





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

SEALING	ROD SEAL
DESIGN	RETAINING GROOVE DESIGN

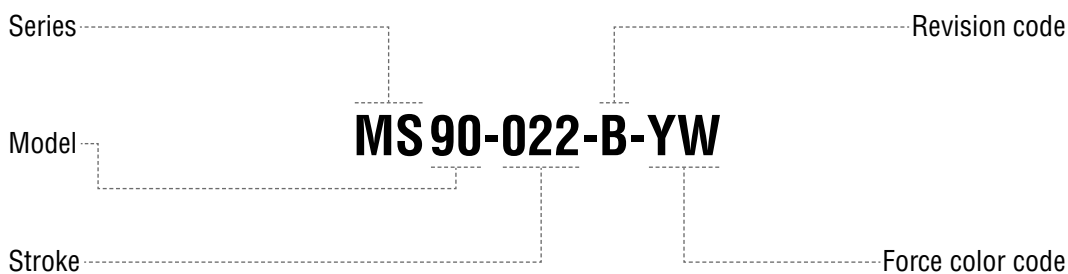
1	Rod (nitrited superfinished)	5	Rod seal
2	Body	6	Force color code
3	O-ring	7	Rod wiper
4	Valve		

RANGE CHART

Model	Body Ø		Stroke Cu		Initial force F0		 OSAS	 USAS	 OPAS	 SKUDO
	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	✓	✓	✓	✓



HOW TO ORDER



Available versions



MS 90-022-B-YW
Standard code



Self contained

Il nuovo codice sarà fornito solo ad esaurimento del vecchio - The new code will be supplied only when the old will be out of stock - Der neue Kode wird nur angegeben, wenn der alte nicht mehr lieferbar ist - Le nouveau code sera fourni uniquement lorsque le vieux stock sera écoulé - El nuevo código será suministrado sólo cuando se agoten las existencias del antiguo - O novo código irá ser fornecido apenas quando o antigo esgotar stock

ACTIVE SAFETY



OPAS



SKUDO

* $F_{1i} =$

Isothermal end force at 100% Cu



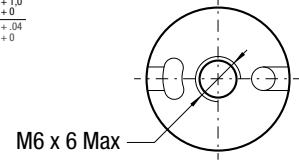
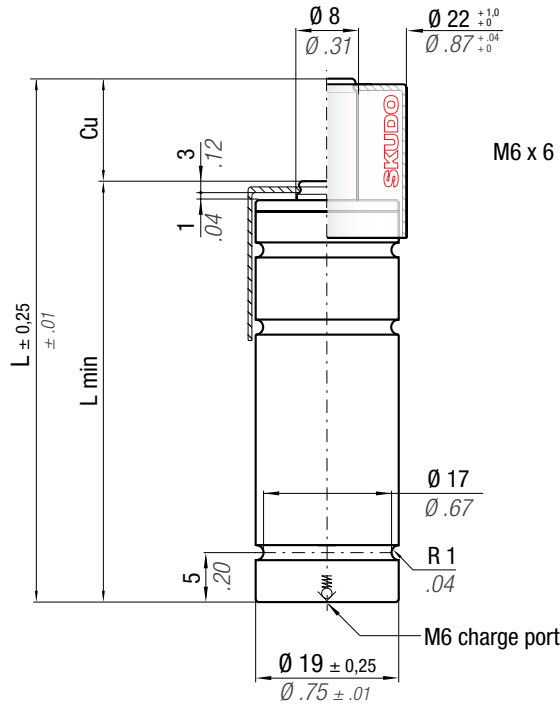
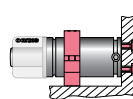
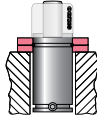
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** $F_{1p} =$

Polytropic 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



N ₂		0 - 80 °C 32 - 176 °F	ΔP ± 0,33 %/°C	P max 180 bar 2610 psi	P min 10 bar 145 psi	S 0,50 cm ² 0,078 in ²	SPM ~ 100 - 150 (at 20°C)	Max Speed 1,8 m/s 70,8 in/s	Maintenance kit Disposable
CODE	NEW	Cu	L	L min	F _{1i} *	F _{1p} **	V ₀	PED 2014/68/EU	
PHASING OUT from 05/2019		mm inch	mm inch	mm inch	daN lb	daN lb	cm ³ in ³	~Kg ~lb	✓
MS90 - 007 - A - ...	MS90 - 007 - B - ...	7 0.28	62 2.44	55 2.17	1.19 x F ₀	1.35 x F ₀	2,6 0.16	0,07 0.15	✓
MS90 - 010 - A - ...	MS90 - 010 - B - ...	9,7 0.38	67,4 2.65	57,7 2.27	1.22 x F ₀	1.40 x F ₀	3,1 0.19	0,08 0.18	✓
MS90 - 012 - A - ...	MS90 - 012 - B - ...	12 0.47	72 2.83	60 2.36	1.24 x F ₀	1.44 x F ₀	3,5 0.21	0,08 0.18	✓
MS90 - 022 - A - ...	MS90 - 022 - B - ...	22 0.87	92 3.62	70 2.76	1.30 x F ₀	1.52 x F ₀	5,5 0.34	0,09 0.20	✓
MS90 - 035 - A - ...	MS90 - 035 - B - ...	35,1 1.38	118,2 4.65	83,1 3.27	1.33 x F ₀	1.57 x F ₀	8,1 0.49	0,11 0.24	✓
MS90 - 047 - A - ...	MS90 - 047 - B - ...	47 1.85	142 5.59	95 3.74	1.34 x F ₀	1.60 x F ₀	10,4 0.63	0,12 0.26	✓
MS90 - 060 - A - ...	MS90 - 060 - B - ...	60,5 2.38	172 6.77	111,5 4.39	1.35 x F ₀	1.61 x F ₀	13,4 0.82	0,14 0.31	✓
MS90 - 077 - A - ...	MS90 - 077 - B - ...	77 3.03	205 8.07	128 5.04	1.36 x F ₀	1.62 x F ₀	16,6 1.01	0,15 0.33	✓
MS90 - 097 - A - ...	MS90 - 097 - B - ...	97 3.82	245 9.65	148 5.83	1.37 x F ₀	1.64 x F ₀	20,6 1.26	0,17 0.37	✓
MS90 - 122 - A - ...	MS90 - 122 - B - ...	122 4.80	295 11.61	173 6.81	1.37 x F ₀	1.65 x F ₀	25,5 1.56	0,20 0.44	✓

WARNING REMOVE SKUDO

Upside down mounting

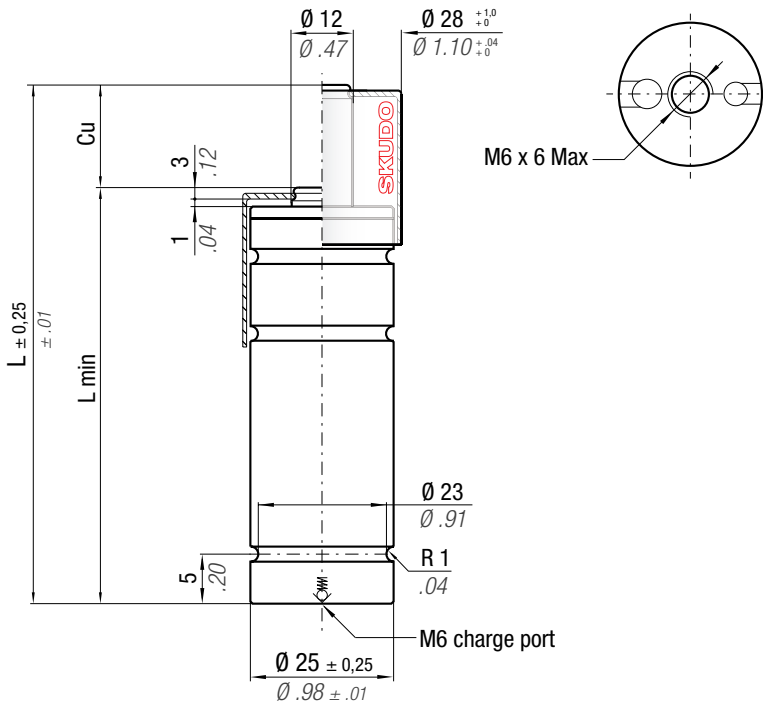


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INSTALLATION GUIDELINE

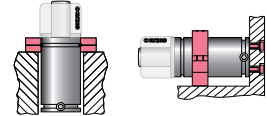
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Il nuovo codice sarà fornito solo ad esaurimento del vecchio - The new code will be supplied only when the old will be out of stock - Der neue Kode wird nur angegeben, wenn der alte nicht mehr lieferbar ist - Le nouveau code sera fourni uniquement lorsque le vieux stock sera écoulé - El nuevo código será suministrado sólo cuando se agoten las existencias del antiguo - O novo código irá ser fornecido apenas quando o antigo esgotar stock

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

Force color code	P		Fo 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



ACTIVE SAFETY



OSAS



USAS



OPAS



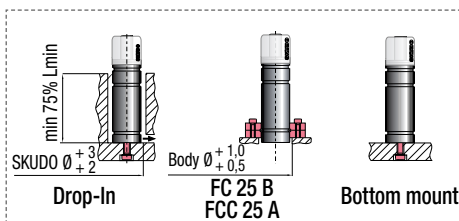
SKUDO

		ΔP ± 0,33 %/°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 70.8 in/s	Maintenance kit Disposable
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CODE PHASING OUT from 05/2019	NEW	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	
MS200 - 007 - A - ...	MS200 - 007 - B - ...	7	0.28	62	2.44	55	2.17	1.25 x FO		1.43 x FO		4,6	0.28	0,13	0.29	✓
MS200 - 010 - A - ...	MS200 - 010 - B - ...	9,7	0.38	67,4	2.65	57,7	2.27	1.30 x FO		1.50 x FO		5,6	0.34	0,13	0.29	✓
MS200 - 012 - A - ...	MS200 - 012 - B - ...	12	0.47	72	2.83	60	2.36	1.32 x FO		1.54 x FO		6,5	0.40	0,14	0.31	✓
MS200 - 022 - A - ...	MS200 - 022 - B - ...	22	0.87	92	3.62	70	2.76	1.39 x FO		1.65 x FO		10,2	0.62	0,16	0.35	✓
MS200 - 035 - A - ...	MS200 - 035 - B - ...	35,1	1.38	118,2	4.65	83,1	3.27	1.43 x FO		1.72 x FO		15,1	0.92	0,19	0.42	✓
MS200 - 047 - A - ...	MS200 - 047 - B - ...	47	1.85	142	5.59	95	3.74	1.45 x FO		1.75 x FO		19,6	1.20	0,20	0.44	✓
MS200 - 060 - A - ...	MS200 - 060 - B - ...	60,5	2.38	172	6.77	111,5	4.39	1.46 x FO		1.78 x FO		24,7	1.51	0,23	0.51	✓
MS200 - 077 - A - ...	MS200 - 077 - B - ...	77	3.03	205	8.07	128	5.04	1.47 x FO		1.80 x FO		30,8	1.88	0,26	0.57	✓
MS200 - 097 - A - ...	MS200 - 097 - B - ...	97	3.82	245	9.65	148	5.83	1.48 x FO		1.81 x FO		38,3	2.34	0,30	0.66	✓
MS200 - 122 - A - ...	MS200 - 122 - B - ...	122	4.80	295	11.61	173	6.81	1.49 x FO		1.82 x FO		47,7	2.91	0,34	0.75	✓

WARNING REMOVE SKUDO

Upside down mounting



HOW TO ORDER

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INSTALLATION GUIDELINE

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