STAINLESS STEEL CYLINDERS

TecnAir®

DRIVE & CONTROL TECHNOLOGY

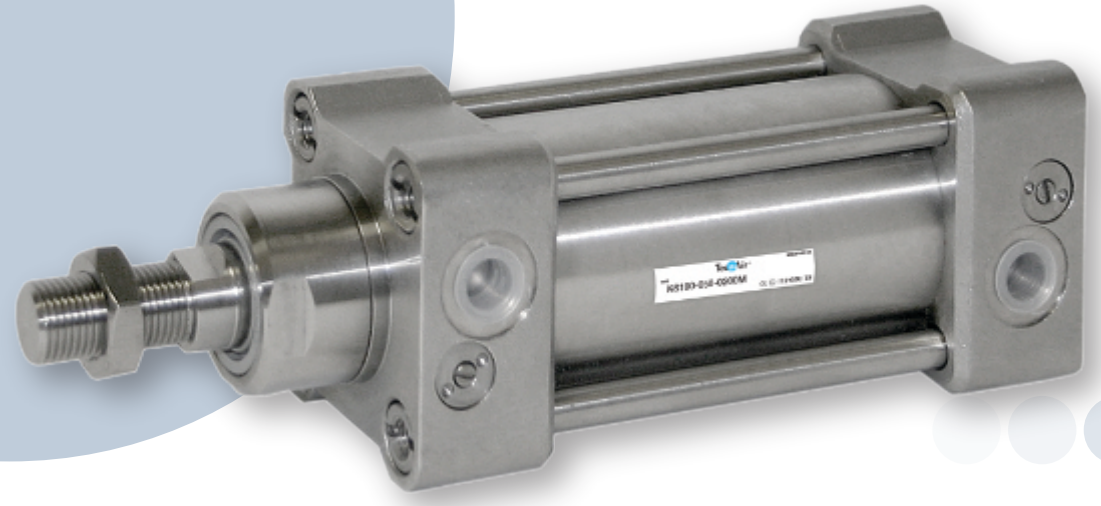
- 316L Stainless Steel
- Heavy duty
- Clean-line
- ATEX Certified

www.tecnair.co.uk

KS Series

ISO 15552

AISI 316L Stainless Steel Cylinders



ATEX CE Ex **II 2 Gc IIC T5**
II 2Dc T100°C

Features

Long Life Cylinder

KS series cylinders are manufactured from AISI 316L Stainless Steel and are available with ATEX certification, upon request. The cylinders are tie-rod construction for added strength.

Removable Nose Bearing

The front end cap is manufactured in two parts, which include the main housing and a screwed front nose assembly. The piston rod seals, bearing and wiper seal are all housed within the front nose assembly, which can be removed from the main endcap body enabling quick and easy maintenance without disassembling the cylinder.

Unique Scraper Bush

The front end cap incorporates a wiper seal manufactured from Polyurethane, which has been developed for chemical and food industries. This device is highly resilient against abrasive substances and chemical attack.

Clean Line Castings

The castings have been produced without external casting cavities in order to eliminate contamination traps. The front end cap housing is machined from solid stainless steel bar to a smooth finish, for maximum strength and with clean lines. The rear end cap incorporates a stainless steel disc to enable the end cap to be used for through-rod as well as standard cylinders, and also ensures a clean line finish.

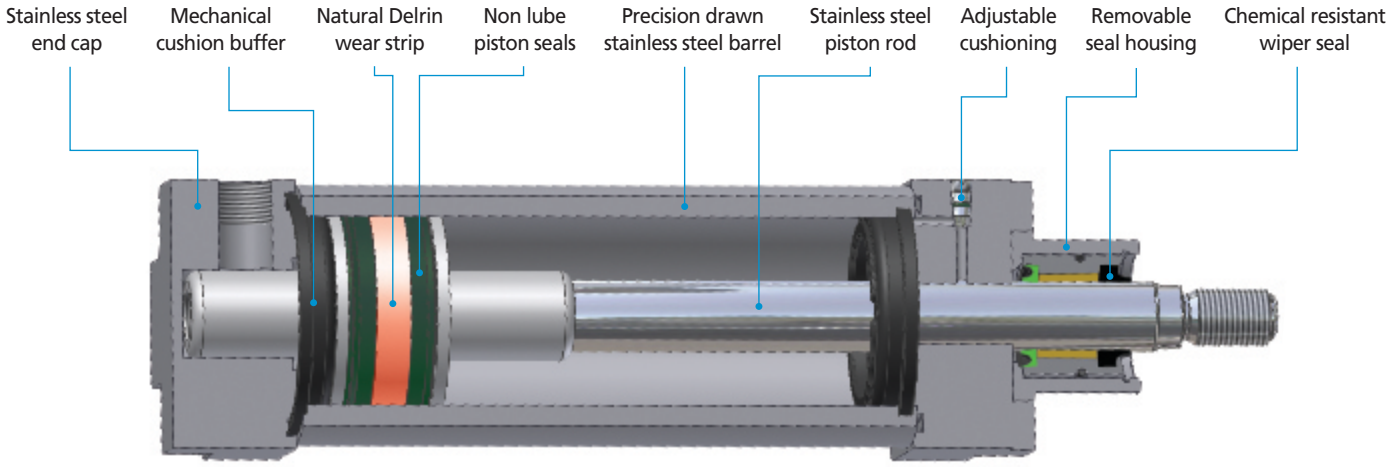
ATEX Certified

KS cylinders can be ordered with ATEX certification according to directive 2014/34/EU

TECHNICAL DATA

Type	Stainless steel cylinder
Bore (mm)	32 / 40 / 50 / 63 / 80 / 100 / 125 / 160 / 200
Mounting	ISO 15552
Stroke	2.5 metre (max)
Operating Pressure	0.5 - 10 bar
Fluid	Filtered 50µ. Use with or without lubrication
Operating temperature	-20°C to 80°C
Cushioning	Mechanical & adjustable pneumatic cushioning
Seals	NBR/Polyurethane (other seals available upon request)

CYLINDER SECTION



CODIFICATION KEY

K	S	1	0	0	0	5	0	0	2	5	0	M
1		2			3			4				5

1 Series

KS = Stainless Steel 316 Cylinder

2 Type

100 = Double Acting Stainless Steel 316
101 = Double Acting Stainless Steel 316 Through Rod

3 Bore (mm)

032 = 32mm
040 = 40mm
050 = 50mm
063 = 63mm
080 = 80mm
100 = 100mm
125 = 125mm
160 = 160mm
200 = 200mm

4 Stroke

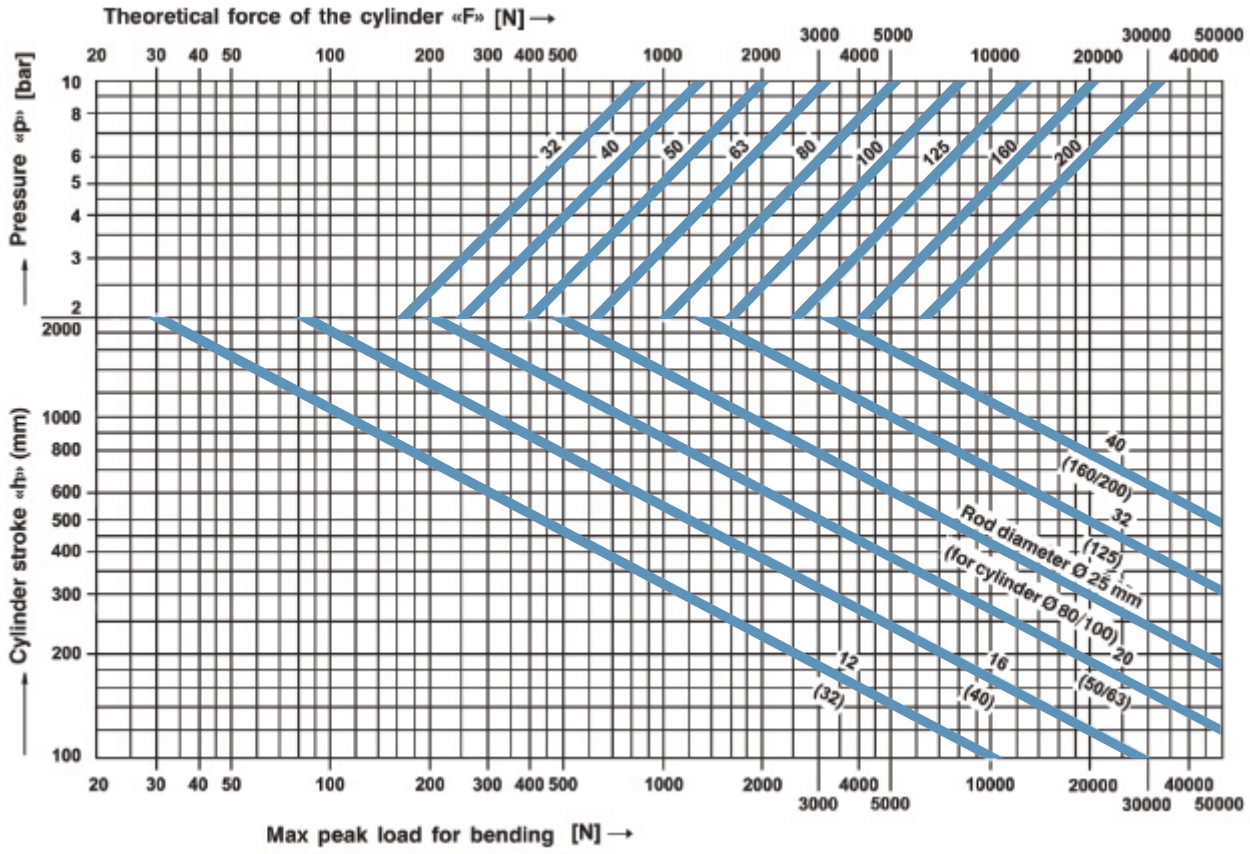
Max = 2.5 metres

5 Options

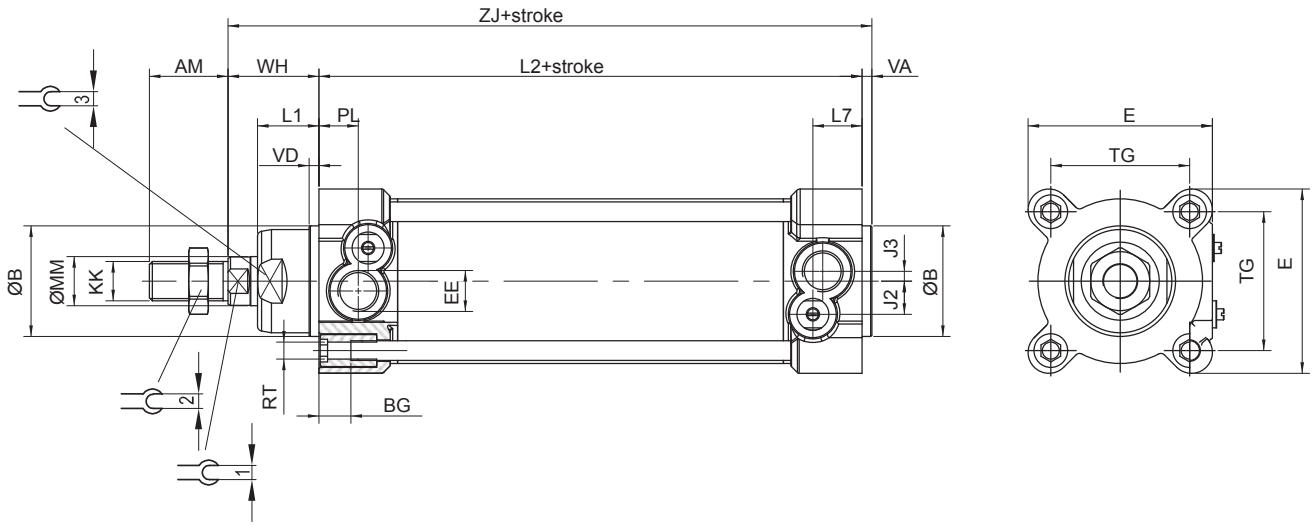
M = Magnetic (supplied as standard)

THEORETICAL FORCE TABLE (N)

Cylinder Bore (mm)	Working surface (mm2)		Working pressure in bar 2	4	6	8	10	Cushion length (mm)
32	Thrust	804	161	322	482	643	804	20
	Traction	691	138	276	414	553	691	
40	Thrust	1256	251	502	754	1005	1256	22
	Traction	1056	211	422	633	844	1055	
50	Thrust	1962	393	785	1178	1570	1963	25
	Traction	1649	330	660	990	1320	1650	
63	Thrust	3116	623	1246	1869	2493	3116	25
	Traction	2802	560	1120	1680	2240	2800	
80	Thrust	5024	1005	2010	3014	4019	5024	35
	Traction	4533	907	1814	2722	3629	4536	
100	Thrust	7850	1570	3140	4710	6280	7850	35
	Traction	7359	1472	2944	4416	5888	7360	
125	Thrust	12266	2453	4906	7359	9812	12266	35
	Traction	11462	2294	4588	6882	9176	11470	
160	Thrust	20096	4019	8038	12058	16077	20096	48
	Traction	18840	3770	7540	11310	15080	18850	
200	Thrust	31400	6280	12560	18840	25120	31400	48
	Traction	30144	6029	12058	18086	24115	30144	



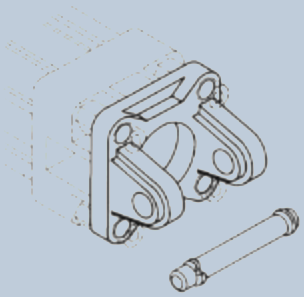
DIMENSIONAL INFORMATION



Ø (mm)	AM	B Ø d11	BG	E	EE	J2	J3	KK	L1	L2	H
32	22	30	15	47	G1/8	6	5	M10x1,25	20	94	8
40	24	35	15	52	G1/4	7.5	5	M12x1,25	22	105	6
50	32	40	16	65	G1/4	9.5	7,5	M16x1,5	26	106	8
63	32	45	16	75	G3/8	13.5	4	M16x1,5	25	121	8
80	40	45	17	95	G3/8	13.5	6	M20x1,5	32	128	10
100	40	55	17	115	G1/2	15	6	M20x1,5	38	138	10
125	54	60	21	140	G1/2	17	8	M27x2	40	160	14
160	72	65	24	180	G3/4	17	15	M36x2	50	180	14
200	72	75	24	220	G3/4	17	15	M36x2	65	180	14

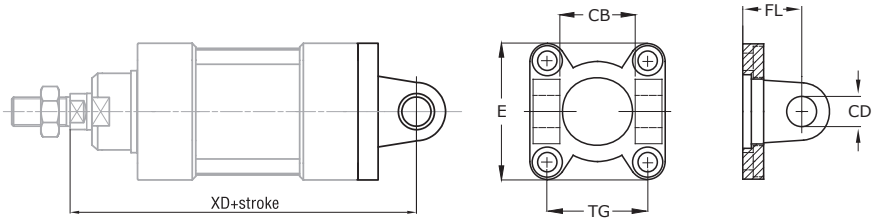
Ø (mm)	L7	MM Ø f7	PL	RT	TG	VA	VD	WH	ZJ	1	2	3
32	17.5	12	10	M6	32,5	4	4	26	124	10	17	27
40	21.5	16	15	M6	38	4	4	30	139	13	19	32
50	20	20	15	M8	46,5	4	4	37	147	17	24	36
63	20	20	16	M8	56,5	4	4	37	162	17	24	38
80	27	25	20	M10	72	4	4	46	178	22	30	42
100	28.5	25	23.5	M10	89	4	4	51	193	22	30	50
125	31.5	32	23.5	M12	110	5	5	65	230	27	41	52
160	33	40	27.5	M16	140	6	8	80	266	36	55	60
200	35	40	27	M16	175	6	8	95	281	36	55	70

FEMALE REAR TRUNNION (MP2)



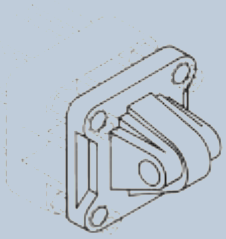
Supplied without Pin

CYL Ø	Part Number
32	KFS-10032
40	KFS-10040
50	KFS-10050
63	KFS-10063
80	KFS-10080
100	KFS-10100
125	KFS-10125
160	KFS-10160
200	KFS-10200



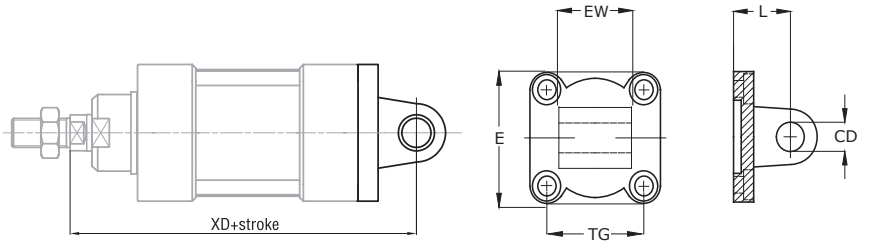
Supplied with End Cap mounting screws (x4)

MALE REAR TRUNNION (MP4)



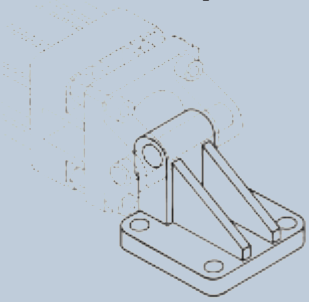
Supplied without Pin

CYL Ø	Part Number
32	KFS-11032
40	KFS-11040
50	KFS-11050
63	KFS-11063
80	KFS-11080
100	KFS-11100
125	KFS-11125
160	KFS-11160
200	KFS-11200



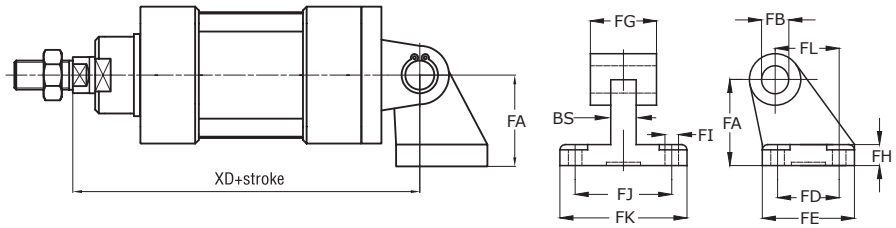
Supplied with End Cap mounting screws (x4)

90° REAR TRUNNION (Cetop RP107P



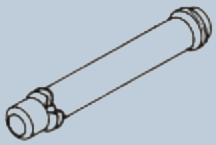
Supplied without Pin

CYL Ø	Part Number
32	KFS-19032
40	KFS-19040
50	KFS-19050
63	KFS-19063
80	KFS-19080
100	KFS-19100
125	KFS-19125

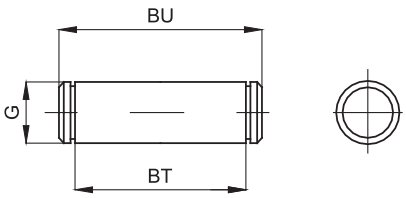


CYL Ø	Rear Trunnions - ISO MP2, ISO MP4									90° Trunnion - CETOP RP 107P										
	CB	CD	E	EW Nom.	EW Toll.	FL	L	XD Nom.	XD Toll.	BS	FA	FB	FD	FE	FG	FH	FI	FJ	FK	FL
32	26	10	45	26	-0.2 -0.6	22	22	142	±1.25	10	32	10	18	31	26	8	6.6	38	51	21
40	28	12	55	28		25	25	160	±1.25	10	36	12	22	35	28	10	6.6	41	54	24
50	32	12	65	32		27	27	170	±1.25	14	45	12	30	45	32	12	9	50	65	33
63	40	16	75	40		32	32	190	±1.6	14	50	16	35	50	40	12	9	52	67	37
80	50	16	95	50		36	36	210	±1.6	18	63	16	40	60	50	14	11	66	86	47
100	60	20	115	60		41	41	230	±1.6	20	71	20	50	70	60	15	11	76	96	55
125	70	25	140	70	-0.5 -1.2	50	50	275	±2	30	90	25	60	90	70	20	14	94	124	70
160	90	30	180	90		55	55	315	±2	-	-	-	-	-	-	-	-	-	-	-
200	90	30	220	90		60	60	335	±2	-	-	-	-	-	-	-	-	-	-	-

TRUNNION PIN



CYL Ø	Part Number
32	KFS-18032
40	KFS-18040
50	KFS-18050
63	KFS-18063
80	KFS-18080
100	KFS-18100
125	KFS-18125
160	KFS-18160
200	KFS-18200



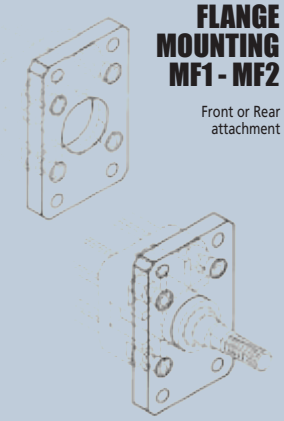
Supplied with 2 circlips

Trunnion Pin

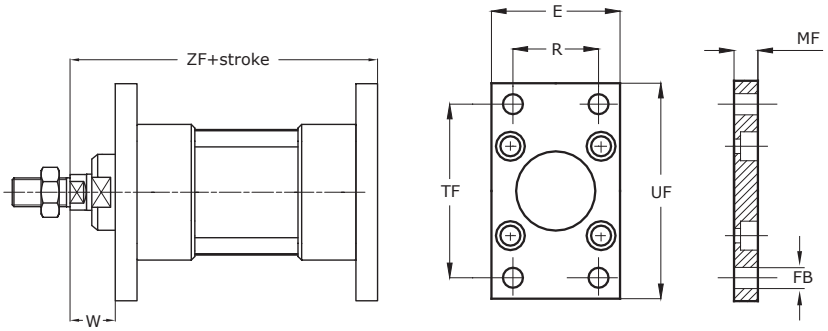
CYL Ø	BU	BT	G
32	53	46	10
40	60	53	12
50	68	61	12
63	78	71	16
80	98	91	16
100	118	111	20
125	139	132	25
160	178	171.5	30
200	178	171.5	30

FLANGE MOUNTING MF1 - MF2

Front or Rear attachment



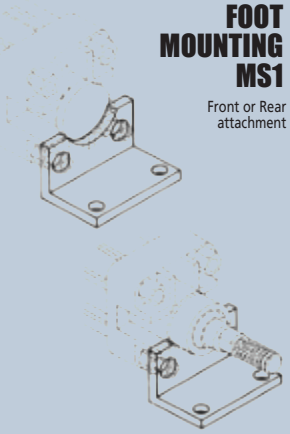
CYL Ø	Part Number
32	KFS-12032
40	KFS-12040
50	KFS-12050
63	KFS-12063
80	KFS-12080
100	KFS-12100
125	KFS-12125
160	KFS-12160
200	KFS-12200



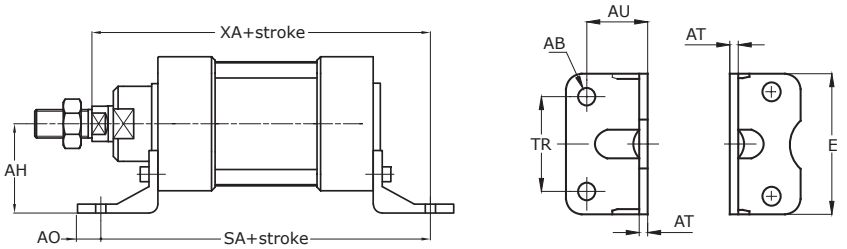
Supplied with End Cap mounting screws (x4)

FOOT MOUNTING MS1

Front or Rear attachment



CYL Ø	Part Number
32	KFS-13032
40	KFS-13040
50	KFS-13050
63	KFS-13063
80	KFS-13080
100	KFS-13100
125	KFS-13125
160	KFS-13160
200	KFS-13200

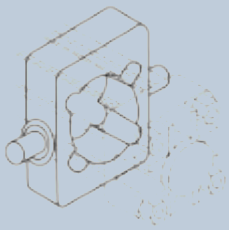


Supplied with End Cap mounting screws (x2)

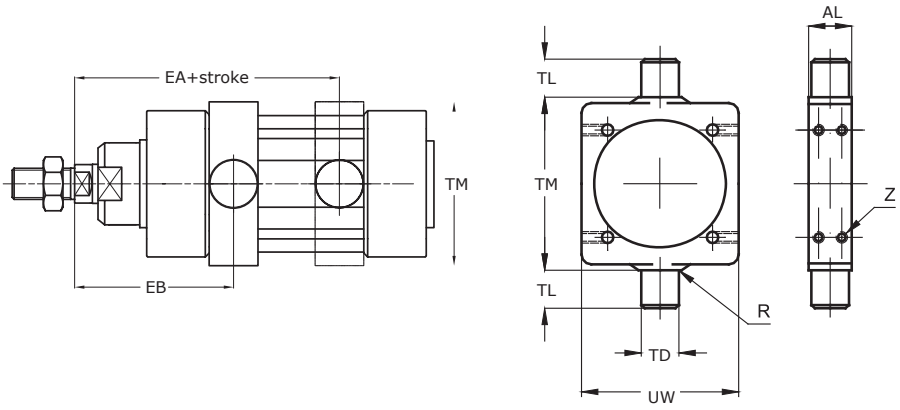
CYL Ø	Flange Mounting (Front and Rear) - ISO MF1-MF2										Foot Mounting (Front and Rear) - ISO MS1										
	E	FB	MF	R	TF	UF	W		ZF		AB	AH	AO	AT	AU	E	TR	SA		XA	
							Nom.	Toll.	Nom.	Toll.								Nom.	Toll.	Nom.	Toll.
32	45	7	10	32	64	80	16	±1.6	130	±1.25	7	32	11	4	24	45	32	142	±1.25	144	±1.25
40	52	9	10	36	72	90	20	±1.6	145	±1.25	9	36	8	4	28	52	36	161	±1.25	163	±1.25
50	65	9	12	45	90	110	25	±1.6	155	±1.25	9	45	15	5	32	65	45	170	±1.25	175	±1.25
63	75	9	12	50	100	120	25	±2	170	±1.6	9	50	13	5	32	75	50	185	±1.6	190	±1.6
80	95	12	16	63	126	150	30	±2	190	±1.6	12	63	14	6	41	95	63	210	±1.6	215	±1.6
100	115	14	16	75	150	170	35	±2	205	±1.6	14	71	16	6	41	115	75	220	±1.6	230	±1.6
125	140	16	20	90	180	205	45	±2.5	245	±2	16	90	25	8	45	140	90	250	±2	270	±2
160	180	18	20	115	230	260	55	±2.5	285	±2	18	115	15	9	60	180	115	300	±2	320	±2
200	220	22	25	135	270	300	70	±2.5	300	±2	22	135	30	12	70	220	135	320	±2	345	±2

CENTRE TRUNNION

Factory positioned

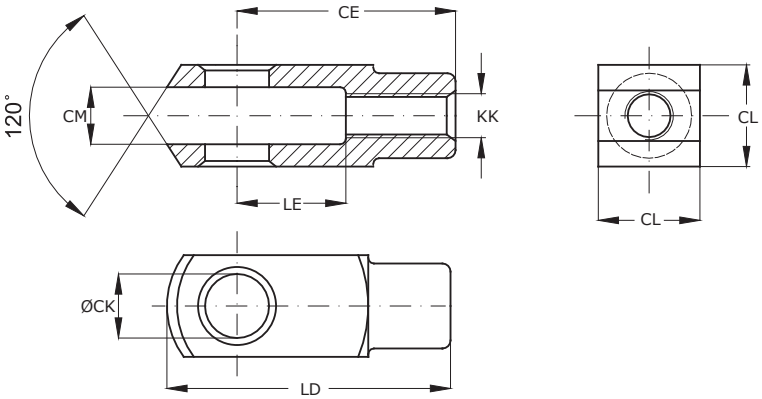


CYL Ø	Part Number
32	KFS-14032
40	KFS-14040
50	KFS-14050
63	KFS-14063
80	KFS-14080
100	KFS-14100
125	KFS-14125
160	KFS-14160
200	KFS-14200



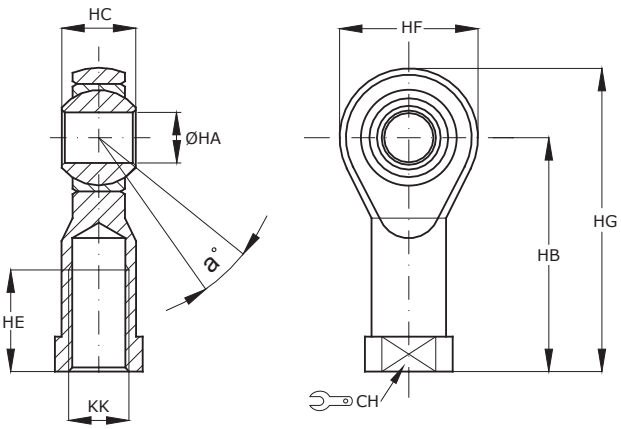
CLEVIS + PIN

CYL Ø	Part Number
32	KFS-15032
40	KFS-15040
50	KFS-15050
63	KFS-15063
80	KFS-15080
100	KFS-15100
125	KFS-15125
160	KFS-15160
200	KFS-15200



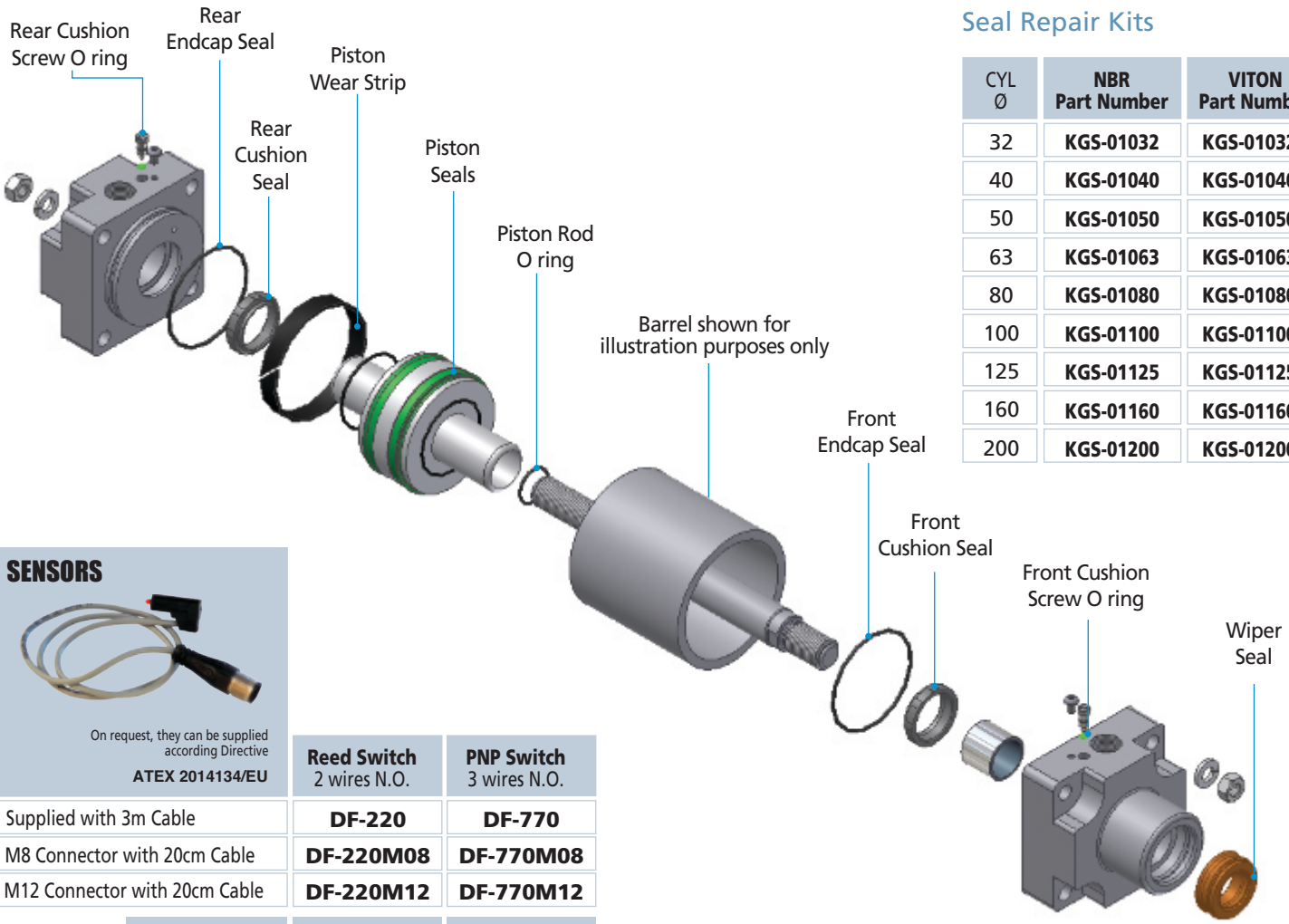
ARTICULATED CLEVIS

CYL Ø	Part Number
32	KFS-17032
40	KFS-17040
50	KFS-17050
63	KFS-17063
80	KFS-17080
100	KFS-17100
125	KFS-17125
160	KFS-17160
200	KFS-17200



CYL Ø	Centre Trunnion - ISO MT 4									Piston Rod Clevis - ISO 8140						Articulated Clevis - ISO 1839							
	AL	EA	EB	R	TD	TL	TM	UW	Z	CE	CK	CL	CM B12	LE	LD	KK	CH	HA H7	HB	HC + 0.0 - 0.12	HE	HF	HG
32	15	86	60	1	12	12	50	46	M5	40	10	20	10	20	52	M10x1.25	17	10	43	14	20	28	57
40	20	96	69	1.5	16	16	63	59	M5	48	12	24	12	24	62	M12x1.25	19	12	50	16	22	32	66
50	20	102	78	1.6	16	16	75	69	M6	64	16	32	16	32	83	M16x1.5	22	16	64	21	28	42	85
63	25	113	82	1.6	20	20	90	84	M6	64	16	32	16	32	83	M16x1.5	22	16	64	21	28	42	85
80	25	123	97	1.6	20	20	110	102	M8	80	20	40	20	40	105	M20x1.5	30	20	77	25	33	50	102
100	30	133	107	2	25	25	132	125	M8	80	20	40	20	40	105	M20x1.5	30	20	77	25	33	50	102
125	32	163.5	126.5	2	25	25	160	155	M10	110	30	55	30	54	148	M27x2	41	30	110	37	51	70	145
160	40	190	150	2.5	32	32	200	190	M12	144	35	70	35	72	188	M36x2	50	35	125	43	56	80	165
200	40	205	165	2.5	32	32	250	240	M12	144	35	70	35	72	188	M36x2	50	35	125	43	56	80	165

SPARE PARTS



Seal Repair Kits

CYL Ø	NBR Part Number	VITON Part Number
32	KGS-01032	KGS-01032V
40	KGS-01040	KGS-01040V
50	KGS-01050	KGS-01050V
63	KGS-01063	KGS-01063V
80	KGS-01080	KGS-01080V
100	KGS-01100	KGS-01100V
125	KGS-01125	KGS-01125V
160	KGS-01160	KGS-01160V
200	KGS-01200	KGS-01200V

SENSORS

On request, they can be supplied according Directive **ATEX 2014134/EU**

	Reed Switch 2 wires N.O.	PNP Switch 3 wires N.O.
Supplied with 3m Cable	DF-220	DF-770
M8 Connector with 20cm Cable	DF-220M08	DF-770M08
M12 Connector with 20cm Cable	DF-220M12	DF-770M12

TECHNICAL DATA

Nominal Voltage	24V AC/DC	24V DC
Working Voltage	5 to 30	5 to 30
Switching Current mA (max)	100	100
Switching Power W/VA (max)	3	3
Voltage Drop (max)	<3.5	0.7
Magnetic Field (min) gauss	60	30
Opening Response Time ms	<0.5	0.08
Closing Response Time ms	<1	0.03
Life Cycles (with resistive load)	$>10^7$	$>10^9$
Condition Indicator (red)	LED	LED
Cable Diameter mm	2 x 0.14	3 x 0.14
Protection Degree	IP67	
Working Temperature °C	-20 to +80	

COMPONENTS CODIFICATION KEY

Front End Cap

Rear End Cap

Piston

K K S - 5 0 1 - 0 3 2

1 2 3

1 Series
KKS = Stainless Steel Parts

2 Type
501 = Front End Cap
601 = Rear End Cap
701 = Piston

3 Bore (mm)
032 = 32mm
040 = 40mm
050 = 50mm
063 = 63mm
080 = 80mm
100 = 100mm
125 = 125mm
160 = 160mm
200 = 200mm

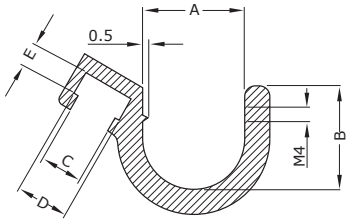
End Caps and Pistons are supplied complete with seals / bearings and tested.

REED SWITCH BRACKET

Aluminium as standard. Stainless Steel available upon request.

CYL Ø	Part Number
32 - 40	DHS-K032040
50 - 63	DHS-K050063
80 -100	DHS-K080100
125	DHS-K125000
160 - 200	DHS-K160200

Dimensions



A	B	C	D	E
7	8	5.4	6.7	3.4
10	14	5.4	6.7	3.4
11.5	11	5.4	6.7	3.4
14.5	14	5.4	6.7	3.4
16.5	20	5.4	6.7	3.4

MS Series

ISO 6432

Stainless Steel Cylinders

ATEX CE Ex II 2 Gc IIC T5
II 2Dc T100°C

Features

Long Life Cylinder

MS series cylinder end caps are manufactured from AISI 304 Stainless Steel and the barrel is in 304 Stainless Steel.

High Speed - Low Noise

TecnAir microbore cylinders are designed for high speed operation and incorporate nitrile rubber buffer rings in the piston to relieve impact and reduce noise operating levels to 70dB(A).

High Performance Wiper Seal

The wiper seal is produced in a single part moulding using a special polyurethane compound requiring no circlip to retain the seal, improving the clean-line aspects of the cylinder. This unique design provides high frequency operation combined with a high resistance to wear. The material is highly resilliant against corrosion.

Clean Line End Caps

The end caps are machined from solid AISI 304 stainless steel bar to a smooth finish, clean line to eliminate contamination traps. The clean-line barrel is manufactures from AISI 304 stainless steel with polished internal bore for maximum strength.

ATEX Certified

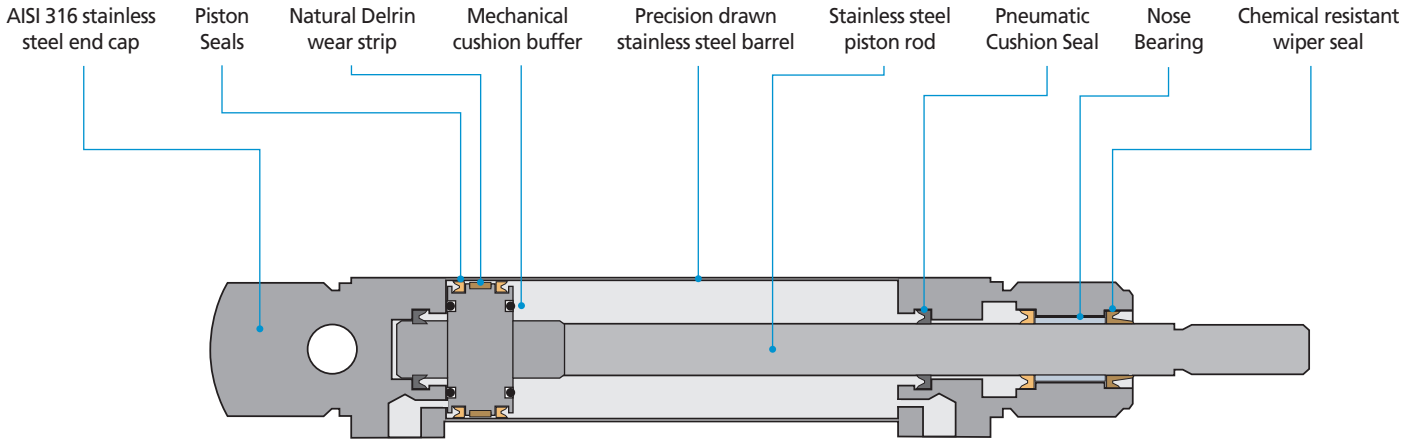
MS cylinders can be ordered with ATEX certification according to directive 2014/34/EU

Upon request.

TECHNICAL DATA

Type	Stainless steel cylinder
Bore (mm)	16 / 20 / 25
Mounting	ISO 6432
Stroke	1 metre (max)
Operating Pressure	1 to 10 bar
Fluid	Filtered 50µ. Use with or without lubrication
Operating temperature	-20°C to 80°C
Cushions	Mechanical (Adjustable pneumatic cushioning upon request)

CYLINDER SECTION



CODIFICATION KEY

M	S	1	0	0	0	2	5	0	1	0	0	M	V
1		2			3			4				5	

1 Series

MS = Stainless Steel 304 Cylinder

2 Type

100 = Double Acting Stainless Steel
101 = Double Acting Stainless Steel Through Rod
150 = Double Acting Stainless Steel with adjustable cushioning (upon request)
151 = Double Acting Stainless Steel Through Rod with adjustable cushioning (upon request)

3 Bore (mm)

016 = 16mm
020 = 20mm
025 = 25mm

4 Stroke

Max = 1 metre

5 Options

M = Magnetic (supplied as standard)
MV = FKM Seals (viton) - upon request

TECHNICAL INFORMATION

THEORETICAL FORCE TABLE (N)

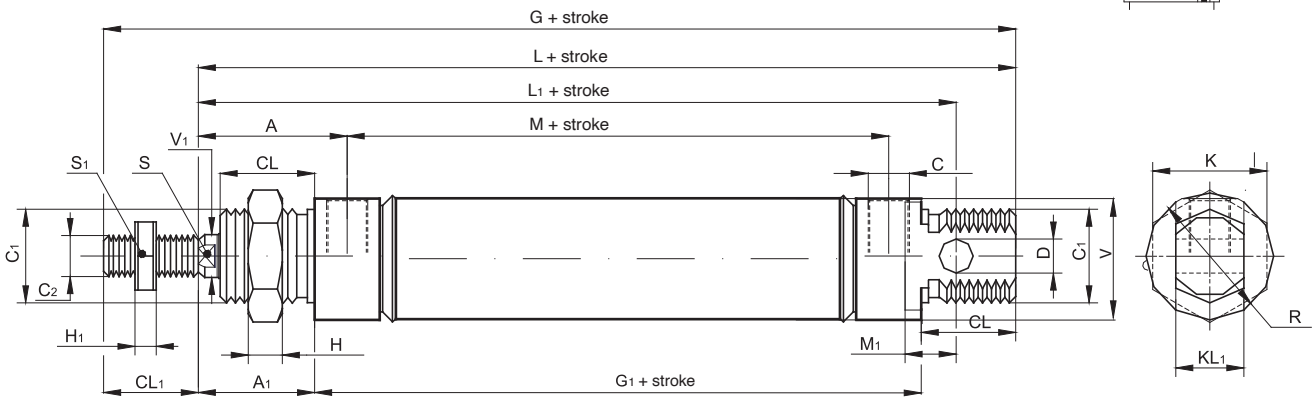
Cylinder Bore (mm)	Working surface (mm2)		Working pressure in bar 2	4	6	8	10	Cushion length (mm)	Max kinetic energy absorption (J)
16	Thrust	201	40	80	121	161	201	-	-
	Traction	173	35	69	104	138	173		
20	Thrust	314	63	126	188	251	314	17	0.2
	Traction	264	53	106	158	211	264		
25	Thrust	491	98	196	295	393	491	20	0.3
	Traction	412	82	165	247	330	412		

DIMENSIONAL INFORMATION

Double Acting Cylinder

MS100 Series

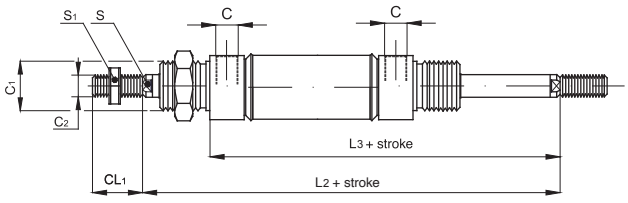
MS150 Series



CYL Ø	A	A1	C	C1	C2	CL	CL1	D	G	G1	H	H1	K	KL1	L	L1	M	M1	R	S	S1	V	V1
16	27	22	M5	M16x1.5	M6x1	18	16	6	112	56	6	3	24	12	96	82	46	9	20	5	10	19	6
20	32	24	G1/8	M22x1.5	M8x1.25	20	20	8	131	67	8	4	27	16	111	95	51	12	27	7	13	25.5	8
25	36	29	G1/8	M22x1.5	M10x1.25	22	22	8	140	67	8	5	27	16	118	104	52	12	30	9	17	28	10

Double Acting - Through Rod

CYL Ø	L2	L3
16	96.5	74.5
20	116	92
25	125	97



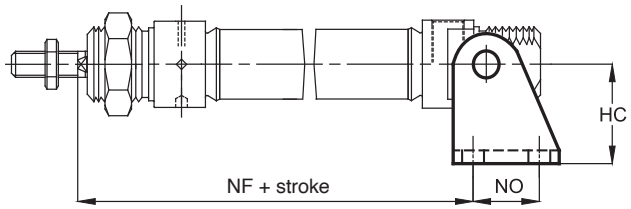
MS101 Series

MS151 Series

FEMALE REAR HINGE

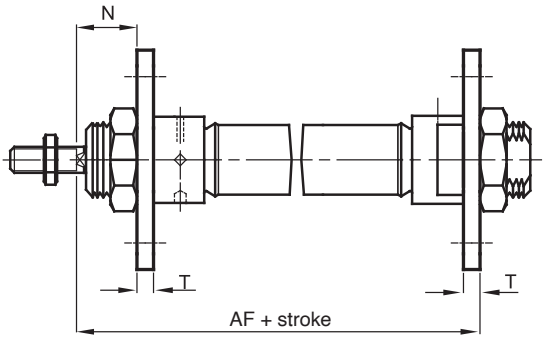
Supplied with Pin

CYL Ø	Part Number
16	MFS-21016
20/25	MFS-21020



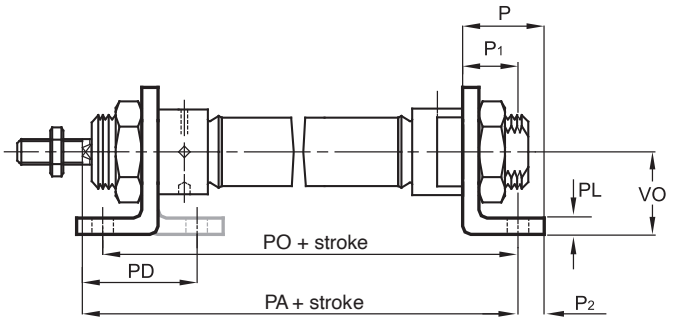
FLANGE MOUNTING

CYL Ø	Part Number
16	MFS-12016
20/25	MFS-12020



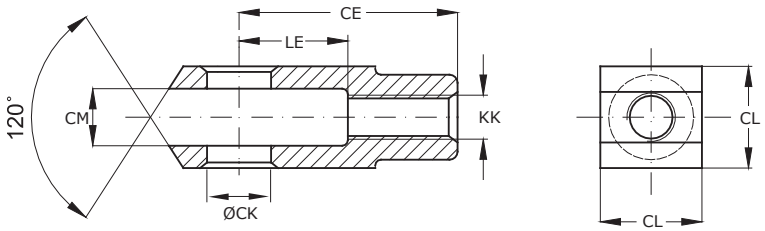
FOOT MOUNTING

CYL Ø	Part Number
16	MFS-13016
20/25	MFS-13020

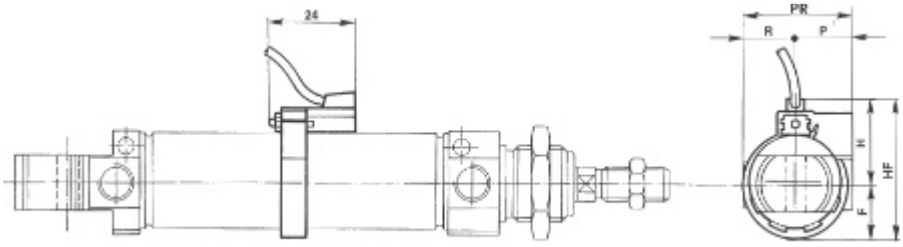


CLEVIS + PIN

CYL Ø	Part Number
16	MFS-15016
20	MFS-15020
25	KFS-15032



	Hinge			Flange			Foot Mounting								Piston Rod Clevis - ISO 8140					
CYL Ø	HC	NF	NO	AF	N	T	P	P_1	P_2	PA	PD	PL	PO	VO	CE	CK	CL	CM	KK	LE
16	27	80	15	82	18	4	20	14	6	92	32	4	84	20	24	6	12	6	M6x1	12
20	30	91	20	97	19	5	25	17	8	109	36	5	102	25	32	8	16	8	M8x1.25	16
25	30	100	20	102.5	23	5	25	17	8	114	40	5	103	25	40	10	20	10	M10x1.25	20

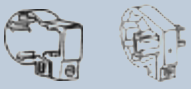


REED SWITCH

CYL Ø	Part Number
16	DH-200
20	DH-200
25	DH-200

REED SWITCH BRACKET

Stainless Steel available upon request



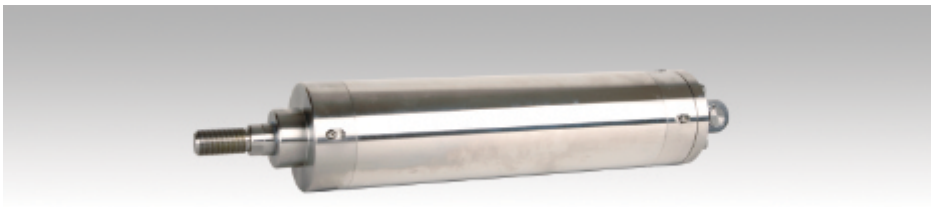
CYL Ø	Part Number	A-B	F	H	HF	P	R	PR
16	DH-M16	14-14	15	25	40	18	13	31
20	DH-M20	18.5-18.5	19	27	46	18	17	35
25	DH-M25	19-19	18	30	48	20	17	37

To order the holder for the recessed sensor DF__ Series add suffix DF to the part number.

MB Series

HEAVY DUTY ROUND-LINE CYLINDERS

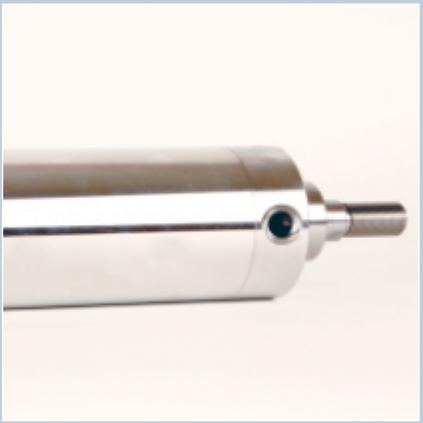
Ø32mm -125mm



KB Series

HEAVY DUTY TIE-ROD CYLINDERS

Ø40mm -100mm

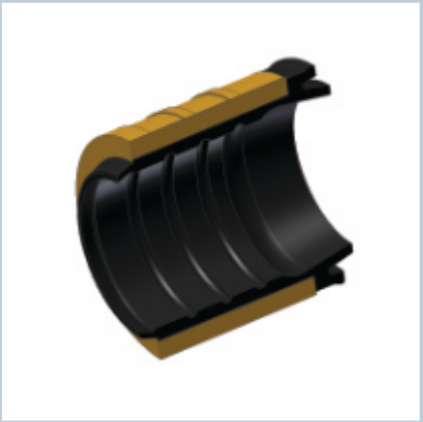


MB Series Cylinders

Manufactured to order, in either 304 or 316L stainless steel, MB series cylinders are designed for applications within breweries, which require a 'completely clean-line' design with zero crevices. Due to the clean-line design position sensing can only be achieved with external proximity devices.

KB Series Cylinders

Also manufactured in either 304 or 316L stainless steel, KB series cylinders are designed specifically for breweries to withstand tough conditions, which are normally associated with Keg handling and washing applications. The front end cap utilises nose bearing technology which incorporates a floating rubber bush and a non-metal contact bearing, all in one component. The floating bush allows the piston rod to move up to 4° whilst supporting the piston rod. This feature allows for fixture misalignment, which is a common cause of seal failure within conventional cylinders.

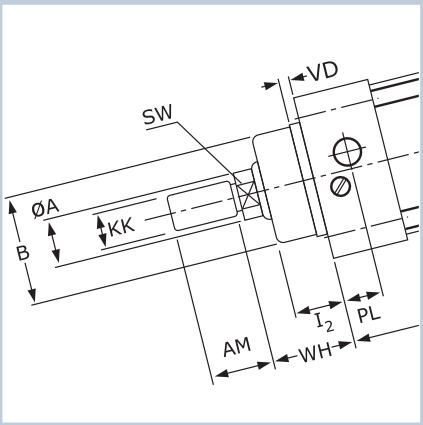


Clean Down Protection

Clean-down practices within breweries often fails to remove residue on exposed piston rods, often resulting in bearing seizure, dislodgement or leakage. KB series cylinders incorporate a unique scraper seal fitted into the front end cap. The scraper seal is produced from a special rubber compound, unlike most conventional scrapers, which are produced from plastics. The scraper seal is extremely hard but very resilient to abrasion, resisting wear caused by abrasive substances such as sugar, powders and beer residue.

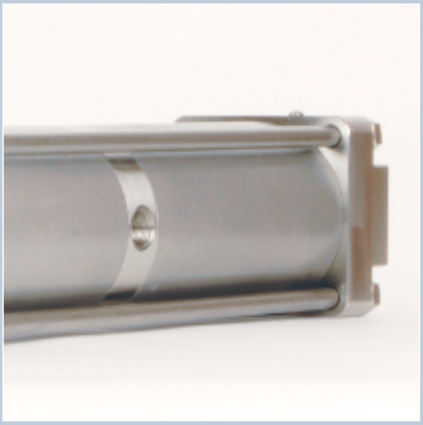
Heavy Duty

Both MB and KB series cylinders are manufactured from solid bar and precision machined for maximum strength, to withstand the rigours of keg handling within the brewing industry. Thicker than average barrel material is used, with internal surfaces honed to provide long seal life. All mounting brackets are also machined from solid bar.



Brewery Interchangeability

Whilst MB and KB series cylinders are manufactured from solid bar, the end cap mounting dimensions are left blank to allow us to modify the dimensions in accordance with the many different brewery standards world wide. This feature allows us to directly interchange with all types of cylinder, even obsolete designs. TecnAir UK offers free of charge on-site surveys to verify dimensional data prior to manufacture.



Special Models

TecnAir supply bespoke pneumatic cylinder solutions throughout the Brewing industry. Examples include resolving problems associated with top clamp assemblies on Keg washing and racking applications, where our designs include ‘fully cushioned’ centre position cylinders, to minimise shock and noise levels, and extended ‘self lubricating’ nose bearings to withstand high impact loads. Recent TecnAir developments include the introduction of a unique 316 stainless steel cylinder fitted with a ‘sealed’ mechanical locking head. This device controls the movement of washer and racker heads onto kegs, firmly holding each keg within the wash-fill stations. The cylinders are electronically controlled to remotely alter operational stroke, allowing different sized kegs to be used on the same conveyor, thus reducing costly set-up times. The stroke adjustment feature also reduces cylinder travel time, which increases performance by enabling higher cycle speeds.

Cylinder for Caustic Washdown

KB series cylinders have been designed using the highest quality materials for rugged, caustic washdown use. All rubber parts and bearings are replaceable including cushion needle valve and seals. Cylinders are identified by laser etched part number and production date code, to withstand rigorous clean down operations.

TecnAir®

DRIVE & CONTROL TECHNOLOGY

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