

"ISO 15552" ULTRA-LOW FRICTION CYLINDER Ø 32÷63 mm

A typical ultra-low friction cylinder is generally used as an oscillating or tensioning cylinder.

It is single acting, in the sense that compressed air is normally fed into one of the two chambers only. An external force acts on the other side.

Metal Work's ultra-low friction cylinder is designed as a double-acting one, which means the compressed air can be fed into the rear or either the front chamber. They are built to comply with ISO 15552 and are available with or without a magnet.

A through-rod version is not available.

These cylinders are always non-cushioned.

The gaskets are made of NBR.

A full range of accessories is available.



TECHNICAL DATA	NBR
Operating pressure	max 10 bar (1 MPa - 145 psi)
Temperature range	-10 to +80 (non-magnetic cylinder) -10 to +70 (magnetic cylinder)
Fluid	Unlubricated air
Bore	Ø 32; Ø 40; Ø 50; Ø 63
Standard stroke	1 to 1200
Design	Heads with Top Tite screws
Versions	Double-acting magnetic, Double-acting non-magnetic (always "no stick slip" cylinder)
Sensor magnet	All the versions with or without magnet
Inrush pressure	Ø 32 = 0.08 Ø 40 = 0.06 Ø 50 = 0.05 Ø 63 = 0.04
Forces generated at 6 bar thrust/retraction	See GENERAL TECHNICAL DATA PAGE 9
Weights	See GENERAL TECHNICAL DATA PAGE 9
Note on use	There may be leakage between the two chambers in the presence of low pressures (up to 1 bar)

COMPONENTS

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② HEAD: die cast aluminium
- ③ PISTON ROD GASKET: NBR
- ④ GUIDE BUSHING: steel strip with bronze insert
- ⑤ BARREL: drawn anodised calibrated aluminium
- ⑥ PISTON GASKET: NBR
- ⑦ HALF-PISTON: aluminium alloy
- ⑧ MAGNET: plastoferrite
- ⑨ GUIDE RING: special technopolymer
- ⑩ BUFFER + Static O-rings: NBR
- ⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
- ⑫ SCREWS: Tap Tite for assembly

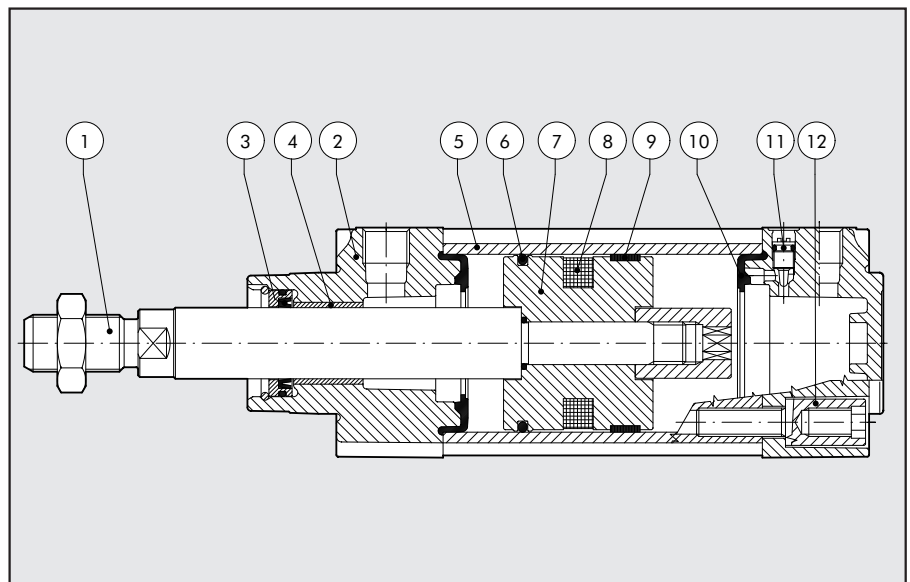
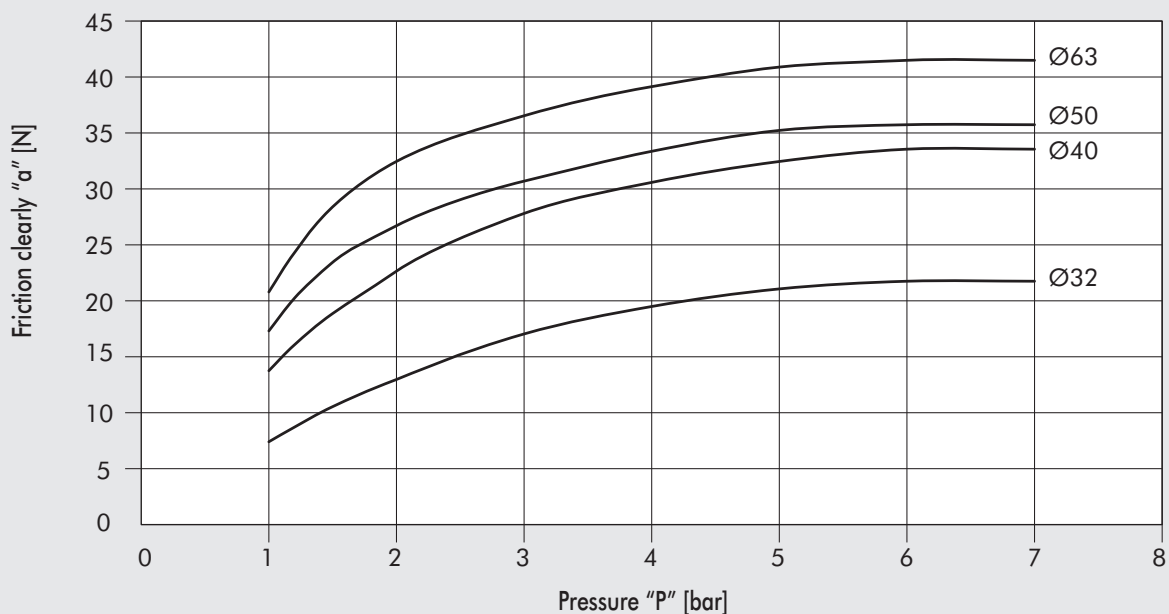




DIAGRAM OF THE CLEAN FRICTIONS

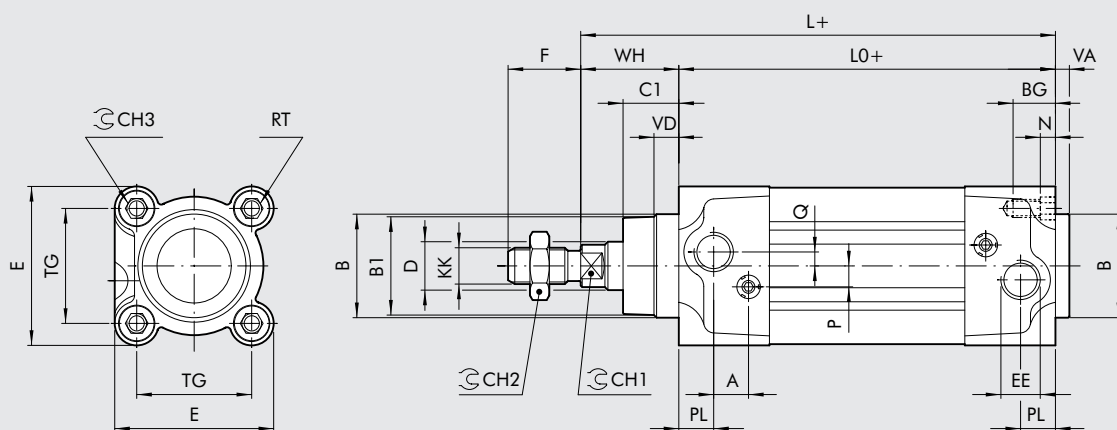


The clean friction values "a" in N have been obtained by inserting in the back chamber the pressure "P" in bars, and simultaneously by detecting the necessary force "F" in N to make the rod re-enter, applying the following formula:

$$a = F - [(P \times S) \times 9.81]$$

where "S" is the thrust section in cm²

DIMENSIONS

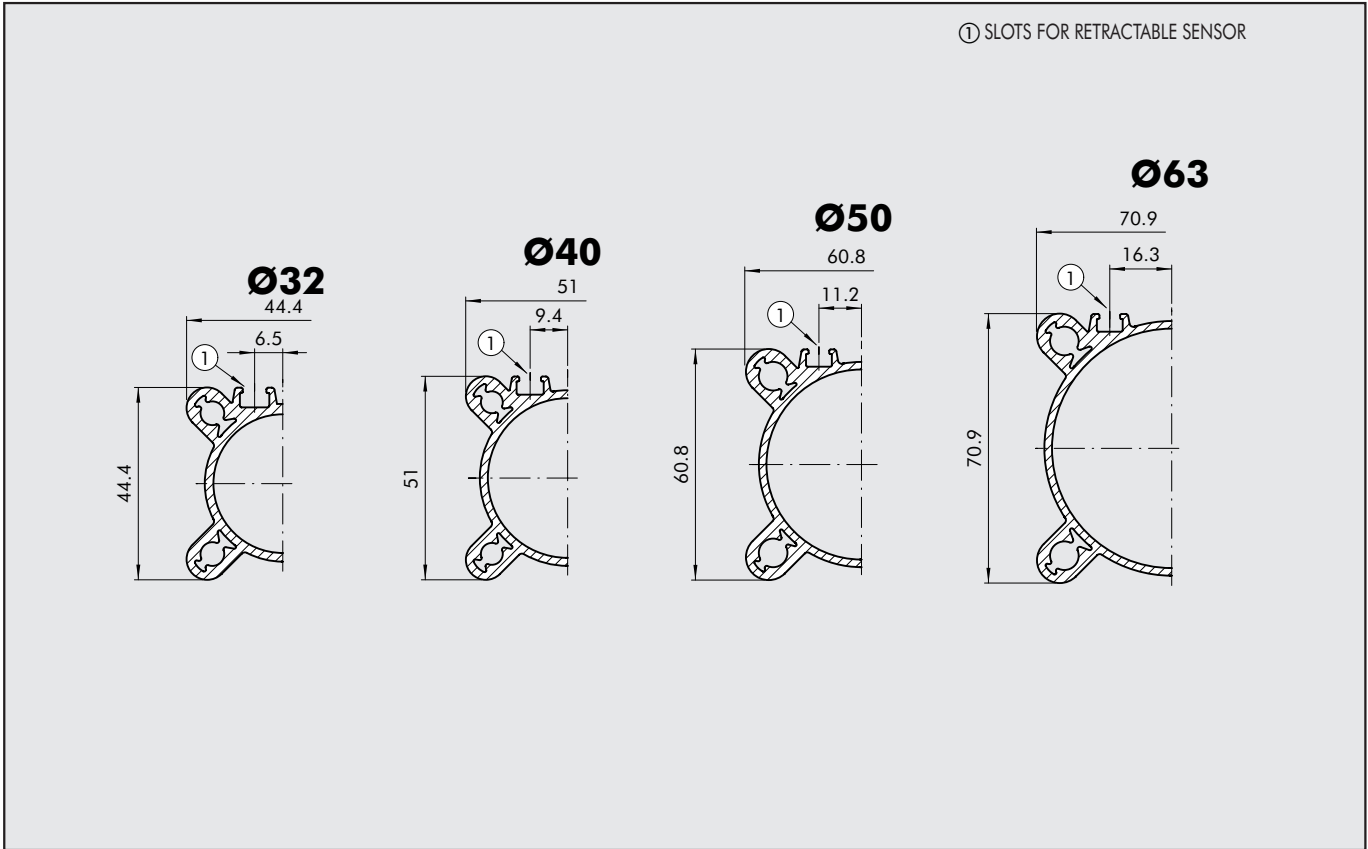


123

+ = ADD THE STROKE

Ø	PL	VD	A	B	B ₁	WH	C ₁	CH ₁	CH ₂	CH ₃	KK	D	TG	VA	F	EE	RT	E	L	L ₀	ZM	BG	N	P	Q
32	10	6.5	10	30	28	26	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8	M6	46	120	94	146	14.5	4.5	6	4
40	12	8	10	35	33	30	20	13	19	6	M12x1.25	16	38	4	24	G1/4	M6	54	135	105	165	14.5	4.5	6	4
50	14	13	10	40	38	37	25	17	24	8	M16x1.5	20	46.5	4	32	G1/4	M8	64.5	143	106	180	17.5	5.5	6	6
63	16	14	10	45	40	37	25	17	24	8	M16x1.5	20	56.5	4	32	G3/8	M8	75.5	158	121	195	17.5	5.5	6	6

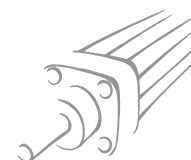
BARREL CROSS SECTION



KEY TO CODES

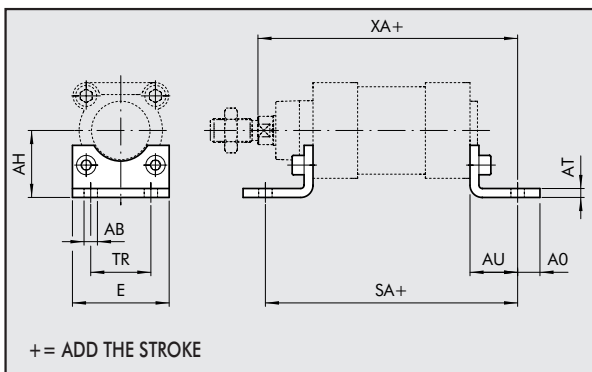
CYL	1	2	3	3	3	2	0	1	0	0	A	N
	TYPE			BORE			STROKE				CONFIGURATION	
	123 Ultra-low friction			3 Double-acting	32		from 1 to 1200 mm				A C45 chromed rod, aluminium piston rod	N NBR gaskets
				5 Double-acting, not magnetic	40						Z Stainless steel piston rod and nut aluminium piston	
					50							
					63							

ALL the cylinders are no stick slip.
 ALL the cylinders are non-cushioned.
 Ultra-low friction cylinders are not available in the through-rod version.



ACCESSORIES: FIXINGS

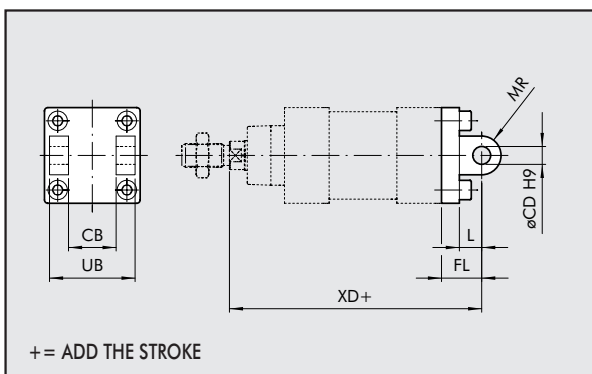
FOOT - MODEL A



Code	∅	∅ AB	AH	AO	AT	AU	TR	E	XA	SA	Weight [g]
W0950322001	32	7	32	11	4	24	32	45	144	142	76
W0950402001	40	9	36	15	4	28	36	52	163	161	100
W0950502001	50	9	45	15	4	32	45	65	175	170	162
W0950632001	63	9	50	15	6	32	50	75	190	185	266

Note: Individually packed with 2 screws.

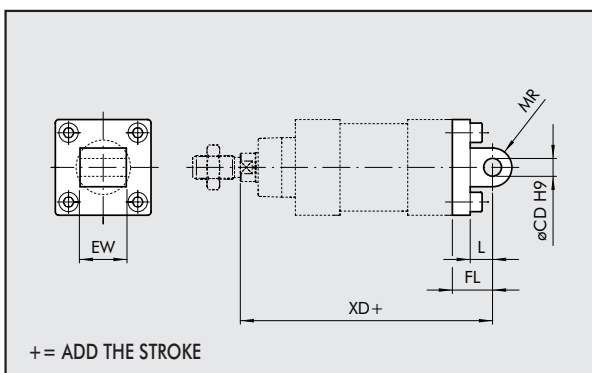
FEMALE HINGE - MODEL B



Code	∅	UB	CB	FL	∅CD	XD	MR	L	Weight [g]
W0950322003	32	45	26	22	10	142	10	10	116
W0950402003	40	52	28	25	12	160	12	10	160
W0950502003	50	60	32	27	12	170	12	12	252
W0950632003	63	70	40	32	16	190	16	12	394

Note: Supplied with 4 screws, 4 washers, 2 snap-rings, 1 pin.

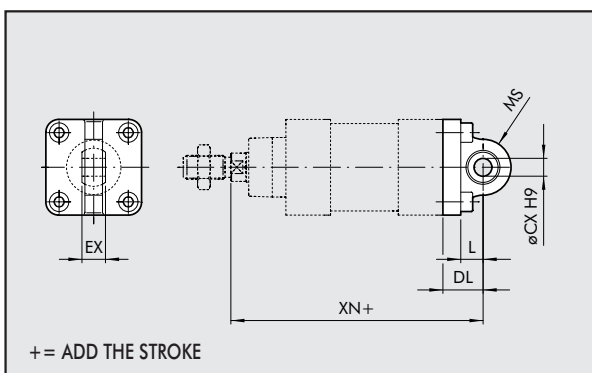
MALE HINGE - MODEL BA



Code	∅	EW	FL	MR	∅ CD	L	XD	Weight [g]
W0950322004	32	26	22	11	10	12	142	94
W0950402004	40	28	25	13	12	15	160	124
W0950502004	50	32	27	13	12	15	170	220
W0950632004	63	40	32	17	16	20	190	316

Note: Supplied with 4 screws, 4 washers

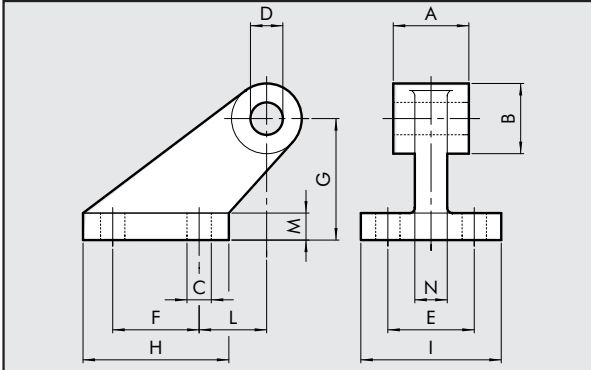
ARTICULATED MALE HINGE - MODEL BAS



Code	∅	DL	MS	L	XN	CX	EX	Weight [g]
W0950322006	32	22	16	12	142	10	14	106
W0950402006	40	25	19	15	160	12	16	142
W0950502006	50	27	19	15	170	12	16	236
W0950632006	63	32	24	20	190	16	21	336

Note: Supplied with 4 screws, 4 washers

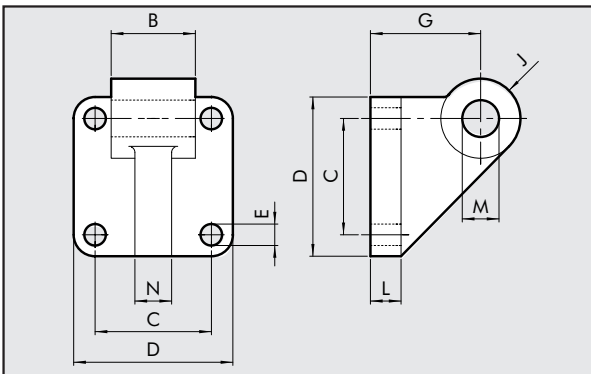
CETOP HINGE FOR MODEL B - MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440

Note: Supplied with 4 screws, 4 washers

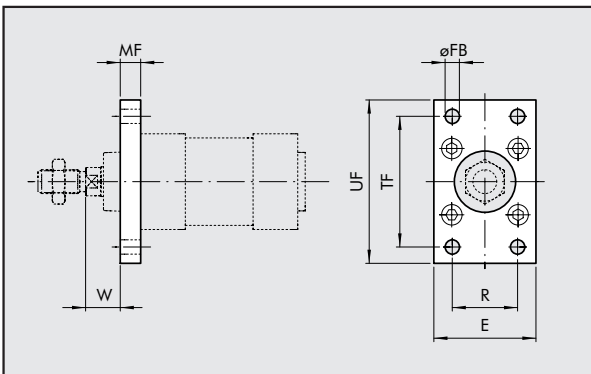
ISO HINGE FOR MODEL B - MODEL GS



Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	25.5	32.5	45	7	32	11	10	10	10	106
W0950402108	40	27.5	38	52	7	36	13	10	12	12	138
W0950502108	50	31.5	46.5	65	9	45	13	12	12	12	252
W0950632108	63	39.5	56.5	75	9	50	17	12	16	15	350

Note: Supplied with 4 screws, 4 washers

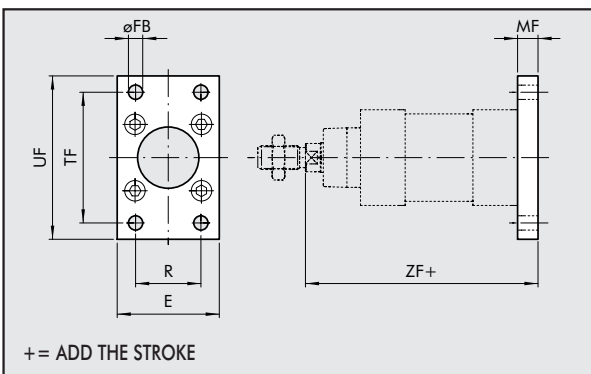
FRONT FLANGE - MODEL C



Code	Ø	TF	UF	E	MF	R	ØFB	W	Weight [g]
W0950322002	32	64	80	50	10	32	7	16	246
W0950402002	40	72	90	55	10	36	9	20	290
W0950502002	50	90	110	65	12	45	9	25	522
W0950632002	63	100	120	75	12	50	9	25	670

Note: Supplied with 4 screws.

REAR FLANGE - MODEL C



Code	Ø	TF	UF	E	MF	R	ØFB	ZF	Weight [g]
W0950322002	32	64	80	50	10	32	7	130	246
W0950402002	40	72	90	55	10	36	9	145	290
W0950502002	50	90	110	65	12	45	9	155	522
W0950632002	63	100	120	75	12	50	9	170	670

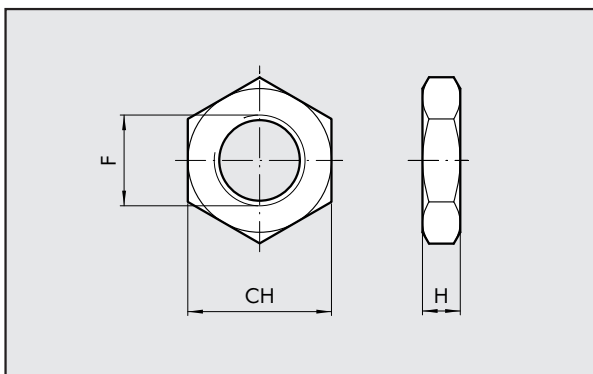
Note: Supplied with 4 screws.

+ = ADD THE STROKE



ROD NUT - MODEL S

Code Ø F H CH Wheigt [g]

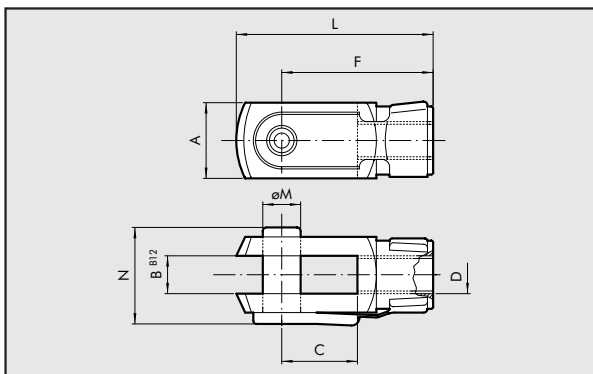


0950322010	32	M10x1.25	6	17	6
0950402010	40	M12x1.25	7	19	12
0950502010	50/63	M16x1.5	8	24	20

Note: Individually packed.

FORK MODEL GK-M

Code Ø Ø M C B A L F D N Wheigt [g]

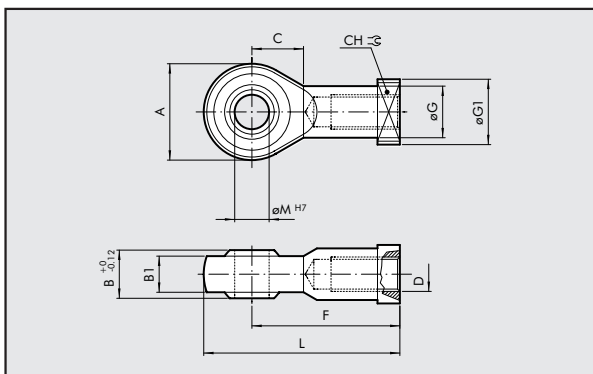


W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
W0950402020	40	12	24	12	24	62	48	M12x1.25	32	148
W0950502020	50	16	32	16	32	83	64	M16x1.5	40	340
W0950502020	63	16	32	16	32	83	64	M16x1.5	40	340

Note: Individually packed.

ROD EYE - MODEL GA-M

Code Ø Ø M C B1 B A L F D Ø G CH Ø G1 Wheigt [g]

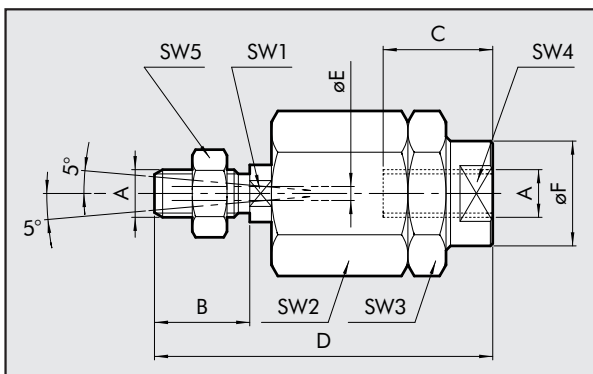


W0950322025	32	10	15	10.5	14	28	57	43	M10x1.25	15	17	19	78
W0950402025	40	12	17	12	16	32	66	50	M12x1.25	17.5	19	19	116
W0950502025	50	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950502025	63	16	22	15	21	42	85	64	M16x1.5	22	22	22	226

Note: Individually packed

SELF ALIGNING ROD COUPLER - MODEL GA-K

Code Ø A B C D ØF ØE SW₁ SW₂ SW₃ SW₄ SW₅ Wheigt [g]

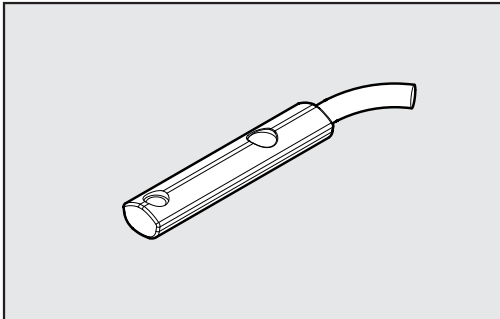


W0950322030	32	M10x1.25	20	20	71	22	4	12	30	30	19	17	216
W0950402030	40	M12x1.25	24	20	75	22	4	12	30	30	19	19	220
W0950502030	50	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950502030	63	M16x1.5	32	32	103	32	4	20	41	41	30	24	620

Note: Individually packed

ACCESSORIES: MAGNETIC SENSORS

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE

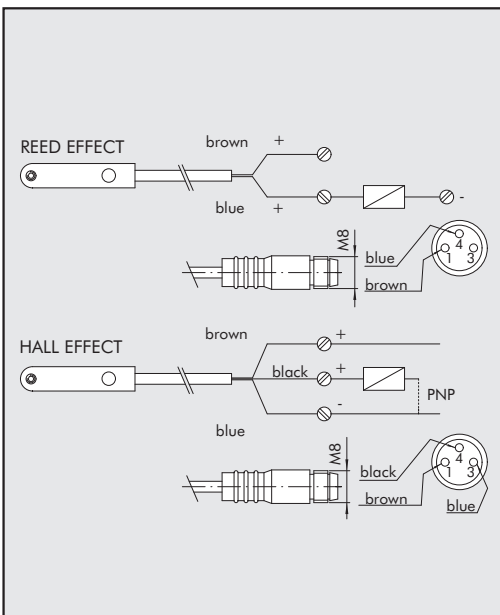


Code Description

W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952125556	HALL N.O. SENSOR, VERTICAL INSERTION 2m ATEX

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

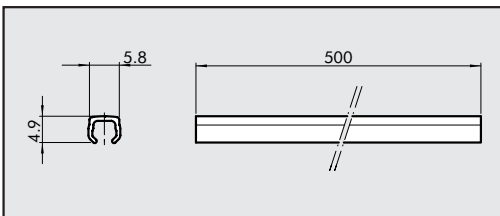
WIRING DIAGRAM



TECHNICAL DATA

	Reed	Effetto Hall	Effetto Hall
Type of contact	N.O.	N.O.	N.O.
Switch	-	PNP	PNP
Supply voltage (Ub)	V 10 ÷ 30 AC/DC	10 ÷ 30 DC	18 ÷ 30 DC
Power	W 3 (peak valve=6)	3	≤ 1.7
Voltage variation	-	≤ 10% di Ub	≤ 10% di Ub
Voltage drop	V -	≤ 2	≤ 2.2
Input current	mA -	≤ 10	≤ 10
Output current	mA ≤ 100	≤ 100	≤ 70
Switching frequency	Hz ≤ 400	≤ 5000	1000
Short-circuit protection	-	Yes	Yes
Over-voltage suppression	-	Yes	Yes
Polarity inversion protection	-	Yes	Yes
EMC	EN 60 947-5-2	EN 60 947-5-2	EN 60 947-5-2
LED display	Yellow	Yellow	Yellow
Magnetic sensitivity	2,8 mT ±25%	2,8 mT ±25%	2.6
Repeatability	≤ 0,1 mT	≤ 0,1 mT	≤ 0,1 (Ub and ta fixed)
Degree of protection (EN 60529)	IP 67	IP 67	IP 68, IP 69K
Vibration and shock resistance	30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C -25 ÷ +75	-25 ÷ +75	-20 ÷ +45
Sensor capsule material	PA66 + PA6I/6T	PA66 + PA6I/6T	PA
2.5m/2m connecting cable	PVC; 2 x 0,12 mm ²	PVC; 3 x 0,14 mm ²	PVC; 3 x 0,12 mm ²
Connecting cable with M8x1	Polyurethane; 2 x 0,14 mm ²	Polyurethane; 3 x 0,14 mm ²	-
Wire NO.	2	3	3

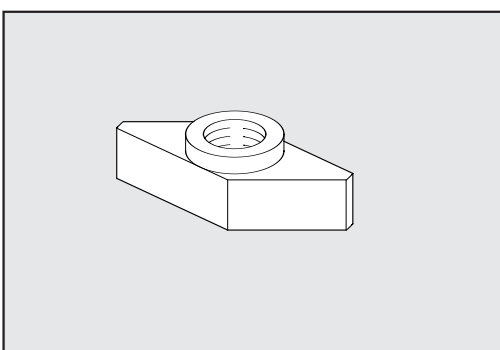
STRIP



Code	Description
W0950000160	SLOT STRIP 500 mm

Note: The code corresponds to 1 piece.

KIT FOR CYLINDER ASSEMBLY WITH SENSOR SLOTS



Code Description Weight [g]

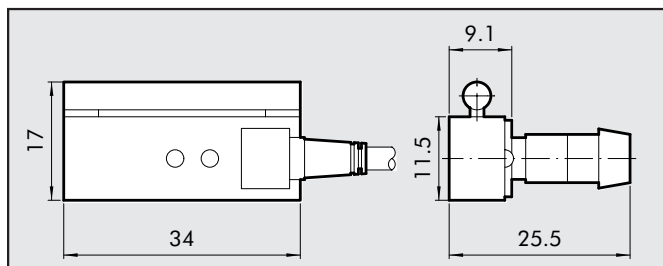
0950003001	ACC. M4 T-SLOTTED FIXING PLATE	1
0950003002	ACC. M3 T-SLOTTED FIXING PLATE	1

Note: Individually packed

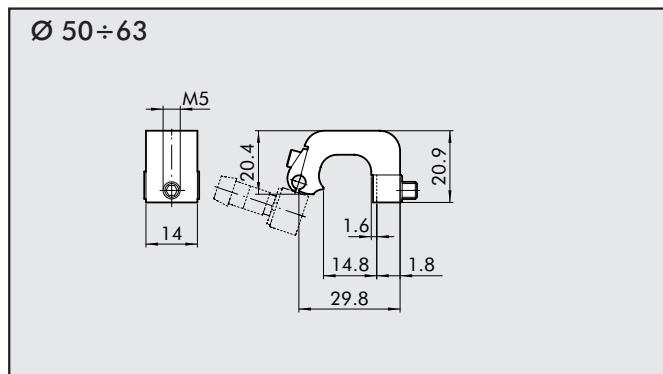
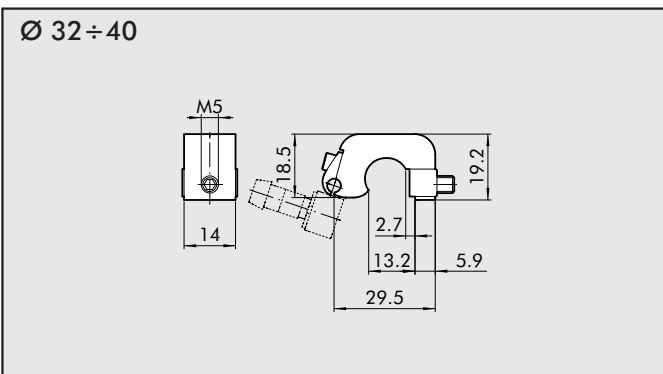


SENSORS MOD. DSM

Code	Model
W0950000201	REED SENSOR ACC. DSM2 - C525 HS
W0950000222	E. HALL PNP SENSOR ACC. DSM3-N225
W0950000232	E. HALL NPN SENSOR ACC. DSM3-M225



SENSOR BRACKET



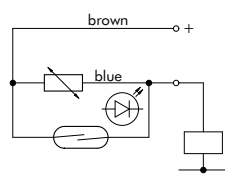
Code	Description
W0950000711	BRACKET ACC. D.32-40 DST 80

Code	Description
W0950000712	BRACKET ACC. D.50-63 DST 81

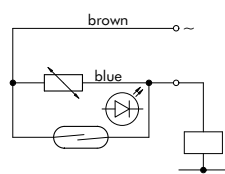
TECHNICAL DATA

Type		REED+VARISTOR+LED 2 wires	HALL VERSION PNP/NPN 3 wires
Contact		REED+VARISTOR+LED NO	HALL EFFECT NO PNP/NPN
Max AC/DC voltage	V	3 to 48 (DC): 3 to 220 (AC)	6-24 V DC
Max current at 25°C	mA	500	250
Power with inductive load	VA	10	-
Power with resistive load	Watt	50	6
Switch-on time	m sec	1.2	0.8
Switch-off time	m sec	0.1	3
Switch-on point	Gauss	110	15
Switch-off point	Gauss	95	8
Operating life	-	10 ⁷ impulses	10 ⁹ impulses
Contact resistance		0.1	-
Cable length	m	2.5	2.5
Cable cross section	mm ²	0.35	0.35
Cable material		Soft PVC	Soft PVC
Circuit			

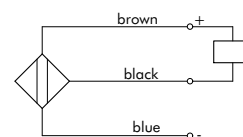
DC



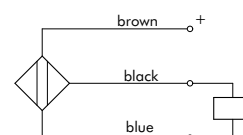
AC



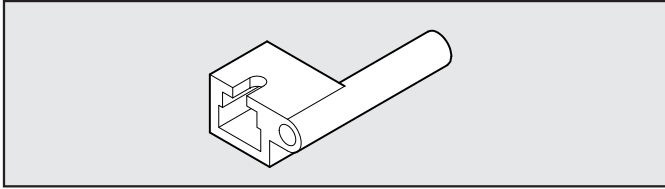
Version NPN



Version PNP



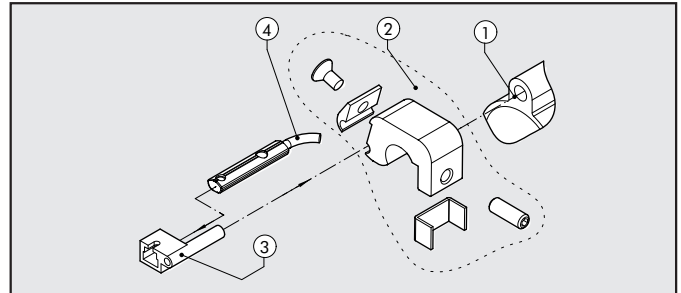
ADAPTOR FOR RETRACTABLE SENSOR



Code	Description
W0950001001	Adaptor DSS005 for DST/ST brackets

ASSEMBLY DIAGRAM

- ① ISO 15552 cylinder with traditional barrel
- ② Sensor bracket mod. DST (Ø32÷125)
- ③ Adaptor
- ④ Retractable sensor with insertion from above



GENERALE TECHNICAL DATA

FORCES GENERATED DURING THRUST AND TRACTION (THEORETICAL)

Cylinder bore D mm	Piston rod diameter d mm	Motion	Useful area cm ²	Thrust and traction force in daN depending on the operating pressure in bar.									
				1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar
32	12	spinta	8.04	8.0	16.1	24.1	32.2	40.2	48.3	56.3	64.3	72.4	80.4
		trazione	6.91	6.9	13.8	20.7	27.6	34.6	41.5	48.4	55.3	62.2	69.1
40	16	spinta	12.57	12.6	25.1	37.7	50.3	62.8	75.4	88.0	100.5	113.1	125.7
		trazione	10.56	10.6	21.1	31.7	42.2	52.8	63.3	73.9	84.4	95.0	105.6
50	20	spinta	19.63	19.6	39.3	58.9	78.5	98.2	117.8	137.4	157.1	176.7	196.3
		trazione	16.49	16.5	33.0	49.5	66.0	82.5	99.0	115.5	131.9	148.4	164.9
63	20	spinta	31.17	31.2	62.3	93.5	124.7	155.9	187.0	218.2	249.4	280.6	311.7
		trazione	28.03	28.0	56.1	84.1	112.1	140.2	168.2	196.2	224.2	252.3	280.3

WEIGHT OF CYLINDERS

"ISO 15552" ultra-low-friction		
Ø	Single-rod	
	Weight [g] Stroke=0	Weight [g] each mm
32	504	1.64
40	774	2.09
50	1245	3.02
63	1697	3.36

NOTES
