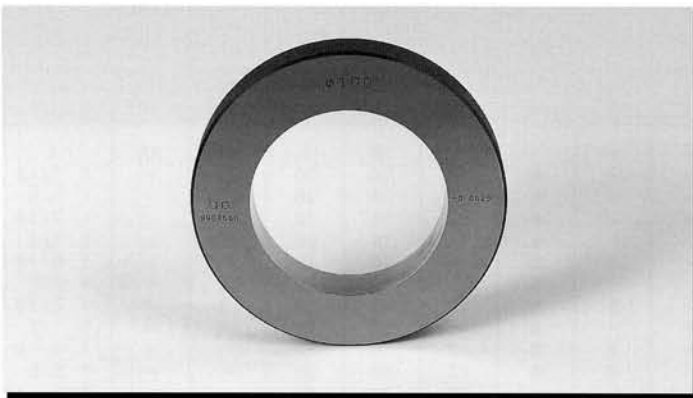


マスターリングゲージ

Master ring gauges

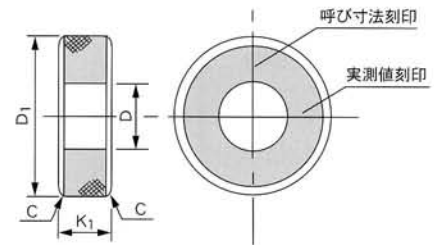


在庫

マスターリングは、測定器の基準として用いられるゲージです。精密測定器の基準用は、JMAS（日本精密測定機器工業会規格）によって、ゲージ部の真円度、円筒度、直径の許容値が、規定されております。マスターリングゲージには、呼び寸法と実測値が、刻印されています。

Master ring gauges are used for setting-up of relative measuring instruments, as dimensional standards.

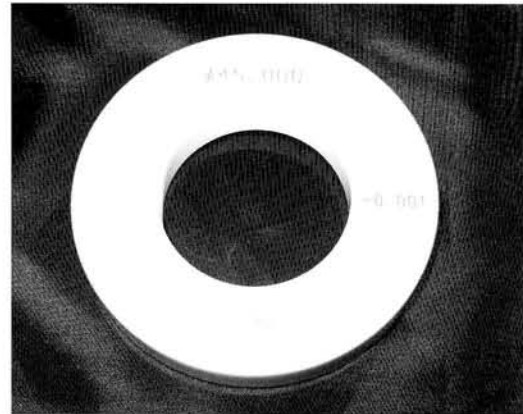
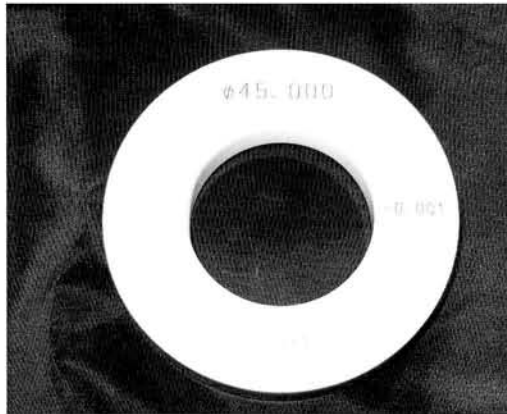
- 材質：SKS3
- 硬度：HRC58～62
- サブゼロ処理、安定化処理済
- ラッピング仕上



呼び寸法 D	外径 D1	厚さ K1	(参考) C	製作公差	真円度 円筒度
1～3	25	4	0.6	±0.001	0.0005
3～6	30	6	0.8	±0.001	0.0005
6～10	30	8	0.8	±0.001	0.0005
10～14	40	10	1	±0.001	0.0006
14～18	50	12	1.5	±0.001	0.0006
18～24	50	15	1.5	±0.001	0.0008
24～30	65	15	1.5	±0.001	0.0008
30～40	80	18	1.5	±0.0015	0.0008
40～50	95	20	1.5	±0.0015	0.0008
50～65	110	20	1.5	±0.002	0.001
65～80	125	22	2	±0.002	0.001
80～90	140	22	2	±0.0025	0.0012
90～100	160	25	2	±0.0025	0.0012
100～110	180	30	2.4	±0.003	0.0015
110～120	190	35	2.4	±0.003	0.0015
120～130	200	35	2.4	±0.004	0.002
130～140	210	35	2.4	±0.004	0.002
140～150	220	40	2.4	±0.004	0.002
150～160	230	40	2.4	±0.005	0.0025
160～180	260	40	2.4	±0.005	0.0025
180～200	280	40	2.4	±0.005	0.0025

ジルコニアセラミックスマスターリングゲージ

ジルコニアセラミックスは、高靱性、高強度、耐摩耗性に優れ、特にセラミックスの中でも、群を抜く高い靱性を持ち、“欠けやすさ”を解決する材料です。



■セラリングはセラミックス材料の中で極めて高強度、高靱性のジルコニアセラミックスを素材に使用しており、通常の使用では割れる心配はありません。

CERARING are made of zirconia-based ceramics, which have superior hardness and toughness compared with other types of ceramic materials. They will not break or crack in ordinary applications.

物質 Property	材質 Material	CERARING (ZrO ₂)	Steel (鋼)	Carbide (WC - Co) (超硬)	Silicon nitride (Si ₃ N ₄) (窒化ケイ素)
硬度 Hardness		1350	800	1650	1500
熱膨張係数 (HV)		10±1	11.5±1	5	2
曲げ強さ Thermal expansion coefficient (10 ⁻⁶ /K)		130	200	200	60
破壊靱性 Flexural strength (three - point bending)		7	>20	12	6.5
ヤング率 (kgf/mm ²)		2.1	2.1	6.3	2.9
ポアソン比 Fracture toughness K _{1c}		0.3	0.3	0.2	0.3
比重 (MN/M ^{1.5})		6.0	7.8	14.8	3.2
熱伝導率 Young's modulus (×)		0.007	0.13	0.19	0.04

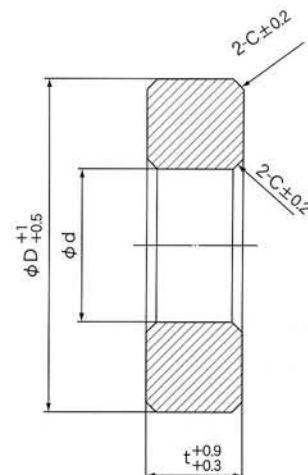
セラミックス (ジルコニア)

■形状

φd (mm)	φD (mm)	t (mm)	2-C
φ6.0	φ25	7	1.0
φ8.0	φ32	10	1.1
φ10.0	φ32	10	1.1
φ11.0	φ32	10	1.1
φ12.0	φ32	10	1.1
φ15.0	φ32	10	1.1
φ16.0	φ45	10	1.2
φ17.0	φ45	10	1.2
φ18.0	φ45	10	1.2
φ20.0	φ45	10	1.2
φ22.0	φ45	10	1.2
φ24.0	φ45	10	1.2
φ25.0	φ53	15	1.8
φ27.0	φ53	15	1.8
φ28.0	φ53	15	1.8
φ30.0	φ71	15	2.0
φ32.0	φ71	15	2.0
φ35.0	φ71	15	2.0
φ38.0	φ71	15	2.0
φ40.0	φ71	15	2.0
φ42.0	φ71	15	2.0
φ45.0	φ85	15	2.3

■精度

φd (mm)	公差 (mm)	真円度 (mm)
6~30	±0.001	0.001以内
30~45	±0.0015	0.0015以内





STEEL RING GAUGE

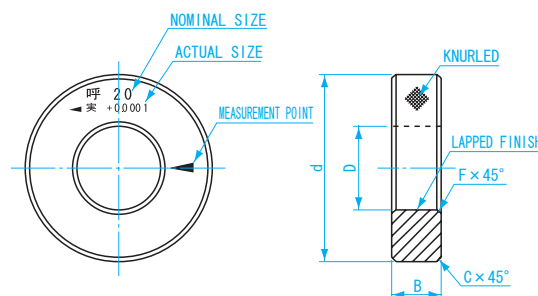
SUB-ZERO Treatment (Cryogenic hardened) for improved durability

Use Ring Gauge as master gauge for "0" adjustment of measuring tools such as bore gauge, inside micrometer, dial caliper, etc.



DIMENSIONS

Units : mm



BLOCK GAUGES

PIN GAUGES

PIN VISE

PIN GAUGE ACCESSORIES

GAUGES

THREAD GAUGES

PLUG GAUGES

RING GAUGES

THICKNESS GAUGES

TAPER GAUGES

WELDING GAUGES

OTHER GAUGES

MATERIAL • Alloy tool steel

SPECIFICATIONS

Size (mm)	Step (mm)	Out of Roundness (μm)	Out of Roundness Cylindricity (μm)	Tolerance (μm)	Hardness (HV)
1 to less than 30	0.1 step	0.5	0.5	± 1.0	653 } 772
30 to less than 50		0.8	0.8	± 1.5	
50 to less than 60	0.5 step	1.0	1.0	± 2.0	
60 to less than 80		2.0	2.0	± 5.0	
80 to less than 100	5.0 step	2.0	2.0	± 5.0	
100 to less than 200		2.0	2.0	± 5.0	

(Stock available size)

Size (mm)	Step (mm)	Step (mm)
1 to less than 50	0.1 step	1.0•1.1•1.2•1.3•1.4•1.5•1.6•1.7•1.8•1.9•2.0•2.1•2.2•2.3•2.4•2.5•2.6•2.7.....50.0
50 to less than 100	0.5 step	50.5•51.0•51.5•52.0•52.5•53.0•53.5•54.0•54.5•55.0•55.5•56.0•56.5•57.0•57.5.....100.0
100 to less than 200	5.0 step	105.0•110.0•115.0•120.0•125.0•130.0•135.0•140.0•145.0•150.0•155.0•160.0•165.0.....200.0

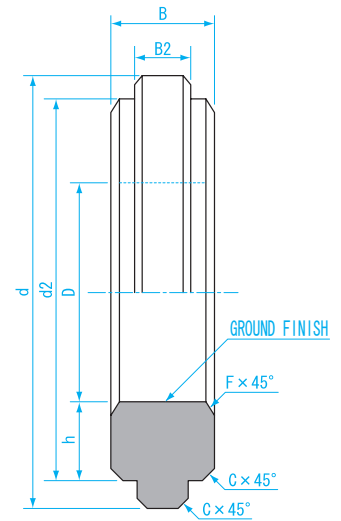
Size List

Size D (mm)	Outside Diameter d (mm)	Thickness B (mm)	Chamfering for outside diameter C (mm)	Chamfering for inside diameter F (mm)	Remarks	Weight
1 to less than 2.5	22	4	0.4	0.3	Knurled	10g
2.5 to less than 5		5				10g
5 to less than 10	32	8	0.8	0.5		50g
10 to less than 15	38	10				80g
15 to less than 20	45	12	1.2	1.0		100g
20 to less than 25	53	14				200g
25 to less than 32	63	16	1.5	1.0		300g
32 to less than 40	71	18				400g
40 to less than 50	85	20	2.0	1.5		600~700g
50 to less than 60	100	24				0.9~1.1kg
60 to less than 70	112		2.0	1.5	1.1~1.3kg	
70 to less than 80	125	1.4~1.6kg				
80 to less than 90	140	40	2.0	1.7~1.9kg		
90 to less than 100	160			2.3~2.6kg		
100 to less than 110	180	30	2.4	2.0	3.7~4.1kg	
110 to less than 120	190	35			4.7~5.1kg	
120 to less than 130	200	38	2.4	2.0	5.0~5.5kg	
130 to less than 140	210				5.7~6.3kg	
140 to less than 160	230	40	2.4	2.0	6.6~8.2kg	
160 to less than 180	260				8.6~10kg	
180 to less than 200	280	40	2.4	2.0	9.4~11kg	

SUB-ZERO TREATMENT (Cryogenic hardened) for improved durability

DIMENSIONS

Units : mm



MATERIALS • Alloy tool steel

SPECIFICATIONS

Size (mm)	Step (mm)	Out of Roundness (μm)	Out of Cylindricity (μm)	Tolerance (μm)	Hardness (HV)
200 to less 230	5.0 step	5.0	5.0	± 7.0	653
230 to less 300	10.0 step			± 8.0	
300 to less 400				± 9.0	
400 to less 500				± 10.0	
500 to less 520					

Size List

※ Make- to- order manufacturing

Size D (mm)	Outside Diameter (mm)		Thickness (mm)		h (mm)	Chamfering for outside diameter C (mm)	Chamfering for inside diameter F (mm)	Remarks	Weight (kg)
	d	d2	B	B2					
200 to less than 230	310	250~270	45	25	20	2.0	2.5	NOT Knurled	9~10
230 to less than 260	340	280~300							11~14
260 to less than 290	370	310~330							11~13
290 to less than 320	400	340~360							12~14
320 to less than 360	440	380~410							14~16
360 to less than 400	480	420~450	50	25	25	2.0	2.5	NOT Knurled	15~18
400 to less than 450	540	460~500							19~24
450 to less than 500	600	510~550							23~29
500 to less than 520	660	560~600							27~33

Order No.	Size (mm)
420500	205.0
421000	210.0
421500	215.0
422000	220.0
422500	225.0
423000	230.0
424000	240.0
425000	250.0
426000	260.0
427000	270.0
428000	280.0
429000	290.0

Order No.	Size (mm)
430000	300.0
431000	310.0
432000	320.0
433000	330.0
434000	340.0
435000	350.0
436000	360.0
437000	370.0
438000	380.0
439000	390.0
440000	400.0

BLOCK GAUGES

PIN GAUGES

PIN VISE

PIN GAUGE ACCESSORIES

GAUGES

THREAD GAUGES

PLUG GAUGES

RING GAUGES

THICKNESS GAUGES

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OTHER GAUGES