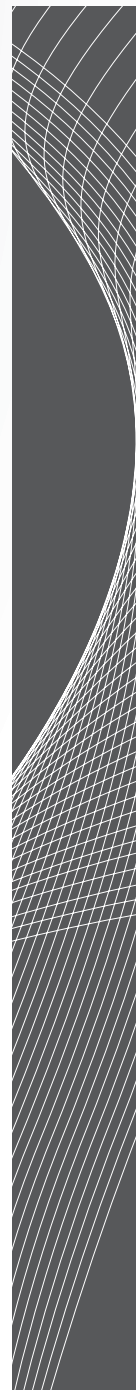
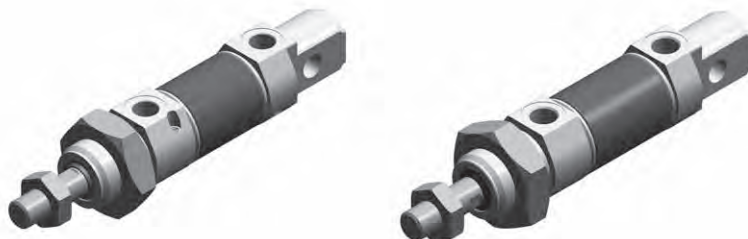


MICRO SERIES
CYLINDERS ISO 6432



CYLINDERS ISO 6432

General Information



Micro cylinders are available in 2 variants, U type and S type. U type is ISO 6432 compliant with front or rear mounting. S type are front fixing only and therefore are non ISO standard. The stainless steel cylinder tube offers excellent resistance to cor-

rosion and a low friction surface for the piston. These standard products are rugged and hard wearing.

There are single and double acting versions, through rod options, and cushioning options for larger U type cylinders.

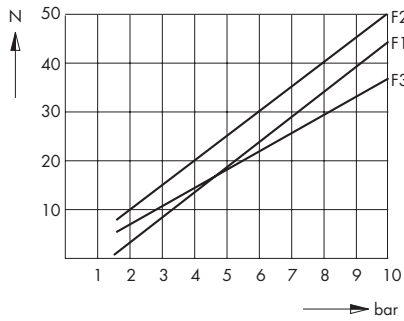
Technical Data

Piston diameters:	Ø 8, 10, 12, 16 ,20, 25 (mm)						
Ports:	Ø 8, Ø 10, Ø 12, Ø 16 = M5; Ø 20, Ø 25 = G1/8						
Cylinder covers:	Aluminium						
Piston rod:	Cr-Ni steel						
Cylinder tube:	Cr-Ni steel						
Assembling design:	Chamfered						
Cushioning:	Plastic						
Operating temperature:	-20 °C to + 70 °C						
Seals:	Perbunan, oil-resistant						
Operating medium:	Compressed air, prepared						
Lubricant:	Shell Tellus Oil C10 or equivalent						
Mounting:	Version "S": threaded mounting on cylinder front cover Version "U": universal mounting (with threads on nose end, and on rear trunnion)						
Pressure range:	Ø [mm]	8	10	12	16	20	25
	Single acting [bar]	2.0 - 10	1.5 - 10	1.5 - 10	1.5 - 10	1.5 - 10	1.5 - 10
	Double acting [bar]	1.5 - 10	1.5 - 10	1.0 - 10	1.0 - 10	0.5 - 10	0.5 - 10
Spring force:	Designed for return of piston, not for any coupled mass						
	Area ratio of piston with double acting cylinders (due to reduction of piston rod sections)						
	Ø 8	4:3	Ø 12	4:3			
	Ø 10	6:5	Ø 16 - 25	7:6			
Length of cushioning:	Ø 16	13.5 mm					
	Ø 20, Ø 25	16.0 mm					
Stroke tolerance:	Max. + 1.5 mm						
Stroke limitation:	If possible external (for optimum life)						

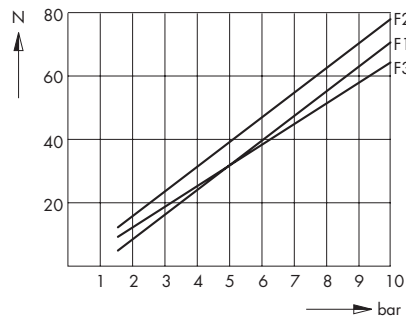
Static Cylinder Characteristics

The cylinder characteristics should be multiplied by a factor of 0.5 - 0.7 for the dynamic behaviour.

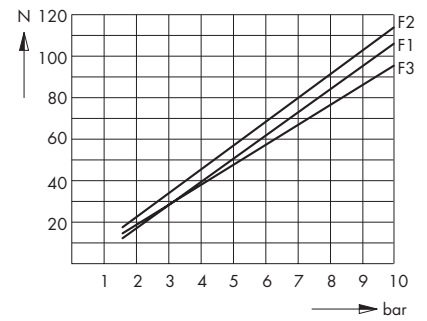
Ø 8 mm



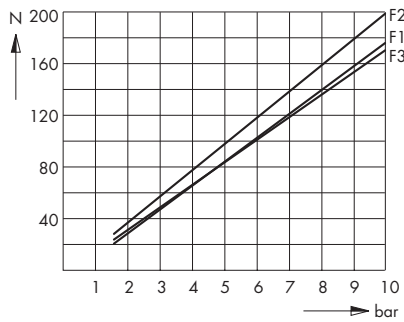
Ø 10 mm



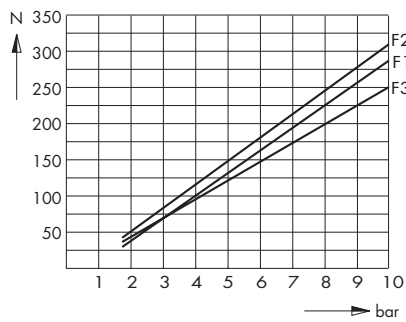
Ø 12 mm



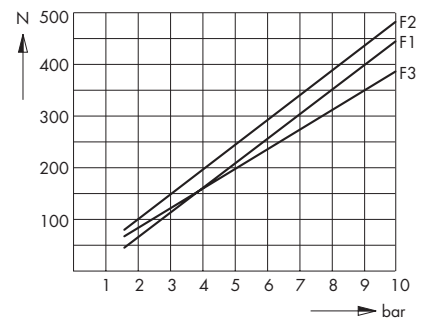
Ø 16 mm



Ø 20 mm



Ø 25 mm



F1 = single acting cylinders

F2 = double acting cylinders in forward stroke

F3 = double acting cylinders in return stroke

Order Code

Order specifications		23.	15	1.	050
Piston diameter					
	Ø 8	23			
	Ø 10	24			
	Ø 12	25			
	Ø 16	26			
	Ø 20	27			
	Ø 25	28			
Design and Type					
	single acting, type S		15		
	single acting, type U		19		
	double acting, type S		25		
	double acting, type U		29		
	double acting, type U with cushioning (only for Ø16, Ø20, Ø25)		24		
	through piston rod		60		
Version					
	without magnetic piston			blank	
	with magnetic piston			1	
Stroke					
	mm				xxx

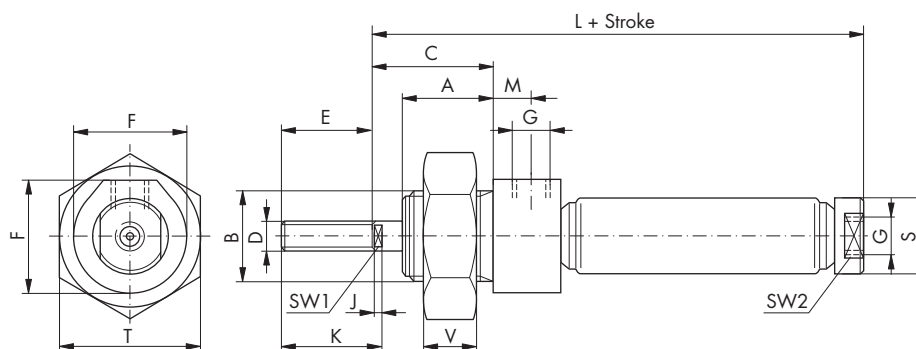
Special versions	SP.7	yy.	zzzz*
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yy = piston diameter code number
 *zzzz = project number (assigned by factory)

Micro-Cylinder - Type S

Acting: Single acting
Double acting

Cushioning: none



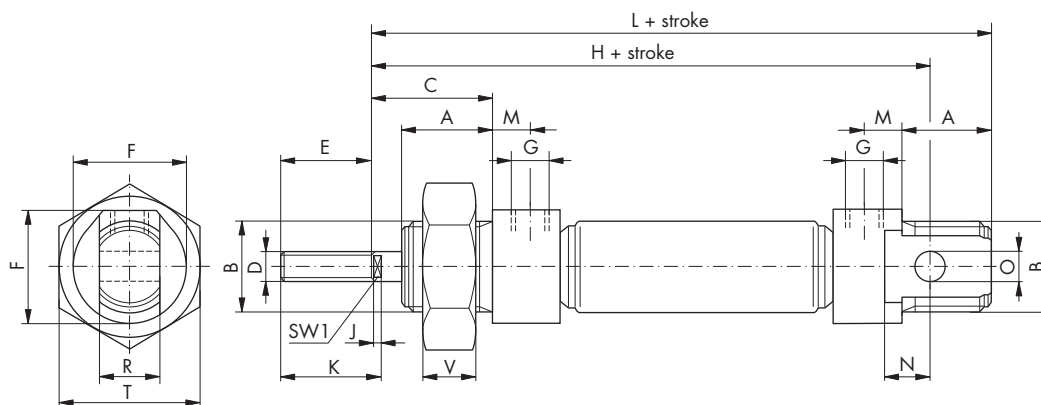
Ø	A	B	C	D	E	F	G	J	K	L	M	Ø	T	V	SW1	SW2	Single acting Max stroke available	Double acting Max stroke available
8	12	M12x1.25	16	M4	12	15	M5	-	12	55	5	10	19	7	-	8	50 mm	150 mm
10	12	M12x1.25	16	M4	12	15	M5	-	12	56	5	12	19	7	-	10	50 mm	150 mm
12	17	M16x1.5	22	M6	16	20	M5	3.5	19.5	64	5	14	24	8	5	12	50 mm	300 mm
16	17	M16x1.5	22	M6	16	20	M5	3.5	19.5	74	5	18	24	8	5	16	50 mm	350 mm
20	20	M22x1.5	24	M8	20	27	G1/8	4	23	82	8	22	32	10	7	19	50 mm	500 mm
25	22	M22x1.5	28	M10x1.25	22	27	G1/8	4	26	90	8	27	32	10	9	24	50 mm	500 mm

Note: The cylinder is supplied with assembled rod nut, the single acting cylinder is threaded only on rear side.

Micro-Cylinder - Type U (no cushioning)

Acting: Single acting
Double acting

Cushioning: none



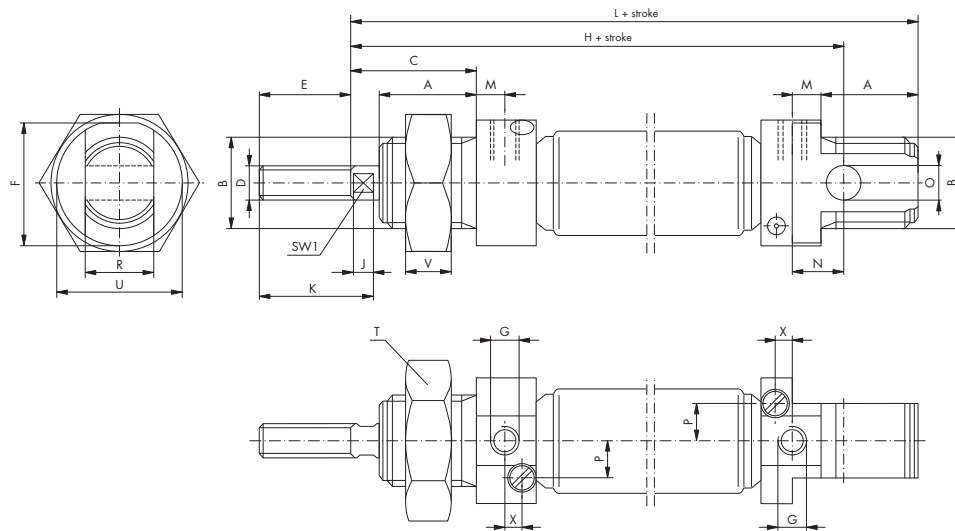
Ø	A	B	C	D	E	F	G	H	J	K	L	M	N	O _(H9)	R _(d13)	T	V	SW1	Single acting Max stroke available	Double acting Max stroke available
8	12	M12x1.25	16	M4	12	15	M5	64	-	12	72	5	6	4	8	19	7	-	50 mm	150 mm
10	12	M12x1.25	16	M4	12	15	M5	64	-	12	72	5	6	4	8	19	7	-	50 mm	150 mm
12	17	M16x1.5	22	M6	16	20	M5	75	3.5	19.5	85	5	9	6	12	24	8	5	50 mm	300 mm
16	17	M16x1.5	22	M6	16	20	M5	82	3.5	19.5	95	5	9	6	12	24	8	5	50 mm	350 mm
20	20	M22x1.5	24	M8	20	27	G1/8	95	4	23	110	8	12	8	16	32	10	7	50 mm	500 mm
25	22	M22x1.5	28	M10x1.25	22	27	G1/8	104	4	26	119	8	12	8	16	32	10	9	50 mm	500 mm

Note: The cylinder is supplied with assembled rod nut, the single acting cylinder is threaded only on rear side.

Micro-Cylinder - Type U with Cushioning

Acting: Double acting

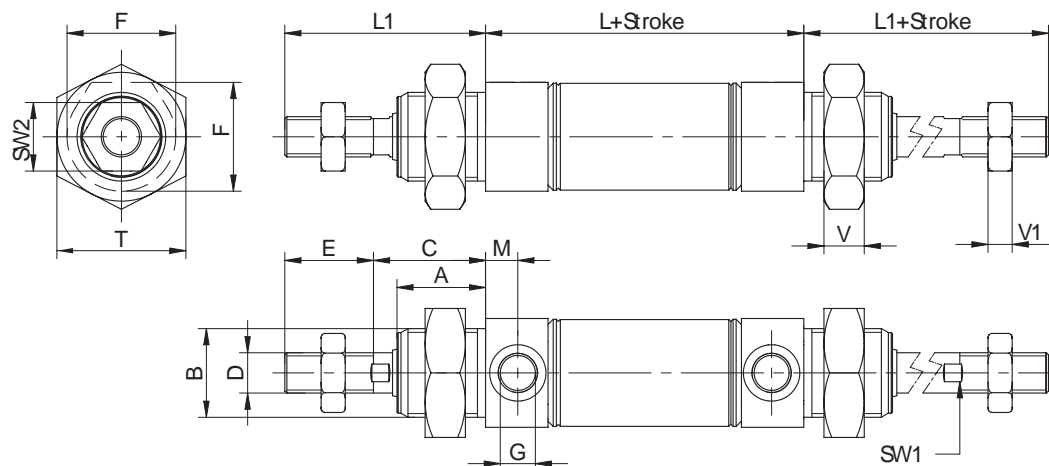
Cushioning: yes



Ø	A	B	C	D	E	F	G	H	J	K	L	M	N	O _(H9)	P	R _(d13)	T	U	V	X	SW1	Double acting Max stroke available
16	17	M16x1.5	22	M6	16	21	M5	82	3.5	19.5	95	5	9	6	6.5	12	24	22	8	3	5	350 mm
20	20	M22x1.5	24	M8	20	27	G1/8	95	4	22.5	110	5	12	8	8	16	32	27	10	4	7	500 mm
25	22	M22x1.5	28	M10x1.25	22	27	G1/8	104	4	26	119	5	12	8	9	16	32	27	10	4	9	500 mm

Note: The cylinder is supplied with assembled rod nut

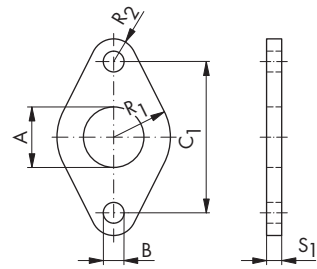
Micro-Cylinder - Through Piston Rod



Ø	A	B	C	D	E	F	G	J	L	L1	SW1	SW2	V	V1
8	12	M12x1.25	16	M4	12	15	M5	-	44	28	-	7	7	3
10	12	M12x1.25	16	M4	12	15	M5	-	44	28	-	7	7	3
12	17	M16x1.5	22	M6	16	20	M5	3.5	46	38	5	10	8	4
16	17	M16x1.5	22	M6	16	20	M5	3.5	56	38	5	10	8	4
20	20	M22x1.5	24	M8	20	27	G1/8	4	66	44	7	13	10	5
25	22	M22x1.5	28	M10x1.25	22	27	G1/8	4	69	50	9	17	10	8

Mounting Flange

Materials: steel, black surface

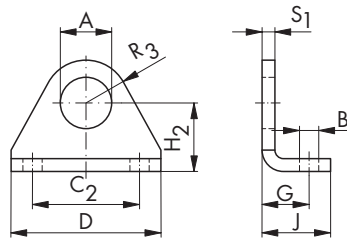


Note: Single mounting brackets or flanges are suitable for stroke lengths up to 50mm only.

Code	Ø	A	B	C1	R ₁	R ₂	S1
23.305	8, 10	12	4.5	30	11	5	3
26.305	12, 16	16	5.5	40	15	6	4
28.305	20, 25	22	6.6	50	20	8	5

Mounting Bracket

Materials: steel, black surface



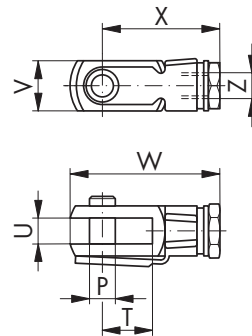
Note: Single mounting brackets or flanges are suitable for stroke lengths up to 50mm only.

Code	Ø	A	B	C ₂	D	G	H ₂	J	R ₃	S ₁
23.312	8, 10	12	4.5	25	35	11	16	16	10	3
26.302	12, 16	16	5.5	32	42	14	20	20	12.5	4
28.302	20, 25	22	6.6	40	54	17	25	25	18	5

Clevis

Clevis materials: steel, galvanised

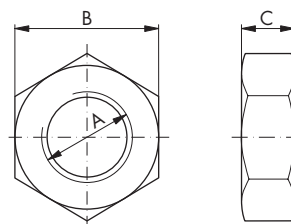
Safety bolt materials: steel, phosphorised



Code	Ø	T	U	P	V	W	X	Z
23.314	8, 10	8	4	4	8	23.2	18.2	M4
19.008.07	12, 16	12	6	6	12	31	24	M6
19.008.08	20	16	8	8	16	42	32	M8
18.008.01	25	20	10	10	20	52	40	M10x1.25

Fixing Nut

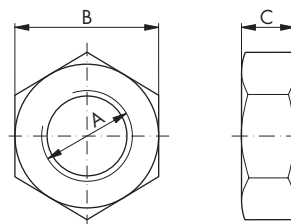
Materials: steel, galvanised



Code	Ø	A	B	C
JB2200007	8, 10	M12x1.25	19	7
JB2200002	12, 16	M16x1.5	24	8
JB5270001	20, 25	M22x1.5	32	10

Rod Nut

Materials: steel, galvanised



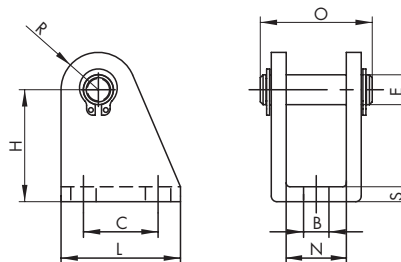
Code	Ø	A	B	C
JB2200025	8, 10	M4	7	3
JB2200051	12, 16	M6	10	4
JB2200022	20	M8	13	5
JB2200001	25	M10x1.25	17	8

Trunnion

Trunnion materials: steel, black surface

Bolt materials: steel, corrosion-resistant

Safety materials: steel, phosphorised



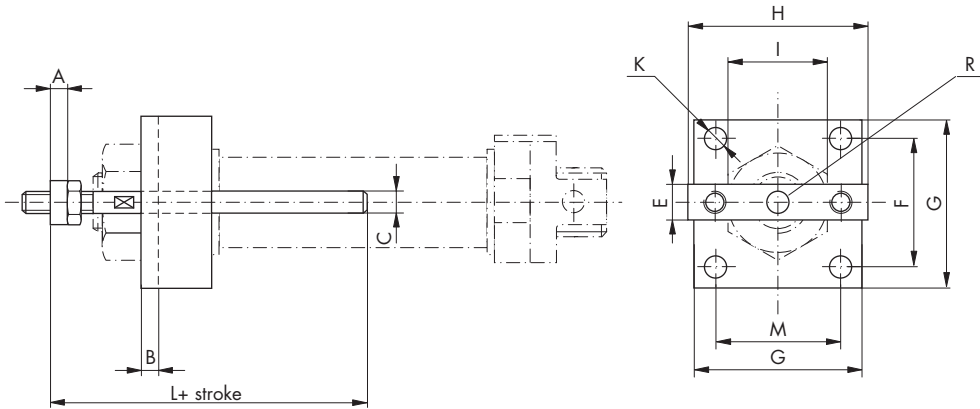
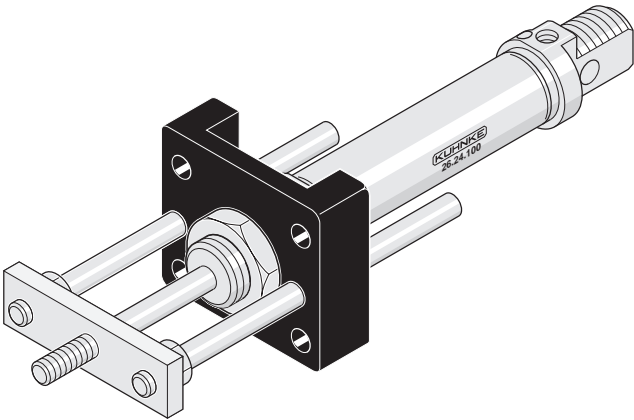
Code	Ø	B	E	C	H	L	N	O	R	S _(±0.2)
23.313	8, 10	4.5	4	12.5	24	20	8.1	17	5	2.5
26.313	12, 16	5.5	6	16	27	25	12.1	23	7	3
28.313	20, 25	6.8	8	20	30	32	16.1	29.5	10	4

Accessories Linear Guide Units - Mini Torsion Protection

These compact and sturdy units fit easily to the micro cylinder range. They provide protection from torsion to the rod extension due to radial loading and have a wide range of applications. Select from a range of extensions for each size of micro cylinder.

Materials

- Flange base (control frame): die-cast aluminium
- Bearing: sintered bronze sleeves
- Mounting plate: brass
- Control rails: stainless steel, corrosion resistant, polished

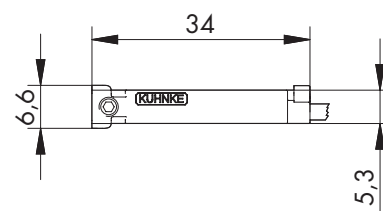


Ø	A	B	C	E	F	G	H	I	K	L + Stroke	M	Z	R
8, 10	4	4	4	8	25	35	33	19	5	30	25	17	M4
12. 16	6	5	6	12	31	45	43	24	6	40	33	19	M6
20	6	5	6	16	40	55	52	32	7	52	42	22	M8
25	65	5	6	16	40	55	52	32	7	52	42	22	M10 x 1.25

Order Code

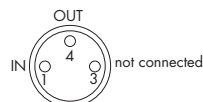
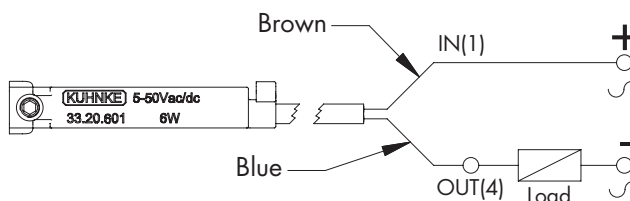
Order specifications		23.	315.	100
Piston diameter				
	Ø 8 - Ø 10	23		
	Ø 12 - Ø 16	26		
	Ø 20	27		
	Ø 25	28		
Design & type				
	Linear Guide Units		315	
Standard Stroke				
	50 mm			050
	100 mm			100
	160 mm			160
	200 mm (not available for Ø8 - Ø10)			200

Position Transmitter



Position Transmitter REED (2 pole)

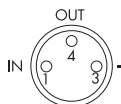
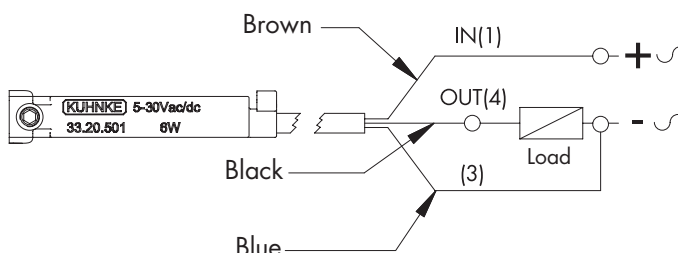
Contact type: N.O.
 Cable: 2 x 0.14 mm²
 Switching capacity: max 6 W
 Switching voltage: 5-50 V AC/DC
 Switching current: max 200 mA
 Voltage drop: 3 V
 Switching time: 0.6 ms
 Switching rate: max 400 Hz
 Service life: 10⁷ operations, depending on the load
 Ambient temperature range: -5°C to +75°C
 Protection class: IP67
 Status indicator: LED
 Housing material: plastic



Code	Description
33.20.601	with cable L = 2000 mm
33.20.681	socket M8, cable L = 300 mm

Position Transmitter REED (3 pole)

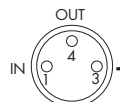
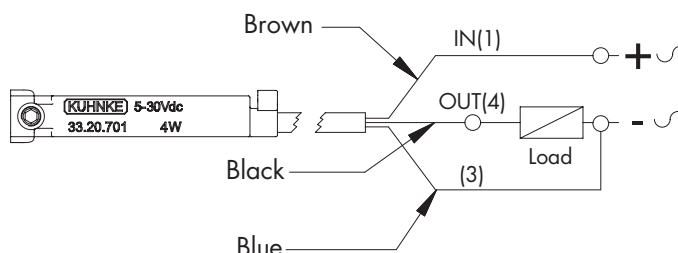
Contact type: N.O.
 Cable: 3 x 0.14 mm²
 Switching capacity: max 6 W
 Switching voltage: 5-30 V AC/DC
 Switching current: max 500 mA
 Voltage drop: 0.1 V
 Switching time: 0.6 ms
 Switching rate: max 400 Hz
 Service life: 10⁷ operations, depending on the load
 Ambient temperature range: -5°C to +75°C
 Protection class: IP67
 Status indicator: LED
 Housing material: plastic



Code	Description
33.20.501	with cable L = 2000 mm
33.20.581	socket M8, cable L = 300 mm

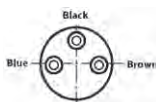
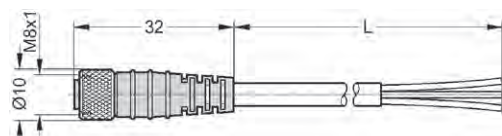
Electronic Position Transmitter

Contact Type: PNP (N.O.)
 Cable: 3 x 0.14 mm²
 Switching capacity: max 4 W
 Switching voltage: 5-30 V DC
 Switching current: max 200 mA
 Voltage drop: 0.7 V
 Switching time: 0.8 μs
 Switching rate: max 1 kHz
 Service life: 10¹¹ operations, depending on the load
 Ambient temperature range: -5°C to +75°C
 Protection class: IP67
 Status indicator: LED
 Housing material: plastic



Code	Description
33.20.701	with cable L = 2000 mm
33.20.781	socket M8, cable L = 300 mm

M8 Connectors (female-straight)



Code	Description
PL08B3.V250.30	cable L = 3000 mm
PL08B3.V250.50	cable L = 5000 mm

Fastening-Clamps for Position Transmitter

Fastening-clamps for electronic position transmitter

Ø	Code
8	33.008.23.01
10	33.008.24.01
12	33.008.25.01
16	33.008.26.01
20	33.008.27.01
25	33.008.28.01

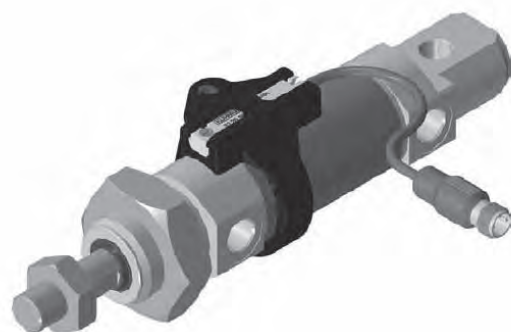
Note: Mounting screw included.



Sensor and Fastening-Clamps Assembly

STEP 1: Place the fastening clamps around the cylinder and fix the screw

STEP 2: Insert the position transmitter inside the clamp



Piston Rod Lock Device

Pressure: 3 - 6 bar

Temperature: -5°C to +80°C

Materials: anodised aluminium (body)

Lock Version: by static type friction (stopped piston rod)

Operating position: any

Fluid: filtered air (dry)

Lubrication: not necessary



Single jaw



Double jaw

Jaw	Cylinder Diameter	Force (N)	Code
Single jaw	12	180	MA7.012
	16	180	MA7.016
	20	350	MA7.020
	25	350	MA7.025
Double jaw	20	490	KB5.3001.020
	25	490	KB5.3001.025



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