








Massima forza, tenuta stelo - Maximum force, rod seal - Maximale Kraft, Kolbenstange dichtung  
 Forces maximale, joint de tige - Máxima fuerza, estanqueidad vástago - Força máxima, estanquidade na haste

<b>SEALING</b>	ROD SEAL
<b>DESIGN</b>	BOTTOM BASE - BODY DESIGN

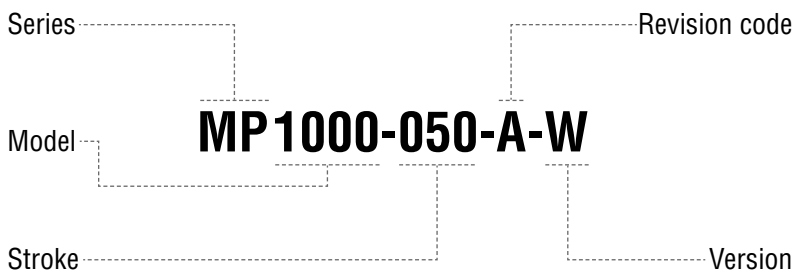
<b>1</b>	Retaining ring	<b>5</b>	Valve	<b>9</b>	Back-up ring
<b>2</b>	Dual ring seal	<b>6</b>	Body	<b>10</b>	Rod wiper
<b>3</b>	Bottom base	<b>7</b>	Guide ring	<b>11</b>	Rod (nitrited superfinished)
<b>4</b>	Plug	<b>8</b>	Rod seal		

## RANGE CHART

Model	Body Ø		Stroke Cu		Initial force F0						
	mm	inch	mm	inch	daN	lb	OSAS	USAS	OPAS	SKUDO	SW
MP 150	19	0.75	10 - 80	0.39 - 3.15	150	337	-	-	✓	-	-
MP 300	25	0.98	10 - 80	0.39 - 3.15	300	674	✓	✓	-	-	-
MP 500	32	1.26	10 - 80	0.39 - 3.15	500	1124	✓	✓	-	-	✓
MP 1000	38	1.50	10 - 80	0.39 - 3.15	1000	2248	✓	✓	✓	-	✓
MP 2000	50	1.97	10 - 80	0.39 - 3.15	2000	4496	✓	✓	✓	-	-
MP 3000	63	2.48	10 - 80	0.39 - 3.15	3000	6744	✓	✓	✓	-	-

 Built-in as standard     
  Optional upon request

## HOW TO ORDER



### Available versions



**MP 1000-050-A**  
Standard code



Self contained



**MP 1000-050-A-W**  
Add "-W" to standard code



Self contained

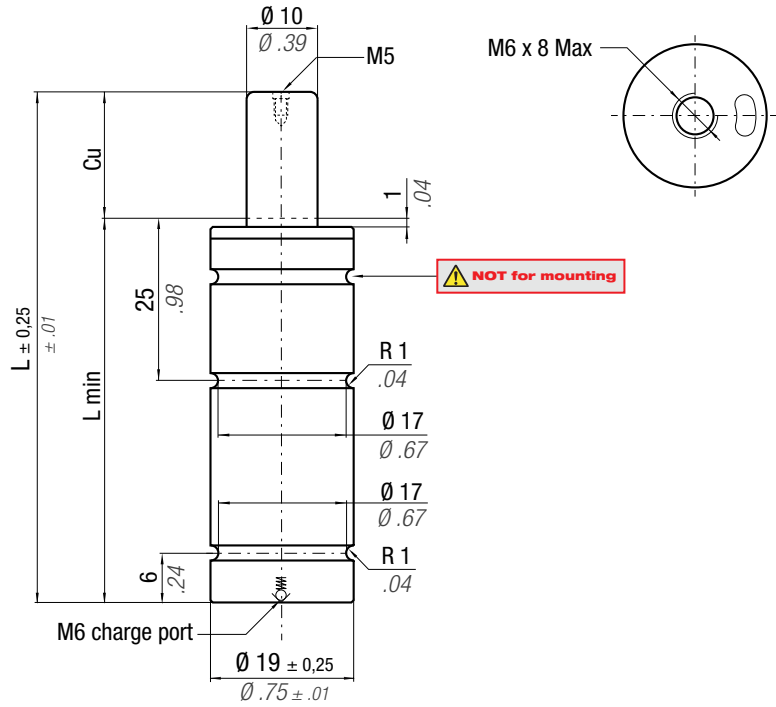


+  
Secondary wiper

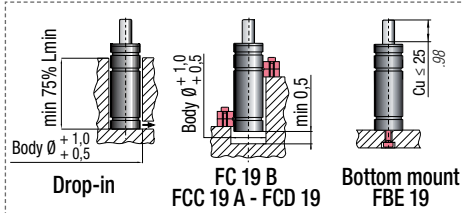
**ACTIVE SAFETY**



\*  $F_{1i}$  = Isothermal end force at 100% Cu p. 16 **\*\*  $F_{1p}$  = Polytrophic end force at 100% Cu**

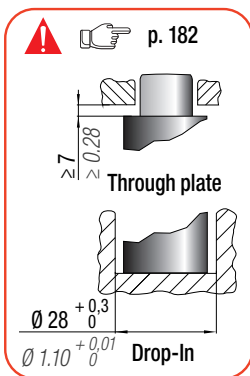
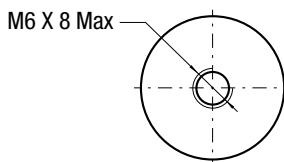
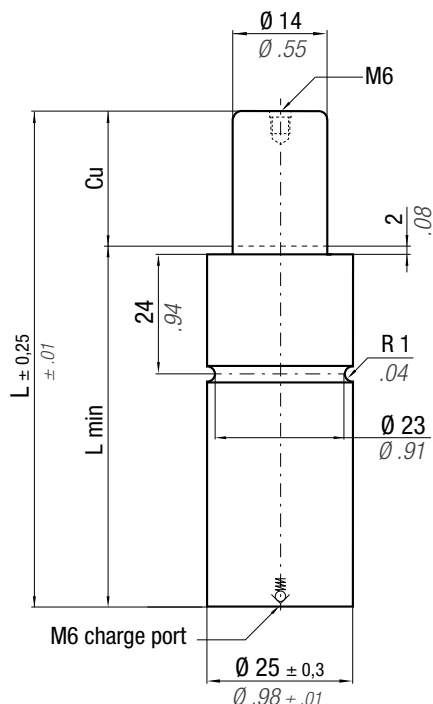


CODE	Cu	L	L min	F <sub>0</sub>		F <sub>1i</sub> *		F <sub>1p</sub> **		V <sub>0</sub>		Maintenance kit		
				Initial force	End force *	End force **	cm <sup>3</sup>	in <sup>3</sup>	~Kg	~lb				
MP 150 - 010 - A	10	75	65	150 ± 5% 337 191 bar 2770 psi + 20 °C +68 °F	daN	lb	185	416	201	452	5,2	0,32	0,09	0,20
MP 150 - 015 - A	15	85	70				195	438	214	481	6,4	0,39	0,09	0,20
MP 150 - 020 - A	20	95	75				203	456	225	506	7,5	0,46	0,10	0,22
MP 150 - 025 - A	25	105	80				209	470	234	526	8,6	0,52	0,11	0,24
MP 150 - 032 - A	32	120	88				214	481	241	542	10,4	0,63	0,11	0,24
MP 150 - 038 - A	38	135	97				214	481	241	542	12,4	0,76	0,12	0,26
MP 150 - 045 - A	45	150	105				217	488	245	551	14,1	0,86	0,13	0,29
MP 150 - 050 - A	50	160	110				220	495	249	560	15,3	0,93	0,14	0,31
MP 150 - 056 - A	56	175	119				219	492	248	558	17,2	1,05	0,14	0,31
MP 150 - 063 - A	63	190	127				221	497	251	564	19,0	1,16	0,15	0,33
MP 150 - 080 - A	80	220	140	231	519	264	593	22,0	1,34	0,17	0,37			



**HOW TO ORDER**  
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**INSTALLATION GUIDELINE**  
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\*  $F_{1i}$  =  
Isothermal  
end force  
at 100% Cu



p. 16



\*\*  $F_{1p}$  =  
Polytropic  
end force  
at 100% Cu

**ACTIVE  
SAFETY**

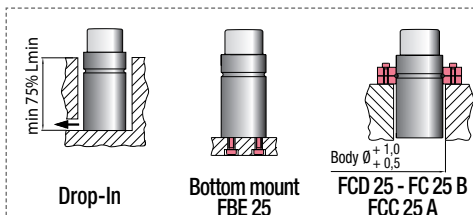


OSAS



USAS

CODE	Cu		L		L min		F <sub>0</sub>		F <sub>1i</sub> *		F <sub>1p</sub> **		V <sub>0</sub>		Maintenance kit		
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	daN	lb	cm <sup>3</sup>	in <sup>3</sup>	~Kg	~lb	Disposable
MP 300 - 010 - A	10	0.39	75	2.95	65	2.56	300 ± 5% 674 191 bar 2770 psi + 20 °C +68 °F		430	966	481	1082	6,4	0,39	0,17	0,37	✓
MP 300 - 015 - A	15	0.59	85	3.35	70	2.76			466	1047	531	1193	8,2	0.50	0,18	0.40	✓
MP 300 - 020 - A	20	0.79	95	3.74	75	2.95			492	1107	568	1277	9,8	0.60	0,20	0.44	✓
MP 300 - 025 - A	25	0.98	105	4.13	80	3.15			513	1153	597	1342	11,5	0.70	0,21	0.46	✓
MP 300 - 032 - A	32	1.26	120	4.72	88	3.46			527	1185	617	1387	14,1	0.86	0,23	0.51	✓
MP 300 - 038 - A	38	1.50	135	5.31	97	3.82			522	1173	610	1371	17,0	1.04	0,25	0.55	✓
MP 300 - 045 - A	45	1.77	150	5.91	105	4.13			531	1194	623	1400	19,6	1.20	0,27	0.60	✓
MP 300 - 050 - A	50	1.97	160	6.30	110	4.33			540	1214	636	1429	21,3	1.30	0,28	0.62	✓
MP 300 - 056 - A	56	2.20	175	6.89	119	4.69			535	1202	628	1412	24,1	1.47	0,30	0.66	✓
MP 300 - 063 - A	63	2.48	190	7.48	127	5.00			540	1215	636	1430	26,7	1.63	0,32	0.71	✓
MP 300 - 080 - A	80	3.15	225	8.86	145	5.71	556	1250	658	1480	32,7	1.99	0,36	0.79	✓		



**HOW TO ORDER**

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**INSTALLATION GUIDELINE**

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SW

**ACTIVE SAFETY**



OSAS



USAS

\*  $F_{1i} =$

Isothermal end force at 100% Cu

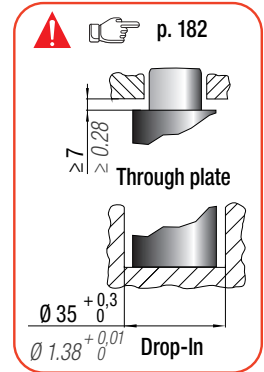
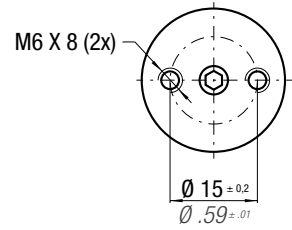
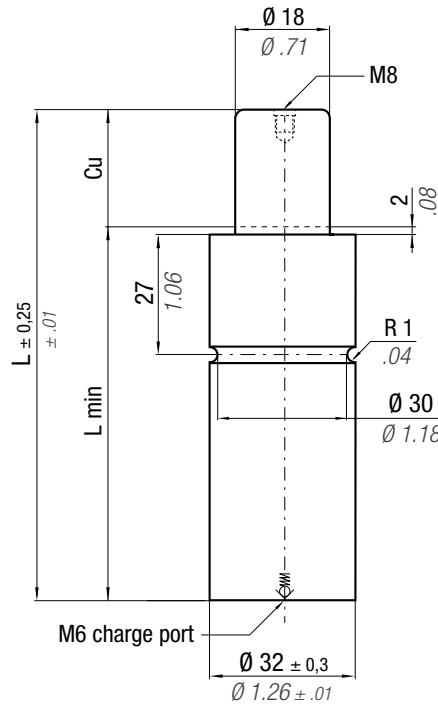


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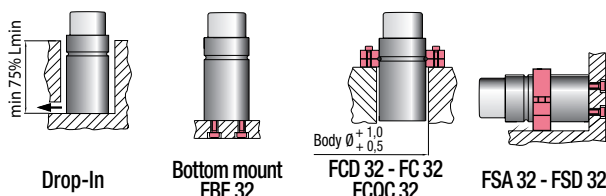


\*\*  $F_{1p} =$

Polytropic end force at 100% Cu



CODE	N <sub>2</sub>	0 - 80 °C 32 - 176 °F	ΔP ± 0,33 %/°C	P max 197 bar 2857 psi	P min 20 bar 290 psi	S 2,54 cm <sup>2</sup> 0,394 in <sup>2</sup>	SPM ~ 40 - 80 (at 20°C)	Max Speed 1,6 m/s 62.9 in/s	Maintenance kit Disposable	Cu		L		L min		F <sub>0</sub>		F <sub>1i</sub> *		F <sub>1p</sub> **		V <sub>0</sub>		PED			
										mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	daN	lb	cm <sup>3</sup>	in <sup>3</sup>	~Kg	~lb	2014/68/EU	
MP 500 - 010 - A										10	0.39	75	2.95	65	2.56	500 ± 5%	1124	197 bar 2857 psi	714	1605	798	798	10,7	0.65	0,29	0.64	✓
MP 500 - 015 - A									15	0.59	85	3.35	70	2.76	770				1731	873	873	13,6	0.83	0,31	0.68	✓	
MP 500 - 020 - A									20	0.79	95	3.74	75	2.95	809				1819	928	928	16,5	1.01	0,33	0.73	✓	
MP 500 - 025 - A									25	0.98	105	4.13	80	3.15	839				1886	970	970	19,5	1.19	0,34	0.75	✓	
MP 500 - 032 - A									32	1.26	120	4.72	88	3.46	859				1931	997	997	24,1	1.47	0,37	0.82	✓	
MP 500 - 038 - A									38	1.50	135	5.31	97	3.82	849				1909	984	984	29,1	1.78	0,40	0.88	✓	
MP 500 - 045 - A									45	1.77	150	5.91	105	4.13	862				1938	1002	1002	33,6	2.05	0,43	0.95	✓	
MP 500 - 050 - A									50	1.97	160	6.30	110	4.33	875				1967	1020	1020	36,6	2.23	0,45	0.99	✓	
MP 500 - 056 - A									56	2.20	175	6.89	119	4.69	866				1947	1008	1008	41,6	2.54	0,48	1.06	✓	
MP 500 - 063 - A									63	2.48	195	7.68	132	5.20	844				1897	977	977	48,6	2.96	0,52	1.15	✓	
MP 500 - 080 - A									80	3.15	230	9.06	150	5.91	869	1954	1012	1012	59,1	3.61	0,59	1.30	✓				



**HOW TO ORDER**

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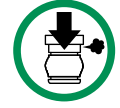
**INSTALLATION GUIDELINE**

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SW

**ACTIVE SAFETY**



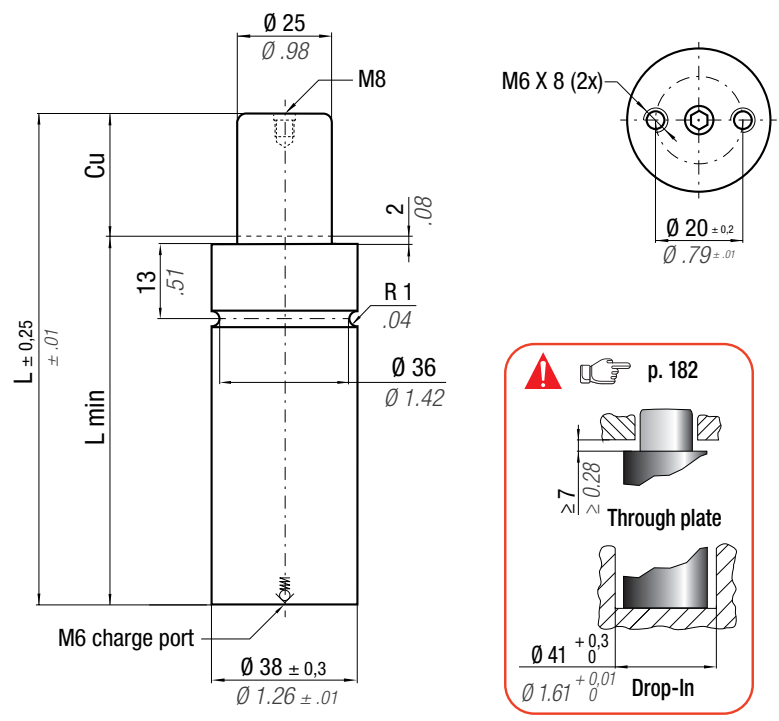
OSAS



USAS



OPAS



\*  $F_{1i}$  =  
Isothermal  
end force  
at 100% Cu

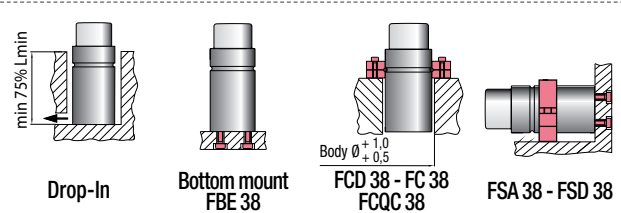


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\*\*  $F_{1p}$  =  
Polytrophic  
end force  
at 100% Cu



CODE	N <sub>2</sub>	0 - 80 °C 32 - 176 °F	ΔP ± 0,33 %/°C	P max 205 bar 2973 psi	P min 20 bar 290 psi	S 4,91 cm <sup>2</sup> 0.761 in <sup>2</sup>	SPM ~ 40 - 80 (at 20°C)	Max Speed 1,6 m/s 62.9 in/s	Maintenance kit 39BMMP01000A	Cu		L		L min		F <sub>0</sub> Initial force		F <sub>1i</sub> * End force *		F <sub>1p</sub> ** End force **		V <sub>0</sub>		PED 2014/68/EU		
										mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	daN	lb	cm <sup>3</sup>	in <sup>3</sup>	~Kg	~lb	✓
MP 1000 - 010 - A											10	0.39	75	2.95	65	2.56	1000 ± 5%	1418	3188	1591	3577	21,5	1.31	0,37	0.82	✓
MP 1000 - 015 - A										15	0.59	85	3.35	70	2.76	1547		3478	1765	3968	26,5	1.62	0,39	0.86	✓	
MP 1000 - 020 - A										20	0.79	95	3.74	75	2.95	1647		3703	1902	4276	31,6	1.93	0,41	0.90	✓	
MP 1000 - 025 - A										25	0.98	105	4.13	80	3.15	1727		3882	2012	4523	36,6	2.23	0,44	0.97	✓	
MP 1000 - 032 - A										32	1.26	120	4.72	88	3.46	1792		4029	2103	4728	44,4	2.71	0,48	1.06	✓	
MP 1000 - 038 - A										38	1.50	135	5.31	97	3.82	1792		4029	2103	4728	52,7	3.21	0,51	1.12	✓	
MP 1000 - 045 - A										45	1.77	150	5.91	105	4.13	1833		4121	2161	4858	60,6	3.70	0,55	1.21	✓	
MP 1000 - 050 - A										50	1.97	160	6.3	110	4.33	1870		4204	2213	4975	65,6	4.00	0,58	1.28	✓	
MP 1000 - 056 - A										56	2.20	175	6.89	119	4.69	1861		4184	2200	4946	73,9	4.51	0,62	1.37	✓	
MP 1000 - 063 - A										63	2.48	205	8.07	142	5.59	1716		3858	1998	4492	93,1	5.68	0,70	1.54	✓	
MP 1000 - 080 - A										80	3.15	240	9.45	160	6.30	1792	4029	2104	4730	111	6.77	0,79	1.74	✓		



**HOW TO ORDER**

Hand icon p. 183

**INSTALLATION GUIDELINE**

Hand icon p. 205

## ACTIVE SAFETY



OSAS



USAS



OPAS

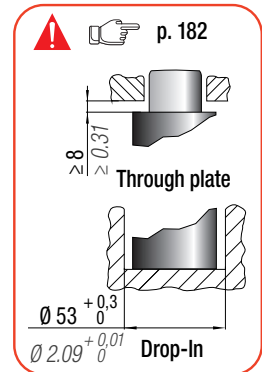
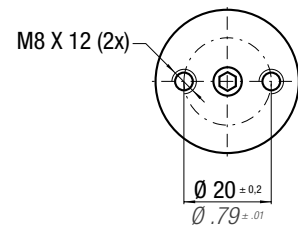
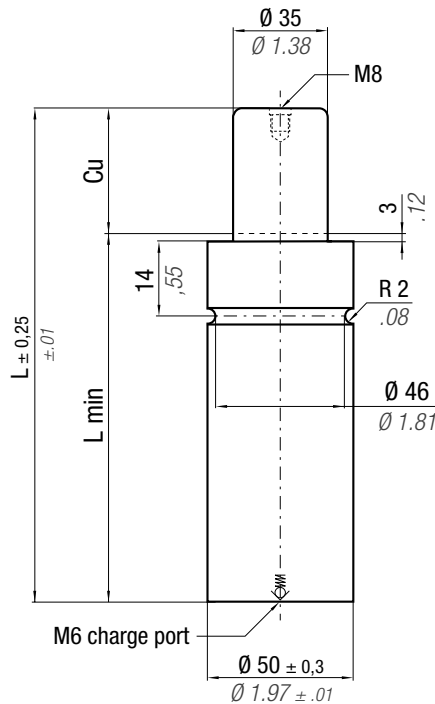
\*  $F_{1i} =$   
Isothermal  
end force  
at 100% Cu



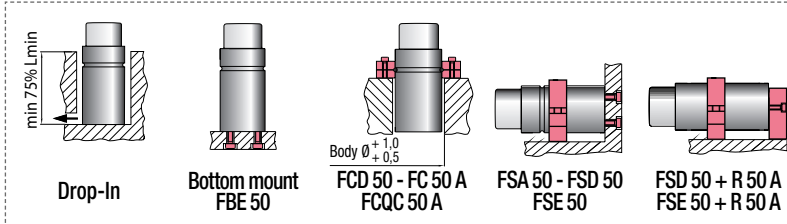
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\*\*  $F_{1p} =$   
Polytropic  
end force  
at 100% Cu

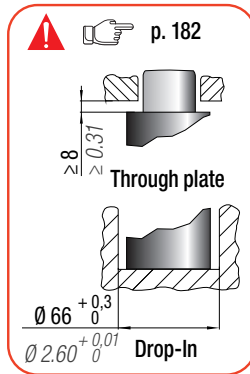
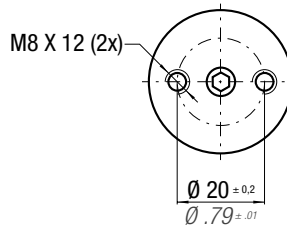
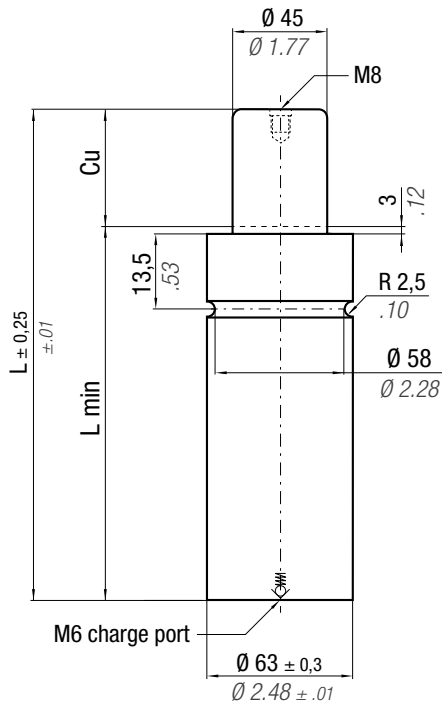


CODE	Cu	L	L min	F <sub>0</sub>		F <sub>1i</sub> *		F <sub>1p</sub> **		V <sub>0</sub>		Maintenance kit			
				Initial force	End force *	End force **	cm <sup>3</sup>	in <sup>3</sup>	~Kg	~lb					
	mm	inch	mm	inch	daN	lb	daN	lb	daN	lb	cm <sup>3</sup>	in <sup>3</sup>	~Kg	~lb	
MP 2000 - 010 - A	10	0.39	90	3.54	2000 ± 5%	4496	2634	5921	2902	6524	52,4	3.20	0,76	1,68	✓
MP 2000 - 015 - A	15	0.59	115	4.53			2617	5883	2880	6474	80,4	4.90	0,89	1.96	✓
MP 2000 - 020 - A	20	0.79	125	4.92			2775	6238	3088	6942	89,6	5.47	0,93	2.05	✓
MP 2000 - 025 - A	25	0.98	135	5.31			2916	6555	3276	7365	98,7	6.02	0,98	2.16	✓
MP 2000 - 032 - A	32	1.26	150	5.91			3074	6911	3487	7839	112,8	6.88	1,04	2.29	✓
MP 2000 - 038 - A	38	1.50	165	6.50			3153	7088	3593	8077	127,5	7.78	1,11	2.45	✓
MP 2000 - 045 - A	45	1.77	180	7.09			3269	7349	3751	8433	141,6	8.64	1,18	2.60	✓
MP 2000 - 050 - A	50	1.97	190	7.48			3355	7542	3868	8696	150,7	9.19	1,22	2.69	✓
MP 2000 - 056 - A	56	2.20	205	8.07			3398	7639	3926	8826	165,5	10.10	1,29	2.84	✓
MP 2000 - 063 - A	63	2.48	220	8.66			3480	7823	4039	9080	179,5	10.95	1,36	3.00	✓
MP 2000 - 080 - A	80	3.15	255	10.04	3668	8246	4299	9665	211,9	12.93	1,51	3.33	✓		



**HOW TO ORDER**  
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\*  $F_{1i}$  =  
Isothermal  
end force  
at 100% Cu

\*\*  $F_{1p}$  =  
Polytrophic  
end force  
at 100% Cu

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## ACTIVE SAFETY



OSAS

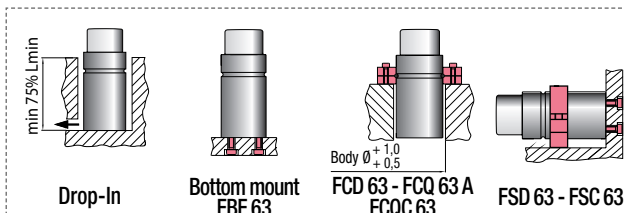


USAS



OPAS

CODE	Cu		L		L min		F <sub>0</sub> Initial force		F <sub>1i</sub> * End force *		F <sub>1p</sub> ** End force **		V <sub>0</sub>		Maintenance kit		
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	daN	lb	cm <sup>3</sup>	in <sup>3</sup>	~Kg	~lb	
MP 3000 - 010 - A	10	0.39	95	3.74	85	3.35	3000 ± 5% 189 bar 2741 psi + 20 °C +68 °F	6744	3792	8525	4150	9330	96,0	5.86	1,25	2.76	✓
MP 3000 - 015 - A	15	0.59	115	4.53	100	3.94			3877	8716	4263	9584	132,7	8.09	1,40	3.09	✓
MP 3000 - 020 - A	20	0.79	125	4.92	105	4.13			4099	9215	4567	10267	148,1	9.03	1,46	3.22	✓
MP 3000 - 025 - A	25	0.98	135	5.31	110	4.33			4298	9662	4840	10881	163,6	9.98	1,52	3.35	✓
MP 3000 - 032 - A	32	1.26	150	5.91	118	4.65			4516	10152	5145	11566	187,3	11.43	1,62	3.57	✓
MP 3000 - 038 - A	38	1.50	165	6.50	127	5.00			4622	10391	5294	11901	212,2	12.94	1,72	3.79	✓
MP 3000 - 045 - A	45	1.77	180	7.09	135	5.31			4781	10748	5519	12407	235,9	14.39	1,82	4.01	✓
MP 3000 - 050 - A	50	1.97	190	7.48	140	5.51			4898	11011	5686	12783	251,3	15.33	1,89	4.17	✓
MP 3000 - 063 - A	63	2.48	220	8.66	157	6.18			5065	11387	5926	13322	299,9	18.29	2,08	4.59	✓
MP 3000 - 080 - A	80	3.15	255	10.04	175	6.89			5319	11958	6292	14145	354,5	21.62	2,31	5.09	✓



## HOW TO ORDER

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## INSTALLATION GUIDELINE

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