



DOWEL PIN



OILLESS & WEAR PLATES



**DATE STAMPS &
AIR-JET VALVES**



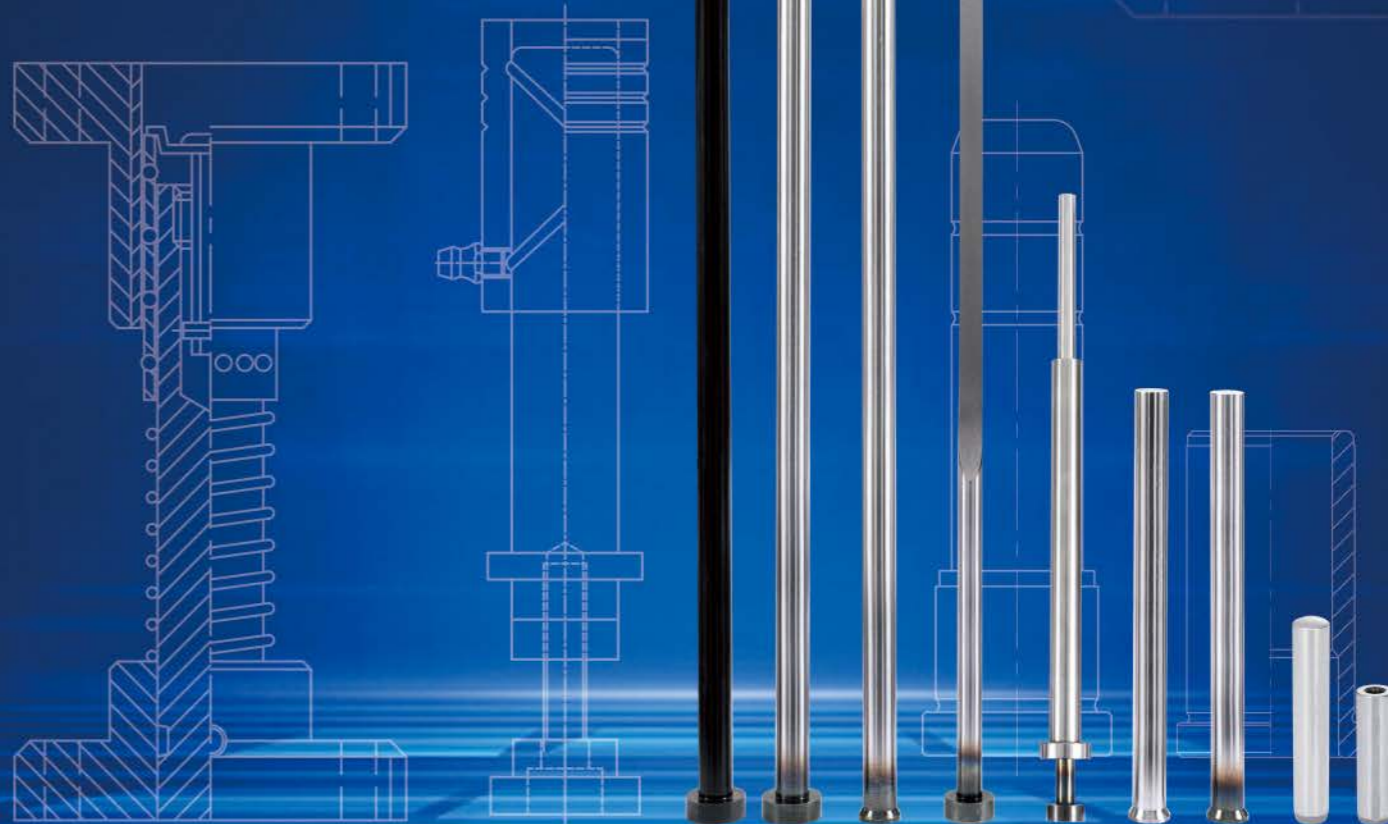
MOLD ACCESSORIES

HARLINGEN®

COMPONENTS FOR MOLD



- Social Value
- Quality Control
- Management



HARLINGEN®

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ADD: Via codognino No.4, 26854 Cornegliano Laudense(Lo), Italy





EJECTOR PINS & SLEEVES



PUNCH & MATRIXES



SPRUE BUSH & LOCATING RING

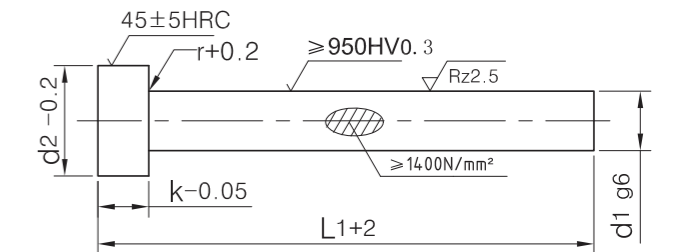


GUIDE BUSH & PIN

Nitrided Ejector Pins Cylindrical Head

CODE: MZ41 Bright Nitrided
 Material: 1.2344 Or Similar Hot Work Die Steel
 Standard: DIN1530-A/ISO6751
 Hardness: Surface $\geq 950\text{HV}0.3$
 Core strength approx. 1400 N/mm^2

CODE: MZ41B Nitrided and oxidized
 Material: 1.2344 Or Similar Hot Work Die Steel
 Standard: DIN1530-A/ISO6751
 Hardness: Surface $\geq 950\text{HV}0.3$
 Core strength approx. 1400 N/mm^2



CODE	d1	d2	K	r	L1+2/0													
					100	125	160	200	250	315	400	500	630	800				
MZ41 MZ41B	1.5	3	1.5	0.2														
	2.0	4	2															
	2.2	5																
	2.5																	
	2.7	6	3	0.3														
	3.0																	
	3.2																	
	3.5				7													
	3.7																	
	4.0	8																
	4.2																	
	4.5																	
	5.0	10																
	5.2																	
	5.5																	
	6.0		12	5	0.5													
	6.2																	
	6.5																	
	7.0																	
	8.0	14																
8.2																		
8.5																		
9.0																		
10.0	16																	
10.2																		
10.5																		
11.0																		
12.0	18	7	0.8															
12.2																		
12.5																		
14.0				22														
16.0																		
18.0	24																	
20.0		26	8	1.0														

Order Example: MZ41-d1 x L1

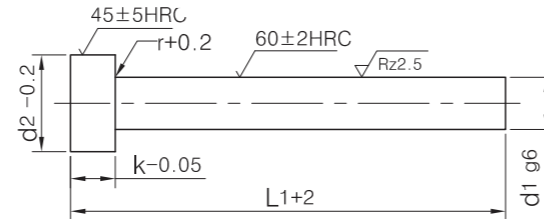
Hardened Ejector Pins Cylindrical Head

CODE: MZ40

Material: WS1.2067 Or Similar Hardened Steel

Standard: DIN1530-AH/ISO6751

Hardness: HRC60+/-2 Through Hardened



CODE	d1	d2	K	r	L1+2/0																		
					100	125	160	200	250	315	400	500	630	800									
MZ40	1	2.5	1.2	0.2																			
	1.1																						
	1.2																						
	1.3																						
	1.4																						
	1.5																						
	1.6																						
	1.7																						
	1.8																						
	1.9																						
	2		4	2	0.3																		
	2.2																						
	2.5																						
	2.7																						
	3																						
	3.2																						
	3.5																						
	3.7																						
	4																						
	4.2																						
	4.5																						
	5		10	3	0.5																		
	5.2																						
	5.5																						
	6																						
	6.2																						
	6.5																						
	7																						
	8																						
	8.2		14	5		0.8																	
8.5																							
9																							
10																							
10.2																							
10.5																							
11																							
12		18	7	1.0																			
12.2																							
12.5																							
14																							
16		22	8		1.0																		
18																							
20																							

Order Example: MZ40-d1 x L1

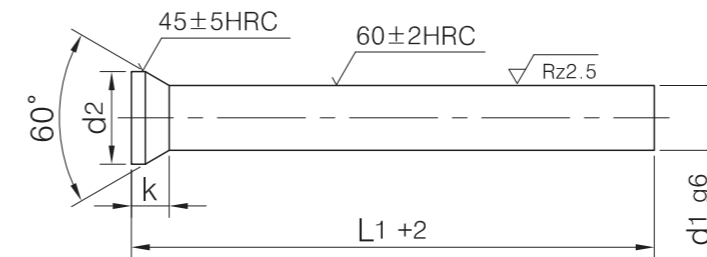
Hardened Ejector Pins Conical Head

CODE : MZ42

Material: WS1.2067 Or Similar Hardened Steel

Standard: DIN1530-D

Hardness: HRC60+/-2 Through Hardened



CODE	d1g6	d2 0/-0.2	K +0.2/0	L1+2/0						
				100	125	160	200	250	315	
MZ42	1.0	1.8	1.19							
	1.2	2								
	1.5	2.2	1.11							
	1.6	2.5	1.28							
	1.8	2.8	1.37							
	2.0	3								
	2.2	3.2								
	2.5	3.5								
	2.6	4		1.71						
	2.8		1.54							
	3.0	4.5	1.8							
	3.2		1.63							
	3.5		1.8							
	3.6	5	1.71							
	3.8		1.54							
	4.0	5.5	1.8							
	4.2		1.63							
	4.5	6	1.8							
	5.0	6.5	1.63							
	5.2		1.8							
	5.5	7	1.8							
	6.0	8	2.23							
	6.2		2.06							
	6.5	9	3.17							
	7.0		2.73							
	7.5		3.17							
	8.0	10	2.73							
	8.2		2.56							
	8.5	11	3.17							
	9.0									
10.0	12	2.73								
12.0	14									
14.0	16	3.23								
16.0	18									

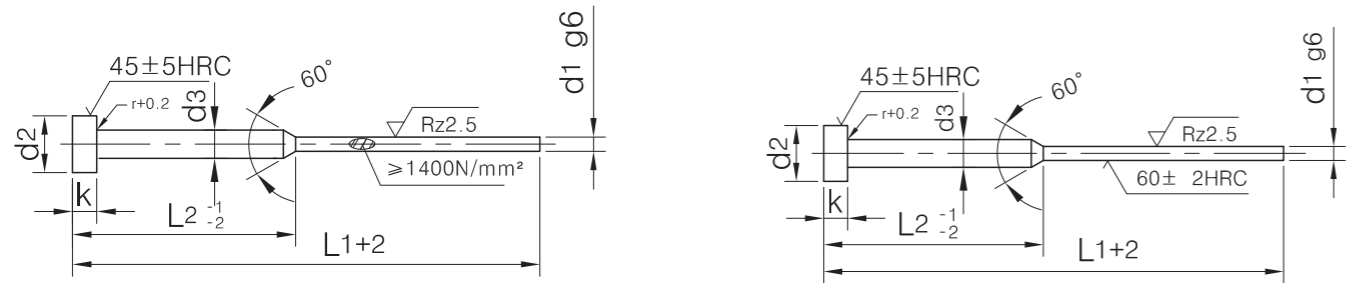
Order Example: MZ42-d1 x L1

Shouldered Ejector Pin

CODE : MZ44 Bright Nitrided
CODE : MZ44B Nitrided and oxidized
 Material: 1.2344 Hot Work Die Steel
 Standard: DIN1530-C/ISO8694
 Hardness: Surface $\geq 950\text{HV}0.3$
 Core: HRC40-45



CODE : MZ44H Hardened
 Material: WS1.2067 Hardened Steel
 Standard: DIN1530-CH/ISO8694
 Hardness: HRC60+/-2 Through Hardened



CODE	d1g6	d3 0/-0.1	d2 0/-0.2	K 0/-0.05	L1/L2					
					80/35	100/50	125/50	160/75	200/75	250/100
MZ44 MZ44B MZ44H	0.8	2	4	2						
	0.9									
	1.0									
	1.1									
	1.2									
	1.3									
	1.4	3	6	3						
	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										
2.8										
2.9										

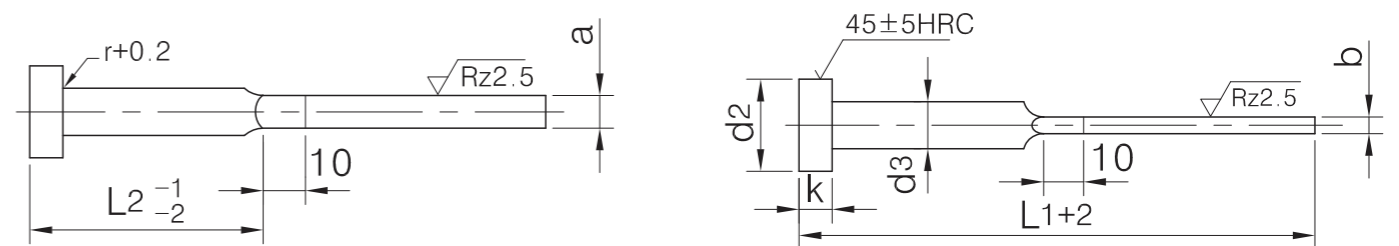
Order Example: MZ44-d1 x d3xL1xL2

Flat Ejector Pins

CODE : MZ46 Bright Nitrided
CODE : MZ46B Nitrided and oxidized
 Material: 1.2344 Hot Work Die Steel
 Standard: DIN1530-F/ISO8693
 Hardness: Surface $\geq 950\text{HV}0.3$
 Core: HRC40-45



CODE : MZ46H Hardened
 Material: WS1.2067 Or Similar Hardened Steel
 Standard: DIN1530-FH/ISO8693
 Hardness: HRC60+/-2 Through Hardened



CODE	a 0/-0.015	b 0/-0.015	d3 0/-0.1	d2 0/-0.2	K 0/-0.05	r	L1/L2							
							60/30	80/40	100/50	125/60	160/80	200/100	250/125	315/160
MZ46 MZ46B MZ46H	3.8	0.8	4.2	8	3	0.3								
		1.0												
		1.2												
	4.5	1.0	5	10										
		1.2												
		1.5												
	5.5	1.0	6	12	5	0.5								
		1.2												
		1.5												
	7.5	1.2	8	14										
		1.5												
		2.0												
	9.5	1.5	10	16	7	0.8								
		2.0												
		2.5												
	11.5	2.0	12	18										
2.5														
2.0														
15.5	2.0	16	22											
	2.5													
	2.5													

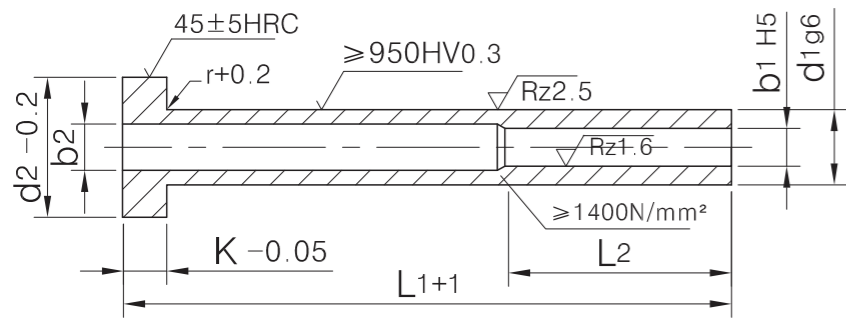
Order Example: MZ46-axbxL1xL2

Nitrided Ejector Sleeves

CODE : MZ45 Bright Nitrided
Material: 1.2344 Hot Work Die Steel
Standard: DIN16756-/ISO8405
Hardness: Surface ≥ 950 HV0.3
Core: HRC40 +/-5



CODE : MZ45B Nitrided and oxidized
Material: 1.2344 Hot Work Die Steel
Standard: DIN16756-/ISO8405
Hardness: Surface ≥ 950 HV0.3
Core: HRC40 +/-5

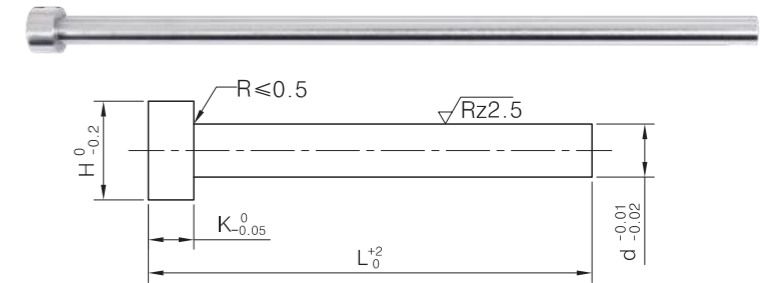


CODE	d1g6	b1H5	d2	K	b2	l2	L1+1														
							60	75	100	125	150	175	200	225	250	275	300				
MZ45 MZ45B	3	1.5	6	3	1.8	25															
		1.6			2.0																
	4	2.0	8		2.4	35															
		2.2			2.5																
	5	2.5	10		3.0	45															
		2.7			3.5																
		3.0		4.0																	
	6	3.5	12	4.5	50																
		3.7		5.5																	
	8	4.0	14	6.5	50																
		4.2		8.5																	
		5.0		10.5																	
	10	5.2	16	12.5	50																
		6.0		15.5																	
12	6.2	20	20.5	50																	
	8.0		25.5																		
14	8.2	22	30.5	50																	
	10.0		35.5																		
16	12.0	40.5	50																		

Order Example: MZ45-b1xd1xL1

JIS Ejector Pins

CODE : MJ11 Bright Nitrided
Material: SKD-61 Hot Work Die Steel
Hardness: Surface: ≥ 900 HV0.3
Core: 40+/-2HRC



CODE: MJ12 Hardened
Material: SUJ2 Or Similar
Hardness: 58-62HRC Through Hardened

CODE	d	H	K	L0+2																				
				100	150	200	250	300	350	400	450	500	600	700	800									
MJ11 MJ12	1.0	6	4																					
	1.5																							
	2.0																							
	2.5																							
	3.0																							
	3.5	7	6																					
	4.0	8																						
	4.5	9																						
	5.0	10																						
	5.5	11	6																					
	6.0																							
	6.5																							
	7.0																							
	7.5	13	8																					
8.0	14																							
8.5	15																							
9.0	17																							
10.0	19																							
12.0	21																							
14.0	25																							
16.0	25																							
20.0	30																							
25.0	30																							

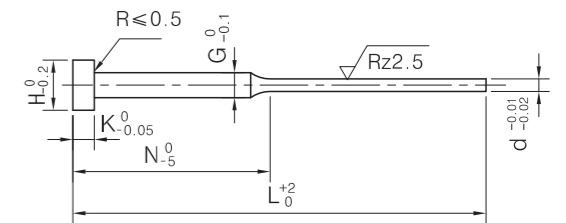
Order Example: MJ11-dxL

JIS Stepped Ejector Pins



CODE: MJ21 Bright Nitrided
Material: SKD-61 Hot Work Die Steel
Hardness: Surface: ≥ 950 HV0.3
Core: HRC40-45

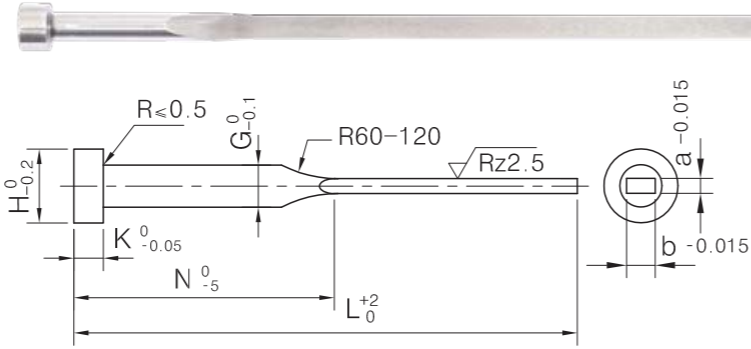
CODE: MJ22 Hardened
Material: SUJ2 Or Similar
Hardness: 58-62HRC
Through Hardened



CODE	d	G	H	K	L/N				
					100/25,50	150/50,70	200/50,70	250/70,100	300/70,100
MJ21 MJ22	0.8	3	6	4					
	1.0								
	1.2								
	1.5								
	2.0								
	2.5								

Order Example: MJ21-dxGxLxN

JIS Flat Ejector Pin



CODE: MJ31 Bright Nitrided
 Material: SKD-61 Hot Work Die Steel
 Hardness: Surface: ≥ 950 HV0.3
 Core: HRC40-45

CODE: MJ32 Hardened
 Material: SUJ2 Or Similar
 Hardness: 58-62HRC Through Hardened

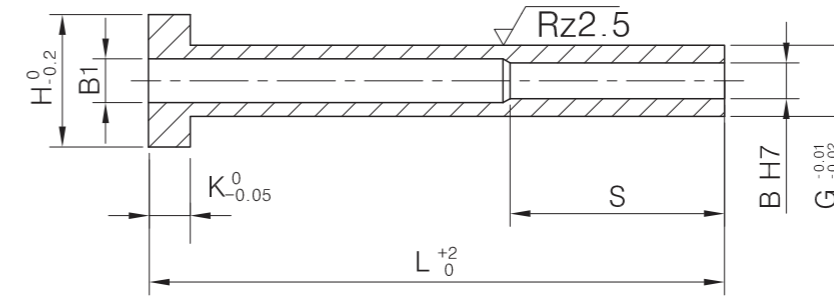
CODE	b	a	G	H	K	L/N					
						100/40	150/50	200/75	250/100	250/100	300/125
MJ31 MJ32	3	0.8	3.5	7	4						
		1.0									
		1.2									
	3	0.8	4	8	6						
		1.0									
		1.2									
	4	0.8	5	9	6						
		1.0									
		1.2									
	5	0.8	6	10	6						
		1.0									
		1.2									
	6	0.8	7	11	6						
		1.0									
		1.2									
	6	1.5	8	13	6						
		1.8									
		2.0									
	8	0.8	10	15	8						
		1.0									
		1.2									
	10	1.5	12	17	8						
		1.8									
		2.0									

Order Example: MJ31-axbxGxLxN

JIS Ejector sleeves



CODE: MJ41 Bright Nitrided
 Material: SKD-61
 Hardness: Surface: ≥ 950 HV0.3
 Core: HRC40+/-5



CODE	G	B	B1	H	K	S	L+2					
							100	125	150	175	200	250
MJ41	4	2.0	B+0.4	8	6	B<2.0 S=35-40						
	4.5	2.0										
				2.5								
	5	2.0										
				2.5								
		3.0										
	5.5	2.0										
				2.5								
	6	2.0										
				2.5								
				3.0								
				3.5								
	7	3.0										
				2.5								
				3.0								
				4.0								
	8	3.0										
				3.5								
				4.0								
	8	4.0										
				4.5								
				5.0								
				6.0								
	9	4.0										
		4.5										
		5.0										
10	6.0											
		6.5										
		8.0										
12	8.0											
		8.5										
16	10.0											
		12.0										
		B+0.5	21	8	B ≥ 10 S=50-55							

Order Example: MJ41-BxGxL

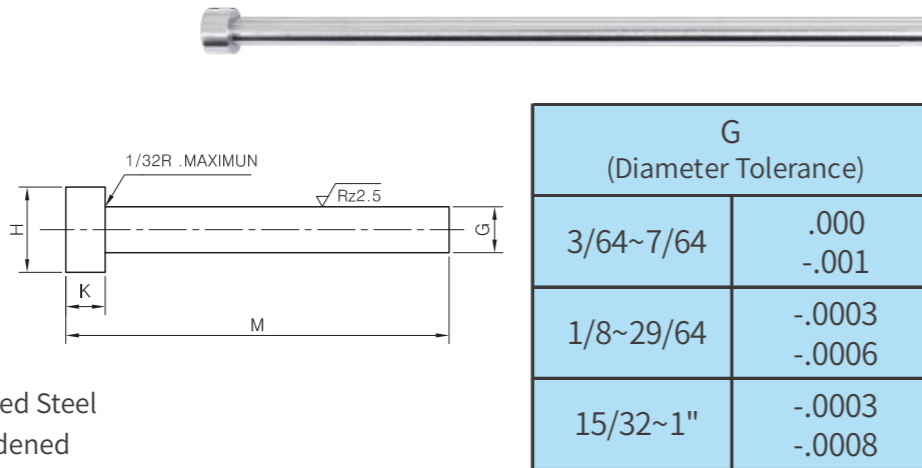
Straight Ejector Pins

CODE:MD11

Standard: American Inch
 Material: H-13 Hot Work Die Steel
 Hardness: Surface=HRC65-74
 Core: HRC40-45
 Bright Nitrided

CODE: MD12

Standard:American Inch
 Material: E52100 Or Similar Hardened Steel
 Hardness: HRC60+/-2 Through Hardened



G (Diameter Tolerance)	
3/64~7/64	.000 -.001
1/8~29/64	-.0003 -.0006
15/32~1"	-.0003 -.0008

CODE	G	H +.000 -.010	K +.000 -.002	M +.375"															
				4"	6"	8"	10"	12"	14"	16"	20"	25"	36"						
MD11 MD12	3/64	1/4	1/8																
	1/16																		
	5/64																		
	3/32																		
	7/64																		
	1/8																		
	9/64																		
	5/32	9/32	5/32																
	11/64	11/32	3/16																
	3/16	3/8																	
	13/64																		
	7/32	13/32																	
	15/64																		
	1/4	7/16																	
	17/64		1/4																
	9/32																		
	19/64	1/2																	
	5/16																		
	21/64	9/16																	
	11/32																		
23/64	5/8																		
3/8																			
13/32	11/16																		
7/16																			
15/32	3/4																		
1/2																			
9/16	13/16																		
5/8	7/8																		
11/16	15/16																		
3/4	1"																		
7/8	1-1/8																		
1"	1-1/4																		

Order Example:MD11-G x M

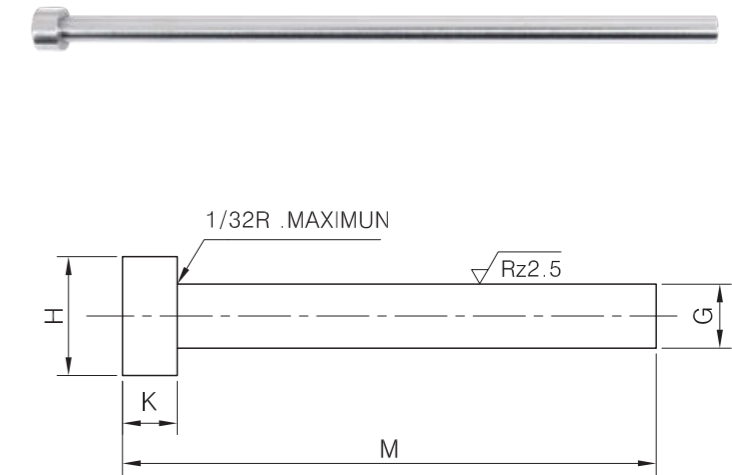
Soft Core Pins & Hard Core Pins

CODE: MD13S

Standard: Soft Core Pins(EPS)
 Material: H-13 Hot Work Die Steel
 Hardness: HRC30-35 Through Hardened

CODE: MD13H

Standard: Hard Core Pins(EPH)
 Material: H-13 Hot Work Die Steel
 Hardness: HRC50-55 Through Hardened



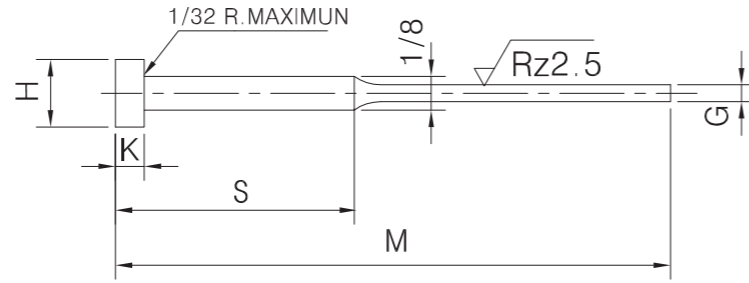
CODE	G +.001 -.000	H +.000 -.010	K +.000 -.002	M+.375"				
				3"	6"	10"	14"	
MD13S MD13H	3/32	1/4	1/8					
	7/64							
	1/8							
	9/64							
	5/32	9/32	5/32					
	11/64	11/32	3/16					
	3/16	3/8						
	13/64							
	7/32	13/32						
	1/4	7/16		1/4				
	9/32							
	5/16	1/2						
	11/32	9/16						
	3/8	5/8						
	13/32	11/16						
	7/16							
	15/32	3/4						
	1/2							
	9/16	13/16						
	5/8	7/8						
3/4	1"							

Order Example:MD13S-G x M

Shouldered Ejector Pins

CODE: MD21

Standard: American Inch
 Material: H-13 Hot Work Die Steel
 Hardness: Surface: HRC65-74
 Core: HRC40-45
 Bright Nitrided



CODE: MD22

Standard: American Inch
 Material: E52100 Hardened Steel
 Hardness: 60±2 HRC
 Through Hardened

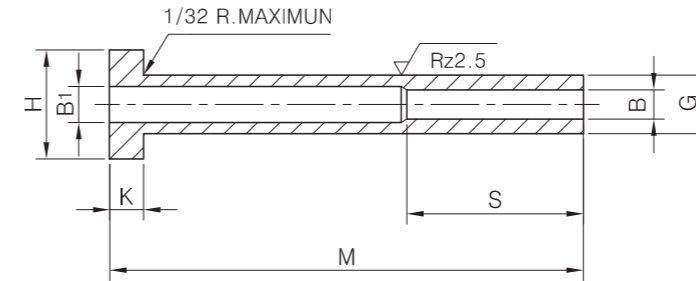
CODE	G +.000 -.010	S	H +.000 -.010	K +.000 -.002	M+.375"					
					4"	6"	8"	10"	12"	14"
MD21 MD22	1/32	1/2	1/4	1/8						
		2								
	3/64	1/2								
		2								
	1/16	1/2								
		2								
	5/64	1/2								
		2								
	3/32	1/2								
		2								
	7/64	1/2								
		2								

Order Example:MD21-G x M X S

Ejector Sleeves

CODE: MD41

Standard: American Inch
 Material: H-13 Hot Work Die Steel
 Hardness: Surface: HRC65-74
 Core: HRC40+/-5
 Bright Nitrided



CODE	G -.0003 -.001	B +.0005 -.000	H +.000 -.010	K +.000 -.002	B1	S	M+.125"										
							4"	5"	6"	7"	8"	9"	10"	11"	12"		
MD41	3/16	3/32	3/8	3/16	B1+1/64	1+3/4											
							7/32	1/8	13/32								
							1/4	5/32	7/16								
	5/16	3/16	1/2	1/4													
							11/32	7/32	9/16								
							3/8	1/4	5/8								
	7/16	5/16	11/16	1/4													
							1/2	3/8	3/4								
							5/8	7/16	7/8								
	11/16	1/2	15/16	1"													
							3/4	9/16	1"								
							7/8	5/8	1-1/8								
1"	3/4	1-1/4															

Order Example:MD41-B x G X M

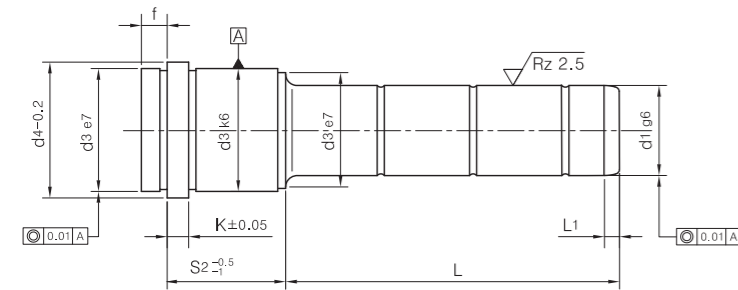
Locating Guide Pillars

CODE: MZ00

Standard: DIN16761-A/Z00

Material: Case Hardening Steel

Hardness: HRC58-62



CODE	d ₁	l ₁	f	k	d ₃	d ₄	S ₂	L																		
								12	25	45	65	70	95	90												
MZ00	9 (10)	4	3	3	14	16	12	25	45	65																
							17	20	30	50	70															
							22	25	35	55	75	95														
							27	20	30	50	70	90														
							36	25	45	65	85															
							46	30	45	70																
							56	35	60																	
							17	35	55	75	95															
	14 (15)	7	9	6	20	25	22	30	50	70	90	110	125	150												
							27	30	45	65	85	105	125	145	165											
							36	35	55	75	95	125	155													
							46	35	45	65	85	105	125	145												
							56	35	55	75	95	135														
							66	55	65	95	125															
							76	55	95																	
							86	55	95																	
	96	55	95																							
	116	75																								
	18 (20)	7	9	6	26	31	17	35	55	75	120															
							22	35	45	65	85	115														
							27	35	45	65	85	105	125	165	225	245										
							36	35	55	75	95	115	135	165	225	255										
							46	35	45	65	85	105	135	165	245											
							56	35	55	75	95	155														
							66	35	55	75	95	145														
							76	55	75	95	135															
							86	55	75	95	125															
							96	55	95																	
116	75	115																								
136	135																									
22 (24)	7	9	6	30	35	17	35	55	75																	
						22	35	55	75	105	130															
						27	35	45	65	85	105	125	165	205	245	285										

Order Example: MZ00-S2/d1 x L

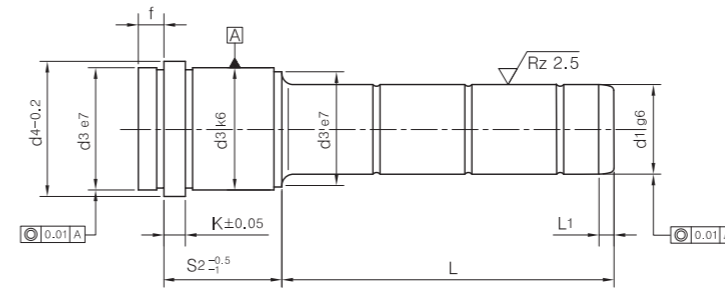
Locating Guide Pillars

CODE: MZ00

Standard: DIN16761-A/Z00

Material: Case Hardening Steel

Hardness: HRC58-62

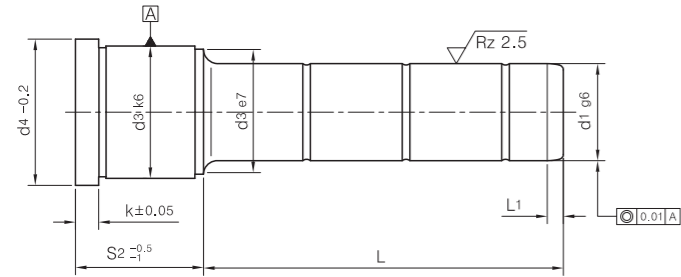


CODE	d ₁	l ₁	f	k	d ₃	d ₄	S ₂	L										
								36	35	55	75	95	115	135	165	205	245	285
MZ00	22 (24)	7	9	6	30	35	36	35	55	75	95	115	135	165	205	245	285	
							46	35	45	65	85	105	125	165	205			
							56	35	55	75	95	115	165	205				
							66	35	55	75	95	155						
							76	55	75	95	115	145						
							86	55	75	95	135							
							96	55	75	95	125							
							116	75	115	155								
	30 (32)	7	9	6	42	47	27	45	65	105	165	185	245	285				
							36	55	75	95	115	155	245	285				
							46	45	65	85	105	125	165		285			
							56	55	75	95	115	135	175	245	295			
							66	55	75	95	115	135	175	245	295			
							76	55	75	95	115	155	225					
							86	55	75	95	115	155	225					
							96	55	75	95	115	155	205					
40 (42)	7	12	10	54	60	46	95	165										
						56	75	115	155	195								
						66	75	135										
						76	75	115	175									
						86	75	135										
						96	75	115	155									
						116	95	135	195									
						136	95	135	215									
						156	115	155	215									
						196	155	195	235									
						246	165	245										

Order Example: MZ00-S2/d1 x L

Guide pillars

CODE: MZ03
 Standard: DIN16761-B/Z03
 Material: Case Hardening Steel
 Hardness: HRC58-62

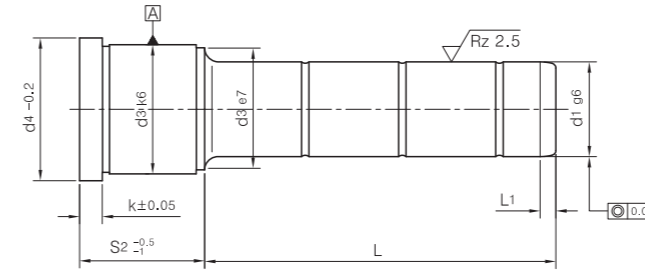


CODE	d ₁	l ₁	k	d ₃	d ₄	S ₂	L																					
							17	20	30	40	45	50	55	60	65	70	75	80	85	90	95	105	110	115	125	135		
MZ03	9 (10)	4	3	14	16	17	20	30																				
						22	25	35	55																			
						27	30	50																				
						36	25	45																				
						46	30	45																				
						46	30	45																				
	14 (15)	7	6	20	25	22	20	35	40	45	50	55	65	70	90	110												
						27	20	35	40	45	55	65	85	105														
						36	20	35	40	45	55	65	75	95														
						46	20	35	45	65	85	105																
						56	20	35	55	75	95																	
						66	55	65	95																			
						76	55	95																				
						86	55	95																				
	18 (20)	7	6	26	31	22	20	35	40	45	50	55	60		70	80	85	115										
						27	20	35	40	45	50	55	60	65	70	80	85	105	125									
						36	20	35	40	45	50	55	60	65	70	75	80	95	115	135								
						46	20	45	65	85	105	135	165															
						56	20	35	55	75	95																	
						66	55	75	95																			
						76	55	75	95																			
						86	55	75	95																			
						96	55	95																				
						116	115																					
	22 (24)	7	6	30	35	27	25	45	50	60	65	70	80	85	105	125	165											
						36	25	45	50	55	60	70	75	80	95	115	135	165										
						46	25	45	50	60	65	70	80	85	105	125	165											
						56	25	45	55	75	95	115	165															
						66	55	75	95																			
						76	25	45	55	75	95	115																
86						55	75	95																				
96						55	75	95																				
116						75	115	155																				
136						135																						

Order Example:MZ03-S2/d1 x L

Guide pillars

CODE: MZ03
 Standard: DIN16761-B/Z03
 Material: Case Hardening Steel
 Hardness: HRC58-62



CODE	d ₁	l ₁	k	d ₃	d ₄	S ₂	L									
							27	45	65	105	165	155	125	175		
MZ03	30 (32)	7	6	42	47	27	45	65	105	165						
						36	55	75	95	115	155					
						46	45	65	85	105	125	165				
						56	55	75	95	115	135	175				
						66	55	75	95	115	135	175				
						76	55	75	95	115	155					
						86	55	75	95	115	155					
						96	55	75	95	115	155					
						116	75	115	155							
	136	95	115	155												
	156	115	135													
	196	155	195													
	40 (42)	7	10	54	60	56	75	115	155	195						
						66	75	135								
						76	75	115	175							
						86	75	135								
						96	75	115	155							
						116	95	135	195							
136						95	135	215								
156						115	155	215								
196						155	195	235								
50	10	10	66	72	96	115										
					116	135										
					136	135										
					156	155										
					196	175										
					246	246										
60	10	20	80	86	96	115										
					116	135										
					136	135										
					156	155										
					196	175										
					246	246										

Order Example:MZ03-S2/d1 x L

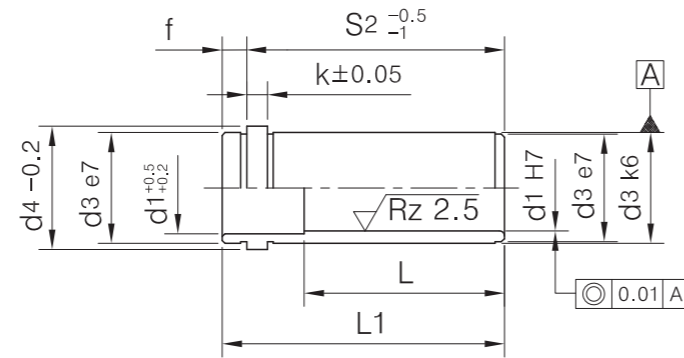
Locating Guide Bushes

CODE: MZ10

Standard: DIN16716-C/Z10

Material: Case Hardening Steel

Hardness: HRC58-62



d1	L	l1	f	k	d3	d4	S2	d1	L	l1	f	k	d3	d4	S2												
9 (10)	15		3	3	14	16	12	22 (24)	45		9	6	30	35	36												
	20	17					46																				
	25	22					56																				
	30	27					66																				
	39	36					76																				
	46	49					46								86												
		59					56								96												
		69					66								116												
	14 (15)	26													9	6	20	25	17	30 (32)	96		9	6	42	47	27
		31					22												36								
36		27	46																								
45		36	56																								
55		46	66																								
56		65	56	76																							
		75	66	86																							
		85	76	96																							
		95	86	106																							
		105	96	116																							
18 (20)		26		9	6	26	31	17	40 (42)	116		12	10	54					60								27
		31	22					36																			
		36	27					46																			
		45	36					56																			
		55	46					66																			
	65	56	76																								
	75	66	86																								
	76	85	76					96																			
		95	86					106																			
		105	96					116																			
		125	116					136																			
		145	136					156																			
		22 (24)	26												9	6	30	35		17	136		12	10	54	60	27
			31					22												36							
	36		27					46																			

Order Example: MZ10-S2/d1

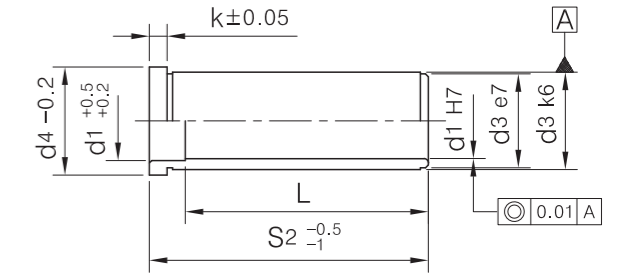
Guide Bushes

CODE: MZ11

Standard: DIN16716-E/Z11

Material: Case Hardening Steel

Hardness: HRC58-62

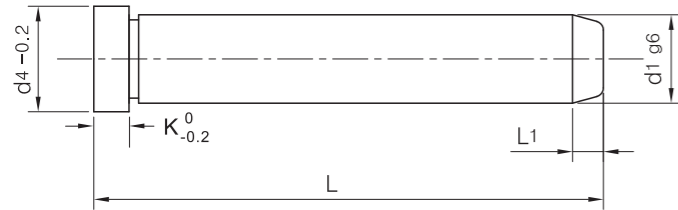


d1	L	d3	d4	k	S2	d1	L	d3	d4	k	S2
9 (10)	9	14	16	3	9	22 (24)	27	30	35	6	27
	12				36						
	17				46						
	22				56						
	27				66						
	36				76						
	46				86						
	66				96						
12	17	18	23	6	17	30 (32)	42	47	6	27	
	22				36						
	27				46						
	36				56						
	46				66						
	56				76						
14 (15)	12	20	25	6	12	30 (32)	42	47	6	27	
	17				36						
	22				46						
	27				56						
	36				66						
	46				76						
	56				86						
	66				96						
	76				106						
	86				116						
16	17	22	27	6	17	30 (32)	42	47	6	27	
	22				36						
	27				46						
	36				56						
	46				66						
	56				76						
	66				86						
	76				96						
	86				106						
	96				116						
18 (20)	17	26	31	6	17	30 (32)	42	47	6	27	
	22				36						
	27				46						
	36				56						
	46				66						
	56				76						
	66				86						
	76				96						
	86				106						
	96				116						
22 (24)	17	30	35	6	17	30 (32)	42	47	6	27	
	22				36						

Order Example: MZ11-S2/d1

Guide pillars (Angle pins)

CODE: MZ01
 Standard: DIN ISO 8404-A/Z01
 Material: Case Hardening Steel
 Hardness: HRC58-62

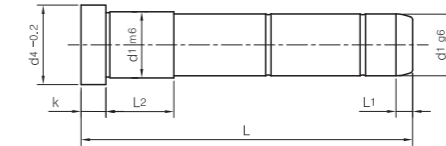


CODE	d1	L1	d4	k	L													
MZ01	8	4	10	3	40	60	80	100										
	9	4	12	3	40	60	80	100	120									
	10	4	12	3	40	60	80	100	120									
	12	7	16	6	40	60	80	100	120	140	160							
	14	7	18	8	60	80	100	120	140	160	180							
	15	7	18	8	60	80	100	120	140	160	180							
	16	7	20	8	40	60	80	100	120	140	160	180	200					
	18	7	22	8	60	80	100	120	140	160	180	200						
	20	7	24	8	60	80	100	120	140	160	180	200		240				
	22	7	26	15	80	100	120	140	160	180	200	220	240	300				
	24	7	28	15	80	100	120	140	160	180	200	220	240	300				
	30	7	36	15	100	120	160				200		240	300	360			
	32	7	36	15	100	120	160				200		240	300	360			
	40	10	48	15							160		200	240	300	360		
	50	10	58	15							160		200	240	300	360		

Order Example: MZ01-d1 x L

Guide pillar with two fits

CODE: MZ011
 Material: Case Hardening Steel
 Hardness: HRC58-62
 With Two Fits

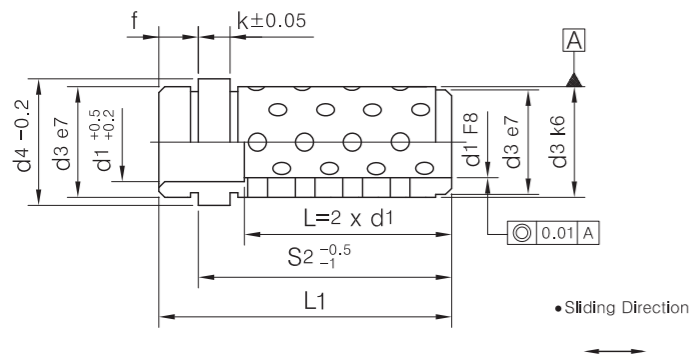


Code	d1	L1	k	d4	L2	L												
MZ011	10	4	3	12	17	40	60											
					22		80											
					27		100											
	12	7	6	16	17		60											
					22		80											
					27		100											
	14	7	8	18	17		60											
					22		80											
					27		100											
					36				120									
	16	7	8	20	17		60											
					27		80	100										
					36			120										
	18	7	8	22	27		80	100										
					36			120										
					46				140	160								
	20	7	8	24	22		60											
					27		80	100										
					36			120										
					46				140	160								
	22	7	15	26	36			100										
					46			120	140									
					56					160	180							
	24	7	15	28	36			100										
					46			120	140									
					56					160	180							
	30	7	15	36	56													
					76						160	200				240		
					56						160	200				240		
	32	7	15	36	56													
					76								200			240		
	40	10	15	48	56													
76														200	240			
96															300			
50	10	15	58	56														
				76									200		240			
				96											300			

Order Example: MZ011-d1 x L

Self-lubricating Locating Guide Bushes

CODE: MZ10W
 Standard: DIN
 Material: Bronze with Graphite

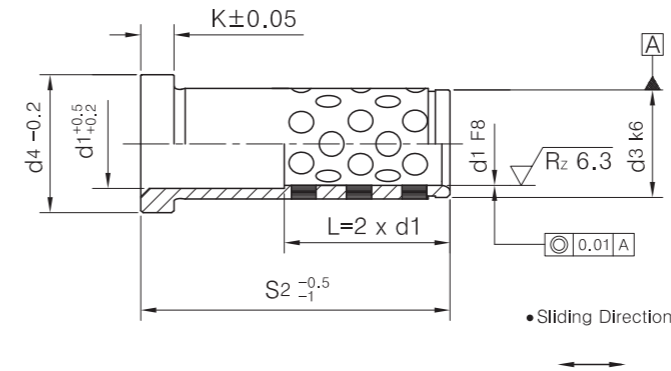


CODE	d1	f	k	d3	d4	S2	L1
MZ10W	9(10)	5	3	14	16	17	22
						22	27
						27	32
						36	41
	14(15)	6	6	20	25	17	23
						22	28
						27	33
						36	42
						46	52
						56	62
	18(20)	8	6	26	31	22	30
						27	35
						36	44
						46	54
						56	64
						66	74
	22(24)	8	8	30	35	22	30
						27	35
						36	44
						46	54
56						64	
66						74	
76						84	
84						94	
30(32)	8	8	42	47	27	35	
					36	44	
					46	54	
					56	64	
					66	74	
					76	84	
					86	94	
					96	104	

Order Example: MZ10W-S2/d1

Self-lubricating Guide Bushes

CODE: MZ11W
 Standard: DIN
 Material: Bronze with Graphite



CODE	d1	d3	d4	K	S2
MZ11W	9(10)	14	16	3	12
					17
					22
					27
	12	18	23	6	36
					46
					56
					17
					22
					27
	14(15)	20	25	6	36
					46
					56
					17
					22
					27
	16	22	27	6	36
					46
					56
					22
18(20)	26	31	6	27	
				36	
				46	
				56	
				22	
				27	
				36	
				46	

d1	d3	d4	K	S2
18(20)	26	31	6	56
				66
				76
				22
22(24)	30	35	6	27
				36
				46
				56
				66
				76
22(24)	30	35	6	86
				96
				27
				36
				46
				56
30(32)	42	47	6	66
				76
				86
				96
				116
				126
40(42)	54	60	10	46
				56
				66
				76
				86
				96
				116
				136

Order Example: MZ11W-S2/d1

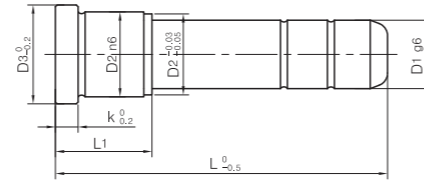
Shouldered Guide Pillar

CODE: M011

Standard: EURO

Material: Case Hardening Steel

Head hardness: HRC 58-62



CODE	D1	D2	D3	K	L1	L																																					
						50	60	70	80	90	100	120	140	160	180	200	220	240	260	280	300	340																					
M011	12	18	22	5	22																																						
					26																																						
					36																																						
					46																																						
	14	20	24	5	22																																						
					36																																						
					46																																						
					56																																						
	16	22	26	5	22																																						
					36																																						
					46																																						
					56																																						
	18	26	30	5	26																																						
					36																																						
					46																																						
					56																																						
	20	30	34	6	26																																						
					36																																						
					46																																						
					56																																						
	25	34	38	7	36																																						
					46																																						
					56																																						
					66																																						
	32	40	45	7	76																																						
					86																																						
					46																																						
					56																																						
	40	48	52	8	66																																						
					76																																						
					86																																						
					96																																						

Order Example: M011-D1xLxL1

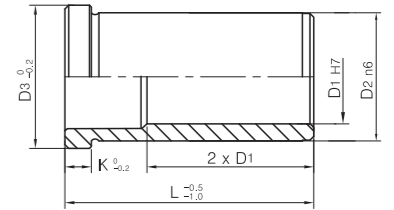
Headed Guide Bushes

CODE: M012

Standard: EURO

Material: Case Hardening Steel

Head hardness: HRC 58-62



CODE	D																					
	D1	12	14	16	18	20	25	32	40	50	60											
	D2	18	20	22	26	30	34	40	48	60	74											
	D3	22	24	26	30	34	38	45	52	65	84											
K	5	5	5	5	6	7	7	8	10	12												
M012	L	22																				
		26																				
		36																				
		46																				
		56																				
		66																				
		76																				
		86																				
		96																				
		106																				
		116																				
126																						
146																						
176																						
196																						

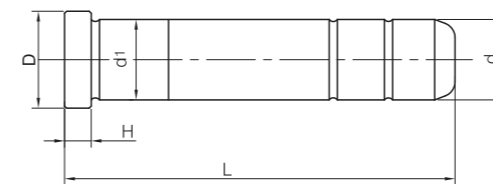
Order Example: M012-D1xL

Straight Guide Pins

CODE: M015

Material: Case Hardening Steel

Head hardness: HRC 58-62



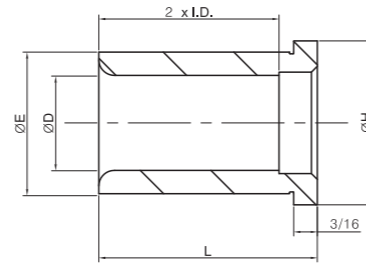
CODE	d(f6)	d1(m6)	D 0/-0.2	H 0/-0.2	L -0.5/-1.5																
					60	70	80	90	100	120	140	160	180	200	220	250	260	280	300		
M015	12	12	17	5																	
	16	16	20	6																	
	20	20	25																		
	25	25	30																		
	30	30	35	8																	
	35	35	40																		
	40	40	45																		
	45	45	50	10																	
	50	50	55	12																	

Order Example: M015-dxL

Shoulder Guide Bushes

CODE: M020

Standard: American Inch
Material: Case-Hardening Steel
Hardness:HRC58-62



NOMINAL I.D.	D(+.0005/0)	E(+.0005/0)	H(0/-0.01)
3/4	.7505	1.1255	1.302
7/8	.8755	1.2505	1.427
1"	1.0005	1.3755	1.552
1 1/4	1.2505	1.6255	1.802
1 1/2	1.5005	2.0005	2.177

Surface Treatment:Case-Hardened 0.03 to 0.04 deep

L	LENGTH +.00/-.06	D=3/4 DIA .7505(+.0005/0)	D=7/8 DIA .8755(+.0005/0)	D=1" DIA 1.0005(+.0005/0)	D=1 1/4 DIA 1.2505(+.0005/0)	D=1 1/2 DIA 1.5005(+.0005/0)
7/8						
1 3/8						
1 7/8						
2 3/8						
2 7/8						
3 3/8						
3 7/8						
4 3/8						
4 7/8						
5 7/8						

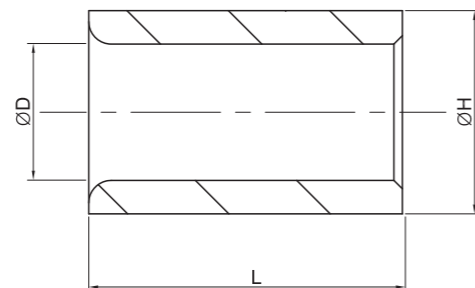
Order Example:M020-D x L

CODE	NOMINAL I.D.	D +.0005 -.0000	H +.0005 -.0000	L +.00 -.06
M021	3/4	.7505	1.1255	7/8
			1.1255	1 3/8
	7/8	.8755	1.2505	1 3/8
			1.2505	1 7/8
	1"	1.0005	1.3755	1 3/8
			1.3755	1 7/8
	1 1/4	1.2505	1.6255	1 3/8
			1.6255	1 7/8
	1 1/2	1.5005	2.0005	1 3/8
			2.0005	1 7/8
2"	2.0005	2.5005	3 7/8	
2 1/2	2.5005	3.2505	4 7/8	
3"	3.0005	3.7505	4 7/8	

Straight Guide Bushes

CODE: M021

Standard: American Inch
Material: Case-Hardening Steel
Hardness:HRC58-62

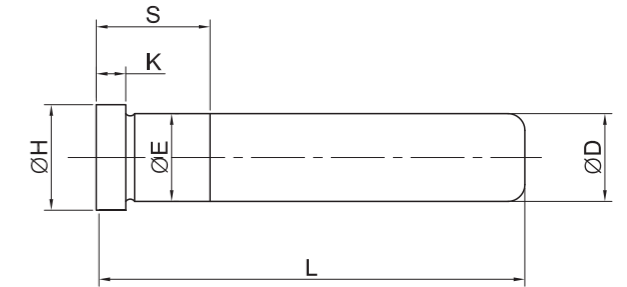


Order Example:M021-D x L

Straight Guide Pins

CODE: M022

Standard: American Inch
Material: Case-Hardening Steel
Hardness:HRC58-62



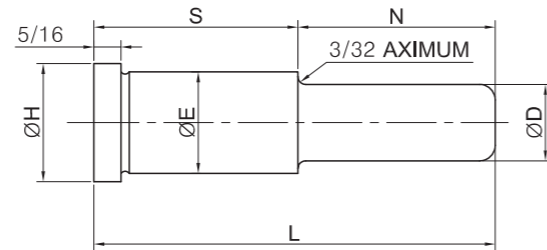
NOMINAL DIA.	D +.0000 -.0005	H .000 -.010	K	E +.0005 -.0000
3/4	.749	0.99	3/16	.751
7/8	.874	1.115	1/4	.876
1"	.999	1.240	1/4	1.001
1 1/4	1.249	1.490	5/16	1.251
1 1/2	1.499	1.740	5/16	1.501

CODE	L LENGTH +.00/-0.06	D=3/4 DIA .749(+.000/-0.0005)	D=7/8 DIA .874(+.000/-0.0005)	D=1" DIA .999(+.000/-0.0005)	D=1 1/4 DIA 1.249(+.000/-0.0005)	D=1 1/2 DIA 1.499(+.000/-0.0005)
		S	S	S	S	S
M022	1 3/4	7/8	7/8	7/8	-	-
	2 1/4	7/8	7/8	7/8	-	-
	2 3/4	7/8	7/8	7/8	7/8	-
	3 1/4	7/8	7/8	7/8	7/8	-
	3 3/4	7/8	7/8	7/8	7/8	1 3/8
	4 1/4	1 3/8	1 3/8	1 3/8	7/8	1 3/8
	4 3/4	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
	5 1/4	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
	5 3/4	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
	6 1/4	1 7/8	1 3/8	1 3/8	1 3/8	1 3/8
	6 3/4	1 7/8	1 7/8	1 7/8	1 7/8	1 3/8
	7 1/4	1 7/8	1 7/8	1 7/8	1 7/8	-
	7 3/4	1 7/8	1 7/8	1 7/8	1 7/8	1 7/8
	8 1/4	-	1 7/8	1 7/8	1 7/8	-
	8 3/4	-	1 7/8	1 7/8	1 7/8	1 7/8
	9 1/4	-	-	1 7/8	1 7/8	-
	9 3/4	1 7/8	-	1 7/8	1 7/8	1 7/8
	10 1/4	-	-	1 7/8	1 7/8	-
	10 3/4	-	7/8	1 7/8	1 7/8	1 7/8
	11 1/4	-	-	1 7/8	1 7/8	-
11 3/4	-	-	1 7/8	1 7/8	1 7/8	
12 1/4	-	1 7/8	1 7/8	1 7/8	-	
12 3/4	-	-	-	1 7/8	1 7/8	
13 3/4	-	-	-	1 7/8	1 7/8	
14 3/4	-	-	-	1 7/8	1 7/8	
15 3/4	-	-	-	1 7/8	1 7/8	

Order Example:M022-G x M x L

Shoulder Guide Pins

CODE: M023
 Standard: American Inch
 Material: Case-Hardening Steel
 Hardness:HRC58-62



NOMINAL DIA.	D +.0000 -.0005	E +.0005 -.0000	H .000 -.010
3/4	.749	1.126	1.228
1"	.999	1.376	1.510
1 1/4	1.249	1.626	1.791

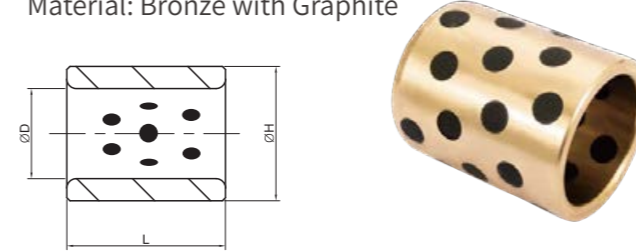
CODE	S	N	M	D=3/4 DIA	D=1" DIA	D=1 1/4 DIA
	+00 -.03	-00 -.03	+00 -.06			
M023	7/8	7/8	1 1/4			
		1 3/8	2 1/4			
		1 7/8	2 3/4			
		2 3/8	3 1/4			
		2 7/8	3 3/4			
	1 3/8	7/8	2 1/4			
		1 3/8	2 3/4			
		1 7/8	3 1/4			
		2 3/8	3 3/4			
		2 7/8	4 1/4			
	1 7/8	7/8	2 3/4			
		1 3/8	3 1/4			
		1 7/8	3 3/4			
		2 3/8	4 1/4			
		2 7/8	4 3/4			
	2 3/8	7/8	3 1/4			
		1 3/8	3 3/4			
		1 7/8	4 1/4			
		2 3/8	4 3/4			
		2 7/8	5 1/4			

Order Example:M023-D x E x L x S

S	N	L	D=3/4 DIA	D=1" DIA	D=1 1/4 DIA
2 7/8	1 3/8	4 1/4			
	1 7/8	4 3/4			
	2 3/8	5 1/4			
	2 7/8	5 3/4			
	3 3/8	6 1/4			
3 3/8	1 7/8	5 1/4			
	2 3/8	5 3/4			
	2 7/8	6 1/4			
	3 3/8	6 3/4			
	4 3/8	7 3/4			
3 7/8	2 3/8	6 1/4			
	2 7/8	6 3/4			
	3 3/8	7 1/4			
	3 7/8	7 3/4			
	4 7/8	8 3/4			
4 3/8	2 7/8	7 1/4			
	3 3/8	7 3/4			
	3 7/8	8 1/4			
	4 3/8	8 3/4			
	4 7/8	9 1/4			
4 7/8	3 7/8	8 3/4			
	4 3/8	9 1/4			
	4 7/8	9 3/4			
	5 7/8	10 3/4			
	5 7/8	11 3/4			

Self-Lubricating Straight Bushings

CODE: M024
 Standard: American Inch
 Material: Bronze with Graphite

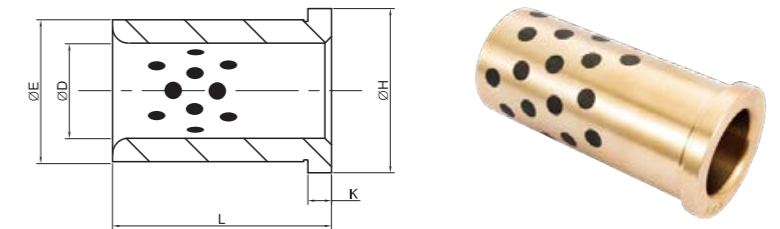


CODE	NOMIN AL	D +.0005 -.0000	L +.00 -.06	H +.0005 -.0000
M024	3/4	.7505	7/8	1.1255
			1 3/8	1.1255
	7/8	.8755	1 3/8	1.2505
			1"	1.3755
	1"	1.0005	1 3/8	1.3755
			1 7/8	1.6255
	1 1/4	1.2505	1 3/8	1.6255
			1 7/8	1.6255
	1 1/2	1.5005	1 3/8	2.0005
			1 7/8	2.0005
	2"	2.0005	3 7/8	2.5005
			4 7/8	3.2505
1 1/2	2.5005	4 7/8	3.2505	
		3"	3.7505	

Order Example:M024-G x L

Self-Lubricating Shoulder Bushings

CODE: M025
 Standard: American Inch
 Material: Bronze with Graphite

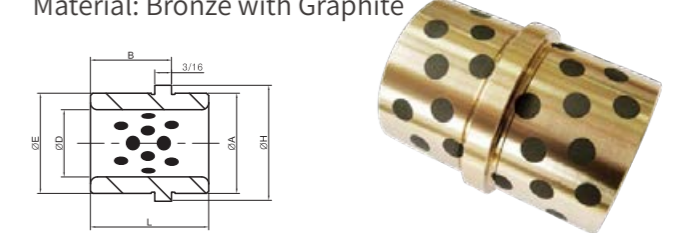


CODE	NOMIN AL I.D.	D +.0005 -.0000	E +.0005 -.0000	H +.000 -.030	K	L ⁺⁰⁰ -.06											
						7/8	1 3/8	1 7/8	2 3/8	2 7/8	3 3/8	3 7/8	4 3/8	4 7/8	5 7/8	7 7/8	
M025	3/4	.7505	1.1255	1.302	3/16												
						7/8	.8755	1.2505	1.427								
	1"	1.0005	1.3755	1.552													
						1 1/4	1.2505	1.6255	1.802								
	1 1/2	1.5005	2.0005	1.802													
						2"	2.0005	2.5005	2.677								
	1 1/2	2.5005	3.2505	2.677		1/2											
							3"	3.0005	3.7505	3.427							

Order Example:M025-G x L

Self-Lubricating Guided Ejection Bushings

CODE: M026
 Standard: American Inch
 Material: Bronze with Graphite



CODE	NOMIN AL I.D.	D +.0005 -.0000	E +.0005 -.0000	A +.000 -.030	H +.000 -.001	L -.00 -.06	B
M026	3/4	.751	1.1255	1.1240	1.302	1.50	1.00
	1"	1.001	1.3755	1.3740	1.552	1.75	1.12
	1 1/2	1.501	2.0005	1.9990	2.117	1.75	1.12

Order Example:M026-G x L

DIN9861D Precision Piercing Punch

CODE: MZ51D

Material: HSS Steel
Shaft hardness: HRC 64±2



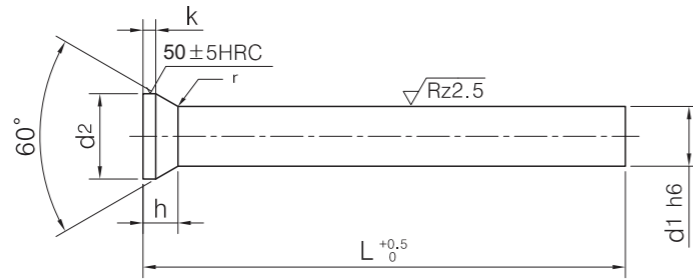
CODE: MZ52D

Material: HWS Tool Steel
Shaft hardness: HRC 62±2



CODE: MZ53D

Material: WS 1.2067 or similar Steel
Shaft hardness: HRC 60-62



CODE	d1(h6)	K +0.2/0	d2 0/-0.2	h	L+0.5/0			
					71	80	100	
MZ51D MZ52D MZ53D	0.5	0.2	0.9	0.55				
	0.55		1.0	0.59				
	0.6		1.1	0.63				
	0.65		1.2	0.68				
	0.7		1.3	0.72				
	0.75			0.68				
	0.8	0.4	1.4	0.98				
	0.85			0.88				
	0.9		1.6	1.01				
	0.95			0.96				
	1.0			1.8	1.19			
	1.1				1.11			
	1.2	2.0	1.19					
	1.3		1.11					
	1.4	2.2	1.19					
	1.5		1.11					
	1.6	2.5	1.28					
	1.7		1.19					
	1.8		2.8	1.37				
	1.9	1.28						
	2.0	3.0	1.37					
	2.1		3.2	1.45				
	2.2			1.37				
	2.3		3.5	1.54				
	2.4			1.45				
	2.5			1.37				
	2.6	4.0	1.71					
	2.7		1.63					
	2.8		1.54	1.54				
	2.9			1.45				
	3.0		1.80	1.80				
	3.1			1.71	1.71			
	3.2	4.5			1.63			
	3.3			1.54				
	3.4			1.45				
	3.5			1.80	1.80			
3.6	1.71							

Order Example: MZ51D-d1xL

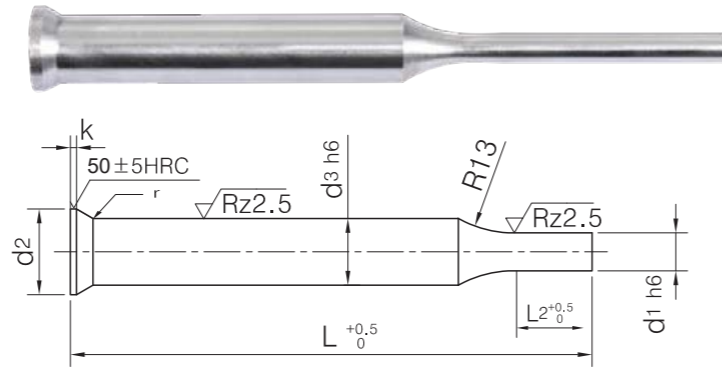
CODE	d1(h6)	K	d2	h	L+0.5/0			
					71	80	100	
MZ51D MZ52D MZ53D	3.7	0.5	5.0	1.63				
	3.8			1.54				
	3.9			1.45				
	4.0			5.5	1.80			
	4.1		1.71					
	4.2		1.63					
	4.3		1.54					
	4.4		1.45					
	4.5		6.0		1.80			
	4.6			1.71				
	4.7			1.63				
	4.8			1.54				
	4.9			1.45				
	5.0			6.5	1.80			
	5.1		1.71					
	5.2		1.63					
	5.3		1.54					
	5.4		1.45					
	5.5		7.0		1.80			
	5.6			1.71				
	5.7			1.63				
	5.8			1.54				
	5.9			1.45				
	6.0			8.0	2.23			
	6.1		2.15					
	6.2		2.06					
	6.3		1.97					
	6.4		1.89					
	6.5		9.0		3.17			
	7.0			2.73				
	7.5			10.0	3.17			
	8.0				2.73			
	8.5				3.17			
	9.0				2.73			
	9.5		11.0		3.17			
	10.0				2.73			
	10.5			12.0	3.17			
	11.0				2.73			
	11.5			13.0	3.17			
	12.0				2.73			
12.5	14.0	3.17						
13.0		2.73						
13.5	15.0	3.17						
14.0		2.73						
14.5		16.0	3.67					
15.0			3.23					
15.5		17.0	3.67					
16.0			3.23					
16.5	18.0	3.67						
17.0		3.23						
17.5	19.0	3.67						
18.0		3.23						
18.5	20.0	3.67						
19.0		3.23						
19.5	21.0	3.67						
20.0		3.23						
20.0	22.0	3.67						
20.0		3.23						

Order Example: MZ51D-d1xL

DIN9861-C Precision Piercing Punch

CODE: MZ51C HSS Steel
CODE: MZ51PS ASP23 Steel
 Hardness: Shaft: HRC64+/-2

CODE: MZ52C
 Material: HWS Steel
 Hardness: Shaft: HRC62+/-2



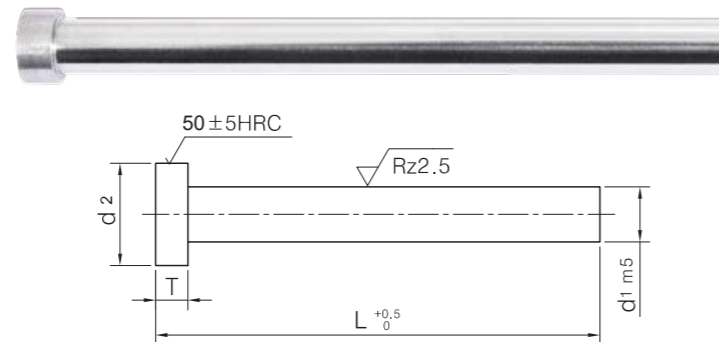
CODE	d1(h6)	d2	d3(h6)	K+0.2/0	L2+0.5	L1+0.5	
						71	80
MZ51C MZ52C MZ51PS	0.5~1.5	3.0	2	0.5	7		
	1.5~2.9	4.5	3	0.5	7		
	2.5~3.5	5.5	4	0.5	10		
	3.5~4.5	6.5	5	0.5	10		
	4.5~5.5	8.0	6	0.5	10		
	5.0~6.5	10.0	8	1.0	13		
	6.0~8.5	12.0	10	1.0	17		

Order Example: MZ51C-d1xd3xLxL2

ISO8020-A Precision Piercing Punch

CODE: MZ55A
 Material: HSS Steel
 Hardness: Shaft: HRC64+/-2

CODE: MZ56A
 Material: HWS Steel
 Hardness: Shaft: HRC62+/-2



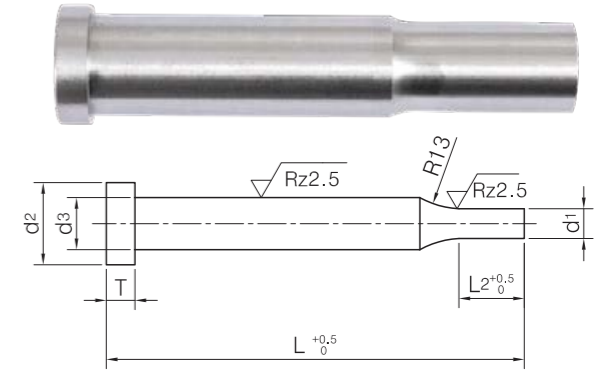
CODE	d1(m5)	d2 0/-0.2	T+0.2/0	L+0.5				
				63	71	80	90	100
MZ55A MZ56A	3	5	3					
	4	6	3					
	5	8	5					
	6	9	5					
	8	11	5					
	10	13	5					
	13	16	5					
	16	19	5					
	20	24	5					
	25	29	5					
	32	36	5					

Order Example: MZ55A-d1xL

Precision Piercing Punch

Standard: ISO8020-B
CODE: MZ55B
 Material: HSS Steel
 Hardness: Shaft=HRC64+/-2
 Head=HRC50+/-5

CODE: MZ56B
 Material: HWS Steel
 Hardness: Shaft=HRC62+/-2
 Head=HRC50+/-5



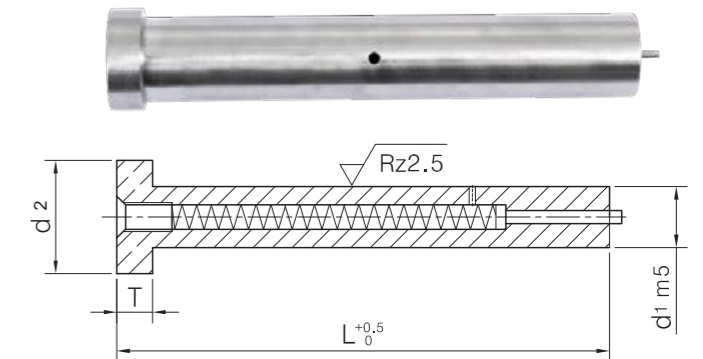
CODE	d1(m5)	d2 0/-0.2	d3 (m5)	T+0.2/0	L2+0.5	L+0.5				
						63	71	80	90	100
MZ55B MZ56B	0.8~2.9	5	3	3	10					
	1.0~3.9	6	4	3	10					
	1.2~4.9	8	5	5	10					
	1.6~5.9	9	6	5	10					
	2.5~7.9	11	8	5	13					
	4.0~9.9	13	10	5	17					
	5.0~12.9	16	13	5	17					
	8.0~15.9	19	16	5	17					
	12.0~19.5	24	20	5	17					
16.5~24.5	29	25	5	17						

Order Example: MZ55B-d1xd3xLxL2

Precision Piercing Ejector Punch

Standard: ISO8020-E
CODE: MZ57E
 Material: HSS Steel
 Hardness: Shaft=HRC64+/-2
 Head=HRC50+/-5

CODE: MZ58E
 Material: HWS Steel
 Hardness: Shaft=HRC62+/-2
 Head=HRC50+/-5



CODE	d1(m5)	d2 0/-0.2	T+0.2/0	L+0.5				
				63	71	80	90	100
MZ57E MZ58E	5	8	5					
	6	9	5					
	8	11	5					
	10	13	5					
	13	16	5					
	16	19	5					
	20	24	5					
	25	29	5					
	32	36	5					

Order Example: MZ57E-d1xL

Precision Piercing Ejector Punch

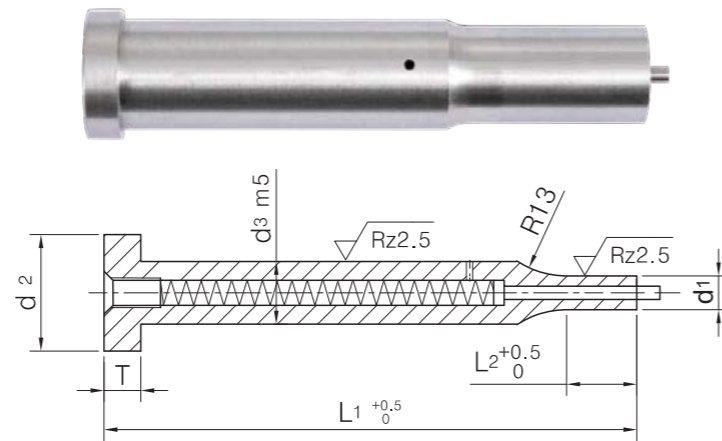
Standard: ISO8020-F

CODE: MZ57F

Material: HSS Steel
 Hardness: Shaft=HRC64+/-2
 Head=HRC50+/-5

CODE: MZ58F

Material: HWS Steel
 Hardness: Shaft=HRC62+/-2
 Head=HRC50+/-5



CODE	d1(j6)	d2 0/-0.2	d3 (m5)	T+0.2/0	L2+0.5	L+0.5				
						63	71	80	90	100
MZ57F MZ58F	1.6~5.9	9	6	5	10					
	2.5~7.9	11	8	5	13					
	4.0~9.9	13	10	5	17					
	5.0~12.9	16	13	5	17					
	8.0~15.9	19	16	5	17					
	12.0~19.5	24	20	5	17					
	16.5~24.5	29	25	5	17					

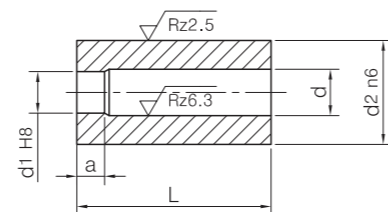
Order Example: MZ57F-d1xd3xLxL2

DIN9845 Precision Matrixes

CODE: MZ61A HSS DIN9845A

CODE: MZ61B HSS DIN9845B

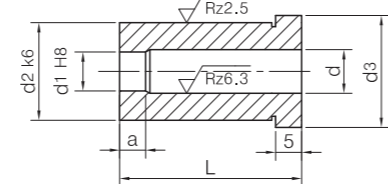
Hardness: Shaft: HRC64+/-2



CODE: MZ62A HWS DIN9845A

CODE: MZ62B HWS DIN9845B

Hardness: Shaft=HRC62+/-2



CODE	d1(H8)	d3	d2 K6	d	a	L	
MZ61A MZ61B MZ62A MZ62B	1.0	7	5	d1+0.3	2	20	28
	1.1~2.0	8	6	d1+0.3	3	20	28
	2.1~3.0	9	7	d1+0.5	3	20	28
	3.1~4.0	10	8	d1+0.5	3	20	28
	4.1~5.0	12	10	d1+0.7	4	20	28
	5.2~6.0	14	12	d1+0.7	4	20	28
	6.2~8.0	17	15	d1+0.7	4	20	28
	8.2~10.0	20	18	d1+1.0	4	20	28
	10.2~12.0	24	22	d1+1.0	5	20	28
	12.5~15.0	28	26	d1+1.0	5	20	28

Order Example: MZ61A-d1xd2xL

Variable Punches Forming

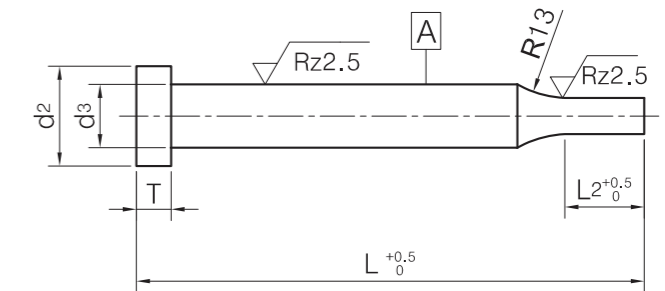
CODE: MZ55C_

Material: HSS Steel
 Hardness: Shaft=HRC64+/-2
 Head=HRC50+/-5



CODE: MZ56C_

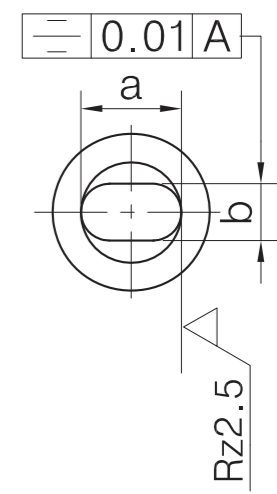
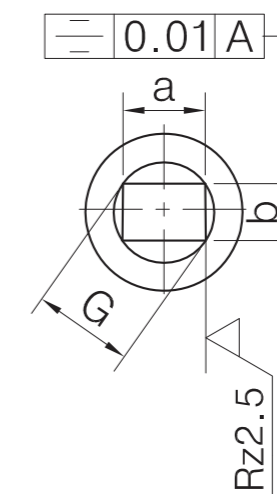
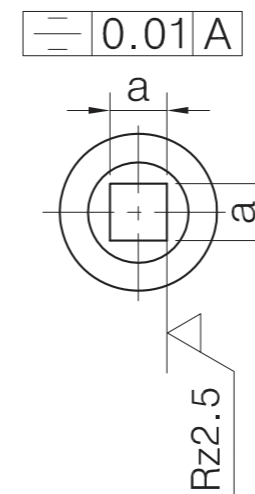
Material: HWS Steel
 Hardness: Shaft=HRC62+/-2
 Head=HRC50+/-5



CS

CR

CO



Standard:ISO8020-C

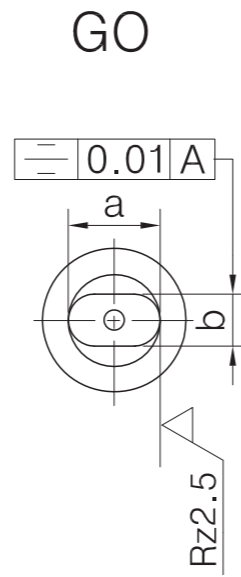
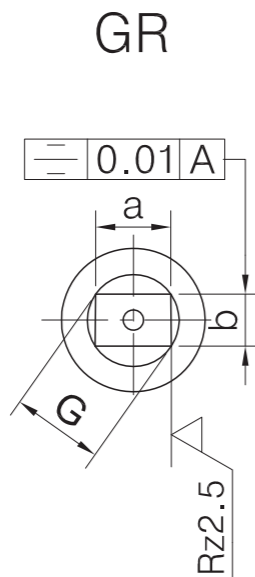
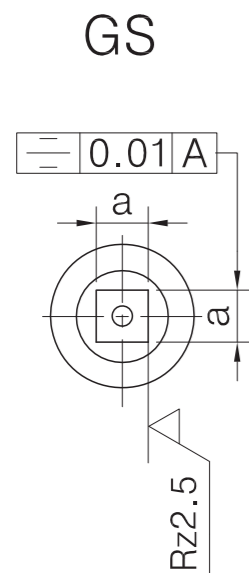
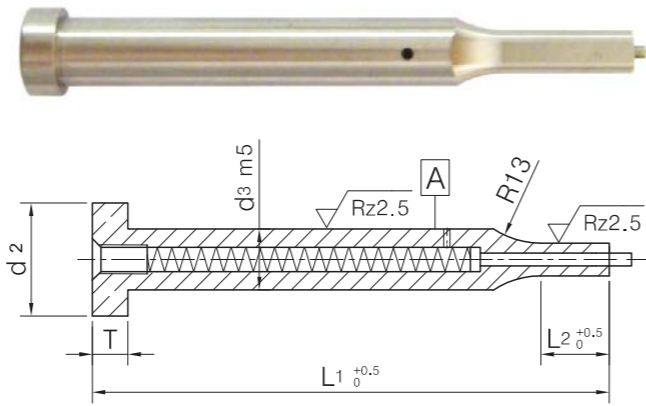
CODE	a +/-0.01	b +/-0.01	d2 0/-0.2	d3 m5	T+0.2/0	L2 +0.5	L+0.5				
							63	71	80	90	100
MZ55C MZ56C	Up to customer's Requirement G= max.d3		6	4	3	From 10, 13,17,19 ...up					
			8	5	5						
			9	6	5						
			11	8	5						
			13	10	5						
			16	13	5						
			19	16	5						
			24	20	5						
	29	25	5								

Order Example: MZ55C-CS/axbxd3xL

Variable Punches Forming

CODE: MZ57G_
 Material: HSS Steel
 Hardness: Shaft=HRC64+/-2
 Head=HRC50+/-5

CODE: MZ58G_
 Material: HWS Steel
 Hardness: Shaft=HRC62+/-2
 Head=HRC50+/-5



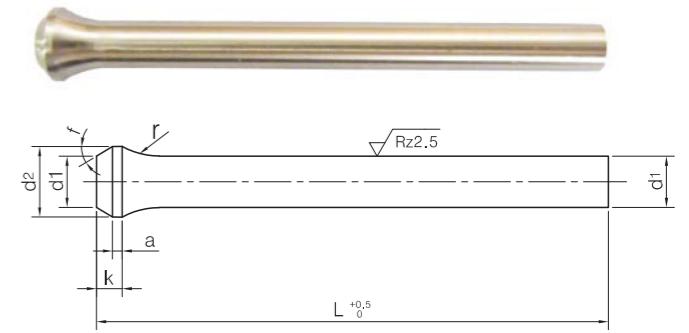
CODE	a +/-0.01	b +/-0.01	d2 0/-0.2	d3 m5	T +/-0.2/0	L2 +0.5	L+0.5				
							63	71	80	90	100
MZ57G MZ58G	Up to customer's Requirement G= max.d3		6	4	3	From 10, 13,17,19 ...up					
			8	5	5						
			9	6	5						
			11	8	5						
			13	10	5						
			16	13	5						
			19	16	5						
			24	20	5						
		29	25	5							

Order Example: MZ55C-GS/axbxd3xL

Piercing Punches with Bottle Neck

CODE: MZ59A
 Material: HSS Steel
 Hardness: Shaft=HRC64+/-2
 Head=HRC50+/-5

CODE: MZ60A
 Material: HWS Steel
 Hardness: Shaft=HRC62+/-2
 Head=HRC50+/-5

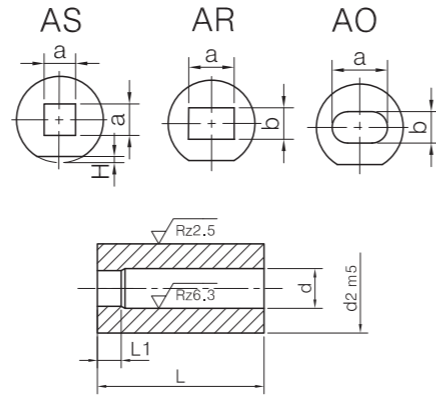


CODE	d1 h6	d2 0/-0.2	k +0.2/0	a	f	r	L+0.5		
							71	80	100
MZ59A MZ60A	2	3	3	1	15°	3.5			
	2.1-2.2	3.2	3	1	15°	5			
	2.3-2.5	3.5	3	1	15°	5			
	2.6-2.9	4	3	1	20°	6.5			
	3-3.4	4.5	3	1	20°	6.5			
	3.5-3.8	5	3	1.5	25°	8			
	4-4.4	5.5	4	1.5	15°	8			
	4.5-4.9	6	4	1.5	15°	8			
	5	7	4	1.5	20°	10			
	5.5	8	4	1.5	25°	10			
	6	9	4	1.5	30°	10			
	6.5	10	4	1.5	35°	12			
	7	10	4	1.5	30°	12			
	7.5	11	4	1.5	35°	12			
	8	11	4	1.5	30°	12			
	8.5	13	4	1.5	40°	15			
	9	13	4	1.5	40°	15			
	9.5	14	4	1.5	40°	15			
	10	14	4	1.5	40°	15			
	13	17	4	1.5	40°	15			
14	18	4	1.5	40°	15				
16	20	4	1.5	40°	15				
18	22	4	1.5	40°	15				
20	25	7	1.5	45°	15				

Order Example: MZ59A-axbxd3xL

Shaped Die Bushes

CODE: MZ63A
Material: HSS Steel
Hardness: Shaft=HRC64+/-2

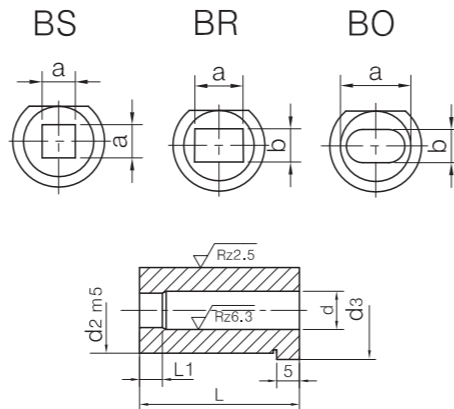


CODE: MZ64A
Material: HWS Steel
Hardness: Shaft=HRC62+/-2
Standard: ISO8977-A

CODE	a +/-0.01	b +/-0.01	d2 m5	H +/-0.01	d	L1	L+0.5
MZ63A MZ64A	1.6-5.4	2.0-5.5	10	1	6.5	3	32
	2.0-7.4	2.5-7.5	13	1.5	8.5	4	32
	2.2-9.9	2.5-10.0	16	1.5	11	4	32
	2.5-12.9	3.2-13.0	20	1.5	14	5	32
	3.2-15.9	4.0-16.0	25	2.5	17	5	32
	4.0-20.9	5.0-21.0	32	2.5	22	6	32
	5.0-26.9	6.5-27.0	40	2.5	28	8	32

Order Example: MZ63A-axbxd2xL

CODE: MZ63B
Material: HSS Steel
Hardness: Shaft=HRC64+/-2



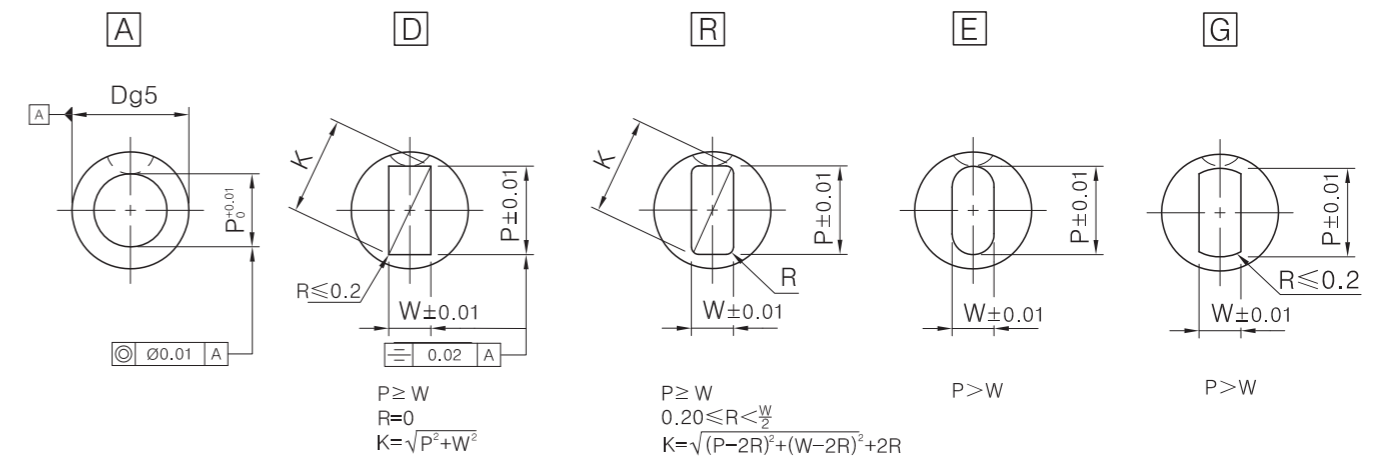
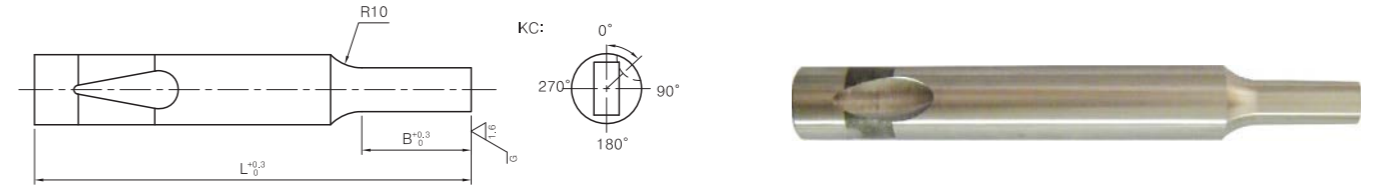
CODE: MZ64B
Material: HWS Steel
Hardness: Shaft=HRC62+/-2

CODE	a +/-0.01	b +/-0.01	d3	d2 m5	d	L1	L+0.5
MZ63B MZ64B	1.6-5.4	2.0-5.5	13	10	6.5	3	32
	2.0-7.4	2.5-7.5	16	13	8.5	4	32
	2.2-9.9	2.5-10.0	19	16	11	4	32
	2.5-12.9	3.2-13.0	24	20	14	5	32
	3.2-15.9	4.0-16.0	29	25	17	5	32
	4.0-20.9	5.0-21.0	36	32	22	6	32
	5.0-26.9	6.5-27.0	44	40	28	8	32

Order Example: MZ63B-axbxd2xL

Ball-Lock Punches

Light code : MELP__
Heavy code :MEBP__
Material: HSS
Hardness: HRC64+/-2



CODE		Unit 0.01mm		L	A	D R E G		B	
Type	shape	B	D			min.P max.	P.Kmax.		P.Wmin.
MELP MEBP	A D R E G	S	10	63 71 74 80 90	3.00-9.97	9.90	2.50	13	
			13		6.00-12.97	12.90	3.00		
			16		10.00-15.97	15.90	4.00		
			20		13.00-19.97	19.90	5.00		
			25		18.00-24.97	24.90	6.00		
			32		22.00-31.97	31.90	7.00		
			L		10	71 74 80 90	3.00-9.97		9.90
		13		6.00-12.97	12.90		3.00		
		16		10.00-15.97	15.90		4.00		
		20		13.00-19.97	19.90		5.00		
		25		18.00-24.97	24.90		6.00		
		32		22.00-31.97	31.90		7.00		

Order Example: MELPDS-PxWxDxL

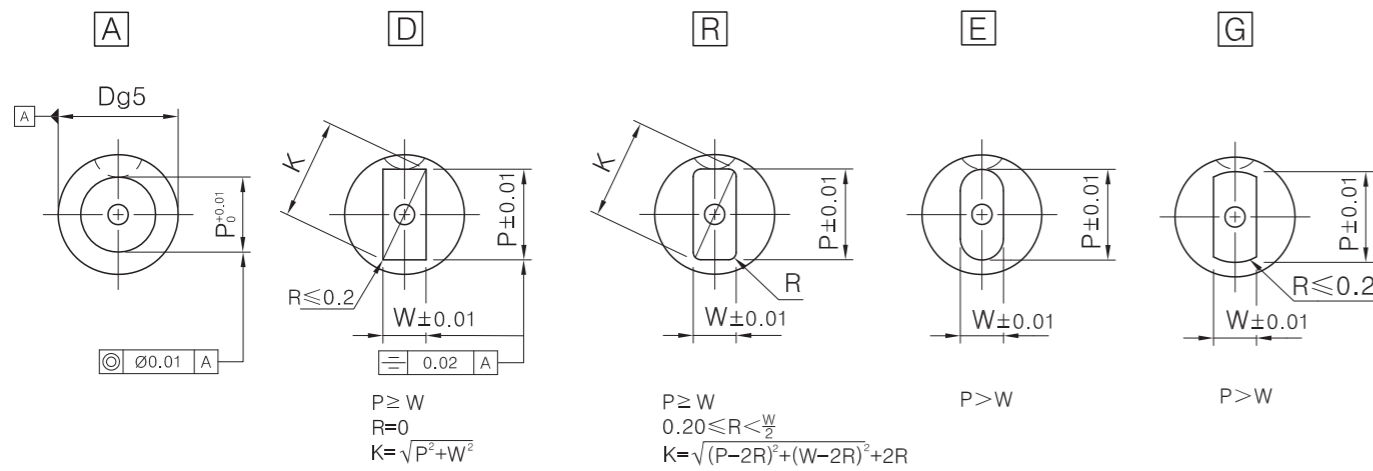
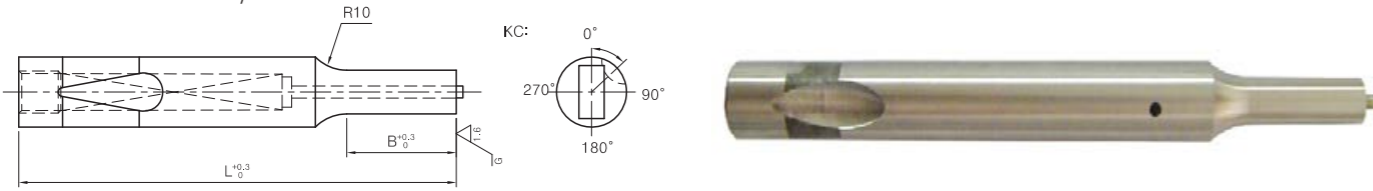
Ball-Lock Ejector Punches

Light code : MELJ__

Heavy code : MEBJ__

Material: HSS

Hardness: HRC64+/-2



CODE				L	Unit 0.01mm			B
Type	shape	B	D		A	D R E G	P.Wmin.	
MELJ MEBJ	A D R E G	S	10	63 71 74 80 90	3.00-9.97	9.90	3.00	13
			13		6.00-12.97	12.90	6.00	
			16		10.00-15.97	15.90	6.00	
			20		13.00-19.97	19.90	6.00	
			25		18.00-24.97	24.90	6.00	
			32		22.00-31.97	31.90	6.00	
		L	10	63 71 74 80 90	3.00-9.97	9.90	3.00	19
			13		6.00-12.97	12.90	6.00	
			16		10.00-15.97	15.90	6.00	
			20		13.00-19.97	19.90	6.00	
			25		18.00-24.97	24.90	6.00	
			32		22.00-31.97	31.90	6.00	

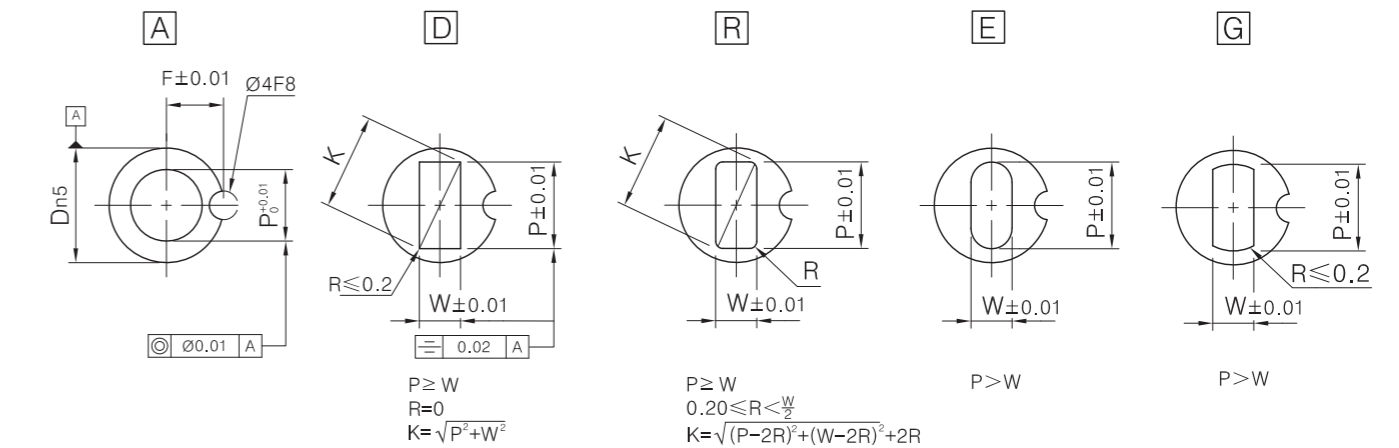
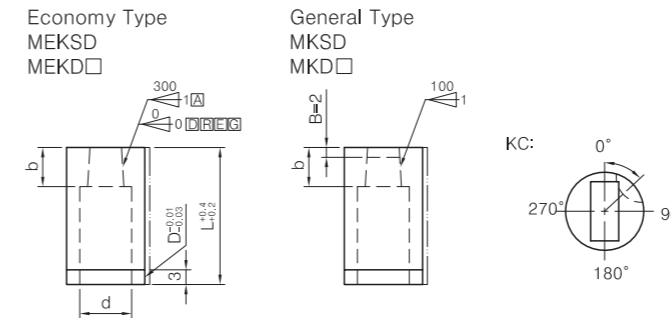
Order Example: MELJDS-PxWxDxL

Butto Dies-Doewl Slot Type

CODE: MEKD_/MKD_

Material: SKD11(A2)

Hardness: HRC60-63

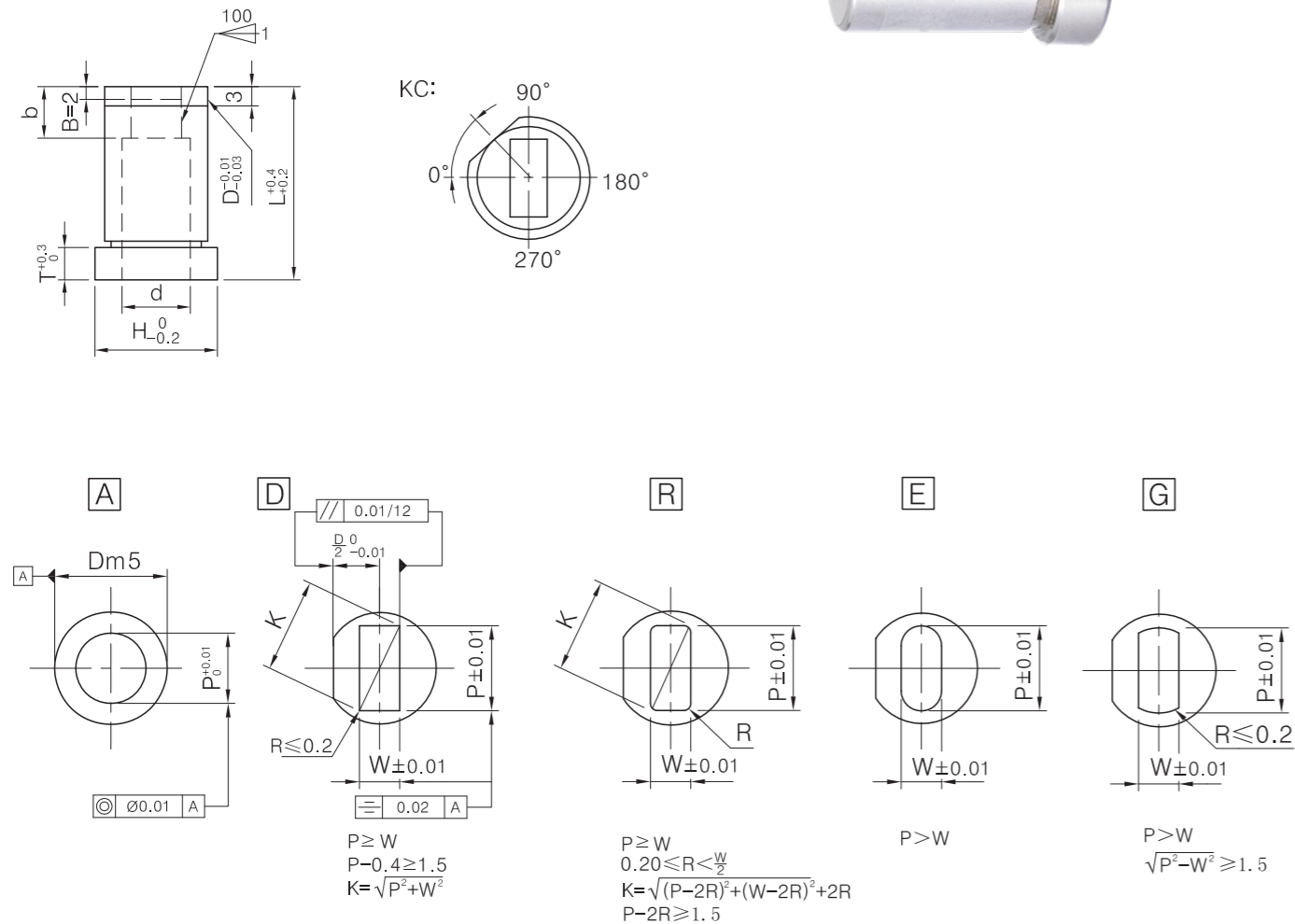


CODE			L	Unit 0.01mm			b	d	F
economy	general	D n5		A	D R E G	P.Wmin.			
MEKSD MEKDD MEKDR MEKDE MEKDG	MKSD MKDD MKDR MKDE MKDG	10	16 20 22 25 28 30 32 35	2.00-6.00	6.00	1.20	6	6.4	6
		13	16 20 22 25 28 30 32 35	3.00-8.00	8.00	1.50		8.4	7.5
		16	16 20 22 25 28 30 32 35	5.00-10.00	10.00	2.00		10.6	8
		20	16 20 22 25 28 30 32 35	7.00-12.00	12.00	3.00		12.6	10
		22	16 20 22 25 28 30 32 35	8.00-14.00	14.00	3.00		14.6	11
		25	16 20 22 25 28 30 32 35	10.00-16.00	16.00	3.00		16.6	12.5
		32	16 20 22 25 28 30 32 35	15.00-20.00	20.00	4.00		20.6	16
		38	16 20 22 25 28 30 32 35	19.00-26.00	26.00	5.00		26.6	19
		45	20 22 25 28 30 32 35	25.00-35.00	35.00	6.00		36	22.5
		50	20 22 25 28 30 32 35	33.00-40.00	40.00	7.00		41	25
		56	20 22 25 28 30 32 35	38.00-45.00	45.00	8.00		46	28

Order Example: MEKDD-PxWxDxL

Shoulder Button Die

CODE: MHD_S **CODE: MHD_H**
 Material: SKD11(A2) Material: SKH51(M2)
 Hardness: HRC60-63 Hardness: HRC61-64

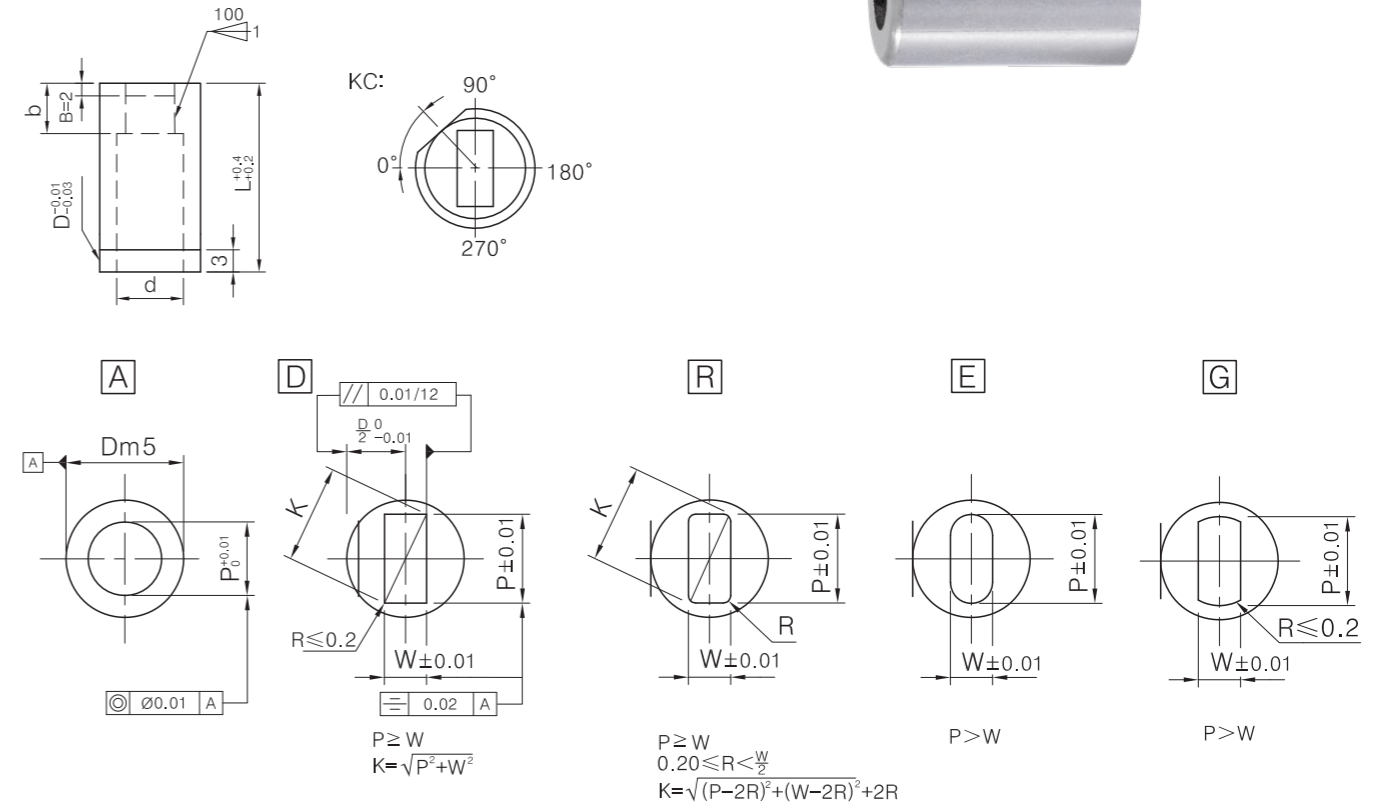


CODE		L	Unit 0.01mm			b	d	H	T	
Type	shape		D							
			min.P max.	P.Kmax.	P.Wmin.					
MHD	A D R E G	4	16 20 22 25 28 30	1.00-2.00	-	-	2	2.4	5	3
		5	16 20 22 25 28 30	1.00-2.50	-	-		2.9	6	
		6	16 20 22 25 28 30 32 35	1.00-3.00	3.00	1.00	3	3.4	9	5
		8	16 20 22 25 28 30 32 35 40	1.00-4.00	4.00	1.00		4.4	11	
		10	16 20 22 25 28 30 32 35 40	2.00-6.00	6.00	1.20	6	6.4	13	5
		13	16 20 22 25 28 30 32 35 40	3.00-8.00	8.00	1.50		8.4	16	
		16	16 20 22 25 28 30 32 35 40	5.00-10.00	10.00	2.00	8	10.6	19	5
		20	16 20 22 25 28 30 32 35 40	7.00-12.00	12.00	3.00		12.6	23	
		22	16 20 22 25 28 30 32 35 40	8.00-14.00	14.00	3.00	8	14.6	25	5
		25	16 20 22 25 28 30 32 35 40	10.00-16.00	16.00	3.00		16.6	28	

Order Example: MHDSS-PxWxDxL

Straight Button Die

CODE: MAD_S **CODE: MAD_H**
 Material: SKD11(A2) Material: SKH51(M2)
 Hardness: HRC60-63 Hardness: HRC61-64



CODE		L	Unit 0.01mm			b	d	
Type	shape		D					
			min.P max.	P.Kmax.	P.Wmin.			
MAD	A D R E G	3	16 20	0.3-1.00	-	-	2	2.0
		4	16 20 22 25 28 30	0.5-2.00	-	-		2.4
		5	16 20 22 25 28 30	0.5-2.50	-	-	3	2.9
		6	16 20 22 25 28 30 32 35	1.00-3.00	-	-		3.4
		8	16 20 22 25 28 30 32 35	1.00-4.00	4.00	1.00	4	4.4
		10	16 20 22 25 28 30 32 35	2.00-6.00	6.00	1.20		6
		13	16 20 22 25 28 30 32 35	3.00-6.00	8.00	1.50	8	
		16	16 20 22 25 28 30 32 35	5.00-10.00	10.00	2.00		8
		20	16 20 22 25 28 30 32 35	7.00-12.00	12.00	3.00	8	
		22	16 20 22 25 28 30 32 35	8.00-14.00	14.00	3.00		8
		25	16 20 22 25 28 30 32 35	10.00-16.00	16.00	3.00	8	
		32	16 20 22 25 28 30 32 35	15.00-20.00	20.00	4.00		8
		38	16 20 22 25 30 35	19.00-26.00	26.00	5.00	8	
		45	20 22 25 30 35	25.00-35.00	35.00	6.00		8
		50	20 22 25 30 35	33.00-40.00	40.00	7.00	8	
		56	20 22 25 30 35	38.00-45.00	45.00	8.00		8

Order Example: MADSS-PxWxDxL

Cylindrical Head Punch Retainers

CODE: MART/MARTS

Material: S45C

Hardness: HRC55-58(Depth 1mm)

Blackening Process

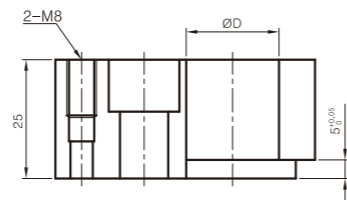
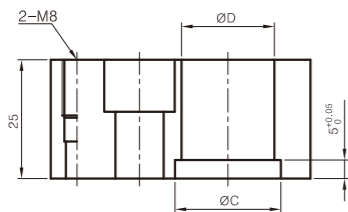
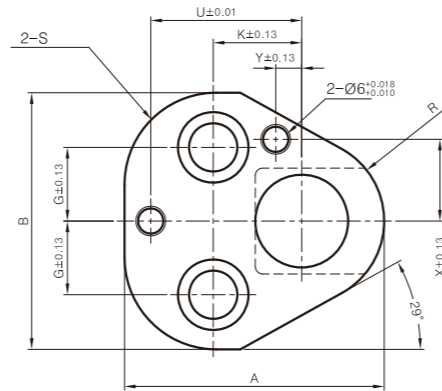
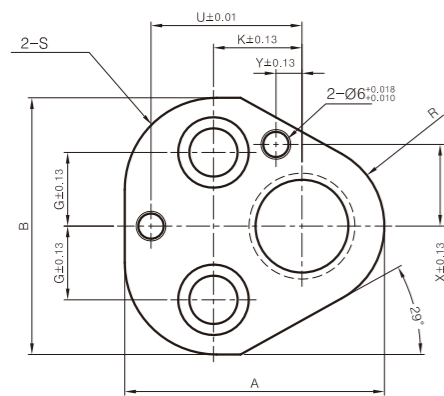
Hexagon socket head bolt: 2pcs

Dowel Pin: 2pcs



MART(For Round Punch)

MARTS(For Irregular Shaped Punch)



CODE	D H6	A	B	C	G	K	R	U	X	Y	S	Accessories
MART MARTS	10	44.5	43.7	14.0	11.1	19.0	9.5	26.9	9.5	7.5	12.0	Bolt-M8x40 Dowel pin-6x30
	13	50.8	50.0	17.0	14.3	19.0	12.7	29.9	12.0	6.5	15.2	
	16	54.0	53.2	20.0	15.9	19.0	14.3	31.7	13.5	6.0	16.8	
	20	60.3	59.5	24.0	17.4	19.0	17.5	33.5	16.5	5.0	20.0	Bolt-M10x40 Dowel pin-6x30
	25	69.9	69.1	29.0	19.8	23.8	22.2	40.6	22.0	7.0	24.7	Bolt-M12x40 Dowel pin-6x30
	32	69.9	69.1	36.0	19.8	23.8	22.2	40.6	22.0	7.0	24.7	

Order Example: MART-D

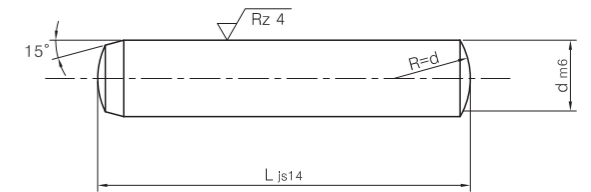
Dowel Pin

CODE: MZ25

Standard: DIN6325/ISO 8734

Material: 1.2067/SUJ2/100Cr6

Hardness: HRC58-62



CODE	d	L																						
		8	10	12	14	16	18	20	24	28	32	36	40	45	50	55	60	70	80	90	100	120		
MZ25	3																							
	4																							
	5																							
	6																							
	8																							
	10																							
	12																							
	14																							
16																								
20																								

Order Example: MZ25-d x L

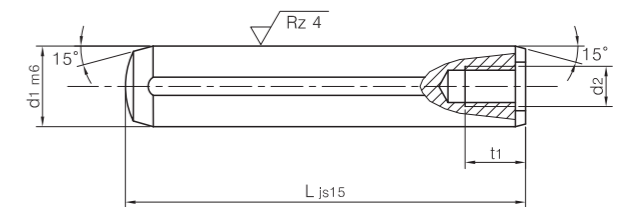
Dowel Pin With Internal Thread

CODE: MZ26

Standard: DIN7979/ISO 8735

Material: 1.2067/SUJ2/100Cr6

Hardness: HRC58-62



CODE	d1	d2	t1	L																			
				20	24	28	32	40	50	60	80	100	120										
MZ26	6	M4	6																				
	8	M5	8																				
	10	M6	10																				
	12	M6	10																				
	14	M8	12																				
	16	M8	12																				
20	M10	16																					

Order Example: MZ26-d1 x L

JIS Standard Dowel pin

Material: SUJ2



Straight type Hardness: HRC58-62 	CODE	D	L														
	SMS	3	8	10	15	20	25	30									
		4	8	10	15	20	25	30	35	40							
		5	8	10	15	20	25	30	35	40	45	50					
		6	8	10	15	20	25	30	35	40	45	50	55	60			
		8		10	15	20	25	30	35	40	45	50	55	60	65	70	80
		10			15	20	25	30	35	40	45	50	55	60	65	70	80
		12				20	25	30	35	40	45	50	55	60	70	80	
		13					30	40	50	60	70	80	100				
		16						30	40	50	60	70	80	100			
		20							30	40	50	60	70	80	100		
		25								30	40	50	60	70	80	100	

High precision type Hardness: HRC58-62 	CODE	D	L													
	SMSV	4		10	15	20	25	30								
		5		10	15	20	25	30	35	40						
		6		10	15	20	25	30	35	40						
		8			20	30	40	50	60							
		10				30	40	50	60	70	80	100				
12						30	40	50	60	70	80					

Tapped precision type Hardness: HRC58-62 	CODE	D	L												M*P	
	SMSTP	5	10	15	20	25	30							3*0.5		
		6	10	15	20	25	30	35	40	45	50					4*0.7
		8		15	20	25	30	35	40	45	50	60	70	80	5*0.8	
		10		15	20	25	30	35	40	45	50	60	70	80	6*1.0	
		12			20	30	40	50	60	70	80	100	120			
		13				30	40	50	60	70	80	100	120	8*1.25		
		16				30	40	50	60	70	80	100	120			
		20					40	50	60	70	80	100	120	10*1.5		

Tapped m6 type Hardness: HRC45-50 	CODE	D	L												M*P
	SMSTM	5	10	15	20	25	30							3*0.5	
		6	10	15	20	25	30	35	40	50					4*0.7
		8		15	20	25	30	35	40	45	50	60	70	80	5*0.8
		10		15	20	25	30	35	40	45	50	60	70	80	6*1.0
		12			20	30	40	50	60	70	80				
		13				40	50	60	70	80					8*1.25
		16				40	50	60	70	80					
		20					50	60	70	80					10*1.5

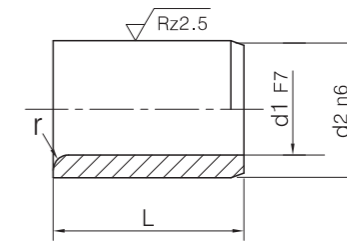
Precision Jig Bushes

CODE: MZ65A

Standard: DIN179

Material: Case Hardening Steel

Hardness: HRC60+/-2



CODE	d1 F7	d2 n6	r	L1		
MZ65A	1.1-1.8	4	1	6	9	
	1.9-2.6	5	1	6	9	
	2.7-3.3	6	1	8	12	16
	3.4-4	7	1	8	12	16
	4.1-5	8	1	8	12	16
	5.1-6	10	1.5	10	16	20
	6.1-8	12	1.5	10	16	20
	8.1-10	15	2	12	20	25
	10.1-12	18	2	12	20	25
	12.1-15	22	2	16	28	36
	15.5-18	26	2	16	28	36
	18.5-22	30	3	20	36	45
	22.5-26	35	3	20	36	45
	26.5-30	42	3	25	45	56
	30.5-35	48	3	25	45	56
35.5-42	55	3.5	30	56	67	
42.5-48	62	3.5	30	56	67	

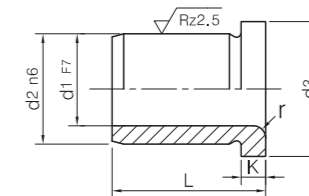
Order Example: MZ65A-d1xL1

CODE: MZ66B

Standard: DIN172

Material: Case Hardening Steel

Hardness: HRC60+/-2

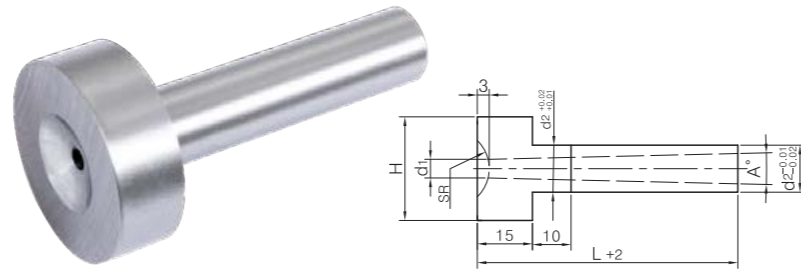


CODE	d1 F7	d2 n6	d3 0/-0.2	K	r	L1		
MZ66B	1.1-1.8	4	7	2	1	6	9	
	1.9-2.6	5	8	2	1	6	9	
	2.7-3.3	6	9	2.5	1	8	12	16
	3.4-4	7	10	2.5	1	8	12	16
	4.1-5	8	11	2.5	1	8	12	16
	5.1-6	10	13	3	1.5	10	16	20
	6.1-8	12	15	3	1.5	10	16	20
	8.1-10	15	18	3	2	12	20	25
	10.1-12	18	22	4	2	12	20	25
	12.1-15	22	26	4	2	16	28	36
	15.5-18	26	30	4	2	16	28	36
	18.5-22	30	34	5	3	20	36	45
	22.5-26	35	39	5	3	20	36	45
	26.5-30	42	46	5	3	25	45	56
	30.5-35	48	52	5	3	25	45	56
	35.5-42	55	59	5	3.5	30	56	67
	42.5-48	62	66	6	3.5	30	56	67

Order Example: MZ66B-d1xL1

Sprue Bushes

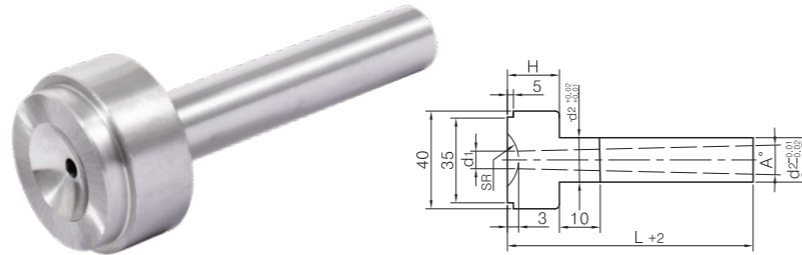
CODE: M320 **CODE: M320A**
 Material: S45C Material: S45C
 Hardness: SR=HRC50-55 Non Hardness



CODE	d2	H	d1	A	L											
					50	60	70	80	90	100	110	120	130	140	150	
M320 M320A	12	25	3.5	2° 3°												
		30														
	16	30														
		35														
	20	30														
		35														

Order Example: M320-d2xLxA

CODE: M321
 Material: S45C
 Hardness: Non Hardness Or SR=HRC50-55

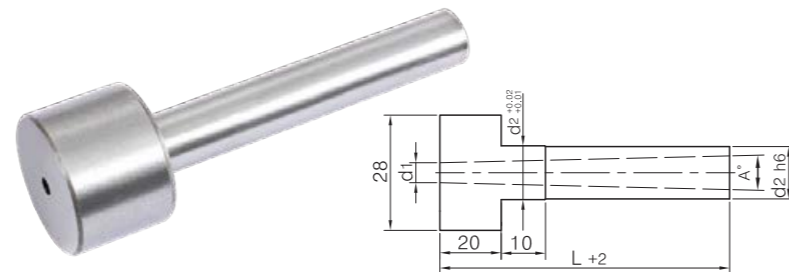


CODE	d2	H	d1	A	L											
					50	60	70	80	90	100	110	120	130	140	150	
M321	12	20	3.5	2° 3°												
		25														
	16	20														
		25														
	20	20														
		25														

Order Example: M321-d2xLxA

DIN Sprue Bushes

CODE: M322 **CODE: M323**
 Material: S45C Material: S45C
 Hardness: HRC50-55 Non Hardness

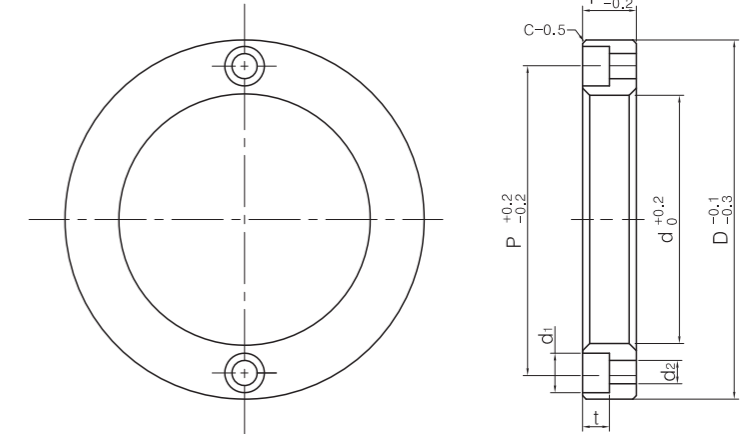


CODE	d2	d1	L											
			50	65	75	85	95	105	115	125	135	150		
M322 M323	12	3.3												
	14													
	16													
	12	4.3												
			14											
			16											

Order Example: M322-d2xLxd1

Locating Rings

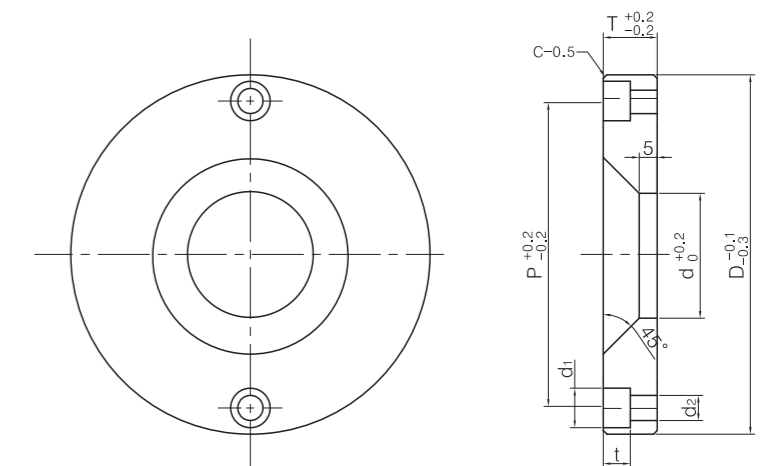
CODE: M324
 Material: S45C



CODE	D	T	P	t	d1	d2	d
M324	60	15	48	4.5	7.5	5	35
	100	10	85	7	11	7	70
	100	15	85	7	11	7	70
	120	15	105	7	11	7	90
	150	20	130	9	51	9	110

Order Example: M324-D x T

CODE: M325
 Material: S45C



CODE	D	T	P	t	d1	d2	d
M325	100	15	85	7	11	7	35
	100	15	85	7	11	7	50
	120	15	105	7	11	7	35
	120	15	105	7	11	7	50

Order Example: M325-D x T x d

Polyurethane Springs



Without hole

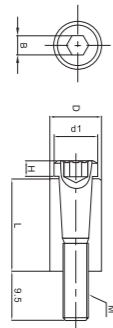
CODE	D	L
M401-10	10	300
M401-12	12	300
M401-15	15	300
M401-20	20	300
M401-25	25	300
M401-30	30	300
M401-35	35	300
M401-40	40	300
M401-45	45	300
M401-50	50	300
M401-60	60	300
M401-80	80	300
M401-100	100	300



With hole

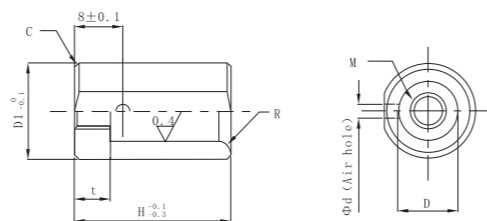
CODE	D	d	L
M402-15	15	8	300
M402-20	20	8	300
M402-25	25	8	300
M402-30	30	8	300
M402-35	35	8	300
M402-40	40	8	300
M402-45	45	8	300
M402-50	50	8	300
M402-60	60	8	300
M402-80	80	8	300
M402-100	100	8	300

Parting Locks



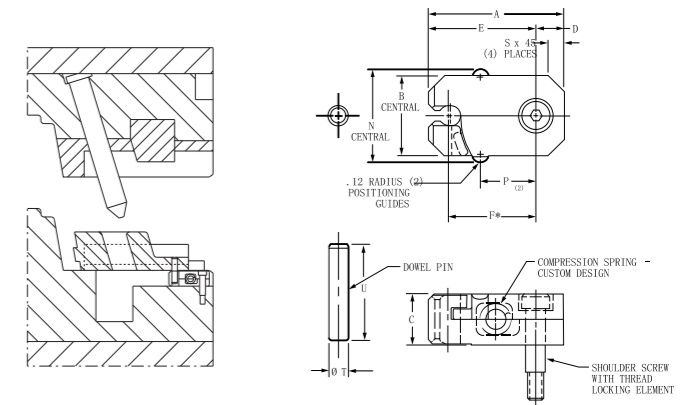
CODE	D	d1	M	B	L	H
M403-10	10	8.5	5	4	18	3
M403-12	12	11.5	6	5	20	3.2
M403-13	13	11.5	6	5	20	3.2
M403-16	16	14	8	6	25	4
M403-20	20	18	10	6	30	4

Parting Locks Bushes



CODE	D	D1	H	t	R	d	C	M
M404-10	10	16	26	6	2	2.3	0.80	6
M404-13	13	20	30	8	2.5	2.8	1.00	8
M404-16	16	25	37	10	3	3	1.00	10
M404-20	20	30	42	10	3	3	1.00	10

Side Retainers



Metric standard

CODE	A	B	C	D	E	F	G	P	S	T	U
M405-1	38	19	16	7	31.5	24.89	24.0	15.5	4	6	32
M405-2	54	32	20	11	43.0	34.93	36.5	22.5	6	8	40
M405-3	86	45	30	19	67.0	53.98	49.5	40.0	10	10	60

Inch standard

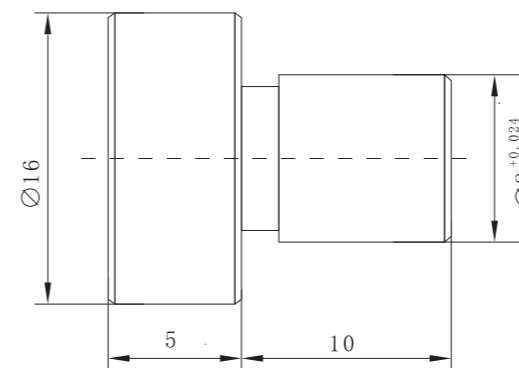
CODE	A	B	C	D	E	F	G	P	S	T	U
M406-1	1.50	0.76	0.63	0.27	1.23	0.980	0.94	0.61	0.14	0.250	1.25
M406-2	2.13	1.26	0.79	0.44	1.69	1.375	1.44	0.88	0.25	0.312	1.50
M406-3	3.38	1.76	1.18	0.75	2.63	2.125	1.94	1.57	0.38	0.375	2.25

Stop pins

CODE: M407

Material: S45C

Hardness: HRC48



*Special size available by request

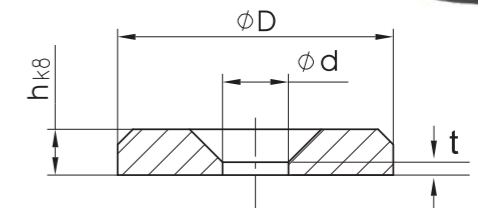
Seating washer

CODE: M408/M409

Material: S45C

Hardness: HRC48

Standard: DIN



CODE	D	d	t	h
M408-16	16	5.5	3	5
M408-20	20	6.5	4.5	5
M408-25	25	8.5	4.4	5

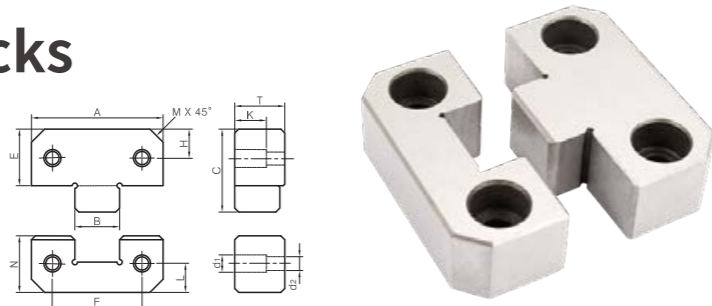
CODE	D	d	h
M409-18	18	4.3	3
M409-28	28	4.3	3

Straight Side Locks

CODE: M201

Material: Tool Steel

Hardness: HRC58+/-2



Metric standard

CODE	A	B	C	d1	d2	E	F	H	L	M	T	K	N
M201-50	50	17	30	10.5	6.5	21.5	34	11	11	5	16	8	21.5
M201-75	75	25	50	16.5	10.5	36	50	18	18	5	19	12	36
M201-100	100	35	65	16.5	10.5	45	70	22	22	5	19	12	45
M201-125	125	45	65	16.5	10.5	45	84	22	22	5	25	12	45

Inch standard

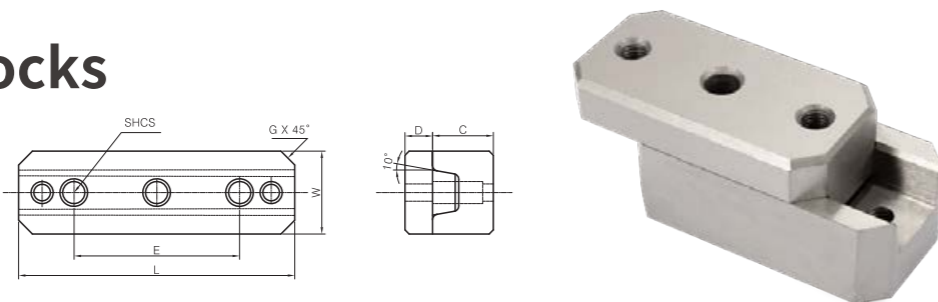
CODE	A	B	C	d1	d2	E	F	H	L	M	T	K	N
M201-15A	1.500	.500	1.180	.406	.281	.870	.938	.437	.281	.190	.620	.312	.870
M201-20A	2.000	.680	1.180	.406	.281	.870	1.250	.437	.375	.190	.620	.312	.870
M201-30A	3.000	1.000	1.910	.593	.406	1.360	2.250	.688	.688	.190	.745	.438	1.370
M201-40A	4.000	1.375	2.640	.593	.406	1.870	2.750	.875	.875	.500	.745	.438	1.870
M201-50A	5.000	1.750	2.640	.781	.531	1.870	3.500	.875	.875	.500	1.120	.563	1.870

Tapered Locks

CODE: M202

Material: Tool Steel

Hardness: HRC58+/-2



Metric standard

CODE	E	L	W	D	C	G	SHCS
		0 -0.1	0 -0.01	0 -0.01	0 -0.01		
M202-50	-	50	25	8	17.5	5	M5(1x)
M202-100	60	100	30	10	22	5	M6(2x)
M202-150	100	150	40	13	25	5	M8(3x)

Inch standard

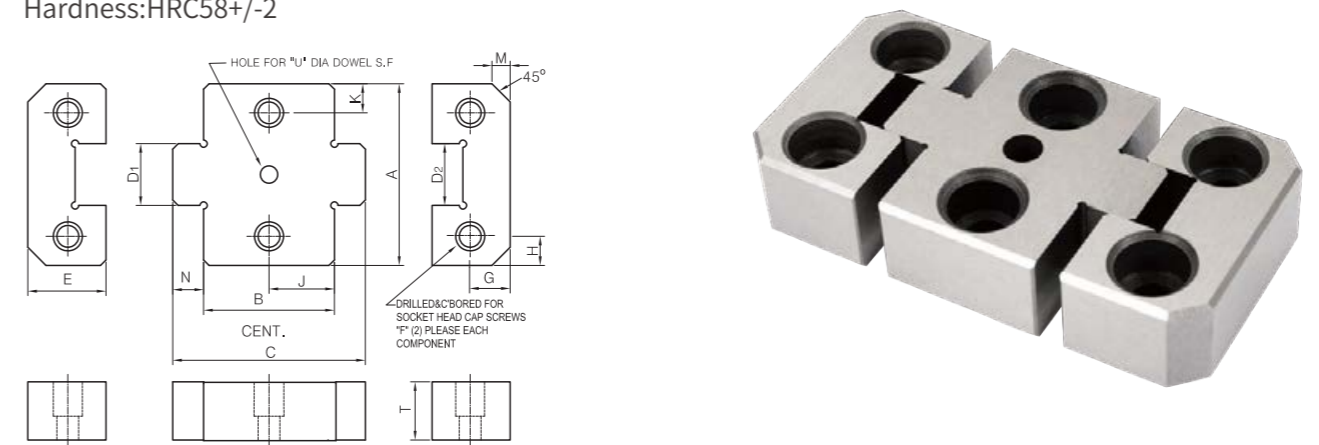
CODE	E	L	W	D	C	G	SHCS
	+0.05 -0.05	+0.1 -0.1	0 -0.01	+0.05 -0.05	+0.05 -0.05		
M202-20L	-	1.980	.999	.312	.690	0.200	3/16"-24(1X)
M202-40L	2.500	3.980	1.249	.375	.870	0.200	1/4"-20(2X)
M202-60L	4.000	5.980	1.499	.500	1.000	0.200	5/16"-18(3X)

X-Type Side Locks

CODE: M203

Material: Tool Steel

Hardness: HRC58+/-2



Metric standard

CODE	A	B	C	D1	D2	E	F	G	H	J	K	L	M	N	U
M203-4026	40	26	43	12	12	21.5	M6-1X20	11	8	13	8	16	5	8.5	6H7
M203-4036	40	36	53	12	12	21.5	M6-1X20	11	8	18	8	16	5	8.5	6H7
M203-5026	50	26	43	17	17	21.5	M6-1X20	11	8	13	8	16	5	8.5	6H7
M203-5036	50	36	53	17	17	21.5	M6-1X20	11	8	18	8	16	5	8.5	6H7
M203-7526	75	26	51	25	25	36	M10-1.5X25	18	12.5	13	12.5	19	5	14	10H7
M203-7536	75	36	61	25	25	36	M10-1.5X25	18	12.5	18	12.5	19	5	14	10H7
M203-10036	100	36	71	35	35	45	M10-1.5X25	22	15	18	15	19	5	20	10H7
M203-10046	100	46	81	35	35	45	M10-1.5X25	22	15	23	15	19	5	20	10H7
M203-12536	125	36	71	45	45	45	M10-1.5X30	22	20.5	18	20.5	25	5	20	12H7
M203-12546	125	46	81	45	45	45	M10-1.5X30	22	20.5	23	20.5	25	5	20	12H7

Inch standard

CODE	A	B	C	D1	D2	E	F	G	H	J	K	L	M	N	U
M203-15A	1.500	.850	1.470	.500	.500	.870	1/4-20X3/4	.281	.281	.425	.281	.620	.19	0.310	.250
M203-15B	1.500	1.350	1.970	.500	.500	.870	1/4-20X3/4	.281	.281	.675	.281	.620	.19	0.310	.250
M203-20A	2.000	.850	1.470	.680	.680	.870	1/4-20X3/4	.375	.375	.425	.375	.620	.19	0.310	.250
M203-20B	2.000	1.350	1.970	.680	.680	.870	1/4-20X3/4	.375	.375	.675	.375	.620	.19	0.310	.250
M203-30A	3.000	.850	1.950	1.000	1.000	1.370	3/8-16X1	.688	.375	.425	.375	.745	.19	0.550	.375
M203-30B	3.000	1.350	2.450	1.000	1.000	1.370	3/8-16X1	.688	.375	.675	.375	.745	.19	0.550	.375
M203-40A	4.000	1.350	2.890	1.375	1.375	1.870	3/8-16X1	.875	.625	.675	.625	.745	.50	0.770	.375
M203-40B	4.000	1.850	3.390	1.375	1.375	1.870	3/8-16X1	.875	.625	.925	.625	.745	.50	0.770	.375
M203-50A	5.000	1.350	2.890	1.750	1.750	1.870	1/2-13X1-1/4	.875	.750	.657	.750	1.120	.50	0.770	.500
M203-50B	5.000	1.850	3.390	1.750	1.750	1.870	1/2-13X1-1/4	.875	.750	.925	.750	1.120	.50	0.770	.500

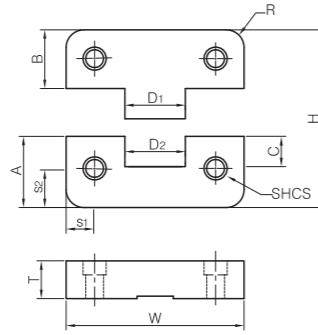
Side Locks with Titanium Coated

CODE: M204

Material: Tool Steel

Hardness: Male=HRC58+/-2 Black Oxidized

Female=HRC80+/-2 Titanium Nitriding Coated



Inch standard

CODE	W +0.000 -0.0004	T +0.000 -0.002	A +0.000 -0.002	B +0.000 -0.002	C	D1 +0.000 -0.0002	D2 +0.0002 -0.000	H +0.002 -0.004	R	S1/S2 +0.010 -0.010	SHCS
M204-100	1.000	.375	1.125	.875	.53	.500	.500	2.000	.187	.250	#10-32X1/2
M204-125	1.250	.490	1.125	.875	.66	.500	.500	2.000	.187	.250	#8-32X5/8
M204-150	1.500	.500	.875	.875	.56	.563	.563	1.750	.187	.250	#8-32X5/8
M204-200	2.000	.500	1.375	.875	.66	.750	.750	2.250	.187	.312	#10-32X1/2
M204-300	3.000	.750	1.875	.875	1.13	1.250	1.250	2.750	.250	.375	1/4-20X3/4
M204-400	4.000	1.000	2.375	1.375	1.25	1.500	1.500	3.750	.500	.500	3/8-16X1
M204-500	5.000	1.250	2.875	1.375	1.63	2.000	2.000	4.250	.500	.625	1/2-13X1-1/4
M204-600	6.000	1.500	2.875	1.375	1.75	2.500	2.500	4.250	.500	.625	1/2-13X1-1/2

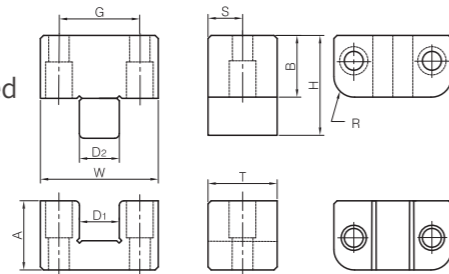
Side Locks with Titanium Coated

CODE: M205

Material: Tool Steel

Hardness: Male=HRC58+/-2 Black Oxidized

Female=HRC80+/-2 Titanium Nitriding Coated



Inch standard

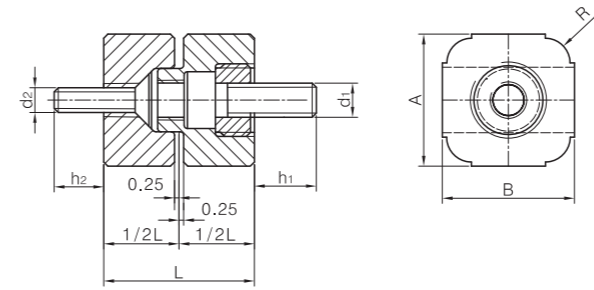
CODE	W +0.000 -0.0005	T +0.000 -0.002	A +0.000 -0.002	B +0.000 -0.002	Total Height	D1 +0.0002 -0.0000	D2 +0.000 -0.0002	H	R	S	G	SHCS	
												Male(2)	Female(2)
M205-125	1.250	.625	.625	.500	1.125	.438	.438	.875	.260	.312	.875	#6-32X1/2	#6-32X5/8
M205-150	1.500	.875	.875	.750	1.625	.500	.500	1.250	.260	.437	1.000	#8-32X3/4	#8-32X3/4
M205-200	2.000	1.000	1.125	.750	1.875	.750	.750	1.375	.380	.500	1.375	#10-32X3/4	#10-32X1"
M205-300	3.000	1.125	1.500	.750	2.250	1.125	1.125	1.500	.510	.562	2.250	1/4-20X3/4	1/4-20X1-1/2

Square Interlocks

CODE: M206

Material: Tool Steel

Hardness: HRC58+/-2



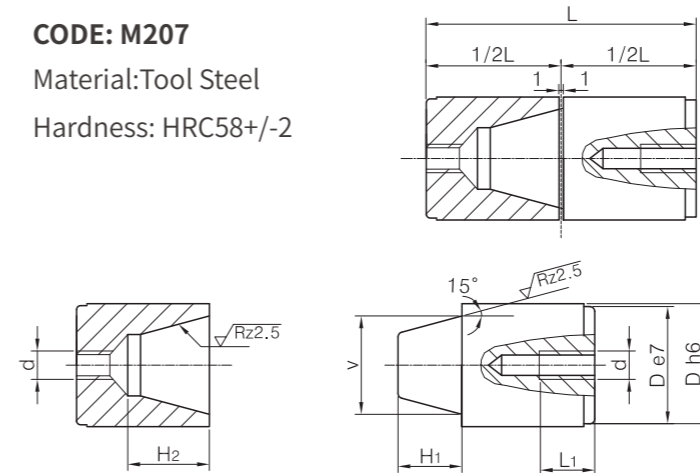
CODE	A	B	L	d1	d2	H1	H2	R
M206-20	20	20	28	M5	M4	12	4	4
M206-25	25	25	32	M6	M5	13	8	5
M206-32	32	32	36	M8	M6	15	12	6
M206-40	40	40	45	M10	M8	17	10	6

Round Interlocks

CODE: M207

Material: Tool Steel

Hardness: HRC58+/-2



CODE	D	L	V	H1	H2	L1	d
M207-12	12	34	8	5	8	10	M4
M207-14	14	34	10	7	8	11	M5
M207-16	16	34	10	7	8	11	M5
M207-20	20	54	15	10	13	15	M8
M207-25	25	54	20	11	13	15	M8
M207-26	26	54	20	11	13	15	M8
M207-30	30	72	25	14	20	18	M10
M207-32	32	72	25	14	20	18	M10
M207-42	42	92	35	25	25	18	M10

Inclined Ejector Core Unit KOCUS

CODE: M208

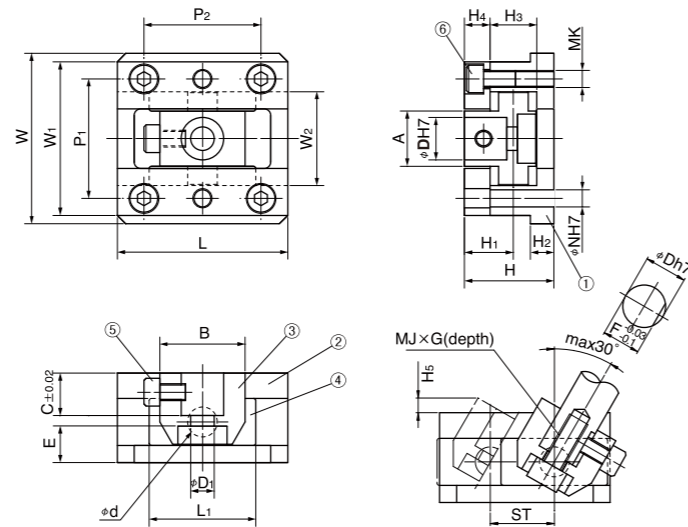


Table of Components

No.	Description	Material	Qty
1	Slide Base	S45C	1
2	Upper Plate	S45C	2
3	Pin Holder	S45C	1
4	Slide Plate	Bronze+Graphite	2
5	Socket Head Screw	SCM435	1
6	Socket Head Screw	SCM435	4

D	d	D1	A	B	C	E	F	MJ	G	H	H1	H2
8	7	4.5	11	20	8	10	7	M4	8	22	12.5	5
10	7	5.5	15	25	10	12.5	9	M5	9	27	15.5	5
12	10	7	17	25	12	15	11	M6	10	32	18	7
16	12	9	22	30	16	15	14.5	M8	12	36	20	8
20	14	11	26	40	20	16	18	M10	16	42	23	11
25	16	14	32	45	25	17	22.5	M12	20	50	28	15
30	18	14	38	50	30	17	27	M12	25	55	30	15
35	20	14	45	60	35	18	32	M12	30	62	35	15
40	25	18	55	70	40	19	36	M16	35	70	40	15
45	30	18	60	80	45	24	40	M16	40	80	45	15

H3	H4	H5	L	L1	W	W1	W2	P1	P2	MK	N	ST
11	7	10.5	32	20	33	30	19	24	20	M3	3	10
15	8	11.3	45	25	45	40	25	32	30	M4		18
16	10	4	50	30	57	51	31	39	35	M6	6	20
20	10	5	65	40	65	58	38	46	40	M6	6	25
22	12	8	80	50	80	72	44	56	55	M8	8	30
26	15	8	90	55	93	85	52	66	65	M10	10	35
30	15	9	100	60	101	93	60	74	70	M10	10	40
34	18	10	120	75	120	110	70	85	80	M12	10	45
44	18	12	135	85	130	120	80	95	90	M12	10	50
50	20	14	150	95	140	130	90	105	110	M12	10	55

Inclined Ejector Core Unit KOCUF

CODE: M208F

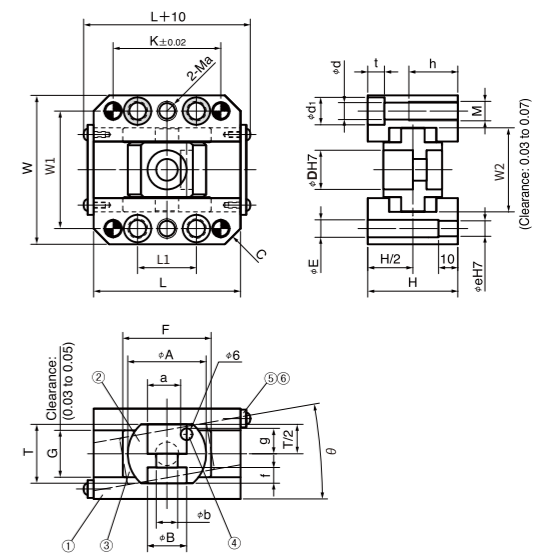


Table of Components

*Remove ⑤ Lock Plate as

No.	Description	Material	Qty
1	Slide Base	S45C	2
2	Pin Holder	S45C	1
3	Side Plate	Bronze+Graphite	2
4	Key	S45C	1
5	Stopper	S45C	2
6	Round Head Screw	SCM435	4

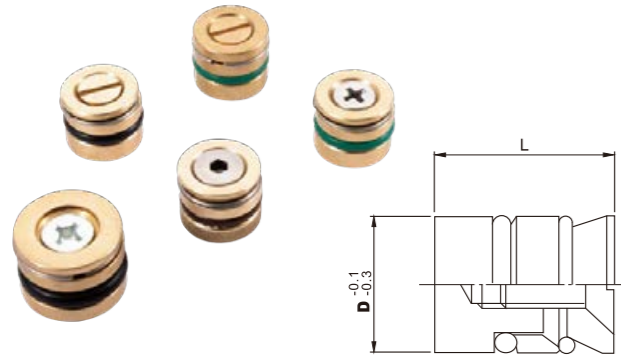
D	W	W1	L	L1	K	C	H	e	E	d	d1	
8	41	33	44	12	25	3	24	4	5	3.4	6	3.4
10	47	38	50	16	30	3	28	5	5.5	4.5	8	5
12	53	42	60	20	40	4	36	6	7	6.6	11	4.8
16	64	50	70	25	50	6	40	6	6.6	6.6	11	6.5
20	76	60	75	30	55	8	46	8	9	8.6	14	8.5
25	81	65	85	40	65	8	48	8	9	8.6	14	8.5
30	88	72	100	50	80	8	54	8	9	8.6	14	8.5
35	100	80	115	50	85	8	60	10	11	11	18	6.5
40	108	88	125	50	85	8	65	10	11	11	18	7

h	M	W2	A	a	B	b	g	F	G	T	θ
10	M4	24	20	7.5	10	5	6.5	25	5	13	16
15	M5	28	20	8.5	12	6	6.5	32	4	17	16
20	M8	31	25	10	13	7	8.5	40	5	20	20
20	M8	36	30	13	16	9	10	45	6	24	24
25	M10	43	40	17	20	11	13	45	8	24	30
25	M10	48	45	22	25	14	14	50	9.5	26	35
25	M10	55	50	27	25	14	15	60	9	30	38
30	M12	64	55	31	25	14	15	70	10	34	40
30	M12	72	60	36	32	18	16	80	11.5	38	43

0°—10°

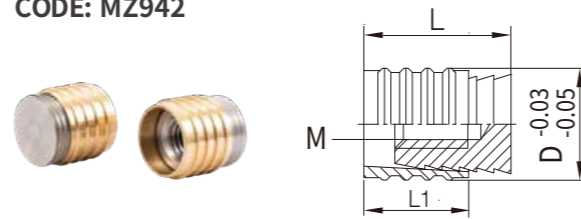
Cooling circuit plugs

CODE: M501A



D	8	10	12	14	16	18	20	25	30
---	---	----	----	----	----	----	----	----	----

CODE: MZ942

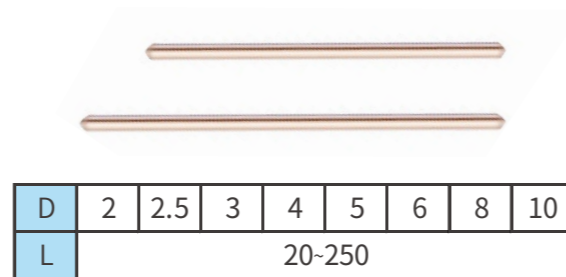
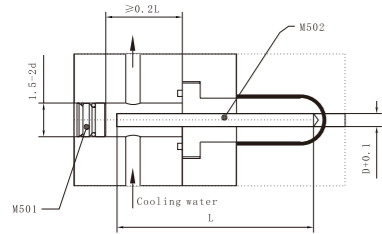


CODE	D	L	L1	M
MZ942	6	11.5	8	M3
	8			M4
	10	14	10	M6
	12			
	16			

Heat transfer cartridge

CODE: M502A

Material: Copper
filled with water

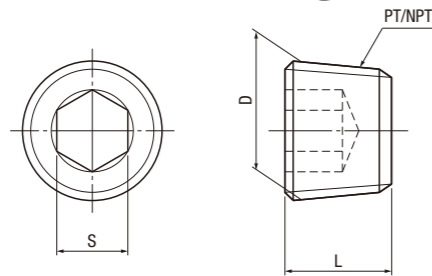


D	2	2.5	3	4	5	6	8	10
L	20-250							

Cooling circuit screw plugs

CODE: PT/NPT

Material: Aluminum(6061)



PT	D	S	L
1/16	7.723	4.1	7
1/8	9.728	5.1	7
1/4	13.157	6.1	8.9
3/8	16.662	8.1	10
1/2	20.955	10.1	12
3/4	26.441	14.1	14
1"	33.249	17.1	17

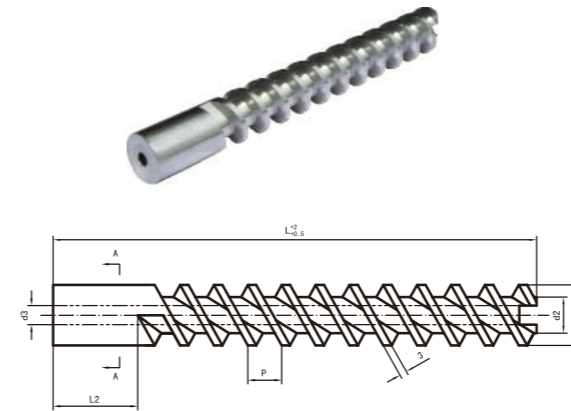
NPT	D(INCH)	HEX	L(INCH)
1/16	0.312	5/32	0.25
1/8	0.405	3/16	0.25
1/4	0.54	1/4	0.406
3/8	0.675	5/16	0.406
1/2	0.84	3/8	0.531
3/4	1.05	9/16	0.531
1"	1.315	5/8	0.656

Spiral Core

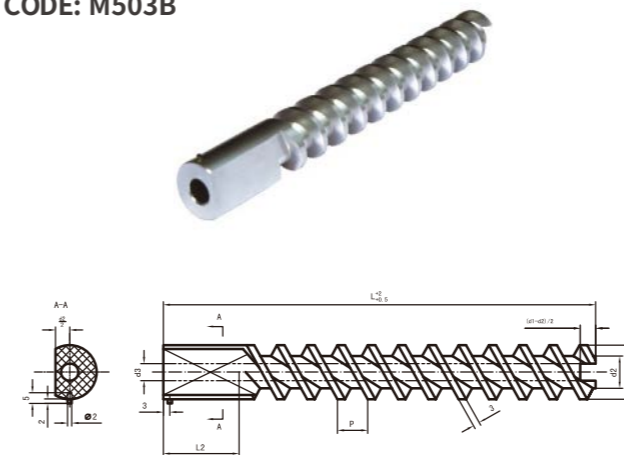
Single threaded

Material: Aluminum(6061)

CODE: M503A



CODE: M503B



CODE	d1	d2	d3	L	P	L2
M503A	12	8	5	125	14	35
	16	11	6	150		
	20	13	8	175		
M503B	25	15	10	200	18	35
	32	22	12	250		
	40	26	14	300		
	50	32	16	350		
				400		

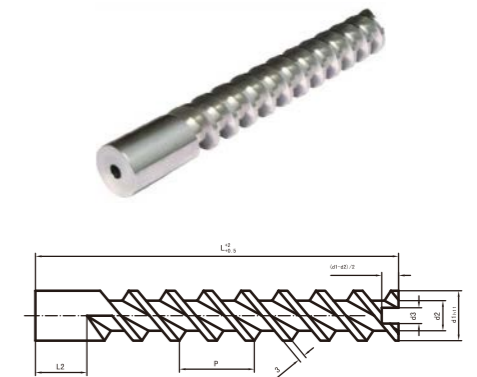
Order Example: M503A-d1 x L

Spiral Core

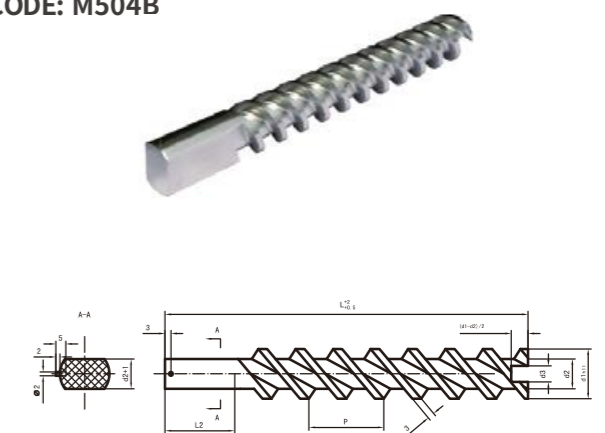
Double threaded

Material: Aluminum(6061)

CODE: M504A



CODE: M504B



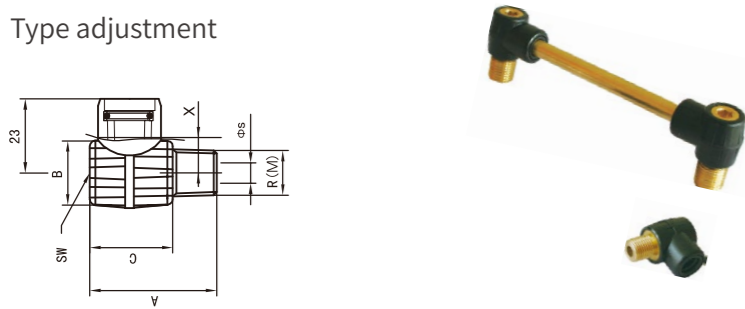
CODE	d1	d2	d3	L	K	P	L2
M504A	12	8	5	125	10	28	35
	16	11	6	150			
	20	13	8	175			
M504B	25	15	10	200	10	36	35
	32	22	12	250			
	40	26	14	300			
	50	32	16	350			
				400			

Order Example: M504A-d1 x L

Cooling Water Junction

CODE: M505

Type adjustment



Code	A	B	C	X	R(PT)	M	S	T	SW
M505	35	21	26	8.7	1/8	M10	5	8	6
					1/4		6		
	39	25	30	11.2	1/4	M12	9	12	8
					3/8				



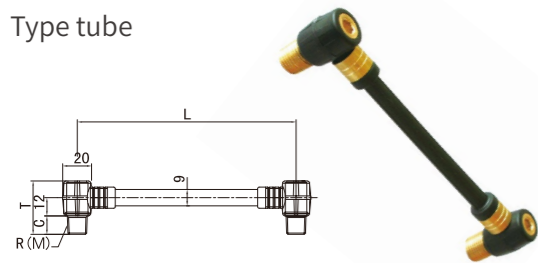
copper tube size

D	d	L
8	6	300
12	10	300

The length of copper pipe can be adjusted when it is installed.

CODE: M506

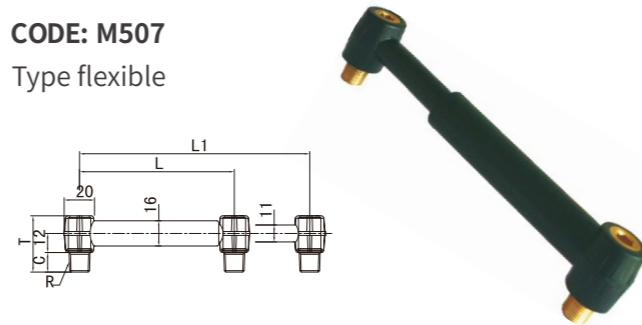
Type tube



Code	T	C	R(PT)	M	L
M506	31	9	1/8	M10	140
	35	12.7	1/4	M12	

CODE: M507

Type flexible

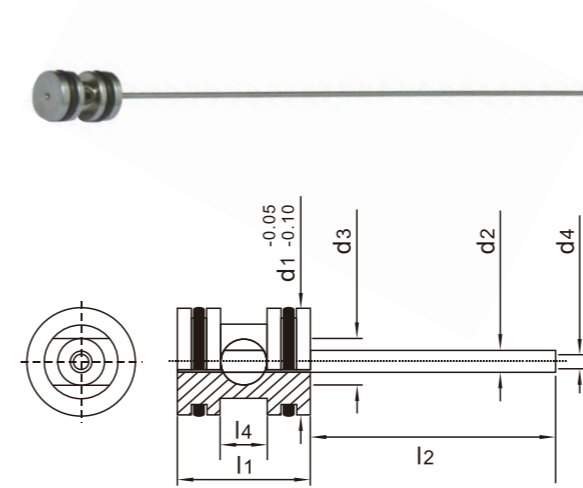


Code	T	C	R(PT)	M	L
M507	31	9	1/8	M10	65
	35	12.7	1/4	M12	100 160

Cooling Water Tube

CODE: ME2112

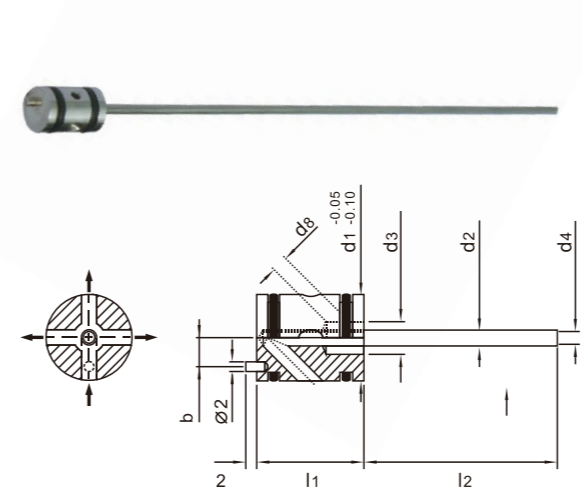
Material: SUS304



CODE	d3	d4	11	12	14	d1	d2
ME2112	4	0.8	15	150	4	10	1.3
	4	1.2	15	150	4	10	1.6
	4	1.8	15	150	4	10	2.4
	7	1.2	20	200	7	16	1.6
	7	1.8	20	200	7	16	2.4
	7	2.5	20	200	7	16	3.3
	7	3.2	20	200	7	16	4
	7	4	20	200	7	16	5
	7	5	20	200	7	16	6
	12	3.2	30	200	12	25	4
	12	4	30	200	12	25	5
	12	5	30	200	12	25	6
12	7	30	200	12	25	8	

CODE: ME2110

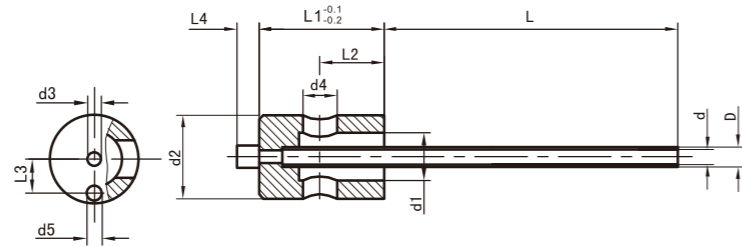
Material: SUS304



CODE	b	d3	d4	d8	11	12	d1	d2
ME2110	3	4	0.8	2	15	150	10	1.3
	3	4	1.2	2	15	150	10	1.6
	3	4	1.8	2	15	150	10	2.4
	5.5	6	1.2	3	20	200	16	1.6
	5.5		1.8	3	20	200	16	2.4
	5.5	6	2.5	3	20	200	16	3.3
	9.8	12	3.2	7	30	200	25	4
	9.8	12	4	7	30	200	25	5
	9.8	12	5	7	30	200	25	6
	9.8	12	7	7	30	200	25	8

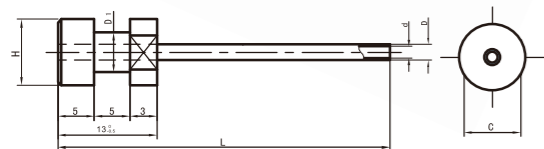
Cooling Water Tube

CODE: MZ962
Material: SUS304



CODE	L1	L2	L3	L4	d1	d2	d3	d4	d5	d	D	L						
MZ962	16	9	3.5	2.5	4	10	2	4	2	2.6	2.6	100						
					5		2.4					200						
					6		3					100						
			18		4.5		6					8	12	4	6	4	5	160
					7							12	16	5		6	160	
												14	18	6		8	315	
	20	10	8	16	20	8	8	8	10	160								
	25	13	9.5	3	20	25	10	10	3	10	12	160						
												315						

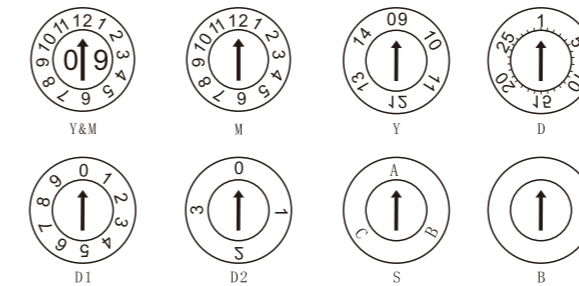
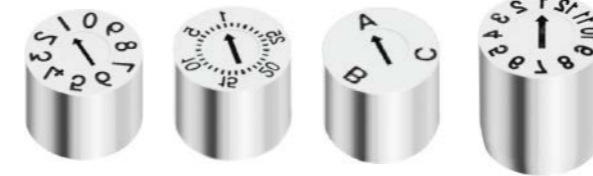
CODE: WCPK
Material: SUS304



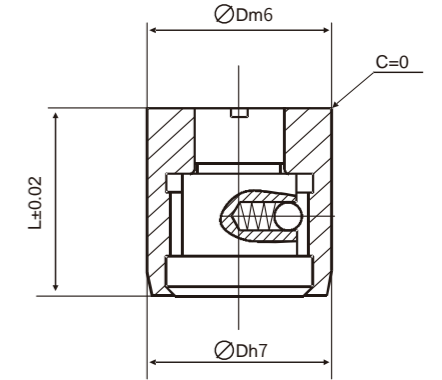
CODE	H	D1	C	d	D	L
WCPK	8	6	6	1.6	2	100
						200
				10	8	8
	200					
	300					
	10	8	8	3.6	4	200
300						

Mold Date Stamps

CODE: M301
Material: SUS420
Hardness: HRC50+/-2



*Special engravings available by request

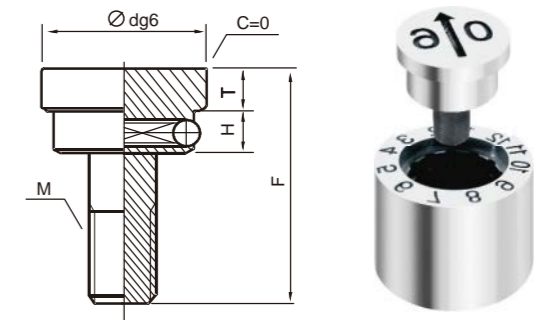
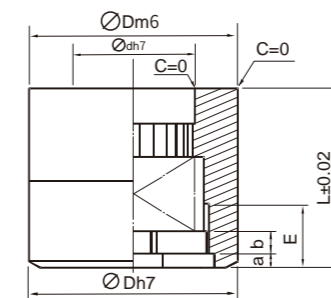


CODE	Dm6	Dh7	L	
M301	4	4	6	8
	5	5	6	8
	6	6	8	10
	8	8	10	
	10	10	10	12
	12	12	12	14
	16	16	14	
	20	20	14	16

Order Example: M301-D x L

Changeable Stamps

CODE: M302
Material: SUS420
Hardness: HRC50+/-2



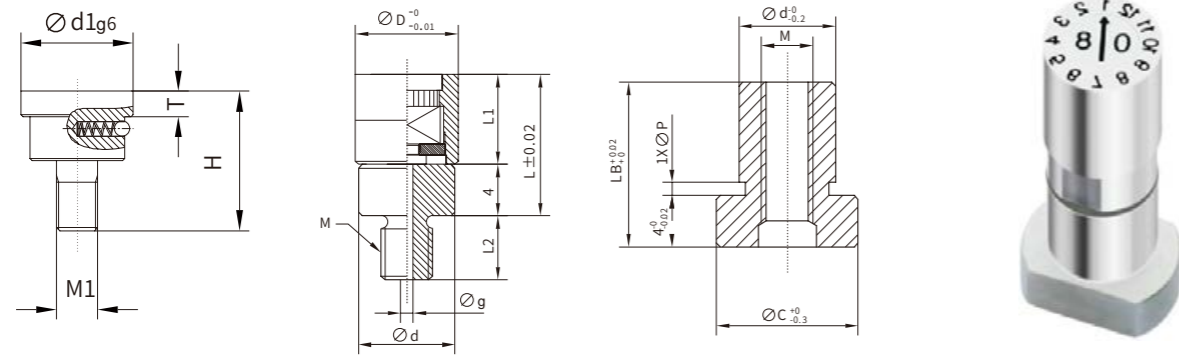
CODE	Dm6	Dh7	L	E	F	T	H	dh7	a	b
M302	4	4	8	2.8	7.7	1.5	3	2.4	1	1
	5	5	8	2.85	7.7	1.5	3	2.9	1	1.2
	6	6	8	2.9	7.7	1.5	3	3.7	1	1.2
	8	8	10	3.4	7.7	2	3.5	5	1	1.5
	10	10	12	4.2	9.7	2.5	4	6.3	1	1.5
	12	12	14	4.4	13.7	2.5	4.3	7.5	1.2	1.8
	16	16	14	5	13.7	2.5	4.3	11	1.2	1.5

Order Example: M302-D x L

Mold Date Stamps

CODE: M302A

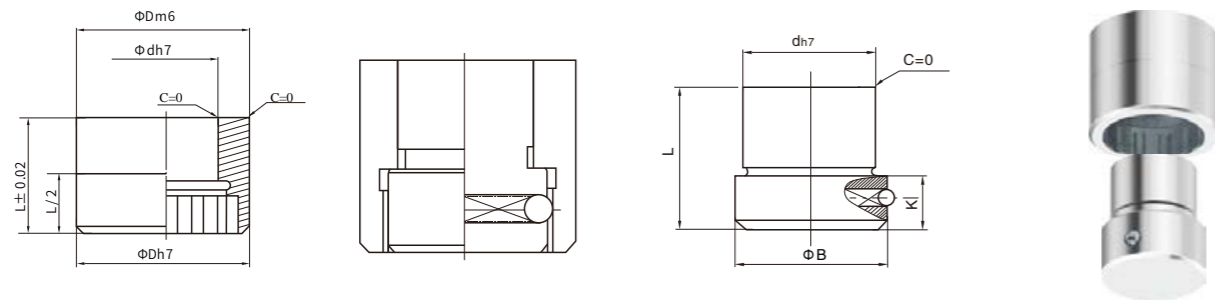
Material: SUS420
Hardness: HRC50+/-2



CODE	D	d	g	M	L1	L2	L	d1	T	M1	H	C	LB
M302A	6	5.5	1	3*0.5	8	4	12	3.7	1.5	1.6*0.2	7.7	9	10-50
	8	7.5	1	4*0.7	10	5	14	5	2	2.3*0.25	9.7	11	10-60
	10	9.5	1.5	5*0.8	12	6	16	6.3	2.5	2.5*0.45	11.7	15	20-70
	12	11.5	2	6*1	14	8	18	7.5	2.5	3*0.5	13.7	20	20-70

CODE: M302B

Material: SUS420
Hardness: HRC50+/-2

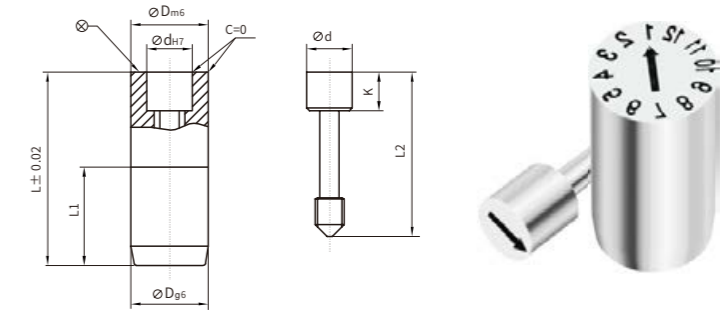


CODE	Dm6	Dh7	L	dh7	B	L	K
M302B	4	4	8	1.9	2.8	8	3
	5	5		2.3	3.4	8	4
	6	6		2.8	4	8	4
	8	8	10	4	5.6	10	4
	10	10	12	5	6.5	12	6
	12	12	14	6.5	8	12	6
	16	16		10	12	14	6
	20	20		12	14	16	6

Mold Date Stamps

CODE: M302C

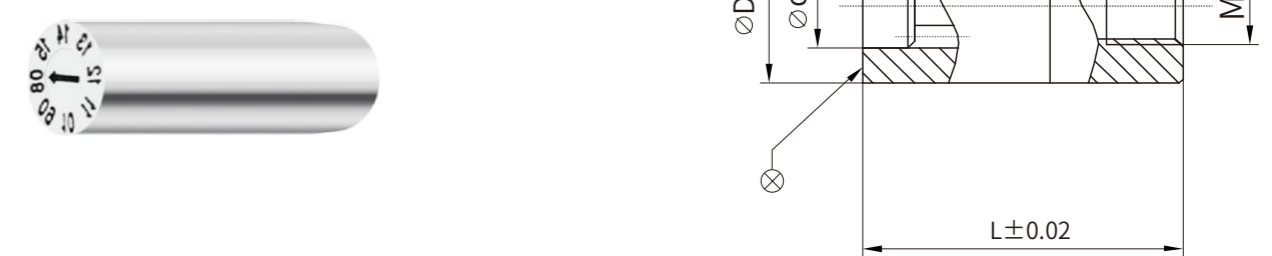
Material: SUS420
Hardness: HRC50+/-2



CODE	Dm6	d	L	L1	L2	K
M302C	4	2.2	12	5	7.5	3.25
	5	3				
	6	3.2	20	12	17	5
	8	4.7				
	10	5.7				
	12	6.7				
16	8.7					
20	10.7					

CODE: M302H

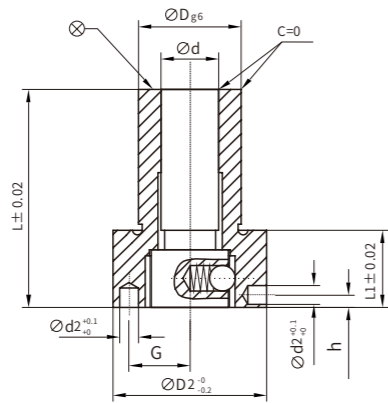
Material: SUS420
Hardness: HRC50+/-2
Standard: DIN



CODE	Dg6	Dd	L	M	L1
M302H	4	2	12.5	2*0.4	2.5
	5	2.5	14	2.5*0.45	3
	6	3	16	3*0.5	
	8	4	18		
	10	5	22	4*0.7	5.5
	12	6.4	25		

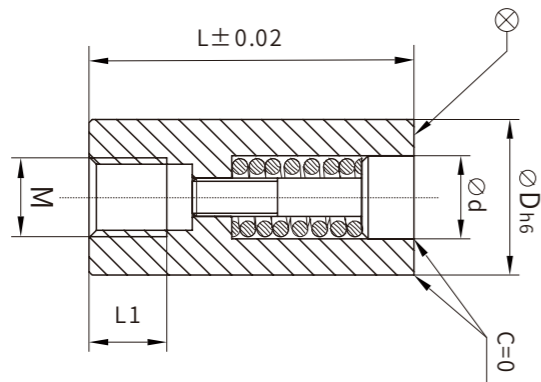
Mold Date Stamps

CODE: M302HT
 Material: SUS420
 Hardness: HRC50+/-2
 Standard: DIN



CODE	Dg6	D2	d	d2	L	L1	G	h
M302HT	6	10	3.5	1.5	14	5	3.95	0.9
	8	12	4.5		17	6	4.75	0.95
	12	20	6.5	2	22	10	8	3.5
	16	23	9		27	11	9.25	
	20	28	10.5		36	14	11.5	

CODE: M303
 Material: SUS420
 Hardness: HRC50+/-2

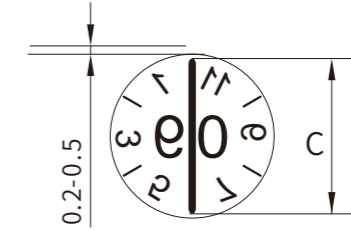
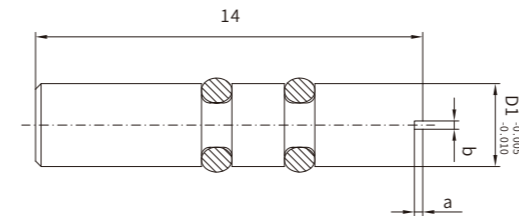


CODE	Dh6	Od	L	L1	M
M303	3	1.6	14	3	2*0.4
	4	2.5			
	5	3.1	17	3.5	3*0.5
	6				
	8	4.6	20	4	4*0.7
	10				5*0.8
	12	6.4	25	6	6*1
	16	8.4	33	8	8*1.25
20	11				

Mold Date Stamps

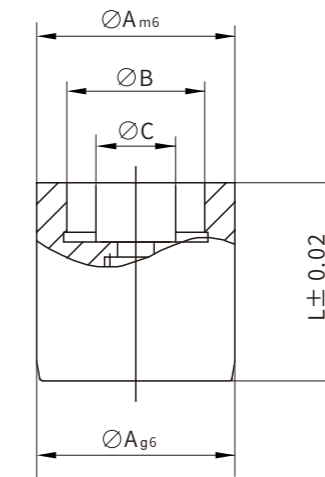
CODE: M303A
 Material: UT40
 Hardness: HRC38-40

CODE: M303B
 Material: SUS420
 Hardness: HRC50+/-2



CODE	D1	D2	a	b	C
M303A M303B	2	2.1	0.3	0.1	1.8
	2.5	2.6	0.3	0.1	2.3
	3	3.2	0.3	0.15	2.8
	4	4.2	0.3	0.15	3.8

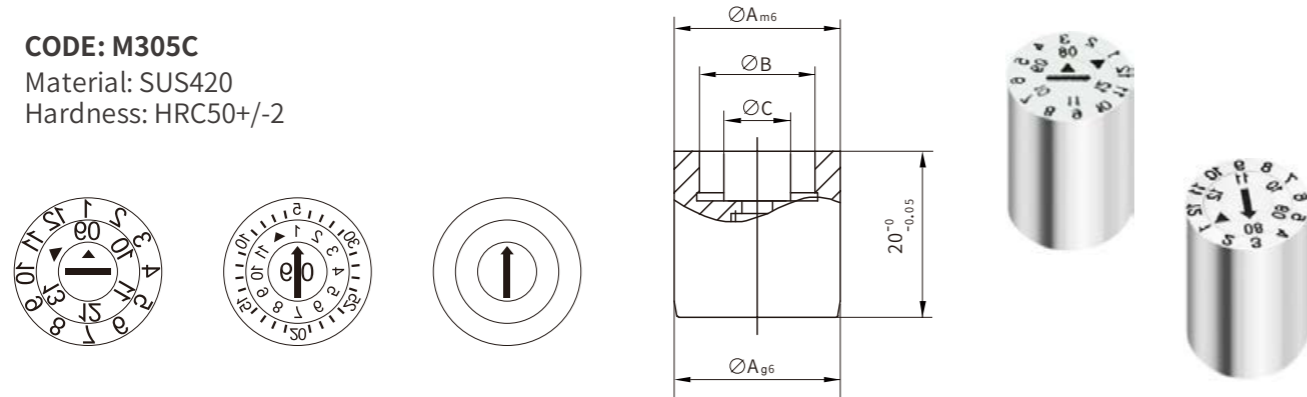
CODE: M305
 Material: SUS420
 Hardness: HRC50+/-2



CODE	Am6	OB	OC	L
M305	8	5.8	3.6	10
	10	7	4	12
	12	8.5	5	14
	16	11.5	7	14
	20	14	8	16

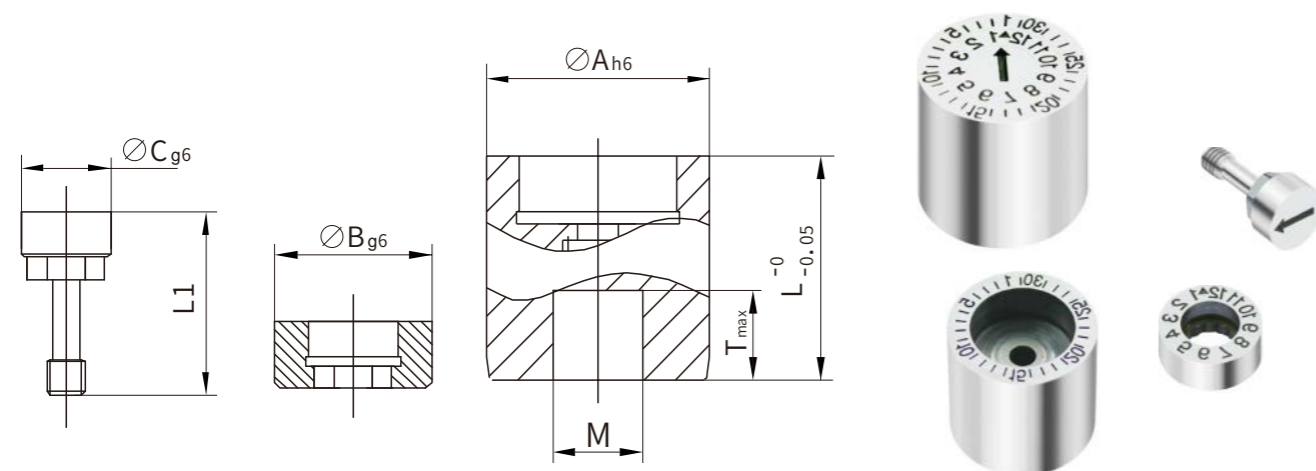
Mold Date Stamps

CODE: M305C
 Material: SUS420
 Hardness: HRC50+/-2



CODE	Am6	OB	OC
M305C	8	5.8	3.6
	10	7	4
	12	8.5	5
	16	11.5	7
	20	14	8

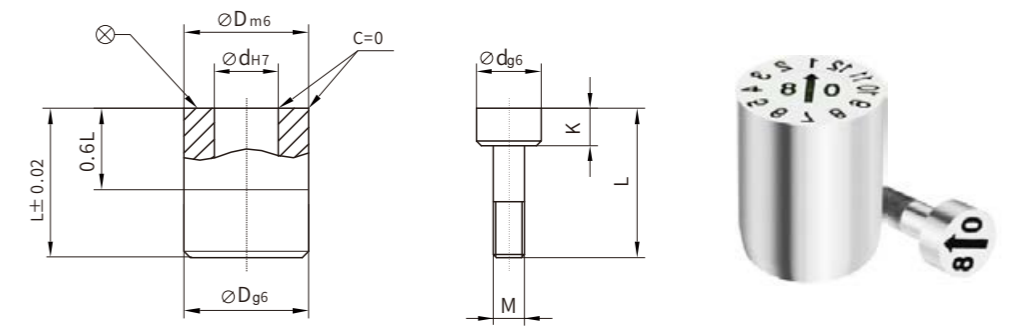
CODE: M3050
 Material: SUS420
 Hardness: HRC50+/-2



CODE	Ah6	B	C	L1	M	T	L
M3050	6	4.2	2.4	13.5	3*0.5	3	17
	8	5.8	3.6	16	4*0.7	4	20
	10	7	4	16	5*0.8	4	20
	12	8.5	5	18.5	6*1	6	25
	16	11.5	7	22	8*1.25	8	33

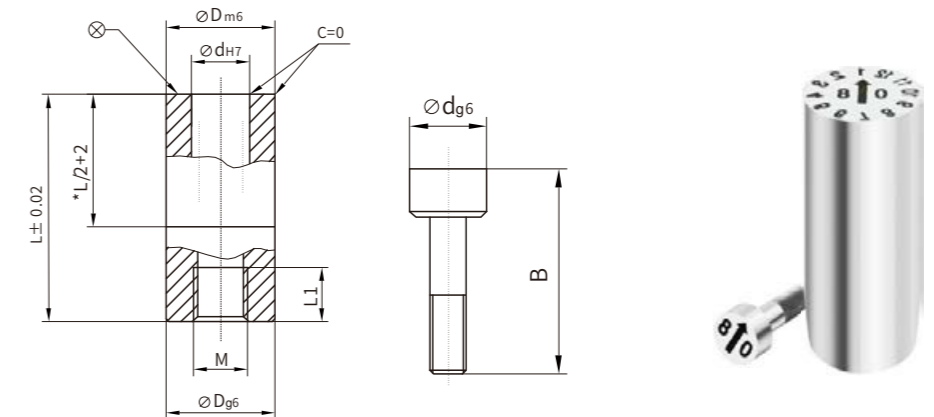
Mold Date Stamps

CODE: M306F
 Material: SUS420
 Hardness: HRC50+/-2



CODE	D	d	L	K	M
M306F	2.6	1.4	4	0.9	0.8*0.2
	3	1.5			
	4	2.1	5	1.2	1.1*0.2
	5	3.1	8	2	1.6+0.2
	6				
	8	4.4	10	2.5	2.3*0.25
	10	5.2	12	3	2.5*0.35
	12	6.2			3*0.35
	16	8.2	14	3.5	4*0.35
	20	11	16	4.5	

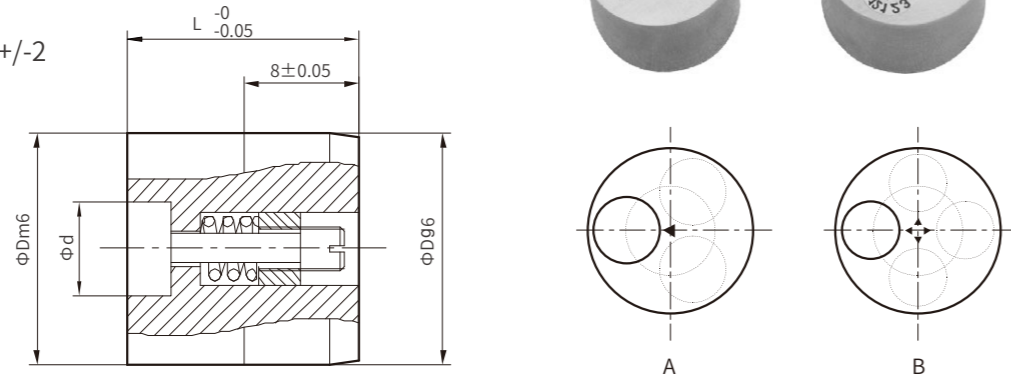
CODE: M306FL
 Material: SUS420
 Hardness: HRC50+/-2
 Standard: American



CODE	D	d	L	B	L1	M
M306FL	5	3.1	17	13	3.5	3*0.5
	6					
	8	4.6	20	14	4	4*0.7
	10					5*0.8
	12	6.4	25	17	6	6*1
	16	8.4	33	22	8	8*1.25
20	11					

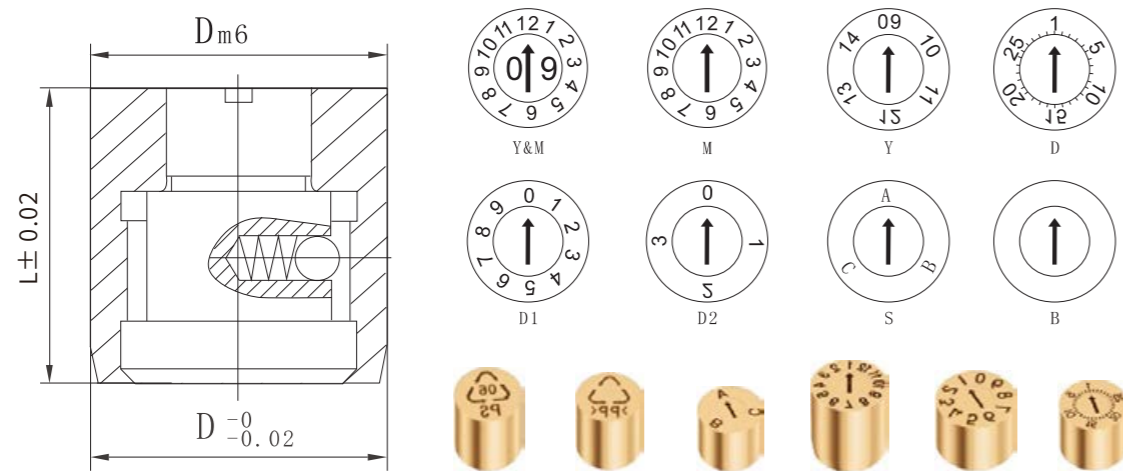
Mold Date Stamps

CODE: M307
 Material: SUS420
 Hardness: HRC50+/-2



CODE	Dm6	d	type
M307	16	6.5	A
	18		B
	22	8.7	A
	25		B
	28	11.5	A
	32		B

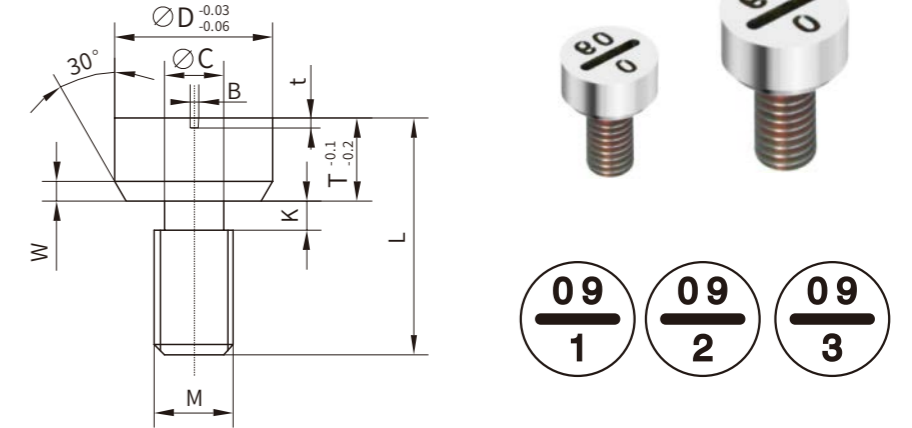
CODE: M308
 Material: UT40
 Hardness: HRC38-40



CODE	D	3	4	5	6	8	10	12	16	20
M308	L	6/8/10			8/10	10	10/12	12/14	14	14/16

Mold Date Stamps

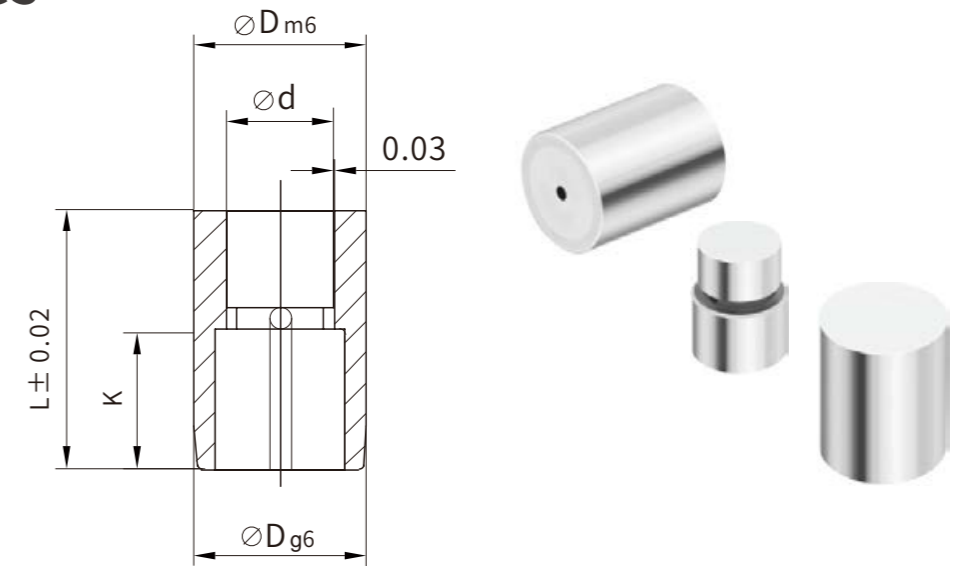
CODE: M309
 Material: 1.2344
 Hardness: HRC50+/-2



CODE	D	C	K	W	T	M	L
M309	6	2.4	1	1	3.2	3*0.5	10
	8	3	1.5	1	4.2	4*0.7	12
	10	4	2	1	4.2	5*0.8	12
	12	5	2	1.2	5.2	6*1	15
	16	6.5	2.5	1.5	6.5	8*1.25	20

Double Valves

CODE: VD
 Material: SUS420
 Hardness: HRC50-55



CODE	D	d	L	K
VD	8	5	12	7
	10	6		
	12	8	20	12
	16	10		

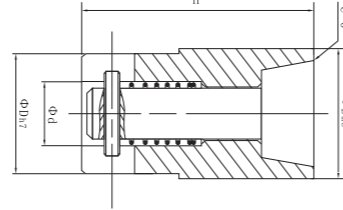
Air-Jet Valves

CODE: M310

Material: SUS420

Hardness: HRC50+/-2

CODE	D	H	d
M310-8	8	15	4.5
M310-10	10	20	7
M310-12	12	25	7.7
M310-16	16	30	10.3
M310-18	18	35	12
M310-20	20	35	12.9
M310-25	25	45	14.9
M310-30	30	45	18

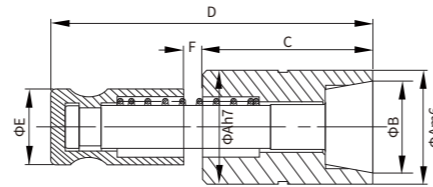


CODE: M312

Material: SUS420

Hardness: HRC50+/-2

CODE	A	B	C	D	E	F
M312-8	8	6.6	11	24	6	1
M312-10	10	8	11	24	6	1
M312-12	12	9.7	18	34	8	2
M312-16	16	13	20	38	8	4
M312-18	18	14.8	22	46	12	4
M312-20	20	16	26	50	12	6
M312-25	25	20	26	50	12	6

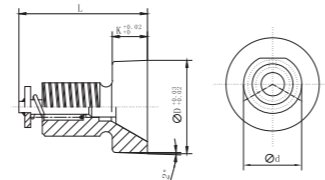


CODE: M313

Standard: DIN

Material : Copper Beryllium+SUS420

CODE	D	H	d
M313-8	8	15	4.5
M313-12	10	20	7
M313-16	12	25	7.7



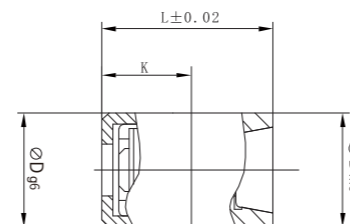
CODE: M314

Material: SUS420

Hardness: HRC50+/-2

Tape C

CODE	Dm6	Dg6	L	K
M314-5	5	5	12	7
M314-6	6	6		
M314-8	8	8		
M314-10	10	10		
M314-12	12	12	20	12
M314-16	16	16		
M314-20	20	20		

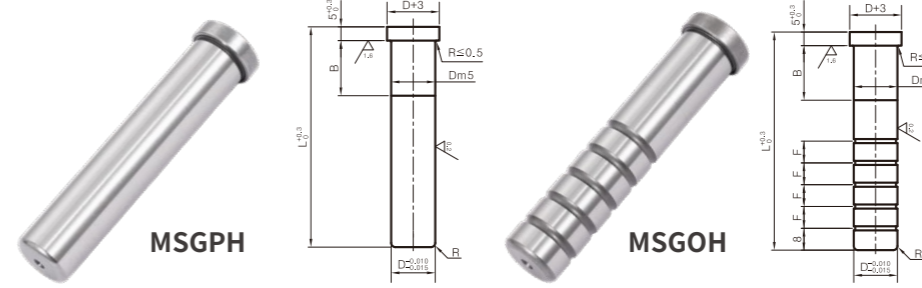


Stripper Guide Pins-Head Type

CODE: MSGPH/MSGOH

Material: SUJ2(100Cr6)

Hardness: HRC58-62



L	Groove	F
40 ≤ L < 50	2	8
50 ≤ L < 70	3	
70 ≤ L < 80	4	
80 ≤ L < 90	5	
90 ≤ L < 120	6	10
120 ≤ L < 160	6	
160 ≤ L < 180	7	
180 ≤ L < 200	8	

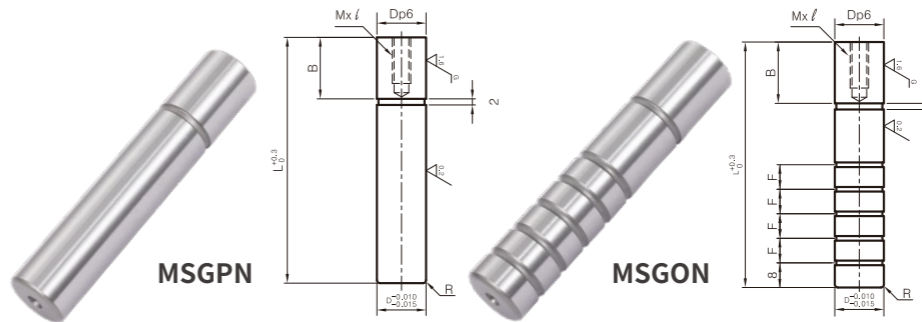
CODE	D m5	B	R	L
MSGPH	8	10	1	40 50 60 70 80
	10	13		40 50 60 70 80 90 100
MSGOH	13	16	1.5	40 50 60 70 80 90 100 110 120
	16	20		50 60 70 80 90 100 110 120 140
	20	25		60 70 80 90 100 110 120 140
	25	28	2	70 80 90 100 110 120 140

Stripper Guide Pins-Straight Type

CODE: MSGPN/MSGON

Material: SUJ2(100Cr6)

Hardness: HRC58-62



L	Groove	F
40 ≤ L < 50	2	8
50 ≤ L < 70	3	
70 ≤ L < 80	4	
80 ≤ L < 90	5	
90 ≤ L < 120	6	10
120 ≤ L < 160	6	
160 ≤ L < 180	7	
180 ≤ L < 200	8	

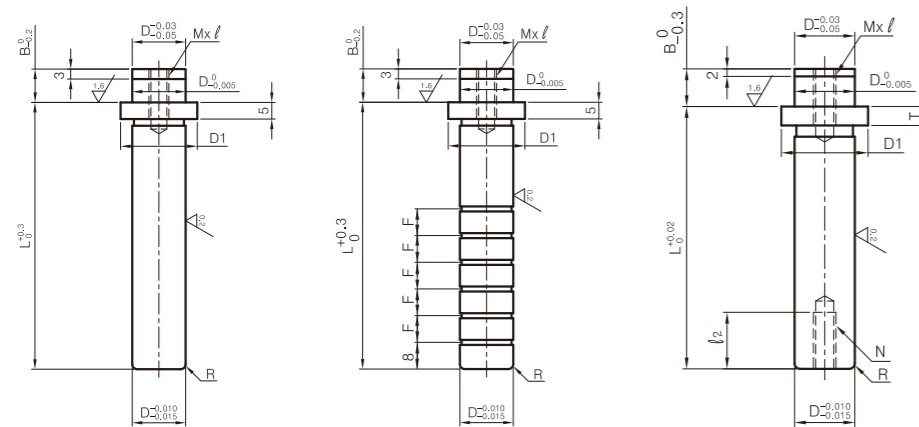
CODE	D p6	B	R	M x l	L
MSGPN	8	10	1	M5 x 12	40 50 60 70 80
	10	13			40 50 60 70 80 90 100
MSGON	13	16	1.5	M6 x 15	40 50 60 70 80 90 100 110 120
	16	20			50 60 70 80 90 100 110 120 140
	20	25			60 70 80 90 100 110 120 140
	25	28	2	M8 x 20	70 80 90 100 110 120 140

Stripper Guide Pins-Removable Type

CODE: MSGPR/MSGOR/MSGPW

Material: SUJ2(100Cr6)

Hardness: HRC58-62



L	Groove	F
30 ≤ L < 40	2	8
40 ≤ L < 60	3	
60 ≤ L < 70	4	
70 ≤ L < 80	5	
80 ≤ L < 120	6	10
120 ≤ L < 140		

CODE	D	D1	R	B	M x l	L
MSGPR	8	13	1	8	M4 x 12	30 40 50
	10	16				30 40 50 60 70 80
MSGOR	13	20	1.5	10	M5 x 15	40 50 60 70 80 90 100
	16	23				40 50 60 70 80 90 100 110 120
	20	27				50 60 70 80 90 100 110 120
MSGPW	25	32	2	13	M8 x 20	50 60 70 80 90 100 110 120
				16		60 70 80 90 100 110 120

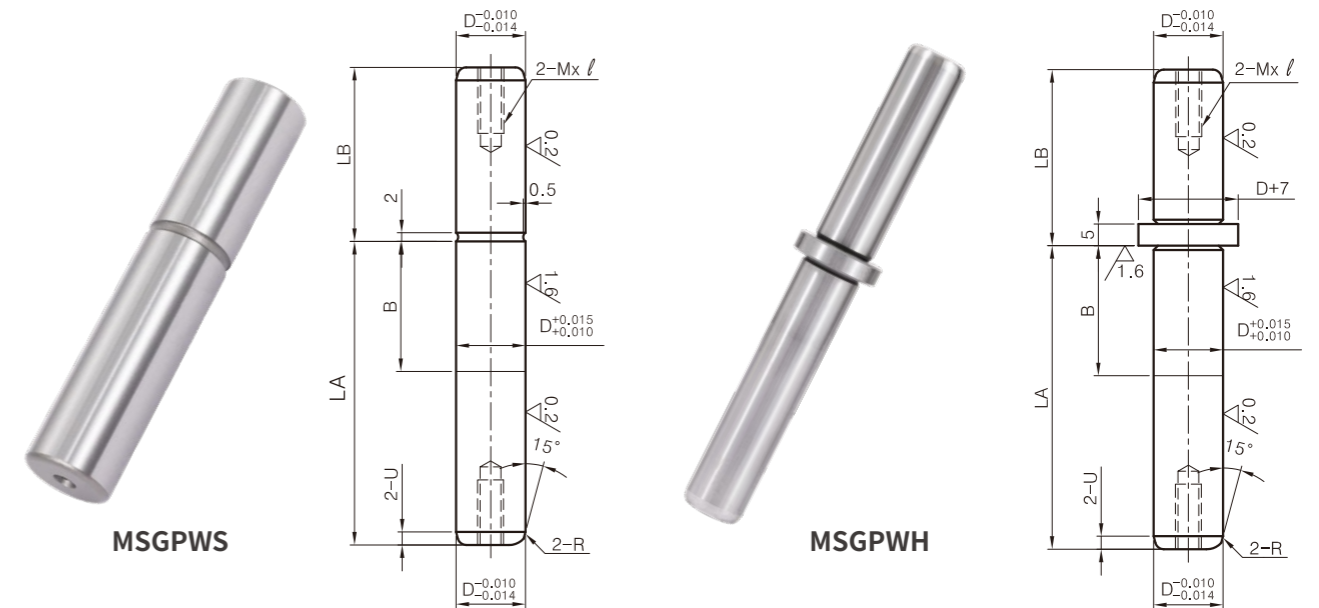
CODE	D	M x l	N	l ₂	D1	R	T	B	L
MSGPW	8	M4 x 12	M4	8~13	12	1.0	3	8	25-70
	10				14				
	13	M5 x 15	M5	10~15	17	1.5	5	10	30-75
	16	M6 x 15	M6		23				40-100
	20	M8 x 20	M8	16~21	27	2.0		13	60-120
25	32				16				

Stripper Guide Pins-Strong Type

CODE: MSGPWS/MSGPWH

Material: SUJ2(100Cr6)

Hardness: HRC58-62



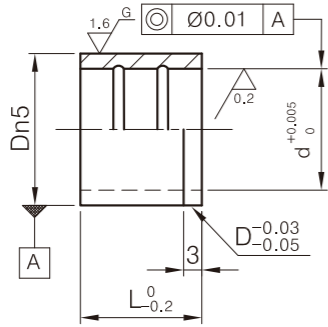
CODE	D	LA	B	U	R	M x l	LB	
MSGPWH	13	60		2	1.5	M5 x 22	30 40 50	
		70					30 40 50 60	
		80					40 50 60	
MSGPWS MSGPWH	16	70	10~30	3	2.0	M6 x 25	30 40 50 60	
		80					40 50 60 70	
		90					40 50 60 70 80	
		80					40 50 60 70	
	20	90			4	3.0	M8 x 25	40 50 60 70
		100						50 60 70 80
		90						50 60 70
		100						50 60 70 80
25	110					60 70 80 90		

Stripper Guide Bushes

CODE: MSGBA/MSGBH/MSGBL/MSGBT

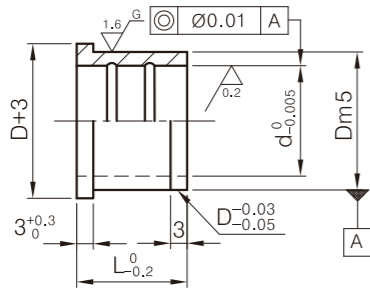
Material: SUJ2(100Cr6)

Hardness: HRC58-62



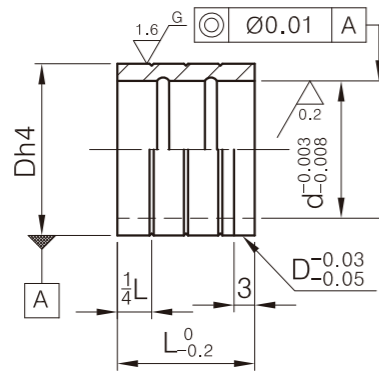
CODE	d	D n5	L
MSGBA	8	12	10 13 16 20
	10	14	10 13 16 20 25
	13	18	13 16 20 25
	16	22	16 20 25 30
	20	25	20 25 30
	25	32	25 30 35

Order Example: MSGBA-d x L



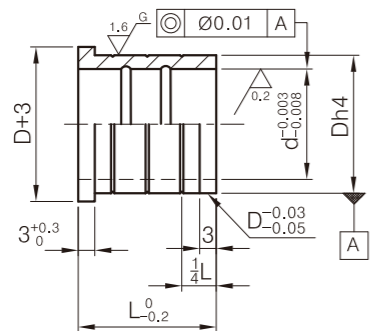
CODE	d	D m5	L
MSGBH	8	12	10 13 16 20
	10	14	10 13 16 20 22 25
	13	18	13 16 20 22 25 30 35
	16	22	13 16 20 22 25 30 35
	20	25	16 20 22 25 30 35
	25	32	20 22 25 30 35

Order Example: MSGBH-d x L



CODE	d	D h4	L
MSGBL	8	12	10 13 16 20
	10	14	10 13 16 20 25
	13	18	13 16 20 25
	16	22	16 20 25 30
	20	25	20 25 30
	25	32	25 30 35

Order Example: MSGBL-d x L



CODE	d	D h4	L
MSGBT	8	12	10 13 16 20
	10	14	10 13 16 20 22 25
	13	18	13 16 20 22 25 30 35
	16	22	13 16 20 22 25 30 35
	20	25	16 20 22 25 30 35
	25	32	20 22 25 30 35

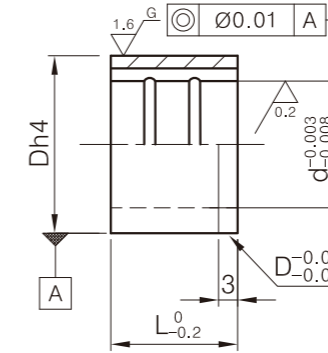
Order Example: MSGBT-d x L

Stripper Guide Bushes

CODE: MSGSF/MSGBF

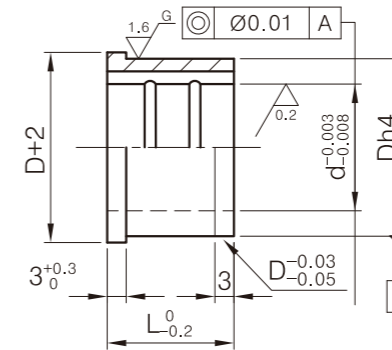
Material: SUJ2(100Cr6)+Aldary

Hardness: HRC45



CODE	d	D h4	L
MSGSF	10	16	10 13 16 20 22 25
	13	20	13 16 20 22 25
	16	24	16 20 22 25 30 35
	20	28	20 22 25 30 35
	25	34	20 22 25 30 35

Order Example: MSGSF-d x L



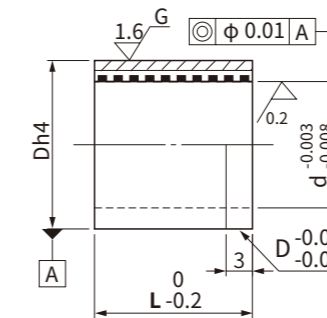
CODE	d	D h4	L
MSGBF	10	16	10 13 16 20 22 25
	13	20	13 16 20 22 25
	16	24	16 20 22 25 30 35
	20	28	20 22 25 30 35
	25	34	20 22 25 30 35

Order Example: MSGBF-d x L

CODE: MSGCZ/MSGFZ

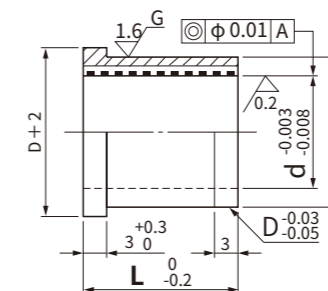
Material: Aldary+MoS2/Inlay

Hardness: HRC45



CODE	d	D h4	L
MSGCZ	10	16	10 13 16 20 22 25
	13	20	13 16 20 22 25
	16	24	16 20 22 25 30 35
	20	28	20 22 25 30 35
	25	34	20 22 25 30 35

Order Example: MSGCZ-d x L



CODE	d	D h4	L
MSGFZ	10	16	10 13 16 20 22 25
	13	20	13 16 20 22 25
	16	24	16 20 22 25 30 35
	20	28	20 22 25 30 35
	25	34	20 22 25 30 35

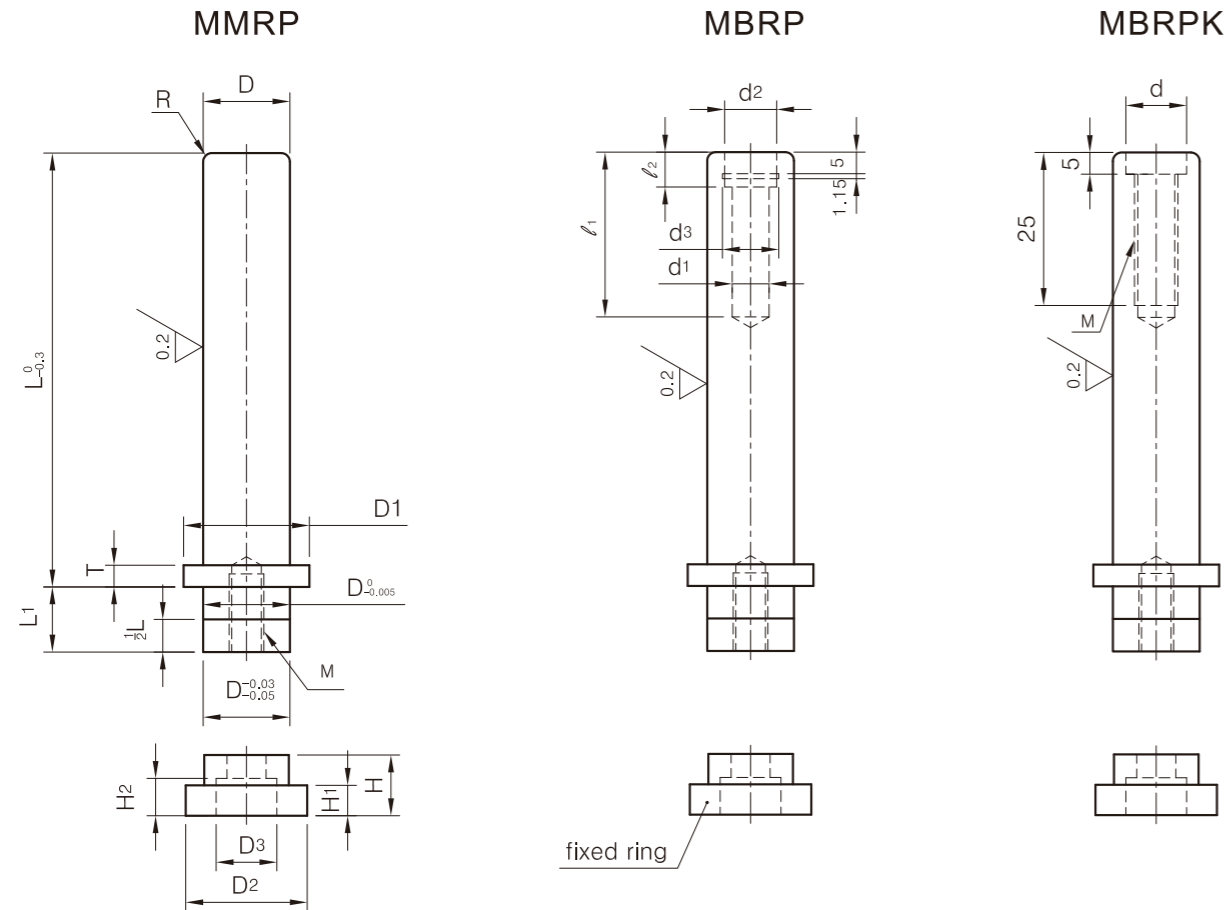
Order Example: MSGFZ-d x L

Guide Post Die Set -Removable Type

CODE: MMRP/MBRP/MBRPK

Material: SUJ2(100Cr6)

Hardness: HRC58-62



CODE	D	D1	T	L1	R	D2	H	H1	D3	H2	M	d1	l1	d2	l2	d3	d	L
MMRP	20	+0.020	29	5	15	2	28		19.5		M8x18	9	36	12	8	13		80-200
	22		31	8	16	3	30	14	7	21.5		8	50					
	25	+0.015	36		18		35		24.5				60	18	9	20	14	
MBRP	28	+0.025	39	10	20	3.5	36	16	8	27.5	10	14	60	18	9	20		80-200
	32	+0.020	44		23		40		31.5			65						
MBRPK	38	+0.030	53	12	27	4	49	18	10	37.5	12	20	75	21	22	23	20	80-200
	45	+0.025	59		32		55			44.5								
	50	+0.035 +0.030	69	15	35	5	62	20	12	49.5	14							

Order Example: MMRP-D x L

Guide Bushes For Die Set

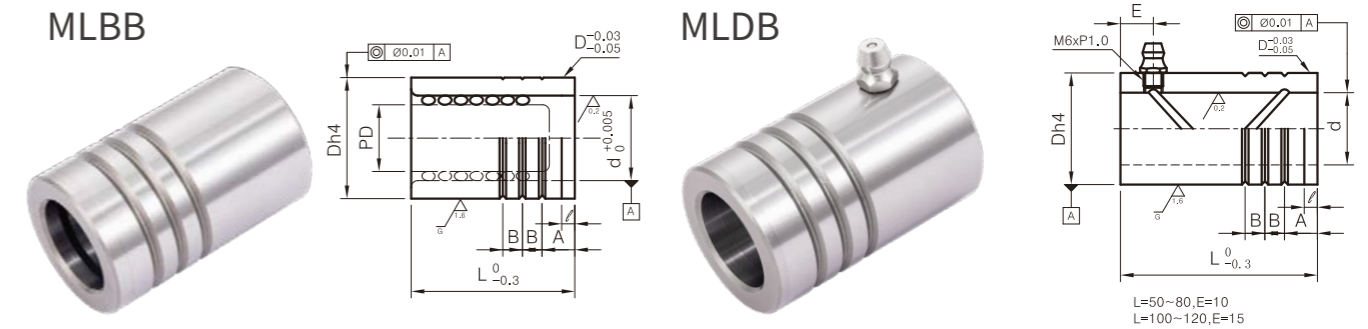
CODE: MLBB/MLDB

Material: SUJ2(100Cr6)

Hardness: HRC58-62

Ball Bearing Guide Bushings For Die Set

Plain Guide Bushings For Die Set



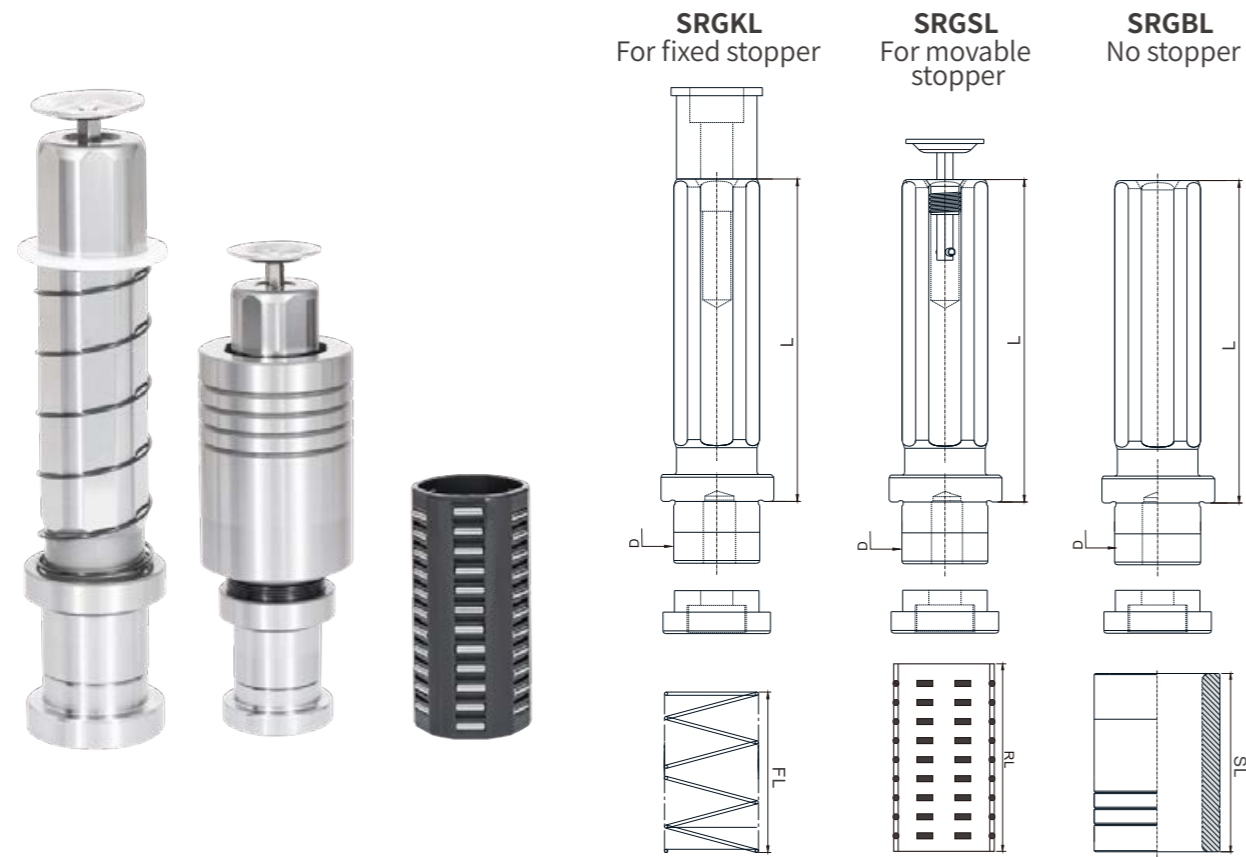
CODE	PD	d	D h4	S	l	A	B	L	
MLBB	20	26	37	0	60	4	12	7	50
	22	28	40		50 60				
	25	31	45	-0.007	80	5	15	10	60 80
	28	36	50		60 80				
	32	40	55	0	100	6	15	10	80 100
	38	48	64		80 100				
	45	55	74	-0.008	120	6	15	10	100 120
	50	60	83						0

Order Example: MLBB-d x L

CODE	d	D h4	l	A	B	L		
MLDB	20	+0.027	31	0	4	10	6	50
	22		34					50 60
	25	+0.022	37	-0.007	5	12	7	60 80
	28	+0.032	42					60 80
	32	+0.027	46	0	6	15	10	80 100
	38	+0.037	54					80 100
	45	+0.032	54	-0.008	6	15	10	100 120
	45	+0.040	62					100 120
	50	+0.035	62	0	6	15	10	100 120
	50	+0.045 +0.040	70					0

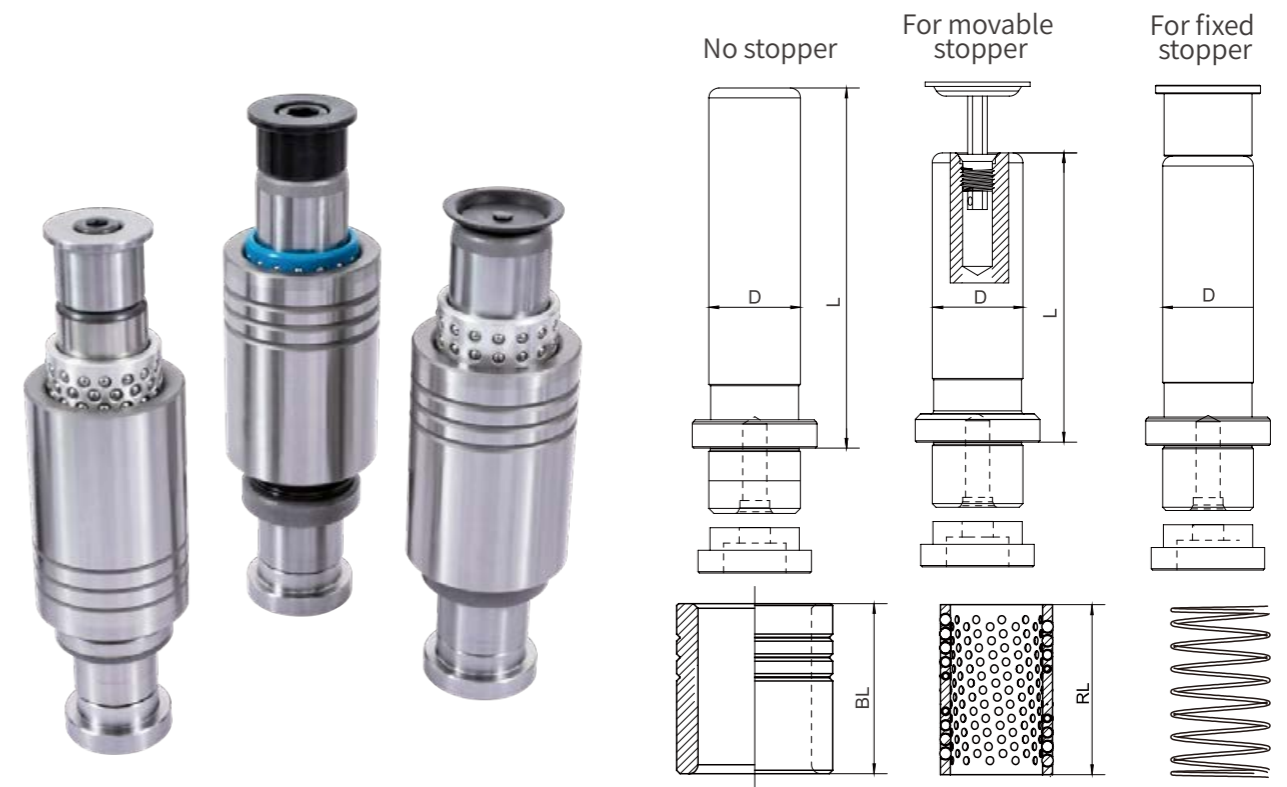
Order Example: MLDB-d x L

Roller Guide Post Sets For Die Sets



CODE	D	L	SL	RL	FL
SRGBL	6	30 35 40 45 55 60	25	20	-
	9	50 55 60 65 70 75 80	30	25	30-60
	13	70 75 80 85 90 95 100 105 110 115 120	40	30	30-100
	16	80 85 90 95 100 105 110 115 120 125 130 135	40	30	30-110
SRGSL	20	80 85 90 95 100 105 110 115 120 125 130 140	60	52	40-120
	25	100 105 110 115 120 125 130 140 145 150 155 160	70	62	60-140
	28	100 105 110 115 120 125 130 140 145 150 155 160	75	66	50-140
SRGKL	32	120 125 130 140 145 150 155 160 170 175 180	78	68	70-155
	40	120 130 140 150 160 170 180 190 200 210 220	92	78	70-200
	50	150 160 170 180 190 200 210 220 230 240 250	96	82	90-230
	60	150 160 170 180 190 200 210 220 230 240 250	120	116	70-210
	80	180 190 200 210 220 230 240 250 260 270 280	145	130	100-220

Ball Guide Post Sets For Die Sets



CODE	D	L	BL	RL	FL
SRBSH (High-rigidity Aluminum/No stopper)	20	80 90 100 110 120	50	50	40-140
SRMSH (High-rigidity Aluminum/Movable stopper)	22	80 90 100 110 120	50 60	50 60	40-140
SRKSH (High-rigidity Aluminum/Fixed stopper)	25	80 90 100 110 120 130	60 80	60 75	40-150
SQBSH (High-rigidity Resin/No stopper)	28	100 110 120 130 140 150 160	60 80	60 75	50-150
SQMSH (High-rigidity Resin/Movable stopper)	32	120 130 140 150 160	80 100	70 95	70-190
SQKSH (High-rigidity Resin/Fixed stopper)	38	140 150 160 170 180	80 100	70 95	80-190
	45	140 150 160 170 180	100 120	90 100	80-190
	50	160 170 180	100 120	90 100	80-190
	60	160 170 180	100 120	90 100	80-190

Guide Post Sets



Ball Guide Post Sets

Movable Stopper	CODE	D	L
	SMYA (Aluminum Type)	20	80 90 100 110 120 130 140 150 160
SMYAP (Aluminum/Dowel Hole Type)	25	80 90 100 110 120 130 140 150 160 170 180 200	
	32	110 120 130 140 150 160 170 180 200	
SMYJ (Resin Type)	38	130 140 150 160 170 180 200 220 240 260 300	
SMYJP (Resin/Dowel Hole Type)	50	170 180 200 220 240 260 300 350	
	60	200 220 240 260 300 350	
Fixed Stopper	SMYAK (Aluminum Type)	20	80 90 100 110 120 130 140 150 160
	SMYKP (Aluminum/Dowel Hole Type)	25	80 90 100 110 120 130 140 150 160 170 180 200
32		110 120 130 140 150 160 170 180 200	
SMYJK (Resin Type)	38	130 140 150 160 170 180 200 220 240 260 300	
SMJKP (Resin/Dowel Hole Type)	50	170 180 200 220 240 260 300 350	
	60	200 220 240 260 300 350	

Plain Guide Post Sets

	CODE	D	L
	SMYP (Oil/With dowel hole type)	20	80 90 100 110 120 130 140 150 160
SMYZP (Oilless/With dowel hole type)	25	80 90 100 110 120 130 140 150 160 170 180 200	
	32	90 100 110 120 130 140 150 160 170 180 200 250	
SMY (Oil type)	38	110 120 130 140 150 160 170 180 200 220 250 280 300	
SMYZ (Oilless type)	50	160 170 180 200 220 250 280 300 350	
	60	180 200 220 250 280 300 350 400	

Ball Bearing Guide Bushes

CODE: M501

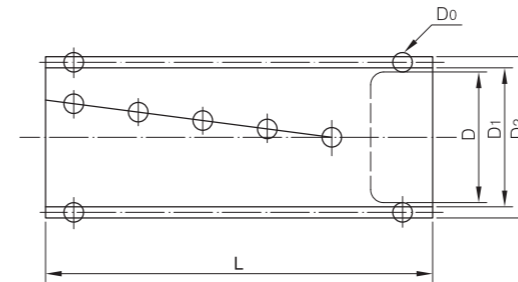
Material: Plastic POM090

CODE: M502

Material: Aluminum AL6061

CODE: M503

Material: Copper CU59#



CODE	D	D1	D2	D0	L			
M501 M502 M503	10	10.4	13.6	2	20			
	12	12.4	15.6	2	30			
	14	14.4	17.6	2	30			
	16	16.5	21.5	3	30	35	40	
	19	19.5	24.5	3	50	60		
	20	20.5	25.5	3	50	60		
	22	22.5	27.5	3	50	60		
	25	25.5	30.5	3	50	60	70	80
	28	28.5	35.4	4	50	60	70	80
	32	32.5	39.4	4	50	60	70	80
	36	36.5	43.4	4	60	70		
	38	38.5	47.3	5	70	80	90	
	40	40.5	49.3	5	80	100		
	45	45.5	54.3	5	80	100		
	50	50.5	59.3	5	80	100		
	60	60.5	69.3	5	100			
80	80.5	89.3	5	200				

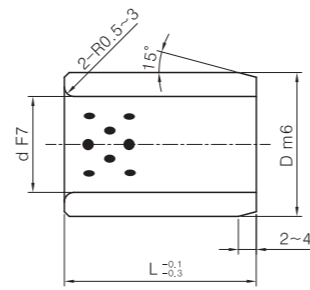
Order Example: M501-D x L

*Special product is available

Oilless Cylindrical Bushes

CODE: MSOB

Material: Bronze with Graphite



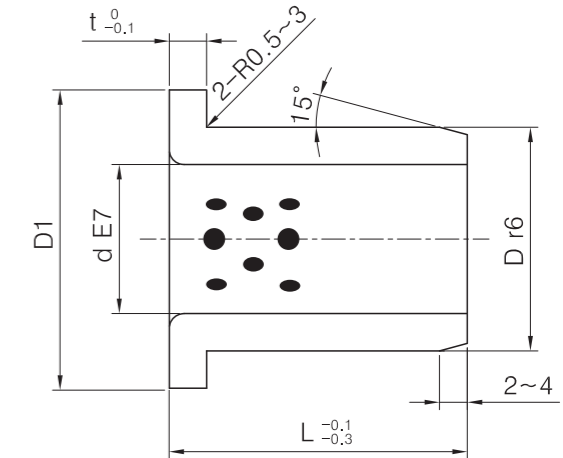
CODE	d	D	L		
MSOB	8	+0.028	12	+0.018	8 10 12 15
	10	+0.013	14	+0.007	8 10 12 15 20
	12	+0.034	18	+0.021	10 12 15 16 20 25 30
	13		19		10 15 16
	14		20		10 12 15 20 25 30
	15		21		10 12 15 16 20 25 30
	16	+0.016	22	+0.008	10 12 15 16 20 25 30 35 40
	18		24		12 15 16 20 25 30 35 40
	20	+0.041	28	+0.025	10 12 15 16 20 25 30 35 40 50
	22		32		12 15 20 25 30 35 40 50 60
	25		33		12 15 16 20 25 30 35 40 50 60
	30		38		12 15 20 25 30 35 40 50 60
	35	+0.050	45	+0.009	20 25 30 35 40 50 60
	40		50		20 25 30 35 40 50 60 70 80
	45	+0.025	55	+0.030	30 35 40 50 60
	50		60		30 35 40 50 60 70 80
	55		62		30 35 40 50 60 70
	60	+0.060	65	+0.011	30 40 50 60 70 80 100
	63		70		40 50 60 70
	65		75		30 35 40 50 60 70 80
	70		80		30 35 40 50 60 70 80 100
	75	+0.030	85	+0.035	50 60 70 80
	80		90		60 70 80 100
	85	+0.071	95	+0.013	60 70 80 100
	90		96		40 50 60 70 80 100 120
	100		100		40 50 60 70 80 100 120 140
	110		110		30 50 60 70 80 100 120
	120	+0.036	120	+0.040	60 70 80 100 120 140
	125		140		80 100 120 140
	130	+0.083	145	+0.015	80 100 120
	140		150		100 130
	150		160		100 140
	160	+0.043	170		80 100 150
	160		180		80 100 150

Order Example: MSOB-d x L

Oilless Flange Bushes

CODE: MSOBF

Material: Bronze with Graphite



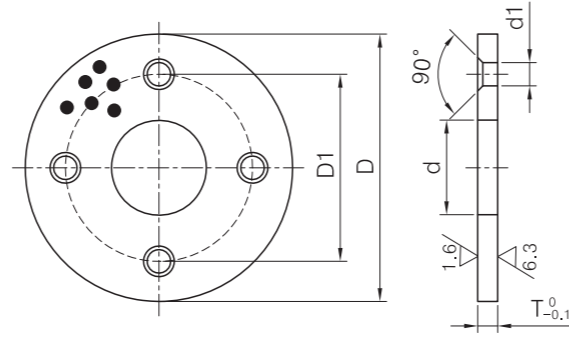
CODE	d	D	D1	T	L		
MSOBF	10	+0.040	14	+0.034	22	2	15 20
	12	+0.025	18	+0.023	25	3	15 20
	13	+0.050	19	+0.041	26		15 20
	14		20		27		15 20
	15	+0.032	21	+0.028	28	15 20 25 30	
	16		22		29	15 20 25 30	
	20	+0.061	30	+0.050	40	15 20 25 30 40	
	25		+0.040		35	45	15 20 25 30 40
	30	+0.075	40	+0.034	50	20 25 30 35 40 50	
	31.5		+0.050		45	5	20 35
	35	+0.050		50	60		20 30 40 50
	40		+0.075	55		70	20 30 40 50
	45	+0.050		60	75		30 40 50 60
	50		+0.060	65		80	30 40 50 60
	55	+0.041		70	7.5		40 60
	60		+0.062	75		90	40 50 80
	63	+0.090		80	85		80
	70		+0.060	85		105	50 80
	75	+0.073		90	110		60
	80		+0.051	95		120	60 80 100
	90	+0.076		100	130		60 80
	100		+0.107	110		150	80 100
	120	+0.072		120	170		80 100
				140			

Order Example: MSOBF-d x L

Oilless Thrust Washers

CODE: MSOBW

Material: Bronze with Graphite



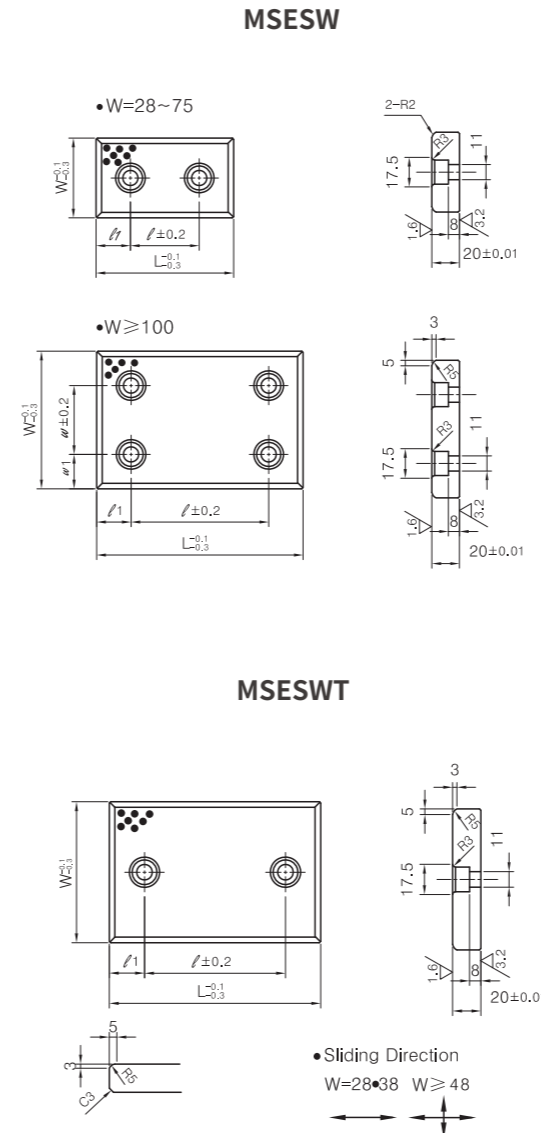
CODE	d Nominal	d Actual size	D	T	Bolt			
					D1	Quantity	Size	d1
MSOBW	10	10.2	30	3	20	2	M3	3.5
	12	12.2	40		28			
	13	13.2			50			
	14	14.2						
	15	15.2	5	40				
	16	16.2						
	18	18.2	7	60	M5		6	
	20	20.2						
	25	25.2	8	75	M6		7	
	30	30.2						
	35	35.2	10	100	M8	9		
	40	40.2						
	45	45.3						
	50	50.3						
	55	55.3	4	110	M10	11		
	60	60.3						
	65	65.3						
	70	70.3						
	75	75.3	10	140	M10	11		
	80	80.3						
90	90.5							
100	100.5							
120	120.5	200	175					

Order Example: MSOBW-d x L

Oilless Wear Plate

CODE: MSESW/MSESWT

Material: Bronze with Graphite



CODE	W	L		w	w1	l	l1							
		MSESW	MSESWT											
MSESW MSESWT	28	75	-	-	-	45	15							
		100				50	25							
		150				100	25							
	38	75				-	-	-	45	15				
		100							50	25				
		150							100	25				
	48	75							-	-	-	45	15	
		100										50	25	
		125										75		
		150										100		
	58	75	-	-	-							45		15
		100										50	25	
		150										100		
	75	75				-	-	-				25		25
		100										50		
		125										75		
		150							100					
	100	100							100	50	25	50	25	
		125							125			75		
		150							150			100		
200		200	150											
250		250	200											
300		300	200											
125	125	125	37.5	25	75	25								
	150	150			100									
	200	200			150									
	250	250			200									
	300	300			200									
	350	350			200									
150	150	150			100	25	100	25						
	200	200					150							
	250	250					200							

Order Example: MSESW-W x L

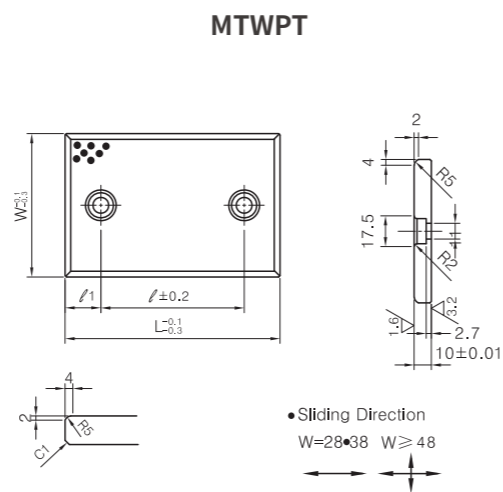
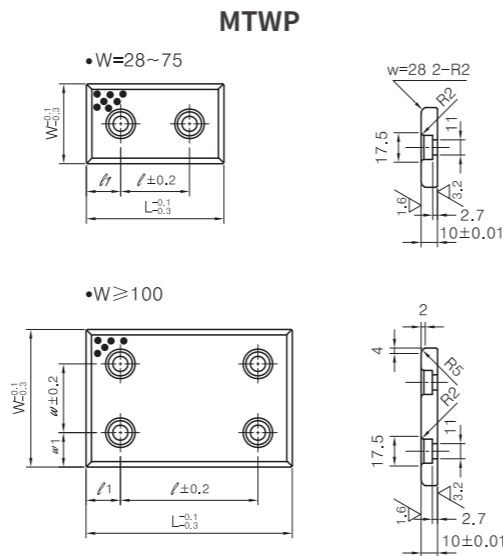
Oilless Wear Plate

CODE: MTWP/MTWPT

Material: Bronze with Graphite



CODE	W	L		w	w ₁	l	l ₁
		MTWP	MTEPT				
MTWP MTWPT	28	75	-	-	-	45	15
		100	-	-	-	50	25
		125	-	-	-	75	
		150	-	-	-	100	
	38	75	-	-	-	45	15
		100	-	-	-	50	25
		125	-	-	-	75	
		150	-	-	-	100	
	48	75	-	-	-	45	15
		100	-	-	-	50	25
		125	-	-	-	75	
		150	-	-	-	100	
	75	75	-	-	-	25	25
		100	-	-	-	50	
		125	-	-	-	75	
		150	-	-	-	100	
	100	100	100	-	50	25	25
		125	125	-	75	50	
		150	150	-	100		
		200	200	-	150		
	125	150	150	-	100	37.5	25
		200	200	-	150		
		250	250	-	200		
		150	150	-	100		
150	150	150	-	100	100	25	
	200	200	-	150			
	250	250	-	200			
	200	200	-	150			



Order Example: MTWP-W x L

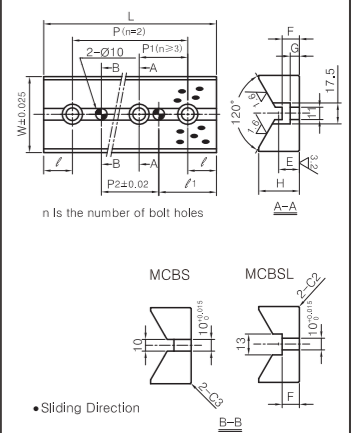
Oilless Cam Bottom Guide Plate

CODE: MCBS(H=35)/MCBSL(H=37)

Material: Bronze with Graphite



CODE	W	L	H	l	l ₁	P	P1	Screws n	P2	E	F	G
MCBS	65	100	35	20	40	60	-	2	20	18	15	8
		150		25	50	-	50	3	50			
		200		25	50	-	50	4	100			
		250		25	50	-	50	5	150			
MCBSL	65	100	37	20	40	60	-	2	20	20	20	10
		125		25	50	75	-	2	25			
		150		25	50	100	-	3	50			
		200		25	50	-	75	100				
		250		25	50	-	-	100	150			
		300		25	50	-	-	125	200			



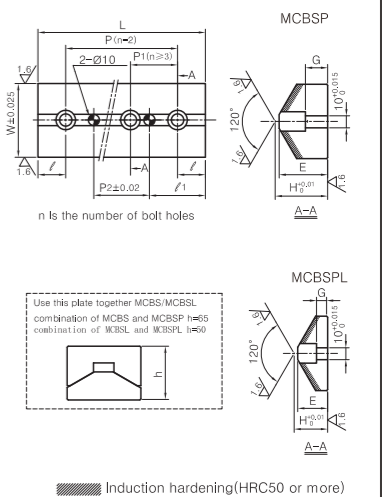
Order Example: MCBS/MCBSL-W x L

CODE: MCBSP(H=47)/MCBSPL(M=30)

Material: S45C Induction hardening(HRC50 or more)

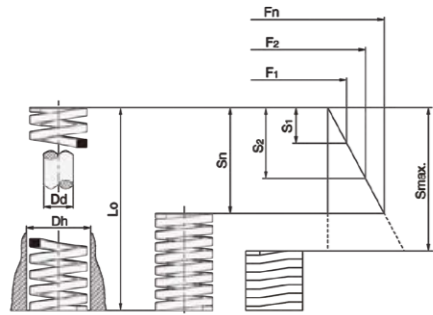


CODE	W	L	H	l	l ₁	P	P1	Screws n	P2	E	G
MCBSP	65	100	47	20	40	60	-	2	20	44	20
		150		25	50	-	50	3	50		
		200		25	50	-	50	4	100		
		250		25	50	-	50	5	150		
		300		25	50	-	-	6	200		
		100		20	40	60	-	2	20		
		125		25	50	75	-	2	25		
		150		25	50	100	-	3	50		
MCBSPL	65	200	30	25	50	-	-	100	100	26	10
		250		25	50	-	-	150			
		200		25	50	-	-	200			
		300		25	50	-	-	125			



Order Example: MCBSP/MCBSPL-W x L

Die Spring ISO 10243 Extra Light Load

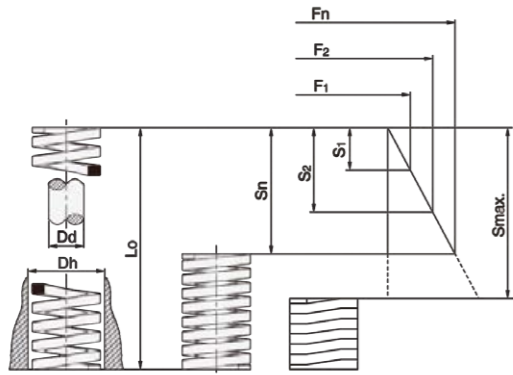


CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	30%		40%		50%		travel stroke		
					S1	F1	S2	F2	S3	F3			
HML01-20x25	20	10	25	29.4	7.5	221	10	294	12.5	368	13.9		
HML01-20x32			32	22.6	9.6	217	12.8	289	16	362	18.2		
HML01-20x38			38	18.6	11.4	212	15.2	283	19	353	22		
HML01-20x44			44	15.7	13.2	207	17.6	276	22	345	25.8		
HML01-20x51			51	13.7	15.3	210	20.4	279	25.5	349	30.3		
HML01-20x64			64	11.3	19.2	217	25.6	289	32	362	38.9		
HML01-20x76			76	9.8	22.8	223	30.4	298	38	372	47		
HML01-20x89			89	8.3	26.7	222	35.6	295	44.5	369	55.7		
HML01-20x102			102	7.4	30.6	226	40.8	302	51	377	64.2		
HML01-20x115			115	6.4	34.5	221	46	294	57.5	368	72.9		
HML01-20x127			127	5.9	38.1	225	50.8	300	63.5	375	80.7		
HML01-20x139			139	5.4	41.7	225	55.6	300	69.5	375	88.4		
HML01-20x152			4.0x1.7	10	152	4.9	45.6	223	60.8	298	76	372	96.7
HML01-20x305					305	2.5	91.5	229	122	305	152.5	381	196.3
HML01-25x25			25	12.5	25	53.9	7.5	404	10	539	12.5	674	12.9
HML01-25x32	32	42.2			9.6	405	12.8	540	16	675	17.2		
HML01-25x38	38	35.8			11.4	408	15.2	544	19	680	20.7		
HML01-25x44	44	31.4			13.2	414	17.6	553	22	691	24.4		
HML01-25x51	51	27			15.3	413	20.4	551	25.5	689	28.5		
HML01-25x64	64	21.6			19.2	415	25.6	553	32	691	36.5		
HML01-25x76	76	18.1			22.8	413	30.4	550	38	688	43.9		
HML01-25x89	89	15.2			26.7	406	35.6	541	44.5	691	51.4		
HML01-25x102	102	13.2			30.6	404	40.8	539	51	688	59.3		
HML01-25x115	115	11.8			34.5	407	46	543	57.5	676	67.2		
HML01-25x127	127	10.6			38.1	404	50.8	538	63.5	673	74.4		
HML01-25x139	139	9.6			41.7	400	55.6	534	69.5	667	81.6		
HML01-25x152	152	8.8			45.6	401	60.8	535	76	669	89.5		
HML01-25x178	178	7.6			53.4	406	71.2	541	89	676	105.4		
HML01-25x203	5.4x2.2	12.5			203	6.7	60.9	408	81.2	544	101.5	680	120.7
HML01-25x305			305	4.4	91.5	403	122	537	152.5	671	182.4		

Die Spring ISO 10243 Extra Light Load

CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	30%		40%		50%		travel stroke		
					S1	F1	S2	F2	S3	F3			
HML01-32x38	32	16	38	43.1	11.4	491	15.2	655	19	819	19.9		
HML01-32x44			44	37.3	13.2	492	17.6	656	22	821	23.5		
HML01-32x51			51	32.4	15.3	496	20.4	661	25.5	826	27.6		
HML01-32x64			64	25.5	19.2	490	25.6	653	32	816	35.2		
HML01-32x76			76	21.6	22.8	492	30.4	657	38	821	42.4		
HML01-32x89			89	18.1	26.7	483	35.6	644	44.5	805	50		
HML01-32x102			102	15.7	30.6	480	40.8	641	51	801	57.6		
HML01-32x115			115	14.2	34.5	490	46	653	57.5	817	65.5		
HML01-32x127			127	12.7	38.1	484	50.8	645	63.5	806	72.5		
HML01-32x139			139	11.6	41.7	484	55.6	645	69.5	806	79.4		
HML01-32x152			152	10.6	45.6	483	60.8	644	76	806	87.3		
HML01-32x178			178	9	53.4	481	71.2	641	89	801	102.9		
HML01-32x203			203	7.8	60.9	475	81.2	633	101.5	792	117.7		
HML01-32x254			6.5x2.6	16	254	6.4	76.2	488	101.6	650	127	813	148.1
HML01-32x305					305	5.3	91.5	485	122	647	152.5	808	178.3
HML01-40x51	40	20	51	48.1	15.3	736	20.4	981	25.5	1227	28		
HML01-40x64			64	39.2	19.2	753	25.6	1004	32	1254	36.2		
HML01-40x76			76	33.3	22.8	759	30.4	1012	38	1265	43.7		
HML01-40x89			89	28.4	26.7	758	35.6	1011	44.5	1264	51.7		
HML01-40x102			102	24.5	30.6	750	40.8	1000	51	1250	59.8		
HML01-40x115			115	22.1	34.5	762	46	1017	57.5	1271	67.9		
HML01-40x127			127	19.6	38.1	747	50.8	996	63.5	1245	75.2		
HML01-40x139			139	17.7	41.7	738	55.6	984	69.5	1230	82.4		
HML01-40x152			152	16.2	45.6	739	60.8	985	76	1231	90.6		
HML01-40x178			178	13.7	53.4	732	71.2	975	89	1219	106.5		
HML01-40x203			203	12.3	60.9	749	81.2	999	101.5	1248	122.2		
HML01-40x254			8.0x3.4	20	254	9.8	76.2	747	101.6	996	127	1245	153.6
HML01-40x305					305	8.3	91.5	759	122	1013	152.5	1266	185.4
HML01-50x64			50	25	64	86.3	19.2	1657	25.6	2209	32	2762	35.1
HML01-50x76					76	70.6	22.8	1610	30.4	2146	38	2683	42.2
HML01-50x89	89	59.8			26.7	1597	35.6	2129	44.5	2661	50.3		
HML01-50x102	102	52			30.6	1591	40.8	2122	51	2652	58.4		
HML01-50x115	115	46.1			34.5	1590	46	2121	57.5	2651	66.1		
HML01-50x127	127	42.2			38.1	1608	50.8	2144	63.5	2680	73.8		
HML01-50x139	139	38.2			41.7	1593	55.6	2124	69.5	2655	80.9		
HML01-50x152	152	34.3			45.6	1564	60.8	2085	76	2607	89		
HML01-50x178	178	29.4			53.4	1570	71.2	2093	89	2617	105.3		
HML01-50x203	203	25.5			60.9	1553	81.2	2071	101.5	2588	120.6		
HML01-50x254	10.5x4.1	25			254	20.6	76.2	1570	101.6	2093	127	2616	152.2
HML01-50x305					305	17.2	91.5	1574	122	2098	152.5	2623	183.7

Die Spring ISO 10243 Light Load

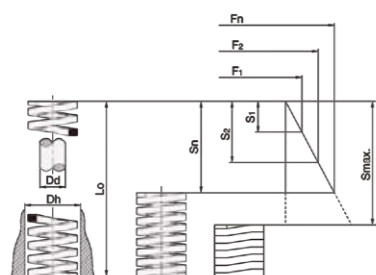


CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	25%		30%		40%		travel stroke
					S1	F1	S2	F2	S3	F3	
HMS01-10x25	10	5	25	11	6.3	69	7.5	83	10	110	13.5
HMS01-10x32			32	8.5	8	68	9.6	82	12.8	109	17.5
HMS01-10x38			38	6.8	9.5	65	11.4	78	15.2	103	20.8
HMS01-10x44			44	6	11	66	13.2	79	17.6	106	23.9
HMS01-10x51			51	5	12.8	64	15.3	77	20.4	102	28.9
HMS01-10x64			64	4.1	16	66	19.2	79	25.6	105	36.1
HMS01-10x76	1.7×1.1		76	3.6	19	68	22.8	82	30.4	109	43.2
HMS01-10x305			305	0.9	76.3	69	91.5	82	122	110	178.7
HMS01-12.5x25			12.5	6.3	25	21	6.3	132	7.5	158	10
HMS01-12.5x32	32	16.4			8	131	9.6	157	12.8	210	18
HMS01-12.5x38	38	13.6			9.5	129	11.4	155	15.2	207	21
HMS01-12.5x44	44	12.1			11	133	13.2	160	17.6	213	24
HMS01-12.5x51	51	10.3			12.8	132	15.3	158	20.4	210	28.7
HMS01-12.5x64	64	7.6			16	122	19.2	146	25.6	195	35.8
HMS01-12.5x76	2.4×1.4		76	6.3	19	120	22.8	144	30.4	192	42.7
HMS01-12.5x89			89	5.4	22.3	120	26.7	144	35.6	192	50.4
HMS01-12.5x305			305	1.6	76.3	122	91.5	146	122	195	172
HMS01-16x25	16	8	25	29	6.3	183	7.5	218	10	290	12.6
HMS01-16x32			32	22.9	8	183	9.6	220	12.8	293	16.4
HMS01-16x38			38	19.3	9.5	183	11.4	220	15.2	293	19.7
HMS01-16x44			44	17.1	11	188	13.2	226	17.6	301	22.5
HMS01-16x51			51	14	12.8	179	15.3	214	20.4	286	26.3
HMS01-16x64			64	10.7	16	171	19.2	205	25.6	274	33.3
HMS01-16x76	3.2×1.7		76	9	19	171	22.8	205	30.4	274	40.2
HMS01-16x89			89	7.3	22.3	163	26.7	195	35.6	260	47.6
HMS01-16x102			102	6.8	25.5	173	30.6	208	40.8	277	55.4
HMS01-16x305			305	2.3	76.3	175	91.5	210	122	281	165.3
HMS01-20x25	20	10	25	55.8	6.3	352	7.5	419	10	558	12.1
HMS01-20x32			32	45	8	360	9.6	432	12.8	576	15.3
HMS01-20x38			38	36	9.5	342	11.4	410	15.2	547	18.9
HMS01-20x44			44	30	11	330	13.2	396	17.6	528	21.5
HMS01-20x51			51	24.5	12.8	314	15.3	375	20.4	500	25
HMS01-20x64			64	19.2	16	307	19.2	369	25.6	492	31.1
HMS01-20x76	4.0×2.1		76	16	19	304	22.8	365	30.4	486	37.3
HMS01-20x89			89	14	22.3	312	26.7	374	35.6	498	44.5
HMS01-20x102			102	12	25.5	306	30.6	367	40.8	490	51.1
HMS01-20x115			115	10.9	28.8	314	34.5	376	46	501	58.2
HMS01-20x127			127	9.5	31.8	302	38.1	362	50.8	483	64.9
HMS01-20x139			139	8.4	35	294	42	353	56	470	71.5
HMS01-20x152	5.4×2.7		152	7.5	38	285	45.6	342	60.8	456	78.8
HMS01-20x305			305	4	76.3	305	91.5	366	122	488	157.4
HMS01-25x25			25	12.5	25	105	6.3	662	7.5	788	10
HMS01-25x32	32	80.3			8	642	9.6	771	12.8	1028	15.2
HMS01-25x38	38	62			9.5	589	11.4	707	15.2	942	18.3
HMS01-25x44	44	52.9			11	582	13.2	698	17.6	931	21.4
HMS01-25x51	51	44			12.8	563	15.3	673	20.4	898	24.9
HMS01-25x64	5.4×2.7				64	35.2	16	563	19.2	676	25.6
HMS01-25x76			76	28	19	532	22.8	638	30.4	851	37.5

Die Spring ISO 10243 Light Load

CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	25%		30%		40%		travel stroke		
					S1	F1	S2	F2	S3	F3			
HMS01-25x89	25	12.5	89	24	22.3	535	26.7	641	35.6	854	43.5		
HMS01-25x102			102	21.1	25.5	538	30.6	646	40.8	861	51.1		
HMS01-25x115			115	18.7	28.8	539	34.5	645	46	860	58.1		
HMS01-25x127			127	16.7	31.8	531	38.1	636	50.8	848	64.1		
HMS01-25x139			139	15.3	35	536	42	643	56	857	70.4		
HMS01-25x152			152	14	38	532	45.6	638	60.8	851	77.1		
HMS01-25x178			178	12.5	44.5	556	53.4	668	71.2	890	93.1		
HMS01-25x203			5.4×2.7		203	10.4	50.8	528	60.9	633	81.2	844	102.7
HMS01-25x305					305	7	76.3	534	91.5	641	122	854	155.9
HMS01-32x38					32	16	38	98	9.5	931	11.4	1117	15.2
HMS01-32x44	44	79.5	11	875			13.2	1049	17.6	1399	21.5		
HMS01-32x51	51	67	12.8	858			15.3	1025	20.4	1367	25.5		
HMS01-32x64	64	53	16	848			19.2	1018	25.6	1357	31.9		
HMS01-32x76	76	44	19	836			22.8	1003	30.4	1338	38.6		
HMS01-32x89	89	37.2	22.3	830			26.7	993	35.6	1324	46.5		
HMS01-32x102	102	32	25.5	816			30.6	979	40.8	1306	53.2		
HMS01-32x115	115	29	28.8	835			34.5	1001	46	1334	60		
HMS01-32x127	127	25	31.8	795			38.1	953	50.8	1270	66.7		
HMS01-32x139	139	23	35	805			42	966	56	1288	71.8		
HMS01-32x152	152	21.5	38	817	45.6	980	60.8	1307	78.5				
HMS01-32x178	178	18.2	44.5	810	53.4	972	71.2	1296	94.4				
HMS01-32x203	6.8×3.3		203	15.8	50.8	803	60.9	962	81.2	1283	107.1		
HMS01-32x254			254	12.5	63.5	794	76.2	953	101.6	1270	136.5		
HMS01-32x305			305	10.3	76.3	786	91.5	942	122	1257	162.7		
HMS01-40x51	40	20	51	92	12.8	1178	15.3	1408	20.4	1877	25.5		
HMS01-40x64			64	73	16	1168	19.2	1402	25.6	1869	31.4		
HMS01-40x76			76	63	19	1197	22.8	1436	30.4	1915	37.8		
HMS01-40x89			89	51	22.3	1137	26.7	1362	35.6	1816	44.3		
HMS01-40x102			102	45	25.5	1148	30.6	1377	40.8	1836	50.7		
HMS01-40x115			115	39.6	28.8	1140	34.5	1366	46	1822	58.1		
HMS01-40x127			127	36	31.8	1145	38.1	1372	50.8	1829	64.6		
HMS01-40x139			139	32	35	1120	42	1344	56	1792	70.1		
HMS01-40x152			152	28	38	1064	45.6	1277	60.8	1702	76.6		
HMS01-40x178			178	25.2	44.5	1121	53.4	1346	71.2	1794	90.4		
HMS01-40x203	8.1×4.0		203	21.8	50.8	1107	60.9	1328	81.2	1770	102.4		
HMS01-40x254			254	17	63.5	1080	76.2	1295	101.6	1727	128.8		
HMS01-40x305			305	14.8	76.3	1129	91.5	1354	122	1806	156.1		
HMS01-50x64	50	25	64	156	16	2496	19.2	2995	25.6	3994	31		
HMS01-50x76			76	125	19	2375	22.8	2850	30.4	3800	37.2		
HMS01-50x89			89	109	22.3	2431	26.7	2910	35.6	3880	43.6		
HMS01-50x102			102	94	25.5	2397	30.6	2876	40.8	3835	50.3		
HMS01-50x115			115	81	28.8	2333	34.5	2795	46	3726	58.1		
HMS01-50x127			127	71	31.8	2258	38.1	2705	50.8	3607	63.7		
HMS01-50x139			139	66.5	35	2328	42	2793	56	3724	69.5		
HMS01-50x152			152	60	38	2280	45.6	2736	60.8	3648	76.5		
HMS01-50x178			178	52	44.5	2314	53.4	2777	71.2	3702	91.9		
HMS01-50x203			10.9×5.3		203	44	50.8	2235	60.9	2680	81.2	3573	104.7
HMS01-50x254	254	35			63.5	2223	76.2	2667	101.6	3556	130.6		
HMS01-50x305	305	28.5			76.3	2175	91.5	2608	122	3477	154.9		
HMS01-63x76	63	38	76	189	19	3591	22.8	4309	30.4	5746	36.5		
HMS01-63x89			89	158	22.3	3523	26.7	4219	35.6	5625	43.4		
HMS01-63x102			102	131	25.5	3341	30.6	4009	40.8	5345	49.7		
HMS01-63x115			115	116	28.8	3341	34.5	4002	46	5336	55.6		
HMS01-63x127			127	103	31.8	3275	38.1	3924	50.8	5232	62.7		
HMS01-63x152			152	84.3	38	3203	45.6	3844	60.8	5125	77.1		
HMS01-63x178			178	71.5	44.5	3182	53.4	3818	71.2	5091	92.2		
HMS01-63x203			203	61.7	50.8	3134	60.9	3758	81.2	5010	103.5		
HMS01-63x254			11.0×7.8		254	47	63.5	2985	76.2	3581	101.6	4775	130.4
HMS01-63x305					305	38.2	76.3	2915	91.5	3495	122	4660	157.4

Die Spring ISO 10243 Medium Load

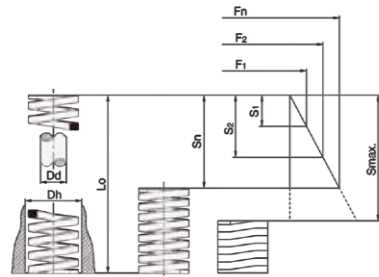


CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	25%		30%		37.5%		travel stroke
					S1	F1	S2	F2	S3	F3	
HMS02-10x25	10	5	25	16	6.3	101	7.5	120	9.4	150	10.2
HMS02-10x32			32	13	8	104	9.6	125	12	156	14.2
HMS02-10x38			38	11.9	9.5	113	11.4	136	14.3	170	16.8
HMS02-10x44			44	10.3	11	113	13.2	136	16.5	170	19.4
HMS02-10x51			51	8.9	12.8	114	15.3	136	19.1	170	23.4
HMS02-10x64			64	7.5	16	120	19.2	144	24	180	28.2
HMS02-10x76	1.8x1.2	5	76	6.2	19	118	22.8	121	28.5	151	34.2
HMS02-10x305			305	1.6	76.3	122	91.5	146	114.4	183	133.8
HMS02-12.5x25	12.5	6.3	25	30	6.3	189	7.5	225	9.4	282	11.9
HMS02-12.5x32			32	24.8	8	198	9.6	238	12	298	16.2
HMS02-12.5x38			38	21.4	9.5	203	11.4	244	14.3	306	18.7
HMS02-12.5x44			44	18	11	198	13.2	244	16.5	305	21.3
HMS02-12.5x51			51	15.5	12.8	198	15.3	237	19.1	296	25.6
HMS02-12.5x64			64	12.1	16	194	19.2	232	24	290	32.4
HMS02-12.5x76	76	10.2	19	194	22.8	233	28.5	291	39		
HMS02-12.5x89	2.5x1.7	6.3	89	8.4	22.3	187	26.7	224	33.4	281	45.9
HMS02-12.5x305			305	2.4	76.3	183	91.5	192	114.4	240	152.5
HMS02-16x25	16	8	25	49.4	6.3	311	7.5	371	9.4	464	10.5
HMS02-16x32			32	38.5	8	308	9.6	356	12	445	13.2
HMS02-16x38			38	33.9	9.5	322	11.4	386	14.3	485	17.2
HMS02-16x44			44	30	11	330	13.2	396	16.5	495	19.4
HMS02-16x51			51	26.4	12.8	338	15.3	404	19.1	504	24.2
HMS02-16x64			64	20.5	16	328	19.2	394	24	492	29.2
HMS02-16x76	76	17.8	19	338	22.8	406	28.5	507	36.3		
HMS02-16x89	89	15.2	22.3	339	26.7	406	33.4	508	41.7		
HMS02-16x102	3.2x2.0	8	102	13.5	25.5	344	30.6	413	38.3	517	48.9
HMS02-16x305			305	4.3	76.3	328	91.5	439	114.4	549	141.6
HMS02-20x25	20	10	25	98	6.3	617	7.5	735	9.4	921	10.5
HMS02-20x32			32	72.6	8	581	9.6	697	12	871	13.9
HMS02-20x38			38	56	9.5	532	11.4	638	14.3	801	16.6
HMS02-20x44			44	47.5	11	523	13.2	627	16.5	784	18.8
HMS02-20x51			51	41.7	12.8	534	15.3	638	19.1	796	23.1
HMS02-20x64			64	32.3	16	517	19.2	620	24	775	27.5
HMS02-20x76			76	25.1	19	477	22.8	572	28.5	715	33.8
HMS02-20x89			89	22	22.3	491	26.7	587	33.4	735	39.7
HMS02-20x102			102	19.8	25.5	505	30.6	606	38.3	758	47.3
HMS02-20x115			115	18.1	28.8	521	34.5	624	43.1	780	52.5
HMS02-20x127			127	16.6	31.8	528	38.1	632	47.6	790	56.9
HMS02-20x139			139	15.1	35	529	42	634	52.5	793	62.1
HMS02-20x152	4.1x2.4	10	152	13.2	38	502	45.6	602	57	752	67.6
HMS02-20x305			305	6.1	76.3	465	91.5	558	114.4	698	143.4
HMS02-25x25			25	12.5	25	157	6.3	989	7.5	1103	9.4
HMS02-25x32	32	118			8	944	9.6	1133	12	1416	13.7
HMS02-25x38	38	93			9.5	884	11.4	1060	14.3	1330	15.7
HMS02-25x44	44	80.8			11	889	13.2	1067	16.5	1333	18.2
HMS02-25x51	51	68.8			12.8	881	15.3	1050	19.1	1310	21.7
HMS02-25x64	5.4x3.1	12.5			64	53	16	848	19.2	1018	24
HMS02-25x76			76	43.2	19	821	22.8	985	28.5	1231	32.3

Die Spring ISO 10243 Medium Load

CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	25%		30%		37.5%		travel stroke
					S1	F1	S2	F2	S3	F3	
HMS02-25x89	25	12.5	89	38.2	22.3	852	26.7	1020	33.4	1276	38
HMS02-25x102			102	33	25.5	842	30.6	1010	38.3	1264	43
HMS02-25x115			115	28	28.8	806	34.5	966	43.1	1207	48.6
HMS02-25x127			127	25.9	31.8	824	38.1	987	47.6	1233	53.7
HMS02-25x139			139	23.2	35	812	42	974	52.5	1218	59.4
HMS02-25x152			152	20.8	38	790	45.6	948	57	1186	63.8
HMS02-25x178			178	17.8	44.5	792	53.4	951	66.8	1189	76.6
HMS02-25x203			5.4x3.1	12.5	203	15.8	50.8	803	60.9	962	76.1
HMS02-25x305	305	10.2			76.3	778	91.5	933	114.4	1167	135.1
HMS02-32x38	32	16	38	185	9.5	1758	11.4	2109	14.3	2646	16.3
HMS02-32x44			44	158	11	1738	13.2	2086	16.5	2607	18.9
HMS02-32x51			51	134	12.8	1715	15.3	2050	19.1	2559	23.1
HMS02-32x64			64	99	16	1584	19.2	1901	24	2376	28.5
HMS02-32x76			76	80.5	19	1530	22.8	1835	28.5	2294	34.2
HMS02-32x89			89	69.1	22.3	1541	26.7	1845	33.4	2308	40.4
HMS02-32x102			102	58.8	25.5	1499	30.6	1799	38.3	2252	48
HMS02-32x115			115	51.5	28.8	1483	34.5	1777	43.1	2220	54.3
HMS02-32x127			127	44.8	31.8	1425	38.1	1707	47.6	2132	59.2
HMS02-32x139			139	42.3	35	1481	42	1777	52.5	2221	65.3
HMS02-32x152			152	37.8	38	1436	45.6	1724	57	2155	73
HMS02-32x178			178	32.5	44.5	1446	53.4	1736	66.8	2171	84.5
HMS02-32x203	6.8x4.0	16	203	28.9	50.8	1468	60.9	1760	76.1	2199	96.9
HMS02-32x254			254	22.2	63.5	1410	76.2	1631	95.3	2039	120.9
HMS02-32x305	305	18.3	76.3	1396	91.5	1674	114.4	2094	146.9		
HMS02-40x51	40	20	51	182	12.8	2330	15.3	2778	19.1	3469	21.4
HMS02-40x64			64	140	16	2240	19.2	2688	24	3360	26.8
HMS02-40x76			76	108	19	2052	22.8	2462	28.5	3078	32.7
HMS02-40x89			89	90.7	22.3	2023	26.7	2422	33.4	3029	39
HMS02-40x102			102	81	25.5	2066	30.6	2479	38.3	3102	44.1
HMS02-40x115			115	71.8	28.8	2068	34.5	2477	43.1	3095	50.6
HMS02-40x127			127	62.7	31.8	1994	38.1	2389	47.6	2985	55.9
HMS02-40x139			139	57.5	35	2013	42	2415	52.5	3019	61.8
HMS02-40x152			152	51.6	38	1961	45.6	2353	57	2941	67.5
HMS02-40x178			178	44.1	44.5	1962	53.4	2355	66.8	2946	77.2
HMS02-40x203	203	36.7	50.8	1864	60.9	2235	76.1	2793	91.8		
HMS02-40x254	8.2x4.7	20	254	30.1	63.5	1911	76.2	2294	95.3	2869	112.7
HMS02-40x305			305	24.6	76.3	1877	91.5	2251	114.4	2814	138.1
HMS02-50x64	50	25	64	209	16	3344	19.2	4013	24	5016	28.2
HMS02-50x76			76	168	19	3192	22.8	3830	28.5	4788	34.9
HMS02-50x89			89	140	22.3	3122	26.7	3738	33.4	4676	39.2
HMS02-50x102			102	119	25.5	3035	30.6	3641	38.3	4558	47.3
HMS02-50x115			115	106	28.8	3053	34.5	3657	43.1	4569	52.6
HMS02-50x127			127	97	31.8	3085	38.1	3696	47.6	4617	59.8
HMS02-50x139			139	87	35	3045	42	3654	52.5	4568	65.1
HMS02-50x152			152	80	38	3040	45.6	3648	57	4560	70.8
HMS02-50x178			178	69.5	44.5	3093	53.4	3711	66.8	4643	84.2
HMS02-50x203			203	59.8	50.8	3038	60.9	3642	76.1	4551	96.6
HMS02-50x229			229	50.9	57.3	2917	68.7	3497	85.9	4372	108.5
HMS02-50x254			11.1x5.8	25	254	46	63.5	2921	76.2	3345	95.3
HMS02-50x305	305	38.6			76.3	2945	91.5	3532	114.4	4416	146.8
HMS02-63x76	63	38	76	320	19	6080	22.8	7114	28.5	8892	30.7
HMS02-63x89			89	260	22.3	5798	26.7	6942	33.4	8684	36.5
HMS02-63x102			102	221	25.5	5636	30.6	6763	38.3	8464	43.6
HMS02-63x115			115	187	28.8	5386	34.5	6452	43.1	8060	48.9
HMS02-63x127			127	168	31.8	5342	38.1	6401	47.6	7997	54.2
HMS02-63x152			152	136	38	5168	45.6	6202	57	7752	65.7
HMS02-63x178			178	114	44.5	5073	53.4	6088	66.8	7615	76.5
HMS02-63x203			203	100	50.8	5080	60.9	6090	76.1	7610	88
HMS02-63x229	11.5x9.1	38	229	89.2	57.3	5111	68.7	6128	85.9	7662	103.9
HMS02-63x254			254	78.4	63.5	4978	76.2	5974	95.3	7472	112.4
HMS02-63x305			305	64.7	76.3	4937	91.5	5920	114.4	7402	133.8

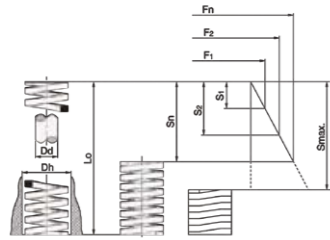
Die Spring ISO 10243 Heavy Load



CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	20%		25%		30%		travel stroke
					S1	F1	S2	F2	S3	F3	
HMS03-10x25	10	5	25	23	5	115	6.3	145	7.5	173	9.2
HMS03-10x32			32	17.5	6.4	112	8	140	9.6	168	12.1
HMS03-10x38			38	14.8	7.6	112	9.5	141	11.4	169	13.2
HMS03-10x44			44	13	8.8	114	11	143	13.2	172	15.1
HMS03-10x51			51	11.2	10.2	114	12.8	143	15.3	171	19.5
HMS03-10x64	1.9×1.3		64	9.2	12.8	118	16	147	19.2	177	21.8
HMS03-10x76			76	7.5	15.2	114	19	143	22.8	171	27.9
HMS03-10x305			305	1.9	61	116	76.3	145	91.5	174	127.2
HMS03-12.5x25	12.5	6.3	25	42.1	5	211	6.3	265	7.5	316	9.8
HMS03-12.5x32			32	33.2	6.4	212	8	266	9.6	319	13.6
HMS03-12.5x38			38	29.3	7.6	223	9.5	278	11.4	334	14.6
HMS03-12.5x44			44	24.6	8.8	216	11	271	13.2	325	18.1
HMS03-12.5x51			51	19.6	10.2	200	12.8	251	15.3	300	22.3
HMS03-12.5x64	2.4×1.9		64	15	12.8	192	16	240	19.2	288	27.3
HMS03-12.5x76			76	13.2	15.2	201	19	251	22.8	301	33.1
HMS03-12.5x89			89	11.4	17.8	203	22.3	254	26.7	304	38.9
HMS03-12.5x305			305	3.2	61	195	76.3	244	91.5	293	139.7
HMS03-16x25	16	8	25	75.7	5	379	6.3	477	7.5	568	8.4
HMS03-16x32			32	60.2	6.4	385	8	482	9.6	578	10.5
HMS03-16x38			38	50.8	7.6	386	9.5	483	11.4	579	13.6
HMS03-16x44			44	42.8	8.8	377	11	471	13.2	565	15.9
HMS03-16x51			51	37.1	10.2	378	12.8	475	15.3	568	18.9
HMS03-16x64	3.1×2.5		64	30.3	12.8	388	16	485	19.2	582	24.9
HMS03-16x76			76	25.7	15.2	391	19	488	22.8	586	29.2
HMS03-16x89			89	21.7	17.8	386	22.3	484	26.7	579	34.5
HMS03-16x102			102	18.9	20.4	386	25.5	482	30.6	578	39.1
HMS03-16x305			305	6.3	61	384	76.3	481	91.5	576	103.6
HMS03-20x25	20	10	25	216	5	1080	6.3	1361	7.5	1620	8.3
HMS03-20x32			32	168	6.4	1075	8	1344	9.6	1613	10.9
HMS03-20x38			38	129	7.6	980	9.5	1226	11.4	1471	12.5
HMS03-20x44			44	112	8.8	986	11	1232	13.2	1478	15
HMS03-20x51			51	94	10.2	959	12.8	1203	15.3	1438	17.6
HMS03-20x64	4.0×3.3		64	72.1	12.8	923	16	1154	19.2	1384	22.6
HMS03-20x76			76	59.7	15.2	907	19	1134	22.8	1361	27.5
HMS03-20x89			89	50.5	17.8	899	22.3	1126	26.7	1348	31.7
HMS03-20x102			102	44.2	20.4	902	25.5	1127	30.6	1353	37.5
HMS03-20x115			115	38.4	23	883	28.8	1106	34.5	1325	42.6
HMS03-20x127			127	34.1	25.4	866	31.8	1084	38.1	1299	45.5
HMS03-20x139			139	31	28	868	35	1085	42	1302	50.1
HMS03-20x152	4.0×3.3		152	28.2	30.4	857	38	1072	45.6	1286	55.8
HMS03-20x305			305	14	61	854	76.3	1068	91.5	1281	114.1
HMS03-25x25	25	12.5	25	375	5	1875	6.3	2363	7.5	2813	8.5
HMS03-25x32			32	297	6.4	1901	8	2376	9.6	2851	11
HMS03-25x38			38	219	7.6	1664	9.5	2081	11.4	2497	12.6
HMS03-25x44			44	187	8.8	1646	11	2057	13.2	2468	14.8
HMS03-25x51	5.5×4.2		51	156	10.2	1591	12.8	1997	15.3	2387	17.9
HMS03-25x64			64	123	12.8	1574	16	1968	19.2	2362	23.1

CODE NO. NO.	Dh	Dd	Lo	R (N/mm)	20%		25%		30%		travel stroke
					S1	F1	S2	F2	S3	F3	
HMS03-25x76	25	25	76	99	15.2	1505	19	1881	22.8	2257	26.3
HMS03-25x89			89	84	17.8	1495	22.3	1873	26.7	2243	30.5
HMS03-25x102			102	73	20.4	1489	25.5	1862	30.6	2234	37.3
HMS03-25x115			115	65	23	1495	28.8	1872	34.5	2243	41.9
HMS03-25x127			127	57.7	25.4	1466	31.8	1835	38.1	2198	46.2
HMS03-25x139			139	52.7	28	1476	35	1845	42	2213	49.3
HMS03-25x152			152	47.8	30.4	1453	38	1816	45.6	2180	55.7
HMS03-25x178			178	41	35.6	1460	44.5	1825	53.4	2189	65.1
HMS03-25x203	5.5×4.2		203	35.8	40.6	1453	50.8	1819	60.9	2180	74.5
HMS03-25x305			305	22.9	61	1397	76.3	1747	91.5	2095	110.2
HMS03-32x38	32	16	38	388	7.6	2949	9.5	3686	11.4	4423	12.5
HMS03-32x44			44	324	8.8	2851	11	3564	13.2	4277	14.9
HMS03-32x51			51	272	10.2	2774	12.8	3482	15.3	4162	17.8
HMS03-32x64			64	212	12.8	2714	16	3392	19.2	4070	22.4
HMS03-32x76			76	172	15.2	2614	19	3268	22.8	3922	26.1
HMS03-32x89			89	141	17.8	2510	22.3	3144	26.7	3765	30.8
HMS03-32x102			102	122	20.4	2489	25.5	3111	30.6	3733	36.8
HMS03-32x115			115	107	23	2461	28.8	3082	34.5	3692	41.4
HMS03-32x127			127	93	25.4	2362	31.8	2957	38.1	3543	44.4
HMS03-32x139			139	86	28	2408	35	3010	42	3612	48.5
HMS03-32x152			152	78	30.4	2371	38	2964	45.6	3557	54.8
HMS03-32x178			178	67.2	35.6	2392	44.5	2990	53.4	3588	63.6
HMS03-32x203			203	59.1	40.6	2399	50.8	3002	60.9	3599	72.5
HMS03-32x254	7.1×5.4		254	46.4	50.8	2357	63.5	2946	76.2	3536	92.8
HMS03-32x305			305	38	61	2318	76.3	2899	91.5	3477	111.8
HMS03-40x51	40	20	51	350	10.2	3570	12.8	4480	15.3	5355	17
HMS03-40x64			64	269	12.8	3443	16	4304	19.2	5165	21.9
HMS03-40x76			76	219	15.2	3329	19	4161	22.8	4993	26.7
HMS03-40x89			89	190	17.8	3382	22.3	4237	26.7	5073	31.3
HMS03-40x102			102	163	20.4	3325	25.5	4157	30.6	4988	37.1
HMS03-40x115			115	142	23	3266	28.8	4090	34.5	4899	41
HMS03-40x127			127	128	25.4	3251	31.8	4070	38.1	4877	46.5
HMS03-40x139			139	115	28	3220	35	4025	42	4830	53.1
HMS03-40x152	152	105	30.4	3192	38	3990	45.6	4788	56.1		
HMS03-40x178	178	89	35.6	3168	44.5	3961	53.4	4753	67.4		
HMS03-40x203			203	77	40.6	3126	50.8	3912	60.9	4689	76.2
HMS03-40x254	8.4×6.2		254	61	50.8	3099	63.5	3874	76.2	4648	96.2
HMS03-40x305			305	51	61	3111	76.3	3891	91.5	4667	114.8
HMS03-50x64	50	25	64	413	12.8	5286	16	6608	19.2	7930	22.4
HMS03-50x76			76	339	15.2	5153	19	6441	22.8	7729	26.5
HMS03-50x89			89	288	17.8	5126	22.3	6422	26.7	7690	31.5
HMS03-50x102			102	245	20.4	4998	25.5	6248	30.6	7497	37.6
HMS03-50x115			115	215	23	4945	28.8	6192	34.5	7418	42.7
HMS03-50x127			127	192	25.4	4877	31.8	6106	38.1	7315	47.5
HMS03-50x139			139	167	28	4676	35	5845	42	7014	51.8
HMS03-50x152			152	154	30.4	4682	38	5852	45.6	7022	57.8
HMS03-50x178	178	134	35.6	4770	44.5	5963	53.4	7156	68.5		
HMS03-50x203			203	117	40.6	4750	50.8	5944	60.9	7125	77.6
HMS03-50x254	11.1×7.6		254	89	50.8	4521	63.5	5652	76.2	6782	97.9
HMS03-50x305			305	73	61	4453	76.3	5570	91.5	6680	120.7
HMS03-63x76	63	38	76	618	15.2	9394	19	11742	22.8	14090	24.7
HMS03-63x89			89	515	17.8	9167	22.3	11485	26.7	13751	30
HMS03-63x102			102	438	20.4	8935	25.5	11169	30.6	13403	35.1
HMS03-63x115			115	370	23	8510	28.8	10656	34.5	12765	37.5
HMS03-63x127			127	333	25.4	8458	31.8	10589	38.1	12687	45.9
HMS03-63x152			152	269	30.4	8178	38	10222	45.6	12266	56.5
HMS03-63x178	178	226	35.6	8046	44.5	10057	53.4	12068	66.8		
HMS03-63x203			203	198	40.6	8039	50.8	10058	60.9	12058	78.8
HMS03-63x254	11.6×12.3		254	155	50.8	7874	63.5	9843	76.2	11811	101.7
HMS03-63x305			305	128	61	7808	76.3	9766	91.5	11712	122.4

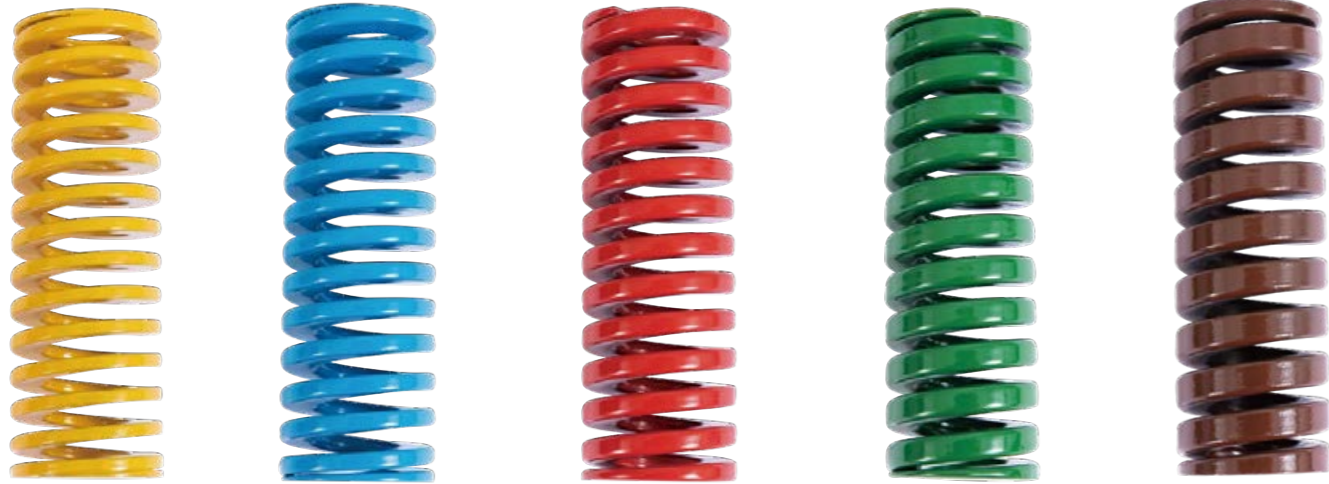
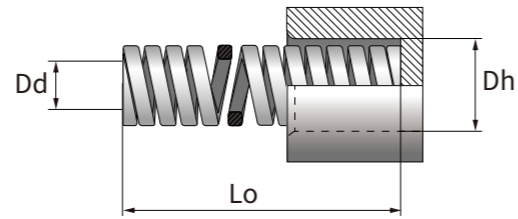
Die Spring ISO 10243 Extra Heavy Load



CODE NO NO.	Dh	Dd	Lo	R (N/mm)	17%		20%		25%		travel stroke
					S1	F1	S2	F2	S3	F3	
HMS04-10x25	10	5	25	36.8	4.3	158	5	184	6.3	232	7.7
HMS04-10x32			32	27.9	5.4	151	6.4	179	8	223	10.6
HMS04-10x38			38	23.7	6.5	154	7.6	180	9.5	225	12.6
HMS04-10x44			44	19.2	7.5	144	8.8	169	11	211	13.8
HMS04-10x51			51	16.5	8.7	144	10.2	168	12.8	211	16.2
HMS04-10x64			64	13.2	10.9	144	12.8	169	16	211	20.4
HMS04-10x76			76	10.9	12.9	141	15.2	166	19	207	25.2
HMS04-10x305	1.9x1.6		305	2.6	51.9	135	61	159	76.3	198	110.8
HMS04-12.5x25	12.5	6.3	25	58.5	4.3	252	5	293	6.3	369	8.1
HMS04-12.5x32			32	43.9	5.4	237	6.4	281	8	351	9.9
HMS04-12.5x38			38	36	6.5	234	7.6	274	9.5	342	12.9
HMS04-12.5x44			44	30.3	7.5	227	8.8	267	11	333	14.1
HMS04-12.5x51			51	26.2	8.7	228	10.2	267	12.8	335	17.4
HMS04-12.5x64			64	21.2	10.9	231	12.8	271	16	339	21
HMS04-12.5x76			76	17.1	12.9	221	15.2	260	19	325	26.4
HMS04-12.5x89	2.4x2.1		89	14.5	15.1	219	17.8	258	22.3	323	31.5
HMS04-12.5x305			305	4.3	51.9	223	61	262	76.3	328	111.3
HMS04-16x25	16	8	25	118	4.3	507	5	590	6.3	743	8.5
HMS04-16x32			32	89	5.4	481	6.4	570	8	712	11
HMS04-16x38			38	72.1	6.5	469	7.6	548	9.5	685	13.2
HMS04-16x44			44	60.9	7.5	457	8.8	536	11	670	14.7
HMS04-16x51			51	52.3	8.7	455	10.2	533	12.8	669	17.7
HMS04-16x64			64	41.2	10.9	449	12.8	527	16	659	21.9
HMS04-16x76			76	34.1	12.9	440	15.2	518	19	648	27.8
HMS04-16x89			89	29.5	15.1	445	17.8	525	22.3	658	31.2
HMS04-16x102			3.2x2.7		102	25.6	17.3	443	20.4	522	25.5
HMS04-16x305		305		8.4	51.9	436	61	512	76.3	641	113.5
HMS04-20x25	20	10	25	293	4.3	1260	5	1465	6.3	1846	6.9
HMS04-20x32			32	224	5.4	1210	6.4	1434	8	1792	9.4
HMS04-20x38			38	177	6.5	1151	7.6	1345	9.5	1682	12
HMS04-20x44			44	149	7.5	1118	8.8	1311	11	1639	13.5
HMS04-20x51			51	128	8.7	1114	10.2	1306	12.8	1638	16.2
HMS04-20x64			64	99	10.9	1079	12.8	1267	16	1584	21.2
HMS04-20x76			76	81.7	12.9	1054	15.2	1242	19	1552	24.7
HMS04-20x89			89	69.5	15.1	1049	17.8	1237	22.3	1550	28.8
HMS04-20x102			102	60.6	17.3	1048	20.4	1236	25.5	1545	34.8
HMS04-20x115			115	53	19.6	1039	23	1219	28.8	1526	39
HMS04-20x127			127	47.5	21.6	1026	25.4	1207	31.8	1511	43
HMS04-20x139	139	43	23.8	1023	28	1204	35	1505	45.3		
HMS04-20x152	4.1x3.7		152	39	25.8	1006	30.4	1186	38	1482	50.4
HMS04-20x305			305	20	51.9	1038	61	1220	76.3	1526	103.5
HMS04-25x25	25	12.5	25	459	4.3	1974	5	2295	6.3	2892	7.3
HMS04-25x32			32	374	5.4	2020	6.4	2394	8	2992	10.7
HMS04-25x38			38	300	6.5	1950	7.6	2280	9.5	2850	12
HMS04-25x44			44	244	7.5	1830	8.8	2147	11	2684	14.4
HMS04-25x51			51	208	8.7	1810	10.2	2122	12.8	2662	17.4
HMS04-25x64			64	161	10.9	1755	12.8	2061	16	2576	21.4

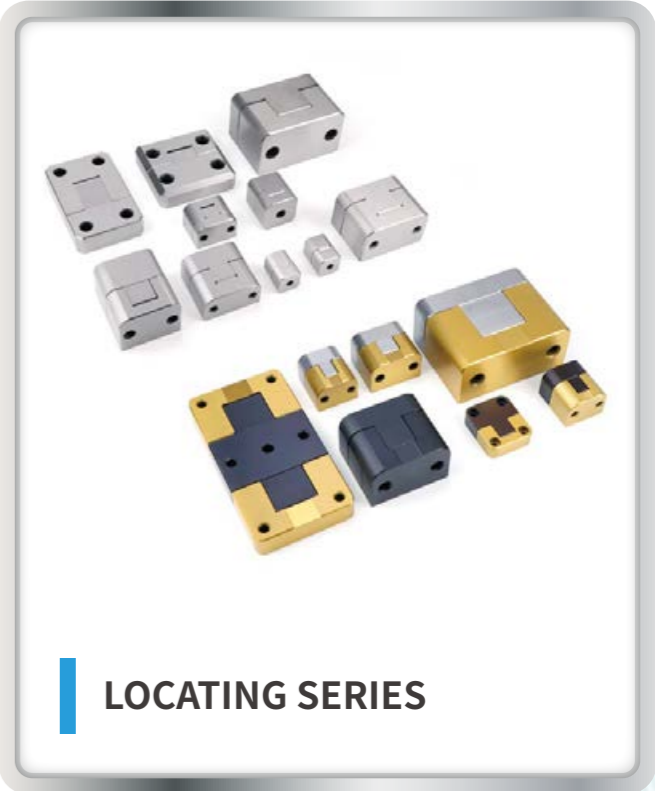
CODE NO NO.	Dh	Dd	Lo	R (N/mm)	17%		20%		25%		travel stroke		
					S1	F1	S2	F2	S3	F3			
HMS04-25x76	25	12.5	76	131	12.9	1690	15.2	1991	19	2489	26.9		
HMS04-25x89			89	111	15.1	1676	17.8	1976	22.3	2475	30.9		
HMS04-25x102			102	96.3	17.3	1666	20.4	1965	25.5	2456	36.7		
HMS04-25x115			115	85.7	19.6	1680	23	1971	28.8	2468	40.3		
HMS04-25x127			127	76.3	21.6	1648	25.4	1938	31.8	2426	45.1		
HMS04-25x139			139	66	23.8	1571	28	1848	35	2310	47.6		
HMS04-25x152			152	63.5	25.8	1638	30.4	1930	38	2413	53.5		
HMS04-25x178			178	53.9	30.3	1633	35.6	1919	44.5	2399	63.9		
HMS04-25x203			5.4x4.5		203	47	34.5	1622	40.6	1908	50.8	2388	70.2
HMS04-25x305		305		30.9	51.9	1604	61	1885	76.3	2358	110.1		
HMS04-32x38	32	16	38	480	6.5	3120	7.6	3648	9.5	4560	11.4		
HMS04-32x44			44	390	7.5	2925	8.8	3432	11	4290	13.7		
HMS04-32x51			51	336	8.7	2923	10.2	3427	12.8	4301	15.6		
HMS04-32x64			64	269	10.9	2932	12.8	3443	16	4304	20		
HMS04-32x76			76	219	12.9	2825	15.2	3329	19	4161	24.4		
HMS04-32x89			89	180	15.1	2718	17.8	3204	22.3	4014	29.7		
HMS04-32x102			102	155	17.3	2682	20.4	3162	25.5	3953	35.1		
HMS04-32x115			115	140	19.6	2744	23	3220	28.8	4032	39		
HMS04-32x127			127	124	21.6	2678	25.4	3150	31.8	3943	42.8		
HMS04-32x139			139	112	23.8	2666	28	3136	35	3920	48.6		
HMS04-32x152			152	102	25.8	2632	30.4	3101	38	3876	52.4		
HMS04-32x178			178	88.2	30.3	2672	35.6	3140	44.5	3925	60.9		
HMS04-32x203			7.3x5.6		203	76	34.5	2622	40.6	3086	50.8	3861	69.2
HMS04-32x254					254	60.8	43.2	2627	50.8	3089	63.5	3861	88.1
HMS04-32x305				305	49	51.9	2543	61	2989	76.3	3739	104.2	
HMS04-40x51			40	20	51	628	8.7	5464	10.2	6406	12.8	8038	15
HMS04-40x64	64	487			10.9	5308	12.8	6234	16	7792	19.5		
HMS04-40x76	76	379			12.9	4889	15.2	5761	19	7201	23.3		
HMS04-40x89	89	321			15.1	4847	17.8	5714	22.3	7158	26.7		
HMS04-40x102	102	281			17.3	4861	20.4	5732	25.5	7166	33.8		
HMS04-40x115	115	245			19.6	4802	23	5635	28.8	7056	36.2		
HMS04-40x127	127	221			21.6	4774	25.4	5613	31.8	7028	40.7		
HMS04-40x139	139	185			23.8	4403	28	5180	35	6475	44.5		
HMS04-40x152	152	168			25.8	4334	30.4	5107	38	6384	49.6		
HMS04-40x178	178	150			30.3	4545	35.6	5340	44.5	6675	59.9		
HMS04-40x203	8.4x7.5				203	132	34.5	4554	40.6	5359	50.8	6706	67.1
HMS04-40x254			254	107	43.2	4622	50.8	5436	63.5	6795	86.3		
HMS04-40x305		305	87.8	51.9	4557	61	5356	76.3	6699	103.6			
HMS04-50x64	50	25	64	709	10.9	7728	12.8	9075	16	11344	19.3		
HMS04-50x76			76	572	12.9	7379	15.2	8694	19	10868	24.2		
HMS04-50x89			89	475	15.1	7173	17.8	8455	22.3	10593	28		
HMS04-50x102			102	405	17.3	7007	20.4	8262	25.5	10328	33.5		
HMS04-50x115			115	352	19.6	6899	23	8096	28.8	10138	38.6		
HMS04-50x127			127	316	21.6	6826	25.4	8026	31.8	10049	41.4		
HMS04-50x139			139	289	23.8	6878	28	8092	35	10115	47.3		
HMS04-50x152			152	255	25.8	6579	30.4	7752	38	9690	50.2		
HMS04-50x178			178	215	30.3	6515	35.6	7654	44.5	9568	61.1		
HMS04-50x203			11.5x9.0		203	187	34.5	6452	40.6	7592	50.8	9500	67.7
HMS04-50x254		254		153	43.2	6610	50.8	7772	63.5	9716	87		
HMS04-50x305		305	127	51.9	6591	61	7747	76.3	9690	103.4			
HMS04-63x76	63	38	76	952	12.9	12280	15.2	14470	-	-	15.5		
HMS04-63x89			89	819	15.1	12360	17.8	14580	-	-	20		
HMS04-63x102			102	700	17.3	12110	20.4	14280	25.5	17850	30.7		
HMS04-63x115			115	620	19.6	12152	23	14260	28.8	17860	34.9		
HMS04-63x127			127	565	21.6	12204	25.4	14351	31.8	17967	38		
HMS04-63x152			152	458	25.8	11816	30.4	13923	38	17404	47.2		
HMS04-63x178			178	384	30.3	11635	35.6	13670	44.5	17088	55.8		
HMS04-63x203			11.8x13.3		203	337	34.5	11627	40.6	13682	50.8	17120	64.8
HMS04-63x254					254	263	43.2	11362	50.8	13360	63.5	16701	86.7
HMS04-63x305		305		218	51.9	11314	61	13298	76.3	16633	105.7		

Die Spring JIS B5012 Standard

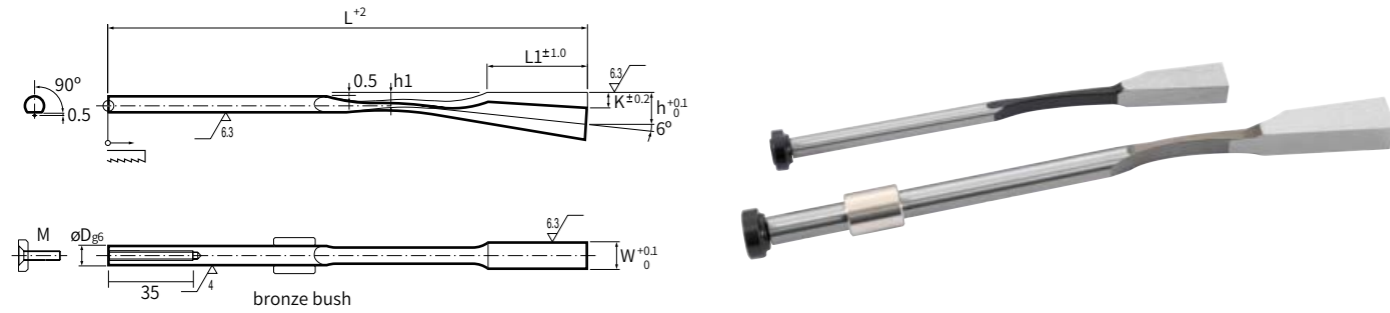


TF Lightest Load (Yellow) **TL** Light Load (Blue) **TM** Medium Load (Red) **TH** Heavy Load (Green) **TB** Extra Heavy Load (Coffee)

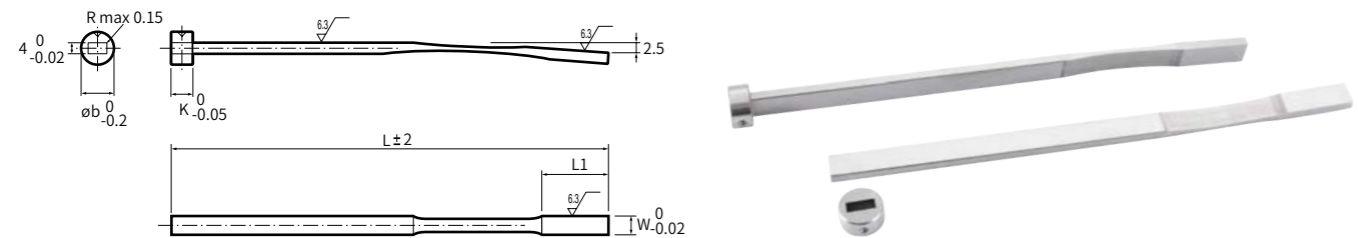
CODE	Dh	Dd	L0																											
			15	20	25	30	35	40	45	50	55	60	65	70	75	80	90	100	125	150	175	200	250	300						
TF	10	5																												
	12	6																												
	16	8																												
	14	7																												
	16	8																												
	18	9																												
	20	10																												
	22	11																												
	25	12.5																												
	27	13.5																												
30	15																													
35	17.5																													
40	20																													
50	25																													
60	30																													



Sprung Cores



CODE	D	W	L	L1	h	h1	M	bronze bush ID x OD x L
MPW-060622	6	6.2	125	22	9	3.5	M4x16	-
MPW-060630	6	6.2	175	30	10	3.5	M4x16	6X15X12
MPW-060822	6	8.2	125	22	9	3.5	M4x16	-
MPW-060830	6	8.2	175	30	10	3.5	M4x16	6X15X12
MPW-080825	8	8.2	140	25	11.5	4.5	M5x16	-
MPW-081025	8	10.2	140	25	11.5	4.5	M5x16	-
MPW-081030	8	10.2	175	30	11.2	4.5	M5x16	8X15X12
MPW-081225	8	12.2	140	25	11.5	4.5	M5x16	-
MPW-081230	8	12.2	175	30	11.2	4.5	M5x16	8x15x12
MPW-101430	10	14.2	175	30	13.6	5.5	M6x16	8x15x12
MPW-101630	10	16.2	175	30	13.6	5.5	M6x16	8x15x12
MPW-101830	10	18.2	175	30	13.6	5.5	M6x16	8x15x12

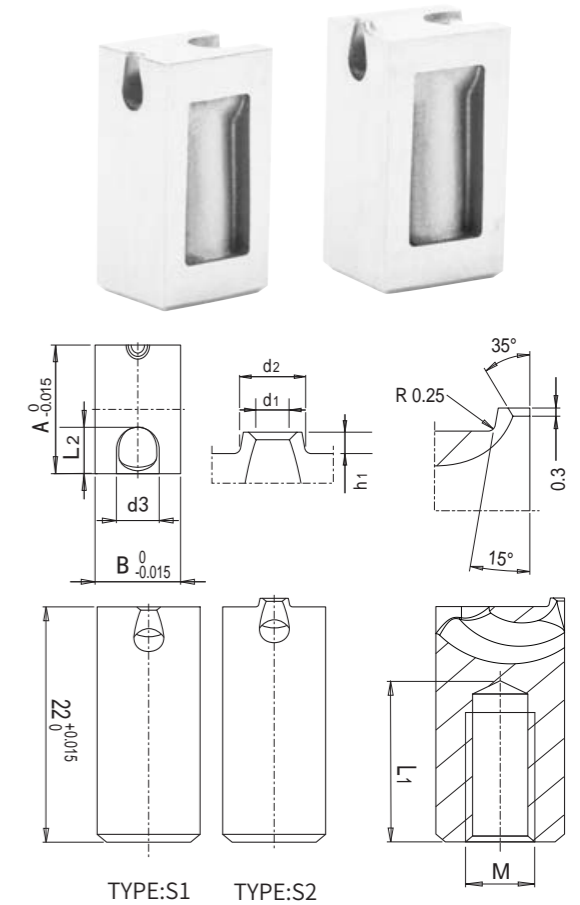


CODE	W	b	L	L1	K
MPF-044150	4	8	150	24	6
MPF-054150	5	8	150	24	6
MPF-064200	6	12	200	30	8
MPF-0642WB	6	12	200	30	8
MPF-084200	8	14	200	30	8
MPF-0842WB	8	14	200	30	8
MPF-104200	10	16	200	30	8
MPF-1042WB	10	16	200	30	8
MPF-124200	12	18	200	30	8
MPF-1242WB	12	18	200	30	8

Square Tunnel Gate Inserts

Material 1.3343/M2 HRC60

CODE	A	B	d1	d2*	d3	h1	L1	L2	M
SGS-0806	8	6	0.6	1.9	3	0.6	16	3.3	M4
SGS-0808			0.8	2.1					
SGS-1008	10	8	0.8	2.2	4	0.8	15	4	M5
SGS-1012			1.2	2.6					
SGS-1016			1.6	3					
SGS-1212	12	10	1.2	2.6	5	0.8	14	5	M5
SGS-1216			1.6	3					
SGS-1220			2	3.4					
SGS-1416	14	12	1.6	3	6	0.8	13	6	M6
SGS-1420			2	3.4					
SGS-1424			2.4	3.8					
SGS-1428			2.8	4.2					

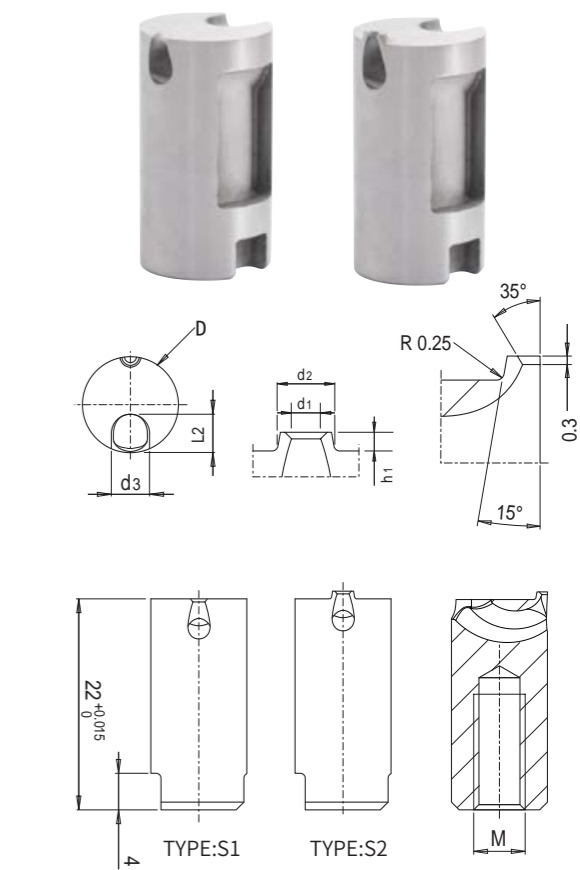


Order Example:SGS-0808/S1 * d2 just for type S2

Round Tunnel Gate Insert

Material 1.3343/M2 HRC60

CODE	D	d1	d2*	d3	h1	L2	M
SGR0806	8	0.6	1.9	3	0.6	3.25	M4
SGR0808		0.8	2.1				
SGR1008	10	0.8	2.2	4	0.8	4	M5
SGR1012		1.2	2.6				
SGR1016		1.6	3.0				
SGR1212	12	1.2	2.6	5	0.8	5	M5
SGR1216		1.6	3.0				
SGR1220		2.0	3.4				
SGR1416	14	1.6	3.0	6	0.8	6	M6
SGR1420		2.0	3.4				
SGR1424		2.4	3.8				
SGR1428		2.8	4.2				



Order Example:SGR-0808/S1 * d2 just for type S2