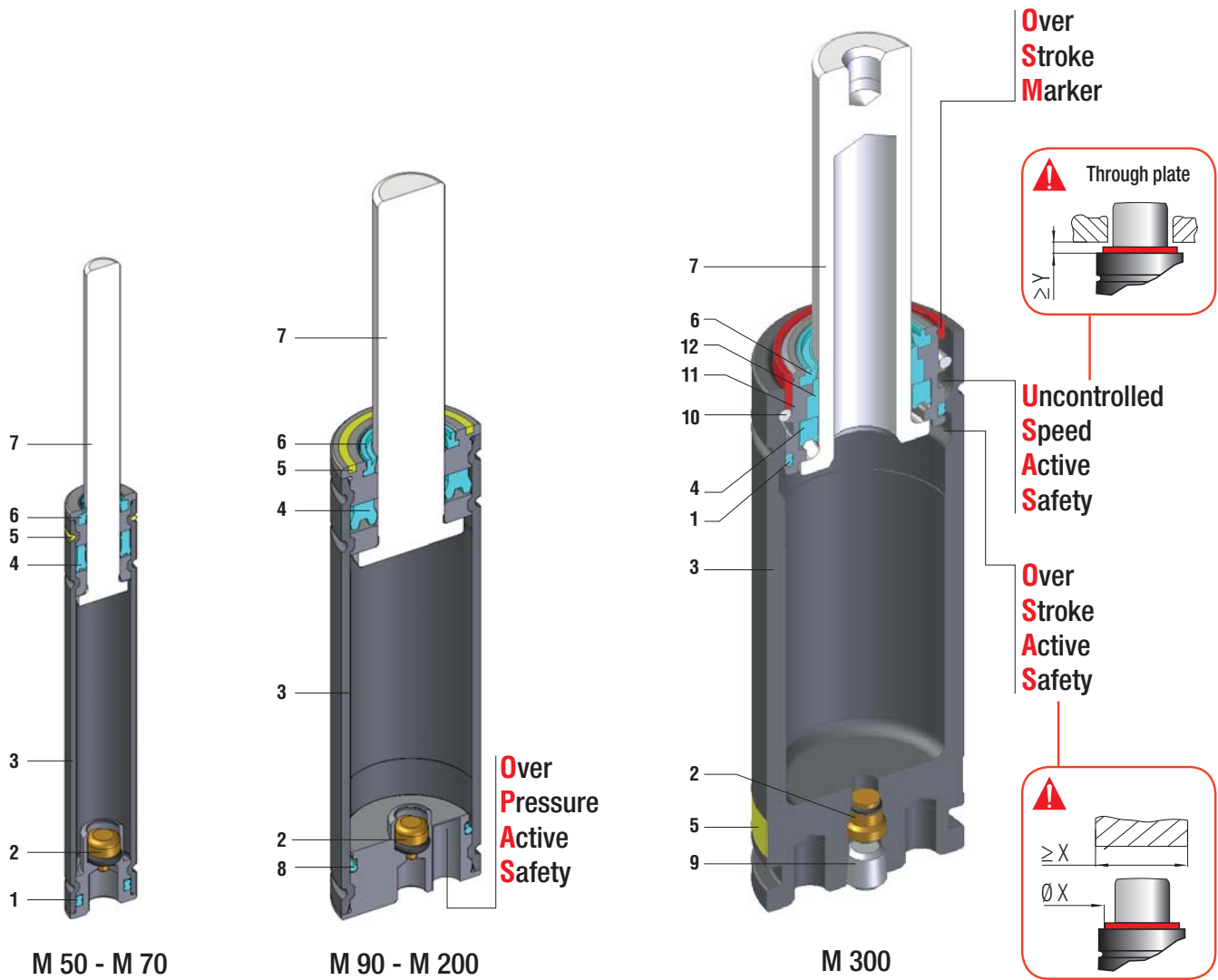


VDI	BMW	FCA
Ford	MB	PSA
VW		







Mini cilindri - Mini cylinders - Mini Gasdruckfedern
 Mini-ressorts - Mini cilindros - Mini-cilindros

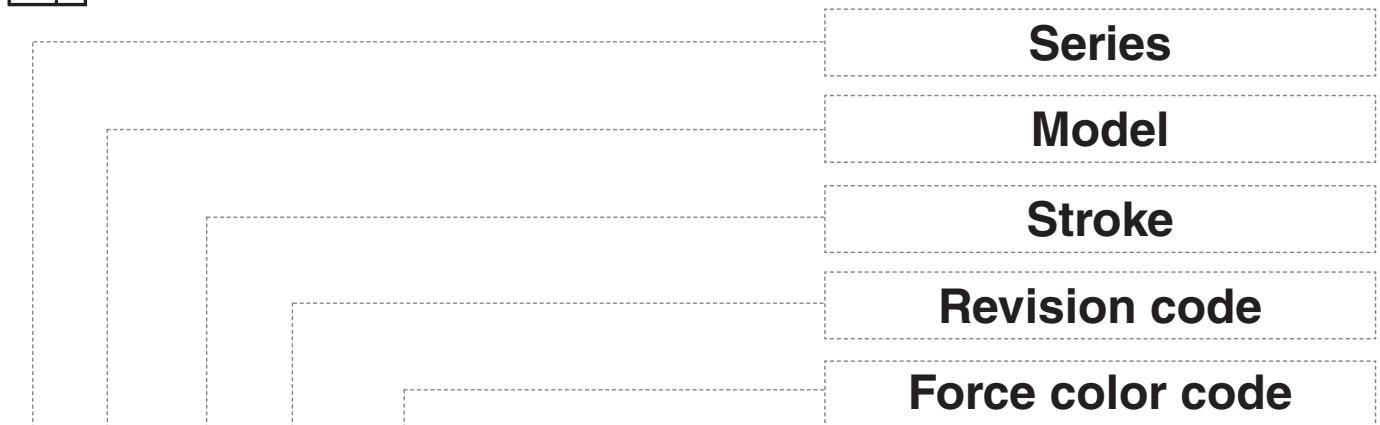
SEALING	ROD SEAL
DESIGN	RETAINING GROOVE DESIGN
	BUSH-BODY DESIGN (M300 only)

1	Dual ring seal	5	Force color code	9	Stopper
2	Valve	6	Rod wiper	10	Retaining ring
3	Body	7	Rod (Nitrited Superfinished)	11	Bush
4	Rod seal	8	O-ring	12	Guide ring

RANGE CHART

Model	Body Ø		Stroke Cu		Initial force F0		 OSAS	 USAS	 OPAS	 SKUDO
	mm	inch	mm	inch	daN	lb				
M 50	12	0.47	7 - 125	0.28 - 4.92	6 - 50	13 - 112	-	-	-	-
M 70	15	0.59	7 - 125	0.28 - 4.92	8 - 70	18 - 157	-	-	-	-
M 90	19	0.75	7 - 125	0.28 - 4.92	5 - 90	11 - 202	-	-	✓	-
M 90 TBM	M 24 X 1,5	M 24 X 1.5	7 - 125	0.28 - 4.92	5 - 90	11 - 202	-	-	✓	-
M 90 TEM	M 24 X 1,5	M 24 X 1.5	7 - 125	0.28 - 4.92	5 - 90	11 - 202	-	-	✓	-
M 90 TBI	1" 8 THD	1" 8 THD	7 - 125	0.28 - 4.92	5 - 90	11 - 202	-	-	✓	-
M 200	25	0.98	7 - 125	0.28 - 4.92	17 - 200	38 - 450	-	-	✓	-
M 300	32	1.26	7 - 125	0.28 - 4.92	80 - 320	180 - 719	✓	✓	-	-

HOW TO ORDER



M 90-050-A - RD

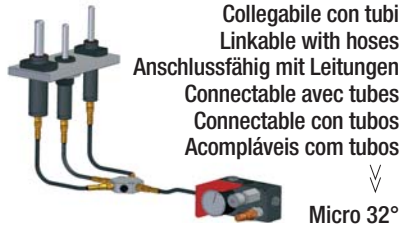
- IT** Codice cilindro autonomo
- EN** Self-contained cylinder code
- DE** Kode des eingeständigen Gdf.
- FR** Code du cylindre autonome
- ES** Codigo del cilindro autónomo
- PT** Codigo do cilindro autónomo

- IT** Identificazione delle forze iniziali (vedi tab. "force color code"), se non specificata, si intende sempre forza massima YW. Per forze diverse BK + Fo richiesta.
- EN** Identification of initial forces (see "force color code" chart), if not specified, it is always intended as maximum force YW. For different forces BK + Fo required
- DE** Identifikation der initiales Kräfte (siehe tabelle "force color code"), wenn nicht aufgestellt, es ist immer verstanden als maximaler Kraft YW. Für verschiedenen Kräfte, BK + Fo gebrauchte
- FR** Identifies forces initiale (voir tabelle "force color code"), si non specificé, on entend toujours force maximale YW. Pour forces différentes BK + Fo requise
- ES** Identificación de las fuerzas iniciales (veer cuadro "force color code"), si no se especifica, se entiende siempre la maxima fuerza YW. Para fuerzas diferentes BK + Fo requerida
- PT** Identificação das forças iniciais (ver Tabela "force color code"), se não especificado, é sempre entendido a maxima força YW. Para forças diferentes BK + Fo inquerita

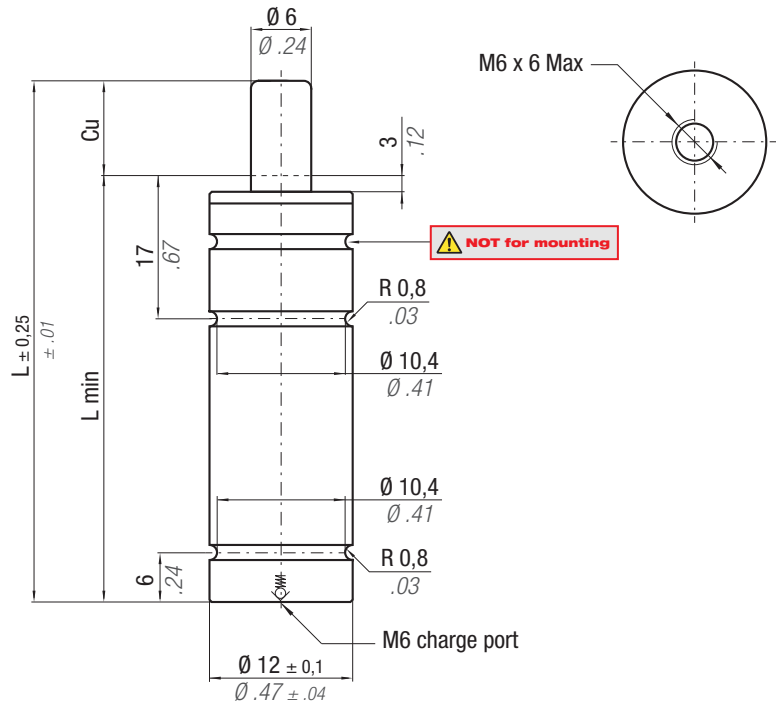


ACTIVE SAFETY

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

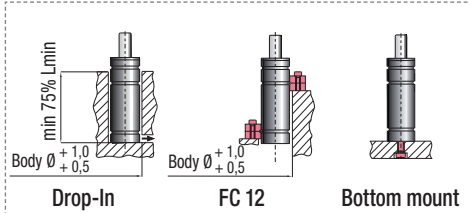


Force color code	P		Fo Initial force ± 5% at +20°C +68°F	
	bar	psi	daN	lb
GR	45	653	13	29
BU	90	1305	25	56
RD	135	1958	38	85
YW	180	2610	50	112
BK	20-180	290-2610	6-50	13-112



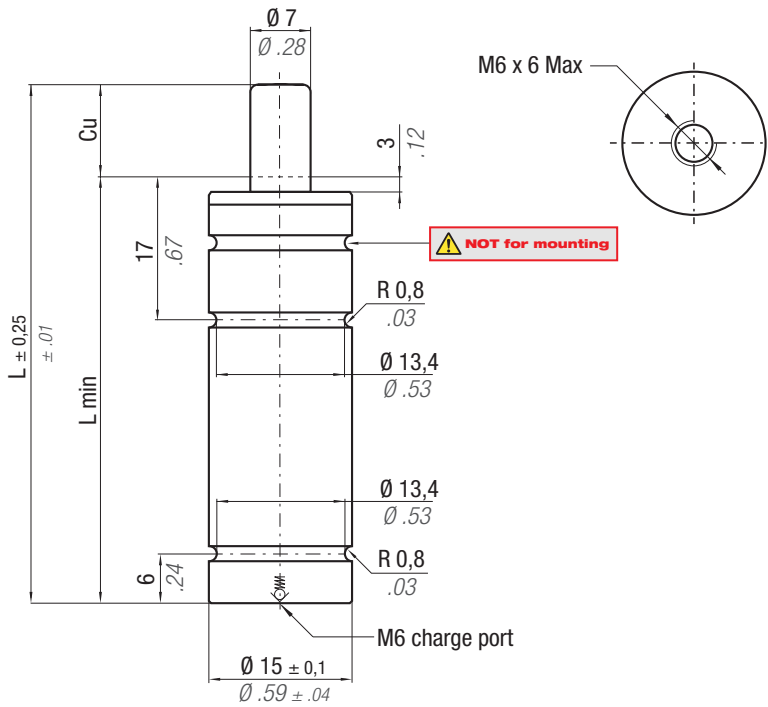
	$^{\circ}\text{F}$ 32 - 176	$^{\circ}\text{C}$ 0 - 80	ΔP $\pm 0,33 \text{ \%}/^{\circ}\text{C}$	P max 180 bar 2610 psi	P min 20 bar 290 psi	S 0,28 cm ² 0.043 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable
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CODE		Cu		L		L min		F _{1i} * End force *		F _{1p} ** End force **		Vo				
		mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³		~Kg	~lb
M50-007-A-...		7	0.28	56	2.20	49	1.93	1,34 x F0		1,56 x F0		-	-	0,03	0,07	✓
M50-010-A-...		10	0.39	62	2.44	52	2.05	1,41 x F0		1,67 x F0		-	-	0,03	0,07	✓
M50-013-A-...		12,7	0.50	67,4	2.65	54,7	2.15	1,44 x F0		1,72 x F0		-	-	0,03	0,07	✓
M50-015-A-...		15	0.59	72	2.83	57	2.24	1,48 x F0		1,79 x F0		-	-	0,03	0,07	✓
M50-019-A-...		19	0.75	80	3.15	61	2.40	1,52 x F0		1,85 x F0		-	-	0,03	0,07	✓
M50-025-A-...		25	0.98	92	3.62	67	2.64	1,56 x F0		1,92 x F0		-	-	0,03	0,07	✓
M50-038-A-...		38	1.50	118	4.65	80	3.15	1,61 x F0		2,01 x F0		-	-	0,04	0,09	✓
M50-050-A-...		50	1.97	142	5.59	92	3.62	1,63 x F0		2,05 x F0		-	-	0,05	0,11	✓
M50-063-A-...		63,5	2.50	172	6.77	108,5	4.27	1,61 x F0		2,01 x F0		-	-	0,06	0,13	✓
M50-075-A-...		75	2.95	195	7.68	120	4.72	1,63 x F0		2,04 x F0		-	-	0,06	0,13	✓
M50-080-A-...		80	3.15	205	8.07	125	4.92	1,63 x F0		2,05 x F0		-	-	0,07	0,15	✓
M50-100-A-...		100	3.94	245	9.65	145	5.71	1,65 x F0		2,08 x F0		-	-	0,08	0,18	✓
M50-125-A-...		125	4.92	295	11.61	170	6.69	1,67 x F0		2,11 x F0		-	-	0,09	0,20	✓



HOW TO ORDER

(10 pcs) M50-050-A-YW



* $F_{1i} =$

Isothermal
end force
at 100% Cu

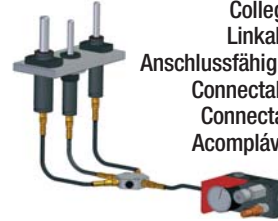
p. 16

** $F_{1p} =$

Polytrophic
end force
at 100% Cu



**ACTIVE
SAFETY**



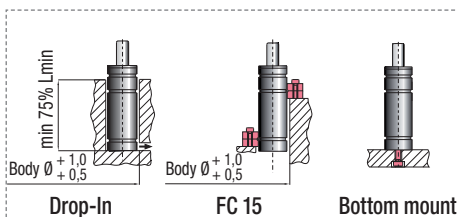
Collegabile con tubi
Linkable with hoses
Anschlussfähig mit Leitungen
Connectable avec tubes
Connectable con tubos
Acompláveis com tubos

Micro 32°

Force color code	P		Fo Initial force ± 5% at +20°C +68°F	
	bar	psi	daN	lb
GR	45	653	18	40
BU	90	1305	35	79
RD	135	1958	50	112
YW	180	2610	70	157
BK	20-180	290-2610	8-70	18-157

	°F 32 - 176	°C 0 - 80	ΔP ± 0,33 %/°C	P max 180 bar 2610 psi	P min 20 bar 290 psi	S 0,38 cm ² 0.059 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable
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CODE	Cu		L		L min		F_{1i} * End force *		F_{1p} ** End force **		Vo		~Kg ~lb	 2014/68/EU	
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³			
M70 - 007 - A - ...	7	0.28	56	2.20	49	1.93	1,28 x F0		1,47 x F0		-	-	0,04	0.09	✓
M70 - 010 - A - ...	10	0.39	62	2.44	52	2.05	1,34 x F0		1,56 x F0		-	-	0,05	0.11	✓
M70 - 013 - A - ...	12,7	0.50	67,4	2.65	54,7	2.15	1,37 x F0		1,61 x F0		-	-	0,05	0.11	✓
M70 - 015 - A - ...	15	0.59	72	2.83	57	2.24	1,40 x F0		1,66 x F0		-	-	0,05	0.11	✓
M70 - 019 - A - ...	19	0.75	80	3.15	61	2.40	1,43 x F0		1,72 x F0		-	-	0,05	0.11	✓
M70 - 025 - A - ...	25	0.98	92	3.62	67	2.64	1,47 x F0		1,78 x F0		-	-	0,06	0.13	✓
M70 - 038 - A - ...	38	1.50	118	4.65	80	3.15	1,51 x F0		1,85 x F0		-	-	0,07	0.15	✓
M70 - 050 - A - ...	50	1.97	142	5.59	92	3.62	1,54 x F0		1,89 x F0		-	-	0,08	0.18	✓
M70 - 063 - A - ...	63,5	2.50	172	6.77	108,5	4.27	1,52 x F0		1,87 x F0		-	-	0,09	0.20	✓
M70 - 075 - A - ...	75	2.95	195	7.68	120	4.72	1,54 x F0		1,89 x F0		-	-	0,10	0.22	✓
M70 - 080 - A - ...	80	3.15	205	8.071	125	4.92	1,54 x F0		1,90 x F0		-	-	0,10	0.22	✓
M70 - 100 - A - ...	100	3.94	245	9.65	145	5.71	1,56 x F0		1,93 x F0		-	-	0,12	0.26	✓
M70 - 125 - A - ...	125	4.92	295	11.61	170	6.69	1,57 x F0		1,95 x F0		-	-	0,14	0.31	✓



HOW TO ORDER

(10 pcs) M70-050-A-YW

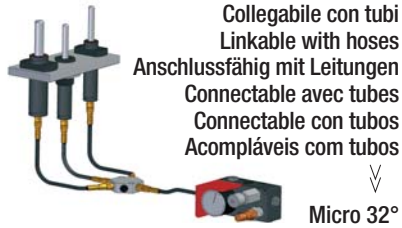


ACTIVE SAFETY

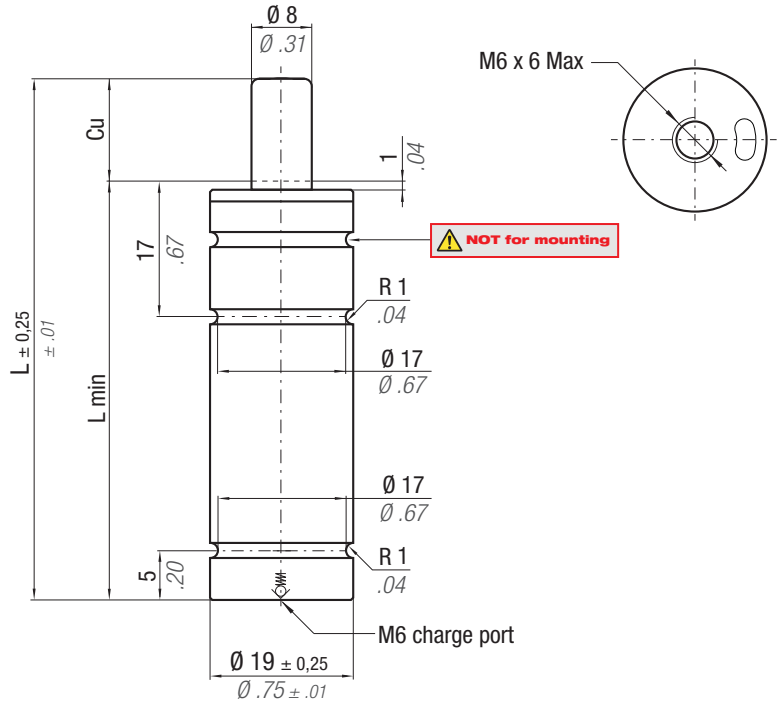


OPAS

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

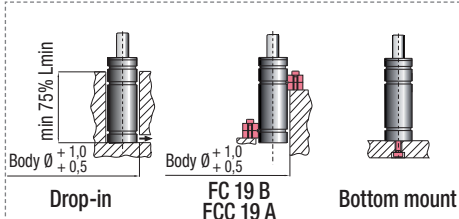


Force color code	P		Fo Initial force ± 5% at +20°C +68°F	
	bar	psi	daN	lb
OR	10	145	5	11
PR	20	290	10	22
GR	60	870	30	67
BU	100	1450	50	112
RD	140	2030	70	157
YW	180	2610	90	202
BK	10-180	145-2610	5-90	11-202



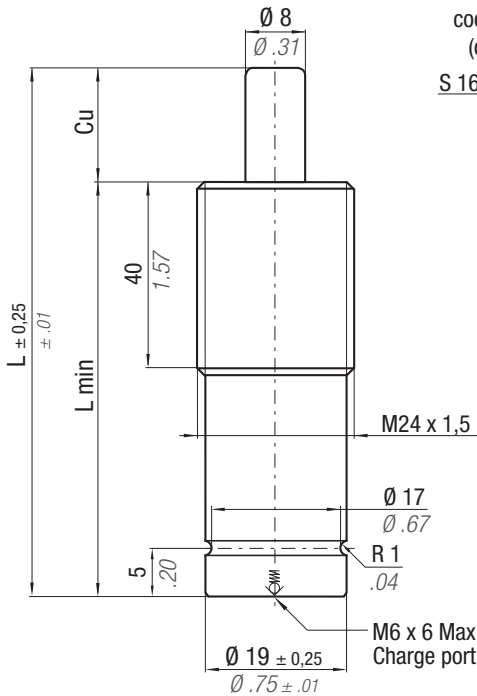
N ₂	$^{\circ}\text{F}$ 32 - 176	$^{\circ}\text{C}$ 0 - 80	ΔP $\pm 0,33\% / ^{\circ}\text{C}$	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 0,5 cm ² 0.078 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable
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CODE	Cu		L		L min		F _{1i} * End force *		F _{1p} ** End force **		Vo		PED 2014/68/EU		
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³	~Kg	~lb	
M90 - 007 - A - ...	7	0.28	56	2.20	49	1.93	1,16 x F0		1,30 x F0		-	-	0,07	0.15	✓
M90 - 010 - A - ...	10	0.39	62	2.44	52	2.05	1,19 x F0		1,36 x F0		-	-	0,07	0.15	✓
M90 - 013 - A - ...	12,7	0.50	67,4	2.65	54,7	2.15	1,22 x F0		1,40 x F0		-	-	0,08	0.18	✓
M90 - 015 - A - ...	15	0.59	72	2.83	57	2.24	1,23 x F0		1,42 x F0		-	-	0,08	0.18	✓
M90 - 025 - A - ...	25	0.98	92	3.62	67	2.64	1,28 x F0		1,50 x F0		-	-	0,09	0.20	✓
M90 - 038 - A - ...	38,1	1.50	118,2	4.65	80,1	3.15	1,31 x F0		1,55 x F0		-	-	0,11	0.24	✓
M90 - 050 - A - ...	50	1.97	142	5.59	92	3.62	1,33 x F0		1,58 x F0		-	-	0,12	0.26	✓
M90 - 063 - A - ...	63,5	2.50	172	6.77	108,5	4.27	1,33 x F0		1,57 x F0		-	-	0,14	0.31	✓
M90 - 080 - A - ...	80	3.15	205	8.07	125	4.92	1,34 x F0		1,59 x F0		-	-	0,15	0.33	✓
M90 - 100 - A - ...	100	3.94	245	9.65	145	5.71	1,35 x F0		1,61 x F0		-	-	0,17	0.37	✓
M90 - 125 - A - ...	125	4.92	295	11.61	170	6.69	1,36 x F0		1,63 x F0		-	-	0,20	0.44	✓

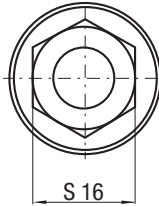
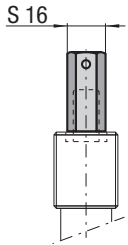


HOW TO ORDER

(10 pcs) M90-050-A-YW



cod. 39 TBT (optional)



! Senza riserva corsa
Without reserve of stroke
Ohne Hubreserve
Sans course de réserve
Sin margen de Carrera
Sem reserva de curso

! NON superare 90% Cu
DO NOT exceed 90% Cu
NICHT überschreiten die 90% Cu
NE PAS dépasser 90% Cu
NO superar el 90% Cu
NÃO se excedam os 90% Cu

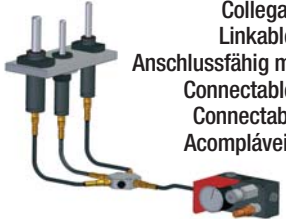
* F_{1i} =

Isothermal end force at 100% Cu

** F_{1p} =

Polytropic end force at 100% Cu

p. 16



Collegabile con tubi
Linkable with hoses
Anschlussfähig mit Leitungen
Connectable avec tubes
Connectable con tubos
Acompláveis com tubos

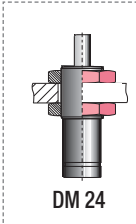
ACTIVE SAFETY



Force color code	P		F ₀	
	bar	psi	Initial force ± 5% at +20°C +68°F	
OR	10	145	5	11
PR	20	290	10	22
GR	60	870	30	67
BU	100	1450	50	112
RD	140	2030	70	157
YW	180	2610	90	202
BK	10-180	145-2610	5-90	11-202

	°F 32 - 176	°C 0 - 80	ΔP ± 0,33 %/°C	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 0,5 cm ² 0.078 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable
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CODE	Cu		L		L min		F _{1i} *		F _{1p} **		V ₀		~Kg	~lb	PED 2014/68/EU
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³			
M90-007-A-...	7	0.28	56	2.20	49	1.93	1,16 x F ₀		1,30 x F ₀		-	-	0,07	0.15	✓
M90-010-A-...	10	0.39	62	2.44	52	2.05	1,19 x F ₀		1,36 x F ₀		-	-	0,07	0.15	✓
M90-013-A-...	12,7	0.50	67,4	2.65	54,7	2.15	1,22 x F ₀		1,40 x F ₀		-	-	0,08	0.18	✓
M90-015-A-...	15	0.59	72	2.83	57	2.24	1,23 x F ₀		1,42 x F ₀		-	-	0,08	0.18	✓
M90-025-A-...	25	0.98	92	3.62	67	2.64	1,28 x F ₀		1,50 x F ₀		-	-	0,09	0.20	✓
M90-038-A-...	38,1	1.50	118,2	4.65	80,1	3.15	1,31 x F ₀		1,55 x F ₀		-	-	0,11	0.24	✓
M90-050-A-...	50	1.97	142	5.59	92	3.62	1,33 x F ₀		1,58 x F ₀		-	-	0,12	0.26	✓
M90-063-A-...	63,5	2.50	172	6.77	108,5	4.27	1,33 x F ₀		1,57 x F ₀		-	-	0,14	0.31	✓
M90-080-A-...	80	3.15	205	8.07	125	4.92	1,34 x F ₀		1,59 x F ₀		-	-	0,15	0.33	✓
M90-100-A-...	100	3.94	245	9.65	145	5.71	1,35 x F ₀		1,61 x F ₀		-	-	0,17	0.37	✓
M90-125-A-...	125	4.92	295	11.61	170	6.69	1,36 x F ₀		1,63 x F ₀		-	-	0,20	0.44	✓



DM 24

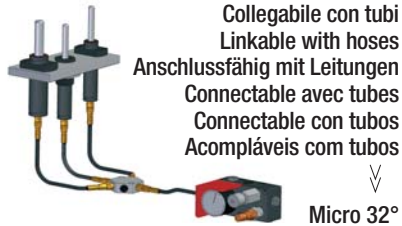
HOW TO ORDER

(10 pcs)
M90-050-A-YW-TBM

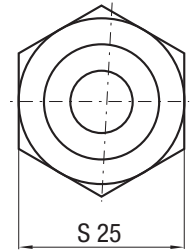
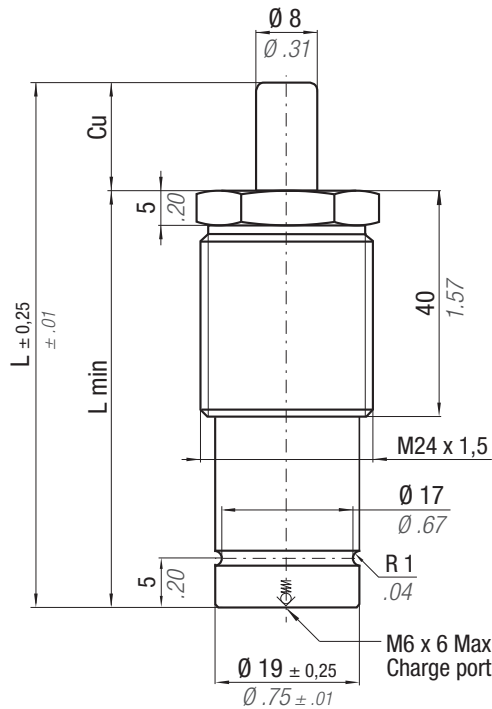
ACTIVE SAFETY



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



Force color code	P		F ₀ Initial force ± 5% at +20°C +68°F	
	bar	psi	daN	lb
OR	10	145	5	11
PR	20	290	10	22
GR	60	870	30	67
BU	100	1450	50	112
RD	140	2030	70	157
YW	180	2610	90	202
BK	10-180	145-2610	5-90	11-202

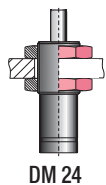


!
 Senza riserva corsa
 Without reserve of stroke
 Ohne Hubreserve
 Sans course de réserve
 Sin margen de Carrera
 Sem reserva de curso

!
 NON superare 90% Cu
 DO NOT exceed 90% Cu
 NICHT überschreiten die 90% Cu
 NE PAS dépasser 90% Cu
 NO superar el 90% Cu
 NÃO se excedam os 90% Cu

	°F 32 - 176	°C 0 - 80	ΔP ± 0,33 %/°C	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 0,5 cm ² 0.078 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable
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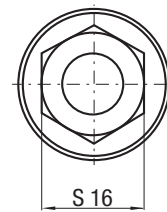
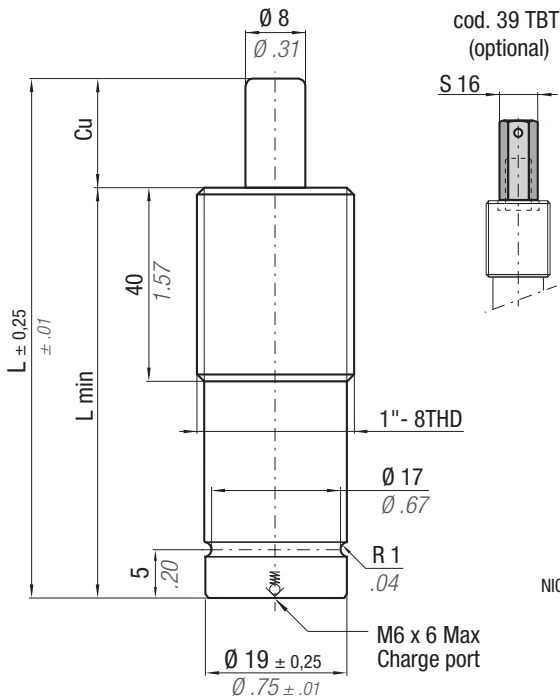
CODE	Cu		L		L min		F _{1i} * End force *		F _{1p} ** End force **		V ₀		PED 2014/68/EU		
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³	~Kg	~lb	
M90-007-A-...	7	0.28	56	2.20	49	1.93	1,16 x F ₀		1,30 x F ₀		-	-	0,07	0.15	✓
M90-010-A-...	10	0.39	62	2.44	52	2.05	1,19 x F ₀		1,36 x F ₀		-	-	0,07	0.15	✓
M90-013-A-...	12,7	0.50	67,4	2.65	54,7	2.15	1,22 x F ₀		1,40 x F ₀		-	-	0,08	0.18	✓
M90-015-A-...	15	0.59	72	2.83	57	2.24	1,23 x F ₀		1,42 x F ₀		-	-	0,08	0.18	✓
M90-025-A-...	25	0.98	92	3.62	67	2.64	1,28 x F ₀		1,50 x F ₀		-	-	0,09	0.20	✓
M90-038-A-...	38,1	1.50	118,2	4.65	80,1	3.15	1,31 x F ₀		1,55 x F ₀		-	-	0,11	0.24	✓
M90-050-A-...	50	1.97	142	5.59	92	3.62	1,33 x F ₀		1,58 x F ₀		-	-	0,12	0.26	✓
M90-063-A-...	63,5	2.50	172	6.77	108,5	4.27	1,33 x F ₀		1,57 x F ₀		-	-	0,14	0.31	✓
M90-080-A-...	80	3.15	205	8.07	125	4.92	1,34 x F ₀		1,59 x F ₀		-	-	0,15	0.33	✓
M90-100-A-...	100	3.94	245	9.65	145	5.71	1,35 x F ₀		1,61 x F ₀		-	-	0,17	0.37	✓
M90-125-A-...	125	4.92	295	11.61	170	6.69	1,36 x F ₀		1,63 x F ₀		-	-	0,20	0.44	✓



DM 24

HOW TO ORDER

(10 pcs)
 M90-050-A-YW-TEM



Senza riserva corsa
Without reserve of stroke
Ohne Hubreserve
Sans course de réserve
Sin margen de Carrera
Sem reserva de curso

NON superare 90% Cu
DO NOT exceed 90% Cu
NICHT überschreiten die 90% Cu
NE PAS dépasser 90% Cu
NO superar el 90% Cu
NÃO se excedam os 90% Cu

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



Collegabile con tubi
Linkable with hoses
Anschlussfähig mit Leitungen
Connectable avec tubes
Connectable con tubos
Acompláveis com tubos

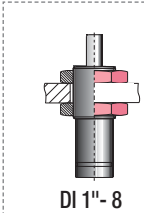
ACTIVE SAFETY

Force color code	P		F ₀	
	bar	psi	Initial force ± 5% at +20°C +68°F	
OR	10	145	5	11
PR	20	290	10	22
GR	60	870	30	67
BU	100	1450	50	112
RD	140	2030	70	157
YW	180	2610	90	202
BK	10-180	145-2610	5-90	11-202



	°F 32 176	°C 0 80	ΔP ± 0,33 %/°C	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 0,5 cm ² 0.078 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable
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CODE	Cu		L		L min		F _{1i} *		F _{1p} **		V ₀		~Kg	~lb	PED 2014/68/EU
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³			
M90-007-A-...	7	0.28	56	2.20	49	1.93	1,16 x F0		1,30 x F0		-	-	0,07	0.15	✓
M90-010-A-...	10	0.39	62	2.44	52	2.05	1,19 x F0		1,36 x F0		-	-	0,07	0.15	✓
M90-013-A-...	12,7	0.50	67,4	2.65	54,7	2.15	1,22 x F0		1,40 x F0		-	-	0,08	0.18	✓
M90-015-A-...	15	0.59	72	2.83	57	2.24	1,23 x F0		1,42 x F0		-	-	0,08	0.18	✓
M90-025-A-...	25	0.98	92	3.62	67	2.64	1,28 x F0		1,50 x F0		-	-	0,09	0.20	✓
M90-038-A-...	38,1	1.50	118,2	4.65	80,1	3.15	1,31 x F0		1,55 x F0		-	-	0,11	0.24	✓
M90-050-A-...	50	1.97	142	5.59	92	3.62	1,33 x F0		1,58 x F0		-	-	0,12	0.26	✓
M90-063-A-...	63,5	2.50	172	6.77	108,5	4.27	1,33 x F0		1,57 x F0		-	-	0,14	0.31	✓
M90-080-A-...	80	3.15	205	8.07	125	4.92	1,34 x F0		1,59 x F0		-	-	0,15	0.33	✓
M90-100-A-...	100	3.94	245	9.65	145	5.71	1,35 x F0		1,61 x F0		-	-	0,17	0.37	✓
M90-125-A-...	125	4.92	295	11.61	170	6.69	1,36 x F0		1,63 x F0		-	-	0,20	0.44	✓



DI 1"-8

HOW TO ORDER

(10 pcs)
M90-050-A-YW-TBI

ISO 11901 - 1 B8 3180 220 000 002(MB)	VDI 3003 - Blatt 2 E24.54.815.G (PSA)	B2 4007 (BMW) 39D 878 (VW)	075.90.50 (FCA)
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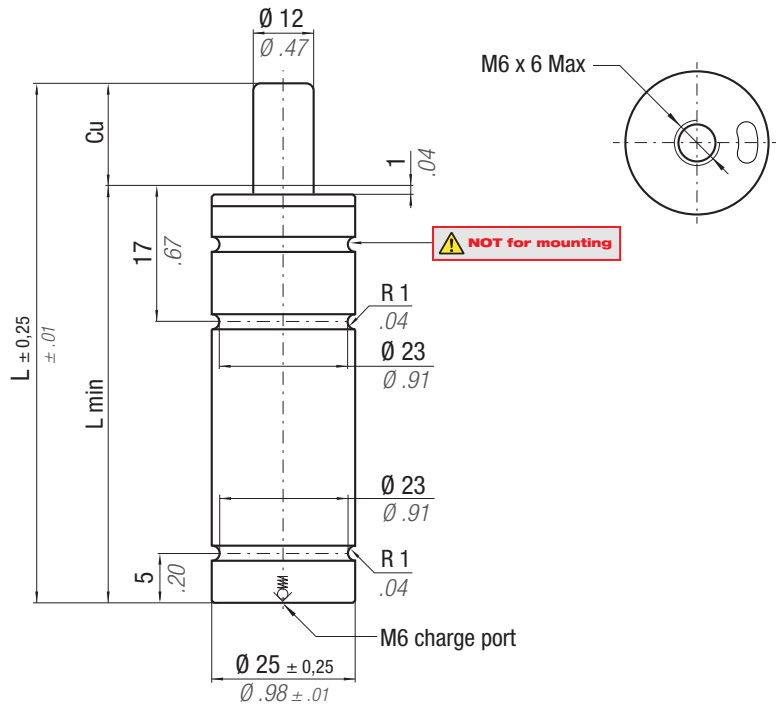


ACTIVE SAFETY

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

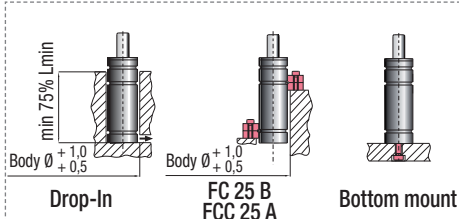


Force color code	P		F ₀ Initial force ± 5% at +20°C +68°F	
	bar	psi	daN	lb
OR	15	218	17	38
PR	25	363	28	63
GR	45	653	50	112
BU	90	1305	100	225
RD	135	1958	150	337
YW	180	2610	200	450
BK	10-180	145-2610	11-200	25-450



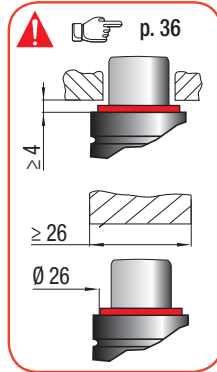
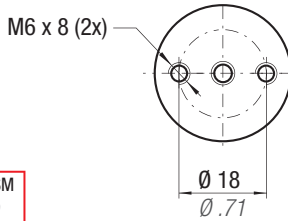
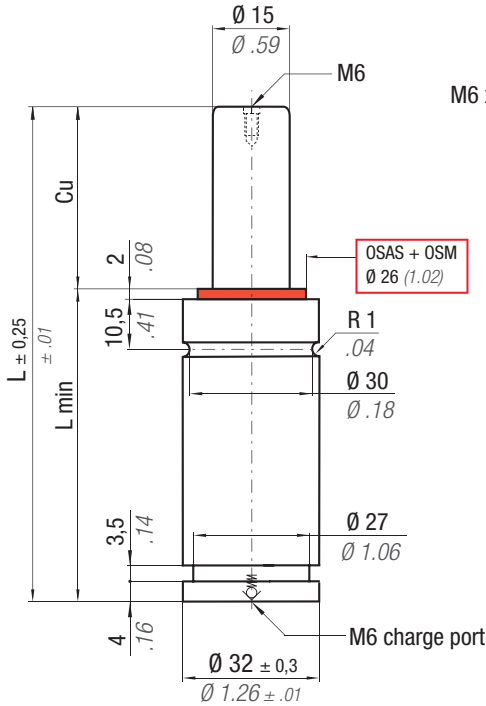
	$^{\circ}\text{F}$ 32 - 176	$^{\circ}\text{C}$ 0 - 80	ΔP $\pm 0,33\% / ^{\circ}\text{C}$	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 1,13 cm ² 0,175 in ²	SPM ~ 50 - 80 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable
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CODE		Cu		L		L min		F _{1i} * End force *		F _{1p} ** End force **		V ₀			2014/68/EU	
		mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³			~Kg
M200 - 007 - A - ...		7	0.28	56	2.20	49	1.93	1,20 x F ₀		1,35 x F ₀		-	-	0,12	0.26	✓
M200 - 010 - A - ...		10	0.39	62	2.44	52	2.05	1,24 x F ₀		1,42 x F ₀		-	-	0,13	0.29	✓
M200 - 013 - A - ...		12,7	0.50	67,4	2.65	54,7	2.15	1,27 x F ₀		1,47 x F ₀		-	-	0,13	0.29	✓
M200 - 015 - A - ...		15	0.59	72	2.83	57	2.24	1,30 x F ₀		1,50 x F ₀		-	-	0,14	0.31	✓
M200 - 016 - A - ...		16	0.63	74	2.91	58	2.28	1,30 x F ₀		1,50 x F ₀		-	-	0,14	0.31	✓
M200 - 025 - A - ...		25	0.98	92	3.62	67	2.64	1,36 x F ₀		1,60 x F ₀		-	-	0,16	0.35	✓
M200 - 038 - A - ...		38,1	1.50	118,2	4.65	80.1	3.15	1,40 x F ₀		1,67 x F ₀		-	-	0,19	0.42	✓
M200 - 050 - A - ...		50	1.97	142	5.59	92	3.62	1,42 x F ₀		1,71 x F ₀		-	-	0,20	0.44	✓
M200 - 063 - A - ...		63,5	2.50	172	6.77	108,5	4.27	1,42 x F ₀		1,70 x F ₀		-	-	0,23	0.51	✓
M200 - 080 - A - ...		80	3.15	205	8.07	125	4.92	1,43 x F ₀		1,73 x F ₀		-	-	0,26	0.57	✓
M200 - 100 - A - ...		100	3.94	245	9.65	145	5.71	1,45 x F ₀		1,75 x F ₀		-	-	0,30	0.66	✓
M200 - 125 - A - ...		125	4.92	295	11.61	170	6.69	1,46 x F ₀		1,78 x F ₀		-	-	0,34	0.75	✓



HOW TO ORDER

(10 pcs) M200-050-A-YW



OSAS + OSM = OVER STROKE ACTIVE SAFETY + OVER STROKE MARKER

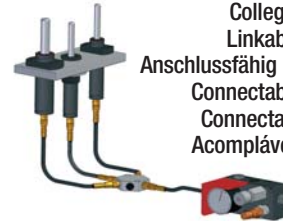
* $F_{1i} =$

Isothermal end force at 100% Cu

p. 16

** $F_{1p} =$

Polytropic end force at 100% Cu



Collegabile con tubi
Linkable with hoses
Anschlussfähig mit Leitungen
Connectable avec tubes
Connectable con tubos
Acompláveis com tubos

Micro 32°



ACTIVE SAFETY



OSAS

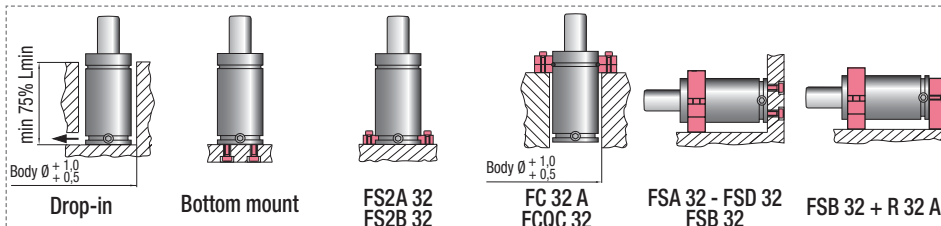


USAS

Force color code	P		Fo	
	bar	psi	Initial force ± 5% at +20°C +68°F	
			daN	lb
GR	45	653	80	180
BU	90	1305	160	360
RD	135	1958	240	540
YW	180	2610	320	719
BK	10-180	145-2610	18-320	40-719

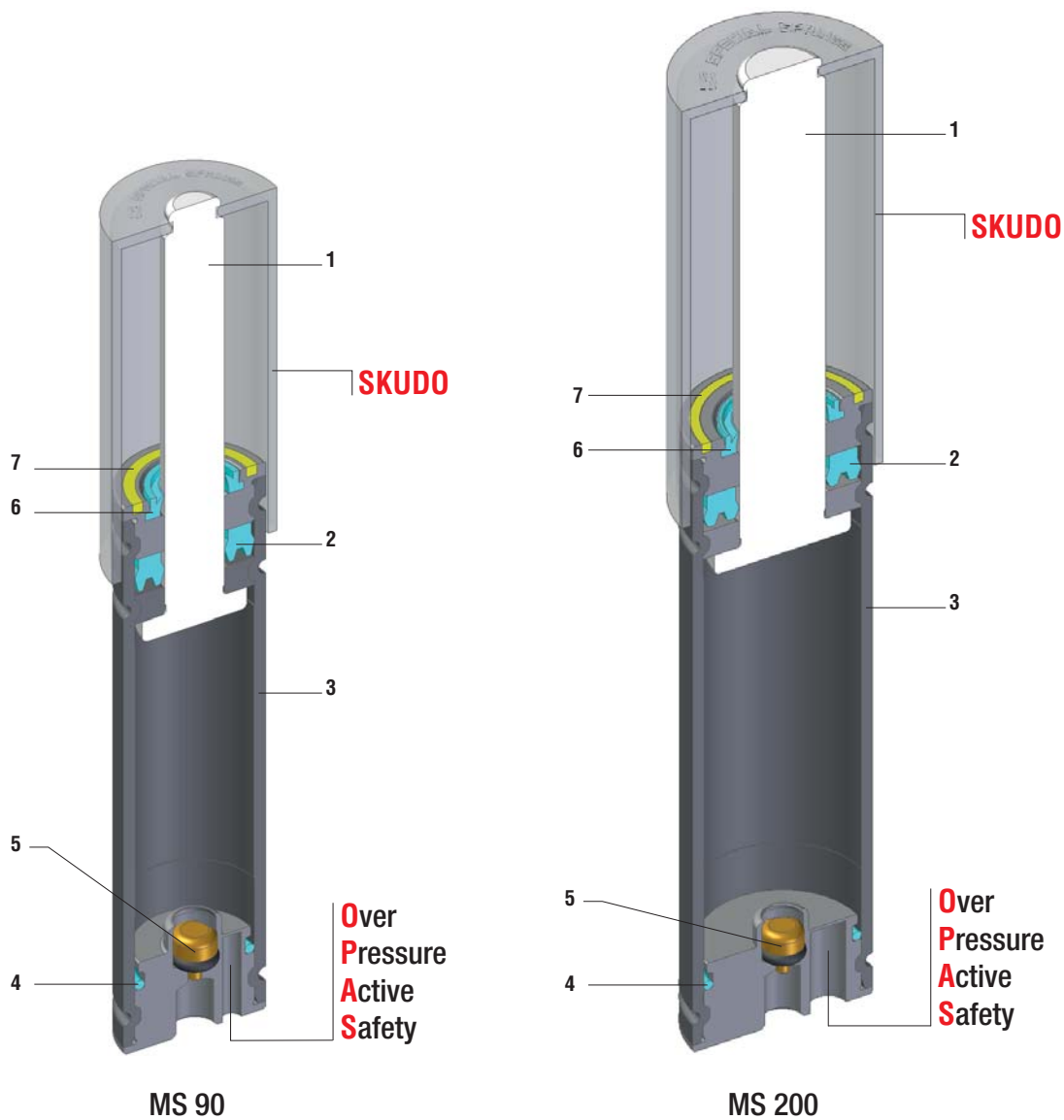
	°F 32 - 176	°C 0 - 80	ΔP ± 0,33 %/°C	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 1,77 cm ² 0,274 in ²	SPM ~ 50 - 80 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit 39BMMCI32A
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CODE	Cu		L		L min		F _{1i} *		F _{1p} **		V ₀		~Kg	~lb	PED 2014/68/EU
	mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³			
M300 - 007 - A - ...	7	0.28	56	2.20	49	1.93	1,17 x F0		1,30 x F0		-	-	0,21	0.01	✓
M300 - 010 - A - ...	10	0.39	62	2.44	52	2.05	1,21 x F0		1,37 x F0		-	-	0,22	0.01	✓
M300 - 013 - A - ...	12,7	0.50	67,4	2.65	54,7	2.15	1,24 x F0		1,41 x F0		-	-	0,23	0.01	✓
M300 - 015 - A - ...	15	0.59	72	2.83	57	2.24	1,26 x F0		1,44 x F0		-	-	0,24	0.01	✓
M300 - 025 - A - ...	25	0.98	92	3.62	67	2.64	1,32 x F0		1,53 x F0		-	-	0,26	0.01	✓
M300 - 038 - A - ...	38	1.50	118	4.65	80	3.15	1,36 x F0		1,60 x F0		-	-	0,30	0.01	✓
M300 - 050 - A - ...	50	1.97	142	5.59	92	3.62	1,38 x F0		1,64 x F0		-	-	0,34	0.01	✓
M300 - 063 - A - ...	63,5	2.50	172	6.77	108,5	4.27	1,38 x F0		1,63 x F0		-	-	0,39	0.02	✓
M300 - 080 - A - ...	80	3.15	205	8.07	125	4.92	1,40 x F0		1,66 x F0		-	-	0,44	0.02	✓
M300 - 100 - A - ...	100	3.94	245	9.65	145	5.71	1,41 x F0		1,68 x F0		-	-	0,50	0.02	✓
M300 - 125 - A - ...	125	4.92	295	11.61	170	6.69	1,42 x F0		1,70 x F0		-	-	0,57	0.02	✓



HOW TO ORDER

(10 pcs) M300-050-A-YW







Mini cilindri - Mini cylinders - Mini Gasdruckfedern
 Mini-ressorts - Mini cilindros - Mini-cilindros

SEALING	ROD SEAL
DESIGN	RETAINING GROOVE DESIGN

1	Rod (nitrited superfinished)	5	Valve
2	Rod seal	6	Rod wiper
3	Body	7	Force color code
4	O-ring		

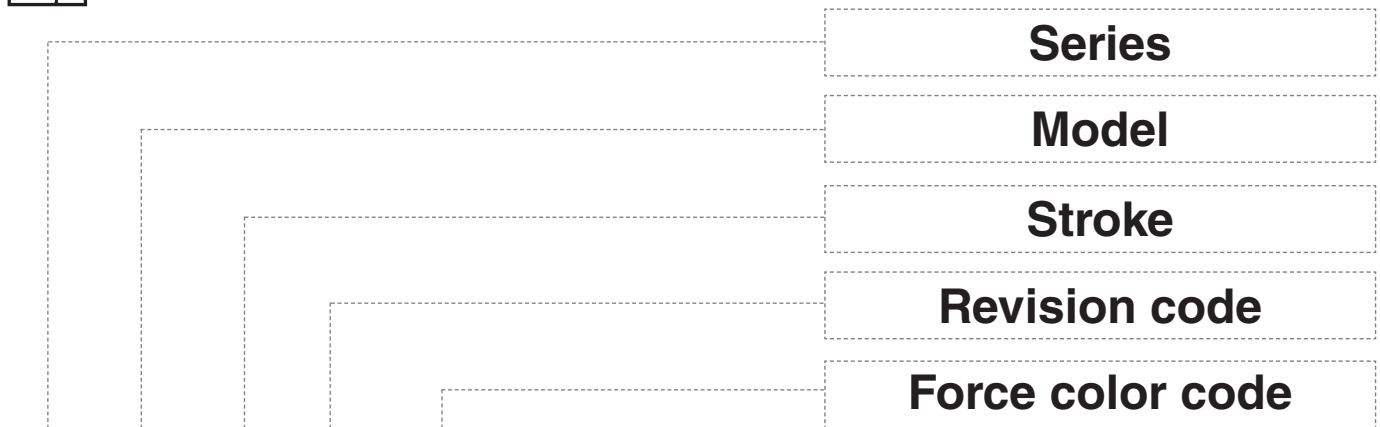
RANGE CHART

Model	Body Ø		Stroke Cu		Initial force F0					
	mm	inch	mm	inch	daN	lb				
MS 90	19	0.75	7 - 122	0.28 - 4.80	5 - 90	11 - 202	-	-	✓	✓
MS 200	25	0.98	7 - 122	0.28 - 4.80	17 - 200	38 - 450	-	-	✓	✓

MS



HOW TO ORDER



MS 90-022-A - RD

- IT** Codice cilindro autonomo
- EN** Self-contained cylinder code
- DE** Kode des eingeständigen Gdf.
- FR** Code du cylindre autonome
- ES** Código del cilindro autónomo
- PT** Codigo do cilindro autónomo

- IT** Identificazione delle forze iniziali (vedi tab. "force color code"), se non specificata, si intende sempre forza massima YW. Per forze diverse BK + Fo richiesta.
- EN** Identification of initial forces (see "force color code" chart), if not specified, it is always intended as maximum force YW. For different forces BK + Fo required
- DE** Identifikation der initiales Kräfte (siehe tabelle "force color code"), wenn nicht aufgestellt, es ist immer verstanden als maximaler Kraft YW. Für verschiedenen Kräfte, BK + Fo gebrauchte
- FR** Identifies forces initiale (voir tabelle "force color code"), si non specificé, on entend toujours force maximale YW. Pour forces différentes BK + Fo requise
- ES** Identificación de las fuerzas iniciales (veer cuadro "force color code"), si no se especifica, se entiende siempre la maxima fuerza YW. Para fuerzas diferentes BK + Fo requerida
- PT** Identificação das forças iniciais (ver Tabela "force color code"), se não especificado, é sempre entendido a maxima força YW. Para forças diferentes BK + Fo inquerita

ACTIVE SAFETY

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

Force color code	P		F ₀	
	bar	psi	Initial force ± 5% at +20°C +68°F	
OR	10	145	5	11
PR	20	290	10	22
GR	60	870	30	67
BU	100	1450	50	112
RD	140	2030	70	157
YW	180	2610	90	202
BK	10-180	145-2610	5-90	11-202

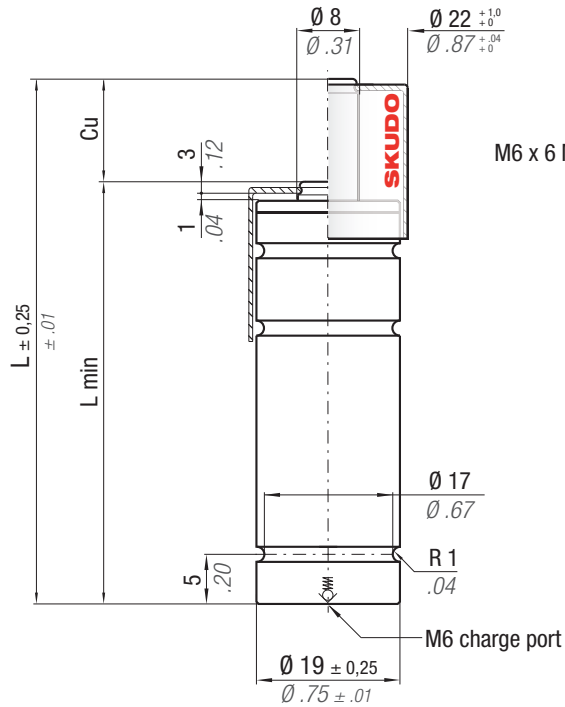
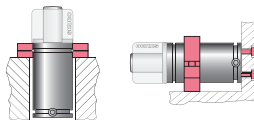


OPAS



SKUDO

NOT FOR

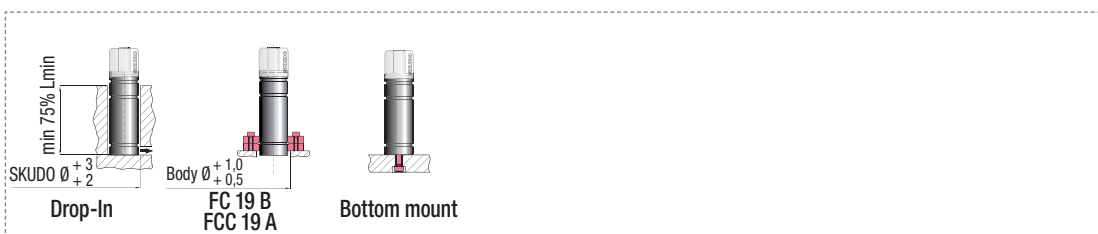


M6 x 6 Max

CODE	N ₂	°F 32 - 176	°C 0 - 80	ΔP ± 0,33 %/°C	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 0,5 cm ² 0,078 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s	Maintenance kit Disposable	Cu		L		L min		F _{1i} *		F _{1p} **		V ₀		PED 2014/68/EU
											mm	inch	mm	inch	mm	inch	daN	lb	daN	lb	cm ³	in ³	
MS90 - 007 - A - ...											7	0.28	62	2.44	55	2.17	1,13 x F ₀	1,26 x F ₀	-	-	0,07	0.15	✓
MS90 - 010 - A - ...											9,7	0.38	67,4	2.65	57,7	2.27	1,16 x F ₀	1,30 x F ₀	-	-	0,08	0.18	✓
MS90 - 012 - A - ...											12	0.47	72	2.83	60	2.36	1,18 x F ₀	1,34 x F ₀	-	-	0,08	0.18	✓
MS90 - 022 - A - ...											22	0.87	92	3.62	70	2.76	1,24 x F ₀	1,43 x F ₀	-	-	0,09	0.20	✓
MS90 - 035 - A - ...											35,1	1.38	118,2	4.65	83,1	3.27	1,28 x F ₀	1,50 x F ₀	-	-	0,11	0.24	✓
MS90 - 047 - A - ...											47	1.85	142	5.59	95	3.74	1,31 x F ₀	1,54 x F ₀	-	-	0,12	0.26	✓
MS90 - 060 - A - ...											60,5	2.38	172	6.77	111,5	4.39	1,31 x F ₀	1,54 x F ₀	-	-	0,14	0.31	✓
MS90 - 077 - A - ...											77	3.03	205	8.07	128	5.04	1,32 x F ₀	1,57 x F ₀	-	-	0,15	0.33	✓
MS90 - 097 - A - ...											97	3.82	245	9.65	148	5.83	1,34 x F ₀	1,59 x F ₀	-	-	0,17	0.37	✓
MS90 - 122 - A - ...											122	4.80	295	11.61	173	6.81	1,35 x F ₀	1,61 x F ₀	-	-	0,20	0.44	✓

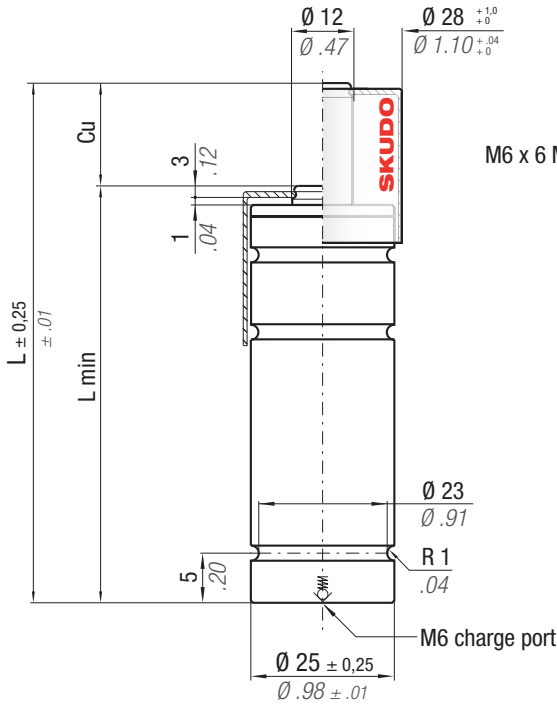
WARNING REMOVE SKUDO

Upside down mounting



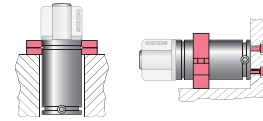
HOW TO ORDER

(10 pcs) MS90-047-A-YW



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

Force color code	P		F ₀	
	bar	psi	Initial force ± 5% at +20°C +68°F	
OR	15	218	17	38
PR	25	363	28	63
GR	45	653	50	112
BU	90	1305	100	225
RD	135	1958	150	337
YW	180	2610	200	450
BK	10-180	145-2610	11-200	25-450



ACTIVE SAFETY



MS

CODE	Cu	L	L min	F _{1i} *		F _{1p} **		V ₀		Maintenance kit	
				daN	lb	daN	lb	cm ³	in ³	~Kg	~lb
MS200 - 007 - A	7 0.28	62 2.44	55 2.17	1,17 x F ₀	1,29 x F ₀	-	-	0,13 0.29	✓		
MS200 - 010 - A	9,7 0.38	67,4 2.65	57,7 2.27	1,20 x F ₀	1,35 x F ₀	-	-	0,13 0.29	✓		
MS200 - 012 - A	12 0.47	72 2.83	60 2.36	1,23 x F ₀	1,39 x F ₀	-	-	0,14 0.31	✓		
MS200 - 022 - A	22 0.87	92 3.62	70 2.76	1,30 x F ₀	1,51 x F ₀	-	-	0,16 0.35	✓		
MS200 - 035 - A	35,1 1.38	118,2 4.65	83,1 3.27	1,36 x F ₀	1,60 x F ₀	-	-	0,19 0.42	✓		
MS200 - 047 - A	47 1.85	142 5.59	95 3.74	1,39 x F ₀	1,65 x F ₀	-	-	0,20 0.44	✓		
MS200 - 060 - A	60,5 2.38	172 6.77	111,5 4.39	1,39 x F ₀	1,66 x F ₀	-	-	0,23 0.51	✓		
MS200 - 077 - A	77 3.03	205 8.07	128 5.04	1,41 x F ₀	1,69 x F ₀	-	-	0,26 0.57	✓		
MS200 - 097 - A	97 3.82	245 9.65	148 5.83	1,43 x F ₀	1,72 x F ₀	-	-	0,30 0.66	✓		
MS200 - 122 - A	122 4.80	295 11.61	173 6.81	1,45 x F ₀	1,75 x F ₀	-	-	0,34 0.75	✓		

WARNING REMOVE SKUDO Upside down mounting

HOW TO ORDER

(10 pcs) MS200-047-A-YW

Drop-In Bottom mount