

# INSPECTION JIGS & FIXTURES

## INSPECTION JIGS & FIXTURES



Product name Catalog No.	PRECISION CARBIDE LIMIT GAUGES VGSA VGWA	PRECISION LARGE CARBIDE LIMIT GAUGES VGSB VGWB	LIMIT GAUGES SGSA SGWA	PRECISION CARBIDE PIN GAUGES VGOA
Page	1573	1574	1575	1576



PRECISION LARGE-DIAMETER CARBIDE PIN GAUGES VGOB	BGQ·BGQH·BGQT·BGQTH	BGQEH·BGOEH	PLUG GAUGES FOR CHECKING FIXTURES BGO·BGOH	BGU·BGUH	BGQPH	BGUPH
1576	1577	1578	1579			1580



REFERENCE PINS FOR CHECKING FIXTURES BGTDSH·BGTA·BGTAH·BGTD·BGTDH	TAPERED REFERENCE PINS FOR CHECKING FIXTURES BGMA BGMD	BUSHINGS FOR INSPECTION FIXTURES JBA JBAM JBH JBHM	BUSHINGS FOR INSPECTION FIXTURES KJBS KJBST	BUSHINGS FOR INSPECTION FIXTURES KJBSK KJBSTK
1581	1582	1583	1583	1584



BUSHINGS FOR INSPECTION FIXTURES KJBSC KJBSTC	MARKING PINS FOR CHECKING FIXTURES BGK BGKS	LOCATING BARS FOR TAPPING POSITIONS BGM	SHIM PLATES FOR INSPECTION FIXTURES — ROUND TYPE — KGSPM	SHIM PLATES FOR INSPECTION FIXTURES — SQUARE TYPE — KGSP
1584	1585	1585	1586	1586



SHIM PLATES FOR INSPECTION FIXTURES — SQUARE TYPE WITH HOLE — KGZ
1586

# INSPECTION JIGS & FIXTURES —GUIDE—

※For some inspection jigs and fixtures, and for machining jigs, refer to "TOOL-DIRECT" and the "Mechanical Standard Components for Factory Automation Catalog."  
※For toggle clamps, refer to the "Mechanical Standard Components for Factory Automation Catalog."

## Limit gauges

### ●What are limit gauges?

These are standardized gauges used for inspection of precision press products and precision holes. They have excellent wear resistance, and can guarantee dimensional accuracy even for inspections of mass-production products.

### ●Accuracy guarantee

So that these products can be of reliable service to our customers, each one is measured not only during machining, but also again after machining when the product has passed a set amount of time in a constant temperature chamber. These products are delivered together with a quality assurance certificate that contains the actual outer-diameter measurements. (A traceability system chart and measurement instrument system chart are not available.)

### ●Quality assurance certificate



### ●Measurement of the gauges

Inspection item	Measurement location	Accuracy	Measurement method
Outer diameter		GO side $+2\mu$ 0 NO GO side $\pm 1\mu$	Measurement comparison with block gauges using measurement instruments.
Roundness		$1\mu$ or less	Found from outer diameter measurements.
Cylindricity	 GO: 6 points (A, B, and C in 2 directions of X and Y) NO GO side: 4 points (A and B in 2 directions of X and Y) Not-measured area: 1mm from the either end of the gauge.	$1\mu$ or less	

### ●List of measurement instruments

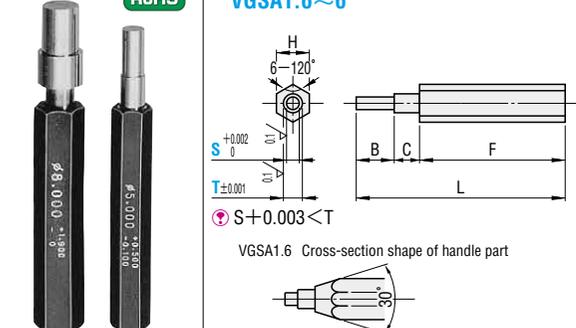
	Measurement instrument name	Manufacturer	Model
Dimensions measurement	●Tool microscope ●All-purpose measurement instrument ●Horizontal-type measuring system	Nikon Carl Zeiss Kuroda Precision Industries Tsugami Mitsutoyo	MM-22 UHM SM-3 UL-5D CD Series
	●Digital caliper ●Micrometer ●Pin gauge ●Block gauge	Mitsutoyo Aizen Mitsutoyo	MDC Series EMC1.00 ~ 25.00 Code No.100.516 Set BM1-24SC-0/KM
Shape measurement	●Roundness measuring instrument ●All-purpose measurement microscope ●Surface roughness measuring instrument	Tokyo Seimitsu Mashprivolintorque Mitsutoyo Tokyo Seimitsu	RONDCOM 45A UIM21 Surfcotest SV400 SURFCOM 2B E-MD-S10A

# PRECISION CARBIDE LIMIT GAUGES

— ONE-END STEPPED TYPE · BOTH-ENDS TYPE —

Ⓜ A quality assurance certificate is provided with these products.

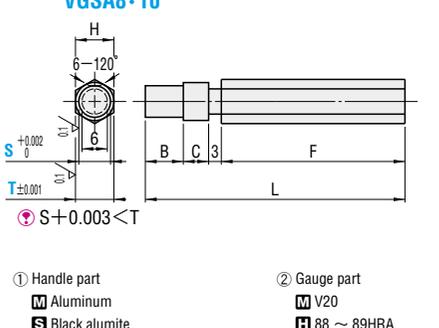
**RoHS** **VGSA1.6~6**



① Handle part  
**M** Aluminum  
**S** Black alumite

② Gauge part  
**M** V20  
**H** 88 ~ 89HRA

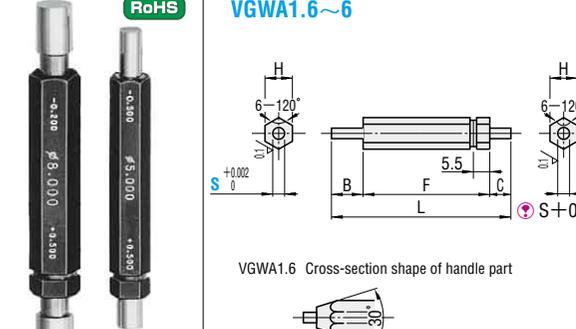
**RoHS** **VGSA8-10**



① Handle part  
**M** Aluminum  
**S** Black alumite

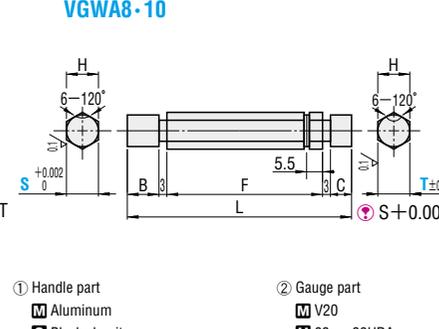
② Gauge part  
**M** V20  
**H** 88 ~ 89HRA

**RoHS** **VGWA1.6~6**



① Handle part  
**M** Aluminum  
**S** Black alumite

**RoHS** **VGWA8-10**

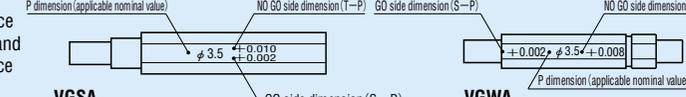


① Handle part  
**M** Aluminum  
**S** Black alumite

② Gauge part  
**M** V20  
**H** 88 ~ 89HRA

L	VGSA	VGWA	B	C	F	H	Catalog No.		P (Applicable nominal value)		S · T		Base unit price 1 ~ 4 pieces	
							Type	No.	0.001mm increments	0.001mm increments	VGSA	VGWA		
40	40	40	3	2	35	5	<b>Quotation</b>	1.6	0.300 ~ 1.600	0.300 ~ 1.700				
48	48	48	5	3	40	8		2.0	1.601 ~ 2.000	1.501 ~ 2.100				
50	50	50	6	4				2.5	2.001 ~ 2.500	1.901 ~ 2.600				
57	57	10	7	50	10	3		2.501 ~ 3.000	2.401 ~ 3.100					
67	67					4		3.001 ~ 4.000	2.901 ~ 4.100					
70	73					5		4.001 ~ 5.000	3.901 ~ 5.100					
								6	5.001 ~ 6.000	4.901 ~ 6.100				
								8	6.001 ~ 8.000	5.901 ~ 8.100				
								10	8.001 ~ 10.000	7.901 ~ 10.100				

Ⓜ Tolerance marking  
 As shown in the figure, the tolerance engraving does not indicate the S and T values, but indicates the difference from the P dimension.



● S+0.003<T  
 ● P dimension is the applicable nominal value. (reference dimension for measurement)

Order **Catalog No.** - **P** - **S** - **T**  
**VGSA 4** - **P3.500** - **S3.502** - **T3.510**

Alterations **Catalog No.** - **P** - **S** - **T** - (BC-CC-MC)  
**VGSA 4** - **P3.500** - **S3.502** - **T3.510** - **BC8-MC-S5011**

	Alteration		Code	Spec.	1Code
	VGSA	VGWA			
		<b>BC</b>	1 ≤ BC < B 0.1mm increments Full length L is shortened by (B-BC).		<b>Quotation</b>
		<b>CC</b>	1 ≤ CC < C 0.1mm increments Full length L is shortened by (C-CC).		
		<b>MC</b>	Addition of engraving on opposite side of tolerance engraving [Order code] MC-S5011 <Marking range> •Max. number of characters : 12 (Max. 8 in case of continuous number string) •Available characters : Alphabet letters and numbers - (hyphen / slash) + (plus) * (asterisk), (period)		

# PRECISION LARGE CARBIDE LIMIT GAUGES

— ONE-END STEPPED TYPE · BOTH-ENDS TYPE —

Ⓜ A quality assurance certificate is provided with these products.

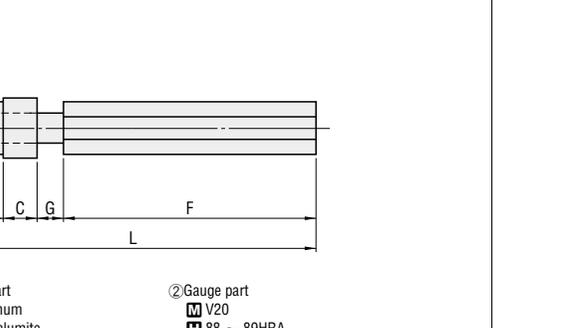
**RoHS** **VGSB**



① Handle part  
**M** Aluminum  
**S** Black alumite

② Gauge part  
**M** V20  
**H** 88 ~ 89HRA

**RoHS** **VGWB**

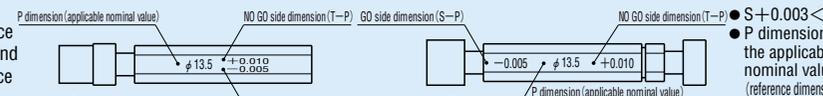


① Handle part  
**M** Aluminum  
**S** Black alumite

② Gauge part  
**M** V20  
**H** 88 ~ 89HRA

L	VGSB	VGWB	B	C	d	F	G	H	Catalog No.		P (Applicable nominal value)		S · T		Base unit price 1 ~ 4 pieces	
									Type	No.	0.001mm increments	0.001mm increments	VGSB	VGWB		
86	92	12	8	7	60	6	12	<b>Quotation</b>	14	10.000 ~ 14.000	9.901 ~ 14.100					
104	112	16	10	9	70	8	14		18	14.001 ~ 18.000	13.901 ~ 18.100					
108	120			12	17	24	18.001 ~ 24.000		17.901 ~ 24.100							

Ⓜ Tolerance marking  
 As shown in the figure, the tolerance engraving does not indicate the S and T values, but indicates the difference from the P dimension.



● S+0.003<T  
 ● P dimension is the applicable nominal value. (reference dimension for measurement)

Order **Catalog No.** - **P** - **S** - **T**  
**VGSB 14** - **P13.500** - **S13.495** - **T13.510**

Alterations **Catalog No.** - **P** - **S** - **T** - (AC-MC)  
**VGSB 14** - **P13.500** - **S13.495** - **T13.510** - **AC-MC-S5011**

	Alteration		Code	Spec.	1Code
	VGSB	VGWB			
		<b>AC</b>	Machining of a φ 2 air hole in the neck of the gauge		<b>Quotation</b>
		<b>MC</b>	Addition of engraving on opposite side of tolerance engraving [Order code] MC-S5011 <Marking range> •Max. number of characters : 12 (Max. 8 in case of continuous number string) •Available characters : Alphabet letters and numbers - (hyphen / slash) + (plus) * (asterisk), (period)		

Days to Ship **Quotation**

Price **Quotation**

# LIMIT GAUGES

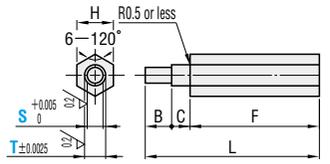
— STANDARD GRADE, ONE END TYPE · STANDARD GRADE, BOTH ENDS TYPE —

# PRECISION CARBIDE PIN GAUGES

Ⓜ A quality assurance certificate is provided with these products.

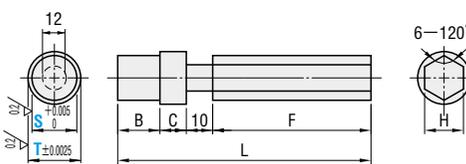



**SGSA3~13**



① Handle part  
 M SS400  
 S Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

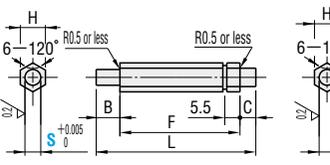
**SGSA16~20**



② Gauge part  
 M SKS3  
 H 58HRC ~

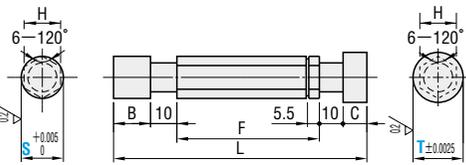



**SGWA3~13**



① Handle part  
 M SS400  
 S Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

**SGWA16~20**



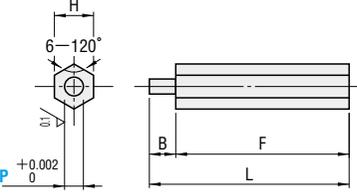
② Gauge part  
 M SKS3  
 H 58HRC ~

Ⓜ S+0.007<T

Ⓜ A quality assurance certificate is provided with these products.

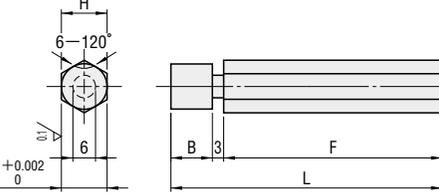



**VGOA1.6~6**



① Handle part  
 M Aluminum  
 S Black alumite

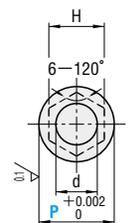
**VGOA8~10**



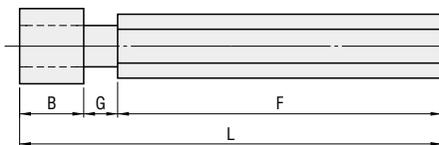
② Gauge part  
 M V20  
 H 88 ~ 89HRA




**VGOB**



① Handle part  
 M Aluminum  
 S Black alumite



② Gauge part  
 M V20  
 H 88 ~ 89HRA

L	SGSA	SGWA	B	C	F	H	Catalog No.		S-T		Base unit price 1 ~ 9 pieces	
							Type	No.	0.001mm increments	SGSA	SGWA	
40	40	40	4	6	30	8	SGSA SGWA	3	1.000 ~ 3.000	Quotation		
55	55	55	8	7	40	10		4	2.500 ~ 4.000			
65	65	65						5	3.500 ~ 5.000			
67	67	67	10	50	16	6		4.500 ~ 6.000				
80	80	80	12			8		8	5.500 ~ 8.000			
96	106	106	16			10		10	7.500 ~ 10.000			
								13	9.500 ~ 13.000			
								16	12.500 ~ 16.000			
								20	15.500 ~ 20.000			

Ⓜ S+0.007<T

Order **Catalog No.** — **S** — **T**  
 SGSA 13 — S10.450 — T10.500

Alterations **Catalog No.** — **S** — **T** — (MC)  
 SGSA 13 — S10.450 — T10.500 — MC—S5011

Alteration		Code	Spec.	1Code
SGSA	SGWA			
S5011	S5011	MC	Addition of engraving on opposite side of tolerance engraving [Order code] MC—S5011 <Marking range> •Max. number of characters : 12 (Max. 8 in case of continuous number string) •Available characters : Alphabet letters and numbers — (hyphen / slash) + (plus) * (asterisk), (period)	Quotation

Days to Ship **Quotation**

Price **Quotation**

L	B	F	H	Catalog No.		P	Base unit price
				Type	No.		
38	3	35	5	VGOA	1.6	0.300 ~ 1.600	Quotation
45	5	40	8		2.0	1.601 ~ 2.000	
46	6				2.5	2.001 ~ 2.500	
50	10				3	2.501 ~ 3.000	
60		4	3.001 ~ 4.000				
63		5	4.001 ~ 5.000				
		6	5.001 ~ 6.000				
	8	6.001 ~ 8.000					
	10	8.001 ~ 10.000					

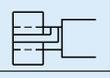
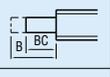
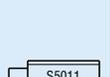
L	B	G	d	F	H	Catalog No.		P	Base unit price
						Type	No.		
78	12	6	7	60	12	VGOB (Large diameter type)	14	10.000 ~ 14.000	Quotation
94	16	8	9	70	14		18	14.001 ~ 18.000	
98		12	12	17	24		18.001 ~ 24.000		

Order **Catalog No.** — **P**  
 VGOA 4 — P3.500  
 VGOB 14 — P13.500

Days to Ship **Quotation**

Price **Quotation**

Alterations **Catalog No.** — **P** — (AC·BC·MC)  
 VGOA 4 — P3.500 — BC8—MC—S5011  
 VGOB 14 — P13.500 — AC — MC—S5011

Alteration	Code	Spec.	1Code
	AC	Machining of a φ 2 air hole in the neck of the gauge Ⓜ Can be used for VGOB type only.	Quotation
	BC	1 ≤ BC < B 0.1mm increments Full length L is shortened by (B—BC). Ⓜ Can be used for VGOA type only.	
	MC	Addition of engraving on opposite side of tolerance engraving [Order code] MC—S5011 <Marking range> •Max. number of characters : 12 (Max. 8 in case of continuous number string) •Available characters : Alphabet letters and numbers — (hyphen / slash) + (plus) * (asterisk), (period)	

# PLUG GAUGES FOR CHECKING FIXTURES

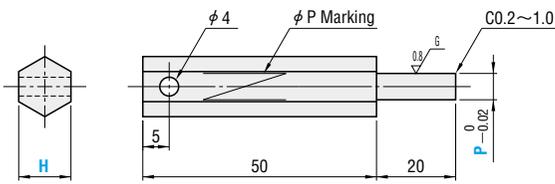
—STRAIGHT TYPE—

# PLUG GAUGES FOR CHECKING FIXTURES

—OBLONG TYPE—



**BGQ**  
**BGQH** (Hardened type)

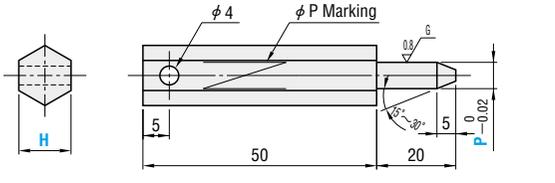


① Handle part  
 M SS400  
 S Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
 M SKS3  
 H (Hardened type) 40 ~ 45HRC



**BGQT** (Tapered type)  
**BGQTH** (Tapered and hardened type)



① Handle part  
 M SS400  
 S Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
 M SKS3  
 H (Hardened type) 40 ~ 45HRC

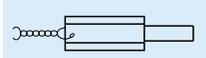
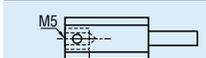
Catalog No.	P		Base unit price 1 ~ 9 pieces	
Type	H	0.01mm increments	BGQ	BGQH
BGQ	10	1.20 ~ 8.00		
	13	8.01 ~ 10.00		
BGQH (Hardened type)	16	10.01 ~ 13.00	<b>Quotation</b>	
	21	13.01 ~ 17.00		

Order  **Catalog No.** — **P**  
**BGQ 16** — **P12.00**

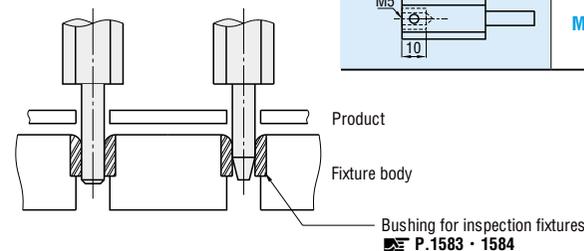
Days to Ship  **Quotation**

Price  **Quotation**

Alterations  **Catalog No.** — **P** — (CH·MH)  
**BGQ 16** — **P12.00** — **CH**

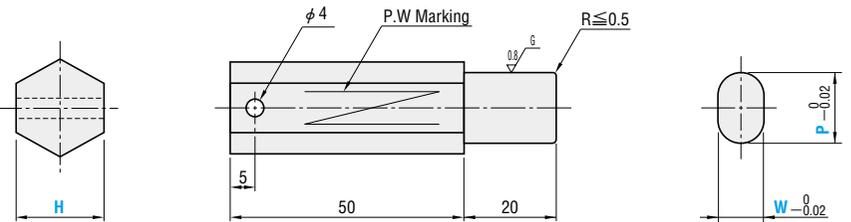
Alteration	Code	Spec.	1Code
	CH	Attachment of a chain (length 600 mm) to the gauge body to prevent loss	<b>Quotation</b>
	MH	Addition of tap hole (M5)	

**ex** Example





**BGQEH** (Hardened type)

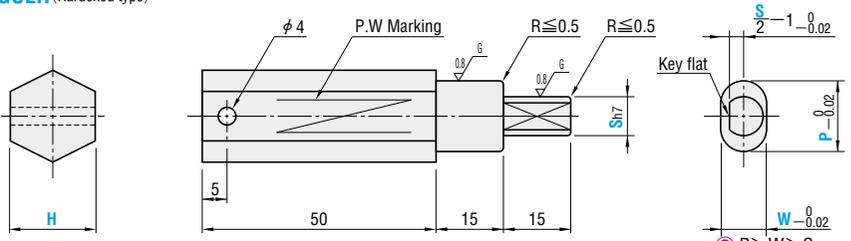


① Handle part  
 M SS400  
 S Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
 M Equivalent to SKD11  
 H 60HRC ~



**BGOEH** (Hardened type)



① Handle part  
 M SS400  
 S Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

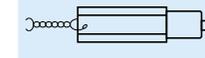
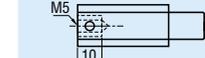
② Gauge part  
 M Equivalent to SKD11  
 H 60HRC ~

Catalog No.	P-W 0.01mm increments			Base unit price
Type	H	P-Wmax.	P-Wmin.	1 ~ 9 pieces
BGQEH (Hardened type)	10	8.00	3.00	
	13	10.00	6.00	<b>Quotation</b>
	16	13.00	8.00	
	21	17.00	10.00	

Catalog No.	P-W 0.01mm increments			S	Base unit price
Type	H	P-Wmax.	P-Wmin.	0.1mm increments	1 ~ 9 pieces
BGOEH (Hardened type)	10	8.00	4.00	3.0 ~ 7.9	
	13	10.00	6.00	3.0 ~ 9.9	
	16	13.00	8.00	5.0 ~ 12.9	<b>Quotation</b>
	21	17.00	10.00	9.0 ~ 16.9	
	26	21.00	16.00	9.0 ~ 20.9	
	32	28.00	20.00	9.0 ~ 27.9	

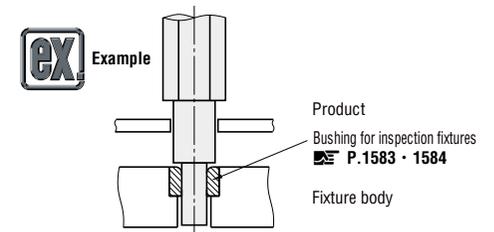
Order  **Catalog No.** — **P** — **W** — **S**  
**BGQEH 10** — **P6.50** — **W4.00**  
**BGOEH 10** — **P6.50** — **W4.50** — **S3.0**

Alterations  **Catalog No.** — **P** — **W** — **S** — (CH·MH)  
**BGQEH 10** — **P6.50** — **W4.00** — **CH**  
**BGOEH 10** — **P7.00** — **W4.00** — **S3.0** — **CH**

Alteration	Code	Spec.	1Code
	CH	Attachment of a chain (length 600 mm) to the gauge body to prevent loss	<b>Quotation</b>
	MH	Addition of tap hole (M5)	

Days to Ship  **Quotation**

Price  **Quotation**



INSPECTION JIGS & FIXTURES

# PLUG GAUGES FOR CHECKING FIXTURES

— STEPPED · FIXED GAUGE LENGTH TYPE —

# PLUG GAUGES FOR CHECKING FIXTURES

— STEPPED · CONFIGURABLE GAUGE LENGTH TYPE —

### BGO

#### BGOH (Hardened type)

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** (Hardened type) 40 ~ 45HRC

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### BGU

#### BGUH (Hardened type)

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** (Hardened type) 40 ~ 45HRC

### BGOPH

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** (Hardened type) 40 ~ 45HRC

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### BGUPH

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** (Hardened type) 40 ~ 45HRC

Catalog No.	P 0.01mm increments				S 1mm increments		Base unit price 1 ~ 9 pieces			
	Type	H	BGO · BGOH	BGU · BGUH	BGO · BGOH	BGU · BGUH	BGO	BGOH	BGU	BGUH
BGO BGOH (Hardened type)	10	4.00 ~ 8.00	4.00 ~ 7.00	3 ~ 7	5 ~ 8	<b>Quotation</b>				
	13	8.01 ~ 10.00	7.01 ~ 9.00	6 ~ 9	8 ~ 10					
	16	10.01 ~ 13.00	9.01 ~ 12.00	8 ~ 12	10 ~ 13					
BGU BGUH (Hardened type)	21	13.01 ~ 17.00	12.01 ~ 15.00	10 ~ 15	14 ~ 17					
	26	17.01 ~ 21.00	15.01 ~ 17.00	10 ~ 17	18 ~ 21					
	32	21.01 ~ 28.00	17.01 ~ 24.00	10 ~ 24	21 ~ 28					

BGO · BGOH : P > S    BGU · BGUH : P < S

**Order**    Catalog No. — **P** — **S**  
 BGO 16 — P12.00 — S10

**Days to Ship**    **Quotation**

**Alterations**    Catalog No. — **P** — **S(SCH)** — (CH · MH)  
 BGO 16 — P12.00 — S10 — CH  
 BGO 21 — P13.01 — SCH14.55 — MH

**Price**    **Quotation**

**Example**    **ex**

Alteration	Code	Spec.	1Code
	CH	Attachment of a chain (length 600 mm) to the gauge body to prevent loss	<b>Quotation</b>
	MH	Addition of tap hole (M5)	
	SCH	S dimension increment change 0.01mm increments The allowable ranges are the same as those shown in the specification table.	

S	Catalog No.	P 0.01mm increments		A	B	Base unit price 1 ~ 9 pieces			
		Type	H			BGOPH	BGUPH	BGOPH	BGUPH
BGOPH	BGUPH	Type	H	BGOPH	BGUPH	1mm increments	1mm increments	BGOPH	BGUPH
4	8	<b>BGOPH BGUPH</b>	10	4.01 ~ 8.00	4.00 ~ 7.00	5 ~ 15	5 ~ 15	<b>Quotation</b>	
6	10		13	8.01 ~ 10.00	7.01 ~ 9.00	8 ~ 20	8 ~ 20		
8	13		16	10.01 ~ 13.00	9.01 ~ 12.00				

BGOPH : S < P    BGUPH : S > P

**Order**    Catalog No. — **P** — **A** — **B**  
 BGOPH 16 — P10.05 — A15 — B20

**Alterations**    Catalog No. — **P** — **A** — **B** — (CH · MH)  
 BGOPH 16 — P10.05 — A15 — B20 — CH

Alteration	Code	Spec.	1Code
	CH	Attachment of a chain (length 600 mm) to the gauge body to prevent loss	<b>Quotation</b>
	MH	Addition of tap hole (M5)	

**Example**    **ex**

# REFERENCE PINS FOR CHECKING FIXTURES

# TAPERED REFERENCE PINS FOR CHECKING FIXTURES

— THREADED TYPE —

**RoHS** **BGTDSH** (Hardened type)

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** 40 ~ 45HRC

⚡  $S < \frac{\sqrt{3}}{2} \left[ E + \sqrt{\frac{P^2 - E^2}{3}} \right]$

⚡ A relief groove of approximately 1mm is created at the locations where the steps are joined.

**RoHS** **BGTA** (Round type)  
**BGTAH** (Round, hardened type)

⚡  $S < P - 1$

⚡ A relief groove of approximately 1mm is created at the locations where the steps are joined.

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** 40 ~ 45HRC (Hardened type)

**RoHS** **BGTD** (Diamond type)  
**BGTDH** (Diamond, hardened type)

⚡  $S < \frac{\sqrt{3}}{2} \left[ E + \sqrt{\frac{(P-1)^2 - E^2}{3}} \right]$

⚡ A relief groove of approximately 1mm is created at the locations where the steps are joined.

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** 40 ~ 45HRC (Hardened type)

**RoHS** **BGMA** (Round, hardened type)

⚡ A relief groove of approximately 1mm is created at the locations where the steps are joined.

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** 40 ~ 45HRC

**RoHS** **BGMD** (Diamond, hardened type)

⚡ A relief groove of approximately 1mm is created at the locations where the steps are joined.

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** 40 ~ 45HRC

B	E	Catalog No.		P		S		Base unit price 1 ~ 9 pieces
		Type	H	0.01mm increments	0.1mm increments			
15	3	<b>BGTDSH</b> (Hardened type)	13	6.00 ~ 9.00	3.0 ~ 6.0	<b>Quotation</b>		
17	4		16	9.01 ~ 12.00	5.0 ~ 8.0			
19	6		21	12.01 ~ 16.00	9.0 ~ 12.0			
24	8		26	16.01 ~ 20.00	9.0 ~ 15.0			
30	10		32	20.01 ~ 27.00	9.0 ~ 20.0			

B	E (BGTD-BGTDH only)	Catalog No.		P		Base unit price 1 ~ 9 pieces			
		Type	H	0.01mm increments	1mm increments	BGTA	BGTAH	BGTD	BGTDH
15	3	<b>BGTA</b> (Round type)	13	6.00 ~ 9.00	3 ~ 6				
17	4		<b>BGTAH</b> (Round, hardened type)	16	9.01 ~ 12.00	5 ~ 8			
19	6	<b>BGTD</b> (Diamond type)		21	12.01 ~ 16.00	9 ~ 12			
24	8		<b>BGTDH</b> (Diamond, hardened type)	26	16.01 ~ 20.00	9 ~ 15			
30	10			32	20.01 ~ 27.00	9 ~ 20			

**Order** Catalog No. — P — S  
**BGTDSH 16** — P10.00 — S5.0  
**BGTD 16** — P12.00 — S5

**Price** **Quotation**

**Alterations** Catalog No. — P — S — (CH-MH)  
**BGTDSH 16** — P12.00 — S6.0 — CH  
**BGTA 16** — P12.00 — S5 — CH

**Days to Ship** **Quotation**

**Example**

Alteration	Code	Spec.	1Code
	<b>CH</b>	Attachment of a chain (length 600 mm) to the gauge body to prevent loss	<b>Quotation</b>
	<b>MH</b>	Addition of tap hole (M5)	

S	E (BGMD only)	M×P	Catalog No.		P 0.01mm increments	Base unit price 1 ~ 9 pieces	
			Type	H		BGMA	BGMD
6	3	5×0.8	<b>BGMA</b> (Round, hardened type) <b>BGMD</b> (Diamond, hardened type)	13	7.20 ~ 9.00		
8	4	6×1.0		16	9.01 ~ 12.00		
10	6	8×1.25		21	12.01 ~ 16.00	<b>Quotation</b>	
				26	16.01 ~ 20.00		
				32	20.01 ~ 27.00		

**Order** Catalog No. — P  
**BGMD 16** — P10.00

**Price** **Quotation**

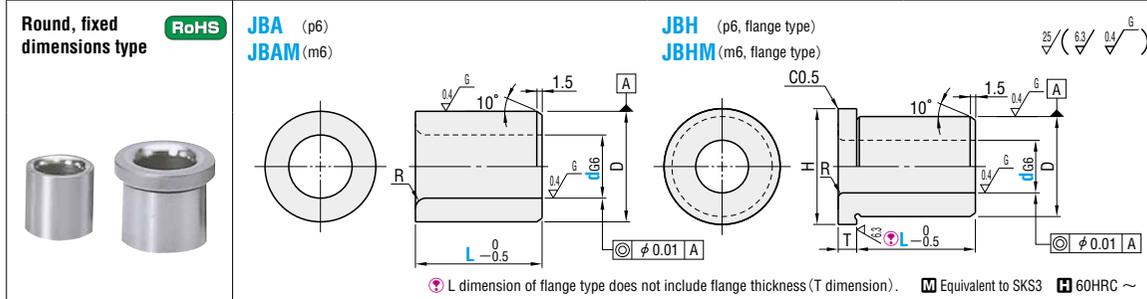
**Days to Ship** **Quotation**

**Alterations** Catalog No. — P — (CH-MH)  
**BGMD 13** — P8.00 — CH

Alteration	Code	Spec.	1Code
	<b>CHT</b>	Attachment of a chain (length 600 mm) to the gauge body to prevent loss. A rotating mechanism is included to prevent twisting of the chain.	<b>Quotation</b>
	<b>MH</b>	Addition of tap hole (M5)	

**Example**

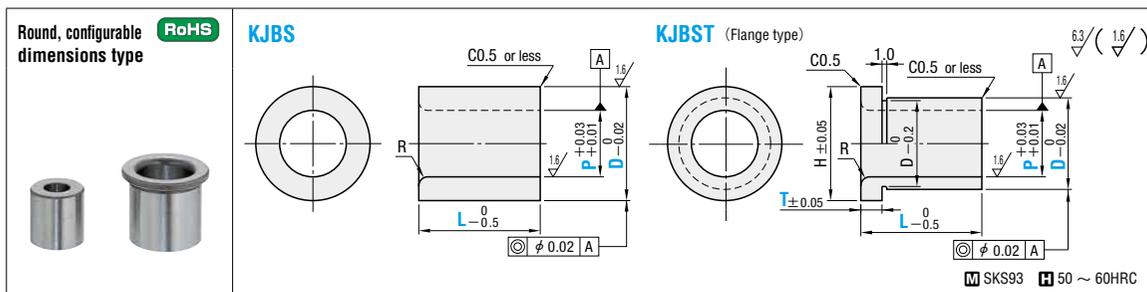
# BUSHINGS FOR INSPECTION FIXTURES



R	H	T	D	tolerance		Catalog No.		L	Base unit price 1 ~ 49 pieces
				p6	m6	Type	d		
0.8	11	2.5	5	+0.020 +0.012	+0.012 +0.004	JBA (p6) JBAM (m6)	2	+0.008	5 6 8 10 12
							3	+0.002	
1.0	14	3	8	+0.024 +0.015	+0.015 +0.006	JBA (p6) JBAM (m6)	4	+0.012	5 6 8 10 12 15 16 20
							5	+0.004	
2.0	26	4	12	+0.029 +0.018	+0.018 +0.007	JBH (p6) JBHM (m6)	6	+0.014	5 6 8 10 12 15 16 20 25
							8	+0.005	
3.0	40	6	35	+0.042 +0.026	+0.025 +0.009	JBH (p6) JBHM (m6)	10	+0.017	6 8 10 12 15 16 20 25
							12	+0.006	
<b>Quotation</b>									
12 15 16 20 25 30									
16 20 25 30 35									

Order Catalog No. - L Days to Ship Quotation Price Quotation

JBA 10 - 16  
JBH 8 - 12

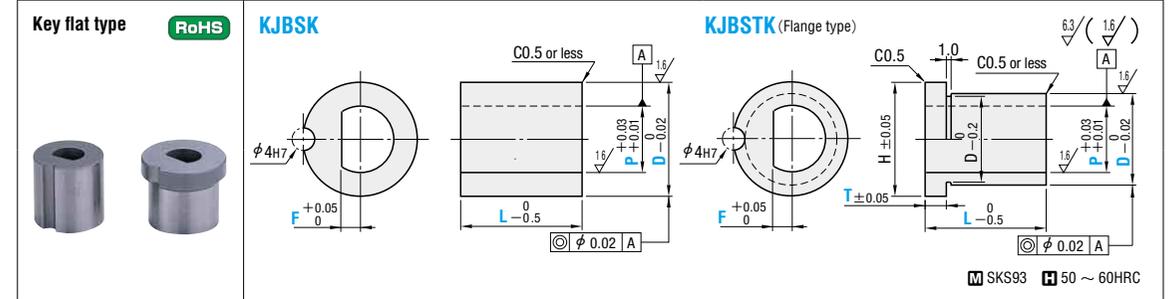


R	H	Catalog No. Type	D	P	L	T	Base unit price 1 ~ 19 pieces	Order	Catalog No. - P - L - T
1.0	D+4	KJBS KJBST	8	2.00 ~ 6.00	5 ~ 40	2	Quotation	Days to Ship	KJBS10 - P3.00 - L6 KJBST10 - P3.00 - L6 - T2
			10	2.00 ~ 8.00					
2.0	D+4	KJBS KJBST	12	4.00 ~ 10.00	<KJBS> <KJBST> If P < 5: If P < 4: L ≤ P × 4 L ≤ P × 4 If P ≥ 5: If P ≥ 4: L ≤ P × 3 L ≤ P × 3	3	Quotation	Price	Quotation
			16	8.00 ~ 14.00					
<b>Quotation</b>									
20 10.00 ~ 18.00									
25 15.00 ~ 23.00									
30 20.00 ~ 27.00									
35 25.00 ~ 32.00									

If (D-P)/2 ≤ 2, then R=0.5. Alterations Catalog No. - P - L - T (FC-NC, etc.)

KJBS10 - P3.00 - L6 - FC

Alteration	Code	Spec.	1Code
	FC	Addition of groove for adhesive accumulation D ≥ P+3 Can be used for L ≥ 10 with straight types, and L ≥ 15 with flange types only.	<b>Quotation</b>
	NC	Addition of fall-off prevention groove D ≥ P+3 Can be used for L ≥ 10 with straight types, and L ≥ 15 with flange types only.	
	RN	Chamfering of R (0.5 or less)	
	CRN	Elimination of R and use of the right angle Burr may occur in some cases. Cannot be combined with alteration TKC.	
	TKC	Addition of surface treatment	
	HT	Addition of flat machining to bushing Flat machining is not applied to the flange.	<b>Quotation</b>

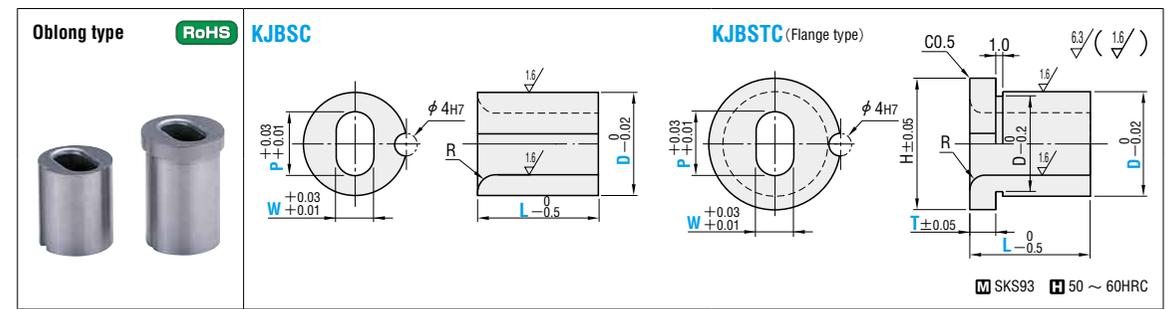


H	Catalog No. Type	D	P	F	L	T	Base unit price 1 ~ 19 pieces	Order	Catalog No. - P - F - L - T
D+4	KJBSK KJBSTK	8	3.00 ~ 5.00	0.3 ~ 3.0	5 ~ 25	2	Quotation	Days to Ship	KJBSK12 - P8.00 - F2.0 - L10 KJBSTK12 - P8.00 - F3.0 - L10 - T3
<b>Quotation</b>									
12 3.00 ~ 9.00 0.5 ~ 4.0									
16 4.00 ~ 13.00 0.5 ~ 6.0									
20 6.00 ~ 17.00 1.0 ~ 8.0									
25 8.00 ~ 21.00 2.0 ~ 10.0									

KJBSK: D/2 - F ≥ 3 Alterations Catalog No. - P - F - L - T (FC-NC-STC-TKC-LKC)

KJBSK12 - P8.00 - F2.0 - L10 - FC

Alteration	Code	Spec.	1Code
	FC	Addition of groove for adhesive accumulation D ≥ P+3 L ≥ 15	<b>Quotation</b>
	NC	Addition of fall-off prevention groove D ≥ P+3 L ≥ 15	
	TKC	Addition of surface treatment	<b>Quotation</b>
	LKC	L dimension tolerance change to 0 Cannot be combined with alteration TKC.	



R	H	Catalog No. Type	D	P	W	L	T	Base unit price 1 ~ 19 pieces	Order	Catalog No. - P - W - L - T
2.0	D+4	KJBSC KJBSTC	(8)	4.00 ~ 6.00	P > W (W ≥ 3.00)	5 ~ 20	2	Quotation	Days to Ship	KJBSC12 - P8.50 - W3.50 - L15 KJBSTC12 - P9.50 - W4.50 - L15 - T2
			10	4.00 ~ 8.00						
<b>Quotation</b>										
12 4.00 ~ 10.00										
16 6.00 ~ 14.00										
20 10.00 ~ 18.00										
25 14.00 ~ 22.00										
(30) 20.00 ~ 27.00										

If (D-P)/2 ≤ 2, then R=0.5. Alterations Catalog No. - P - W - L - T (FC-NC, etc.)

KJBSC12 - P8.50 - W3.50 - L15 - FC

Alteration	Code	Spec.	1Code
	TKC	Addition of surface treatment	<b>Quotation</b>
	FC	Addition of groove for adhesive accumulation D ≥ P+3 Can be used for L ≥ 8 with straight types, and L ≥ 15 with flange types only.	
	RN	Chamfering of R (0.1 or less)	
	LKC	L dimension tolerance change to 0 Can be used for L ≤ 19 only.	
	NC	Addition of fall-off prevention groove D ≥ P+3 Can be used for L ≥ 8 with straight types, and L ≥ 15 with flange types only.	

# MARKING PINS FOR CHECKING FIXTURES / LOCATING BARS FOR TAPPING POSITIONS

# SHIM PLATES FOR INSPECTION FIXTURES (ZERO PLATES)

—ROUND · SQUARE · SQUARE WITH HOLE—

**Marking pins** **RoHS** **BGK** **BGKS** (Configurable P dimension)

① Handle part  
**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

② Gauge part  
**M** SKS3  
**H** 58HRC ~

Catalog No. Type	H	P	B 1mm increments	Base unit price 1 ~ 9 pieces
<b>BGK</b>	16	10	20 ~ 50	Quotation
	21	16		
	26	20		
	32	25		

Catalog No. Type	H	P 0.1mm increments	B 1mm increments	K° selection	Base unit price 1 ~ 9 pieces
<b>BGKS</b> (Configurable P dimension)	16	6.0 ~ 14.0	20 ~ 50	10	Quotation
	21	14.1 ~ 18.0		20	
	26	18.1 ~ 20.0		30	
	32	20.1 ~ 25.0			

**Order** Catalog No. — P — B — K°  
**BGK 16** — P10 — B30  
**BGKS 21** — P16.0 — B40 — K20

**Alterations** Catalog No. — P — B — K° — (CH·MH)  
**BGKS 16** — P10.0 — B30 — K10 — CH

**Days to Ship** **Quotation**

**Price** **Quotation**

Alteration	Code	Spec.	1Code
	<b>CH</b>	Attachment of a chain (length 600 mm) to the gauge body to prevent loss	Quotation
	<b>MH</b>	Addition of tap hole (M5)	Quotation

**Example**

Bushing for inspection fixtures  
**P.1583 · 1584**

**Locating bars for tapping positions** **RoHS** **BGM**

Concentricity of threaded section with respect to shank is 0.1 or less.

**M** SKS3  
**H** 55 ~ 60HRC

D	M×P	Catalog No. Type		L	Base unit price 1 ~ 9 pieces
		M			
8	3×0.5	<b>BGM</b>	10 20 30	3	Quotation
	4×0.7			4	
	5×0.8			5	
14	6×1.0			6	
	8×1.25			8	
	10×1.5			10	
	12×1.75	12			

**Order** Catalog No. — L  
**BGM 4** — L20

**Days to Ship** **Quotation**

**Price** **Quotation**

**Example**

※Verify that the nut and burring screw are perpendicular to the surface.

**RoHS** **KGSPM** (Round type)

**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)  
**A** Cross-recessed countersunk screw (M2×15) 1 screw

**RoHS** **KGSP** (Square type)

① When A and B=15

② When A=10, B=20

③ Except for ① and ②

**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)  
**A** Cross-recessed countersunk screw (M2×15) 2 screws 1 screw when A and B=15

**RoHS** **KGZ** (Square type with hole)

**M** SS400  
**S** Black oxide (Fe<sub>3</sub>O<sub>4</sub>)

Catalog No. Type	A	T	Base unit price 1 ~ 29 pieces
<b>KGSPM</b>	20	2·3·5	Quotation

**Order** Catalog No. — B — T  
**KGSPM20** — 20 — 3  
**KGSP15** — 20 — 3  
**KGZ25** — 5

Catalog No. Type	A	B	T	Base unit price 1 ~ 29 pieces
<b>KGSP</b>	10	20	2	Quotation
		* 15		
	15	20	3	
		25		
	20	20	5	
		25		
25	25			

**Days to Ship** **Quotation**

**Price** **Quotation**

**Example**

Workpiece  
 Toggle clamp  
 Fixture body  
 Bushing for inspection fixtures  
**P.1583 · 1584**  
 KGSPM · KGSP

\* For 15—15, there is only 1 countersunk hole.

d	Catalog No. Type	A	T	Base unit price 1 ~ 29 pieces
8	<b>KGZ</b>	20	2	Quotation
12		25	3	
18		30	5	