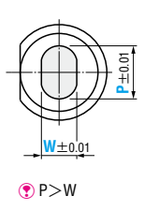
P≧W
K=√(P²+W²)

Tip shape R



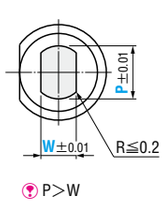
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²)+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip Shape	B Tip length	with dowel hole	D	L	0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	R R	B	H
(Equivalent to SKH51) RW—AP	A D R E G	S	—C	10	(50) 60 70 80 90 100 110 120 130 140 150	3.00～9.99	9.97	2.50	R≧W/2 (R only)	13	15
				13	(50) 60 70 80 90 100 110 120 130 140 150	6.00～12.99	12.97	3.00			18
				16	(50) 60 70 80 90 100 110 120 130 140 150	10.00～15.99	15.97	4.00		19	21
				20	(50) 60 70 80 90 100 110 120 130 140 150	13.00～19.99	19.97	5.00			25
				25	(50) 60 70 80 90 100 110 120 130 140 150	18.00～24.99	24.97	6.00			30
(Powdered highspeed steel) RW—APH	A D R E G	L	—C	10	60 70 80 90 100 110 120 130 140 150	3.00～9.99	9.97	2.50		19	15
				13	60 70 80 90 100 110 120 130 140 150	6.00～12.99	12.97	3.00			18
				16	70 80 90 100 110 120 130 140 150	10.00～15.99	15.97	4.00		25	21
				20	70 80 90 100 110 120 130 140 150	13.00～19.99	19.97	5.00			25
				25	70 80 90 100 110 120 130 140 150	18.00～24.99	24.97	6.00			30

(?) L(50)⋯B=8 If the full length is(50), the tip length is 8mm in all cases.
(?) Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$(press-in lead) is not included.
(?) DREG: P·K>D−0.05⋯ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$(press-in lead) is not included.

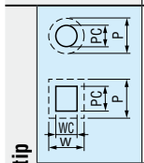
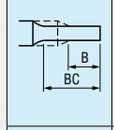
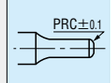
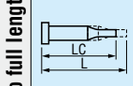
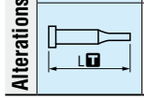
Order

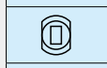
Catalog No.	L	P	W	R(R only)
RW—APDS—C25	80	P18.00	W10.00	

Days to Ship Quotation

Alterations

Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC·KC⋯etc.)
RW—APAS—C 20 — LC82 — PC12.00 — BC13

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin/2 0.01mm increments P(PC) / Bmax: 1.500～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC≧P·Wmin/2 WC≧P·Wmin/2 0.01mm increments P(PC)·W(WC) / Bmax: 1.25～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax 0.1mm increments (?) Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax 0.1mm increments (?) Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments (?) PRC≦(P−0.2)/2	—	
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1mm increments (?) If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1mm increments (?) If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alterations		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	—	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes⋯⋯
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

■**Effects of RW coating**
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. For details, see the product data. P.1607

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES
—FINISHED FOR RETAINERS・SPRING AND PIN REINFORCED TYPE—

PRODUCTS DATA P.1611

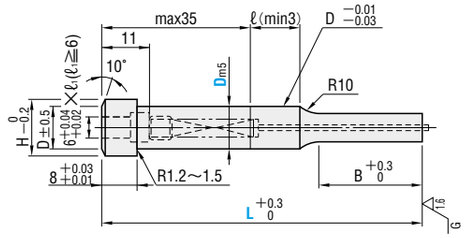
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
With locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKH51 61~64HRC	AHJ Spring and pin reinforced type AHJV	A D R E G	S L	—C

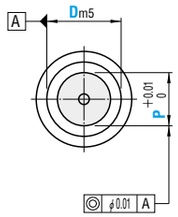
RoHS

The tip shape can be selected from Tip shape A~G in the figure below.

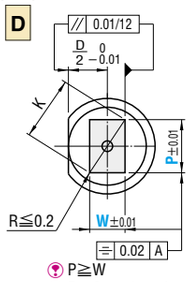


Tip length (B) L>S

Tip shape A

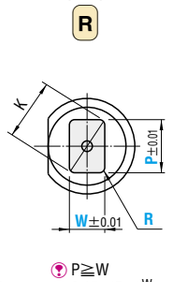


Tip shape D



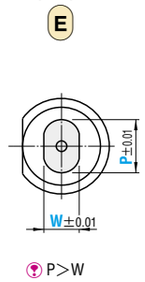
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



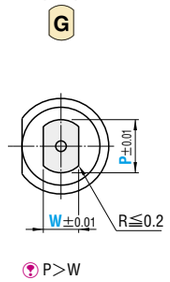
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
AHJ Spring and pin reinforced type AHJV	A D R E G	S	—C	10	(60) 70 80 90 100 (110) (120) (130)	5.00~ 9.99	9.97	5.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00~ 12.99	12.97	6.00			18
				16	(60) 70 80 90 100 (110) (120) (130)	10.00~ 15.99	15.97	6.00		19	21
				20	(60) 70 80 90 100 (110) (120) (130)	13.00~ 19.99	19.97	6.00			25
				25	(60) 70 80 90 100 (110) (120) (130)	18.00~ 24.99	24.97	6.00			30
		L		10	(60) 70 80 90 100 (110) (120) (130)	5.00~ 9.99	9.97	5.00		19	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00~ 12.99	12.97	6.00			18
				16	70 80 90 100 (110) (120) (130)	10.00~ 15.99	15.97	6.00		25	21
				20	70 80 90 100 (110) (120) (130)	13.00~ 19.99	19.97	6.00			25
				25	70 80 90 100 (110) (120) (130)	18.00~ 24.99	24.97	6.00			30

- L(60)⋯B=8 If full length is (60), tip length is 8mm in all cases.
- Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- L(110), (120) and (130) cannot be used for spring and pin reinforced types.

Order

Catalog No.	L	P	W	R (R only)
AHJAS—C 20	80	P15.00		
AHJVDS—C 25	80	P18.00	W10.00	

Days to Ship Quotation

■**Effect of spring and pin reinforced type**
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	L (LC)	P	W	R	(BC・KC, etc.)
AHJAS—C 20	LC82	P13.00			BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		SC	Lapping of tip ⓟ P dimension tolerance and increment are the same. ⓧ R=0 cannot be selected for tip shape D corners.		
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓟ PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⓧ Cannot be combined with PCC.	—	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓟ PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⓧ Cannot be combined with PRC.	—	
	P W	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ ⓟ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
Alterations to full length	LC L	LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) ⓟ Tip length B is shortened by (L−LC). ⓟ Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
	L T	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⓧ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⓧ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank	AIR	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⓧ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
	ℓ D −0.01 −0.03	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES
—FINISHED FOR RETAINERS・TiCN COATING・SPRING AND PIN REINFORCED TYPE—

PRODUCTS DATA P.1601・1604・1611

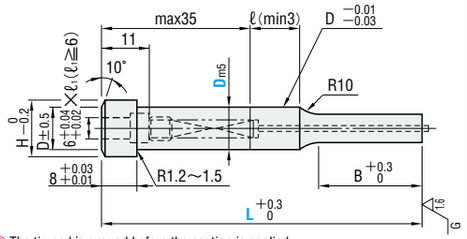
- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	Ⓐ	Shank diameter D Ⓣ tolerance	Ⓜ Ⓗ	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3000HV	H—AHJ Spring and pin reinforced type H—AHJV	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L	—C

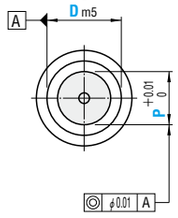
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

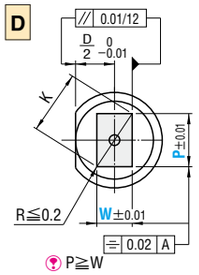


The tip end is ground before the coating is applied.
Tip length (B)　L>S

Tip shape A

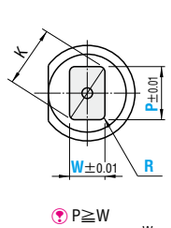


Tip shape D



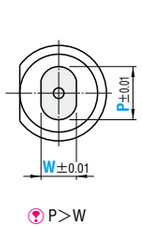
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



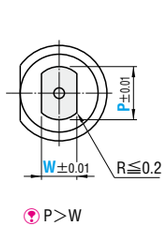
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P・Kmax.	0.01mm increments DREG P・Wmin.	R R	B	H
H—AHJ Spring and pin reinforced type H—AHJV	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S	—C	10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	(60) 70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		19	21
				20	(60) 70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	(60) 70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30
		L		10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00		19	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		25	21
				20	70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30

L(60)…B=8　If the full length is (60), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03…ℓ=0　If P>D−0.03 for a round punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0　If P・K>D−0.05 for a shaped punch, $D_{-0.03}^{-0.01}$ (press-in lead) is not included.
L(110), (120) and (130) cannot be used for spring and pin reinforced types.

Order

Catalog No.	L	P	W	R (Ⓡ only)
H—AHJAS—C 20	80	P15.00		
H—AHJVDS—C 25	80	P18.00	W10.00	

Days to Ship: Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No. — L(LC) — P — W — R — (BC・KC, etc.)
H—AHJAS—C 20 — LC82 — P15.00 — KFC225

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip	BC	BC	Tip length change (shorter than standard) 2≦BC<B　0.1 mm increments		
	SC	SC	Lapping of tip ⓟ P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.		
	PRC	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓟ PRC≦(P−d_1−0.5)/2 d_1 dimension details P.238 ⊗ Cannot be combined with PCC.	—	Quotation
	PCC	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓟ PCC≦(P−d_1−0.5)/2 d_1 dimension details P.238 ⊗ Cannot be combined with PRC.	—	
	PKC	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 ⓟ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ +0.01 0 ⊗ Cannot be used for D>13.	
Alterations to full length	LC	LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) ⓟ Tip length B is shortened by (L−LC). ⓟ Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
	LKC	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead　ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price: Quotation

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

—FINISHED FOR RETAINERS·WPC® TREATMENT·HW COATING·SPRING AND PIN REINFORCED TYPE—

PRODUCTS DATA P.1601·1605·1611

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

● For details of jector holes, refer to Jector Punch Blanks. P.238
● For details of jector pins, refer to Jector Pin Sets. P.241

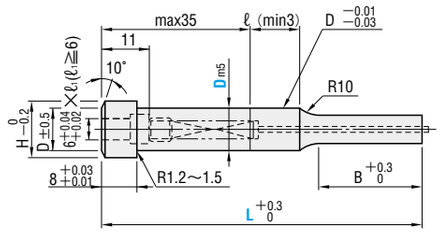
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKH51 61～64HRC Surface 1000～1200HV	W—AHJ	A D R E G	S	—C
			Equivalent to SKH51 61～64HRC Surface 3000HV	W—AHJV			
HW coating with locating dowel hole			Spring and pin reinforced type	HW—AHJ		L	
				HW—AHJV			

—WPC® treatment—

—HW coating—

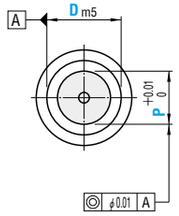
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

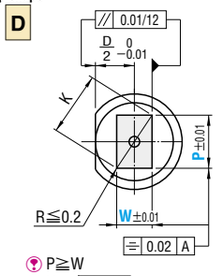


The tip edges are very slightly rounded.
Tip length (B) L>S

Tip shape A

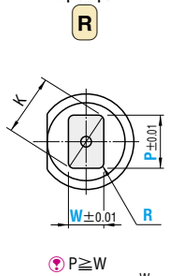


Tip shape D



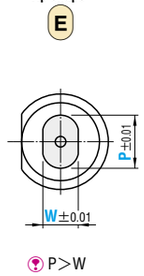
P≧W
K=$\sqrt{P^2+W^2}$

Tip shape R



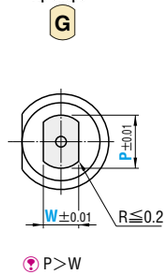
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
WPC® treatment W—AHJ Spring and pin reinforced type W—AHJV	A D R E G	S	—C	10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00	W/2 (Ⓡ only) 0.15≦R<	13	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	(60) 70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		19	21
				20	(60) 70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	(60) 70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30
HW coating HW—AHJ Spring and pin reinforced type HW—AHJV		L		10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00		19	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		25	21
				20	70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30

L(60)⋯B=8 If the full length is (60), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05⋯ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
⊗ L(110), (120), and (130) cannot be used for spring and pin reinforced types.

Order

Catalog No.	L	P	W	R (Ⓡ only)
W—AHJAS—C 20	80	P15.00		
HW—AHJDS—C 25	80	P18.00	W10.00	

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Days to Ship Quotation

Alterations

Catalog No. — L(LC) — P — W — R — (BC·KC, etc.)
W—AHJAS—C 20 — LC82 — P15.00 — KFC225—TPC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip	BC	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
	PRC±0.1	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P238 ⊗ Cannot be combined with PCC.	—	
	PCC±0.1	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension details P238 ⊗ Cannot be combined with PRC.	—	
	P W	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ P dimension can be selected in 0.001 mm increments. ⊗ HW Coating Cannot be used for D>13.	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ HW Coating Cannot be used for D>13.	
Alterations to full length	LC L	LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
	L T	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	—	No key flat	
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
	ℓ D −0.01 −0.03	NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

—FINISHED FOR RETAINERS · RW COATING · SPRING AND PIN REINFORCED TYPE—

PRODUCTS DATA P.1607

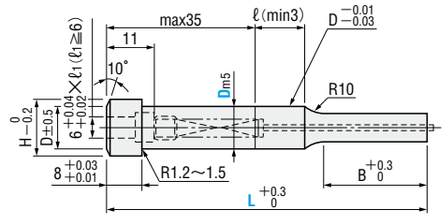
- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip Shape	B Tip length	with dowel hole
Locating with dowel hole RW coating	Dowel pin MS6—25	D m5	Equivalent to SKH51 61～64HRC Surface 3100HV	RW—AHJ Spring and pin reinforced type RW—AHJV	A D R E G	S L	—C

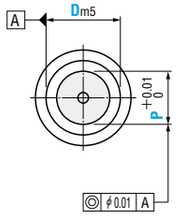
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.

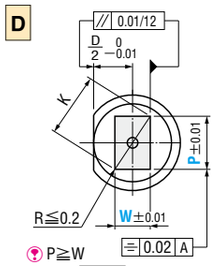


The tip edges are very slightly rounded.
Tip length (B) L>S

Tip shape A

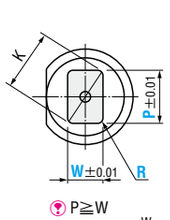


Tip shape D



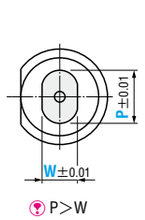
P≧W
K=$\sqrt{P^2+W^2}$

Tip shape R



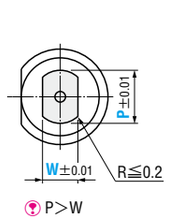
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip Shape	B Tip length	with dowel hole	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P·Kmax.	0.01mm increments D R E G P·Wmin.	0.01mm increments R R	B	H
RW—AHJ Spring and pin reinforced type RW—AHJV	A D R E G	S	—C	10	(60) 70 80 90 100 (110) (120) (130)	5.00～9.99	9.97	5.00	0.15≦R<W/2 (R only)	13	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～12.99	12.97	6.00			18
				16	(60) 70 80 90 100 (110) (120) (130)	10.00～15.99	15.97	6.00		19	21
				20	(60) 70 80 90 100 (110) (120) (130)	13.00～19.99	19.97	6.00			25
				25	(60) 70 80 90 100 (110) (120) (130)	18.00～24.99	24.97	6.00			30
		L		10	(60) 70 80 90 100 (110) (120) (130)	5.00～9.99	9.97	5.00		19	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～12.99	12.97	6.00			18
				16	70 80 90 100 (110) (120) (130)	10.00～15.99	15.97	6.00		25	21
				20	70 80 90 100 (110) (120) (130)	13.00～19.99	19.97	6.00			25
				25	70 80 90 100 (110) (120) (130)	18.00～24.99	24.97	6.00			30

The spring constants of RW—AHJV are twice those of RW—AHJ.
L(60)…B=8 If full length is (60), tip length is 8mm in all cases.
Ⓐ: P>D—0.03…ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P·K>D—0.05…ℓ=0 If P·K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(110), (120) and (130) cannot be used for spring and pin reinforced types.

Order

Catalog No.	L	P	W	R (R only)
RW—AHJDS—C 25	80	P18.00	W10.00	

Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
For details, see the product data P.1607

Alterations

Catalog No. — L(LC) — P — W — R — (BC·KC…etc.)
RW—AHJAS—C 20 — LC82 — P15.00 — KFC225—TPC

Alterations		Code	Ⓐ	D R E G	1Code
Alterations to tip	BC	BC	Tip length change (shorter than standard) 2≦BC<B 0.1mm increments		Quotation
	PRC	PRC±0.1	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P—d1—0.5)/2 d1 dimension P.238	—	
Alterations to full length	LC	LC L	Full length change LC<L (reduction in tip length) 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) Tip length B is reduced by (L—LC). Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
	LKC	L T	Full length tolerance change	$L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$	

Alterations		Code	Ⓐ	D R E G	1Code
Alterations to head	KC	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	KFC	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗Cannot be combined with KC·WKC.	
	NKC	NKC	—	No key flat	
Alterations to shank	AC	AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	NC	The jector pin is removed. ⊗Cannot be combined with AC.		
	TPC	TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
	NDC	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes……
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

PUNCHES

DOUBLE-STEPPED SHOULDER PUNCHES FOR HEAVY LOAD

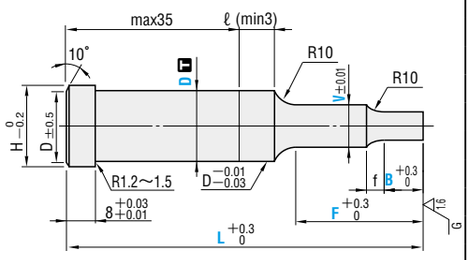
—FINISHED FOR RETAINERS, NORMAL・TiCN COATING・HW COATING—

PRODUCTS DATA P.1611

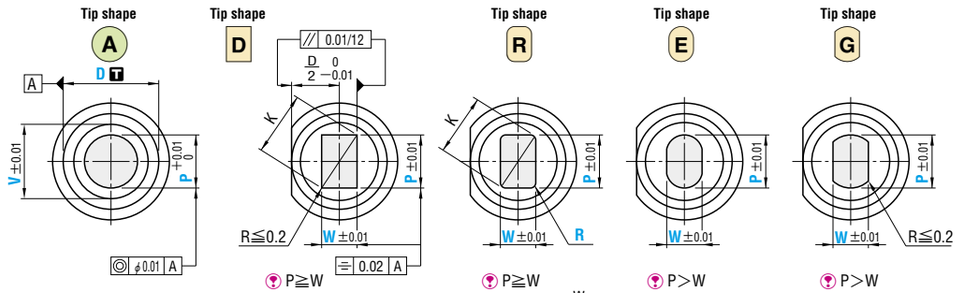
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Tip shape
—Normal— RoHS	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3000HV	Normal APTW	A D R E G
			TiCN coating H—APTW	
			HW coating HW—APTW	
		Powdered high-speed steel 64～67HRC Surface 3000HV	Normal APHTW	
			TiCN coating H—APHTW	
			HW coating HW—APHTW	
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC Surface 3000HV	Normal A—APTW	
			TiCN coating AH—APTW	
			HW coating AHW—APTW	
		Powdered high-speed steel 64～67HRC Surface 3000HV	Normal A—APHTW	
			TiCN coating AH—APHTW	
			HW coating AHW—APHTW	

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.



The tip end of a TiCN coating punch is ground before the coating is applied.
The tip edge of an HW coating punch is very slightly rounded.



Tip shape A: P≧W; R=0 can be selected. (However HW coating punches cannot be used.); $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R: P>W

Tip shape E: P>W

Tip shape G: P>W

Catalog No. Type	Tip shape	D	L	0.01mm increments Ⓐ P	0.1mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments DREG P・W	R R	0.1mm increments DREG B	0.01mm increments V	0.1mm increments F	H
(D_{m5}) Normal APTW APHTW TiCN coating H—APTW H—APHTW HW coating HW—APTW HW—APHTW	A D R E G	5	50・60・70・80	1.50～ 1.999	2.0～20.0	4.96	1.00～ 1.49	$0.15 \leqq R < \frac{W}{2}$ (R only)	2.0～ 8.0	Ⓐ D>V>P+0.01 DREG D>V>(P,K)+0.03	B+f+2<F≦Fmax. & Ⓐ :F≦L−35 DREG :F≦L−40	10
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 4.98	2.0～40.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 4.98	2.0～40.0		3.50～ 4.96		2.0～ 25.0			
		6	50・60・70・80	1.50～ 1.999	2.0～20.0	5.96	1.00～ 1.49		2.0～ 8.0			11
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.98	2.0～40.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 5.98	2.0～40.0		3.50～ 4.99		2.0～ 25.0			
				4.00～ 5.98	2.0～40.0		5.00～ 5.96		2.0～ 30.0			
		8	50・60・70・80・90・100	1.50～ 1.999	2.0～20.0	7.96	1.00～ 1.49		2.0～ 8.0			13
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 7.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 7.98	2.0～60.0		5.00～ 7.96		2.0～ 30.0			
($D^{+0.005}_{0}$) Normal A—APTW A—APHTW TiCN coating AH—APTW AH—APHTW HW coating AHW—APTW AHW—APHTW		10	50・60・70・80・90・100	1.50～ 1.999	2.0～20.0	9.96	1.25～ 1.49		2.0～ 8.0			15
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 9.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 9.98	2.0～60.0		5.00～ 9.96		2.0～ 30.0			
		13	50・60・70・80・90・100	3.00～ 3.999	2.0～35.0	12.96	1.50～ 1.99		2.0～ 13.0			18
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 12.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 12.98	2.0～60.0		5.00～ 12.96		2.0～ 30.0			
		16	50・60・70・80・90・100	5.00～ 5.999	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			21
				6.00～ 15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	50・60・70・80・90・100	6.50～ 19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			25
				6.50～ 19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～ 19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	50・60・70・80・90・100	9.00～ 24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			30
				9.00～ 24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～ 24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			

V	Fmax.
1.030～1.999	20
2.000～3.999	35
4.000～5.999	45
6.000～	60

For dimension **f**, refer to the punch R lengths in [Products Data] on P.1592, and verify the following.
Ⓐ : (V−P)/2=X
DREG : (V−W)/2=X

If V>D−0.03⋯ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	B	V	F	R (R only)
APTWA 10	80	P 9.50		B30	V 9.80	F35	
A—APHTWR 13	80	P10.50	W7.34	B25	V12.00	F35	R0.5

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P	W	B	V	F	R (R only)	(KC・WKC, etc.)
APTWA 10	LC72	P4.80		B10	V6.80	F25		SKC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip	0.16 GL	SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before coating is applied. ⊗ R=0 cannot be selected for the tip D corner. ⊗ Cannot be used with HW coating.		Quotation
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC. ⊗ HW coating, the tolerance is PRC±0.1	—	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC. ⊗ HW coating, the tolerance is PCC±0.1	—	
	P W	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating or HW coating cannot be used for D>13.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
	V	VKC	Tip tolerance change $V \pm 0.01 \Rightarrow {}^{+0.005}_{0}$ (V dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating or HW coating cannot be used for D>13.	Tip tolerance change $V \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
Alterations to full length	LC L	LC	Full length change 40+F≦LC<L 0.1mm increment (If combined with LKC・LKZ, 0.01mm increments can be selected.)		
	L T	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating or HW coating.		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank ・D5・6 V≦D−1.2 (Machining width 0.5) ・D8～ V≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
	ℓ D −0.01 −0.03	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

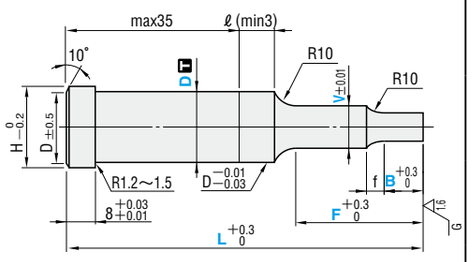
DOUBLE-STEPPED SHOULDER PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS, RW COATING—

PRODUCTS DATA P.1611

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Tip shape
RoHS	D_{m5}	Equivalent to SKH51 64～67HRC Surface 3100HV	RW—APTW	A D R E G
		Powdered high-speed steel 64～67HRC Surface 3100HV	RW—APHTW	
	$D^{+0.005}_{0}$	Equivalent to SKH51 64～67HRC Surface 3100HV	ARW—APTW	
		Powdered high-speed steel 64～67HRC Surface 3100HV	ARW—APHTW	

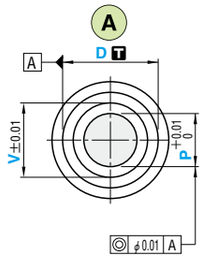
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.

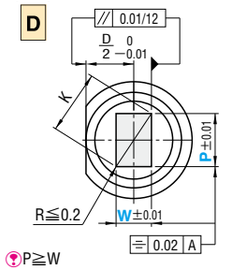


The tip edges are very slightly rounded.

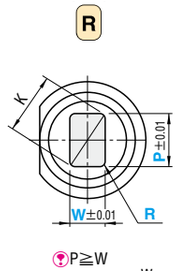
Tip shape A



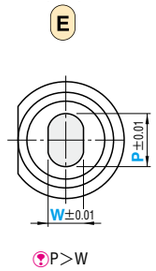
Tip shape D



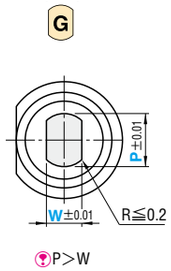
Tip shape R



Tip shape E



Tip shape G



P≧W
R=0 can be selected. (However, HW coating punches cannot be used.)
$K=\sqrt{P^2+W^2}$

P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

P>W

P>W

Catalog No. Type	Tip shape	D	L	0.01mm increments Ⓐ P	0.01mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments D R E G P·W	0.01mm increments R	0.1mm increments D R E G B	0.01mm increments V	0.1mm increments F	H
(D_{m5}) RW—APTW RW—APHTW ($D^{+0.005}_{0}$) ARW—APTW ARW—APHTW	A D R E G	5	50·60·70·80	1.50～ 1.999	2.0～20.0	4.96	1.00～ 1.49	$0.15 \leqq R < \frac{W}{2}$ (R only)	2.0～ 8.0	Ⓐ: D>V>P+0.01 D R E G: D>V>(P,K)+0.03	B+f+2<F≦Fmax & Ⓐ:F≦−35 D R E G :F≦L−40	10
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 4.98	2.0～40.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 4.98	2.0～40.0		3.50～ 4.96		2.0～ 25.0			
		6	50·60·70·80	1.50～ 1.999	2.0～20.0	5.96	1.00～ 1.49		2.0～ 8.0			11
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.98	2.0～40.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 5.98	2.0～40.0		3.50～ 4.99		2.0～ 25.0			
				4.00～ 5.98	2.0～40.0		5.00～ 5.96		2.0～ 30.0			
		8	50·60·70·80·90·100	1.50～ 1.999	2.0～20.0	7.96	1.00～ 1.49		2.0～ 8.0			13
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 7.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 7.98	2.0～60.0		5.00～ 7.96		2.0～ 30.0			
		10	50·60·70·80·90·100	1.50～ 1.999	2.0～20.0	9.96	1.25～ 1.49		2.0～ 8.0			15
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 9.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 9.98	2.0～60.0		5.00～ 9.96		2.0～ 30.0			
		13	50·60·70·80·90·100	3.00～ 3.999	2.0～35.0	12.96	1.50～ 1.99		2.0～ 13.0			18
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 12.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 12.98	2.0～60.0		5.00～ 12.96		2.0～ 30.0			
		16	50·60·70·80·90·100	5.00～ 5.999	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			21
				6.00～ 15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	50·60·70·80·90·100	6.50～ 19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			25
				6.50～ 19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～ 19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	50·60·70·80·90·100	9.00～ 24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			30
				9.00～ 24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～ 24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			

If V>D−0.03…ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	L	P	W	B	V	F	R (R only)
RW—APHTWR 13	80	P10.50	W7.34	B25	V12.00	F35	R0.5

Days to Ship: Quotation

Alterations

Catalog No.	L (LC)	P	W	B	V	F	R (R only)	(KC·WKC…etc.)
RW—APTWA 10	LC72	P4.80		B10	V6.80	F25		SKC

Alterations		Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC±0.1	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P)PRC≦(P−0.2)/2	—	Quotation
Alterations to full length	LC L	LC	Full length change 40+F≦LC<L 0.1mm increment (If combined with LKC, 0.01mm increments can be selected.)		
	LT	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alterations		Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank ·D5·6 V≦D−1.2 (Machining width 0.5) ·D8～ V≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
	ℓ D −0.01 −0.03	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

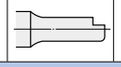
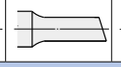
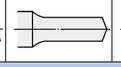
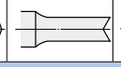
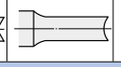
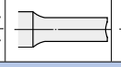
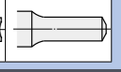
Price: Quotation

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
See the product data for details. P.1607

V	Fmax
1.030～1.999	20
2.000～3.999	35
4.000～5.999	45
6.000～	60

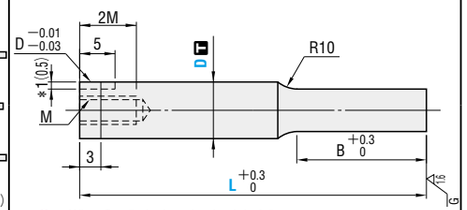
For dimension **f**, refer to the punch R lengths in [Products Data] on P.1592, and verify the following.
Ⓐ : (V−P)/2=X
D R E G : (V−W)/2=X

TAPPED PUNCHES

Tip profile alteration P.232	1F	2F	3F	4F	5F	6F	7F
							

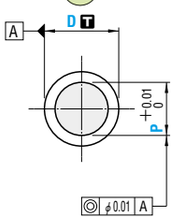
Type	M H	Catalog No. Type: Shank diameter tolerance D$^{-0.01}_{-0.03}$	Catalog No. Type: Shank dia. tolerance D$^{+0.005}_{0}$	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Equivalent to SKD 11 60～63HRC	(D5～25) MP	(D5～25) A—MP	A D R E G	S L X Tip length (B) X>L>S
		Tapped large-diameter type (D16～25) MPL			
	Powdered high-speed steel 64～67HRC	(D5～25) MPH	(D5～25) A—MPH		

The tip shape can be selected from Tip shape A～G in the figure below.

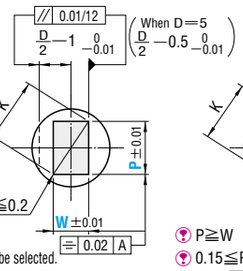


∗When D=5, the key slot depth is 0.5.

Tip shape A

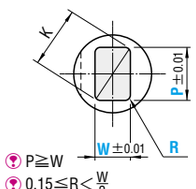


Tip shape D



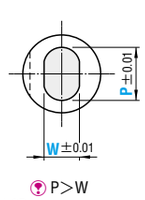
- P≧W
- R=0 can be selected.
- K=√(P²+W²)

Tip shape R



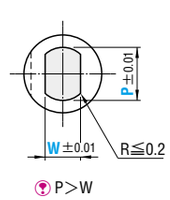
- P≧W
- 0.15≦R<W/2
- K=√((P−2R)²+(W−2R)²+2R

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P·Kmax.	0.01mm increments D R E G P·Wmin.	0.01mm increments Ⓡ R	B	M
(Dm5) MP MPH	A D R E G	S	5	40 50 60 70 80	2.00～ 4.99	4.97	1.20	0.15≦R<W/2 (Ⓡ only)	8	3
			6	40 50 60 70 80	2.00～ 5.99	5.97	1.50			
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00		13	4
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			5
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00		19	6
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00			
			20	(40) 50 60 70 80 90 100	13.00～ 19.99	19.97	5.00			
			25	(40) 50 60 70 80 90 100	18.00～ 24.99	24.97	6.00			
(D$^{+0.005}_{0}$) A—MP A—MPH		L	5	50 60 70 80	2.00～ 4.99	4.97	2.00		13	3
			6	50 60 70 80	2.00～ 5.99	5.97	2.00			
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50		19	4
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			5
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00		25	6
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00			
			20	60 70 80 90 100	13.00～ 19.99	19.97	5.00			
			25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			
		X	5	60 70 80	2.00～ 4.99	4.97	3.50		25	3
			6	60 70 80	2.00～ 5.99	5.97	3.50			
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00		30	4
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00			5
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00		40	6
			16	70 80 90 100	10.00～ 15.99	—				
			20	70 80 90 100	13.00～ 19.99					
			25	70 80 90 100	18.00～ 24.99					
Tapped large-diameter type (Dm5) MPL		S	16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00		19	8
			20	(40) 50 60 70 80 90 100	13.00～ 19.99	19.97	5.00			
			25	(40) 50 60 70 80 90 100	18.00～ 24.99	24.97	6.00			
		L	16	60 70 80 90 100	10.00～ 15.99	15.97	4.00		25	
			20	60 70 80 90 100	13.00～ 19.99	19.97	5.00			
			25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			

L(40)⋯B=8 If the full length is (40), the tip length is 8mm in all cases.

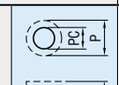
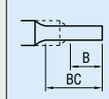
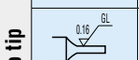
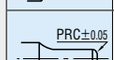
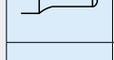
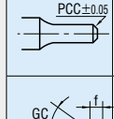
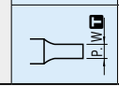
Order

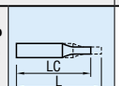
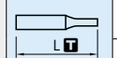
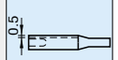
Catalog No.	L	P	W	R (Ⓡ only)
MPAL 13	80	P8.24		
MPLRS 20	60	P15.50	W7.25	R0.50

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC・KC・WKC, etc.)
MPAL 13	80	P8.24			KC—LKC

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax.: 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC/WC≧P・Wmin./2≧0.80 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax.: 0.80～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip D corner.		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	—	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・PRC・PCC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		Quotation
Others		KC	Addition of single key slot ⊗ Cannot be used for D5.	Key slot position change 1° increments	
		WKC	Addition of double key slots in parallel ⊗ Cannot be used for D5.	Double key slots in parallel Can be combined with KC.	
		NKC	—	No key slot	
		SKC	Single key flat on shank Ⓐ D R E G ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC.		

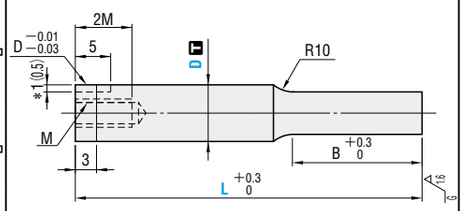
Price Quotation

TAPPED PUNCHES
—TiCN COATING・DICOAT® TREATMENT—

PRODUCTS DATA P.1599・1601・1604

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—TiCN coating— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64～67HRC Surface 3000HV	H—MPH	A D R E G	S L X
	$D^{+0.005}_{0}$	Powdered high-speed steel 64～67HRC Surface 3000HV	AH—MPH		
—Dicoat® treatment— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKD11 60～63HRC Surface 3000HV	T—MP		
		Powdered high-speed steel 62～64HRC Surface 3000HV	T—MPH		
	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63HRC Surface 3000HV	AT—MP		
		Powdered high-speed steel 62～64HRC Surface 3000HV	AT—MPH		

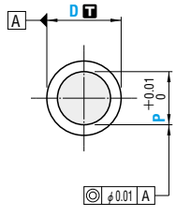
The tip shape can be selected from Tip shape A～G in the figure below.



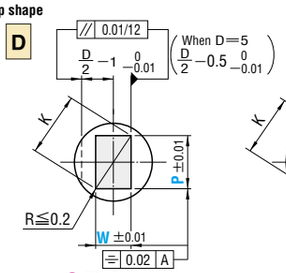
Tip length (B) X>L>S

The tip end of a TiCN coating punch is ground before the coating is applied.
∗When D=5, the key slot depth is 0.5.

Tip shape A

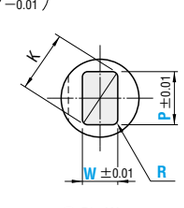


Tip shape D



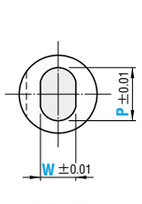
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



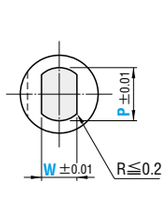
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P・Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P・Wmin.	Ⓡ R	B	M
(Dm5) H—MPH T—MP T—MPH (D+0.005 0) AH—MPH AT—MP AT—MPH	A D R E G	S	5	40 50 60 70 80	2.00～ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	3
			6	40 50 60 70 80	2.00～ 5.99	5.97	1.50			
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00		13	4
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			5
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00		19	6
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00			
			20	(40) 50 60 70 80 90 100	13.00～ 19.99	19.97	5.00			
			25	(40) 50 60 70 80 90 100	18.00～ 24.99	24.97	6.00			
		L	5	50 60 70 80	2.00～ 4.99	4.97	2.00		13	3
			6	50 60 70 80	2.00～ 5.99	5.97	2.00			
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50		19	4
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50			5
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00		25	6
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00			
			20	60 70 80 90 100	13.00～ 19.99	19.97	5.00			
			25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			
		X	5	60 70 80	2.00～ 4.99	4.97	3.50		25	3
			6	60 70 80	2.00～ 5.99	5.97	3.50			
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00		30	4
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00			5
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00			6
			16	70 80 90 100	10.00～ 15.99	—		—	40	
			20	70 80 90 100	13.00～ 19.99					
			25	70 80 90 100	18.00～ 24.99					

Ⓡ L(40)⋯B=8 If the full length is (40), the tip length is 8mm in all cases. Ⓡ The Dicoat® treatment tip-length X type is available for tip shape Ⓐ only.

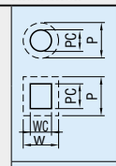
Order

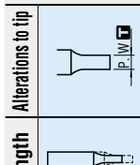
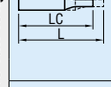
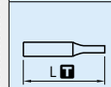
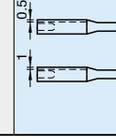
Catalog No.	L	P	W	R (Ⓡ only)
AH—MPHRS 8	60	P6.50	W4.25	R0.50
T—MPHAL 13	80	P8.24		

Days to Ship: Quotation

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC・WKC, etc.)
T—MPHAL 13	80	P8.24			— KC—LKC

Alteration	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip 	PC WC	Tip dimension change PC≧ Pmin. 2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax.: 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 40(45); 6.000～ / 45(60). Ⓡ Coating can be used for the types in ( ).	Tip dimension change PC/WC≧ P・Wmin. 2 ≧1.00 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax.: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30.	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip Ⓡ P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners. Ⓡ Can be used for TiCN coating types only.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓡ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓡ PCC≦(P−0.2)/2 Ⓡ Can be used with TiCN coating only. ⊗ Cannot be combined with PRC・GC.	—	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓡ Can be combined with TiCN coating only. Ⓡ When used with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・PRC・PCC.	—	

Alteration	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip 	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓡ (P dimension can be selected in 0.001mm increments.) Ⓡ Can be used with TiCN coating only. ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	Quotation
Alterations to full length 	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm). (If combined with LKC, 0.01 mm increments can be selected.)	
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	Addition of single key slot ⊗ Cannot be used for D5.	Key slot position 0°, 90°, 180°, 270° change 1° increments	
	WKC	Addition of double key slots in parallel ⊗ Cannot be used for D5.	Double key slots in parallel Can be combined with KC.	
	NKC	—	No key slot	
	SKC	Addition of single key flat on shank D/2 −0.5 0 −0.01 ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC.	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	

Price: Quotation

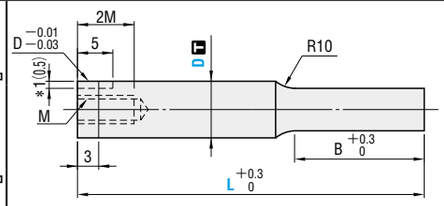
TAPPED PUNCHES
—WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1605

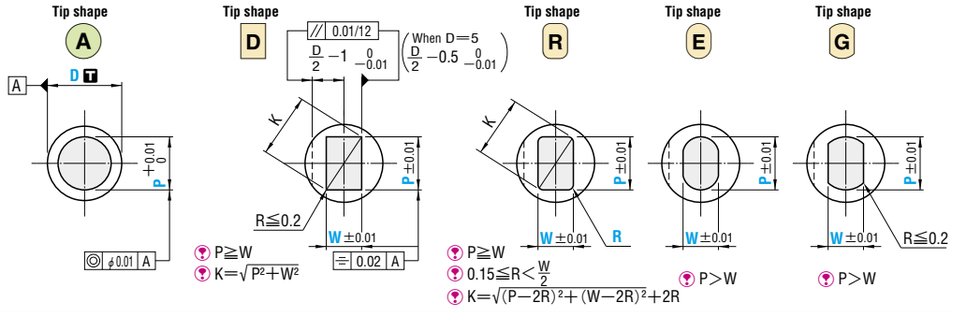
Type	MH	Catalog No. Type: Shank dia. T D(m5)	Catalog No. Type: Shank dia. T D +0.005 0	Tip shape	B Tip length
—WPC® treatment— RoHS	Equivalent to SKD11 60~63HRC Surface 1000~1100HV	WPC® treatment W—MP	WPC® treatment AW—MP	A D R E G	S L X
	Powdered high-speed steel 64~67HRC Surface 1000~1100HV	WPC® treatment W—MPH	WPC® treatment AW—MPH		
—HW coating—	Powdered high-speed steel 64~67HRC Surface 3000HV	HW coating HW—MPH	HW coating AHW—MPH		

For shank diameter tolerance D T, select either m5 or +0.005 0.

The tip shape can be selected from Tip shape A~G in the figure below.



The tip edges are very slightly rounded.
＊When D=5, the key slot depth is 0.5.



P≧W
K=√(P²+W²)
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²)+2R
P>W
P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P・Kmax.	0.01mm increments DREG P・Wmin.	0.01mm increments R	B	M
(Dm5) —WPC® treatment— W—MP W—MPH —HW coating— HW—MPH	A D R E G	S	5	40 50 60 70 80	2.00 ~ 4.99	4.97	1.20		8	3
			6	40 50 60 70 80	2.00 ~ 5.99	5.97	1.50			
			8	(40) 50 60 70 80 90 100	3.00 ~ 7.99	7.97	2.00		13	4
			10	(40) 50 60 70 80 90 100	3.00 ~ 9.99	9.97	2.50			5
			13	(40) 50 60 70 80 90 100	6.00 ~ 12.99	12.97	3.00			
			16	(40) 50 60 70 80 90 100	10.00 ~ 15.99	15.97	4.00		19	6
			20	(40) 50 60 70 80 90 100	13.00 ~ 19.99	19.97	5.00			
			25	(40) 50 60 70 80 90 100	18.00 ~ 24.99	24.97	6.00			
		L	5	50 60 70 80	2.00 ~ 4.99	4.97	2.00		13	3
			6	50 60 70 80	2.00 ~ 5.99	5.97	2.00			
			8	50 60 70 80 90 100	3.00 ~ 7.99	7.97	2.50		19	4
			10	50 60 70 80 90 100	3.00 ~ 9.99	9.97	2.50			5
			13	50 60 70 80 90 100	6.00 ~ 12.99	12.97	3.00			
(D +0.005 0) —WPC® treatment— AW—MP AW—MPH —HW coating— AHW—MPH			16	60 70 80 90 100	10.00 ~ 15.99	15.97	4.00	0.15≦R<W/2 (Ⓡ only)	25	6
			20	60 70 80 90 100	13.00 ~ 19.99	19.97	5.00			
			25	60 70 80 90 100	18.00 ~ 24.99	24.97	6.00			
		X	5	60 70 80	2.00 ~ 4.99	4.97	3.50		25	3
			6	60 70 80	2.00 ~ 5.99	5.97	3.50			
			8	60 70 80 90 100	3.00 ~ 7.99	7.97	5.00		30	4
			10	60 70 80 90 100	3.00 ~ 9.99	9.97	5.00			5
			13	60 70 80 90 100	6.00 ~ 12.99	12.97	5.00			
			16	70 80 90 100	10.00 ~ 15.99	—			40	6
			20	70 80 90 100	13.00 ~ 19.99					
			25	70 80 90 100	18.00 ~ 24.99					

L(40)⋯B=8 If the full length is (40), the tip length is 8mm in all cases.

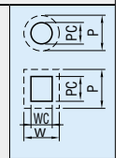
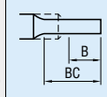
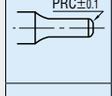
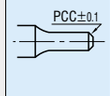
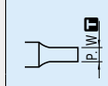
Order

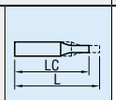
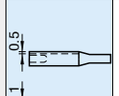
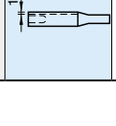
Catalog No.	L	P	W	R(Ⓡ only)
AW—MPDL 13	80	P10.50	W7.34	

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC・WKC, etc.)
W—MPHAL 13	80	P8.24			— KC—LKC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC WC≧P・Wmin./2≧1.00 0.01 mm increments ⊗Cannot be used for tip X.	Quotation
			P(PC) | Bmax.: 1.000~1.999 | 20; 2.000~3.999 | 35; 4.000~5.999 | 45; 6.000~ | 60	P(PC)・W(WC) | Bmax.: 1.00~1.49 | 8; 1.50~1.99 | 13; 2.00~3.49 | 19; 3.50~4.99 | 25; 5.00~ | 30	
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments ⓡ Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments ⓡ Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓡ PRC≦(P−0.2)/2 ⊗Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓡ PCC≦(P−0.2)/2 ⊗Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 ⓡ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
			⊗HW coating cannot be used for D>13.		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments ⓡ If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments ⓡ If difference between full length and tip length is 30mm or less,tip length is adjusted to (Full length−30mm).	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others		KC	Addition of single key slot ⊗Cannot be used for D5.	Key slot 0°/90°/180°/270° 180° position change 1° increments	
		WKC	Addition of double key slots in parallel ⊗Cannot be used for D5.	Double key slots in parallel Can be combined with KC.	
		NKC	—	No key slot	
		SKC	Single key flat on shank Ⓐ D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗Cannot be combined with KC・WKC.	DREG W≦D−1.2	

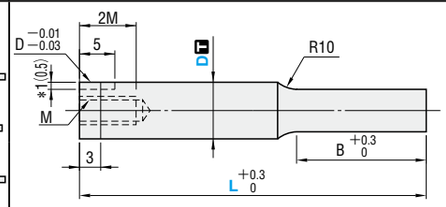
Price Quotation

TAPPED PUNCHES
—RW COATING・DLC COATING—

PRODUCTS DATA
P.1605 ～ 1609

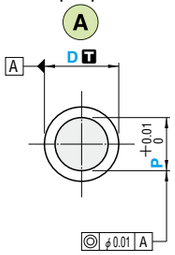
Type	M H	Catalog No. Type: Shank dia. T D$_{m5}$	Catalog No. Type: Shank dia. T D$^{+0.005}_{0}$	Tip shape	B Tip length
—RW coating— RoHS —DLC coating— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Powdered high-speed steel 64～67HRC RW coating Surface 3100HV	RW—MPH	ARW—MPH	A D R E G	S L X
	Powdered high-speed steel 64～67HRC DLC coating Surface 3000HV～	N—MPH (Foundation WPC®) NW—MPH	AN—MPH (Foundation WPC®) ANW—MPH		Tip length(B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.



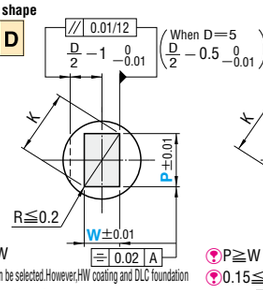
- The tip end is ground before the coating is applied.
- The tip edges are very slightly rounded.
- ＊When D=5, the key slot depth is 0.5.

Tip shape A

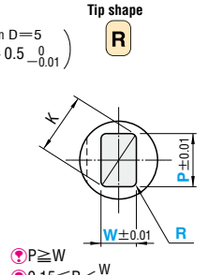


- P≧W
- R=0 can be selected.However,HW coating and DLC foundation WPC® cannot be used.
- K= $\sqrt{P^2+W^2}$

Tip shape D

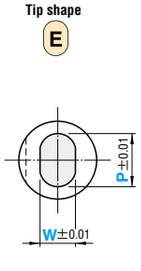


Tip shape R



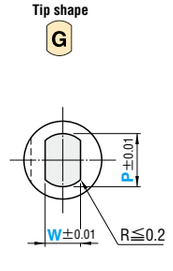
- P≧W
- 0.15≦R< W/2
- K= $\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P・Kmax.	0.01mm increments DREG P・Wmin.	0.01mm increments R R	B	M
(D$_{m5}$) —RW coating— RW—MPH —DLC coating— N—MPH	A D R E G	S	5	40 50 60 70 80	2.00 ～ 4.99	4.97	1.20	0.15≦R< W/2 (Ⓡ only)	8	3
			6	40 50 60 70 80	2.00 ～ 5.99	5.97	1.50			
			8	(40) 50 60 70 80 90 100	3.00 ～ 7.99	7.97	2.00		13	4
			10	(40) 50 60 70 80 90 100	3.00 ～ 9.99	9.97	2.50			5
			13	(40) 50 60 70 80 90 100	6.00 ～ 12.99	12.97	3.00			6
			16	(40) 50 60 70 80 90 100	10.00 ～ 15.99	15.97	4.00		19	
			20	(40) 50 60 70 80 90 100	13.00 ～ 19.99	19.97	5.00			
			25	(40) 50 60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			
—DLC foundation WPC®— NW—MPH (D$^{+0.005}_{0}$) —RW coating— ARW—MPH —DLC coating— AN—MPH		L	5	50 60 70 80	2.00 ～ 4.99	4.97	2.00		13	3
			6	50 60 70 80	2.00 ～ 5.99	5.97	2.00			
			8	50 60 70 80 90 100	3.00 ～ 7.99	7.97	2.50		19	4
			10	50 60 70 80 90 100	3.00 ～ 9.99	9.97	2.50			5
			13	50 60 70 80 90 100	6.00 ～ 12.99	12.97	3.00			6
			16	60 70 80 90 100	10.00 ～ 15.99	15.97	4.00		25	
			20	60 70 80 90 100	13.00 ～ 19.99	19.97	5.00			
			25	60 70 80 90 100	18.00 ～ 24.99	24.97	6.00			
—DLC foundation WPC®— ANW—MPH		X	5	60 70 80	2.00 ～ 4.99	4.97	3.50		25	3
			6	60 70 80	2.00 ～ 5.99	5.97	3.50			
			8	60 70 80 90 100	3.00 ～ 7.99	7.97	5.00		30	4
			10	60 70 80 90 100	3.00 ～ 9.99	9.97	5.00			5
			13	60 70 80 90 100	6.00 ～ 12.99	12.97	5.00			6
			16	70 80 90 100	10.00 ～ 15.99	—			40	
			20	70 80 90 100	13.00 ～ 19.99					
			25	70 80 90 100	18.00 ～ 24.99					

Ⓡ L(40)⋯B=8 If the full length is(40), the tip length is 8mm in all cases.

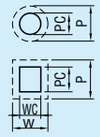
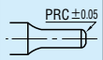
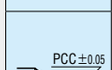
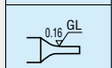
Order

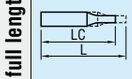
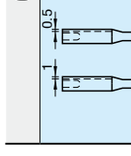
Catalog No.	L	P	W	R(Ⓡonly)
ARW—MPHDL 13	80	P10.50	W7.34	

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC・WKC…etc.)
RW—MPHAL 13	80	P8.24			— KC—LKC

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments P(PC) | Bmax: 1.000～1.999 | 20; 2.000～3.999 | 35; 4.000～5.999 | 45; 6.000～ | 60	Tip dimension change PC WC≧ P・Wmin./2 ≧1.00 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) | Bmax: 1.00～1.49 | 8; 1.50～1.99 | 13; 2.00～3.49 | 19; 3.50～4.99 | 25; 5.00～ | 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓡ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC. It is PRC±0.1 for RW coating and DLC foundation WPC®.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓡ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC. RW coating・DLC foundation WPC® cannot be used.	—	
		SC	Lapping of tip Ⓡ P dimension tolerance and increment are the same. ⊗ Cannot be combined with RW coating and DLC foundation WPC®. ⊗ R=0 cannot be selected for the tip D corner.		

Alterations		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓡ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	Quotation
		LKC	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Others		KC	Addition of single key slot ⊗ Cannot be used for D5.	90° 0° 180° 270° Key slot position change 1° increments	
		WKC	Addition of double key slots in parallel ⊗ Cannot be used for D5.	Double key slots in parallel Can be combined with KC.	
		NKC	—	No key slot	
		SKC	Single key flat on shank Ⓐ DREG ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC.		

Price Quotation

■Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
See the product data for details. P.1607

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.
See the product data for details. P.1609

TAPPED JECTOR PUNCHES
—NORMAL・WPC® TREATMENT—

PRODUCTS DATA P.1605

Calculating the projection length of the jector pin (reference value) P.241

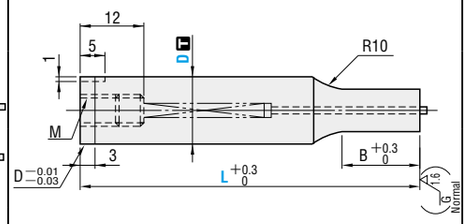
- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H
—Normal— RoHS	D_{m5}	Equivalent to SKD 11 60～63HRC
—WPC® treatment—	$D^{+0.005}_{0}$	WPC® treatment 60～63HRC Surface 1000～1100HV

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

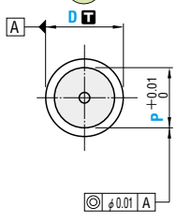
Catalog No. Type	Tip shape	B Tip length
MJ	A D R E G	S L
W—MJ		
A—MJ		
AW—MJ		

The tip shape can be selected from Tip shape A～G in the figure below.



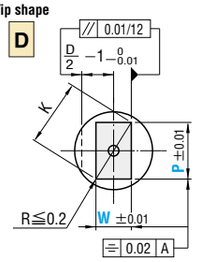
The tip edge of a WPC® treatment punch is very slightly rounded.

Tip shape A



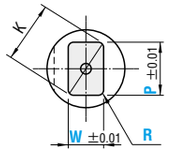
P≧W
R=0 can be selected. (WPC® treatment punches cannot be used.)
K=$\sqrt{P^2+W^2}$

Tip shape D



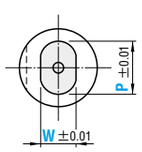
P≧W
0.15≦R<W/2
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R



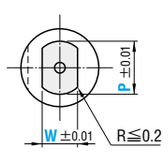
P>W

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P・Kmax.	0.01mm increments DREG P・Wmin.	0.01mm increments Ⓡ R	B	M
(D_{m5}) MJ —WPC® treatment— W—MJ	A D R E G	S	6	(40) 50 60 70 80	2.00～ 5.99	5.97	2.00	0.15≦R<W/2 (Ⓡ only)	8	3
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	3.00		13	4
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	3.00			5
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	6.00			6
			16	(40) (50) 60 70 80 90 100	10.00～ 15.99	15.97	6.00		19	
			20	(40) (50) 60 70 80 90 100	13.00～ 19.99	19.97	6.00			
			25	(40) (50) 60 70 80 90 100	18.00～ 24.99	24.97	6.00			
($D^{+0.005}_{0}$) A—MJ —WPC® treatment— AW—MJ		L	6	50 60 70 80	2.00～ 5.99	5.97	2.00		13	3
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	3.00		19	4
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	3.00			5
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	6.00			6
			16	60 70 80 90 100	10.00～ 15.99	15.97	6.00		25	
			20	60 70 80 90 100	13.00～ 19.99	19.97	6.00			
			25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			

L(40)⋯B=6 If full length is (40), tip length is 6mm in all cases.
L(50)⋯B=13 If full length is (50), tip length is 13mm in all cases.

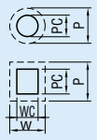
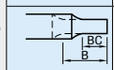
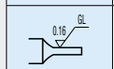
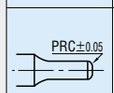
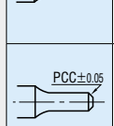
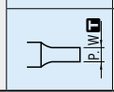
Order

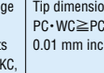
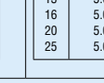
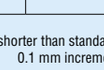
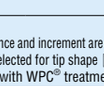
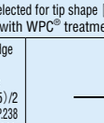
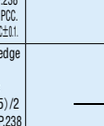
Catalog No.	L	P	W	R (Ⓡ only)
A—MJAL 13	80	P8.24		

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC・KC・WKC, etc.)
A—MJAL 13	80	P8.24			KC—LKC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC・WC≧PC・WCmin. 0.01 mm increments	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip ⓟ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape D corners. ⊗ Cannot be used with WPC® treatment.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ⓟ PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PCC. ⓟ WPC® treatment, the tolerance is PRC±0.1.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ⓟ PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PRC. ⓟ For WPC® treatment, the tolerance is PCC±0.1.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 ⓟ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

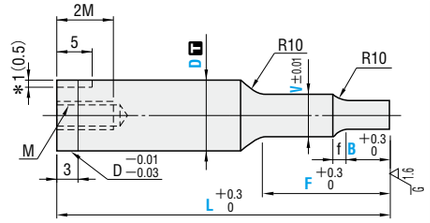
Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) ⓟ Tip length B is shortened by (L−LC). ⓟ Projection length of jector pin is 2 mm.		Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used with WPC® treatment.		
Others		KC	Addition of single key slot	90° 0° 180° 270° Key slot position change 1° increments	
		WKC	Addition of double key slots in parallel	Double key slots in parallelCan be combined with KC.	
		NKC	—	No key slot	
		SKC	Single key flat on shank Ⓐ DREG ・D6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC.		
		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		

Price Quotation

DOUBLE-STEPPED TAPPED PUNCHES
—NORMAL・TiCN COATING・HW COATING—

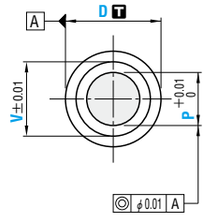
Type	Shank diameter. D T tolerance	M H	Catalog No. Type: Normal	TiCN coating surface 3000HV	HW coating surface 3000HV	Tip shape
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKD11 60～63HRC	MPTW Tapped large-diameter tyoe MPLTW	—	—	A D R E G
		Powdered high-speed steel 64～67HRC	MPHTW	H—MPHTW	HW—MPHTW	
	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63HRC	A—MPTW	—	—	
		Powdered high-speed steel 64～67HRC	A—MPHTW	AH—MPHTW	AHW—MPHTW	

The tip shape can be selected from Tip shape A～G in the figure below.

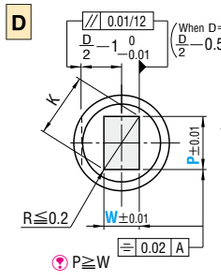


- ∗When D=5, the key slot depth is 0.5.
- The tip end is ground before the coating is applied.
- The tip edge of a HW coating punch is very slightly rounded.

Tip shape A

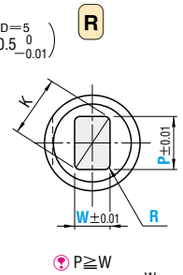


Tip shape D



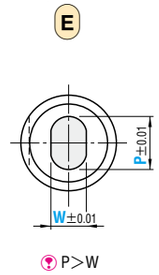
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



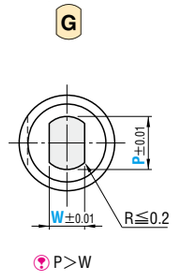
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	D	L	0.01mm increments Ⓐ P	0.1mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments D R E G P・W	R R	0.1mm increments D R E G B	0.01mm increments V	0.1mm increments F	M
—Standard type— (Dm5) —Normal— MPTW MPHTW —TiCN coating— H—MPHTW —HW coating— HW—MPHTW	A D R E G	5	40・50・60・70・80	1.00～ 1.999	2.0～20.0	4.96	0.80(1.00)～ 1.49	$0.15 \leqq R < \frac{W}{2}$ (R only)	2.0～ 8.0	Ⓐ: D>V>P+0.01 D R E G: D>V>(P,K)+0.03	B+f+2<F≦Fmax & F≦L−30	3
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 4.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 4.98	2.0～45.0		3.50～ 4.96		2.0～ 25.0			
		6	40・50・60・70・80	1.00～ 1.999	2.0～20.0	5.96	0.80(1.00)～ 1.49		2.0～ 8.0			
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 5.98	2.0～45.0		3.50～ 4.99		2.0～ 25.0			
				4.00～ 5.98	2.0～45.0		5.00～ 5.96		2.0～ 30.0			
($D^{+0.005}_{0}$) —Normal— A—MPT A—MPHTW —TiCN coating— AH—MPHTW —HW coating— AHW—MPHTW		8	40・50・60・70・80・90・100	1.00～ 1.999	2.0～20.0	7.96	1.00～ 1.49		2.0～ 8.0			4
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 7.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 7.98	2.0～60.0		5.00～ 7.96		2.0～ 30.0			
		10	40・50・60・70・80・90・100	1.50～ 1.999	2.0～20.0	9.96	1.25～ 1.49		2.0～ 8.0			5
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 9.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 9.98	2.0～60.0		5.00～ 9.96		2.0～ 30.0			
		13	40・50・60・70・80・90・100	3.00～ 3.999	2.0～35.0	12.96	1.50～ 1.99		2.0～ 13.0			6
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 12.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 12.98	2.0～60.0		5.00～ 12.96		2.0～ 30.0			
		16	40・50・60・70・80・90・100	5.00～ 5.999	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			
				6.00～ 15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	40・50・60・70・80・90・100	6.50～ 19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			
				6.50～ 19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～ 19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	40・50・60・70・80・90・100	9.00～ 24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			
				9.00～ 24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～ 24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			
Tapped large-diameter type MPLTW		16	40・50・60・70・80・90・100	5.00～ 5.98	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			8
				6.00～ 15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	40・50・60・70・80・90・100	6.50～ 19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			
				6.50～ 19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～ 19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	40・50・60・70・80・90・100	9.00～ 24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			
				9.00～ 24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～ 24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			

V	Fmax.
0.83～0.99	10
1.00～1.99	20
2.00～3.99	35
4.00～5.99	45
6.00～	60

For **f** dimension, refer to the punch R length in [Products Data] on P.1592, and verify the following.
Ⓐ: (V−P)/2=X
D R E G: (V−W)/2=X

- If V>D−0.03…ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.
- For TiCN coating and HW coating, P.W min. is 1.00.

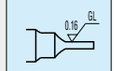
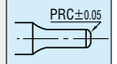
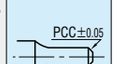
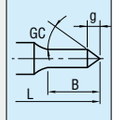
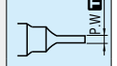
Order

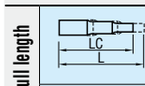
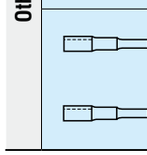
Catalog No.	L	P	W	B	V	F	R (R only)
MPTWA10	80	P9.50		B30	V9.80	F45	
A—MPHTWR13	80	P10.50	W7.34	B25	V12.00	F45	R0.5

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P	W	B	V	F	R (R only)	(KC・WKC, etc.)
MPTWA10	LC72	P4.80		B10	V6.80	F40		KC

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		SC	Lapping of tip P dimension tolerance and increment are the same. With TiCN coating, the base material is finished before the coating is applied. Cannot be used with HW coating. R=0 cannot be selected for the tip D corner.		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC・GC. For HW coating, the tolerance is PRC±0.1.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC・GC. For HW coating, the tolerance is PCC±0.1.	——	
		GC	20°≦GC<90° 1° increments Tip length B≧g+2 g=P/2×tan(90°−GC°) If combined with SC, tip edges are rounded. Cannot be combined with LKC・LKZ・PRC・PCC. Cannot be used with TiCN coating or HW coating.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) TiCN coating/HW coating cannot be used for D>13.	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to full length		LC	Full length change 30+F≦LC<L 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.)		Quotation
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$ Cannot be used with TiCN・HW coating		
Others		KC	Addition of single key slot Cannot be used for D5.	Key slot position change 1° increments	
		WKC	Addition of double key slots in parallel Cannot be used for D5.	Double key slots in parallel. Can be combined with KC.	
		NKC	——	No key slot	
		SKC	Single key flat on shank ・D5・6 V≦D−1.2 (Machining width 0.5) ・D8～ V≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC.		

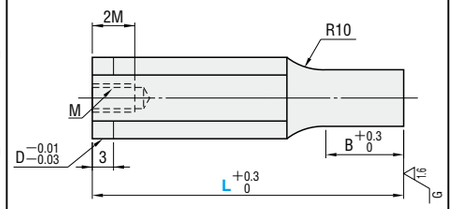
Price Quotation

KEY FLAT SHANK TAPPED PUNCHES
—NORMAL・TiCN COATING・HW COATING・DLC COATING—

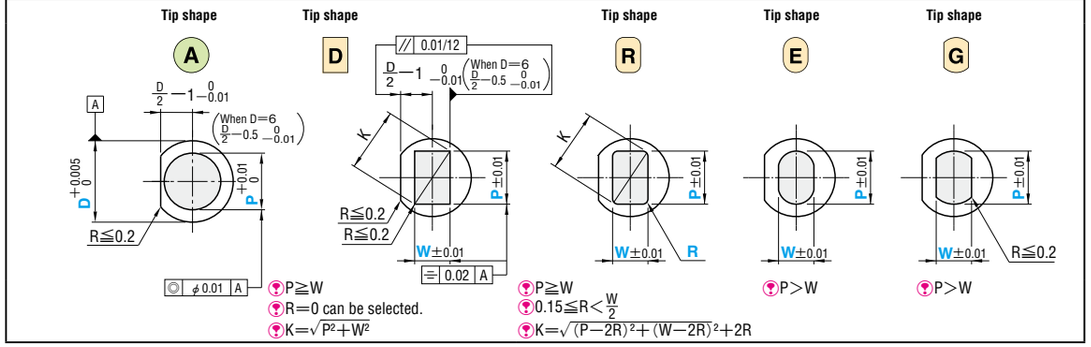
PRODUCTS DATA
P.1603 ～ 1609

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A～G in the figure below.
—Narmal— RoHS	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63HRC	G—MP	A D R E G	S L X	
—TiCN coating—		Powdered high-speed steel 64～67HRC	G—MPH			
		TiCN coating Surface 3000HV	GH—MPH			
—HW coating—		HW coating Surface 3000HV	GHW—MPH			
—DLC coating—		DLC coating Surface 3000HV	GN—MPH			
			DLC foundation WPC® GNW—MPH			

Tip length (B) X>L>S



- The tip end is ground before the coating is applied.
- The tip edges of a HW coating or DLC foundation WPC® type are very slightly rounded.



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2+2R}$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P-Kmax.	DREG Wmax.	DREG P-Wmin.	R R	B	M
G—MP G—MPH	A	S	6	40 50 60 70 80	2.00～ 3.80	5.97	3.80	1.50	$0.15 \leqq R < \frac{W}{2}$ (R only)	8	3
—TiCN coating—			8	(40) 50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	2.00		13	4
GH—MPH			10	(40) 50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	2.50			5
—HW coating—			13	(40) 50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	3.00		19	6
GHW—MPH			16	(40) 50 60 70 80 90 100	10.00～ 13.80	15.97	13.80	4.00			
—DLC coating—			20	(40) 50 60 70 80 90 100	13.00～ 17.80	19.97	17.80	5.00			
GN—MPH			25	(40) 50 60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			
DLC foundation WPC® GNW—MPH	D	L	6	50 60 70 80	2.00～ 3.80	5.97	3.80	2.00		13	3
	R		8	50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	2.50		19	4
	E		10	50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	2.50			5
	G		13	50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	3.00		25	6
			16	60 70 80 90 100	10.00～ 13.80	15.97	13.80	4.00			
			20	60 70 80 90 100	13.00～ 17.80	19.97	17.80	5.00			
			25	60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			
		X	6	60 70 80	2.00～ 3.80	5.97	4.80	3.50		25	3
			8	60 70 80 90 100	3.00～ 5.80	7.97	5.80	5.00		30	4
			10	60 70 80 90 100	3.00～ 7.80	9.97	7.80	5.00			5
			13	60 70 80 90 100	6.00～ 10.80	12.97	10.80	5.00			
			16	70 80 90 100	10.00～ 13.80	—			—	45	6
			20	70 80 90 100	13.00～ 17.80						
			25	70 80 90 100	18.00～ 22.80						

L(40) CB=8 If the full length is (40), the tip length is 8mm in all cases.

Order

Catalog No.	L	P	W	R (R only)
GN—MPHDS 13	60	P10.65	W6.55	

Days to Ship Quotation

Alterations

Catalog No. — L(LC) — P(PC) — W(WC) — R(R only) — (BC・PKC・LKC…etc.)
G—MPES 8 — LC65.5 — P7.00 — W4.00

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change $PC \geqq \frac{Pmin.}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax: 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change $PC \geqq \frac{P \cdot Wmin}{2} \geqq 0.80$ 0.01mm ⊗ Cannot be used for tip X. For TiCN coating: HW coating・DLC coating $PC \geqq \frac{P \cdot Wmin}{2} \geqq 1.00$ P(PC)・W(WC) / Bmax: 0.80～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. With TiCN coating, the base material is finished before the coating is applied. ⊗ HW coating and DLC foundation WPC® cannot be used. ⊗ R=0 cannot be selected for the tip D corner.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC. It is PRC±0.1 for HW coating and DLC foundation WPC®.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC. ⊗ HW coating and DLC foundation WPC® cannot be used.	—	

Alterations		Code	Ⓐ	DREG	1Code
Alterations to tip		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・PRC・PCC. ⊗ HW coating and DLC foundation WPC® cannot be used.	—	Quotation
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating cannot be used for D>13. ⊗ Cannot be used for D>13 with HW coating.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
		LKC	Full length tolerancechange $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerancechange $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$	⊗ Cannot be used with TiCN coating, HW coating and DLC foundation WPC®.	

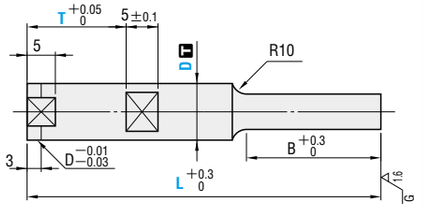
Price Quotation

PUNCHES WITH KEY GROOVES

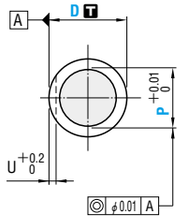
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS	D_{m5}	Equivalent to SKD 11 60～63HRC	SK	A D R E G	S
		Equivalent to SKH51 61～64HRC	SHK		L
		Powdered high-speed steel 64～67HRC	PK		X
	$D^{+0.005}_{0}$	Equivalent to SKD 11 60～63HRC	A—SK		
		Equivalent to SKH51 61～64HRC	A—SHK		
		Powdered high-speed steel 64～67HRC	A—PK		

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

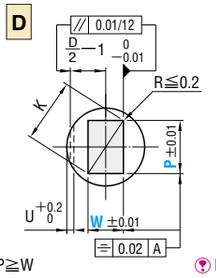
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape A

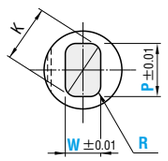


Tip shape D



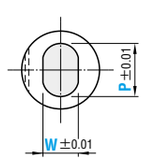
Ⓥ P≧W
Ⓥ R=0 can be selected.
Ⓥ $K=\sqrt{P^2+W^2}$

Tip shape R



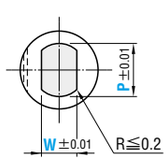
Ⓥ P≧W
Ⓥ $0.15 \leqq R < \frac{W}{2}$
Ⓥ $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



Ⓥ P>W

Tip shape G



Ⓥ P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P·Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P·Wmin.	Ⓡ R	0.1 mm increments T	B	U Key groove depth
(D_{m5}) SK SHK PK	A D R E G	S	3	40 50 60 70 80	1.00～ 2.99	—	—	W/2 (Ⓡ only) ≦R< W/2 0.15≦R< W/2	T>5.0	8	0.5
			4	40 50 60 70 80	1.00～ 3.99	3.97	1.00				1.0
			5	40 50 60 70 80	2.00～ 4.99	4.97	1.20				
			6	40 50 60 70 80	2.00～ 5.99	5.97	1.50				
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00			13	1.5
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00			19	
($D^{+0.005}_{0}$) A—SK A—SHK A—PK		L	3	50 60 70 80	1.00～ 2.99	—	—			13	0.5
			4	50 60 70 80	1.00～ 3.99	3.97	2.00				1.0
			5	50 60 70 80	2.00～ 4.99	4.97	2.00				
			6	50 60 70 80	2.00～ 5.99	5.97	2.00				
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50			19	1.5
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00			25	
		X	3	50 60 70 80	1.20～ 2.99	—	—			19	0.5
			4	50 60 70 80	1.20～ 3.99	3.97	2.00				1.0
			5	60 70 80	2.00～ 4.99	4.97	3.50			25	
			6	60 70 80	2.00～ 5.99	5.97	3.50				
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00			30	1.5
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00				
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00				
			16	60 70 80 90 100	10.00～ 15.99	—	—			40	

Ⓥ L(40)⋯B=8 If the full length is (40), the tip length is 8mm in all cases.
Ⓥ If no key groove is required, select T dimension that is the same as the full length L.

Order

Catalog No.	L	P	W	R (Ⓡ only)	T
SKEL 16	70	P12.00	W6.00		T20.1
A—SKAS 3	40	P 1.80			T13.0

Ⓥ If no key groove is required, select T=L.

Days to Ship Quotation

Alterations

Catalog No.	L(LC·LCT)	P(PC)	W(WC)	R	T	(BC·KC·PKC, etc.)
SKEL 16	LC68	P12.00	W6.00		T20.5	PKC

Alteration	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip	PC WC	Tip dimension change PC≧ Pmin./2, WC≧ Wmin./2 ≧0.80, 0.01 mm increments (If combined with PKC, 0.001mm increments can be selected.) Ⓧ Cannot be used for tip X. P(PC): 0.500～0.799 Bmax.10; 0.800～0.999 13; 1.000～1.999 20; 2.000～3.999 35; 4.000～4.999 45; 5.000～5.999 50; 6.000～ 60. P(PC)·W(WC): 0.80～1.49 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30.		Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓥ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓥ Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip Ⓥ P dimension tolerance and increment are the same. Ⓧ R=0 cannot be selected for the tip D corner.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓥ PRC≦(P−0.2)/2 Ⓧ Cannot be combined with PCC·GC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓥ PCC≦(P−0.2)/2 Ⓧ Cannot be combined with PRC·GC.	—	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓥ When combined with SC, tip edges are rounded. Ⓧ Cannot be used for P<1.0. Ⓧ Cannot be combined with LKC·LKZ·LCT·PRC·PCC.	—	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓥ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01 ⇨ +0.01 0	

Price Quotation

Alteration	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓥ If difference between full length and tip length is 25mm or less,tip length is adjusted to (Full length−25mm). (If combined with LKC·LKZ, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓥ If difference between full length and tip length is 30mm or less,tip length is adjusted to (Full length−30mm).	Quotation
	LCT	T dimension tolerance and full length change are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓥ) are the same as for LC. TKC T dimension tolerance change T +0.05 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
	LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		
Others	KC	—	Key flat position change 1° increments	
	NKC	—	No key flat	
	KD	—	Key groove position change 1° increments	
	WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
	UK	Key groove depth change Ⓧ Cannot be used for D3. D: 4·5 UK 0.7; 6 1.2; 8～16 1.7		
	TKC	T dimension tolerance change T +0.05 0 ⇨ 0 −0.02		
	SKC	Single key flat on shank Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ ·D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Ⓧ Cannot be used for D3. Ⓧ Cannot be combined with KC·KD·WKD.		

■Fixing keys for punches with key grooves P.245

PSKB PSKBH

PSKS PSKJ

PSK PSKP PSKH

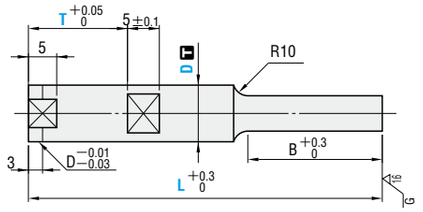
PSKW

PUNCHES WITH KEY GROOVES
—TiCN COATING—

PRODUCTS DATA P.1601・1604

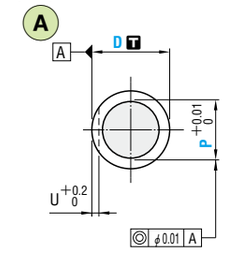
Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3000HV	H—SHK	A D R E G	S L X Tip length (B) X>L>S
		Powdered high-speed steel 64～67HRC Surface 3000HV	H—PK		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC Surface 3000HV	AH—SHK		
		Powdered high-speed steel 64～67HRC Surface 3000HV	AH—PK		

The tip shape can be selected from Tip shape A～G in the figure below.

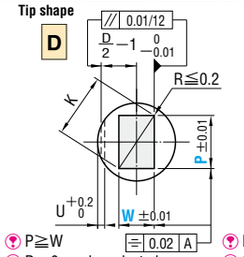


The tip end is ground before the coating is applied.

Tip shape A

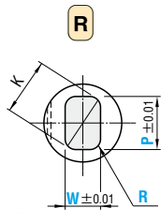


Tip shape D



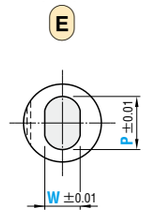
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



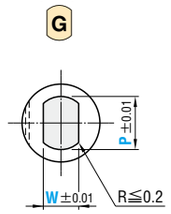
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	R R	0.1 mm increments T	B	U Key groove depth
(D_{m5}) H—SHK H—PK	A D R E G	S	3	40 50 60 70 80	1.00～ 2.99	—	—	$\frac{W}{2}$ (R only) $0.15 \leqq R < \frac{W}{2}$	T>5.0	8	0.5
			4	40 50 60 70 80	1.00～ 3.99	3.97	1.00				
			5	40 50 60 70 80	2.00～ 4.99	4.97	1.20				1.0
			6	40 50 60 70 80	2.00～ 5.99	5.97	1.50				
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00			13	1.5
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00			19	
		L	3	50 60 70 80	1.00～ 2.99	—	—			13	0.5
			4	50 60 70 80	1.00～ 3.99	3.97	2.00				
($D^{+0.005}_{0}$) AH—SHK AH—PK			5	50 60 70 80	2.00～ 4.99	4.97	2.00				1.0
			6	50 60 70 80	2.00～ 5.99	5.97	2.00				
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50			19	1.5
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00			25	
		X	3	50 60 70 80	1.20～ 2.99	—	—			19	0.5
			4	50 60 70 80	1.20～ 3.99	3.97	2.00				
			5	60 70 80	2.00～ 4.99	4.97	3.50			25	1.0
			6	60 70 80	2.00～ 5.99	5.97	3.50				
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00			30	1.5
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00				
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00				
			16	70 80 90 100	10.00～ 15.99	—	—			40	

L(40)⋯B=8 If the full length is (40), the tip length is 8mm in all cases.
If no key groove is required, select T dimension that is the same as the full length L.

Order

Catalog No.	L	P	W	R (Ⓡ only)	T
H—SHKEL16	70	P12.00	W6.00		T20.1
AH—SHKAS3	40	P1.80			T13.0

If no key groove is required, select T=L.

Days to Ship Quotation

Alterations

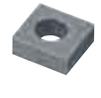
Catalog No.	L (LC・LCT)	P (PC)	W (WC)	R	T	(BC・KC・LKC, etc.)
H—SHKEL 16	LC68	P12.00	W6.00		T20.5	LKC

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip: PC WC	PC WC	Tip dimension change PC≧$\frac{P\text{min.}}{2}$≧1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) 1.000～1.999 Bmax. 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Tip dimension change PC≧$\frac{P\cdot W\text{min.}}{2}$≧1.00 WC≧ 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) 1.00～1.49 Bmax. 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓟ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓟ Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip Ⓟ P dimension tolerance and increment are the same. The base material is finished before coating is applied. ⊗ R=0 cannot be selected for the tip D corner.		Quotation
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓟ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓟ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	—	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓟ If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LCT・PRC・PCC.	—	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓟ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D16.	Tip tolerance change P・W±0.01 ⇨ +0.01 0 ⊗ Cannot be used for D16.	

Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length: LC	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments Ⓟ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments Ⓟ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
LCT	LCT	T dimension tolerance and full length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓟ) are the same as for LC. TKC T dimension tolerance change T +0.05 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
LKC	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others: KC	KC	—	90° 0° 180° 270° Key flat position change 1° increments	Quotation
NKC	NKC	—	No key flat	
KD	KD	—	90° 0° 180° 270° Key groove position change 1° increments	
WKD	WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
UK	UK	Key groove depth change ⊗ Cannot be used for D3. D: 4・5 UK 0.7; 6 1.2; 8～16 1.7		
TKC	TKC	T dimension tolerance change T +0.05 0 ⇨ 0 −0.02		
SKC	SKC	Single key shaft on flank Ⓐ D/2 −0.5 0 −0.01 ・D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be used for D3. ⊗ Cannot be combined with KC・KD・WKD.	DREG D/2 −1 0 −0.01	

Price Quotation

Fixing keys for punches with key grooves P.245

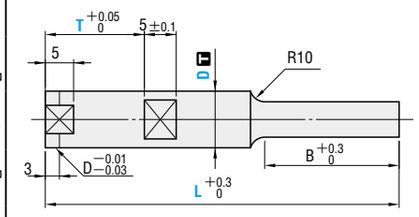
PSKB PSKBH PSKS PSKJ PSK PSKP PSKH  PSKW

PUNCHES WITH KEY GROOVES
—WPC® TREATMENT・HW COATING—

PRODUCTS DATA P.1605

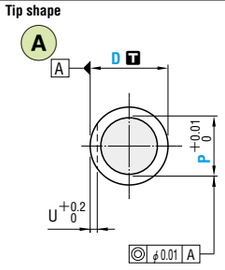
Type	M H	Catalog No. Type: Shank dia. T D_{m5}	Catalog No. Type: Shank dia. T $D^{+0.005}_{0}$	Tip shape	B Tip length
—WPC® treatment— RoHS	Equivalent to SKD11 60～63 HRC Surface 1000～1100HV	W—SK	AW—SK	A D R E G	S
	Equivalent to SKH51 61～64 HRC Surface1000～1100HV	W—SHK	AW—SHK		L
—HW coating—	Powdered high-speed steel 64～67 HRC Surface 1000～1100HV	W—PK	AW—PK		X
	Equivalent to SKH51 61～64 HRC Surface 3000 HV	HW—SHK	AHW—SHK		
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$	Powdered high-speed steel 64～67 HRC Surface 3000 HV	HW—PK	AHW—PK		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.

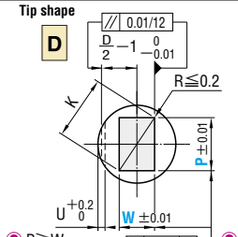


The tip edges are very slightly rounded.

Tip shape A

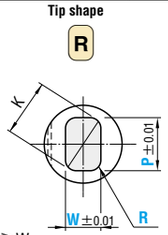


Tip shape D



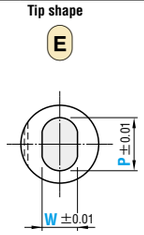
P≧W
K=√(P²+W²)

Tip shape R



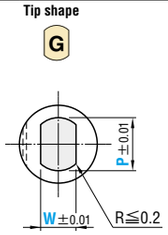
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²+2R

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P・Kmax.	0.01mm increments DREG P・Wmin.	0.01mm increments Ⓡ R	0.1 mm increments T	B	U Key groove depth
(Dm5) —WPC® treatment— W—SK W—SHK W—PK —HW coating— HW—SHK HW—PK	A D R E G	S	3	40 50 60 70 80	1.00～ 2.99	—	—	W/2 (Ⓡ only) 0.15≦R<W/2	T>5.0	8	0.5
			4	40 50 60 70 80	1.00～ 3.99	3.97	1.00				1.0
			5	40 50 60 70 80	2.00～ 4.99	4.97	1.20				
			6	40 50 60 70 80	2.00～ 5.99	5.97	1.50				
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00			13	1.5
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00			19	
(D +0.005 0) —WPC® treatment— AW—SK AW—SHK AW—PK —HW coating— AHW—SHK AHW—PK		L	3	50 60 70 80	1.00～ 2.99	—	—			13	0.5
			4	50 60 70 80	1.00～ 3.99	3.97	2.00				1.0
			5	50 60 70 80	2.00～ 4.99	4.97	2.00				
			6	50 60 70 80	2.00～ 5.99	5.97	2.00				
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50			19	1.5
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00			25	
		X	3	50 60 70 80	1.20～ 2.99	—	—			19	0.5
			4	50 60 70 80	1.20～ 3.99	3.97	2.00				
			5	60 70 80	2.00～ 4.99	4.97	3.50			25	1.0
			6	60 70 80	2.00～ 5.99	5.97	3.50				
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00			30	1.5
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00				
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00				
			16	70 80 90 100	10.00～ 15.99	—	—			40	

(Ⓡ only) If no key groove is required, select T=L.

L(40)⋯B=8 If the full length is (40), the tip length is 8mm in all cases.
If no key groove is required, select T dimension that is the same as the full length L.

Order

Catalog No.	L	P	W	R (Ⓡ only)	T
AW—SKDL 13	80	P10.50	W7.34		T20.1

Days to Ship Quotation

Alterations

Catalog No.	L (LC・LCT)	P (PC)	W (WC)	R	T	(BC・KC・LKC, etc.)
HW—SHKEL 16	LC68	P12.00	W6.00		T20.5	LKC

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip	PC WC	Tip dimension change PC≧Pmin./2≧1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P (PC) / Bmax.: 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC・WC≧P・Wmin./2≧1.00 0.01 mm increments ⊗ Cannot be used for tip X. P (PC)・W (WC) / Bmax.: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	—	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (Pdimension can be selected in 0.001 mm increments.) ⊗ HW coating cannot be used for D16.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length −25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length −30mm).	
	LCT	T dimension tolerance and full length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. TKC T dimension tolerance change T +0.05 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	—	Key flat position change 1° increments	Quotation
	NKC	—	No key flat	
	KD	—	Key groove position change 1° increments	
	WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
	UK	Key groove depth change ⊗ Cannot be used for D3. D: 4・5 / UK: 0.7; 6 / 1.2; 8～16 / 1.7		
	TKC	T dimension tolerance change T +0.05 0 ⇨ 0 −0.02		
	SKC	Single key flat on shank Ⓐ: D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5); D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be used for D3. ⊗ Cannot be combined with KC・KD・WKD.	DREG	

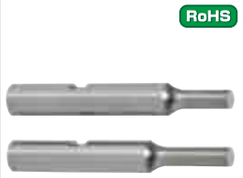
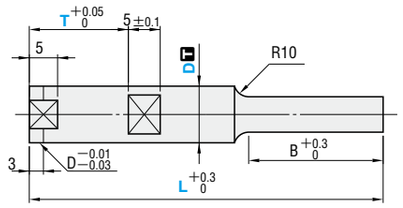
Price Quotation

■Fixing keys for punches with key grooves P.245

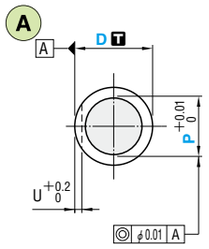
PSKB PSKBH PSKS PSKJ PSK PSKP PSKH PSKW

PUNCHES WITH KEY GROOVES
—RW COATING—

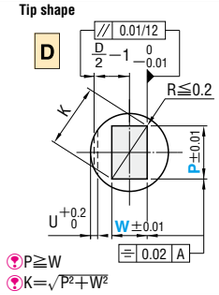
PRODUCTS DATA P.1607

Type	M H	Catalog No. Type: Shank dia. T D_{m5}	Catalog No. Type: Shank dia. T $D^{+0.005}_{0}$	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
RoHS  For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$	Equivalent to SKH51 61 ~ 64HRC Surface 3100HV	RW—SHK	ARW—SHK	A D R E G	S L X Tip length (B) X>L>S	 ℗ The tip edges are very slightly rounded.
	Powdered high-speed steel 64 ~ 67HRC Surface 3100HV	RW—PK	ARW—PK			

Tip shape A

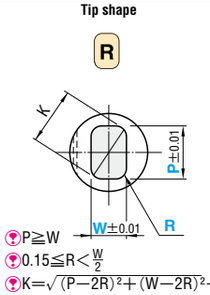


Tip shape D



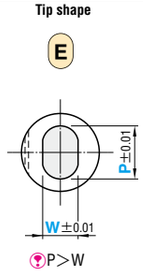
℗P≧W
℗$K=\sqrt{P^2+W^2}$

Tip shape R



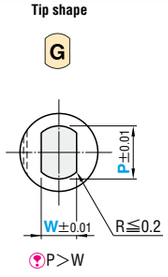
℗P≧W
℗0.15≦R<$\frac{W}{2}$
℗$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



℗P>W

Tip shape G



℗P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments DREG P·Kmax.	0.01mm increments DREG P·Wmin.	0.1 mm increments Ⓡ R	0.1 mm increments T	B	U Key groove depth
(D_{m5}) RW—SHK RW—PK	A D R E G	S	3	40 50 60 70 80	1.00～ 2.99	—	—	W/2 (Ⓡ only) 0.15≦R<W/2	T>5.0	8	0.5
			4	40 50 60 70 80	1.00～ 3.99	3.97	1.00				
			5	40 50 60 70 80	2.00～ 4.99	4.97	1.20				1.0
			6	40 50 60 70 80	2.00～ 5.99	5.97	1.50			13	1.5
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00				
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00			19	
($D^{+0.005}_{0}$) ARW—SHK ARW—PK		L	3	50 60 70 80	1.00～ 2.99	—	—			13	0.5
			4	50 60 70 80	1.00～ 3.99	3.97	2.00				
			5	50 60 70 80	2.00～ 4.99	4.97	2.00				1.0
			6	50 60 70 80	2.00～ 5.99	5.97	2.00			19	1.5
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50				
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00			25	
		X	3	50 60 70 80	1.20～ 2.99	—	—			19	0.5
			4	50 60 70 80	1.20～ 3.99	3.97	2.00				
			5	60 70 80	2.00～ 4.99	4.97	3.50			25	1.0
			6	60 70 80	2.00～ 5.99	5.97	3.50				
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00			30	1.5
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00				
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00				
			16	70 80 90 100	10.00～ 15.99	—	—			40	

℗ L(40)⋯B=8 If the full length is (40), the tip length is 8mm in all cases.
℗ If no key groove is required, select T dimension that is the same as the full length L.

Order

Catalog No.	L	P	W	R (Ⓡ only)	T
ARW—SHKDL 13	80	P10.50	W7.34		T20.1

℗ If no key groove is required, select T=L.

Days to Ship Quotation

■**Effects of RW coating**
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance.
See the product data for details. P.1607

Alterations

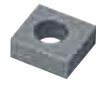
Catalog No.	L(LC·LCT)	P(PC)	W(WC)	R	T	(BC·KC·LKC…etc.)
RW—SHKEL 16	LC68	P12.00	W6.00		T20.5	LKC

Alterations	Code	Ⓐ	DREG	1Code
Alterations to tip	PC WC	Tip dimension change PC≧$\frac{Pmin.}{2}$≧1.00 0.01 mm increments P(PC) / Bmax: 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	Tip dimension change PC·WC≧$\frac{P\cdot Wmin.}{2}$≧1.00 0.01 mm increments ⊗Cannot be used for tip X. P(PC)·W(WC) / Bmax: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments ℗Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments ℗Full length L must be at least 30mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ℗PRC≦(P−0.2)/2	—	
Alterations to full length	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments ℗If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length −25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments ℗If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length −30mm).	
	LCT	T dimension tolerance and full length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes (℗) are the same as for LC. TKC: T dimension tolerance change $T^{+0.05}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alterations	Code	Ⓐ	DREG	1Code
Others	KC	—	Key flat 90°/0°/180°/270° position change 1° increments	Quotation
	NKC	—	No key flat	
	KD	—	Key groove 90°/0°/180°/270° position change 1° increments	
	WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
	UK	Key groove depth change ⊗Cannot be used for D3. D / UK: 4·5 / 0.7; 6 / 1.2; 8～16 / 1.7		
	TKC	T dimension tolerance change $T^{+0.05}_{0}$ ⇨ $^{0}_{-0.02}$		
	SKC	Single key flat on shank Ⓐ: ·D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗Cannot be used for D3. ⊗Cannot be combined with KC·KD·WKD.	DREG: $\frac{D}{2}-0.5\ ^{0}_{-0.01}$ / $\frac{D}{2}-1\ ^{0}_{-0.01}$	

Price Quotation

■**Fixing keys for punches with key grooves** P.245

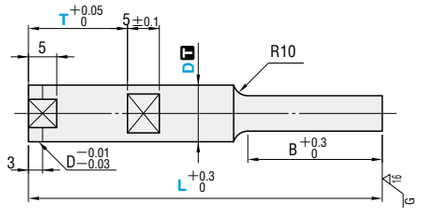
PSKB PSKBH PSKS PSKJ PSK PSKP PSKH  PSKW

PUNCHES WITH KEY GROOVES
—DLC COATING—

PRODUCTS DATA
P.1605 ～ 1609

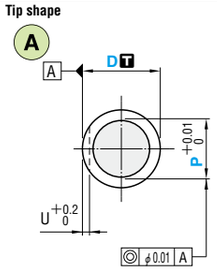
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKH51 61～64HRC Surface3000HV～	N—SHK NW—SHK	A D R E G	S L X
		Powdered high-speed steel 64～67HRC Surface3000HV～	N—PK NW—PK		
	$D^{+0.005}_{0}$	Equivalent to SKH51 61～64HRC Surface3000HV～	AN—SHK ANW—SHK		
		Powdered high-speed steel 64～67HRC Surface3000HV～	AN—PK ANW—PK		

The tip shape can be selected from Tip shape A～G in the figure below.

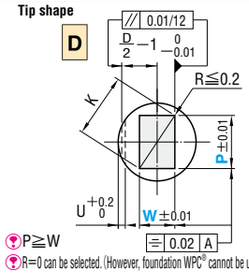


- The tip edge of a WPC® treatment punch is very slightly rounded.
- The tip end is ground before the coating is applied.

Tip shape A

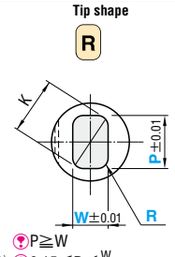


Tip shape D



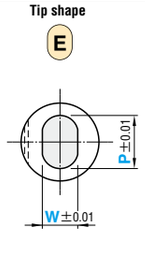
- P≧W
- R=0 can be selected. (However, foundation WPC® cannot be used.)
- $K=\sqrt{P^2+W^2}$

Tip shape R



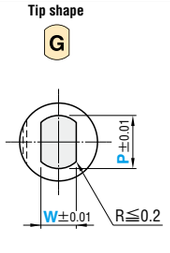
- P≧W
- 0.15≦R＜W/2
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P＞W

Tip shape G



- P＞W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P·Kmax.	Ⓓ Ⓡ Ⓔ Ⓖ P·Wmin.	Ⓡ R	0.1 mm increments T	B	U Key groove depth
(D_{m5}) N—SHK N—PK	A D R E G	S	3	40 50 60 70 80	1.00～ 2.99	—	—	W/2 (Ⓡ only) 0.15≦R＜W/2	T＞5.0	8	0.5
			4	40 50 60 70 80	1.00～ 3.99	3.97	1.00				
			5	40 50 60 70 80	2.00～ 4.99	4.97	1.20				1.0
			6	40 50 60 70 80	2.00～ 5.99	5.97	1.50				
			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	2.00			13	1.5
			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00			19	
—Foundation WPC®— NW—SHK NW—PK ($D^{+0.005}_{0}$) AN—SHK AN—PK		L	3	50 60 70 80	1.00～ 2.99	—	—			13	0.5
			4	50 60 70 80	1.00～ 3.99	3.97	2.00				
			5	50 60 70 80	2.00～ 4.99	4.97	2.00				1.0
			6	50 60 70 80	2.00～ 5.99	5.97	2.00				
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	2.50			19	1.5
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50				
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00				
			16	60 70 80 90 100	10.00～ 15.99	15.97	4.00			25	
—Foundation WPC®— ANW—SHK ANW—PK		X	3	50 60 70 80	1.20～ 2.99	—	—			19	0.5
			4	50 60 70 80	1.20～ 3.99	3.97	2.00				
			5	60 70 80	2.00～ 4.99	4.97	3.50			25	1.0
			6	60 70 80	2.00～ 5.99	5.97	3.50				
			8	60 70 80 90 100	3.00～ 7.99	7.97	5.00			30	1.5
			10	60 70 80 90 100	3.00～ 9.99	9.97	5.00				
			13	60 70 80 90 100	6.00～ 12.99	12.97	5.00				
			16	70 80 90 100	10.00～ 15.99	—	—			40	

- L(40)⋯B=8　If the full length is (40), the tip length is 8mm in all cases.
- If no key groove is required, select T dimension that is the same as the full length L.

Order

Catalog No.	L	P	W	R (Ⓡ only)	T
N—SHKEL16	70	P12.00	W6.00		T20.1
AN—SHKAS3	40	P1.80			T13.0

- If no key groove is required, select T=L.

Days to Ship Quotation

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal. See the product data for details. P.1609

Alterations

Catalog No.	L(LC·LCT)	P(PC)	W(WC)	R	T	(BC·KC·LKC…etc.)
N—SHKEL 16	LC68	P12.00	W6.00		T20.5	LKC

Alterations	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip	PC WC	Tip dimension change PC≧Pmin./2≧1.00 0.01 mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip dimension change PC≧P·Wmin./2≧1.00 WC≧P·Wmin./2≧1.00 0.01 mm increments ⊗ Cannot be used for tip X.	Quotation
		P(PC) / Bmax: 1.000～1.999 / 20; 2.000～3.999 / 35; 4.000～5.999 / 45; 6.000～ / 60	P(PC)·W(WC) / Bmax: 1.00～1.49 / 8; 1.50～1.99 / 13; 2.00～3.49 / 19; 3.50～4.99 / 25; 5.00～ / 30	
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Ⓡ Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip Ⓡ P dimension tolerance and increment are the same. The base material is finished before coating is applied. ⊗ R=0 cannot be selected for the tip D corner. ⊗ Cannot be combined with foundation WPC®.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments Ⓡ PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC. It is PRC±0.1 for foundation WPC®.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments Ⓡ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC. Foundation WPC® cannot be used.	—	
	GC	20°≦GC＜90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓡ When combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC·LCT·PRC·PCC. Foundation WPC® cannot be used.	—	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 Ⓡ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01 ⇨ +0.01 0	

Alterations	Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to full length	LC	Full length change 25+B(BC)≦LC＜L 0.1 mm increments Ⓡ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC＜L 0.1 mm increments Ⓡ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	Quotation
	LCT	T dimension tolerance and full length change are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. TKC T dimension tolerance change T +0.05 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	—	Key flat position change 1° increments	
	NKC	—	No key flat	
	KD	—	Key groove position change 1° increments	
	WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
	UK	Key groove depth change ⊗ Cannot be used for D3.	D: 4·5 / 6 / 8～16; UK: 0.7 / 1.2 / 1.7	
	TKC	T dimension tolerance change T +0.05 0 ⇨ 0 −0.02		
	SKC	Single key flat on shank Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ ·D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be used for D3. ⊗ Cannot be combined with KC·KD·WKD.		

Price Quotation

■Fixing keys for punches with key grooves P.245

PSKB PSKBH
PSKS PSKJ
PSK PSKP PSKH
PSKW

JECTOR PUNCHES WITH KEY GROOVES
—NORMAL・WPC® TREATMENT—

PRODUCTS DATA P.1605

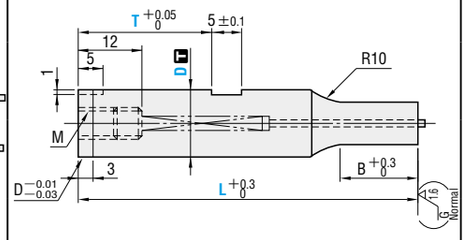
Calculating the projection length of the jector pin (reference value) P.241

- For details of jector holes, refer to Jector Punch Blanks. P.238
- For details of jector pins, refer to Jector Pin Sets. P.241

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—Normal— RoHS	D_{m5}	Equivalent to SKD11 60～63HRC —WPC® treatment— Surface 1000～1100HV	SKJ	A D R E G	S L
—WPC® treatment—	$D^{+0.005}_{0}$		WPC® treatment W—SKJ		
			A—SKJ		
			WPC® treatment AW—SKJ		Tip length (B) L>S

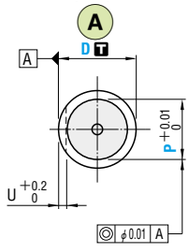
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.

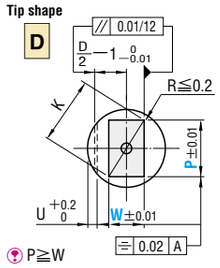


The tip edge of a WPC® treatment punch is very slightly rounded.

Tip shape A

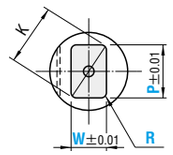


Tip shape D



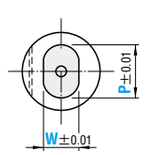
P≧W
R=0 can be selected.
(However WPC® treatment cannot be used.)
K=$\sqrt{P^2+W^2}$

Tip shape R



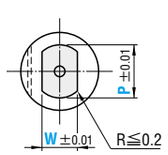
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	0.01mm increments D R E G P・Kmax.	0.01mm increments D R E G P・Wmin.	0.1 mm increments R	0.1 mm increments T	B	U Key groove depth	M
(D_{m5}) SKJ	A D R E G	S	6	(40) 50 60 70 80	2.00～ 5.99	5.97	2.00	W/2 (R only) 0.15≦R<	T>5.0	8	1.0	3
—WPC® treatment— W—SKJ			8	(40) 50 60 70 80 90 100	3.00～ 7.99	7.97	3.00			13	1.5	4
($D^{+0.005}_{0}$) A—SKJ			10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	3.00					5
—WPC® treatment— AW—SKJ			13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	6.00					6
			16	(40) (50) 60 70 80 90 100	10.00～ 15.99	15.97	6.00			19		
		L	6	50 60 70 80	2.00～ 5.99	5.97	2.00			13	1.0	3
			8	50 60 70 80 90 100	3.00～ 7.99	7.97	3.00			19	1.5	4
			10	50 60 70 80 90 100	3.00～ 9.99	9.97	3.00					5
			13	50 60 70 80 90 100	6.00～ 12.99	12.97	6.00					6
			16	60 70 80 90 100	10.00～ 15.99	15.97	6.00			25		

L(40)⋯B=6 If full length is (40), tip length is 6mm in all cases.
L(50)⋯B=13 If full length is (50), tip length is 13 mm in all cases.
If no key groove is required, select T dimension that is the same as the full length L.

Order

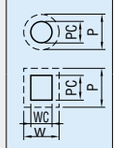
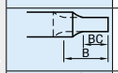
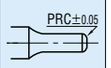
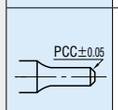
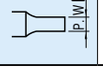
Catalog No.	L	P	W	R (R only)	T
A—SKJAS 13	80	P8.24			T20.0

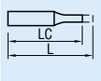
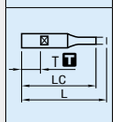
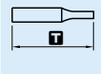
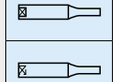
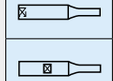
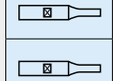
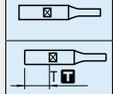
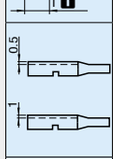
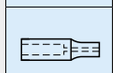
If no key groove is required, select T=L.

Days to Ship Quotation

Alterations

Catalog No.	L (LC・LCT)	P (PC)	W (WC)	R	T	(BC・KC・NKC, etc.)
A—SKJAL 13	80	P8.24			T20.0	LKC

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC・WC≧PC・WCmin. 0.01 mm increments	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape D corners. ⊗ Cannot be used with WPC treatment.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PCC. For WPC treatment, the tolerance is PRC±0.1.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.238 ⊗ Cannot be combined with PRC. For WPC treatment, the tolerance is PCC±0.1.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Tip length B is shortened by (L—LC). The projection length of the jector pin is 2 mm.		
		LCT	T dimension tolerance and full length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓐ) are the same as for LC. TKC T dimension tolerance change T +0.05 0 ⇨ 0 −0.02 LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used with WPC treatment.		
Others		KC	—	90° 0° 180° 270° Key flat position change 1° increments	Quotation
		NKC	—	No key flat	
		KD	—	90° 0° 180° 270° Key groove position change 1° increments	
		WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
		TKC	T dimension tolerance change T +0.05 0 ⇨ 0 −0.02		
		SKC	Single key flat on shank Ⓐ D R E G ・D6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・KD・WKD. ⊗ Cannot be used with WPC treatment.		
		AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		

Price Quotation

■**Fixing keys for punches with key grooves** P.245

PSKB PSKBH

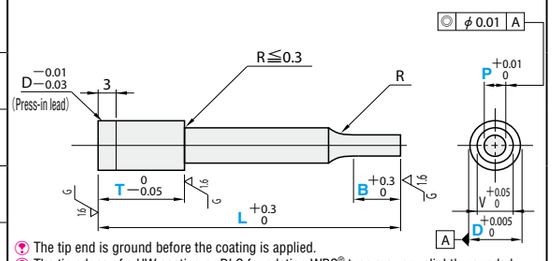
PSKS PSKJ

PSK PSKP PSKH

PSKW

ROUND PUNCHES
—NORMAL・TiCN COATING・HW COATING・DLC COATING—

PRODUCTS DATA P.1601・1604・1605・1609

Type	M H	Catalog No.	Shape
RoHS	Powdered high-speed steel 64～67HRC	PHTAL	
	Powdered high-speed steel 64～67HRC Surface 3000HV	TiCN coating H—PHTAL	
		HW coating HW—PHTAL	
	Powdered high-speed steel 64～67HRC Surface 3000HV～	DLC coating N—PHTAL	
		DLC foundation WPC® NW—PHTAL	

The tip end is ground before the coating is applied.
The tip edges of a HW coating or DLC foundation WPC® type are very slightly rounded.

Catalog No. Type	D	L	0.01mm increments min. P max.	T	1mm increments B	V	R	Base Unit Price 1～4 PHTAL	H—PHTAL	HW—PHTAL	N—PHTAL	NW—PHTAL
PHTAL	4	40 50	0.50(1.00)～2.00	13 16 20	2～ 6	2	2～3					
—TiCN coating— H—PHTAL	5	40 50 60	1.00～ 3.00	13 16 20	2～ 8	3	10					
—HW coating— HW—PHTAL	6	40 50 60 70	1.50～ 4.00	13 16 20	2～ 10	4						
—DLC coating— N—PHTAL	8	40 50 60 70	2.00～ 6.00	13 16 20	2～ 10	6						
—DLC foundation WPC®— NW—PHTAL	10	40 50 60 70	3.00～ 8.00	13 16 20	2～ 10	8		Quotation				
	13	40 50 60 70	3.00～ 10.00	13 16 20	2～ 10	11						
	16	40 50 60 70	6.00～ 13.00	13 16 20	2～ 10	14						
	20	40 50 60 70	10.00～ 16.00	13 16 20	2～ 10	18						
	25	40 50 60 70	13.00～ 23.00	13 16 20	2～ 10	23						

(P(1.00) ···For TiCN coating, Pmin. is 1.00.

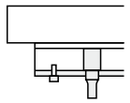
Order: Catalog No. — L — P — T — B
PHTAL 5 — 60 — P3.00 — T20 — B5

Price: Quotation

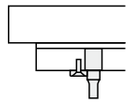
Days to Ship: Quotation

Example

■Example showing use of slotted plate to prevent loosening of punch

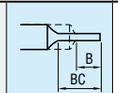
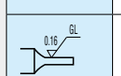
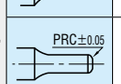
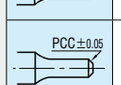
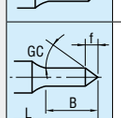
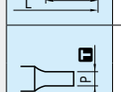


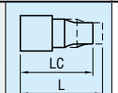
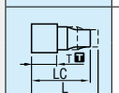
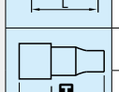
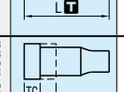
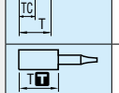
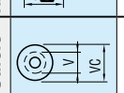
■Example showing use of punch fixing key



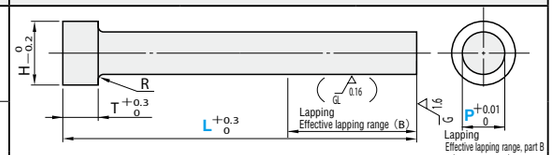
Alterations: Catalog No. — L(LC・LCT) — P — T(TC) — B(BC) — (PKC・LKC…etc.)
PHTAL 5 — 60 — P3.00 — T20.0 — B5

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

Alterations		Code	Spec.	1Code
Alterations to tip		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments (▽) L—B—T≧10	
		SC	Lapping of tip (▽) P dimension tolerance and increment are the same. (▽) The base material is finished before coating is applied. (⊗) R=0 cannot be selected for the tip D corner・DLC foundation WPC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (▽) PRC≦(P—0.2)/2 (⊗) Cannot be combined with PCC・GC. (▽) For HW coating and DLC foundation WPC®,the tolerance is PRC±0.1.	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (▽) PCC≦(P—0.2)/2 (⊗) Cannot be combined with PRC・GC. (⊗) HW coating and DLC foundation WPC® cannot be used.	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°—GC°) (▽) If combined with SC, tip edges are rounded. (⊗) Cannot be combined with LKC・LKZ・LCT・PRC・PCC. (⊗) Cannot be used for P<1.0. (⊗) HW coating and DLC foundation WPC® cannot be used.	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (▽) (P dimension can be selected in 0.001 mm increments.) (⊗) TiCN coating・HW coating cannot be used for D>13.	

Alterations		Code	Spec.	1Code
Alterations to full length		LC	Full length change 40<LC<L 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) (▽) If LC<50, T and TC must be 20 or less. (▽) If LC<50 with D6・8, the allowable range of B is 2～10.	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (▽) are the same as for LC. TKC: Head thickness tolerance change T 0 −0.05 ⇨ 0 −0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 (⊗) Cannot be used with TiCN coating.	
Alterations to head		TC	T dimension change 13<TC<25 0.1 mm increments (▽) If L<50, the allowable range is 13<TC<20. (▽) The full length L remains the same.	
		TKC	Head thickness tolerance change T 0 −0.05 ⇨ 0 −0.02	
Others		VC	V dimension change D4～6 V—0.5≦VC≦D—1.2 D8～ V—2≦VC≦D—1.2 0.1 mm increments	

STRAIGHT PUNCHES
—NORMAL・LAPPING TYPE—

Type	M H	Catalog No.	Shape
—Normal— RoHS	Equivalent to SKD11 60～63HRC	SPC Lapping L—SPC	
—Lapping—	Equivalent to SKH51 61～64HRC	SHC Lapping L—SHC	
	Powdered high-speed steel 64～67HRC	PHC Lapping L—PHC	

No.	R
1.0～2.5	≦0.2
3 ～25	≦0.5

Effective lapping range

P	L	(B)
0.500～0.999	20≦L≦30	8
1.000～2.499	20≦L≦80	13
2.500～2.999	L<23	L—10
	L≧23	13

P	L	(B)
3.000～9.999	L<25	5
	25≦L<40	L—20
	L≧40	19
10.000～	L<25	5
	25≦L<40	L—20
	L≧40	25

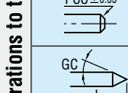
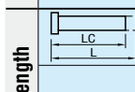
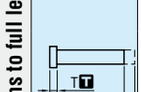
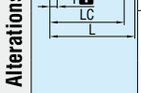
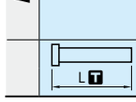
Catalog No. Type	No.	L	0.01mm increments(0.001mm increments for lapping) min. P max.	H	T
—Lapping— SHC L—SHC PHC L—PHC	1.0	20 25 30	0.50～ 1.00	2.0	3
	1.6	20 25 30 35 40 50 60	1.00～ 1.60	2.6	
	2.0	20 25 30 35 40 50 60	1.60～ 2.00	3.0	
	2.5	20 25 30 35 40 50 60	2.00～ 2.50	3.5	
—Lapping— SPC L—SPC SHC L—SHC PHC L—PHC	3	40 50 60 70 80	2.00～ 3.00	5	5
	4	40 50 60 70 80	3.00～ 4.00	7	
	5	40 50 60 70 80	4.00～ 5.00	8	
	6	40 50 60 70 80	5.00～ 6.00	9	
	8	40 50 60 70 80 90 100	6.00～ 8.00	11	
	10	40 50 60 70 80 90 100	8.00～ 10.00	13	
	13	40 50 60 70 80 90 100 110 120	10.00～ 13.00	16	
	16	40 50 60 70 80 90 100 110 120	13.00～ 16.00	19	
	20	40 50 60 70 80 90 100 110 120	16.00～ 20.00	23	
	25	40 50 60 70 80 90 100 110 120	20.00～ 25.00	28	

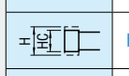
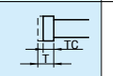
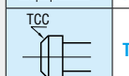
Order: Catalog No. — L — P
PHC 6 — 40 — P5.50
L—PHC 6 — 40 — P5.500

Price: Quotation

Days to Ship: Quotation

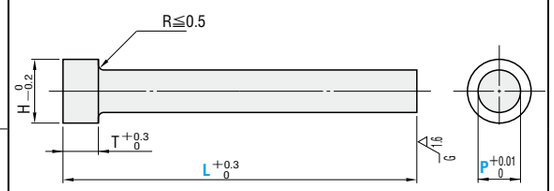
Alterations: Catalog No. — L(LC・LCT・LMT) — P — (HC・TC・GC…etc.)
SPC 6 — LC45 — P5.50 — PKC—LKC

Alterations		Code	Spec.	1Code
Alterations to tip		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (▽) PRC≦(P—0.2)/2 (⊗) Cannot be combined with PCC・GC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (▽) PCC≦(P—0.2)/2 (⊗) Cannot be combined with PRC・GC.	
		GC	20°≦GC<90° 1° increments (⊗) Cannot be combined with LKC・LCT・LMT・PRC・PCC. with lapping,the tip edges are rounded	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.0005 0 (P dimension can be selected in 0.001 mm increments.) (⊗) Lapping cannot be used.	Quotation
Alterations to full length		LC	Full length change 20≦LC<L 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	
		LCT	Changes to head thickness tolerance and full length are processed using a single code.The allowable range of change, increment, ordering process, and notes (▽) are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
		LMT	Changes to head thickness tolerance and full length are processed using a single code.The allowable range of change, increment, ordering process, and notes (▽) are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0	

Alterations		Code	Spec.	1Code
Alterations to head		KC	Addition of single key flat to head (▽) Can be used for No.3 and above	
		WKC	Addition of double key flats in parallel (▽) Can be used for No.3 and above	
		KFC	Double key flats at 0° and a selected angle 1° increments (▽) Can be used for No.3 and above (⊗) Cannot be combined with KC・WKC.	Quotation
		HC	Head diameter chage P≦HC<H 0.1mm increments	
		TC	Head thickness change 2≦TC<T 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (▽) Full length L is shortened by (T—TC). If combined with LC・LCT・LMT, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H—P)/2 (▽) If H≦5, then TCC is 0.5.	

STRAIGHT PUNCHES
—TiCN COATING—

PRODUCTS DATA P.1603・1606

Type	M H	Catalog No.	Shape
RoHS	Equivalent to SKH51 61～64HRC Surface 3000HV	H—SHC	
	Powdered high-speed steel 64～67HRC Surface 3000HV	H—PHC	

- Coating is applied to the tip end and the tip diameter (P). (Coating is not applied to the head.)
- The tip end is ground before the coating is applied.

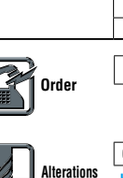
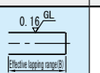
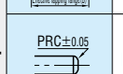
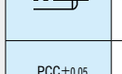
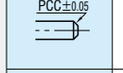
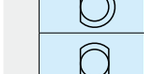
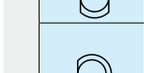
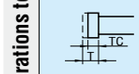
Catalog No. Type	No.	L	0.01mm increments min. P max.	H	T	Base unit price 1～9 pieces H—SHC	H—PHC
	4	40 50 60 70 80	3.00～ 4.00	7			
	5	40 50 60 70 80	4.00～ 5.00	8			
	6	40 50 60 70 80	5.00～ 6.00	9			
H—SHC	8	40 50 60 70 80 90 100	6.00～ 8.00	11			
	10	40 50 60 70 80 90 100	8.00～ 10.00	13	5	Quotation	
H—PHC	13	40 50 60 70 80 90 100 110 120	10.00～ 13.00	16			
	16	40 50 60 70 80 90 100 110 120	13.00～ 16.00	19			
	20	40 50 60 70 80 90 100 110 120	16.00～ 20.00	23			
	25	40 50 60 70 80 90 100 110 120	20.00～ 25.00	28			

Order — Catalog No. — L — P
H—SHC 6 — 40 — P5.50

Days to Ship: Quotation

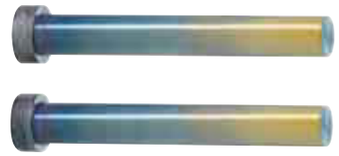
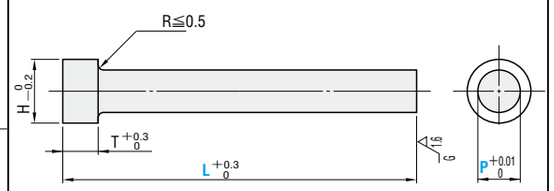
Alterations — Catalog No. — L(LC・LCT・LMT) — P — (TC・KC, etc.)
H—SHC 6 — LC45 — P5.50 — LKC

Price: Quotation

Alteration		Code	Spec.	1Code
Alterations to tip		SC	Lapping of tip (?) P dimension tolerance and increment are the same. The base material is finished before coating is applied. (?) Refer to the 224 page for a Effective lapping range.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (?) PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	
		GC	20°≦GC＜90° 1° increments ⊗ Cannot be combined with LKC・LCT・LMT・PRC・PCC.	Quotation
Alterations to full length		LC	Full length change 20≦LC＜L 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.)	
		LCT	Changes to head thickness tolerance and full length are processed using a single code.The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
		LMT	Changes to head thickness tolerance and full length are processed using a single code.The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
Full length		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0 ⊗ Cannot be combined with GC.	
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Quotation
		TC	Head thickness change 4.0≦TC＜T 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (?) Full length L is shortened by (T−TC). If combined with LC・LCT・LMT, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−P)/2 (?) If H≦5, then TCC is 0.5.	

STRAIGHT PUNCHES
—DLC COATING—

PRODUCTS DATA P.1607・1611

Type	M H	Catalog No.	Shape
RoHS 	Equivalent to SKH51 61～64HRC Surface 3000HV	N—SHC	
	Powdered high-speed steel 64～67HRC Surface 3000HV	N—PHC	

- Coating is applied to the tip end and the tip diameter (P). (Coating is not applied to the head.)
- The tip end is ground before the coating is applied.

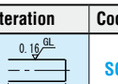
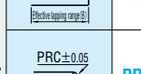
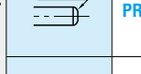
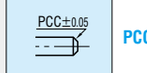
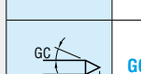
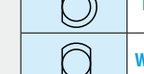
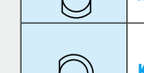
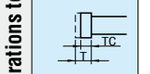
Catalog No. Type	No.	L	0.01mm increments min. P max.	H	T	Base unit price 1～9 pieces N—SHC	N—PHC
	4	40 50 60 70 80	3.00～ 4.00	7			
	5	40 50 60 70 80	4.00～ 5.00	8			
	6	40 50 60 70 80	5.00～ 6.00	9			
N—SHC	8	40 50 60 70 80 90 100	6.00～ 8.00	11			
	10	40 50 60 70 80 90 100	8.00～ 10.00	13	5	Quotation	
N—PHC	13	40 50 60 70 80 90 100 110 120	10.00～ 13.00	16			
	16	40 50 60 70 80 90 100 110 120	13.00～ 16.00	19			
	20	40 50 60 70 80 90 100 110 120	16.00～ 20.00	23			
	25	40 50 60 70 80 90 100 110 120	20.00～ 25.00	28			

Order — Catalog No. — L — P
N—SHC 6 — 40 — P5.50
N—PHC 8 — 70 — P6.30

Days to Ship: Quotation

Alterations — Catalog No. — L(LC・LCT・LMT) — P — (TC・KC, etc.)
N—SHC 6 — LC45 — P5.50 — LKC

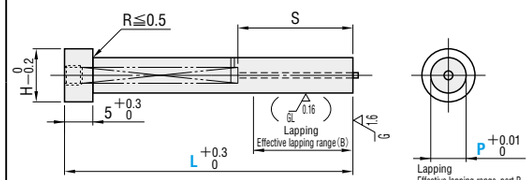
Price: Quotation

Alteration		Code	Spec.	1Code
Alterations to tip		SC	Lapping of tip (?) P dimension tolerance and increment are the same. The base material is finished before coating is applied. (?) Refer to the 224 page for a Effective lapping range.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (?) PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (?) PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	
		GC	20°≦GC＜90° 1° increments ⊗ Cannot be combined with LKC・LCT・LMT・PRC・PCC.	Quotation
Alterations to full length		LC	Full length change 20≦LC＜L 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.)	
		LCT	Changes to head thickness tolerance and full length are processed using a single code.The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
		LMT	Changes to head thickness tolerance and full length are processed using a single code.The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
Full length		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0 ⊗ Cannot be combined with GC.	
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Quotation
		TC	Head thickness change 4.0≦TC＜T 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (?) Full length L is shortened by (T−TC). If combined with LC・LCT・LMT, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−P)/2 (?) If H≦5, then TCC is 0.5.	

■**Effects of DLC coating**
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal.See the product data for details. P.1609

JECTOR STRAIGHT PUNCHES
—NORMAL・LAPPING—

Calculating the projection length of the jector pin (reference value) P.241
● For details of jector holes, refer to Jector Punch Blanks. P.236
● For details of jector pins, refer to Jector Pin Sets. P.241

Type	M H	Catalog No.	Shape
—Normal— RoHS —Lapping—	(No.5・6) Equivalent to SKH51 61～64HRC (No.8～25) Equivalent to SKD11 60～63HRC	SJC Lapping L—SJC	 Effective lapping range: P 4.500～9.999 (B) 19; 10.000～ 25. If L＜(B)+20, (B) is adjusted to (L−20).

Catalog No. Type	No.	L	0.01mm increments (0.001mm increments for lapping) min. P max.	H	S	Base unit price 1～9 pieces SJC	L—SJC
SJC —Lapping— L—SJC	5	(40) 50 60 70 80	4.50～ 5.00	8	20	Quotation	
	6		5.00～ 6.00	9			
	8		6.00～ 8.00	11	27		
	10	(40) 50 60 70 80 90 100	8.00～ 10.00	13	28		
	13		10.00～ 13.00	16			
	16		13.00～ 16.00	19			
	20	(40) (50) 60 70 80 90 100	16.00～ 20.00	23	36		
	25		20.00～ 25.00	28			

When full length L is (40), S dimension for No. 5～No. 13 is 15mm and for No. 16～No. 25 is 17mm.
When full length L is (50), S dimension for No. 16～No. 25 is 24mm.

Order: Catalog No. — L — P
SJC 6 — 50 — P5.50
L—SJC 6 — 50 — P5.500

Days to Ship: Quotation

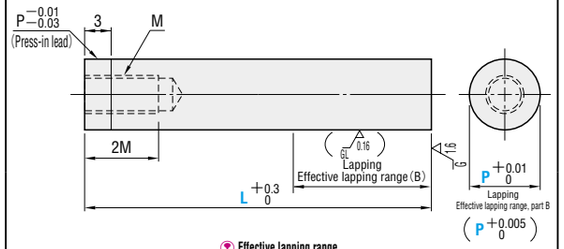
Alterations: Catalog No. — L(LC・LCT・LMT) — P — (HC・TC, etc.)
SJC 6 — LC45.5 — P5.50 — AC—PKC

Price: Quotation

Alteration		Code	Spec.	1Code
Alterations to tip	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P−d_1−0.5)/2 d_1 dimension details P.236 ⊗ Cannot be combined with PCC.	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P−d_1−0.5)/2 d_1 dimension details P.236 ⊗ Cannot be combined with PRC.	
	P	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with lapping.	
Alterations to full length	LC L	LC	Tip length change 30≦LC＜L 0.1 mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.) (P) S dimension is shortened accordingly. (P) Projection length of the jector pin is 2 mm.	Quotation
	T LC L	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change,increment, ordering process, and notes ((P)) are the same as for LC. TKC (Head thickness tolerance change T +0.3 0 ⇨ +0.02 0) + LC (Full length change) + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
	T T LC L	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ((P)) are the same as for LC. TKM (Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02) + LC (Full length change) + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0	

Alteration		Code	Spec.	1Code
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
	H HC	HC	Head diameter change P≦HC＜H 0.1 mm increments	
	TC T	TC	Head thickness change 3.5≦TC＜5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (P) Full length L is shortened by (5−TC). (P) If combined with LC・LCT・LMT, full length is equal to LC.	Quotation
	T T	TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
	TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H−P)/2 (P) If H≦5, then TCC is 0.5.	
Shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.	
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.	

TAPPED STRAIGHT PUNCHES
—NORMAL・LAPPING—

Type	M H	Catalog No.	Shape
—Normal— RoHS —Lapping—	Equivalent to SKD 11 60～63HRC	MSPC Lapping L—MSPC	 Effective lapping range: P 6.000～9.999 (B) 19; 10.000～ 25. If L＜(B)+20, (B) is adjusted to (L−20).

Catalog No. Type	No.	L	0.01mm increments (0.001mm increments for lapping) min. P max.	M	Base unit price for 1～9 pieces MSPC	L—MSPC
MSPC —Lapping— L—MSPC	8	40 50 60 70 80 90 100	6.00～ 8.00	3	Quotation	
	10		8.01～10.00	4		
	13		10.01～13.00	6		
	16		13.01～16.00			
	20		16.01～20.00			
	25		20.01～25.00			

Order: Catalog No. — L — P
MSPC 16 — 70 — P14.73
L—MSPC 16 — 70 — P14.730

Days to Ship: Quotation

Alterations: Catalog No. — L(LC) — P — (KC, etc.)
MSPC 16 — LC67.3 — P14.73 — LKC

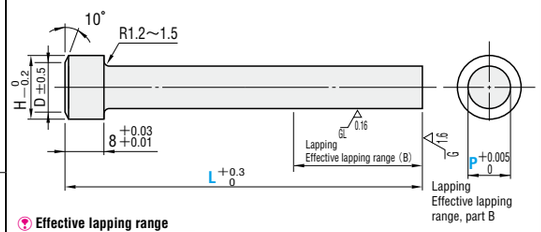
Price: Quotation

Alteration		Code	Spec.	1Code
Alterations to tip	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	Quotation
	GC L	GC	20°≦GC＜90° 1° mm increments ⊗ Cannot be combined with LKC・LKZ・PRC・PCC.	
	P	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with lapping.	

Alteration		Code	Spec.	1Code
Alterations to full length	LC L	LC	Full length change 30≦LC＜100 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	
	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0	Quotation
Others		KC	Addition of single key flat	
		WKC	Addition of double Key flats in parallel	
	ℓ D −0.01 −0.03	NDC	No press-in lead ℓ=3 ⇨ ℓ=0	

PUNCHES

STRAIGHT PUNCHES FOR HEAVY LOAD
—NORMAL・LAPPING—

Type	M H	Catalog No.	Shape
—Normal— RoHS	Equivalent to SKH51 61～64HRC	Normal **AHC** Lapping **L—AHC**	
—Lapping—	Powdered high-speed steel 64～67HRC	Normal **APHC** Lapping **L—APHC**	

Effective lapping range

P	L	(B)
3.000～9.999	L＜25	5
	25≦L＜40	L—20
	L≧40	19
10.000～	L＜25	5
	25≦L＜40	L—20
	L≧40	25

Catalog No. Type	No.	L	0.01mm increments min. P max.	H
—Normal— **AHC** **APHC** —Lapping— **L—AHC** **L—APHC**	4	40 50 60 70 80	3.00 ～ 4.00	9
	5	40 50 60 70 80	4.00 ～ 5.00	10
	6	40 50 60 70 80	5.00 ～ 6.00	11
	8	40 50 60 70 80 90 100	6.00 ～ 8.00	13
	10	40 50 60 70 80 90 100	8.00 ～ 10.00	15
	13	40 50 60 70 80 90 100 110 120	10.00 ～ 13.00	18
	16	40 50 60 70 80 90 100 110 120	13.00 ～ 16.00	21
	20	40 50 60 70 80 90 100 110 120	16.00 ～ 20.00	25
	25	40 50 60 70 80 90 100 110 120	20.00 ～ 25.00	30

Order: Catalog No. — L — P
AHC 6 — 40 — P5.50
L—APHC6 — 40 — P5.500

Days to Ship: Quotation

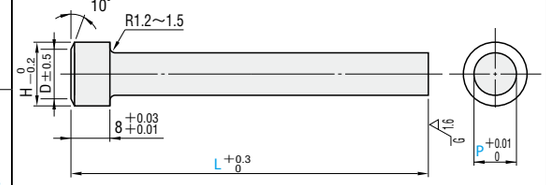
Price: Quotation

Alterations: Catalog No. — L(LC) — P — (PKC…etc.)
AHC 6 — LC45 — P5.50 — PKC—LKC

Alterations		Code	Spec.	1Code
Alterations to tip	PRC ±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P—0.2)/2 (⊗) Cannot be combined with PCC.	Quotation
	PCC ±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P—0.2)/2 (⊗) Cannot be combined with PRC.	
	P	PKC	Tip tolerance change P +0.01 0 ⇨ +0.0005 0 (P dimension can be selected in 0.001 mm increments.) (⊗) Lapping cannot be used.	
Full length	LC L	LC	Full length change 20≦LC＜L 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	

Alterations		Code	Spec.	1Code
Full length	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	Quotation
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0	
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
	90° 0° 180° 270°	KFC	Double key flats at 0° and a selected angle 1° increments (⊗) Cannot be combined with KC・WKC.	

STRAIGHT PUNCHES FOR HEAVY LOAD
—TiCN COATING—

Type	M H	Catalog No.	Shape
RoHS	Equivalent to SKH51 61～64HRC Surface 3000HV	TiCN coating **H—AHC**	
	Powdered high-speed steel 64～67HRC Surface 3000HV	TiCN coating **H—APHC**	

Catalog No. Type	No.	L	0.01mm increments min. P max.	H
—TiCN coating— **H—AHC** **H—APHC**	4	40 50 60 70 80	3.000 ～ 4.000	9
	5	40 50 60 70 80	4.000 ～ 5.000	10
	6	40 50 60 70 80	5.000 ～ 6.000	11
	8	40 50 60 70 80 90 100	6.000 ～ 8.000	13
	10	40 50 60 70 80 90 100	8.000 ～ 10.000	15
	13	40 50 60 70 80 90 100 110 120	10.000 ～ 13.000	18
	16	40 50 60 70 80 90 100 110 120	13.000 ～ 16.000	21
	20	40 50 60 70 80 90 100 110 120	16.000 ～ 20.000	25
	25	40 50 60 70 80 90 100 110 120	20.000 ～ 25.000	30

Order: Catalog No. — L — P
H—AHC 6 — 40 — P5.50

Days to Ship: Quotation

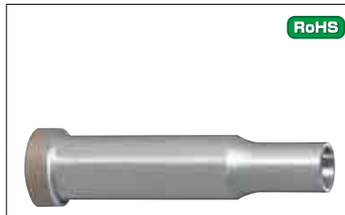
Price: Quotation

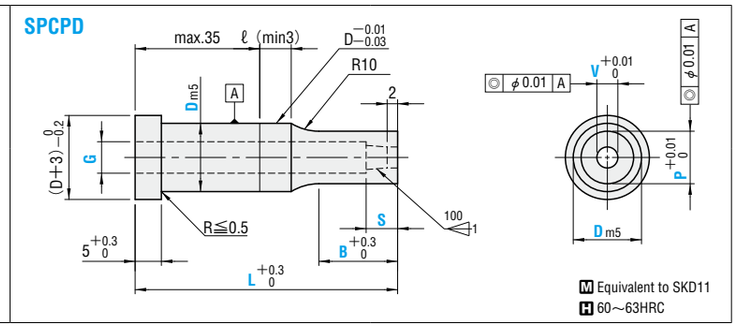
Alterations: Catalog No. — L(LC) — P — (LKC…etc.)
H—AHC 6 — LC45 — P5.500 — LKC

Alterations		Code	Spec.	1Code
Alterations to tip	0.16 GL Lapping range	SC	Lapping of tip (P) P dimension tolerance and increment are the same. The base material is finished before coating is applied. (P) Refer to the 229 page for a Effective lapping range.	Quotation
	PRC ±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments (P) PRC≦(P—0.2)/2 (⊗) Cannot be combined with PCC.	
	PCC ±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments (P) PCC≦(P—0.2)/2 (⊗) Cannot be combined with PRC.	

Alterations		Code	Spec.	1Code
Full length	LC L	LC	Full length change 20≦LC＜L 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	
	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	Quotation
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
	90° 0° 180° 270°	KFC	Double key flats at 0° and a selected angle 1° increments (⊗) Cannot be combined with KC・WKC.	

PUNCHES





Catalog No. Type	D	0.1mm increments L	0.01mm increments P	V min.	V max.	0.1mm increments B	0.1mm increments S min.	S max.	G		Base unit price 1～9 pieces
SPCPD	8	35.0～60.0	4.80 ～ 7.99	1.50	G−0.5	4.0≦B≦19.0 and B≦L−27	3	(10)	G≦P×0.6 and (P−G)/2 ≧1.20	0.2mm increments	Quotation
	10		4.80 ～ 9.99	1.50							
	13		5.80 ～ 12.99	1.50							
	16		9.80 ～ 15.99	2.50		4.0≦B≦25.0 and B≦L−27				0.5mm increments	
	20		12.80 ～ 19.99	3.50				12			
	25	40.0～60.0	17.80 ～ 24.99	5.00		4.0≦B≦25.0 and B≦L−32					
	32		19.80 ～ 31.99	7.50				15			

Smax.(10)･･･▶When V≦1.99, S is 4 mm at maximum.
P＞D−0.03･･･▶If P＞D−0.03, D −0.01 −0.03 (press-in lead) is not included.

Be aware that when the difference between P dimension and V dimension or G dimension is small (thin walls), the punch may lack sufficient strength depending on the workpiece.

Order Catalog No. — L — P — V — B — S — G

Example SPCPD 20 — 55.0 — P14.65 — V7.35 — B8 — S10 — G8.5

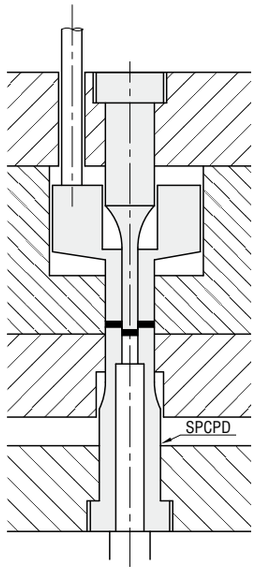
Days to Ship Quotation

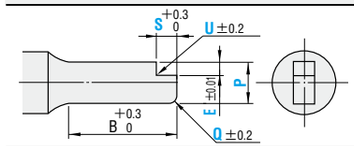
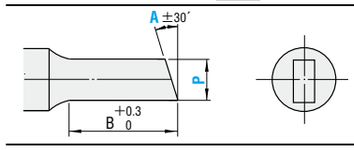
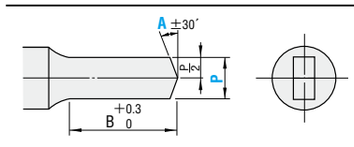
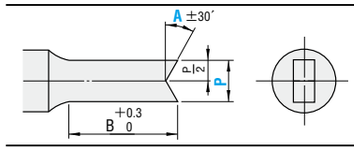
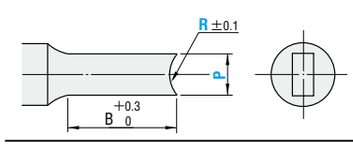
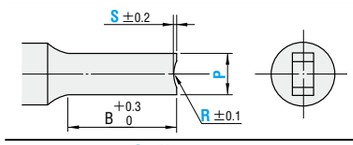
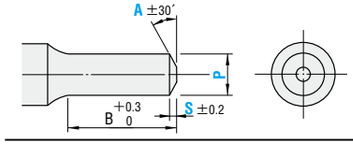
Price Quotation

Alterations Catalog No. — L — P — V — B — S — G — (TKC･LKC, etc.)

SPCPD 20 — 55.0 — P14.65 — V7.35 — B8 — S10 — G8.5 — TKC

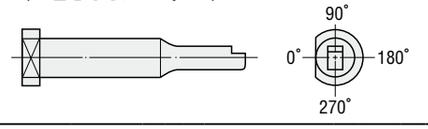
Alteration		Code	Spec.	1Code
Alterations to tip		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	
		VKC	Tip tolerance change V +0.01 0 ⇨ +0.005 0 (V dimension can be selected in 0.001 mm increments.)	
Full length		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
Alterations to head		KC	Addition of single key flat to head	Quotation
		WKC	Addition of double key flats in parallel	
		HC	Head diameter change D≦HC＜(D+3) 0.1 mm increments	
		TC	Head thickness change 2≦TC＜5 0.1mm increments (If combined with TKC･TKM, 0.01mm increments can be selected.) The full length remains as specified.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
Shank		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	



Shape	Code	Tip shape Ⓐ	Tip shape D R E G	1Code
	1F	—	●1≦S≦B ●S≦Smax. ●1≦E≦P/2 ●U≦S−1 ●0.2≦U≦E ●Q=0 or 1≦Q≦P/2 ⊗ Cannot be used for LKC･LKZ. ⊗ E G shape Q dimension cannot be selected. S: 0.1mm increments U: 0.1mm increments E: 0.01mm increments Q: 0.01mm increments (P−E / Smax.: 1.00～1.99 / 4.0; 2.00～2.49 / 7.0; 2.50～3.99 / 10.0; 4.00～ / 13.0)	
	2F	●0°＜A≦15° ●P tanA+2＜B ⊗ Cannot be used for LKC･LKZ･LCT･LMT. ⊗ Cannot be combined with PRC･PCC･GC. ⊗ Cannot be combined with KC･WKC･KFC･SKC. A: 1° increments	●0°＜A≦15° ●P tanA+2＜B ⊗ Cannot be used for LKC･LKZ･LCT･LMT. A: 1° increments	
	3F	●0°＜A≦15° ●P/2 tanA+2＜B ⊗ Cannot be used for LKC･LKZ･LCT･LMT. ⊗ Cannot be combined with PRC･PCC･GC. ⊗ Cannot be combined with KC･WKC･KFC･SKC. A: 1° increments	●0°＜A≦15° ●P/2 tanA+2＜B ⊗ Cannot be used for LKC･LKZ･LCT･LMT. A: 1° increments	Quotation
	4F	●0°＜A≦15° ●P/2 tanA＜B ⊗ Cannot be used for LKC･LKZ･LCT･LMT. ⊗ Cannot be combined with PRC･PCC･GC. ⊗ Cannot be combined with KC･WKC･KFC･SKC. A: 1° increments	●0°＜A≦15° ●P/2 tanA＜B ⊗ Cannot be used for LKC･LKZ･LCT･LMT. A: 1° increments	
	5F	●P+1≦R≦P+5 Full length tolerance L±0.3 Not spherical machining. ⊗ Cannot be used for LKC･LKZ･LCT･LMT. ⊗ Cannot be combined with PRC･PCC･GC. ⊗ Cannot be combined with KC･WKC･KFC･SKC. ⊗ Cannot be combined with PKC. R: 0.1mm increments	●P+1≦R≦P+5 Full length tolerance L±0.3 No spherical surface. ⊗ Cannot be used for LKC･LKZ･LCT･LMT. ⊗ Cannot be combined with PKC. R: 0.1mm increments	
	6F	●S＜R ●S≧0.5 ●2√{R²−(R−S)²}＜P ⊗ Cannot be used for LKC･LKZ･LCT･LMT. ⊗ Cannot be combined with PRC･PCC･GC. ⊗ Cannot be combined with KC･WKC･KFC･SKC. R: 0.1mm increments S: 0.1mm increments	●S＜R ●S≧0.5 ●2√{R²−(R−S)²}＜P ⊗ Cannot be used for LKC･LKZ･LCT･LMT. R: 0.1mm increments S: 0.1mm increments	
	7F	●0°＜A≦45° ●S≧0.5 ●S/tanA＜P/2−0.3 ⊗ Cannot be used for LKC･LKZ･LCT･LMT. ⊗ Cannot be combined with PRC･PCC･GC. ⊗ Cannot be combined with KC･WKC･KFC･SKC. A: 1° increments, S: 0.1mm increments	—	

Applicable ranges for the above alterations
Tip shape Ⓐ→P≧2.0mm, B≦10P Tip shape D R E G→W≧2.0mm, B≦10W

For tip shape Ⓐ no key flat is provided.
For tip shapes D R E G, the key flat position is as shown below.



■Effect of the shear angle
The benefits of adding a shear angle to the punch tip include a reduction in punching load, reduced noise, and prevention of scrap lifting.

Order Standard order code — Punch tip shear angle alteration

Catalog No. — L — Tip dimension (P,W,R) — Code — Specified dimension (S･E･U･Q･A)

SPEL 16 — 70 — P12.00—W6.00 — 3F — A11

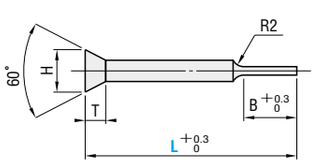
Days to Ship Quotation

Type	Catalog No.	Page
	SP□□	P.55
	SH□□	
	PH□□	
	SP□□—C	P.113
	AP□□	P.137
	APH□□	
	AP□□—C	P.177
	MP□□	P.197

MINI STRAIGHT PUNCHES

RoHS

SHCL



M SKH51
H 61～64HRC
(Head: 40～50HRC)

B	T	H	Catalog No. Type	Catalog No. D	L	0.01mm increments min. P max.	Base unit price 1～9 pieces
4	1.1	2.9	SHCL	1.6	(25) 30 35 40 50	0.30～1.59	Quotation
6	1.4	3.6		2.0		0.50～1.99	
8	1.8	4.5		2.5		1.00～2.49	

L(25)⋯B=4 If full length is (25), tip length is 4mm in all cases.

Order — Catalog No. — L — P
SHCL 2.0 — 30 — P0.88

Days to Ship: Quotation

Price: Quotation

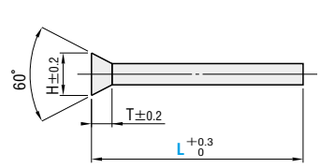
Alterations — Catalog No. — L(LC) — P(PC) — (BC・GC・LKC, etc.)
SHCL 2.0 — LC28 — P0.88

Alteration		Code	Spec.	1Code
Alterations to tip		PC	Tip diameter change D2.0: PC≧0.30 D2.5: PC≧0.50 0.01mm increments Tip length is 4mm in all cases. Cannot be used for D1.6.	
	BC, B	BC	Tip length change 2≦BC＜B 0.1 mm increments	Quotation
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC・GC.	Quotation
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC・GC.	
	GC, f, L	GC	Conical tip 20°≦GC＜90° 1° increments Cannot be combined with PRC・PCC・LKC. Tip length B≧f+2	

Alteration		Code	Spec.	1Code
Alterations to full length	LC, L	LC	Full length change 25＜LC＜50 0.1mm increments (If combined with LKC, 0.01 mm increments can be selected.) If LC＜30, tip length B is 4mm in all cases.	Quotation
	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0 Cannot be combined with GC.	

RoHS

SH



The tip edges are very slightly rounded

M SKH51
H 61～64HRC
(Head: 40～50HRC)

T	H	Catalog No. Type	Catalog No. P	L	Base unit price 1～9 pieces
0.7	1.8	SH	1.0	25 30 35 40 50	Quotation
0.8	2.0		1.1		
0.8	2.1		1.2		
0.9	2.3		1.3		
1.0	2.6		1.4		
1.1	2.8		1.5		
1.1	2.9		1.6		
1.2	3.1		1.7		
1.3	3.3		1.8		
1.3	3.4		1.9		
1.4	3.6		2.0		
1.5	3.8		2.1		
1.5	3.9		2.2		
1.6	4.1		2.3		
1.7	4.4		2.4		
1.8	4.5		2.5		
1.8	4.7		2.6		
1.9	4.9		2.7		
2.0	5.1		2.8		
2.0	5.2		2.9		
2.1	5.4		3.0		

Order — Catalog No. — L
SH 1.5 — 40

Days to Ship: Quotation

Price: Quotation

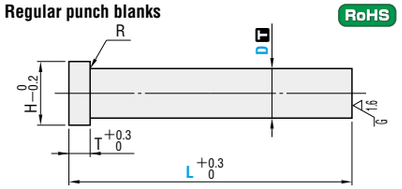
Alterations — Catalog No. — L(LC) — (LKC)
SH 1.5 — LC38 — LKC

Alteration		Code	Spec.	1Code
Alterations to full length	LC, L	LC	Full length change 25＜LC＜50 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.)	Quotation
	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	

PUNCH BLANKS

Regular punch blanks

RoHS



D	R
1.0 ～ 2.5	R≦0.2
3 ～ 25	R≦0.5

Catalog No.	Shank diameter tolerance	M	H	Applicable dim. D
SPB	D m5	Equivalent to SKD11	60～63HRC	D3 ～25
SHB		Equivalent to SKH51	61～64HRC	D1.0～25
PHB		Powdered high-speed steel	64～67HRC	D1.6～25
A—SPB	D +0.005 0	Equivalent to SKD11	60～63HRC	D3 ～25
A—SHB		Equivalent to SKH51	61～64HRC	D1.0～25
A—PHB		Powdered high-speed steel	64～67HRC	D1.6～25

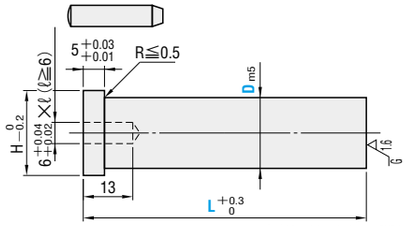
H	T	Catalog No. Type	D	10mm increments L	Base unit price 1 ～ 9 pieces SPB	SHB	PHB	A—SPB	A—SHB	A—PHB
2.0	3	(Dm5) SPB SHB PHB (D +0.005 0) A—SPB A—SHB A—PHB	1.0	30～50						
2.6			1.6							
3.0			2.0							
3.5			2.5							
5	5		3	40～100						
7			4							
8			5							
9			6							
11			8							
13			10							
16			13							
19			16							
23			20							
28			25							

Quotation

Punch blanks with locating dowel holes

SPB—C

RoHS



M Material equivalent to SKD11
H Hardness 60 ～ 63HRC
A Accessory MS6—25

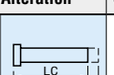
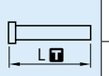
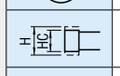
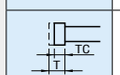
H	Catalog No. Type	D	10mm increments L	Base unit price 1～9 pieces
13	SPB—C	10	40～150	
16		13		
19		16		
23		20		
28		25		
35		32		
41		38		
48		45		

Quotation

Price Quotation

Alterations — Catalog No. SHB 3 — L(LC) — LC65 (HC・TC, etc.)

■Punch blanks other than jector

Alteration		Code	Spec.	1Code
Alterations to full length		LC	・SPB ・SHB A—SPB ・A—SHB ···15≦LC＜L ・SPB—C ···20≦LC＜L ・PHB・A—PHB ···30≦LC＜L 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used for D＞25, or for L(LC)＜16.	
Alterations to head		KC	Addition of single key flat to head	Quotation
		WKC	Addition of double key flats in parallel	
		HC	Head diameter change D≦HC＜H 0.1 mm increments	
		TC	2≦TC＜T 0.1mm increments (If combined with TKC・TKM, 0.01mm increments can be selected.) Full length L is shortened by (T—TC). If combined with LC, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	

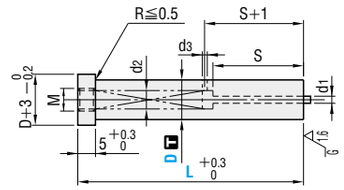
■Jector punch blanks

Alteration		Code	Spec.	1Code
Alterations to full length		LC	・SJB・SJVB・PJB・PJVB・SJFB A—SJB・A—SJVB・A—PJB・A—PJVB···30≦LC＜L ・SJXB・SJB—C・SJVB—C・SJBL A—SJXB・A—SJXVB・A—PJBL・A—SJBL LFSJB・LFSJVB・A—LFSJB・A—LFSJVB···40≦LC＜L ・SJXB—C・SJXVB—C···90≦LC＜L 0.1mm increments (Ⓥ S dimension is shortened accordingly. (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used for D＞25.	
Alterations to head		KC	Addition of single key flat to head	Quotation
		WKC	Addition of double key flats in parallel	
		HC	Head diameter change D≦HC＜H 0.1 mm increments	
		TC	3.5≦TC＜5 0.1mm increments (If combined with TKC・TKM, 0.01mm increments can be selected.) Ⓥ Full length L is shortened by (5—TC). Ⓥ If combined with LC, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring. ⊗ Cannot be used for LFSJB・A—LFSJB.	
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.	

Ⓥ Calculating the projection length of the jector pin (reference value) P.241 Ⓥ SJB—CMS will be eliminated beginning from the next edition of the catalog.

Jector punch blanks

RoHS



Catalog No.	Shank diameter tolerance	M	H
SJB Spring reinforced type SJVB	D m5	D4 ～ 6 Equivalent to SKH51 D8 ～ 25 Equivalent to SKD11	61～64HRC 60～63HRC
SJBL			
SJXB Spring reinforced type SJXVB			
SJFB			
LFSJB Spring reinforced type LFSJVB			
PJB Spring reinforced type PJVB		Powdered high-speed steel	64～67HRC
PJBL			
A—SJB Spring reinforced type A—SJVB	D +0.005 0	D4 ～ 6 Equivalent to SKH51 D8 ～ 25 Equivalent to SKD11	61～64HRC 60～63HRC
A—SJBL			
A—SJXB Spring reinforced type A—SJXVB			
A—LFSJB Spring reinforced type A—LFSJVB			
A—PJB Spring reinforced type A—PJVB		Powdered high-speed steel	64～67HRC
A—PJBL			

Ⓥ Details of jector pins P.239

Jector pin diameter	d1 (hole dia.)	d2	d3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1～9 pieces SJB	PJB	A—SJB	A—PJB	SJVB	PJVB	A—SJVB	A—PJVB
0.35	0.4	2.1	1.0	13	2.5	(Dm5)	(4)	40～ 80								
0.65	0.7			20		SJB PJB	(5)									
0.65	0.7	2.6		20	3	Spring reinforced type SJVB PJVB	(6)	(40)～ 80								
1.0	1.1	3.4	1.5	27	4		8									
1.4	1.5	4.4		28	5	(D +0.005 0) A—SJB A—PJB	10	(40)～100								
1.7	1.8						13									
2.7	2.8			36		Spring reinforced type A—SJVB A—PJVB	16 20 25	(40) (50)～100								

Quotation

Ⓥ L(40)···φD 5 ～ 13=S15 φD16 ～ 25=S17
Ⓥ L(50)···φD16 ～ 25=S24
Ⓥ D(4), (5) and (6) are specifications available for SJB・PJB・A—SJB・A—PJB only.

Jector pin diameter	d1 (hole dia.)	d2	d3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1～9 pieces SJBL	PJBL	A—SJBL	A—PJBL
0.35	0.4	2.1	1.0	20	2.5	(Dm5) SJBL PJBL (D +0.005 0) A—SJBL A—PJBL	4	50～80				

Quotation

Jector pin diameter	d1 (hole dia.)	d2	d3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1～9 pieces SJXB	A—SJXB	SJXVB	A—SJXVB
0.65	0.7	2.1	1.0	32	2.5	(Dm5) SJXB	(5)	60～80				
0.65	0.7	2.6			3		(6)					
1.0	1.1	3.4	1.5	40	4	Spring reinforced type SJXVB	8	70～100				
1.4	1.5	4.4			5	(D +0.005 0) A—SJXB	10					
1.7	1.8						13					
2.7	2.8			50		Spring reinforced type A—SJXVB	16 20 25	80～100				

Quotation

Ⓥ D(5) and (6) are specifications available for SJXB・A—SJXB only.

Jector pin diameter	d1 (hole dia.)	d2	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1～9 pieces LFSJB	LFSJVB	A—LFSJB	A—LFSJVB
0.65	0.7	2.1	32	2.5	(Dm5)	(5)	(50)～80				
0.65	0.7	2.6		3	LFSJB	(6)					
1.0	1.1	3.4		4	Spring reinforced type LFSJVB	8	60～100				
1.4	1.5		40		(D +0.005 0) A—LFSJB	10					
1.7	1.8	4.4		5		13					
2.7	2.8		50		Spring reinforced type A—LFSJVB	16 20 25	70～100				

Quotation

Ⓥ L(50)···S=30 Ⓥ D(5) and (6) are specifications available for LFSJB・A—LFSJB only.

Jector pin diameter	d1 (hole dia.)	d2	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1～9 pieces
2.7	2.8	4.4	27	5	(Dm5) SJFB	8	(50)～100	
			28			10		
4.0	4.2	6.9		8		13		
			36			16		
6.0	6.2	8.7		10		20		
						25		

Quotation

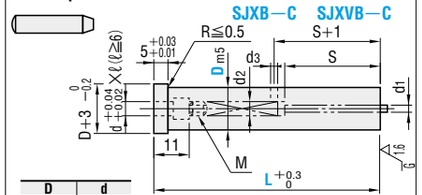
Ⓥ L(50)···φD16～25=S24

Jector punch blanks with locating dowel holes

RoHS

Jector punch blanks

SJB—C SJVB—C SJXB—C SJXVB—C

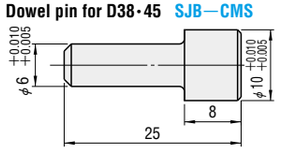


D	d
10～32	6
38・45	10

Ⓥ Details of jector pins P.239

M Material Equivalent to SKD11 A Accessory D10～32···MS6—25
H Hardness 60～63HRC Ⓥ D38・45···SJB—CMS

Dowel pin for D38・45 SJB—CMS



M Material SUJ2
H Hardness 58HRC～

Jector pin diameter	d1 (hole dia.)	d2	d3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1～9 pieces SJB—C	SJVB—C
1.4	1.5	4.4	1.5	28	5	SJB—C Spring reinforced type SJVB—C	10	60～120		
1.7	1.8						13			
2.7	2.8			36			16 20 25 32	(60)～120		
4.0	4.2	6.9		37	8		(38) (45)			

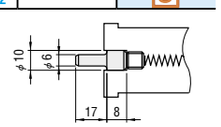
Quotation

Ⓥ L(60)···φD16～45=S24 Ⓥ D(38) and (45) are specifications available for SJVB—C only.

Jector pin diameter	d1 (hole dia.)	d2	d3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1 ～ 9 pieces
1.4	1.5	4.4	1.5	40	5	SJXB—C Spring reinforced type SJXVB—C	10	100 ～ 120	
1.7	1.8						13		
2.7	2.8			50			16 20 25 32	100 ～ 120	

Quotation

Catalog No.	Base unit price 1～9 pieces
SJB—CMS	Quotation

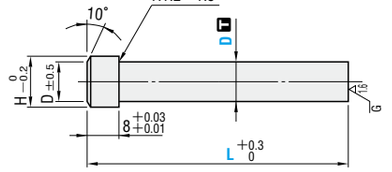


Order — Catalog No. SHB 3 — L 50

Days to Ship Quotation

PUNCH BLANKS

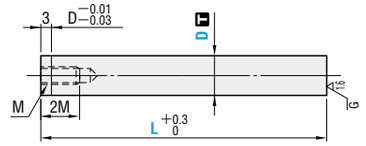
Heavy load punch blanks RoHS



Catalog No.	Shank diameter tolerance	M	H
APB	D_{m5}	Equivalent to SKH51	61~64HRC
AHB		Powdered high-speed steel	64~67HRC
A—APB	$D^{+0.005}_{0}$	Equivalent to SKH51	61~64HRC
A—AHB		Powdered high-speed steel	64~67HRC

H	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces APB	AHB	A—APB	A—AHB
10	(D_{m5}) APB AHB ($D^{+0.005}_{0}$) A—APB A—AHB	5	50~ 80	Quotation			
11		6					
13		8	50~100				
15		10					
18		13					
21		16					
25		20					
30		25					

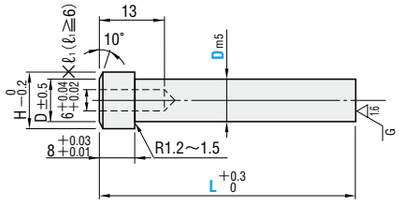
Tapped punch blanks RoHS



Catalog No.	Shank diameter tolerance	M	H
MPB	D_{m5}	Equivalent to SKD11	60~63HRC
MPHB		Powdered high-speed steel	64~67HRC
A—MPB	$D^{+0.005}_{0}$	Equivalent to SKD11	60~63HRC
A—MPHB		Powdered high-speed steel	64~67HRC

M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces MPB	A—MPB	MPHB	A—MPHB
3	(D_{m5}) MPB MPHB ($D^{+0.005}_{0}$) A—MPB A—MPHB	5	40~ 80	Quotation			
4		6					
5		8	40~100				
6		10					
		13					
		16					
		20					
		25					

Heavy load punch blanks with dowel holes RoHS



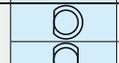
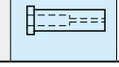
Catalog No.	Shank diameter tolerance	M	H
APB—C	D_{m5}	Equivalent to SKH51	61~64HRC
AHB—C		Powdered high-speed steel	64~67HRC

H	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces APB—C	AHB—C
15	(D_{m5}) APB—C AHB—C	10	50~100	Quotation	
18		13			
21		16			
25		20			
30		25			

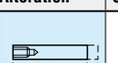
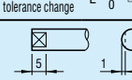
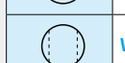
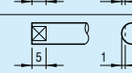
Alterations — Catalog No. — L(LC) — (KC・WKC, etc.)

MPB 10 — LC85

■ ・APB ・A—APB ・AHB ・A—AHB ・APB—C ・AJB ・A—AJB ・LFAJB ・A—LFAJB ・AHJB—C ・AHB—C

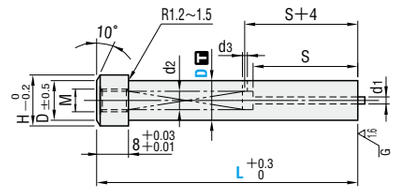
Alteration		Code	Spec.	1Code
Alterations to full length		LC	Full length change APB・AHB・A—APB・A—AHB・APB—C・AHB—C 20≦L<LC 0.1mm increments AJB・AJVB・A—AJB・A—AJVB・LFAJB・A—LFAJB 40≦L<LC 0.1mm increments AHJB—C・LFAJB・LFAJVB・A—LFAJB・A—LFAJVB 50≦L<LC 0.1mm increments (?) S dimension is shortened accordingly. (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.05}_{0}$	Quotation
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.01}_{0}$	
Others		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.	
		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring. ⊗ Cannot be used for LFAJB・A—LFAJB.	

■ ・MPB ・A—MPB ・MJB ・MPHB ・A—MPHB ・A—MJB

Alteration		Code	Spec.	1Code
Alterations to full length		LC	Full length change MPB・A—MPB・MPHB・A—MPHB 20≦LC<L 0.1mm increments MJB・A—MJB 30≦LC<L 0.1mm increments (?) S dimension is shortened accordingly. (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.05}_{0}$	Quotation
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow ^{+0.01}_{0}$	
Others		KC	 Addition of single key flat ⊗ Cannot be used for D5.	
		WKC	 Addition of double key flats in parallel ⊗ Cannot be used for D5.	
		NC	The jector pin is removed.	

(?) Calculating the projection length of the jector pin (reference value) P.241

Jector punch blanks for heavy load RoHS



(?) For LFAJB・LFAJVB・A—LFAJB・A—LFAJVB, d_3 (side hole) is not provided.

Catalog No.	Shank diameter tolerance	M	H
AJB, AJVB, LFAJB, LFAJVB, A—AJB, A—AJVB, A—LFAJB, A—LFAJVB	D_{m5}	Powdered high-speed steel	64 ~ 67HRC
	$D^{+0.005}_{0}$		

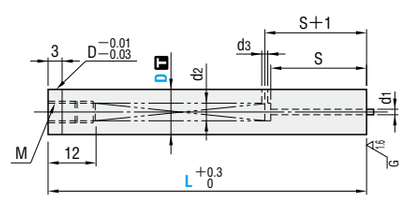
Jector pin diameter	d_1 hole dia.	d_2	d_3	S	M	H	Catalog No. Type	D	10mm increments L	Base unit price 1 ~ 9 pieces AJB L≦100	AJB 100<L≦130	A—AJB L≦100	A—AJB 100<L≦130	AJVB L≦100	A—AJVB L≦100
1.4	1.5	3.4	1.5	28	4	13	(D_{m5}) AJB (Spring and pin reinforced type) AJVB ($D^{+0.005}_{0}$) A—AJB (Spring and pin reinforced type) A—AJVB	8	(50) ~ 130	Quotation					
1.7	1.8					15		10							
2.7	2.8	4.4		36	5	18		13							
						21		16							
						25		20							
3.0	3.1					30		25							

(?) L(50)···S=24 (?) For AJVB・A—AJVB, max. L is 100. (?) Details of jector pins P.239

Jector pin diameter	d_1 hole dia.	d_2	S	M	H	Catalog No. Type	D	10mm increments L	Base unit price 1 ~ 9 pieces LFAJB・LFAJVB L≦100	LFAJB・LFAJVB 100<L≦130	A—LFAJB・A—LFAJVB L≦100	A—LFAJB・A—LFAJVB 100<L≦130
1.4	1.5	3.4	40	4	13	(D_{m5}) LFAJB (Spring and pin reinforced type) LFAJVB ($D^{+0.005}_{0}$) A—LFAJB (Spring and pin reinforced type) A—LFAJVB	8	70 ~ (130)				
1.7	1.8				15		10					
2.7	2.8	4.4	50	5	18		13		Quotation			
					21		16					
					25		20	80 ~ (130)				
3.0	3.1				30		25					

(?) For LFAJVB・A—LFAJVB, max. L is 100. (?) Details of jector pins P.239

Tapped jector punch blanks RoHS

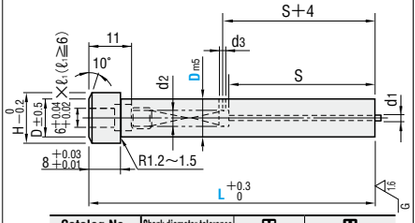


Catalog No.	Shank diameter tolerance	M	H
MJB	D_{m5}	Equivalent to SKD11	60~63HRC
A—MJB	$D^{+0.005}_{0}$		

Jector pin diameter	d_1 hole dia.	d_2	d_3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces MJB	A—MJB
0.65	0.7	2.6	1.0	20	3	(D_{m5}) MJB ($D^{+0.005}_{0}$) A—MJB	6	(40)~80	Quotation	
1.0	1.1	3.4	1.5	27	4		8	(40)~100		
1.4	1.5	4.4		28	5		10			
1.7	1.8						13			
2.7	2.8			36	6		16	(40) (50)~100		
							20			
							25			

(?) L(40)···φD 6~13=S15 φD16~25=S17 (?) L(50)···φD16~25=S24 (?) Details of jector pins P.239

Heavy-load jector punch blanks with dowel holes RoHS



Catalog No.	Shank diameter tolerance	M	H
AHJB—C AHJVB—C	D_{m5}	Equivalent to SKH51	61~64HRC

Jector pin diameter	d_1 hole dia.	d_2	d_3	S	M	H	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces AHJB—C	AHJVB—C
1.7	1.8	4.4	1.5	28	5	15	(D_{m5}) AHJB—C (Spring and pin reinforced type) AHJVB—C	10	(60)~100	Quotation	
2.7	2.8			36		18		13			
						21		16			
						25		20			
3.0	3.1					30		25			

(?) L(60)···S=24 (?) Details of jector pins P.239

Order — Catalog No. — L

MPB 10 — 90

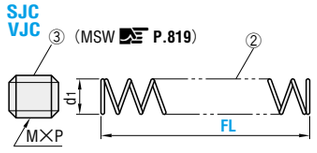
Price Quotation

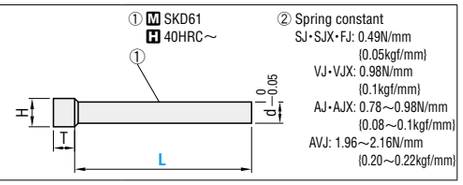
Days to Ship Quotation

JECTOR PIN SETS

RoHS

SJ1～7 SJC
SJX VJC
AJ
AJX
AVJ
VJ
VJX
VAJ
FJ4・5





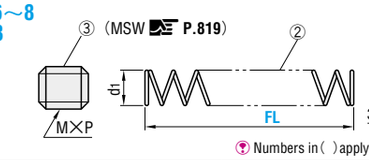
① M SKD61
H 40HRC～

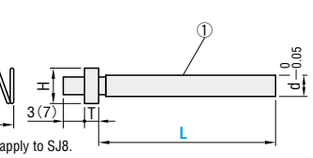
② Spring constant
SJ・SJX・FJ: 0.49N/mm {0.05kgf/mm}
VJ・VJX: 0.98N/mm {0.1kgf/mm}
AJ・AJX: 0.78～0.98N/mm {0.08～0.1kgf/mm}
AVJ: 1.96～2.16N/mm {0.20～0.22kgf/mm}

Punch blank Type	Punch diameter ϕD	Catalog No.	Pin length ①L	②FL (Spring length) Punch length 40L	50L	60L	70L	80L	90L	100L	110L	120L	130L	d	H	T	d_1	③MSW (M×P)
SJB A—SJB PJB A—PJB SJBL A—SJBL PJBL A—PJBL	4	(Set) SJ1 (① only) SJ1P (② only) SJ1F	14	30	40	50	60	70						0.35	1.6	1.5	2.0	MSW2.5 (2.5×0.45)
	4	(Set) SJL1 (① only) SJL1P (② only) SJL1F	21		33	43	53	63										
	5	(Set) SJ2 (① only) SJ2P (② only) SJ2F	16	28										0.65	2.0		2.2	MSW3 (3×0.5)
			21		33	43	53	63										
	6	(Set) SJ3 (① only) SJ3P (② only) SJ3F	16	28														
			21		33	43	53	63										
	8	(Set) SJ4 (① only) SJ4P (② only) SJ4F	16.5	29										1.0	2.8	2.0	3.0	MSW4 (4×0.7)
			28.5		27	37	47	57	67	77								
	10	(Set) SJ5 (① only) SJ5P (② only) SJ5F	16.5	27										1.4	3.6		3.8	MSW5 (5×0.8)
			29.5		27	37	47	57	67	77								
	13	(Set) SJ6 (① only) SJ6P (② only) SJ6F	16.5	27										1.7				
			29.5		27	37	47	57	67	77								
	16・20 25	(Set) SJ7 (① only) SJ7P (② only) SJ7F	18.5	27										2.7				
			25.5		27													
			37.5			27	37	47	57	67								
SJB—C	10	(Set) SJ5 (① only) SJ5P (② only) SJ5F	29.5			20	27	37	47	57	67	77		1.4	3.6	2.0	3.8	MSW5 (5×0.8)
	13	(Set) SJ6 (① only) SJ6P (② only) SJ6F	29.5			20	27	37	47	57	67	77		1.7				
	16・20 25・32	(Set) SJ7 (① only) SJ7P (② only) SJ7F	25.5			27								2.7				
			37.5				27	37	47	57	67	77						
	38・45	(Set) SJ8 (① only) SJ8P (② only) SJ8F	28			15								4.0	6.0	3.0	6.0	MSW8 (8×1.25)
			40				15	25	35	50	60	70						
SJXB A—SJXB LFSJB A—LFSJB	5	(Set) SJX2 (① only) SJX2P (② only) SJX2F	33			21	31	41	51					0.65	1.6	1.5	2.0	MSW2.5 (2.5×0.45)
	6	(Set) SJX3 (① only) SJX3P (② only) SJX3F	33			21	31	41	51						2.0		2.2	MSW3 (3×0.5)
	8	(Set) SJX4 (① only) SJX4P (② only) SJX4F	41.5				23	33	43	53	63			1.0	2.8	2.0	3.0	MSW4 (4×0.7)
	10	(Set) SJX5 (① only) SJX5P (② only) SJX5F	41.5				23	33	43	53	63			1.4	3.6		3.8	MSW5 (5×0.8)
	13	(Set) SJX6 (① only) SJX6P (② only) SJX6F	41.5				23	33	43	53	63			1.7				
	16・20 25	(Set) SJX7 (① only) SJX7P (② only) SJX7F	51.5					23	33	43	53			2.7				
SJXB—C	10	(Set) SJC5 (① only) SJX5P (② only) SJ5F	41.5						37	47	57	67	77	1.4	3.6	2.0	3.8	MSW5 (5×0.8)
	13	(Set) SJC6 (① only) SJX6P (② only) SJ6F	41.5						37	47	57	67	77	1.7				
	16・20 25・32	(Set) SJC7 (① only) SJX7P (② only) SJ7F	51.5						37	47	57	67	77	2.7				
MJB A—MJB	6	(Set) SJ3 (① only) SJ3P (② only) SJ3F	16	24										0.65	2.0	1.5	2.2	MSW3 (3×0.5)
			21		28	33	43	53										
	8	(Set) SJ4 (① only) SJ4P (② only) SJ4F	16.5	20										1.0	2.8	2.0	3.0	MSW4 (4×0.7)
			28.5		17	27	37	47	57	67								
	10	(Set) SJ5 (① only) SJ5P (② only) SJ5F	16.5	20										1.4	3.6		3.8	MSW5 (5×0.8)
			29.5		17	27	37	47	57	67								
	13	(Set) SJT6 (① only) SJ6P (② only) SJ6F	16.5	20										1.7				
			29.5		17	27	37	47	57	67								
	16・20 25	(Set) SJT7 (① only) SJ7P (② only) SJ7F	18.5	17										2.7				
			25.5		17													
			37.5			17	27	37	47	57								
AJB A—AJB	8	(Set) AJ4 (① only) AJ4P (② only) AJ4F	28		28									1.4	2.8	2.0	3.2	MSW4 (4×0.7)
			32			34	44	54	64	74	84	94	104					
	10	(Set) AJ5 (① only) AJ5P (② only) AJ5F	28		26									1.7	3.6		4.3	MSW5 (5×0.8)
			32			32	42	52	62	72	82	92	102					
	13・16 20	(Set) AJ6 (① only) AJ6P (② only) AJ6F	28		26									2.7				
			40			24	34	44	54	64	74	84	94					
	25	(Set) AJ7 (① only) AJ7P (② only) AJ7F	28		26									3.0		3.0		
			40			24	34	44	54	64	74	84	94					
AHJB—C	10	(Set) AJ5 (① only) AJ5P (② only) AJ5F	28			26								1.7	3.6	2.0	4.3	MSW5 (5×0.8)
			32				32	42	52	62	72	82	92					
	13・16 20	(Set) AJ6 (① only) AJ6P (② only) AJ6F	28			26								2.7				
			40				24	34	44	54	64	74	84					
	25	(Set) AJ7 (① only) AJ7P (② only) AJ7F	28			26								3.0		3.0		
			40				24	34	44	54	64	74	84					
SJVB (Spring reinforced type)	8	(Set) VJ4 (① only) VJ4P (② only) VJ4F	16.5	25										1.0	2.8	2.0	3.2	MSW4 (4×0.7)
			28.5		23	35	45	55	65	75								
PJVB (Spring reinforced type)	10	(Set) VJ5 (① only) VJ5P (② only) VJ5F	16.5	26										1.4	3.6		4.3	MSW5 (5×0.8)
			29.5		22	33	43	53	63	73								
A—SJVB (Spring reinforced type)	13	(Set) VJ6 (① only) VJ6P (② only) VJ6F	16.5	26										1.7				
			29.5		22	33	43	53	63	73								
A—PJVB (Spring reinforced type)	16・20 25	(Set) VJ7 (① only) VJ7P (② only) VJ7F	18.5	26										2.7				
			25.5		29													
			37.5			27	37	47	57	67								

RoHS

FJ6～8
SJ8





Numbers in ( ) apply to SJ8.

① M SK4
H 53～58HRC (Annealing of head to max. 45 HRC)
② Spring constant
1.0～1.5N/mm {0.1～0.15kgf/mm}

Punch blank Type	Punch diameter ϕD	Catalog No.	Pin length ①L	②FL (Spring length) Punch length 50L	60L	70L	80L	90L	100L	110L	120L	130L	d	H	T	d_1	③MSW (M×P)
SJVB—C (Spring reinforced type)	10	(Set) VJ5 (① only) VJ5P (② only) VJ5F	29.5		21	32	42	52	62	72	82		1.4	3.6	2.0	4.3	MSW5 (5×0.8)
	13	(Set) VJ6 (① only) VJ6P (② only) VJ6F	29.5		21	32	42	52	62	72	82		1.7				
	16・20 25・32	(Set) VJ7 (① only) VJ7P (② only) VJ7F	25.5		28								2.7				
			37.5			26	36	46	56	66	76						
SJXVB (Spring reinforced type)	8	(Set) VJX4 (① only) VJX4P (② only) VJX4F	41.5			32	42	52	62				1.0	2.8	2.0	3.2	MSW4 (4×0.7)
A—SJXVB (Spring reinforced type)	10	(Set) VJX5 (① only) VJX5P (② only) VJX5F	41.5			31	41	51	61				1.4	3.6		4.3	MSW5 (5×0.8)
LFSJVB (Spring reinforced type)	13	(Set) VJX6 (① only) VJX6P (② only) VJX6F	41.5			31	41	51	61				1.7				
A—LFSJVB (Spring reinforced type)	16・20 25	(Set) VJX7 (① only) VJX7P (② only) VJX7F	51.5				33	43	53				2.7				
SJXVB—C (Spring reinforced type)	10	(Set) VJC5 (① only) VJ5P (② only) VJ5F	29.5						52	62			1.4	3.6	2.0	4.3	MSW5 (5×0.8)
		(Set) VJC5 (① only) VJ5P (② only) VJ5F	41.5								72						
	13	(Set) VJC6 (① only) VJ6P (② only) VJ6F	29.5						52	62	72		1.7				
	16・20 25・32	(Set) VJC7 (① only) VJ7P (② only) VJ7F	51.5						42	52	62		2.7				
SJFB (Large-diameter pin type)	8	(Set) FJ4 (① only) FJ4P (② only) FJ4F	29	27	37	47	57	67	77				2.7	3.6	2.0	3.8	MSW5 (5×0.8)
	10	(Set) FJ5 (① only) FJ5P (② only) FJ5F	30	27	37	47	57	67	77								
	13	(Set) FJ6 (① only) FJ6P (② only) FJ6F	30	15	25	35	45	55	65				4.0	6.0	3.0	6.0	MSW8 (8X1.25)
	16	(Set) FJ7 (① only) FJ7P (② only) FJ7F	26	20													
			38		15	30	40	50	60								
	20 25	(Set) FJ8 (① only) FJ8P (② only) FJ8F	26	15									6.0	8.0		8.0	MSW10 (10×1.5)
			38		15	25	35	45	55								
AJVB A—AJVB (Spring and pin reinforced type)	8	(Set) AVJ4 (① only) AVJ4P (② only) AVJ4F	26	26									1.4	2.8	2.0	3.2	MSW4 (4×0.7)
			30		32	43	53	63	73								
	10	(Set) AVJ5 (① only) AVJ5P (② only) AVJ5F	26	26									1.7	3.6		4.3	MSW5 (5×0.8)
			30		33	43	53	63	73								
	13・16 20	(Set) AVJ6 (① only) AVJ6P (② only) AVJ6F	26	27									2.7				
			38		27	37	47	57	67								
	25	(Set) AVJ7 (① only) AVJ7P (② only) AVJ7F	26	27									3.0		3.0		
			38		24	37	47	57	67								
LFAJB A—LFAJB	8	(Set) AJX4 (① only) AJX4P (② only) AJX4F	44			28	44	54	64	74	84	94	1.4	2.8	2.0	3.2	MSW4 (4×0.7)
	10	(Set) AJX5 (① only) AJX5P (② only) AJX5F	44			32	42	52	62	72	82	92	1.7	3.6		4.3	MSW5 (5×0.8)
	13	(Set) AJX6 (① only) AJX6P (② only) AJX6F	44			32	42	52	62	72	82	92	2.7				
	16 20	(Set) AJX7 (① only) AJX7P (② only) AJX7F	54				32	42	52	62	72	82					
	25	(Set) AJX8 (① only) AJX8P (② only) AJX8F	54				32	42	52	62	72	82	3.0				
LFAJVB (Spring and pin reinforced type) A—LFAJVB (Spring and pin reinforced type)	8	(Set) VAJ4 (① only) AVJ4P (② only) AVJ4F	42			32	43	53	63				1.4	2.8	2.0	3.2	MSW4 (4×0.7)
	10	(Set) VAJ5 (① only) AVJ5P (② only) AVJ5F	42			33	43	53	63				1.7	3.6		4.3	MSW5 (5×0.8)
	13	(Set) VAJ6 (① only) AVJ6P (② only) AVJ6F	42			33	43	53	63				2.7				
	16 20	(Set) VAJ7 (① only) AVJ7P (② only) AVJ7F	52				33	43	53								
	25	(Set) VAJ8 (① only) AVJ8P (② only) AVJ8F	52				33	43	53				3.0		3.0		
AHJVB—C (Spring and pin reinforced type)	10	(Set) AVJ5 (① only) AVJ5P (② only) AVJ5F	26		26								1.7	3.6	2.0	4.3	MSW5 (5×0.8)
			30			33	43	53	63								
	13・16 20	(Set) AVJ6 (① only) AVJ6P (② only) AVJ6F	26		27								2.7				
			38			27	37	47	57								
	25	(Set) AVJ7 (① only) AVJ7P (② only) AVJ7F	26		27								3.0		3.0		
			38			24	37	47	57								

Order

(Sets ①, ② and ③) / (Pin ① only) / (Spring ② only)	Catalog No.	—	L	—	FL
	SJ3	—	21	—	43
	SJ5P	—	16.5		
	SJ5F			—	47

Days to Ship Quotation

Price P.241

■For SJB—C D38・45
(No set product is available. Select a combination of the parts listed at right.)

ϕD	L	SJB—C
38 45	60	LPS4—28—WL20
	70	LPS4—40—WL30
	80	LPS4—40—WL40
	90	LPS4—40—WL50
	100	LPS4—40—WL60
	110	LPS4—40—WL70
	120	LPS4—40—WL80

WL P.1400
LPS P.859

Catalog No.	Page	Punch blank		Page
		Tip length S-L	Tip length X	
SJ□	P.69	SJB	SJXB	P.236
SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
PJ□		PJB	–	
PJV□□		PJVB (Spring reinforced type)	–	
A—SJ□		A—SJB	A—SJXB	
A—SJV□□		A—SJVB (Spring reinforced type)	A—SJXVB (Spring reinforced type)	
A—PJ□		A—PJB	–	
A—PJV□□		A—PJVB (Spring reinforced type)	–	
T—SJ□	P.71	SJB	–	
T—SJV□□		SJVB (Spring reinforced type)	–	
T—PJ□		PJB	–	
T—PJV□□		PJVB (Spring reinforced type)	–	
AT—SJ□		A—SJB	–	
AT—SJV□□		A—SJVB (Spring reinforced type)	–	
AT—PJ□		A—PJB	–	
AT—PJV□□		A—PJVB (Spring reinforced type)	–	
H—PJ□	P.73	PJB	–	
H—PJV□□		PJVB (Spring reinforced type)	–	
AH—PJ□		A—PJB	–	
AH—PJV□□		A—PJVB (Spring reinforced type)	–	
W—SJ□	P.75	SJB	SJXB	
W—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
W—PJ□·HW—PJ□		PJB	–	
W—PJV□·HW—PJV□		PJVB (Spring reinforced type)	–	
AW—SJ□		A—SJB	A—SJXB	
AW—SJV□□		A—SJVB (Spring reinforced type)	A—SJXVB (Spring reinforced type)	
AW—PJ□·AHW—PJ□		A—PJB	–	
AW—PJV□·AHW—PJV□		A—PJVB (Spring reinforced type)	–	
RW—PJ□	P.77	PJB	–	
RW—PJV□□		PJVB (Spring reinforced type)	–	
ARW—PJ□		A—PJB	–	
ARW—PJV□□		A—PJVB (Spring reinforced type)	–	
N—PJ□	P.79	PJB	–	P.236
N—PJV□□		PJVB (Spring reinforced type)	–	
AN—PJ□		A—PJB	–	
AN—PJV□□		A—PJVB (Spring reinforced type)	–	
NW—PJ□		PJB	–	
NW—PJV□□		PJVB (Spring reinforced type)	–	
ANW—PJ□		A—PJB	–	
ANW—PJV□□		A—PJVB (Spring reinforced type)	–	
L—SJ□	P.81	SJB	SJXB	
L—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
L—PJ□		PJB	–	
L—PJV□□		PJVB (Spring reinforced type)	–	
AL—SJ□		A—SJB	A—SJXB	
AL—SJV□□		A—SJVB (Spring reinforced type)	A—SJXVB (Spring reinforced type)	
AL—PJ□		A—PJB	–	
AL—PJV□□		A—PJVB (Spring reinforced type)	–	
LFSJ□·W—LFSJ□	P.83	LFSJB	–	
LFSJV□·W—LFSJV□		LFSJVB (Spring reinforced type)	–	
A—LFSJ□·AW—LFSJ□		A—LFSJB	–	
A—LFSJV□·AW—LFSJV□		A—LFSJVB (Spring reinforced type)	–	
SJF□·L—SJF□	P.85	SJFB	–	
G—SJ□	P.107	SJB	SJXB	
G—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
G—PJ□·GH—PJ□		PJB	–	
G—PJV□·GH—PJV□		PJVB (Spring reinforced type)	–	
GW—SJ□	P.109	SJB	SJXB	
GW—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
GW—PJ□·GHW—PJ□		PJB	–	
GW—PJV□·GHW—PJV□		PJVB (Spring reinforced type)	–	
GRW—PJ□	P.111	PJB	–	
GRW—PJV□		PJVB (Spring reinforced type)	–	
GN—PJ□		PJB	–	
GN—PJV□		PJVB (Spring reinforced type)	–	
GNW—PJ□		PJB	–	
GNW—PJV□		PJVB (Spring reinforced type)	–	

Catalog No.	Page	Punch blank		Page
		Tip length S-L	Tip length X	
SJ□—C	P.125	SJB—C	SJXB—C	P.236
SJV□□—C		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
T—SJ□—C	P.127	SJB—C	–	
T—SJV□□—C		SJVB—C (Spring reinforced type)	–	
H—SJ□—C	P.129	SJB—C	SJXB—C	
H—SJV□□—C		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
W—SJ□—C·HW—SJ□—C	P.131	SJB—C	SJXB—C	
W—SJV□—C·HW—SJV□—C		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
RW—SJ□—C	P.133	SJB—C	SJXB—C	
RW—SJV□□—C		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
N—SJ□—C·NW—SJ□	P.135	SJB—C	SJXB—C	
N—SJV□—C·NW—SJV□		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
APJ□·L—APJ□	P.149	AJB	–	P.238
APJV□·L—APJV□		AJVB (Spring reinforced type)	–	
A—APJ□·AL—APJ□		A—AJB	–	
A—APJV□·AL—APJV□		A—AJVB (Spring reinforced type)	–	
T—APJ□	P.151	AJB	–	
T—APJV□		AJVB (Spring reinforced type)	–	
AT—APJ□		A—AJB	–	
AT—APJV□		A—AJVB (Spring reinforced type)	–	
H—APJ□	P.153	AJB	–	
H—APJV□		AJVB (Spring reinforced type)	–	
AH—APJ□		A—AJB	–	
AH—APJV□		A—AJVB (Spring reinforced type)	–	
W—APJ□·HW—APJ□	P.155	AJB	–	
W—APJV□·HW—APJV□		AJVB (Spring reinforced type)	–	
AW—APJ□·AHW—APJ□		A—AJB	–	
AW—APJV□·AHW—APJV□		A—AJVB (Spring reinforced type)	–	
RW—APJ□	P.157	AJB	–	
RW—APJV□		AJVB (Spring reinforced type)	–	
ARW—APJ□		A—AJB	–	
ARW—APJV□		A—AJVB (Spring reinforced type)	–	
L—APJ□	P.159	AJB	–	
L—APJV□		AJVB (Spring reinforced type)	–	
AL—APJ□		A—AJB	–	
AL—APJV□		A—AJVB (Spring reinforced type)	–	
LFAPJ□	P.161	LFAJB	–	
LFAPJV□		LFAJVB (Spring reinforced type)	–	
A—LFAPJ□		A—LFAJB	–	
A—LFAPJV□		A—LFAJVB (Spring reinforced type)	–	
H—LFAPJ□	P.163	LFAJB	–	
H—LFAPJV□		LFAJVB (Spring reinforced type)	–	
AH—LFAPJ□		A—LFAJB	–	
AH—LFAPJV□		A—LFAJVB (Spring reinforced type)	–	
W—LFAPJ□·HW—LFAPJ□	P.165	LFAJB	–	
W—LFAPJV□·HW—LFAPJV□		LFAJVB (Spring reinforced type)	–	
AW—LFAPJ□·AHW—LFAPJ□		A—LFAJB	–	
AW—LFAPJV□·AHW—LFAPJV□		A—LFAJVB (Spring reinforced type)	–	
RW—LFAPJ□	P.167	LFAJB	–	
RW—LFAPJV□		LFAJVB (Spring reinforced type)	–	
ARW—LFAPJ□		A—LFAJB	–	
ARW—LFAPJV□		A—LFAJVB (Spring reinforced type)	–	
AHJ□—C	P.185	AHJB—C	–	
AHJV□—C		AHJVB—C (Spring reinforced type)	–	
H—AHJ□—C	P.187	AHJB—C	–	
H—AHJV□—C		AHJVB—C (Spring reinforced type)	–	
W—AHJ□—C·HW—AHJ□—C	P.189	AHJB—C	–	
W—AHJV□—C·HW—AHJV□—C		AHJVB—C (Spring reinforced type)	–	
RW—AHJ□—C	P.191	AHJB—C	–	
RW—AHJV□—C		AHJVB—C (Spring reinforced type)	–	
MJ□·W—MJ□	P.205	MJB	–	
A—MJ□·AW—MJ□		A—MJB	–	
SKJ□·W—SKJ□	P.221	MJB	–	
A—SKJ□·AW—SKJ□		A—MJB	–	
SJC·L—SJC	P.227	SJB		P.235

Price

COMPONENTS	Catalog No.	Base unit price	Volume discount unit price		
		1~4 pieces	5~9	10~19	20~50
①②③	SJ1~8	Quotation			
①	SJ1P~8P				
②	SJ1F~8F				
①②③	SJL1				
①	SJL1P				
②	SJL1F				
①②③	SJC5~7				
①②③	SJX2~7				
①	SJX2P~7P				
②	SJX2F~7F				
①②③	SJT6·7				
①②③	AJ4~7				
①	AJ4P~7P				
②	AJ4F~7F				
①②③	VJ4~7				
①	VJ4P~7P				
②	VJ4F~7F				
①②③	VJC5~7				
①②③	VJX4~7				
①	VJX4P~7P				
②	VJX4F~7F				
①②③	FJ4~8				
①	FJ4P~8P				
②	FJ4F~8F				
①②③	AVJ4 ~ 7				
①	AVJ4P ~ 8P				
②	AVJ4F ~ 8F				
①②③	AJX4 ~ 8				
①	AJX4P ~ 8P				
②	AJX4F ~ 8F				
①②③	VAJ4 ~ 8				

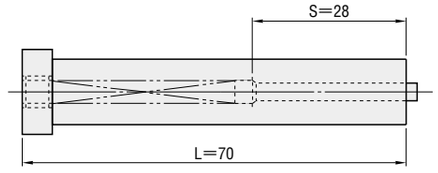
■Calculating the projection length of the jector pin (reference value)

(L dimension of jector pin) − (S dimension of the punch blank)

(Example) In case of SJEL10—70—P8.50—W4.25

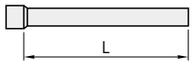
・Punch blank: **SJB10—70**

S dimension 28



・Jector pin: **SJ5P**

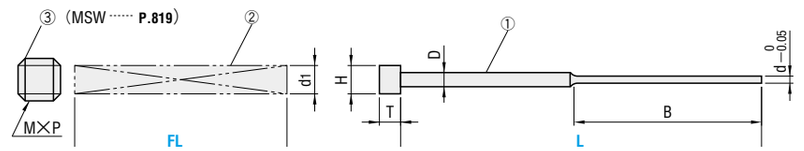
L dimension 29.5



Projection length of jector pin: 29.5—28=1.5

LJ

RoHS



① M SKD61
H 40HRC～
② Spring constant
0.98N/mm
(0.1kgf/mm)

Punch diameter φD	Catalog No.	① B Punch length 40L	50L	60L	70L	80L	90L	100L	d	D	H	T	②Spring length WL30 Wire diameter	WL30 Fmax.	WL35 Wire diameter	WL35 Fmax.	WL40 Wire diameter	WL40 Fmax.	WL50 Wire diameter	WL50 Fmax.	WL60 Wire diameter	WL60 Fmax.	d1	③ MSW (M×P)
5	LJ2	20	30	30	40	50	60	70	0.65	1.9	4	3	0.55	12	0.55	14	0.6	16	0.6	20	0.65	24	4	MSW5 (5×0.8)
6	LJ3								0.65	2.3	4.5	3	0.55	12	0.55	14	0.6	16	0.6	20	0.65	24	4	MSW6 (6×1.0)
8	LJ4		35	40					1.05	3.1	6	3	0.7	12	0.7	14	0.7	16	0.75	20	0.8	24	6	MSW8 (8×1.25)
10	LJ5								1.4	3.9	8	4	0.8	12	0.8	14	0.8	16	0.85	20	0.9	24	8	MSW10 (10×1.5)
13	LJ6								1.7	3.9	8	4	0.8	12	0.8	14	0.8	16	0.85	20	0.9	24	8	
16·20·25	LJ7								2.7	3.9	8	4	0.8	12	0.8	14	0.8	16	0.85	20	0.9	24	8	

Punch diameter φD	Catalog No.	①L Punch length 40L	50L	60L	70L	80L	90L	100L	②FL
5	(Set) LJ2 (① only) LJ2P	41	51	61	71	81			30
6	(Set) LJ3 (① only) LJ3P	41	51	61	71	81			35
8	(Set) LJ4 (① only) LJ4P	41.5	51.5	61.5	71.5	81.5	91.5	101.5	40
10	(Set) LJ5 (① only) LJ5P	41.5	51.5	61.5	71.5	81.5	91.5	101.5	50
13	(Set) LJ6 (① only) LJ6P	41.5	51.5	61.5	71.5	81.5	91.5	101.5	60
16·20·25	(Set) LJ7 (① only) LJ7P	42	52	62	72	82	92	102	

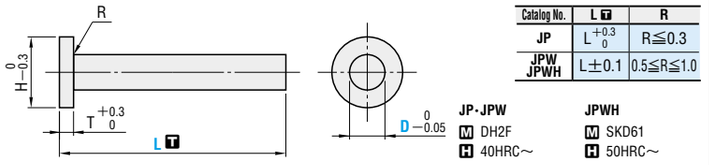
Order — Catalog No. — L — FL
①②③ LJ2 — 61 — 40
① LJ5P — 81.5

Days to Ship — Quotation

Price — Quotation

JP / JPW / JPWH

RoHS



Catalog No.	L T	R
JP	L +0.3 0	R≦0.3
JPW JPWH	L±0.1	0.5≦R≦1.0

JP・JPW
M DH2F
H 40HRC～

JPWH
M SKD61
H 50HRC～

T	H	Catalog No. Type	D	L 0.1mm increments	Base unit price 1～49 pieces L5.0～29.9	L30.0	L30.1～49.9	L50.0	L50.1～69.9	L70.0
2	3	JP	1	5.0～70.0	Quotation					
	3		1.5							
	4		2							
	5		2.5							
	6		3							
3	8		4							
	9		5							

T	H	Catalog No. Type	D	L 0.1mm increments	Base unit price 1～49 pieces L10.0～29.9	L30.0	L30.1～49.9	L50.0	L50.1～69.9	L70.0	L70.1～99.9	L100.0
5	5	JPW	2	10.0～100.0	Quotation							
	8		3									
	10		4									
	12		5									
	14		6									
	16		8									
	18		10									

T	H	Catalog No. Type	D	L 0.1mm increments	Base unit price 1～49 pieces L10.0～29.9	L30.0	L30.1～49.9	L50.0	L50.1～69.9	L70.0	L70.1～99.9	L100.0
5	5	JPWH	2	10.0～100.0	Quotation							
	8		3									
	10		4									
	12		5									
	14		6									
	16		8									
	18		10									

Order — Catalog No. — L
JP 4 — 28.5

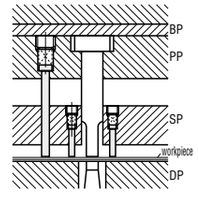
Days to Ship — Quotation

Price — Quotation

Alterations — Catalog No. — L — (RC・HC)
JP5 — 70.0 — RC—HC8.0

Alteration	Code	Spec.	1Code
Alterations to tip	RC	Rounding of pin end to R0.2～0.3.	Quotation
Alterations to head	HC	Head diameter change D≦HC<H 0.1 mm increments	

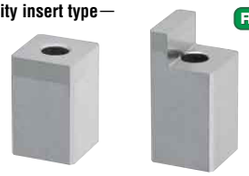
Example



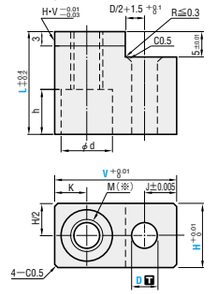
—Fixing-bolt type— RoHS

—Double-fixing-bolt type— RoHS

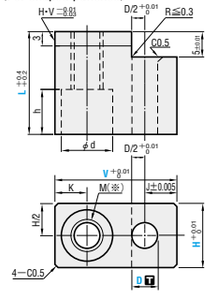
—Cavity insert type— RoHS



BBPH (For round punches)



BBPHC (For shaped punches)



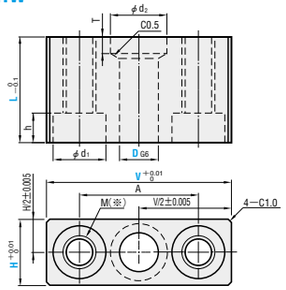
(?) M(※)
For lift-out tap hole, use a bolt 1 size larger than the mounting bolt.

Mounting bolt	M (lift-out tap hole)
M3	M4
M4	M5
M6	M8
M8	M10

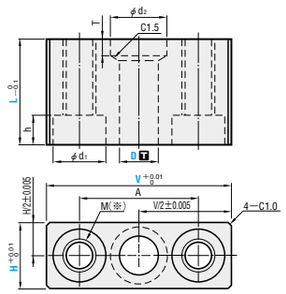
D	T
3～6	+0.012 +0.004
8・10	+0.015 +0.007
13・16	+0.018 +0.010

M Equivalent to SKD11
H 60～63HRC

BBPHW



BBPHWA (For heavy-load punches)



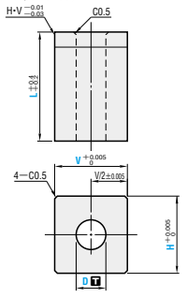
(?) M(※)
For lift-out tap hole, use a bolt 1 size larger than the mounting bolt.

Mounting bolt	M (lift-out tap hole)
M6	M8
M8	M10

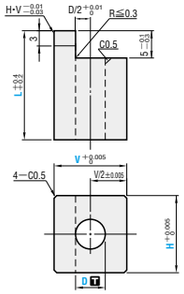
D	T
8・10	+0.014 +0.005
13・16	+0.017 +0.006
20	+0.020 +0.007

M Equivalent to SKD11
H 60 ～ 63HRC

KBPH (For round punches)



KBPHC (For shaped punches)



D	T
1.6～2.5	+0.008 +0.002
3～6	+0.012 +0.004
8・10	+0.015 +0.007
13・16	+0.018 +0.010

H・V3～5
M Equivalent to SKH51
H 61～64HRC
H・V8～25
M Equivalent to SKD11
H 60～63HRC

K	Mounting bolt d	Mounting bolt h	Mounting bolt Size	J	Catalog No.	V	H	L	D	Base unit price 1～9 pieces BBPH	Base unit price 1～9 pieces BBPHC
4	6	7.5	M3	4	BBPH (For round punches) BBPHC (For shaped punches)	16	8	16	3	Quotation	Quotation
5	8	8.5	M4	4		18	10	20	3・4		
6.5	11	10.5	M6	6.5		25	13	22	4・5・6		
6.5	11	10.5	M6	8		28	16	25	8・10		
8	14	12.5	M8	10		35	20	30	10・13		
8	14	12.5	M8	12.5		40	25		13・16		

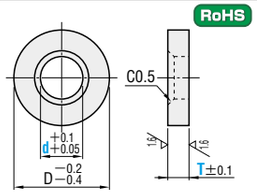
A	Mounting bolt d_1	Mounting bolt h	Mounting bolt Size	T	d_2	Catalog No.	V	H	L	D	Base unit price 1～9 pieces
25	11	7	M6	In case of BBPHW T=5	In case of BBPHW d_2=D+4	BBPHW BBPHWA (For heavy-load punches)	40	20	25	8 10	Quotation
34							50			10 13	
36	14	9	M8	In case of BBPHWA T=8	In case of BBPHWA d_2=D+6		55	25	30	10 13 16	
40							60	30		13 16 20	

Catalog No.	V	H	L	D	Base unit price 1～9 pieces
KBPH (For round punches)	3	3	7・10・13 17・19・22	1.6	Quotation
	4	4		1.6・2.0	
	5	5		2.5	
	8	8	11 15 17 20 25	3・4	
	10	10		3・4・5	
	13	13		4・5・6・8	
	16	16		8・10	
	20	20		10・13	
	25	25		13・16	

Catalog No.	V	H	L	D	Base unit price 1～9 pieces
KBPHC (For shaped punches)	8	8	16	3・4	Quotation
	10	10	20	3・4・5	
	13	13	22	4・5・6・8	
	16	16	25	8・10	
	20	20	30	10・13	
	25	25		13・16	

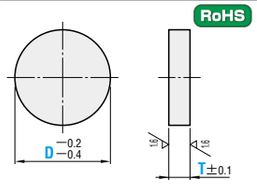
SPACERS & SHIMS FOR PUNCHES

PWA—Spacers for punches— RoHS



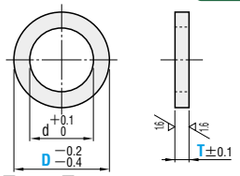
M SKS3 H 58～62HRC

PWB—Shims for punches— RoHS



M SKS3 H 58～62HRC

PWC—Spacers for tapped punches— RoHS



M SKS3 H 58～62HRC

D	Catalog No. Type	Catalog No. d	T (thickness) tolerance±0.1	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
5	PWA	3	0.5 (d3～13 only)	Quotation			
7		4					
8		5					
9		6					
11		8	1				
13		10	2				
16		13	3				
19		16	4				
23		20	5				
28		25					

⊗ If d is 16 or more, T0.5 cannot be selected.
(?) (C0.5)…If T is 0.5, chamfering is C0.2～0.3.

D	Catalog No. Type	Catalog No. D	T (thickness) tolerance±0.1	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
5	PWB	5	0.5 (D5～16 only)	Quotation			
7		7					
8		8					
9		9					
11		11	1				
13		13	2				
16		16	3				
19		19	4				
23		23	5				
28		28					

⊗ T0.5 can not be selected for D19 or larger.

d	Catalog No. Type	Catalog No. D	T (thickness) tolerance±0.1	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
3.5	PWC	5	0.5 (D5～16 only)	Quotation			
		6					
4.5		8					
5.5		10	1				
6.5		13	2				
		16	3				
		20	4				
		25	5				

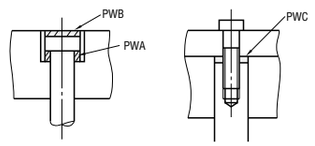
⊗ T0.5 can not be selected for D20 or larger.

Order — Catalog No. — T
PWA 3 — 0.5

Days to Ship: Quotation

Alterations — Catalog No. — T — TKC
PWB 5 — 0.5 — TKC2
Quotation

Example



Use to make adjustments when regrinding a punch tip.

Alteration	Code	Spec.	1Code
Alteration to thickness	TKC	Thickness tolerance change: No. 1 ±0.05; 2 ±0.01; 3 ±0.005	Quotation

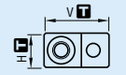
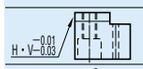
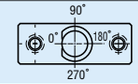
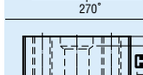
Order — Catalog No. — V — H — L — D
BBPH 16 08 — 20 — D3
KBPH 04 04 — 10 — D1.6

Days to Ship: Quotation

Price: Quotation

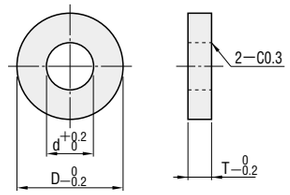
Alterations — Catalog No. — V — H — L(LC) — D — (LKC・VKC1, etc.)
BBPH 16 08 — LC21.1 — D3

Alteration	Code	Spec.	1Code
	LC	Full length change BBPH・BBPHC・KBPHC 16<L<30 BBPHW・BBPHWA If A−(d_1+d_2)<4, T+h+3.5≦LC<L If A−(d_1+d_2)≧4, h+4≦LC<L KBPH V・H: 3～5 7<L<25 V・H: 8～25 11<L<25 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.) (?) Punch fixing part (5±0.01)・Press-in lead length (3) Bolt counterbore depth (h) is the same as specified.	Quotation
	LKC	Full length tolerance change L +0.4 +0.2 ⇨ +0.05 0 ⊗ Cannot be used for BBPHW・BBPHWA.	
	LKZ	Full length tolerance change L +0.4 +0.2 ⇨ +0.01 0 ⊗ Cannot be used for BBPHW・BBPHWA.	

Alteration	Code	Spec.	1Code
	VKC1	V・H tolerance change V・H +0.01 0 ⇨ V・H +0.005 0 ⊗ Cannot be used for BBPHW・BBPHWA・KBPH・KBPHC.	Quotation
	VKC2	V・H tolerance change V・H +0.01 0 ⇨ V・H 0 −0.005 ⊗ Cannot be used for BBPHW・BBPHWA.	
	NDC	No press-in lead ⊗ Cannot be used for BBPHW・BBPHWA.	
	KC	Addition of single key flat to head 1° increments ⊗ Cannot be used for BBPH・BBPHC・KBPH・KBPHC.	
	TKC	Head tolerance change No specification → +0.05 +0.03 ⊗ Cannot be used for BBPH・BBPHC・KBPH・KBPHC.	
	CCP	Chamfering of C3.0 to 1corner ⊗ Cannot be used for BBPH・BBPHC・KBPH・KBPHC.	

RoHS

Catalog No.	M	H	S
PSKB	S45C	45～55HRC	—
PSKBH	SKS3	58～62HRC	Chromate treatment (silver)

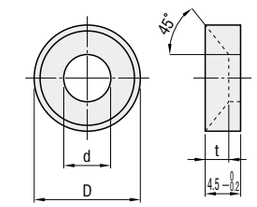


Bolt	D	d	T	Catalog No. Type	Catalog No. No.	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
M4	10	4.2	3	PSKB	4				
			4.5		4—4.5				
M5	12	5.2	3		5				
			4.5		5—4.5				
M6	14	6.2	3		6				
			4.5		6—4.5				
M4	10	4.2	3	PSKBH	4				
			4.5		4—4.5				
M5	12	5.2	3		5				
			4.5		5—4.5				
M6	14	6.2	3		6				
			4.5		6—4.5				

Quotation

RoHS

Catalog No.	M	H
PSKS	S45C	45～55HRC
PSKJ	SKS3	58～62HRC

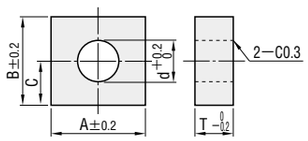


Bolt	D	d	t	Catalog No. Type	Catalog No. No.	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
M4	10	4.5	2.5	PSKS	4				
M5	13	5.5	3		5				
M4	12	4.2	2.5	PSKJ	4				
M5	15	5.2	3		5				

Quotation

RoHS

Catalog No.	M	H	S
PSK	S45C	45～55HRC	—
PSKP			
PSKH	SKS3	58～62HRC	Chromate treatment (silver)



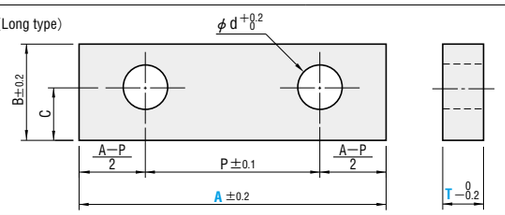
Bolt	A	B	C	d	T	Catalog No. Type	Catalog No. No.	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
M4	10	11	6	4.2	3	PSK	4—3				
					4.5		4				
M5				5.2	3		5—3				
					4.5		5				
M6	12	14	7	6.2	3		6—3				
					4.5		6				
M4	11	11	5.5	4.2	3	PSKP	4—3				
					4.5		4				
M5				5.2	3		5—3				
					4.5		5				
M6	14	14	7	6.2	3		6—3				
					4.5		6				
M4	10	11	6	4.2	3	PSKH	4—3				
					4.5		4				
M5				5.2	3		5—3				
					4.5		5				
M6	12	14	7	6.2	3		6—3				
					4.5		6				

Quotation

Because PSKP has a hole at the center, it can be mounted in any direction.

RoHS

PSKW (Long type)



Bolt	B	C	d	P A=21～30	P A=31～40	P A=41～50	P A=51～60	Catalog No. Type	Catalog No. No.	T (Selection)	A 1mm increments	Base unit price 1～19 pieces A21～30	A31～40	A41～50	A51～60
M4	11	6	4.2	10	20	30	—	PSKW	4	3	21～50				
M5			5.2	—	20	30	40		5	4.5	31～60				

Quotation

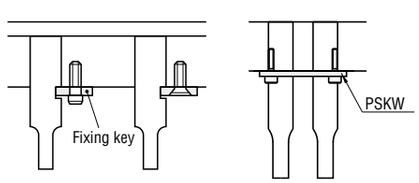
Order — Catalog No. — T — A

PSKB 4
PSKS 5
PSKP 5
PSKW 4 — 3 — 40

Days to Ship Quotation

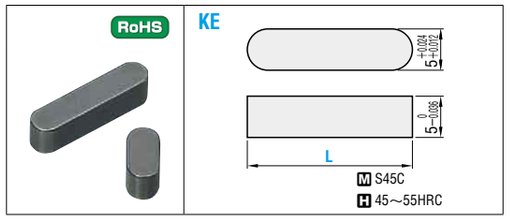
Price Quotation

Example



RoHS

KE



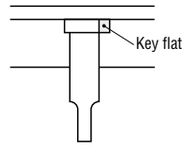
Catalog No. Type	L	Base unit price 1～199 pieces	Volume discount unit price 200～399	400～599	600～1000
KE	8				
	10				
	12				
	15				
	20				
	25				
	30				

Quotation

Order — Catalog No.: KE 12

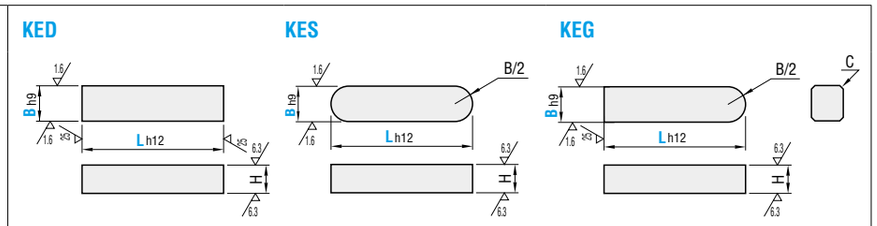
Days to Ship Quotation

Example



RoHS

KED KES KEG



L	Tolerance
Shortest ～ 10	0 −0.15
11 ～ 18	0 −0.18
19 ～ 30	0 −0.21
31 ～ 50	0 −0.25
51 ～ 80	0 −0.30
81 ～ 110	0 −0.35

JIS B 1301—1996

Type	M
KED	S45C
KES	
KEG	

Tensile strength 600N/mm² or more

Catalog No. Type	B h9	L	H tolerance	C	Base unit price 1～3 pieces	Volume discount unit price 4～19	20～100
KED	2 0 −0.025	10 15 20	2 0 −0.025	0.16～0.25			
KES	3 0 −0.025	10 15 20 25 30	3 0 −0.025	0.16～0.25			
KEG	4 0 −0.030	10 12 15 16 18 20 25 30 35 40 45 50	4 0 −0.030	0.25～0.40			
	5 0 −0.030	10 12 15 16 18 20 25 30 35 40 45 50	5 0 −0.030	0.25～0.40			
	6 0 −0.030	10 12 15 16 18 20 25 30 35 40 45 50 55 60	6 0 −0.030	0.25～0.40			
	7 0 −0.036	15 20 25 30 35 40 45 50 60	7 0 −0.036	0.25～0.40			
	8 0 −0.036	15 16 18 20 25 30 35 40 45 50 55 60 70 80	8 0 −0.090	0.40～0.60			
	10 0 −0.036	15 18 20 25 30 35 40 45 50 55 60 70 80	8 0 −0.090	0.40～0.60			
	12 0 −0.043	20 25 30 35 40 45 50 55 60 70 80	8 0 −0.090	0.40～0.60			
	14 0 −0.043	30 35 40 45 50 55 60 70 80 90	9 0 −0.090	0.40～0.60			
	15 0 −0.043	30 35 40 45 50 55 60 70 80 90	10 0 −0.090	0.40～0.60			
	16 0 −0.043	40 45 50 55 60 70 80 90 100	10 0 −0.090	0.40～0.60			
	18 0 −0.043	40 45 50 55 60 70 80 90 100 110	11 0 −0.110	0.40～0.60			

Quotation

For larger orders, ask about prices/delivery.

Order — Catalog No. — L

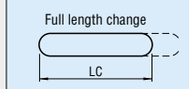
KED 6 — 30

Days to Ship Quotation

Alterations — Catalog No. — L (LC)

KED 6 — LC28

Quotation

Alteration	Code	Spec.	1Code
Alterations to full length 	LC	LC can be selected in 1mm increments. B: 2 3 4 5 6 7 8 10 12 14 15 16 18 / LC range: 5～20 6～30 8～50 8～50 10～60 15～60 15～80 15～80 20～80 25～90 25～90 35～100 35～110	Quotation