

SECTION A

PIN and BUSHING COMPONENTS

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SECTION A

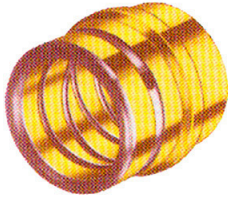
PIN and BUSHING COMPONENTS

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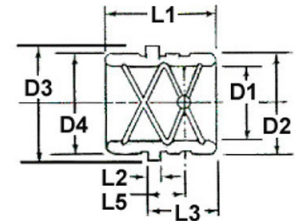
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DIE COMPONENTS:			
Lamina Die Products Catalog			CATALOG INSERT
DANLY Die Components Catalog			CATALOG INSERT
LEMPCO Ball Bearing Catalog			CATALOG INSERT

Ejector Bushings

Bronze Plated / Self Lubricating / Solid Bronze



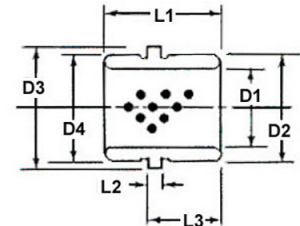
Bronze plated bushings offer the strength of steel with the lubricity and non-galling surface of bronze. Regular lubrication with grease is recommended for efficient operation.



EJECTOR BUSHINGS - BRONZE PLATED - INCH									
Part Number	Nominal I.D.	D1 I.D. +.0005 -.0000	D2 O.D. +.0005 -.0000	D3 Rib Diam. +.000 -.010	D4 O.D. +.000 -.001	L1 O.A.L. +.000 -.030	L2 Rib Thick. +.000 -.005	L3 Length +.000 -.015	L5 Length + or - .005
ELB-750	3/4	.751	1.1255	1.302	1.124	1.500	.187	1.000	.560
ELB-875	7/8	.8760	1.2505	1.427	1.249	1.500	.187	1.000	.560
ELB-100	1	1.0010	1.3755	1.552	1.374	1.750	.187	1.120	.620
ELB-125	1 1/4	1.2510	1.6255	1.802	1.624	1.750	.187	1.120	.620
ELB-150	1 1/2	1.5010	2.0005	2.177	1.999	1.750	.187	1.120	.620
ELB-200	2	2.0010	2.5005	2.687	2.499	2.250	.187	1.620	.800



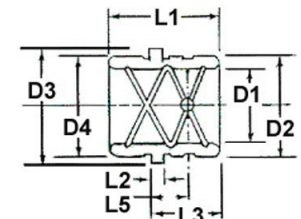
Self-lubricating aluminum bronze bushings with grahite plugs eliminate the possibility of grease contamination for clean part applications. It is recommended to use a light machine oil at start-up to begin lubrication.



EJECTOR BUSHINGS - SELF LUBRICATING - INCH								
Part Number	Nominal I.D.	D1 I.D. +.0005 -.0000	D2 O.D. +.0005 -.0000	D3 Rib Diam. +.000 -.010	D4 O.D. +.000 -.001	L1 O.A.L. +.000 -.030	L2 Rib Thick. +.000 -.005	L3 Length +.000 -.015
EBG-075	3/4	.751	1.1255	1.302	1.124	1.500	.187	1.000
EBG-087	7/8	.8760	1.2505	1.427	1.249	1.500	.187	1.000
EBG-100	1	1.0010	1.3755	1.552	1.374	1.750	.187	1.120
EBG-100L	1	1.0010	1.3755	1.552	1.374	2.000	.187	1.620
EBG-125	1 1/4	1.2510	1.6255	1.802	1.624	1.750	.187	1.120
EBG-125L	1 1/4	1.2510	1.6255	1.802	1.624	2.500	.187	1.870
EBG-150	1 1/2	1.5010	2.0005	2.177	1.999	1.750	.187	1.120
EBG-150L	1 1/2	1.5010	2.0005	2.177	1.999	2.500	.187	1.870
EBG-200	2	2.0010	2.5005	2.687	2.499	2.250	.187	1.620



Regular lubrication with grease is recommended to avoid galling and possible seizing of bushing and mold leader pin.



EJECTOR BUSHINGS - SOLID BRONZE - INCH									
Part Number	Nominal I.D.	D1 I.D. +.0005 -.0000	D2 O.D. +.0005 -.0000	D3 Rib Diam. +.000 -.010	D4 O.D. +.000 -.001	L1 O.A.L. +.000 -.030	L2 Rib Thick. +.000 -.005	L3 Length +.000 -.015	L5 Length + or - .005
EBSB-075	3/4	.751	1.1255	1.302	1.124	1.500	.187	1.000	.560
EBSB-087	7/8	.8760	1.2505	1.427	1.249	1.500	.187	1.000	.560
EBSB-100	1	1.0010	1.3755	1.552	1.374	1.750	.187	1.120	.620
EBSB-100L	1	1.0010	1.3755	1.552	1.374	2.000	.187	1.620	.620
EBSB-125	1 1/4	1.2510	1.6255	1.802	1.624	1.750	.187	1.120	.620
EBSB-125L	1 1/4	1.2510	1.6255	1.802	1.624	2.500	.187	1.870	.620
EBSB-150	1 1/2	1.5010	2.0005	2.177	1.999	1.750	.187	1.120	.620
EBSB-150L	1 1/2	1.5010	2.0005	2.177	1.999	2.500	.187	1.870	.620
EBSB-200	2	2.0010	2.5005	2.687	2.499	2.250	.187	1.620	.800

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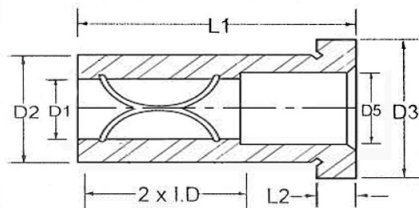
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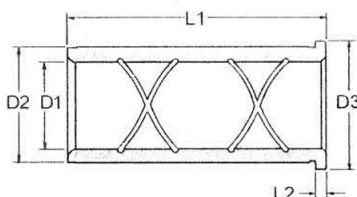
Shoulder Bushings

Steel & Bronze Plated



GENERAL DIMENSIONS					
Nom. I.D.	D1 +.0005 -.0000	D2 +.0005 -.0000	D3 +.000 -.010	D5 +.000 -.015	L2 +.000 -.005
1/2	.500	.7505	.853	-	.187
3/4	.7505	1.1255	1.302	.781	.187
7/8	.8755	1.2505	1.427	.906	.187
1	1.0005	1.3755	1.552	1.031	.187
1-1/4	1.2505	1.6255	1.802	1.281	.187
1-1/2	1.5005	2.0005	2.177	1.531	.187
2	2.0005	2.5005	2.677	2.031	.187
2-1/2	2.5005	3.2505	3.427	2.531	.187
3	3.0005	3.7505	3.990	3.031	.500

SHOULDER BUSHINGS - HARDENED STEEL - INCH									
LENGTH (L1)	INSIDE DIAMETER								
	1/2	3/4	7/8	1	1 1/4	1 1/2	2	2 1/2	3
7/8	HSB-0507	HSB-0607	HSB-0707	HSB-0807	HSB-1007	HSB-1207	-	-	-
1 3/8	HSB-0513	HSB-0613	HSB-0713	HSB-0813	HSB-1013	HSB-1213	HSB-1613	HSB-2013	-
1 7/8	HSB-0517	HSB-0617	HSB-0717	HSB-0817	HSB-1017	HSB-1217	HSB-1617	HSB-2017	-
2 3/8	HSB-0523	HSB-0623	HSB-0723	HSB-0823	HSB-1023	HSB-1223	HSB-1623	HSB-2023	-
2 7/8	-	HSB-0627	HSB-0727	HSB-0827	HSB-1027	HSB-1227	HSB-1627	HSB-2027	-
3 3/8	-	HSB-0633	HSB-0733	HSB-0833	HSB-1033	HSB-1233	HSB-1633	HSB-2033	-
3 7/8	-	HSB-0637	HSB-0737	HSB-0837	HSB-1037	HSB-1237	HSB-1637	HSB-2037	HSB-2437
4 3/8	-	HSB-0643	HSB-0743	HSB-0843	HSB-1043	HSB-1243	HSB-1643	HSB-2043	-
4 7/8	-	HSB-0647	HSB-0747	HSB-0847	HSB-1047	HSB-1247	HSB-1647	HSB-2047	HSB-2447
5 7/8	-	HSB-0657	HSB-0757	HSB-0857	HSB-1057	HSB-1257	HSB-1657	HSB-2057	HSB-2457
7 7/8	-	-	-	-	-	-	-	-	HSB-2477



GENERAL DIMENSIONS					
Nom. I.D.	D1 +.0005 -.0000	D2 +.0005 -.0000	D3 +.000 -.015	L2 +.000 -.005	
3/4	.7505	1.1255	1.302	.187	
7/8	.8755	1.2505	1.427	.187	
1	1.0005	1.3755	1.552	.187	
1-1/4	1.2505	1.6255	1.802	.187	
1-1/2	1.5005	2.0005	2.177	.187	
2	2.0005	2.5005	2.677	.187	
2-1/2	2.5005	3.2505	3.427	.187	
3	3.0005	3.7505	3.990	.500	

SHOULDER BUSHINGS - BRONZE PLATED - INCH								
LENGTH (L1) +.00-.03	INSIDE DIAMETER							
	3/4	7/8	1	1 1/4	1 1/2	2	2 1/2	3
7/8	LBB-0607	LBB-0707	LBB-0807	LBB-1007	LBB-1207	-	-	-
1 3/8	LBB-0613	LBB-0713	LBB-0813	LBB-1013	LBB-1213	LBB-1613	LBB-2013	-
1 7/8	LBB-0617	LBB-0717	LBB-0817	LBB-1017	LBB-1217	LBB-1617	LBB-2017	-
2 3/8	LBB-0623	LBB-0723	LBB-0823	LBB-1023	LBB-1223	LBB-1623	LBB-2023	-
2 7/8	LBB-0627	LBB-0727	LBB-0827	LBB-1027	LBB-1227	LBB-1627	LBB-2027	-
3 3/8	LBB-0633	LBB-0733	LBB-0833	LBB-1033	LBB-1233	LBB-1633	LBB-2033	-
3 7/8	LBB-0637	LBB-0737	LBB-0837	LBB-1037	LBB-1237	LBB-1637	LBB-2037	LBB-2437
4 3/8	LBB-0643	LBB-0743	LBB-0843	LBB-1043	LBB-1243	LBB-1643	LBB-2043	-
4 7/8	LBB-0647	LBB-0747	LBB-0847	LBB-1047	LBB-1247	LBB-1647	LBB-2047	LBB-2447
5 7/8	LBB-0657	LBB-0757	LBB-0857	LBB-1057	LBB-1257	LBB-1657	LBB-2057	LBB-2457
7 7/8	-	-	-	-	-	-	-	LBB-2477

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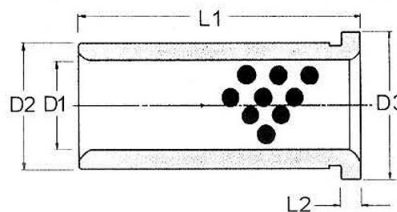
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Shoulder Bushings

Self-Lubricating & Solid Bronze

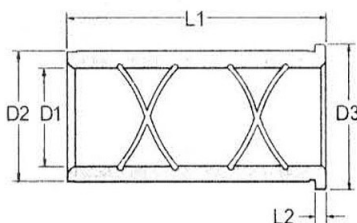


GENERAL DIMENSIONS				
Nom I.D.	D1 +.0005 -.0000	D2 +.0005 -.0000	D3 +.000 -.030	L2 +.000 -.005
3/4	.7505	1.1255	1.302	.187
7/8	.8755	1.2505	1.427	.187
1	1.0005	1.3755	1.552	.187
1-1/4	1.2505	1.6255	1.802	.187
1-1/2	1.5005	2.0005	2.177	.187
2	2.0005	2.5005	2.677	.187
2-1/2	2.5005	3.2505	3.427	.187
3	3.0005	3.7505	3.990	.500

SHOULDER BUSHINGS - *SELF-LUBRICATING - INCH

LENGTH (L1) +.00-.06	INSIDE DIAMETER							
	3/4	7/8	1	1 1/4	1 1/2	2	2 1/2	3
7/8	SG075-07	SG087-07	SG100-07	SG125-07	SG150-07	-	-	-
1 3/8	SG075-11	SG087-11	SG100-11	SG125-11	SG150-11	SG200-11	SG250-11	-
1 7/8	SG075-15	SG087-15	SG100-15	SG125-15	SG150-15	SG200-15	SG250-15	-
2 3/8	SG075-19	SG087-19	SG100-19	SG125-19	SG150-19	SG200-19	SG250-19	-
2 7/8	SG075-23	SG087-23	SG100-23	SG125-23	SG150-23	SG200-23	SG250-23	-
3 3/8	SG075-27	SG087-27	SG100-27	SG125-27	SG150-27	SG200-27	SG250-27	SG300-27
3 7/8	SG075-31	SG087-31	SG100-31	SG125-31	SG150-31	SG200-31	SG250-31	SG300-31
4 3/8	SG075-35	SG087-35	SG100-35	SG125-35	SG150-35	SG200-35	SG250-35	-
4 7/8	SG075-39	SG087-39	SG100-39	SG125-39	SG150-39	SG200-39	SG250-39	SG300-39
5 7/8	SG075-47	SG087-47	SG100-47	SG125-47	SG150-47	SG200-47	SG250-47	SG300-47
7 7/8	-	-	-	-	-	-	-	SG300-57

*Aluminum Bronze material with graphite plugs. It is recommended to use a light machine oil at start-up to begin lubrication.



GENERAL DIMENSIONS				
Nom I.D.	D1 +.0005 -.0000	D2 +.0005 -.0000	D3 +.000 -.030	L2 +.000 -.005
3/4	.7505	1.1255	1.302	.187
7/8	.8755	1.2505	1.427	.187
1	1.0005	1.3755	1.552	.187
1-1/4	1.2505	1.6255	1.802	.187
1-1/2	1.5005	2.0005	2.177	.187
2	2.0005	2.5005	2.677	.187
2-1/2	2.5005	3.2505	3.427	.187
3	3.0005	3.7505	3.990	.500

SHOULDER BUSHINGS - SOLID BRONZE - INCH

LENGTH (L1) +.00 -.06	INSIDE DIAMETER							
	3/4	7/8	1	1 1/4	1 1/2	2	2 1/2	3
7/8	SB-0707	SB-0807	SB-1007	SB-1207	SB-1507	-	-	-
1 3/8	SB-0713	SB-0813	SB-1013	SB-1213	SB-1513	SB-2013	SB-2513	-
1 7/8	SB-0717	SB-0817	SB-1017	SB-1217	SB-1517	SB-2017	SB-2517	-
2 3/8	SB-0723	SB-0823	SB-1023	SB-1223	SB-1523	SB-2023	SB-2523	-
2 7/8	SB-0727	SB-0827	SB-1027	SB-1227	SB-1527	SB-2027	SB-2527	-
3 3/8	SB-0733	SB-0833	SB-1033	SB-1233	SB-1533	SB-2033	SB-2533	SB-3033
3 7/8	SB-0737	SB-0837	SB-1037	SB-1237	SB-1537	SB-2037	SB-2537	SB-3037
4 3/8	SB-0743	SB-0843	SB-1043	SB-1243	SB-1543	SB-2043	SB-2543	-
4 7/8	SB-0747	SB-0847	SB-1047	SB-1247	SB-1547	SB-2047	SB-2547	SB-3047
5 7/8	SB-0757	SB-0857	SB-1057	SB-1257	SB-1557	SB-2057	SB-2557	SB-3057
7 7/8	-	-	-	-	-	-	-	SB-3077

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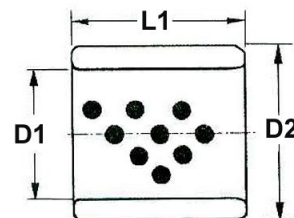
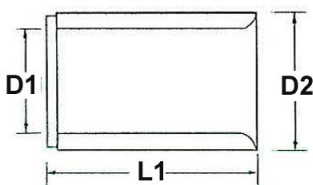


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Straight Bushings

Steel / Bronze Plated / Self Lubricating



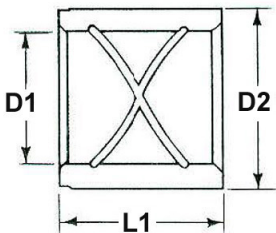
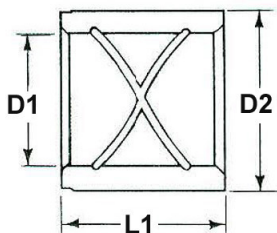
STRAIGHT BUSHINGS - HARDENED STEEL - INCH

Part Number	Nominal I.D.	D1 I.D.	D2 O.D.	Length (L1)
		+ .0005 - .0000		
HSTB-0507	1/2	.500	.7505	.875
HSTB-0513	1/2	.500	.7505	1.375
HSTB-0607	3/4	.7505	1.1255	.875
HSTB-0613	3/4	.7505	1.1255	1.375
HSTB-0713	7/8	.8755	1.2505	1.375
HSTB-0813	1	1.0005	1.3755	1.375
HSTB-1013	1 1/4	1.2505	1.6255	1.375
HSTB-1017	1 1/4	1.2505	1.6255	1.875
HSTB-1213	1 1/2	1.5005	2.0005	1.375
HSTB-1217	1 1/2	1.5005	2.0005	1.875
HSTB-1637	2	2.0005	2.5005	3.875
HSTB-2047	2 1/2	2.5005	3.2505	4.875

STRAIGHT BUSHINGS - SELF-LUBRICATING - INCH

Part Number	Nominal I.D.	D1 I.D.	D2 O.D.	Length (L1)
		+ .0005 - .0000		
*SGS075-07	3/4	.7505	1.1255	.875
*SGS075-11	3/4	.7505	1.1255	1.375
SGS075-12	3/4	.7505	1.1255	1.500
SGS087-10	7/8	.8755	1.2505	1.250
*SGS087-11	7/8	.8755	1.2505	1.375
SGS087-12	7/8	.8755	1.2505	1.500
SGS100-10	1	1.0005	1.3755	1.250
*SGS100-11	1	1.0005	1.3755	1.375
SGS100-12	1	1.0005	1.3755	1.500
SGS100-14	1	1.0005	1.3755	1.750
*SGS100-16	1	1.0005	1.3755	2.000
SGS100-24	1	1.0005	1.3755	3.000
SGS125-10	1 1/4	1.2505	1.6255	1.250
*SGS125-11	1 1/4	1.2505	1.6255	1.375
SGS125-12	1 1/4	1.2505	1.6255	1.500
SGS125-14	1 1/4	1.2505	1.6255	1.750
*SGS125-15	1 1/4	1.2505	1.6255	1.875
SGS125-16	1 1/4	1.2505	1.6255	2.000
SGS125-24	1 1/4	1.2505	1.6255	3.000
SGS150-10	1 1/2	1.5005	2.0005	1.250
*SGS150-11	1 1/2	1.5005	2.0005	1.375
SGS150-12	1 1/2	1.5005	2.0005	1.500
SGS150-14	1 1/2	1.5005	2.0005	1.750
*SGS150-15	1 1/2	1.5005	2.0005	1.875
SGS150-16	1 1/2	1.5005	2.0005	2.000
SGS150-24	1 1/2	1.5005	2.0005	3.000
SGS175-10	1 3/4	1.7505	2.2505	1.250
SGS175-12	1 3/4	1.7505	2.2505	1.500
SGS175-14	1 3/4	1.7505	2.2505	1.750
SGS175-16	1 3/4	1.7505	2.2505	2.000
SGS175-20	1 3/4	1.7505	2.2505	2.500
SGS175-24	1 3/4	1.7505	2.2505	3.000
SGS175-28	1 3/4	1.7505	2.2505	3.500
SGS175-32	1 3/4	1.7505	2.2505	4.000
SGS200-10	2	2.0005	2.5005	1.250
SGS200-12	2	2.0005	2.5005	1.500
*SGS200-16	2	2.0005	2.5005	2.000
SGS200-20	2	2.0005	2.5005	2.500
SGS200-24	2	2.0005	2.5005	3.000
*SGS200-31	2	2.0005	2.5005	3.875
SGS200-39	2	2.0005	2.5005	4.875
SGS225-12	2 1/4	2.2505	2.7505	1.500
SGS225-16	2 1/4	2.2505	2.7505	2.000
SGS225-20	2 1/4	2.2505	2.7505	2.500
SGS225-24	2 1/4	2.2505	2.7505	3.000
SGS250-12	2 1/2	2.5005	3.2505	1.500
SGS250-16	2 1/2	2.5005	3.2505	2.000
SGS250-24	2 1/2	2.5005	3.2505	3.000
*SGS250-39	2 1/2	2.5005	3.2505	4.875
SGS300-16	3	3.0005	3.7505	2.000
SGS300-20	3	3.0005	3.7505	2.500
SGS300-24	3	3.0005	3.7505	3.000
SGS300-28	3	3.0005	3.7505	3.500
*SGS300-39	3	3.0005	3.7505	4.875

(*) Also available in Solid bronze. Use prefix "SSB" with above part number. Example: SSB125-15 (1 1/4 x 1 7/8)



STRAIGHT BUSHINGS - BRONZE PLATED - INCH

Part Number	Nominal I.D.	D1 I.D.	D2 O.D.	Length (L1)
		+ .0005 - .0000		
STB-0607	3/4	.7505	1.1255	.875
STB-0613	3/4	.7505	1.1255	1.375
STB-0713	7/8	.8755	1.2505	1.375
STB-0813	1	1.0005	1.3755	1.375
STB-1013	1 1/4	1.2505	1.6255	1.375
STB-1017	1 1/4	1.2505	1.6255	1.875
STB-1213	1 1/2	1.5005	2.0005	1.375
STB-1217	1 1/2	1.5005	2.0005	1.875
STB-1637	2	2.0005	2.5005	3.875
STB-2047	2 1/2	2.5005	3.2505	4.875
STB-2447	3	3.0005	3.7505	4.875

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Die Bushings - Wring Fit Style

BRONZE PLATED



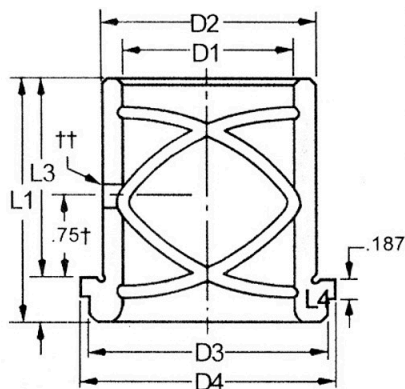
SOLID AL. BRONZE



BRONZE SELF-LUBE



Available in Class 3 only



I.D. Tolerances	
3/4 to 1 1/2	+0.0006 +0.0010
1 3/4 to 2	+0.0007 +0.0012
2 1/2	+0.0012 +0.0018
3	+0.0014 +0.0023
3 3/4	+0.0018 +0.0028
4 1/2	+0.0025 +0.0035

- * (t) Bushings with 2.50" diameter and larger have 1.25" dimension.
- * (tt) Bushing I.D less than 1.25", hole=.188 larger than 1.25", hole=.344
- * D1 diameter is also available with +.015 grind stock.
- * For "GSCB" self-lube bushings use light oil at start up. Do Not Grease.
- * D-Clamps and D-Screws are included with bushings.

SHORT SHOULDER BUSHINGS - INCH

D1 Nominal I.D.	D2 Wring Fit DIAM.	D3 Head O.D.	D4 Shoulder O.D.	PART NUMBER			L1 Overall Length	L3 Wring Fit Length	L4 Head Length
				Bronze Plated	Solid Al. Bronze	Al. Bronze Self-Lube			
3/4	1.1250	1.125	1.313	GSC-750-S	GSC-750-SB	GSCB-750-S	1.563	1.063	.500
				GSC-750-L	GSC-750-LB	GSCB-750-L	2.313	1.813	
7/8	1.3750	1.375	1.563	GSC-875-S	GSC-875-SB	GSCB-875-S	1.563	1.063	.500
				GSC-875-L	GSC-875-LB	GSCB-875-L	2.313	1.813	
1	1.5000	1.563	1.750	GSC-100-S	GSC-100-SB	GSCB-100-S	1.875	1.375	.500
				GSC-100-L	GSC-100-LB	GSCB-100-L	2.875	2.375	
1 1/4	1.7500	1.938	2.125	GSC-125-S	GSC-125-SB	GSCB-125-S	2.375	1.875	.500
				GSC-125-L	GSC-125-LB	GSCB-125-L	3.375	2.875	
1 1/2	2.000	2.188	2.375	GSC-150-S	GSC-150-SB	GSCB-150-S	2.375	1.875	.500
				GSC-125-L	GSC-150-LB	GSCB-150-L	3.375	2.875	
1 3/4	2.2500	2.438	2.625	GSC-175-S	GSC-175-SB	GSCB-175-S	2.875	2.375	.500
				GSC-175-L	GSC-175-LB	GSCB-175-L	3.875	3.375	
2	2.500	2.750	2.938	GSC-200-S	GSC-200-SB	GSCB-200-S	2.875	2.375	.500
				GSC-200-L	GSC-200-LB	GSCB-200-L	3.875	3.375	
2 1/2	3.000	3.188	3.375	GSC-250-S	GSC-250-SB	GSCB-250-S	3.000	2.625	.375
				GSC-250-M	GSC-250-MB	GSCB-250-M	4.000	3.625	
				GSC-250-L	GSC-250-LB	GSCB-250-L	5.000	4.625	
3	3.500	3.688	3.875	-	-	GSCB-300-X	3.000	2.625	.375
				GSC-300-S	GSC-300-SB	GSCB-300-S	4.000	3.625	
				GSC-300-M	GSC-300-MB	GSCB-300-M	5.000	4.625	
				GSC-300-L	GSC-300-LB	GSCB-300-L	6.000	5.625	
3 3/4	4.500	4.688	4.875	-	GSC-375-B	GSCB-375-S	7.000	6.625	.375
4 1/2	5.500	5.688	5.875	-	GSC-450-B	GSCB-450-S	8.000	7.625	.375

*A complete Die Components catalog is available upon request.

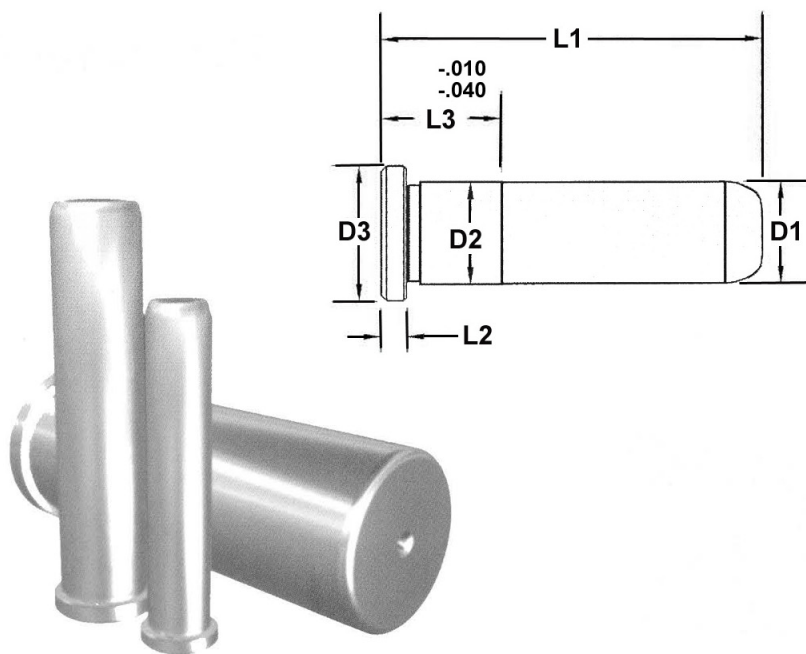
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Tooling Components, Inc.

Leader Pins



GENERAL DIMENSIONS				
NO. PIN DIA.	D1 +.0000 -.0005	D2 +.0005 -.0000	D3 +.000 -.010	L2 +.000 -.005
3/4	.7490	.7510	.990	.187
7/8	.8740	.8760	1.115	.250
1	.9990	1.0010	1.240	.250
1-1/4	1.2490	1.2510	1.490	.312
1-1/2	1.4990	1.5010	1.740	.312
2	1.9990	2.0010	2.240	.312
2-1/2	2.4990	2.5010	2.740	.312
3	2.9990	3.0010	3.365	.500

LEADER PINS - INCH																
Overall Length L1	Nominal Dia. 3/4"		Nominal Dia. 7/8"		Nominal Dia. 1"		Nominal Dia. 1 1/4"		Nominal Dia. 1 1/2"		Nominal Dia. 2"		Nominal Dia. 2 1/2"		Nominal Dia. 3"	
	Part Number	L3	Part Number	L3	Part Number	L3	Part Number	L3					Part Number	L3	Part Number	L3
1 3/4"	LP-0616	7/8	LP-0716	7/8	LP-0816	7/8	-		-		-		-		-	
2 1/4"	LP-0622	7/8	LP-0722	7/8	LP-0822	7/8	-		-		-		-		-	
2 3/4"	LP-0626	7/8	LP-0726	7/8	LP-0826	7/8	LP-1026	7/8	-		-		-		-	
3 1/4"	LP-0632	7/8	LP-0732	7/8	LP-0832	7/8	LP-1032	7/8	-		-		-		-	
3 3/4"	LP-0636	7/8	LP-0736	7/8	LP-0836	7/8	LP-1036	7/8	LP-1236	1 3/8	-		-		-	
4 1/4"	LP-0642	1 3/8	LP-0742	1 3/8	LP-0842	1 3/8	LP-1042	7/8	LP-1242	1 3/8	-		-		-	
4 3/4"	LP-0646	1 3/8	LP-0746	1 3/8	LP-0846	1 3/8	LP-1046	1 3/8	LP-1246	1 3/8	-		-		-	
5 1/4"	LP-0652	1 3/8	LP-0752	1 3/8	LP-0852	1 3/8	LP-1052	1 3/8	LP-1252	1 3/8	-		-		-	
5 3/4"	LP-0656	1 7/8	LP-0756	1 3/8	LP-0856	1 3/8	LP-1056	1 3/8	LP-1256	1 3/8	LP-1656	1 7/8	LP-2056	2 3/8	-	
6 1/4"	LP-0662	1 7/8	LP-0762	1 7/8	LP-0862	1 3/8	LP-1062	1 3/8	LP-1262	1 3/8	-		-		-	
6 3/4"	LP-0666	1 7/8	LP-0766	1 7/8	LP-0866	1 7/8	LP-1066	1 7/8	LP-1266	1 3/8	LP-1666	1 7/8	LP-2066	2 3/8	-	
7 1/4"	LP-0672	1 7/8	LP-0772	1 7/8	LP-0872	1 7/8	LP-1072	1 7/8	-		-		-		-	
7 3/4"	LP-0676	1 7/8	LP-0776	1 7/8	LP-0876	1 7/8	LP-1076	1 7/8	LP-1276	1 7/8	LP-1676	1 7/8	LP-2076	2 3/8	-	
8 1/4"	-		LP-0782	1 7/8	LP-0882	1 7/8	LP-1082	1 7/8	-		-		-		-	
8 3/4"	-		LP-0786	1 7/8	LP-0886	1 7/8	LP-1086	1 7/8	LP-1286	1 7/8	LP-1686	1 7/8	LP-2086	2 3/8	LP-2486	2 7/8
9 1/4"	LP-0692	1 7/8	LP-0792	1 7/8	LP-0892	1 7/8	LP-1092	1 7/8	-		-		-		-	
9 3/4"	-		-		LP-0896	1 7/8	LP-1096	1 7/8	LP-1296	1 7/8	LP-1696	1 7/8	LP-2096	2 3/8	-	
10 1/4"	-		-		LP-08102	1 7/8	LP-10102	1 7/8	-		-		-		-	
10 3/4"	-		LP-0706	1 7/8	LP-08106	1 7/8	LP-10106	1 7/8	LP-12106	1 7/8	LP-16106	1 7/8	LP-20106	2 3/8	LP-24106	2 7/8
11 1/4"	-		-		LP-08112	1 7/8	LP-10112	1 7/8	-		-		-		-	
11 3/4"	-		-		LP-08116	1 7/8	LP-10116	1 7/8	LP-12116	1 7/8	LP-16116	1 7/8	LP-20116	2 3/8	-	
12 1/4"	-		LP-0722	1 7/8	LP-08122	1 7/8	LP-10122	1 7/8	-		-		-		-	
12 3/4"	-		-		-		LP-10126	1 7/8	LP-12126	1 7/8	LP-16126	1 7/8	LP-20126	2 3/8	LP-24126	2 7/8
13 3/4"	-		-		-		LP-10136	1 7/8	LP-12136	1 7/8	LP-16136	1 7/8	LP-20136	2 3/8	-	
14 3/4"	-		-		-		LP-10146	1 7/8	LP-12146	1 7/8	LP-16146	1 7/8	LP-20146	2 3/8	LP-24146	2 7/8
15 3/4"	-		-		-		LP-10156	1 7/8	LP-12156	1 7/8	LP-16156	1 7/8	LP-20156	2 3/8	-	
16 3/4"	-		-		-		-		-		LP-16166	1 7/8	LP-20166	2 3/8	LP-24166	2 7/8
18 3/4"	-		-		-		-		-		LP-16186	1 7/8	LP-20186	2 3/8	LP-24186	2 7/8

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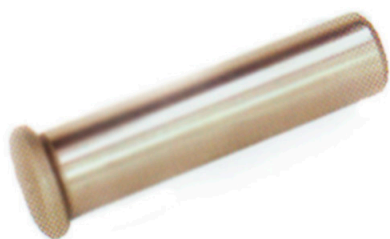
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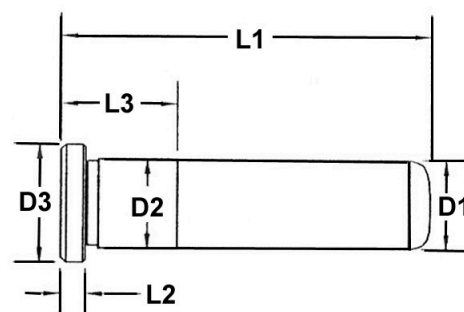
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Guided Ejector Leader Pins

Straight Style and Shoulder Style *Short Press Fit Length



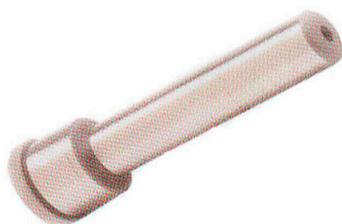
***7/8 Press Fit Length**



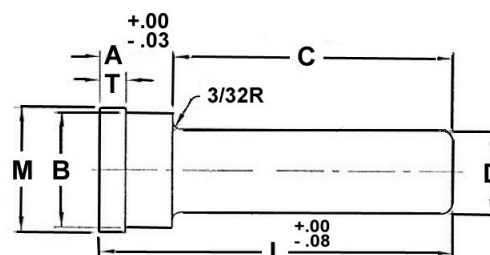
LEADER PINS - STRAIGHT STYLE								
Overall Length L1	Nominal Dia. 3/4"		Nominal Dia. 7/8"		Nominal Dia. 1"		Nominal Dia. 1 1/4"	
	Part Number	L3	Part Number	L3	Part Number	L3	Part Number	L3
4 1/4"	LPG-0642	7/8	LPG-0742	7/8	LPG-0842	7/8	LPG-1042	7/8
4 3/4"	LPG-0646	7/8	LPG-0746	7/8	LPG-0846	7/8	LPG-1046	7/8
5 1/4"	LPG-0652	7/8	LPG-0752	7/8	LPG-0852	7/8	LPG-1052	7/8
5 3/4"	LPG-0656	7/8	LPG-0756	7/8	LPG-0856	7/8	LPG-1056	7/8
6 1/4"	LPG-0662	7/8	LPG-0762	7/8	LPG-0862	7/8	LPG-1062	7/8

General Dimensions				
Nominal Diameter	D1	D2	D3	L2
	+0.0000 -0.0005	+0.0005 -0.0000	+0.00 -0.01	+0.000 -0.005
3/4"	.749	.751	.990	3/16
7/8"	.874	.876	1.115	1/4
1"	.999	1.001	1.240	1/4
1 1/4"	1.249	1.251	1.490	5/16

* Mate with standard ejector bushings.



***7/8 and 1 3/8" Press Fit Length**



LEADER PINS - SHOULDER STYLE					
Press Fit Length	Bearing Length	Overall Length	Nominal Dia. 1/2"	Nominal Dia. 3/4"	Nominal Dia. 1"
A	C	L	Part Number	Part Number	Part Number
7/8	2 7/8	3 3/4	LPGS-050836	-	-
7/8	3 3/8	4 1/4	LPGS-050842	LPGS-070842	LPGS-100842
7/8	3 7/8	4 3/4	LPGS-050846	LPGS-070846	LPGS-100846
7/8	4 3/8	5 1/4	LPGS-050852	LPGS-070852	LPGS-100852
7/8	4 7/8	5 3/4	-	LPGS-070856	LPGS-100856
1 3/8	3 7/8	5 1/4	-	-	LPGS-101352
1 3/8	4 3/8	5 3/4	-	-	LPGS-101356
1 3/8	4 7/8	6 1/4	-	-	LPGS-101362

General Dimensions				
Nominal Diameter	D	B	M	T
	+0.0000 -0.0005	+0.0005 -0.0000	+0.00 -0.01	+0.000 -0.015
1/2"	.499	.751	.853	3/16
3/4"	.749	1.126	1.250	5/16
1"	.999	1.376	1.500	5/16

* Allows for line boring of both leader pin and guided ejector bushing holes.

* Mate with standard ejector bushings.

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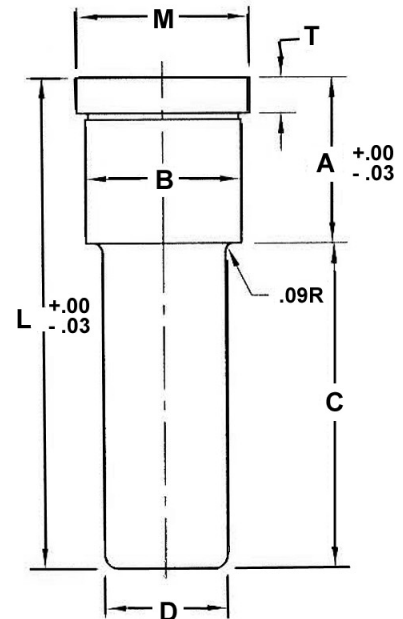
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Leader Pins - Shoulder Style

SHOULDER LEADER PINS - INCH						
Shoulder Length	Bearing Length	Overall Length	Nom. Dia. (D)= 1/2"	Nom. Dia. (D)=3/4"	Nom. Dia. (D)=1"	Nom. Dia. (D)=1 1/4"
A	C	L	Part Number	Part Number	Part Number	Part Number
7/8	7/8	1 3/4	LPS-050816	LPS-070816	-	-
7/8	1 3/8	2 1/4	LPS-050822	LPS-070822	-	-
7/8	1 7/8	2 3/4	LPS-050826	-	-	-
7/8	2 3/8	3 1/4	LPS-050832	LPS-070832	-	-
7/8	2 7/8	3 3/4	-	LPS-070836	LPS-100836	-
1 3/8	7/8	2 1/4	LPS-051322	LPS-071322	-	-
1 3/8	1 3/8	2 3/4	LPS-051326	LPS-071326	LPS-101326	-
1 3/8	1 7/8	3 1/4	LPS-051332	LPS-071332	LPS-101332	-
1 3/8	2 3/8	3 3/4	-	LPS-071336	-	-
1 3/8	2 7/8	4 1/4	-	LPS-071342	LPS-101342	-
1 3/8	3 3/8	4 3/4	-	LPS-071346	LPS-101346	LPS-121346
1 7/8	7/8	2 3/4	LPS-051726	LPS-071726	-	-
1 7/8	1 3/8	3 1/4	LPS-051732	LPS-071732	LPS-101732	-
1 7/8	1 7/8	3 3/4	LPS-051736	LPS-071736	LPS-101736	-
1 7/8	2 3/8	4 1/4	-	LPS-071742	LPS-101742	LPS-121742
1 7/8	2 7/8	4 3/4	-	LPS-071746	LPS-101746	LPS-121746
1 7/8	3 3/8	5 1/4	-	LPS-071752	LPS-101752	-
1 7/8	3 7/8	5 3/4	-	LPS-071756	LPS-101756	LPS-121756
2 3/8	7/8	3 1/4	LPS-052332	-	-	-
2 3/8	1 3/8	3 3/4	-	LPS-072336	LPS-102336	-
2 3/8	1 7/8	4 1/4	-	LPS-072342	LPS-102342	-
2 3/8	2 3/8	4 3/4	-	LPS-072346	LPS-102346	-
2 3/8	2 7/8	5 1/4	-	LPS-072352	LPS-102352	LPS-122352
2 3/8	3 3/8	5 3/4	-	-	LPS-102356	-
2 3/8	3 7/8	6 1/4	-	LPS-072362	LPS-102362	LPS-122362
2 7/8	1 3/8	4 1/4	LPS-052742	LPS-072742	-	-
2 7/8	1 7/8	4 3/4	-	LPS-072746	LPS-102746	LPS-122746
2 7/8	2 3/8	5 1/4	-	LPS-072752	LPS-102752	LPS-122752
2 7/8	2 7/8	5 3/4	-	LPS-072756	LPS-102756	LPS-122756
2 7/8	3 3/8	6 1/4	-	-	LPS-102762	-
2 7/8	3 7/8	6 3/4	-	LPS-072766	LPS-102766	-
2 7/8	4 3/8	7 1/4	-	-	LPS-102772	LPS-122772
3 3/8	1 7/8	5 1/4	-	LPS-073352	LPS-103352	-
3 3/8	2 3/8	5 3/4	-	LPS-073356	LPS-103356	LPS-123356
3 3/8	2 7/8	6 1/4	-	-	LPS-103362	-
3 3/8	3 3/8	6 3/4	-	LPS-073366	LPS-103366	LPS-123366
3 3/8	4 3/8	7 3/4	-	-	LPS-103376	LPS-123376
3 7/8	2 3/8	6 1/4	-	LPS-073762	LPS-103762	LPS-123762
3 7/8	2 7/8	6 3/4	-	LPS-073766	LPS-103766	LPS-123766
3 7/8	3 3/8	7 1/4	-	-	-	LPS-123772
3 7/8	3 7/8	7 3/4	-	-	LPS-103776	LPS-123776
3 7/8	4 7/8	8 3/4	-	-	LPS-103786	LPS-123786
4 3/8	2 7/8	7 1/4	-	-	LPS-104372	-
4 3/8	3 3/8	7 3/4	-	-	-	LPS-124376
4 3/8	3 7/8	8 1/4	-	-	LPS-104382	-
4 3/8	4 3/8	8 3/4	-	-	LPS-104386	-
4 3/8	4 7/8	9 1/4	-	-	-	LPS-124392
4 7/8	3 7/8	8 3/4	-	-	LPS-104786	LPS-124786
4 7/8	4 3/8	9 1/4	-	-	LPS-104792	-
4 7/8	4 7/8	9 3/4	-	-	LPS-104796	LPS-124796
4 7/8	5 7/8	10 3/4	-	-	-	LPS-1247106
5 7/8	3 7/8	9 3/4	-	-	LPS-105796	LPS-125796
5 7/8	4 3/8	10 1/4	-	-	-	LPS-1257102
5 7/8	4 7/8	10 3/4	-	-	-	LPS-1257106
5 7/8	5 7/8	11 3/4	-	-	LPS-1057116	LPS-1257116



General Dimensions				
Nominal Diameter	D	B	M	T
	+.0000 -.0005	+.0005 -.0000	+.00 -.01	+.000 -.005
1/2	.499	.751	.853	3/16
3/4	.749	1.126	1.250	5/16
1	.999	1.376	1.500	5/16
1 1/4	1.249	1.626	1.750	5/16

* Allows for line boring of both leader pin and mold bushing holes.

* Mate with standard mold bushings.

A-8

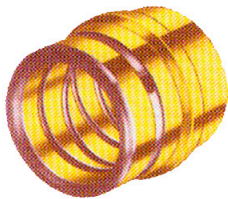
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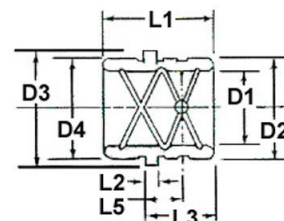
Metric Ejector Bushings

Bronze Plated / Self Lubricating



Bronze plated bushings offer the strength of steel with the lubricity and non-galling surface of bronze. Regular lubrication with grease is recommended for efficient operation.

*Use with "MLP" type Metric Leader Pins page A-

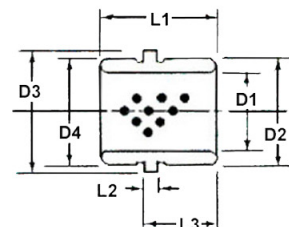


EJECTOR BUSHINGS - BRONZE PLATED - METRIC									
Part Number	Nominal I.D.	D1 I.D. +0.013 -0.000	D2 O.D. +0.013 -0.000	D3 Rib Diam. +0.00 -0.13	D4 O.D. +0.000 -0.026	L1 O.A.L. +0.00 -0.76	L2 Rib Thick. +0.00 -0.26	L3 Length +0.00 -0.38	L5 Length + or - 0.13
MELB-2037	20	20.063	26.013	28.00	26.00	37.00	5.00	25.00	15.00
MELB-2545	25	25.063	32.013	35.00	32.00	45.00	5.00	29.00	16.00
MELB-3045	30	30.063	38.013	41.00	38.00	45.00	5.00	29.00	16.00

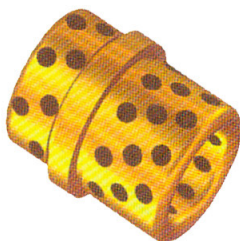


Self-lubricating aluminum bronze bushings with grahite plugs eliminate the possibility of grease contamination for clean part applications. It is recommended to use a light machine oil at start-up to begin lubrication.

*Use with "MLP" type Metric Leader Pins page A-

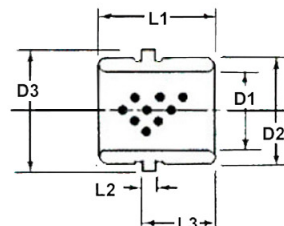


EJECTOR BUSHINGS - SELF LUBRICATING - METRIC								
Part Number	Nominal I.D.	D1 I.D. +0.013 -0.000	D2 O.D. +0.013 -0.000	D3 Rib Diam. +0.00 -0.13	D4 O.D. +0.000 -0.026	L1 O.A.L. +0.00 -0.76	L2 Rib Thick. +0.00 -0.26	L3 Length +0.00 -0.38
MEBG-2037	20	20.063	26.013	28.00	26.00	37.00	5.00	25.00
MEBG-2545	25	25.063	32.013	35.00	32.00	45.00	5.00	29.00
MEBG-3045	30	30.063	38.013	41.00	38.00	45.00	5.00	29.00



Self-lubricating aluminum bronze bushings with grahite plugs eliminate the possibility of grease contamination for clean part applications. It is recommended to use a light machine oil at start-up to begin lubrication.

Call for price and availability.



EJECTOR BUSHINGS - SELF LUBRICATING - METRIC (DIN)							ISO / DIN TOLERANCE		
Part Number	D1 I.D. MM (H7)	D2 O.D. MM (k6)	D3 Rib Diam. (+0 - 0.02 MM)	L1 O.A.L. (-0.5 -1.0 MM)	L2 Rib Thick. (+OR- 0.05MM)	L3 Length (-0.4 -0.8 MM)	NOM. SIZE MM	H7 MM	k6 MM
MEB13W-1417	14	20	25	26	6	17	6 TO 10	+015 0	+010 +.001
MEB13W-1517	15	20	25	26	6	17	10 TO 18	+018 0	+012 +.001
MEB13W-1822	18	26	31	39	6	22	18 TO 30	+021 0	+015 +.002
MEB13W-2022	20	26	31	39	6	22	30 TO 50	+025 0	+018 +.002
MEB13W-2227	22	30	35	49	6	27	50 TO 80	+030 0	+021 +.002
MEB13W-2427	24	30	35	49	6	27			
MEB13W-3036	30	42	47	63	6	36			
MEB13W-3236	32	42	47	63	6	36			

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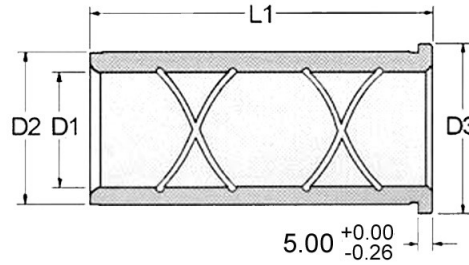


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Metric Shoulder Bushings

Bronze Plated



GENERAL DIMENSIONS			
NOM. I.D.	D1 +0.013 -0.000	D2 +0.0013 -0.000	D3 +0.00 -0.13
20	20.013	26.013	28.00
25	25.013	32.013	35.00
30	30.013	38.013	41.00
40	40.013	50.013	53.00
50	50.013	60.013	63.00
60	60.013	70.013	73.00

SHOULDER BUSHINGS - BRONZE PLATED - METRIC						
(L1) LENGTH +0.00 -0.76	(D1) INSIDE DIAMETER					
	20 mm	25 mm	30 mm	40 mm	50 mm	60 mm
25	MLBB20-025	MLBB25-025	MLBB30-025	MLBB40-025	MLBB50-025	MLBB60-025
30	MLBB20-030	MLBB25-030	MLBB30-030	MLBB40-030	MLBB50-030	MLBB60-030
40	MLBB20-040	MLBB25-040	MLBB30-040	MLBB40-040	MLBB50-040	MLBB60-040
50	MLBB20-050	MLBB25-050	MLBB30-050	MLBB40-050	MLBB50-050	MLBB60-050
65	MLBB20-065	MLBB25-065	MLBB30-065	MLBB40-065	MLBB50-065	MLBB60-065
80	MLBB20-080	MLBB25-080	MLBB30-080	MLBB40-080	MLBB50-080	MLBB60-080
100	MLBB20-100	MLBB25-100	MLBB30-100	MLBB40-100	MLBB50-100	MLBB60-100
120	MLBB20-120	MLBB25-120	MLBB30-120	MLBB40-120	MLBB50-120	MLBB60-120
140	MLBB20-140	MLBB25-140	MLBB30-140	MLBB40-140	MLBB50-140	MLBB60-140
150	MLBB20-150	MLBB25-150	MLBB30-150	MLBB40-150	MLBB50-150	MLBB60-150

*Use with "MLP" type Metric Leader Pins page A-

METRIC ISO / DIN TOLERANCES						
Nominal Size MM	e7 MM	f8 MM	g6 MM	h8 MM	k6 MM	m6 MM
0 to 3	-.014 -.024	-.006 -.020	-.002 -.008	0 -.014	+.006 0	+.008 +.002
3 to 6	-.020 -.032	-.010 -.028	-.004 -.012	0 -.018	+.009 +.001	+.012 +.004
6 to 10	-.025 -.040	-.013 -.035	-.005 -.014	0 -.022	+.010 +.001	+.015 +.006
10 to 18	-.032 -.050	-.016 -.043	-.006 -.017	0 -.027	+.012 +.001	+.018 +.007
18 to 30	-.040 -.061	-.020 -.053	-.007 -.020	0 -.033	+.015 +.002	+.021 +.008
30 to 50	-.050 -.075	-.025 -.064	-.009 -.025	0 -.039	+.018 +.002	+.025 +.009
50 to 80	-.060 -.090	-.030 -.076	-.010 -.029	0 -.046	+.021 +.002	+.030 +.011
80 to 120	-.072 -.107	-.036 -.090	-.012 -.034	0 -.054	+.025 +.003	+.035 +.013
120 to 180	-.085 -.125	-.043 -.106	-.014 -.039	0 -.063	+.028 +.003	+.040 +.015

METRIC ISO / DIN TOLERANCES						
Nominal Size MM	B11 MM	F6 MM	G6 MM	H5 MM	H7 MM	M6 MM
0 to 3	+.200 +.140	+.012 +.006	+.008 +.002	+.004 0	+.010 0	-.002 -.008
3 to 6	+.215 +.140	+.018 +.010	+.012 +.004	+.005 0	+.012 0	-.001 -.009
6 to 10	+.240 +.150	+.022 +.013	+.014 +.005	+.006 0	+.015 0	-.003 -.012
10 to 18	+.260 +.150	+.027 +.016	+.017 +.006	+.008 0	+.018 0	-.004 -.015
18 to 30	+.290 +.160	+.033 +.020	+.020 +.007	+.009 0	+.021 0	-.004 -.017
30 to 50	+.340 +.170	+.041 +.025	+.025 +.009	+.011 0	+.025 0	-.004 -.020
50 to 80	+.390 +.190	+.049 +.030	+.029 +.010	+.013 0	+.030 0	-.005 -.024
80 to 120	+.460 +.220	+.058 +.036	+.034 +.012	+.015 0	+.035 0	-.006 -.028
120 to 180	+.560 +.260	+.068 +.043	+.039 +.014	+.018 0	+.040 0	-.008 -.033

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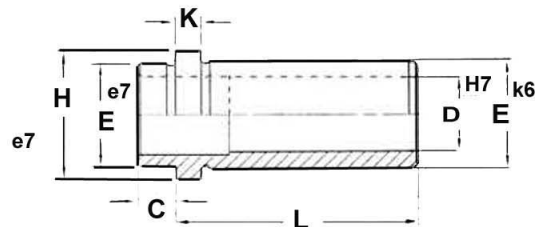
Metric (DIN) Locating Bushing

Steel & Self-Lubricating

DIMENSION	TOLERANCE
D=Inside Diameter	(H7)
E=Outside Diameter	(k6)
L=Length from Head	(-0.5 to -1.0)
C=Collar Length	
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A-8 for Metric ISO / DIN Tolerances.

Call for price and availability.



Specify Part Number with: Example: MBL10-09009

Prefix (D) Inside Diameter (L) Length
MBL10- 09 009

*Use with "MPL" or "MPS" type Metric (DIN) Standard Guide Pins.

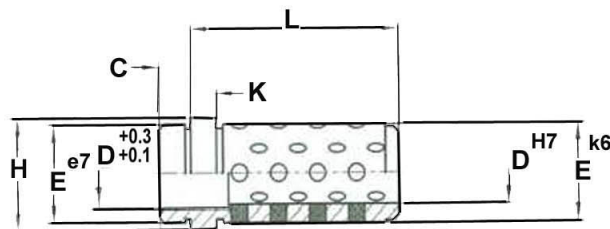
STEEL LOCATING BUSHINGS - METRIC (DIN) (With Collar)

Part Number Add (L) Length In Space	D ID MM	E OD MM	H MM	K MM	C MM	L LENGTH FROM HEAD																
						9	12	17	22	27	36	46	56	66	76	86	96	116	136	156	196	246
						MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
MBL10-09	09	14	16	3	3	009	012	017	022	027	036	046	056	066	-	-	-	-	-	-	-	-
MBL10-10	10	14	16	3	3	009	012	017	022	027	036	046	056	066	-	-	-	-	-	-	-	-
MBL10-14	14	20	25	6	9	-	012	017	022	027	036	046	056	066	076	086	096	116	-	-	-	-
MBL10-15	15	20	25	6	9	-	012	017	022	027	036	046	056	066	076	086	096	116	-	-	-	-
MBL10-18	18	26	31	6	9	-	-	017	022	027	036	046	056	066	076	086	096	116	136	-	-	-
MBL10-20	20	26	31	6	9	-	-	017	022	027	036	046	056	066	076	086	096	116	136	-	-	-
MBL10-22	22	30	35	6	9	-	-	017	022	027	036	046	056	066	076	086	096	116	136	156	-	-
MBL10-24	24	30	35	6	9	-	-	017	022	027	036	046	056	066	076	086	096	116	136	156	-	-
MBL10-30	30	42	47	6	9	-	-	-	022	027	036	046	056	066	076	086	096	116	136	156	196	-
MBL10-32	32	42	47	6	9	-	-	-	022	027	036	046	056	066	076	086	096	116	136	156	196	-
MBL10-40	40	54	60	10	12	-	-	-	-	-	036	046	056	066	076	086	096	116	136	156	196	246
MBL10-42	42	54	60	10	12	-	-	-	-	-	036	046	056	066	076	086	096	116	136	156	196	246

DIMENSION	TOLERANCE
D=Inside Diameter	(H7)
E=Outside Diameter	(k6)
L=Length from Head	(-0.5 to -1.0)
C=Collar Length	
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A-8 for Metric ISO / DIN Tolerances.

Call for price and availability.



Specify Part Number with: Example: MBL10W-10012

Prefix (D) Inside Diameter (L) Length
MBL10W- 10 012

*Use with "MPL" or "MPS" type Metric (DIN) Standard Guide Pins.

SELF-LUBRICATING LOCATING BUSHINGS - METRIC (DIN) (With Collar)

SELF-LUBRICATING LOCATING BUSHINGS - METRIC (DIN) (With Collar)																						
Part Number Add (L) Length In Space	D	E	H	K	C	L LENGTH FROM HEAD																
	ID	OD				9	12	17	22	27	36	46	56	66	76	86	96	116	136	156	196	246
	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
MBL10W-09	09	14	16	3	5	-	012	017	022	027	036	046	056	066	-	-	-	-	-	-	-	-
MBL10W-10	10	14	16	3	5	-	012	017	022	027	036	046	056	066	-	-	-	-	-	-	-	-
MBL10W-14	14	20	25	6	6	-	-	017	022	027	036	046	056	066	076	086	-	-	-	-	-	-
MBL10W-15	15	20	25	6	6	-	-	017	022	027	036	046	056	066	076	086	-	-	-	-	-	-
MBL10W-18	18	26	31	6	8	-	-	017	022	027	036	046	056	066	076	086	096	116	-	-	-	-
MBL10W-20	20	26	31	6	8	-	-	017	022	027	036	046	056	066	076	086	096	116	-	-	-	-
MBL10W-22	22	30	35	6	8	-	-	-	022	027	036	046	056	066	076	086	096	116	136	156	-	-
MBL10W-24	24	30	35	6	8	-	-	-	022	027	036	046	056	066	076	086	096	116	136	156	-	-
MBL10W-30	30	42	47	6	8	-	-	-	-	027	036	046	056	066	076	086	096	116	136	-	-	-
MBL10W-32	32	42	47	6	8	-	-	-	-	027	036	046	056	066	076	086	096	116	136	-	-	-
MBL10W-40	40	54	60	10	10	-	-	-	-	-	-	046	056	066	076	086	096	116	136	156	196	-
MBL10W-42	42	54	60	10	10	-	-	-	-	-	-	046	056	066	076	086	096	116	136	156	196	-

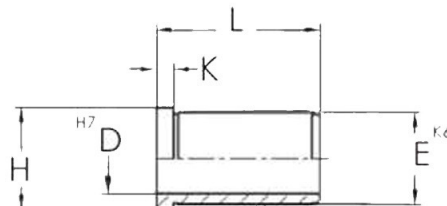
Metric (DIN) Shoulder Bushings

Steel & Self-Lubricating

DIMENSION	TOLERANCE
D=Inside Diameter	(H7)
E=Outside Diameter	(k6)
L=Bushing Length	(-0.5 to -1.0)
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A-10 for Metric ISO / DIN Tolerances.

Call for price and availability.



Specify Part Number with: Example: MBS11-09009

Prefix	(D) Inside Diameter	(L) Length
MBS11-	09	009

"Use with "MPL" or "MPS" type Metric (DIN) Standard Guide Pins.

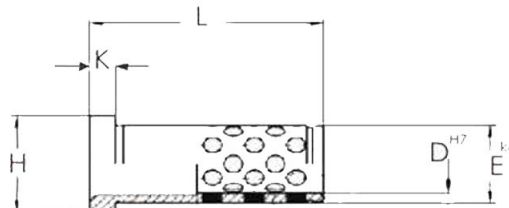
STEEL SHOULDER BUSHINGS - METRIC (DIN)

Part Number Add (L) Length In Space	D ID MM	E OD MM	H MM	K MM	L OVERALL LENGTH																
					9	12	17	22	27	36	46	56	66	76	86	96	116	136	156	196	246
					MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
<u>MBS11-09</u>	09	14	16	3	<u>009</u>	<u>012</u>	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	-	-	-	-	-	-	-	-
<u>MBS11-10</u>	10	14	16	3	<u>009</u>	<u>012</u>	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	-	-	-	-	-	-	-	-
<u>MBS11-12</u>	12	18	23	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
<u>MBS11-14</u>	14	20	25	6	-	<u>012</u>	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	-	-	-	-
<u>MBS11-15</u>	15	20	25	6	-	<u>012</u>	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	-	-	-	-
<u>MBS11-16</u>	16	22	27	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
<u>MBS11-18</u>	18	26	31	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	-	-	-
<u>MBS11-20</u>	20	26	31	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	-	-	-
<u>MBS11-22</u>	22	30	35	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	<u>156</u>	-	-
<u>MBS11-24</u>	24	30	35	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	<u>156</u>	-	-
<u>MBS11-30</u>	30	42	47	6	-	-	-	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	<u>156</u>	<u>196</u>	-
<u>MBS11-32</u>	32	42	47	6	-	-	-	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	<u>156</u>	<u>196</u>	-
<u>MBS11-40</u>	40	54	60	10	-	-	-	-	-	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	<u>156</u>	<u>196</u>	<u>246</u>
<u>MBS11-42</u>	42	54	60	10	-	-	-	-	-	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	<u>156</u>	<u>196</u>	<u>246</u>

DIMENSION	TOLERANCE
D=Inside Diameter	(H7)
E=Outside Diameter	(k6)
L=Bushing Length	(-0.5 to -1.0)
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A-8 for Metric ISO / DIN Tolerances.

Call for price and availability.



Specify Part Number with: Example: MBS11W-10012

Prefix	(D) Inside Diameter	(L) Length
MBS11W-	10	012

"Use with "MPL" or "MPS" type Metric (DIN) Standard Guide Pins.

SELF-LUBRICATING SHOULDER BUSHINGS - METRIC (DIN)

Part Number Add (L) Length In Space	D ID MM	E OD MM	H MM	K MM	L OVERALL LENGTH																
					9	12	17	22	27	36	46	56	66	76	86	96	116	136	156	196	246
					MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
MBS11W-09	09	14	16	3	-	<u>012</u>	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
MBS11W-10	10	14	16	3	-	<u>012</u>	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
MBS11W-12	12	18	23	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
MBS11W-14	14	20	25	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
MBS11W-15	15	20	25	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
MBS11W-16	16	22	27	6	-	-	-	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	-	-	-	-	-	-	-	-	-
MBS11W-18	18	26	31	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	-	-	-	-	-	-	-
MBS11W-20	20	26	31	6	-	-	<u>017</u>	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	-	-	-	-	-	-	-
MBS11W-22	22	30	35	6	-	-	-	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	-	-	-	-	-
MBS11W-24	24	30	35	6	-	-	-	<u>022</u>	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	-	-	-	-	-
MBS11W-30	30	42	47	6	-	-	-	-	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	-	-	-	-
MBS11W-32	32	42	47	6	-	-	-	-	<u>027</u>	<u>036</u>	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	-	-	-	-
MBS11W-40	40	54	60	10	-	-	-	-	-	-	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	-	-	-
MBS11W-42	42	54	60	10	-	-	-	-	-	-	<u>046</u>	<u>056</u>	<u>066</u>	<u>076</u>	<u>086</u>	<u>096</u>	<u>116</u>	<u>136</u>	-	-	-

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Phone Toll Free: (877)438-7657

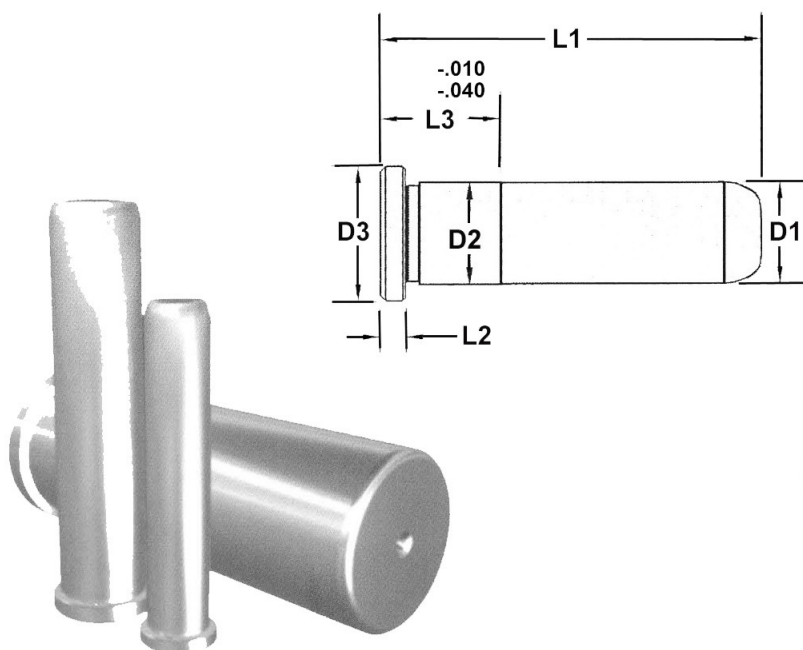
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Tooling Components, Inc.

Metric Leader Pins

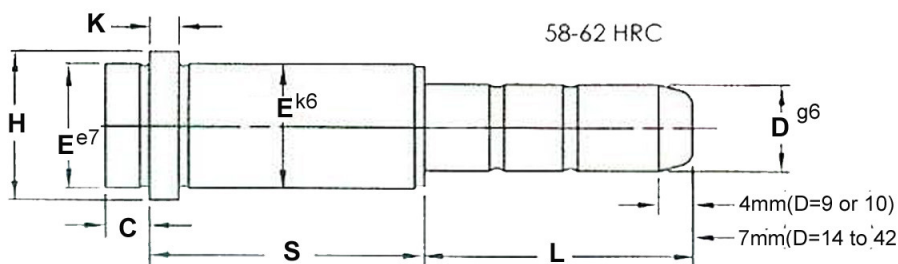


GENERAL DIMENSIONS				
NOM. PIN DIA.	D1 +0.000 -0.013	D2 +0.013 -0.000	D3 +0.00 -0.26	L2 +0.00 -0.05
20	19.975	20.025	25.00	5.00
25	24.975	25.025	31.00	6.00
30	29.975	30.025	36.00	8.00
40	39.975	40.025	46.00	8.00
50	49.975	50.025	56.00	8.00
60	59.975	60.025	66.00	8.00

* Use with "MLBB" or "MELB" or "MEBG" type Metric Bushings.

LEADER PINS - METRIC												
Overall Length L1 (mm)	Nominal 20 mm Dia.		Nominal 25 mm Dia.		Nominal 30 mm Dia.		Nominal 40 mm Dia.		Nominal 50 mm Dia.		Nominal 60 mm Dia.	
	Part Number	L3 (mm)	Part Number	L3 (mm)	Part Number	L3 (mm)	Part Number	L3 (mm)	Part Number	L3 (mm)	Part Number	L3 (mm)
50	MLP20-050	25	MLP25-050	25	-	-	-	-	-	-	-	-
60	MLP20-060	25	MLP25-060	25	-	-	-	-	-	-	-	-
70	MLP20-070	25	MLP25-070	25	MLP30-070	25	-	-	-	-	-	-
80	MLP20-080	25	MLP25-080	25	MLP30-080	25	-	-	-	-	-	-
90	MLP20-090	25	MLP25-090	25	MLP30-090	25	MLP40-090	35	-	-	-	-
100	MLP20-100	25	MLP25-100	25	MLP30-100	25	MLP40-100	35	-	-	-	-
120	MLP20-120	35	MLP25-120	35	MLP30-120	35	MLP40-120	35	-	-	-	-
140	MLP20-140	35	MLP25-140	35	MLP30-140	35	MLP40-140	35	-	-	-	-
150	-	-	-	-	-	-	-	-	MLP50-150	45	MLP60-150	60
160	MLP20-160	35	MLP25-160	35	MLP30-160	35	MLP40-160	35	-	-	-	-
175	-	-	-	-	-	-	-	-	MLP50-175	45	MLP60-175	60
180	MLP20-180	45	MLP25-180	45	MLP30-180	45	MLP40-180	45	-	-	-	-
200	MLP20-200	45	MLP25-200	45	MLP30-200	45	MLP40-200	45	MLP50-200	45	MLP60-200	60
220	MLP20-220	45	MLP25-220	45	MLP30-220	45	MLP40-220	45	-	-	-	-
225	-	-	-	-	-	-	-	-	MLP50-225	45	MLP60-225	60
240	MLP20-240	45	MLP25-240	45	MLP30-240	45	MLP40-240	45	-	-	-	-
250	-	-	-	-	-	-	-	-	MLP50-250	45	MLP60-250	60
260	-	-	MLP25-260	45	MLP30-260	45	MLP40-260	45	-	-	-	-
275	-	-	-	-	-	-	-	-	MLP50-275	45	MLP60-275	60
280	-	-	MLP25-280	45	MLP30-280	45	MLP40-280	45	-	-	-	-
300	-	-	MLP25-300	45	MLP30-300	45	MLP40-300	45	MLP50-300	45	MLP60-300	60
325	-	-	-	-	-	-	-	-	MLP50-325	45	MLP60-325	60
350	-	-	-	-	-	-	-	-	MLP50-350	45	MLP60-350	60
375	-	-	-	-	-	-	-	-	MLP50-375	45	MLP60-375	60
400	-	-	-	-	-	-	-	-	MLP50-400	45	MLP60-400	60

Metric (DIN) Locating Guide Pins (With Collar)



Call for price and availability.

Specify Part Number with: Example: MPL09-012-045

Prefix (D) Pin Diameter (S) Should Length (L) Pin Length

MPL 09 -012 -045

Specify Part Number with: Example: MPL14-056-075

Prefix (D) Pin Diameter (S) Should Length (L) Pin Length

MPL 14 -056 -075

DIMENSION	TOLERANCE
D=Pin Diameter	(g6)
S=Shoulder Length	-0.5 to -1 mm
L=Pin Length	
E=Shoulder Diameter	(k6)
C=Collar Length	
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A10 for Metric ISO / DIN Tolerances.

* Use with "MBL" or "MBS" type Metric (DIN) Standard Bushings.

LOCATING GUIDE PINS - METRIC (DIN)

Part Number Add In Space Below (D)-(S)-(L)	D	S	E	H	K	C	L PIN LENGTH																				
							20	25	30	35	45	50	55	60	65	70	75	85	90	95	105	110	125	135	145	150	155
MPL_-012-	PIN	012	14	16	3	3	-	025	-	-	045	-	-	-	065	-	-	-	-	-	-	-	-	-	-	-	-
MPL_-017-	DIA.	017	14	16	3	3	020	-	030	-	-	050	-	-	-	070	-	-	-	-	-	-	-	-	-	-	-
MPL_-022-		022	14	16	3	3	-	025	-	035	-	-	055	-	-	-	075	-	-	095	-	-	-	-	-	-	-
MPL_-027-	09	027	14	16	3	3	020	-	030	-	-	050	-	-	-	070	-	-	090	-	-	-	-	-	-	-	-
MPL_-036-	or	036	14	16	3	3	-	025	-	-	045	-	-	-	065	-	-	085	-	-	-	-	-	-	-	-	-
MPL_-046-	10	046	14	16	3	3	-	-	030	-	045	-	-	-	-	070	-	-	-	-	-	-	-	-	-	-	-
MPL_-056-		056	14	16	3	3	-	-	-	035	-	-	-	060	-	-	-	-	-	-	-	-	-	-	-	-	-
MPL_-017-		017	20	25	6	9	-	-	-	035	-	-	055	-	-	-	075	-	-	095	-	-	-	-	-	-	-
MPL_-022-		022	20	25	6	9	-	-	030	-	-	050	-	-	-	070	-	-	090	-	-	110	125	-	-	150	-
MPL_-027-	PIN	027	20	25	6	9	-	-	030	-	045	-	-	-	065	-	-	085	-	-	105	-	125	-	145	-	-
MPL_-036-	DIA.	036	20	25	6	9	-	-	-	035	-	-	055	-	-	-	075	-	-	095	-	-	125	-	-	-	155
MPL_-046-		046	20	25	6	9	-	-	-	035	045	-	-	-	065	-	-	085	-	-	105	-	125	-	145	-	-
MPL_-056-	14	056	20	25	6	9	-	-	-	035	-	-	055	-	-	-	075	-	-	095	-	-	-	135	-	-	-
MPL_-066-	or	066	20	25	6	9	-	-	-	-	-	-	055	-	065	-	-	-	-	095	-	-	125	-	-	-	-
MPL_-076-	15	076	20	25	6	9	-	-	-	-	-	-	055	-	-	-	-	-	-	095	-	-	-	-	-	-	-
MPL_-086-		086	20	25	6	9	-	-	-	-	-	-	055	-	-	-	-	-	-	095	-	-	-	-	-	-	-
MPL_-096-		096	20	25	6	9	-	-	-	-	-	-	055	-	-	-	-	-	-	095	-	-	-	-	-	-	-
MPL_-116-		116	20	25	6	9	-	-	-	-	-	-	-	-	-	-	075	-	-	-	-	-	-	-	-	-	-

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Metric (DIN) Locating Guide Pins (With Collar)



Call for price and availability.

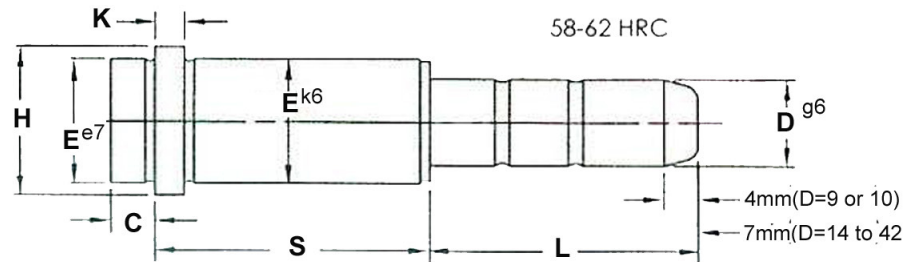
Specify Part Number with: Example: MPL18-036-095

Prefix (D) Pin Diameter (S) Shoulder Length (L) Pin Length
MPL 18 -036 -095

Specify Part Number with: Example: MPL24-046-065

Prefix (D) Pin Diameter (S) Shoulder Length (L) Pin Length
MPL 24 -046 -065

* Use with "MBL" or "MBS" type Metric (DIN) Standard Bushings.

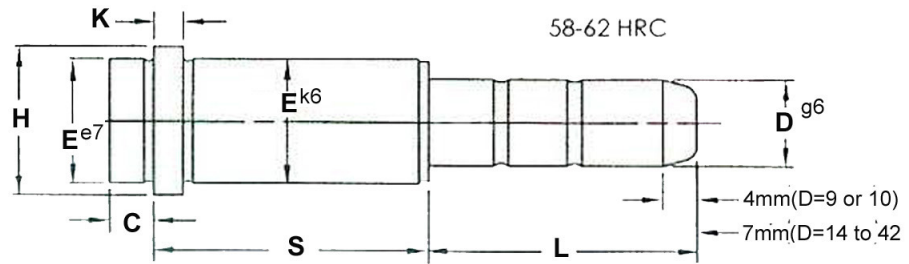


DIMENSION	TOLERANCE
D=Pin Diameter	(g6)
S=Shoulder Length	-0.5 to -1 mm
L=Pin Length	
E=Shoulder Diameter	(k6)
C=Collar Length	
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A-10 for Metric ISO / DIN Tolerances.

LOCATING GUIDE PINS - METRIC (DIN)																											
Part Number Add In Space Below (D)-(S)-(L)	D	S	E	H	K	C	L PIN LENGTH																				
							35	45	55	65	75	85	95	105	115	120	125	130	135	145	155	165	205	225	245	255	285
	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
MPL__-017-__		017	26	31	6	9	035	-	055	-	075	-	-	-	-	120	-	-	-	-	-	-	-	-	-	-	-
MPL__-022-__		022	26	31	6	9	035	045	-	065	-	085	-	-	115	-	-	-	-	-	-	-	-	-	-	-	-
MPL__-027-__	PIN	027	26	31	6	9	035	045	-	065	-	085	-	105	-	-	125	-	-	-	-	165	-	225	245	-	-
MPL__-036-__	DIA.	036	26	31	6	9	035	-	055	-	075	-	095	-	115	-	-	-	135	-	-	165	-	225	-	255	-
MPL__-046-__		046	26	31	6	9	035	045	-	065	-	085	-	105	-	-	-	-	135	-	-	165	-	-	245	-	-
MPL__-056-__	18	056	26	31	6	9	035	-	055	-	075	-	095	-	-	-	-	-	-	-	155	-	-	-	-	-	-
MPL__-066-__	or	066	26	31	6	9	035	-	055	-	075	-	095	-	-	-	-	-	-	145	-	-	-	-	-	-	-
MPL__-076-__	20	076	26	31	6	9	-	-	055	-	075	-	095	-	-	-	-	-	135	-	-	-	-	-	-	-	-
MPL__-086-__		086	26	31	6	9	-	-	055	-	075	-	095	-	-	-	-	125	-	-	-	-	-	-	-	-	-
MPL__-096-__		096	26	31	6	9	-	-	055	-	-	-	095	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MPL__-116-__		116	26	31	6	9	-	-	-	-	075	-	-	-	115	-	-	-	-	-	-	-	-	-	-	-	-
MPL__-136-__		136	26	31	6	9	-	-	-	-	-	-	-	-	-	-	-	-	135	-	-	-	-	-	-	-	-
MPL__-017-__		017	30	35	6	9	035	-	055	-	075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MPL__-022-__		022	30	35	6	9	035	-	055	-	075	-	-	105	-	-	-	130	-	-	-	-	-	-	-	-	-
MPL__-027-__	PIN	027	30	35	6	9	035	045	-	065	-	085	-	105	-	-	125	-	-	-	-	165	205	-	245	-	285
MPL__-036-__	DIA.	036	30	35	6	9	035	-	055	-	075	-	095	-	115	-	-	-	135	-	-	165	205	-	245	-	285
MPL__-046-__		046	30	35	6	9	035	045	-	065	-	085	-	105	-	-	125	-	-	-	-	165	205	-	-	-	-
MPL__-056-__	22	056	30	35	6	9	035	-	055	-	075	-	095	-	115	-	-	-	-	-	155	-	-	-	-	-	-
MPL__-066-__	or	066	30	35	6	9	035	-	055	-	075	-	095	-	-	-	-	-	-	-	155	-	-	-	-	-	-
MPL__-076-__	24	076	30	35	6	9	-	-	055	-	075	-	095	-	115	-	-	-	-	145	-	-	-	-	-	-	-
MPL__-086-__		086	30	35	6	9	-	-	055	-	075	-	095	-	-	-	-	-	135	-	-	-	-	-	-	-	-
MPL__-096-__		096	30	35	6	9	-	-	055	-	075	-	095	-	-	-	-	125	-	-	-	-	-	-	-	-	-
MPL__-116-__		116	30	35	6	9	-	-	-	-	075	-	-	-	115	-	-	-	-	-	155	-	-	-	-	-	-
MPL__-136-__		136	30	35	6	9	-	-	-	-	-	-	095	-	-	-	-	-	135	-	-	-	-	-	-	-	-
MPL__-156-__		156	30	35	6	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	155	-	-	-	-	-	-

Metric (DIN) Locating Guide Pins (With Collar)



Call for price and availability.

Specify Part Number with: Example: MPL32-076-115

Prefix	(D) Pin Diameter	(S) Shoulder Length	(L) Pin Length
MPL	32	-076	-115

Specify Part Number with: Example: MPL40-136-215

Prefix	(D) Pin Diameter	(S) Shoulder Length	(L) Pin Length
MPL	40	-136	-215

DIMENSION	TOLERANCE
D=Pin Diameter	(g6)
S=Shoulder Length	-0.5 to -1 mm
L=Pin Length	
E=Shoulder Diameter	(k6)
C=Collar Length	
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A-10 for Metric ISO / DIN Tolerances.

* Use with "MBL" or "MBS" type Metric (DIN) Standard Bushings.

LOCATING GUIDE PINS - METRIC (DIN)																											
Part Number Add In Space Below (D)-(S)-(L)	D	S	E	H	K	C	L PIN LENGTH																				
							45	55	65	75	85	95	105	115	125	135	155	165	175	185	195	205	215	225	235	245	285
MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	
MPL_-027_-		027	42	47	6	9	045	-	065	-	-	-	105	-	-	-	-	165	-	185	-	-	-	-	-	245	285
MPL_-036_-		036	42	47	6	9	-	055	-	075	-	095	-	115	-	-	155	-	-	-	-	-	-	-	-	245	285
MPL_-046_-	PIN	046	42	47	6	9	045	-	065	-	085	-	105	-	125	-	-	165	-	-	-	-	-	-	-	245	285
MPL_-056_-	DIA.	056	42	47	6	9	-	055	-	075	-	095	-	115	-	135	-	-	175	-	-	-	-	-	-	245	-
MPL_-066_-		066	42	47	6	9	-	055	-	075	-	095	-	115	-	135	-	-	175	-	-	-	-	-	-	245	-
MPL_-076_-	30	076	42	47	6	9	-	055	-	075	-	095	-	115	-	-	155	-	-	-	-	-	-	225	-	-	-
MPL_-086_-	or	086	42	47	6	9	-	055	-	075	-	095	-	115	-	-	155	-	-	-	-	-	-	225	-	-	-
MPL_-096_-	32	096	42	47	6	9	-	055	-	075	-	095	-	115	-	-	155	-	-	-	-	205	-	-	-	-	-
MPL_-116_-		116	42	47	6	9	-	-	-	075	-	-	-	115	-	-	155	-	-	-	-	-	-	-	-	-	-
MPL_-136_-		136	42	47	6	9	-	-	-	-	-	095	-	115	-	-	155	-	-	-	-	-	-	-	-	-	-
MPL_-156_-		156	42	47	6	9	-	-	-	-	-	-	-	115	-	-	155	-	-	-	-	-	-	-	-	-	-
MPL_-196_-		196	42	47	6	9	-	-	-	-	-	-	-	-	-	-	155	-	-	-	195	-	-	-	-	-	-
MPL_-036_-		036	54	60	10	12	-	-	-	075	-	-	-	-	-	135	-	-	-	-	-	-	-	-	-	-	-
MPL_-046_-		046	54	60	10	12	-	-	-	-	-	095	-	-	-	-	-	165	-	-	-	-	-	-	-	-	-
MPL_-056_-	PIN	056	54	60	10	12	-	-	-	075	-	-	-	115	-	-	155	-	-	-	195	-	-	-	-	-	-
MPL_-066_-	DIA.	066	54	60	10	12	-	-	-	075	-	-	-	-	-	135	-	-	-	-	-	-	-	-	-	-	-
MPL_-076_-		076	54	60	10	12	-	-	-	075	-	-	-	115	-	-	-	-	175	-	-	-	-	-	-	-	-
MPL_-086_-	40	086	54	60	10	12	-	-	-	075	-	-	-	-	-	135	-	-	-	-	-	-	-	-	-	-	-
MPL_-096_-	or	096	54	60	10	12	-	-	-	075	-	-	-	115	-	-	155	-	-	-	-	-	-	-	-	-	-
MPL_-116_-	42	116	54	60	10	12	-	-	-	-	-	095	-	-	-	135	-	-	-	-	195	-	-	-	-	-	-
MPL_-136_-		136	54	60	10	12	-	-	-	-	-	095	-	-	-	135	-	-	-	-	-	-	215	-	-	-	-
MPL_-156_-		156	54	60	10	12	-	-	-	-	-	-	-	115	-	-	155	-	-	-	-	-	215	-	-	-	-
MPL_-176_-		176	54	60	10	12	-	-	-	-	-	-	-	-	-	135	155	-	175	-	-	-	-	-	-	-	-
MPL_-196_-		196	54	60	10	12	-	-	-	-	-	-	-	-	-	-	155	-	-	-	195	-	-	-	235	-	-
MPL_-246_-		246	54	60	10	12	-	-	-	-	-	-	-	-	-	-	-	165	-	-	-	-	-	-	-	245	-

A-16

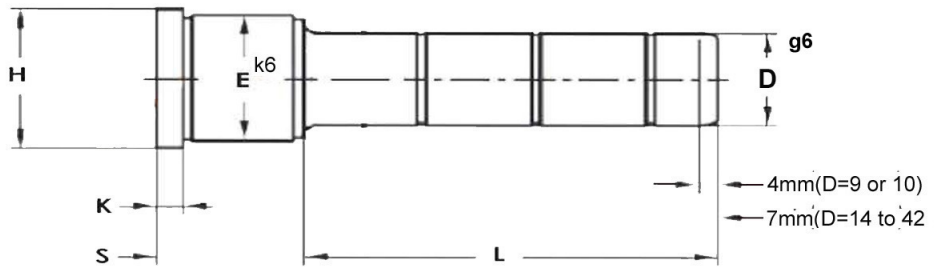
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Tooling Components, Inc.

Metric (DIN) Shoulder Guide Pins



Call for price and availability.

Specify Part Number with: Example: MPS10-022-055

Prefix (D) Pin Diameter (S) Should.Length (L) Pin Length
MPS 10 -022 -055

Specify Part Number with: Example: MPS20-046-135

Prefix (D) Pin Diameter (S) Should.Length (L) Pin Length
MPS 20 -046 -135

DIMENSION	TOLERANCE
D=Pin Diameter	(g6)
S=Shoulder Length	-0.5 to -1 mm
L=Pin Length	
E=Shoulder Diameter	(k6)
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

Refer to page number A10 for Metric ISO / DIN Tolerances.

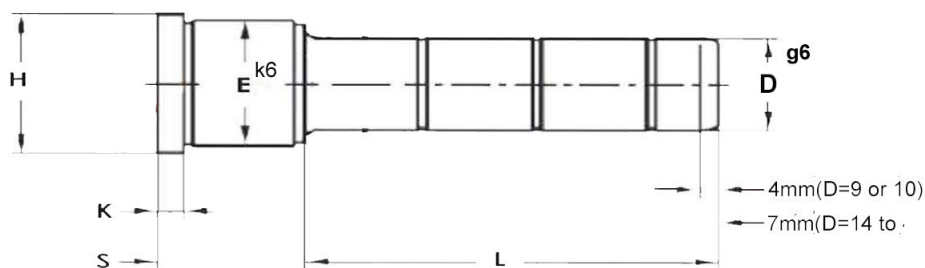
* Use with "MBL" or "MBS" type Metric (DIN) Standard Bushings.

SHOULDER GUIDE PINS - METRIC (DIN)																											
Part Number Add In Space Below (D)-(S)-(L)	D MM	S MM	E MM	H MM	K MM	L PIN LENGTH																					
						20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	105	110	115	125	135	165
MPS_-017_-	PIN	017	14	16	3	020	-	030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MPS_-022_-	DIA.	022	14	16	3	-	025	-	035	-	-	-	055	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MPS_-027_-	09	027	14	16	3	-	-	030	-	-	-	050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MPS_-036_-	or	036	14	16	3	-	025	-	-	-	045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MPS_-046_-	10	046	14	16	3	-	-	030	-	-	045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MPS_-056_-		056	14	16	3	-	-	-	035	-	-	-	-	060	-	-	-	-	-	-	-	-	-	-	-	-	-
MPS_-017_-		017	20	25	6	-	-	-	035	-	-	-	055	-	-	-	075	-	-	-	095	-	-	-	-	-	-
MPS_-022_-		022	20	25	6	020	-	-	035	040	045	050	055	-	065	070	-	-	-	090	-	-	110	-	-	-	-
MPS_-027_-	PIN	027	20	25	6	020	-	-	035	040	045	-	055	-	065	-	-	-	085	-	-	105	-	-	-	-	-
MPS_-036_-	DIA.	036	20	25	6	020	-	-	035	040	045	-	055	-	065	-	075	-	-	-	095	-	-	-	-	-	-
MPS_-046_-		046	20	25	6	020	-	-	035	-	045	-	-	-	065	-	-	-	085	-	-	105	-	-	-	-	-
MPS_-056_-	14	056	20	25	6	020	-	-	035	-	-	-	055	-	-	-	075	-	-	-	095	-	-	-	-	-	-
MPS_-066_-	or	066	20	25	6	-	-	-	-	-	-	-	055	-	065	-	-	-	-	-	095	-	-	-	-	-	-
MPS_-076_-	15	076	20	25	6	-	-	-	-	-	-	-	055	-	-	-	-	-	-	-	095	-	-	-	-	-	-
MPS_-086_-		086	20	25	6	-	-	-	-	-	-	-	055	-	-	-	-	-	-	-	095	-	-	-	-	-	-
MPS_-096_-		096	20	25	6	-	-	-	-	-	-	-	055	-	-	-	-	-	-	-	095	-	-	-	-	-	-
MPS_-022_-		022	26	31	6	020	-	-	035	040	045	050	055	060	065	070	-	080	085	-	-	-	-	115	-	-	-
MPS_-027_-	PIN	027	26	31	6	020	-	-	035	040	045	050	055	060	065	070	-	080	085	-	-	105	-	-	125	-	-
MPS_-036_-	DIA.	036	26	31	6	020	-	-	035	040	045	050	055	060	065	070	075	080	-	-	095	-	-	115	-	135	-
MPS_-046_-		046	26	31	6	020	-	-	-	-	045	-	-	-	065	-	-	-	085	-	-	105	-	-	-	135	165
MPS_-056_-	18	056	26	31	6	020	-	-	035	-	-	-	055	-	-	-	075	-	-	-	095	-	-	-	-	-	-
MPS_-066_-	or	066	26	31	6	-	-	-	-	-	-	-	055	-	-	-	075	-	-	-	095	-	-	-	-	-	-
MPS_-076_-	20	076	26	31	6	-	-	-	-	-	-	-	055	-	-	-	075	-	-	-	095	-	-	-	-	-	-
MPS_-086_-		086	26	31	6	-	-	-	-	-	-	-	055	-	-	-	075	-	-	-	095	-	-	-	-	-	-
MPS_-096_-		096	26	31	6	-	-	-	-	-	-	-	055	-	-	-	-	-	-	-	095	-	-	-	-	-	-
MPS_-116_-		116	26	31	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115	-	-	-	-

Metric (DIN) Shoulder Guide Pins



Call for price and availability.



Specify Part Number with: Example: MPS22-046-050

Prefix (D) Pin Diameter (S) Should.Length (L) Pin Length
MPS 22 -046 -050

Specify Part Number with: Example: MPS32-076-075

Prefix (D) Pin Diameter (S) Should.Length (L) Pin Length
MPS 32 -076 -075

DIMENSION	TOLERANCE
D=Pin Diameter	(g6)
S=Shoulder Length	-0.5 to -1 mm
L=Pin Length	
E=Shoulder Diameter	(k6)
H=Head Diameter	-0.2
K=Head Thickness	+ or - 0.05

* Use with "MBL" or "MBS" type Metric (DIN) Standard Bushings.

Refer to page number A-10 for Metric ISO / DIN Tolerances.

SHOULDER GUIDE PINS - METRIC (DIN)

Part Number Add In Space Below (D)-(S)-(L)	D	S	E	H	K	L PIN LENGTH																					
						25	35	45	50	55	60	65	70	75	80	85	95	105	115	125	135	155	165	175	195	215	235
						MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
MPS _022_		022	30	35	6	-	035	-	-	055	-	-	-	075	-	-	-	105	-	-	-	-	-	-	-	-	
MPS _027_		027	30	35	6	025	-	045	050	-	060	065	070	-	080	085	-	105	-	125	-	-	165	-	-	-	
MPS _036_		036	30	35	6	025	-	045	050	055	060	-	070	075	080	-	095	-	115	-	135	-	165	-	-	-	
MPS _046_	PIN	046	30	35	6	025	-	045	050	-	060	065	070	-	080	085	-	105	-	125	-	-	165	-	-	-	
MPS _056_	DIA.	056	30	35	6	025	-	045	-	055	-	-	-	075	-	-	095	-	115	-	-	-	165	-	-	-	
MPS _066_		066	30	35	6	-	-	-	-	055	-	-	-	075	-	-	095	-	-	-	-	-	-	-	-	-	
MPS _076_	22	076	30	35	6	025	-	045	-	055	-	-	-	075	-	-	095	-	115	-	-	-	-	-	-	-	
MPS _086_	or	086	30	35	6	-	-	-	-	055	-	-	-	075	-	-	095	-	-	-	-	-	-	-	-	-	
MPS _096_	24	096	30	35	6	-	-	-	-	055	-	-	-	075	-	-	095	-	-	-	-	-	-	-	-	-	
MPS _116_		116	30	35	6	-	-	-	-	-	-	-	-	075	-	-	-	-	115	-	-	155	-	-	-	-	
MPS _136_		136	30	35	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	-	-	-	-	-	
MPS _027_		027	42	47	6	-	-	045	-	-	-	065	-	-	-	-	-	105	-	-	-	-	165	-	-	-	
MPS _036_		036	42	47	6	-	-	-	-	055	-	-	-	075	-	-	095	-	115	-	-	155	-	-	-	-	
MPS _046_	PIN	046	42	47	6	-	-	045	-	-	-	065	-	-	-	085	-	105	-	125	-	-	165	-	-	-	
MPS _056_	DIA.	056	42	47	6	-	-	-	-	055	-	-	-	075	-	-	095	-	115	-	135	-	-	175	-	-	
MPS _066_		066	42	47	6	-	-	-	-	055	-	-	-	075	-	-	095	-	115	-	135	-	-	175	-	-	
MPS _076_	30	076	42	47	6	-	-	-	-	055	-	-	-	075	-	-	095	-	115	-	-	155	-	-	-	-	
MPS _086_	or	086	42	47	6	-	-	-	-	055	-	-	-	075	-	-	095	-	115	-	-	155	-	-	-	-	
MPS _096_	32	096	42	47	6	-	-	-	-	055	-	-	-	075	-	-	095	-	115	-	-	155	-	-	-	-	
MPS _116_		116	42	47	6	-	-	-	-	-	-	-	-	075	-	-	-	-	115	-	-	155	-	-	-	-	
MPS _136_		136	42	47	6	-	-	-	-	-	-	-	-	-	-	-	095	-	115	-	-	155	-	-	-	-	
MPS _156_		156	42	47	6	-	-	-	-	-	-	-	-	-	-	-	-	-	115	-	-	155	-	-	-	-	
MPS _196_		196	42	47	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	155	-	-	195	-	
MPS _056_		056	54	60	10	-	-	-	-	-	-	-	-	075	-	-	-	-	115	-	-	155	-	-	195	-	
MPS _066_		066	54	60	10	-	-	-	-	-	-	-	-	075	-	-	-	-	-	-	135	-	-	-	-	-	
MPS _076_	PIN	076	54	60	10	-	-	-	-	-	-	-	-	075	-	-	-	-	115	-	-	-	-	175	-	-	
MPS _086_	DIA.	086	54	60	10	-	-	-	-	-	-	-	-	075	-	-	-	-	-	-	135	-	-	-	-	-	
MPS _096_		096	54	60	10	-	-	-	-	-	-	-	-	075	-	-	-	-	115	-	-	155	-	-	-	-	
MPS _116_	40	116	54	60	10	-	-	-	-	-	-	-	-	-	-	-	095	-	-	-	135	-	-	195	-	-	
MPS _136_	or	136	54	60	10	-	-	-	-	-	-	-	-	-	-	-	095	-	-	-	135	-	-	-	215	-	
MPS _156_	42	156	54	60	10	-	-	-	-	-	-	-	-	-	-	-	-	-	115	-	-	155	-	-	-	215	
MPS _196_		196	54	60	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	155	-	-	195	-	

A-18

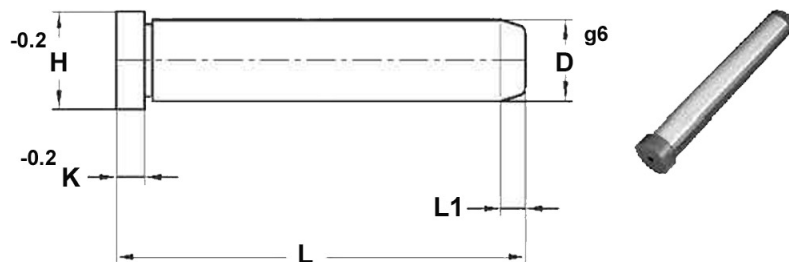
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Metric (DIN) Guide Pins

Straight & Angle Guide Pins



DIMENSION	TOLERANCE
D=Pin Diameter	(g6)
L=Pin Length	
L1=Taper Length	
H=Head Diameter	-0.2
K=Head Thickness	-0.2

Refer to page number A-8 for Metric ISO / DIN Tolerances.

Call for price and availability.

Specify Part Number with:	Example: MPA10-080
Prefix (D) Pin Diameter	(L) Pin Length
MPA 10	080

STRAIGHT (ANGLE) GUIDE PINS - METRIC (DIN)																				
Part Number	D	H	K	L1	L OVERALL LENGTH															
Add In Space Below (D)-(L)	MM	MM	MM	MM	40 MM	60 MM	80 MM	100 MM	120 MM	140 MM	160 MM	180 MM	200 MM	210 MM	220 MM	240 MM	270 MM	300 MM	360 MM	
MPA10-___	10	12	3	4	040	060	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA12-___	12	16	6	7	040	060	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA14-___	14	18	8	7	-	060	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA15-___	15	18	8	7	-	060	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA16-___	16	20	8	7	040	060	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA18-___	18	22	8	7	-	060	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA20-___	20	24	8	7	-	060	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA22-___	22	26	15	7	-	-	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA24-___	24	28	15	7	-	-	080	100	120	140	160	180	200	210	220	240	270	300	360	
MPA30-___	30	36	15	7	-	-	-	100	120	140	160	180	200	210	220	240	270	300	360	
MPA32-___	32	36	15	7	-	-	-	100	120	140	160	180	200	210	220	240	270	300	360	
MPA40-___	40	48	15	10	-	-	-	-	-	-	160	180	200	210	220	240	270	300	360	
MPA50-___	50	58	15	10	-	-	-	-	-	-	160	180	200	210	220	240	270	300	360	



GENERAL DIMENSIONS				
PIN DIA. (D)	PF DIA. (D1)	HEAD DIA. (H)	HEAD THICK. (K)	TAPER LENGTH (L1)
Tol. (g6)	Tol. (m6)	Tol. (-0.2)	Tol. (+0.2)	
10	10	12	3	4
12	12	16	6	7
14	14	18	8	7
16	16	20	8	7
18	18	22	8	7
20	20	24	8	7
22	22	26	15	7
24	24	28	15	7
30	30	36	15	7
32	32	36	15	7
40	40	48	15	10

Call for price and availability.

Refer to page number A-10 for Metric ISO / DIN Tolerances.

STRAIGHT GUIDE PINS - METRIC (DIN)																				
Overall Length	Nominal D=10	Nominal D=12	Nominal D=14	Nominal D=16	Nominal D=18	Nominal D=20	Nominal D=22	Nominal D=24	Nominal D=30	Nominal D=32	Nominal D=40	Nominal D=50	Nominal D=60	Nominal D=80	Nominal D=100	Nominal D=120	Nominal D=140	Nominal D=160	Nominal D=180	Nominal D=200
L	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number
040	MPG10-040	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
060	MPG10-060	17	MPG12-060	17	MPG14-060	17	MPG16-060	22	-	-	-	-	-	-	-	-	-	-	-	-
080	MPG10-080	22	MPG12-080	22	MPG14-080	22	MPG16-080	27	MPG18-080	27	MPG20-080	27	MPG22-080	36	MPG24-080	36	MPG26-080	36	MPG28-080	36
100	MPG10-100	27	MPG12-100	27	MPG14-100	27	MPG16-100	36	MPG18-100	36	MPG20-100	36	MPG22-100	46	MPG24-100	46	MPG26-100	46	MPG28-100	46
120	-	-	MPG12-120	36	MPG14-120	36	MPG16-120	46	MPG18-120	46	MPG20-120	46	MPG22-120	56	MPG24-120	56	MPG26-120	56	MPG28-120	56
140	-	-	-	-	MPG14-140	46	MPG16-140	46	MPG18-140	46	MPG20-140	46	MPG22-140	56	MPG24-140	56	MPG26-140	56	MPG28-140	56
160	-	-	-	-	MPG14-160	46	MPG16-160	46	MPG18-160	46	MPG20-160	46	MPG22-160	56	MPG24-160	56	MPG26-160	56	MPG28-160	56
180	-	-	-	-	-	-	-	-	MPG18-180	56	MPG20-180	56	MPG22-180	56	MPG24-180	56	MPG26-180	56	MPG28-180	56
200	-	-	-	-	-	-	-	-	MPG18-200	56	MPG20-200	56	MPG22-200	56	MPG24-200	56	MPG26-200	56	MPG28-200	56
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Metric (DIN)

Centering Sleeves & Seating Washers

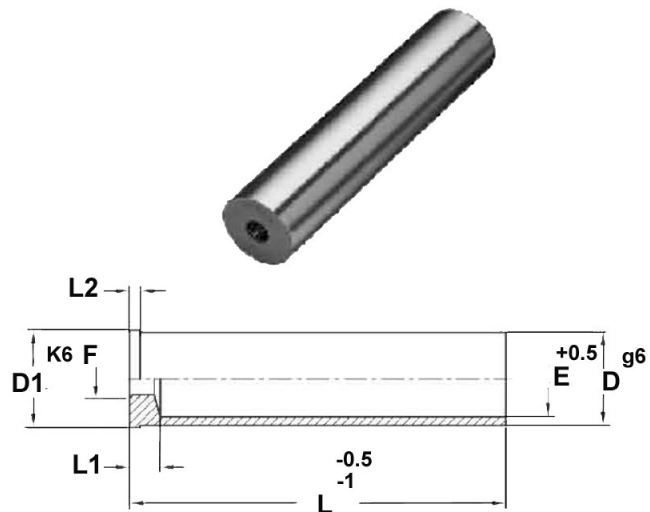
DIMENSION	TOLERANCE
D=Outside Diameter	(g6)
L=Overall Length	-0.5 to -1 mm
E=Inside Diameter	(+0.5)
F=Thread Diameter	
D1=Outside Diameter	(k6)
L1=Inside Length	
L2=Thickness	

Refer to page number A-8 for Metric ISO / DIN Tolerances.

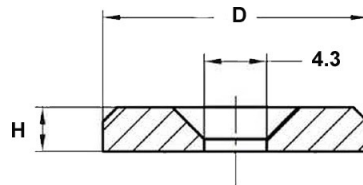
Call for price and availability.

Specify Part Number with: Example: MCS20-30-120

Prefix	(D) Outside Diameter	(L) Overall Length
MCS20	-30	-120



CENTERING SLEEVES - METRIC (DIN)																								
Part Number	D	D1	E	F	L1	L2	L OVERALL LENGTH																	
Add In Space	(g6)	(k6)		(Threaded)			20	30	40	50	60	70	80	100	120	140	160	180	200	220	240	260	280	300
Below -(D) -(L)	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
MCS20-14-__	14	14	11	6 or 8	8	2	020	030	040	050	060	070	080	100	-	-	-	-	-	-	-	-	-	-
MCS20-20-__	20	20	16	8 or 12	10	2	-	030	040	-	060	-	080	100	120	140	160	-	-	-	-	-	-	-
MCS20-26-__	26	26	21	10 or 12	13	2.5	-	030	040	-	060	-	080	100	120	140	160	180	-	-	-	-	-	-
MCS20-30-__	30	30	25	12	13	2.5	-	-	040	-	060	-	080	100	120	140	160	180	200	-	240	-	-	-
MCS20-42-__	42	42	33	12 or 16	16	4.5	-	-	040	-	060	-	080	100	120	140	160	180	200	220	-	260	-	300
MCS20-54-__	54	54	43	12 or 20	16	4.5	-	-	-	-	060	-	080	-	120	-	160	-	200	-	240	-	280	-



SEATING WASHERS - METRIC (DIN)				
Part Number	D OD MM	H Thickness MM	FASTENER SIZE (Not Included) Metric FHCS	
MSW55-18-3	18	3	M4 X 8 mm	
MSW55-28-3	28	3	M4 X 8 mm	

A-20

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