

Suitable torques from 1,2 to 51,0 Nm/bar

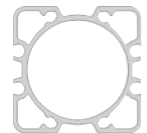
Rotation angles 90°, 180°, 270°, 360°

Adjustable cushioning

Male and female pinion available

Switches can be mounted flush with the profile

VDMA 24562 pitch to use standard VDMA mountings



### Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

M/162000 Double acting, non-magnetic piston  
adjustable cushioning

M/162000/M Double acting, magnetic piston,  
adjustable cushioning

Operating pressure:

1,5 to 10 bar

Operating temperature:

-5°C to +80°C max.

(consult our Technical Service for use below +2°C)

Cylinder diameters:

32, 40, 50, 63, 80, 100, 125 mm

Rotation angles:

90°, 180°, 270°, 360°

Fixed up to +8°

Adjustable ±5°

Additional angles on request

### Materials

Profile barrel: anodised aluminium

End covers: pressure diecast aluminium

Central body: anodised aluminium

Rack: normalized steel

Pinion: surface hardened high strength steel

Pinion bearings: ball bearings (Ø 32 teflon bronze bearings)

Rack guide shoe: acetal resin

Piston seals: polyurethane O-rings: nitrile rubber

### Ordering examples

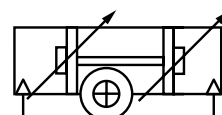
See page 3

### Mountings and switches

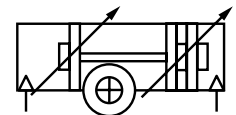
See page 2 and 3

### Alternative variants

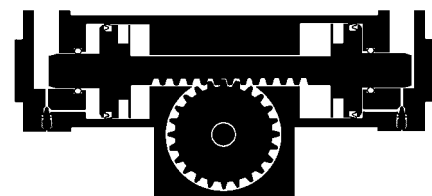
See page 2



Non-magnetic piston



Magnetic piston



### Alternative variants

Symbol	Model Non-magnetic piston	Symbol	Model Magnetic piston	Description	Dimensions see page
	M/162000/II		M/162000/MI	Rotary cylinders with fixed angle and male pinion	4
	M/162000/IIx		M/162000/MIX	Rotary cylinders with fixed angle and female pinion	4
	M/162000/IE		M/162000/ME	Rotary cylinders with adjustable angle and male pinion	5
	M/162000/IEx		M/162000/MEX	Rotary cylinders with adjustable angle and female pinion	5

### Options selector

**M/162\*\*\*\*/\*\*\*\*/\*\*\*\***

Cylinder diameters (mm)	Substitute
32	032
40	040
50	050
63	063
80	080
100	100
125	125

Cylinder variants	Substitute
Non-magnetic piston	I
Magnetic piston	M

Standard rotation angle	Substitute
90°	90
180°	180
270°	270
360°	360

Pinion variants	Substitute
Male pinion	None
Female pinion	X

Tolerances of rotation angle	Substitute
Adjustable ± 5°	E
Fixed up to +8°	I

Note: If option is not required, disregard option position within part number eg. M/162100/ME/90  
 This options selector explains only the cylinder variants. Additional variants/options are not possible.

### Mountings

Style	A	B, G	C	Groove key
Cylinder Ø	Page 06	Page 06	Page 06	
32	QM/8032/35	QA/8032/22	QA/8032/21	M/P72816
40	QM/8032/35	QA/8040/22	QA/8040/21	M/P72816
50	QM/8050/35	QA/8050/22	QA/8050/21	M/P72816
63	QM/8050/35	QA/8063/22	QA/8063/21	M/P72816
80	QM/8080/35	QA/8080/22	QA/8080/21	M/P72816
100	QM/8080/35	QA/8100/22	QA/8100/21	M/P72816
125	QM/8125/35	QM/8125/22	QM/8125/21	M/P72816

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

**Switches**

Type Reed	With cable		With connector (M8x1)		Current max.	Temperature °C	LED	Features	Cable/ Connector length	Cable type	Cable with Connector	Datasheet
	Solid state	Voltage V a.c.	V d.c.	Voltage V a.c.								
M/50/LSU/*V	–	10 to 240	10 to 170	180 mA	-20 to +80	•	–	–	2, 5, 10 m	PVC 2 x 0,25	–	N/UK 4.3.005
M/50/LSU/5U	–	10 to 240	10 to 170	180 mA	-20 to +80	•	–	–	5 m	PUR 2 x 0,25	–	N/UK 4.3.005
TM/50/RAU/2S	–	10 to 240	10 to 170	180 mA	-20 to +150	–	–	–	2 m	Silicone 2 x 0,25	–	N/UK 4.3.005
M/50/RAC/5V	–	10 to 240	10 to 170	180 mA	-20 to +80	–	Changeover	–	5 m	PVC 3 x 0,25	–	N/UK 4.3.005
M/50/LSU/CP	–	10 to 60	10 to 75	180 mA	-20 to +80	•	Plug M8x1	–	5 m	PVC 3 x 0,25	MP73001/5	N/UK 4.3.005
–	M/50/EAP/*V	–	10 to 30	150 mA	-20 to +80	•	PNP	–	2, 5, 10 m	PVC 3 x 0,25	–	N/UK 4.3.007
–	M/50/EAP/CP	–	10 to 30	150 mA	-20 to +80	•	PNP, Plug M8x1	–	5 m	PVC 3 x 0,25	MP73001/5	N/UK 4.3.007
–	M/50/EAP/CC	–	10 to 30	150 mA	-20 to +80	•	PNP, Plug M12x1	–	5 m	PVC 3 x 0,25	MP34614/5	N/UK 4.3.007
–	M/50/EAN/*V	–	10 to 30	150 mA	-20 to +80	•	NPN	–	2, 5, 10 m	PVC 3 x 0,25	–	N/UK 4.3.007
–	M/50/EAN/CP	–	10 to 30	150 mA	-20 to +80	•	NPN, Plug M8x1	–	5 m	PVC 3 x 0,25	MP73001/5	N/UK 4.3.007

\* Please insert cable length  
Further information (technical data, cable material, dimensions) see datasheet.

**Ordering examples**

To order a rotary cylinder with Ø 80 mm, magnetic piston with male pinion and a 90° fixed rotation angle (+8°)  
quote: **M/162080/MI/90**

**Mountings**

To order a front flange mounting style G for Ø 80 mm cylinder  
quote: **QA/8080/22**

**Switches**

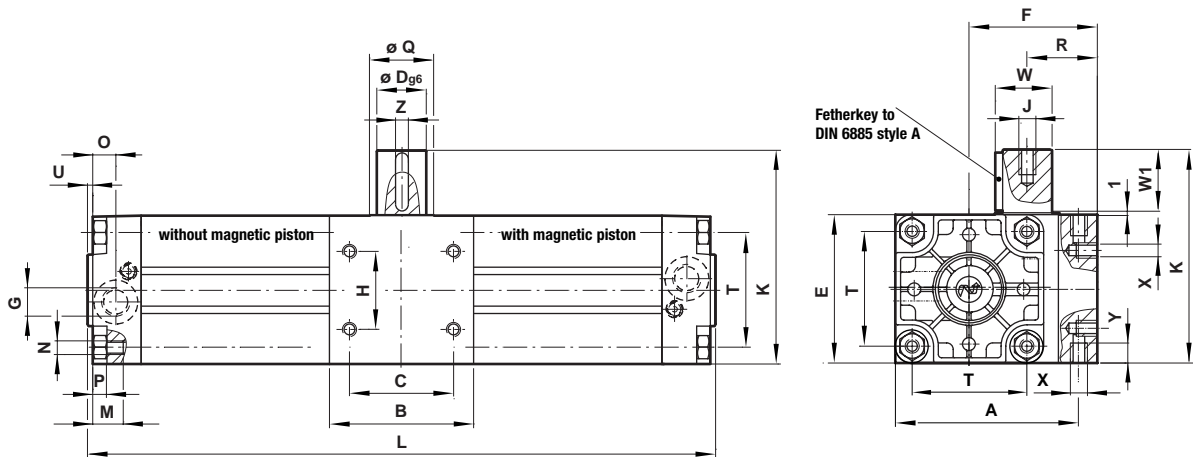
To order a reed switch with LED and 2 m cable length  
quote: **M/50/LSU/2V**

**Theoretical forces, air consumption, cushion**

Model	Ø	Theoretical force (N) at 1 bar	Cushion length (mm)	Initial cushion volume (cm <sup>3</sup> )
M/162032/.	32	1,2	19	12,3
M/162040/.	40	2,3	22	20,7
M/162050/.	50	3,9	24	36
M/162063/.	63	7,3	24	64
M/162080/.	80	15,7	27	11
M/162100/.	100	26,3	34	24
M/162125/.	125	51,0	41	45

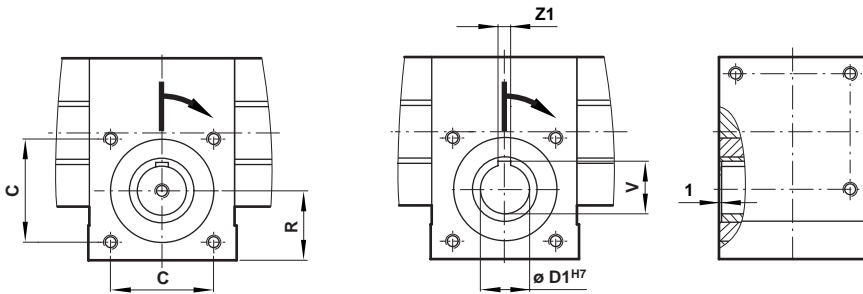
**Dimensions**

M/162000/\*/\*/Angle - Rotary cylinders with fixed angle (up to +8°)



Rotary cylinders with male pinion

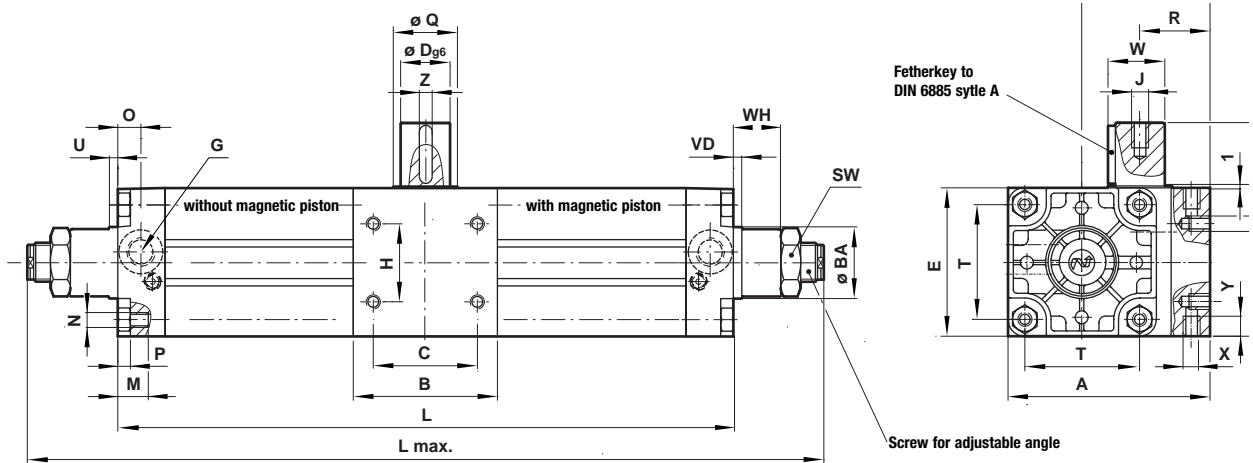
Rotary cylinders with female pinion



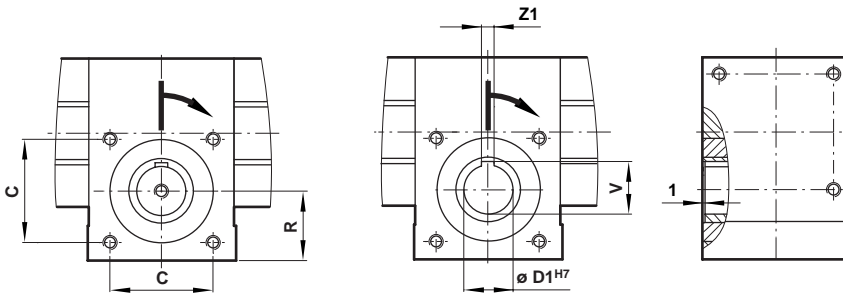
Model	Ø	A	B	C	Ø D	Ø D1	E	F	G	H	J	K	L	(90°)	(180°)	(270°)	(360°)
M/162032/.	32	71,5	50	33	14	14	50	46,5	G 1/8	18	M 5	81	227	274	321	368,5	
M/162040/.	40	82	60	40	14	14	60	54,5	G 1/4	22	M 5	91	266	323	379,5	436	
M/162050/.	50	94	70	50	19	19	65	60,5	G1/4	25	M 6	106	282	345	408	471	
M/162063/.	63	110	75	60	24	19	75	71	G3/8	35	M 8	116	331	406	480,5	555	
M/162080/.	80	142	99	80	28	24	99	93,5	G3/8	50	M 8	150	396	495	594	693	
M/162100/.	100	156,5	115	80	38	28	115	99	G 1/2	60	M 10	166	414	521	628	735	
M/162125/.	125	188	125	90	38	28	140	118	G 1/2	70	M 10	191	483,5	615,5	747,5	879,5	
Model	Ø	M	N	O	P	Ø Q	R	T	U	V	W	W1	X	Y	Z	Z1	
M/162032/.	32	18	M 6	13	4	25	25	32,5	3	16,3	16	30	M 6	10	5	5	
M/162040/.	40	18	M 6	15	4	25	30	38	3,5	16,3	16	30	M 6	10	5	5	
M/162050/.	50	18	M 8	18,5	5	30	32,5	46,5	3,5	21,8	21,5	40	M 8	13	6	6	
M/162063/.	63	17,5	M 8	19	5	30	37	56,5	4	21,8	27	40	M 8	13	8	6	
M/162080/.	80	21,5	M 10	19	-	45	50	72	4	27,3	31	50	M 10	16	8	8	
M/162100/.	100	21,5	M 10	18	-	50	54	89	4	31,3	41	50	M 10	16	10	8	
M/162125/.	125	32	M 12	20	-	60	60	110	6	31,3	41	50	M 12	20	10	8	

**Dimensions**

M/162000/\*E\*/Angle - Rotary cylinders with adjustable angle ( $\pm 5^\circ$ )



**Rotary cylinders with male pinion**

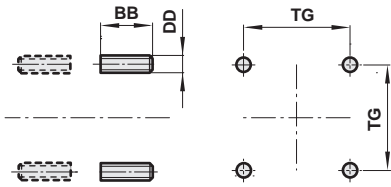


Model	Ø	A	B	Ø BA	C	Ø D	Ø D1	E	F	G	H	J	K	L				L max.			
														(90°)	(180°)	(270°)	(360°)	(90°)	(180°)	(270°)	(360°)
M/162032/.	32	71,5	50	30	33	14	14	50	46,5	G 1/8	18	M 5	81	221	268	315	362,5	303	350	397	444,5
M/162040/.	40	82	60	35	40	14	14	60	54,5	G 1/4	22	M 5	91	259	316	372,5	429	350	407	463,5	519
M/162050/.	50	94	70	40	50	19	19	65	60,5	G 1/4	25	M 6	106	275	338	401	464	379	442	505	568
M/162063/.	63	110	75	45	60	24	19	75	71	G 3/8	35	M 8	116	323	398	472,5	555	431	506	580,5	655
M/162080/.	80	142	99	45	80	28	24	99	93,5	G 3/8	50	M 8	150	388	487	586	685	514	613	712	811
M/162100/.	100	156,5	115	55	80	38	28	115	99	G 1/2	60	M 10	166	406	513	620	727	540	647	754	861
M/162125/.	125	188	125	60	90	38	28	140	118	G 1/2	70	M 10	191	471,5	603,5	735,5	867,5	631,5	763,5	895,5	1027,5
Model	Ø	M	N	O	P	Ø Q	R	SW	SW1	T	V	VD	W	W1	WH	X	Y	Z	Z1		
M/162032/.	32	18	M 6	13	4	25	25	30	17	32,5	16,3	6	16	30	20	M 6	10	5	5		
M/162040/.	40	18	M 6	15	4	25	30	32	19	38	16,3	6	16	30	22	M 6	10	5	5		
M/162050/.	50	18	M 8	18,5	5	30	32,5	41	24	46,5	21,8	6	21,5	40	27	M 8	13	6	6		
M/162063/.	63	17,5	M 8	19	5	30	37	41	24	56,5	21,8	6	27	40	29	M 8	13	8	6		
M/162080/.	80	21,5	M 10	19	-	45	50	46	27	72	27,3	6	31	50	33	M 10	16	8	8		
M/162100/.	100	21,5	M 10	18	-	50	54	46	27	89	31,3	6	41	50	36	M 10	16	10	8		
M/162125/.	125	32	M 12	20	-	60	60	55	32	110	31,3	15,5	41	50	45	M 12	20	10	8		

**Mountings**

**Front or rear stude A**

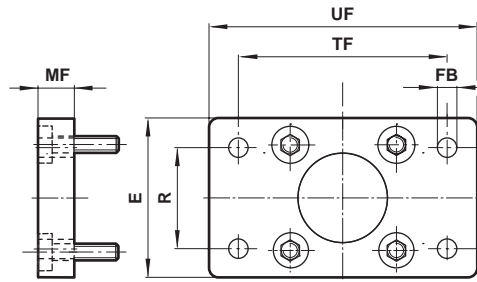
Corresponds to DIN ISO 6431, type MX1



Type	Ø	BB	DD	TG	kg
QM/8032/35	32/40	17	M6	32,5/38	0,02
QM/8050/35	50/63	23	M8	46,5/56,5	0,05
QM/8080/35	80/100	28	M10	72/89	0,08
QM/8125/35	125	34	M12	110	0,14
QM/8160/35	160/200	42	M16	140/175	0,31
QM/8250/35	250	50	M20	220	0,92
QM/8320/35	320	60	M24	270	1,46

**Rear flange B, front flange G**

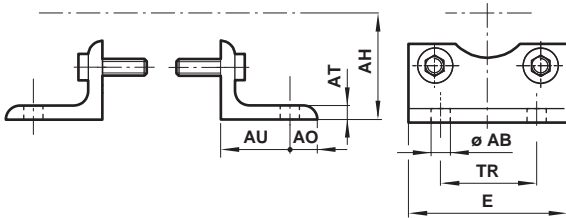
Corresponds to DIN ISO 6431 or VDMA 24562 part 2  
Type MF1 and MF2



Type	Ø	E	Ø FB	MF	R	TF	UF	kg
QA/8032/22	32	50	7	10	32	64	80	0,25
QA/8040/22	40	55	9	10	36	72	90	0,35
QA/8050/22	50	65	9	12	45	90	110	0,70
QA/8063/22	63	75	9	12	50	100	125	0,80
QA/8080/22	80	100	12	16	63	126	154	1,35
QA/8100/22	100	120	14	16	75	150	186	2,20
QM/8125/22	125	140	16	20	90	180	224	2,70
QM/8160/22	160	180	18	20	115	230	280	3,10
QM/8200/22	200	220	22	25	135	270	320	4,60
QM/8250/22	250	280	26	25	165	330	395	7,40
QM/8320/22	320	350	33	30	200	400	475	13,6

**Foot C**

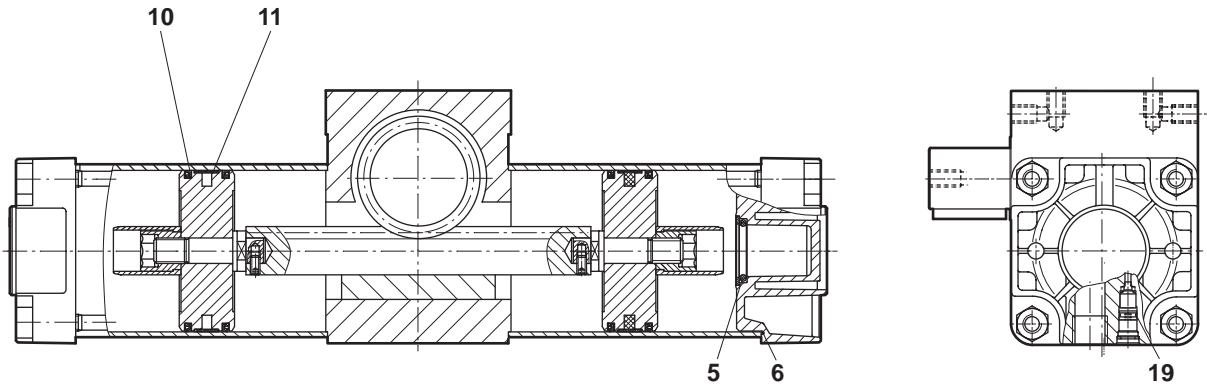
Corresponds to DIN ISO 6431 or VDMA 24562 part 2  
Type MS1



Type	Ø	Ø AB	AH	AO	AT	AU	E	TR	kg
QA/8032/21	32	7	32	8	4	24	48	32	0,15
QA/8040/21	40	9	386	9	4	28	53	36	0,18
QA/8050/21	50	9	45	10	5	32	64	45	0,30
QA/8063/21	63	9	50	12	5	32	74	50	0,39
QA/8080/21	80	12	63	19	5	41	98	63	0,80
QA/8100/21	100	14	71	19	5	41	115	75	0,95
QM/8125/21	125	16	90	20	9	45	140	90	2,40
QM/8160/21	160	18	115	20	8	60	180	115	3,50
QM/8200/21	200	22	135	30	9	70	220	135	5,25
QM/8250/21	250	26	165	35	10	75	280	165	9,50
QM/8320/21	320	33	200	45	16	85	350	200	22,0

**Spares**

Rotary cylinders with fixed angle (up to +8°)

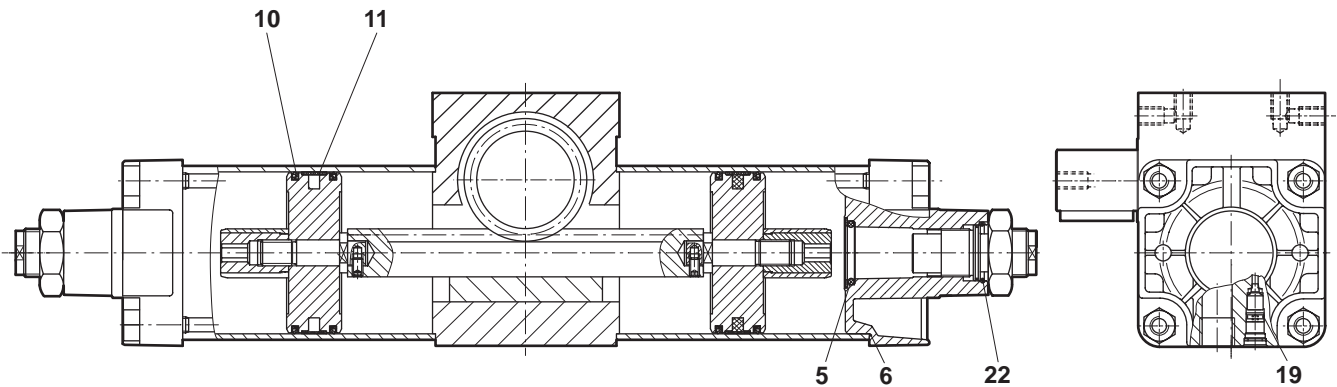


Cylinder Ø	Model	Spares kit	Comprising Item	Description	Quantity
32	M/162032/**/Drehwinkel	QM/162032/00	5	Cushion seals	2
40	M/162040/**/Drehwinkel	QM/162040/00	6	Sealing rings	2
50	M/162050/**/Drehwinkel	QM/162050/00	10	Piston seals	4
63	M/162063/**/Drehwinkel	QM/162063/00	11	Wear rings	2
80	M/162080/**/Drehwinkel	QM/162080/00	19	O-ring	2
100	M/162100/**/Drehwinkel	QM/162100/00			
125	M/162125/**/Drehwinkel	QM/162125/00			

\* Insert stroke length

Note: Please quote the cylinder type number when ordering spares kit

Rotary cylinders with adjustable angle (±5°)



Cylinder Ø	Model	Spares kit	Comprising Item	Description	Quantity
32	M/162032/*E*/Drehwinkel	QM/162032/00	5	Cushion seals	2
40	M/162040/*E*/Drehwinkel	QM/162040/00	6	Sealing rings	2
50	M/162050/*E*/Drehwinkel	QM/162050/00	10	Piston seals	4
63	M/162063/*E*/Drehwinkel	QM/162063/00	11	Wear rings	2
80	M/162080/*E*/Drehwinkel	QM/162080/00	19	O-ring	2
100	M/162100/*E*/Drehwinkel	QM/162100/00	22	O-ring	2
125	M/162125/*E*/Drehwinkel	QM/162125/00			

\* Insert stroke length

Note: Please quote the cylinder type number when ordering spares kit