

Diameter Tolerance Selectable Type

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continued

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RoHS 10

Type	Material	Hardness	Surface Treatment	Accessory Shape C (Retaining Ring)	Accessory Shape B (Nut)
KCL	1045 Carbon Steel or Equivalent	—	Black Oxide	Retaining Ring 1 Pc.	Nut 1 Pc.
KCLH		40~45 HRC min.	Black Oxide		
PKCL		—	Electroless Nickel Plating		
PKCLH		40~45 HRC min.	Electroless Nickel Plating		
KCLS	304 Stainless Steel	—	—	304 Stainless Steel	304 Stainless Steel
KCLSH	440C Stainless Steel Equivalent	45~50 HRC min.	—	304 Stainless Steel	304 Stainless Steel

D	Tolerance Selection					
	M m6	P p6	H h7	F f8	C c9	*LF
2, 3	+0.008 +0.002	+0.012 +0.006	0 -0.010	-0.006 -0.020	-0.060 -0.085	-0.025 -0.034
4~6	+0.012 +0.004	+0.020 +0.012	0 -0.012	-0.010 -0.028	-0.070 -0.100	-0.025 -0.037
8, 10	+0.015 +0.006	+0.024 +0.015	0 -0.015	-0.013 -0.035	-0.080 -0.116	-0.025 -0.040
12~18	+0.018 +0.007	+0.029 +0.018	0 -0.018	-0.016 -0.043	-0.095 -0.138	-0.025 -0.043
20~25	+0.021 +0.008	+0.035 +0.022	0 -0.021	-0.020 -0.053	-0.110 -0.162	-0.025 -0.046

*LF tolerances are recommended values for Multi-Layer Oil Free Bushings LF Type (MDZB, MDZF).

- ⊕ KCLSH_ may be discolored by hardening.
- ⊕ Relief dimension under the shoulder is for reference.
- ⊕ This type may have centering holes depending on dimensions.
- ⊕ For L Dimension, Standard Machining Tolerances (Class: Medium) are used.
- ⊕ KCL_ , PKCL_ may have identification grooves on the side in order to distinguish them from Hardened Type.

Shape C (Retaining Ring)

Shape M (Both Ends Tapped)

Shape B (Nut)

Shape S (Set Screw Flat)

Alterations	Retaining Ring Groove Position	Shoulder Thickness	Thread Part Length	Thread Diameter	Shoulder Thickness	L Dimension Tolerance																																
Code	NC	TC	FC	MC	TC	LKC																																
Spec.	Ordering Code: NC3.5 <table border="1"> <thead> <tr> <th>D</th> <th>NC (0.1mm Increment)</th> </tr> </thead> <tbody> <tr><td>2-4</td><td>1.5-3</td></tr> <tr><td>5</td><td>1.7-3</td></tr> <tr><td>6</td><td>1.9-4</td></tr> <tr><td>8</td><td>2.4-5</td></tr> <tr><td>10-18</td><td>2.7-5</td></tr> <tr><td>20-25</td><td>2.9-5</td></tr> </tbody> </table> ⊕ Overall Length is L+NC+T.	D	NC (0.1mm Increment)	2-4	1.5-3	5	1.7-3	6	1.9-4	8	2.4-5	10-18	2.7-5	20-25	2.9-5	Ordering Code: TC3 ⊕ TC = 0.5 mm Increment ⊕ T < TC ≤ 5 ⊕ Overall Length is L+N+TC.	Ordering Code: FC4 ⊕ FC = 1 mm Increment ⊕ M(MC) ≤ FC ≤ M(MC)x3	Ordering Code: MC3 <table border="1"> <thead> <tr> <th>D</th> <th>MC (Selection Range)</th> </tr> </thead> <tbody> <tr><td>5</td><td>3</td></tr> <tr><td>6</td><td>3 4</td></tr> <tr><td>8</td><td>3 4 5</td></tr> <tr><td>10</td><td>4 5 6</td></tr> <tr><td>12</td><td>5 6 8</td></tr> <tr><td>13-18</td><td>6 8 10</td></tr> <tr><td>20, 22</td><td>8 10 12</td></tr> <tr><td>25</td><td>10 12</td></tr> </tbody> </table> ⊕ Not applicable to D4. ⊕ For D12, MC5, please also use alteration FC	D	MC (Selection Range)	5	3	6	3 4	8	3 4 5	10	4 5 6	12	5 6 8	13-18	6 8 10	20, 22	8 10 12	25	10 12	Ordering Code: TC3 ⊕ TC = 0.5 mm Increment ⊕ 2 ≤ TC ≤ 5	Ordering Code: LKC Changes L dimension tolerance to ±0.05.
D	NC (0.1mm Increment)																																					
2-4	1.5-3																																					
5	1.7-3																																					
6	1.9-4																																					
8	2.4-5																																					
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5	3																																					
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12	5 6 8																																					
13-18	6 8 10																																					
20, 22	8 10 12																																					
25	10 12																																					

Alterations	Thread Diameter	Tapping																													
Code	MC / NC	MMC																													
Spec.	Ordering Code: MC3 <table border="1"> <thead> <tr> <th>D</th> <th>MC / NC (Selection Range)</th> </tr> </thead> <tbody> <tr><td>8</td><td>3 4</td></tr> <tr><td>10/12</td><td>4 5</td></tr> <tr><td>13-15</td><td>5 6</td></tr> <tr><td>16-18</td><td>6 8</td></tr> <tr><td>20, 22</td><td>8 10</td></tr> <tr><td>25</td><td>10 12</td></tr> </tbody> </table> ⊕ Not applicable to D6. ⊕ L ≥ MCx2 + NCx2	D	MC / NC (Selection Range)	8	3 4	10/12	4 5	13-15	5 6	16-18	6 8	20, 22	8 10	25	10 12	Ordering Code: MMC <table border="1"> <thead> <tr> <th>D</th> <th>M (Coarse)</th> <th>£</th> </tr> </thead> <tbody> <tr><td>6</td><td>M3</td><td>6</td></tr> <tr><td>8-14</td><td>M4</td><td>8</td></tr> <tr><td>15-22</td><td>M6</td><td>12</td></tr> <tr><td>25</td><td>M8</td><td>16</td></tr> </tbody> </table> ⊕ Not applicable to D3-5. ⊕ (D-M)/2 - N ≤ 1, F > Mx2 ⊕ L ≥ Mx3 When L ≤ Mx3, the pilot hole for tapping might go through.	D	M (Coarse)	£	6	M3	6	8-14	M4	8	15-22	M6	12	25	M8	16
D	MC / NC (Selection Range)																														
8	3 4																														
10/12	4 5																														
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16-18	6 8																														
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6	M3	6																													
8-14	M4	8																													
15-22	M6	12																													
25	M8	16																													

Part Number Alterations

Part Number - L - (NC, TC...etc.)

KCLCF15 - 120.3 - NC3.5 - TC3.5

Shape C (Retaining Ring)

Part Number	Type	D Tolerance	D	L 0.1 mm Increment	M		N	u	(n)	d		T	H	Attached Retaining Ring					
					Tolerance					Tolerance				Shape	JIS Nominal*				
KCLC KCLHC PKCLC PKCLHC KCLSC KCLSHC	M (m6)		2	5.0-30.0	0.5	+0.05 0	2	1.9 2.9 3.9	1.0	1.5 2 3	+0.06 0 +0.075 0	1.5	4.5 5.5 6.5	E Type		No.1.5			
			3	5.0-50.0												4	8	No.2	
			4	5.0-50.0												5	9	No.3	
			5	10.0-60.0												6	10	No.4	
			6	10.0-60.0												7	11	No.5	
	P (p6)			8	10.0-100.0	0.7	+0.1 0	7.8			+0.09 0	2	12			No.7			
				10	15.0-100.0											9	13	No.8	
				12	15.0-200.0											10	14	No.9	
				13	15.0-200.0											11	15	No.10	
				14	25.0-200.0											12	16	No.11	
	H (h7)			15	30.0-200.0	0.9	+0.14 0	9.8			0 -0.09	3	14			No.12			
				16												15.0-200.0	13	17	No.13
				17												15.0-200.0	14	18	No.14
				18												25.0-200.0	15	19	No.15
				19												25.0-200.0	16	20	No.16
	F (f8)			20	30.0-200.0	1.15	+0.14 0	11.8			0 -0.11	4	17			No.17			
				21												15.0-200.0	17	21	No.18
				22												15.0-200.0	18	22	No.19
				23												25.0-200.0	19	23	No.20
				24												25.0-200.0	20	24	No.21
	C (c9)			25	30.0-200.0	1.35	+0.14 0	12.8			0 -0.21	4	18			No.22			
				26												15.0-200.0	21	25	No.23
				27												15.0-200.0	22	26	No.24
				28												25.0-200.0	23	27	No.25
				29												25.0-200.0	24	28	No.26
LF (for Bushings)			30	30.0-200.0		+0.14 0	13.8			0 -0.21	4	19			No.27				
			31												15.0-200.0	25	29	No.28	
			32												15.0-200.0	26	30	No.29	
			33												25.0-200.0	27	31	No.30	
			34												25.0-200.0	28	32	No.31	

⊕ For details, please refer to P.4021.

Shape B (Nut)

Part Number	Type	D Tolerance	D	L 0.1 mm Increment	A	B	T	F	(u)	(n)	M (Coarse Thread)		Included Nut								
KCLB KCLHB PKCLB PKCLHB KCLSB KCLSHB	M (m6)		4	5.0-50.0	7	5	3	6	3.9			M3	M3 x 0.5								
			5	5.0-60.0										9	7	4	4.9	M4	M4 x 0.7		
			6	5.0-60.0										10	8		5.8	M5	M5 x 0.8		
			8	10.0-100.0										13	10		7.8	M6	M6 x 1.0		
			10	10.0-100.0										16	13		9.8	M8	M8 x 1.25		
	P (p6)			12	15.0-200.0	18	14		16	11.8			M10	M10 x 1.5							
				13	15.0-200.0													12.8			
				14	25.0-200.0													13.8			
				15	25.0-200.0													14.8			
				16	25.0-200.0													15.8			
	H (h7)			17	30.0-200.0	24	21	5	18	16.8			M12	M12 x 1.75							
				18											15.0-200.0				17.8		
				19											15.0-200.0				18.8		
				20											25.0-200.0				19.8		
				21											25.0-200.0				20.8		
F (f8)			22	30.0-200.0	27	23		24	21.8			M16	M16 x 2.0								
			23											15.0-200.0				22.8			
			24											15.0-200.0				23.8			
			25											25.0-200.0				24.8			
			26											25.0-200.0				25.8			
C (c9)			27	30.0-200.0	30	27			24.8												
			28											15.0-200.0							
			29											15.0-200.0							
			30											25.0-200.0							
			31											25.0-200.0							
LF (for Bushings)			32	30.0-200.0					24.8												
			33											15.0-200.0							
			34											15.0-200.0							
			35											25.0-200.0							
			36											25.0-200.0							

Shape M (Both Ends Tapped)

Part Number	Type	D Tolerance	D	L 0.1 mm Increment	M (Coarse Thread)		N (Coarse Thread)					
KCLM KCLHM PKCLM PKCLHM KCLSM KCLSHM	M (m6)		6	20.0-100.0	M3	M5	M3	M5				
			8	25.0-100.0					M6	M6		
			10	25.0-100.0								
			12	25.0-100.0								
			13	35.0-200.0								
	P (p6)			14	35.0-200.0	M8	M10	M8	M10			
				15						40.0-200.0		
				16						40.0-200.0		
				17						40.0-200.0		
				18						40.0-200.0		
H (h7)			20	50.0-200.0	M12	M16	M12	M16				
			21						50.0-200.0			
			22						50.0-200.0			
			23						50.0-200.0			
			24						50.0-200.0			
F (f8)			25	50.0-200.0								
			26						50.0-200.0			
			27						50.0-200.0			
			28						50.0-200.0			
			29						50.0-200.0			
C (c9)			30	50.0-200.0								
			31						50.0-200.0			
			32						50.0-200.0			
			33						50.0-200.0			
			34						50.0-200.0			
LF (for Bushings)			35	50.0-200.0								
			36						50.0-200.0			
			37						50.0-200.0			
			38						50.0-200.0			
			39						50.0-200.0			

Shape S (Set Screw Flat)

Part Number	Type	D Tolerance	D	L 0.1 mm Increment	1 mm Increment		N				
					F	E					
KCLS KCLHS PKCLS PKCLHS KCLSS KCLSHS	M (m6)		3	5.0-50.0	0 ≤ F ≤ L/2	1 ≤ E ≤ 50	0.5				
			4	10.0-60.0							
			5	10.0-60.0							
			6	10.0-100.0							
			8	10.0-100.0							
	P (p6)			10			15.0-100.0			1	
				12			15.0-200.0				
				13			15.0-200.0				
				14			25.0-200.0				
				15			25.0-200.0				
	H (h7)			16			25.0-200.0			2	
				17							25.0-200.0
				18							25.0-200.0
				19							25.0-200.0
				20							30.0-200.0
F (f8)			21	30.0-200.0							
			22					30.0-200.0			
			23					30.0-200.0			
			24					30.0-200.0			
			25					30.0-200.0			
C (c9)			26	30.0-200.0							
			27					30.0-200.0			
			28					30.0-200.0			
			29					30.0-200.0			
			30					30.0-200.0			
LF (for Bushings)			31	30.0-200.0							
			32					30.0-200.0			
			33					30.0-200.0			
			34					30.0-200.0			
			35					30.0-200.0			

Part Number Example

Part Number: KCLC - L - F - E

Type: M, D Tolerance Selection: M, D: 15, L: 120.3, F: F0, E: E10

Type: F, D Tolerance Selection: F, D: 15, L: 50.5, F: F0, E: E10