

**Heavy Duty Cylinders
Double Acting
Ø 2" to 12" (50 to 305 mm)**

- **Extremely rugged heavy duty construction - ideal for use in the most arduous conditions.**
- **Long, adjustable cushioning.**
- **Large range of bore sizes - ideal for a wide variety of industrial applications.**



Technical Data

Medium:

Compressed air, filtered and lubricated

Operation:

Double acting with adjustable cushioning

Operating Pressure:

2 to 17 bar up to 8 inch
2 to 13,5 bar 10 and 12 inch

Important: Regardless of any other qualifications these Operating Pressures should not be exceeded. Further pressure limitations are imposed upon certain mountings and our Technical Service should be consulted for any use above 10 bar.

Operating Temperature:

-20°C* to +80°C max.

*Consult our Technical Service for use below +2°C

Cylinder Diameters:

2, 2 1/2, 3, 4, 5, 6, 8, 10, 12 inch

Non-standard Strokes:

Available on request

Materials:

Stainless steel (Martensitic) piston rod, steel barrel, tie rods and piston (up to 3 inch), cast iron piston (over 3 inch) and end covers, aluminium barrel gaskets (copper alternative available), nitrile rubber seals.

Alternative Cylinders:

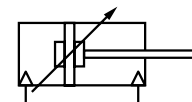
See page N 1.5.171.02

Ordering Information

To order a basic 6 inch bore cylinder with a 350 mm stroke quote: M/1060/350

To order a basic 8 inch bore cylinder with a 500 mm stroke quote: M/1080/500

To order mounting brackets refer to appropriate cylinder mounting table.





Alternative Cylinders

Symbol	Model	Description
	SM/1000	Stainless steel piston rod (Austenitic)
	TM/1000	Heat resistant seals (150°C max.)
	M/1000/B	Supercushioned, both ends – consult our Technical Service
	M/1000/P	Supercushioned, front end only – consult our Technical Service
	M/1000/Q	Supercushioned, rear end only – consult our Technical Service
	M/1000/X	Female piston rod thread
	M/1000/Y	Full piston rod thread
	HM/1000	Hydraulic version – consult our Technical Service Operating pressure: 2 to 34,5 bar up to 8 inch 2 to 27,5 bar up 10 and 12 inch
	M/1000/K	Piston rod bellows – consult our Technical Service

For combinations of alternative cylinders consult our Technical Service.

Cushioning • Theoretical Forces • Air Consumption

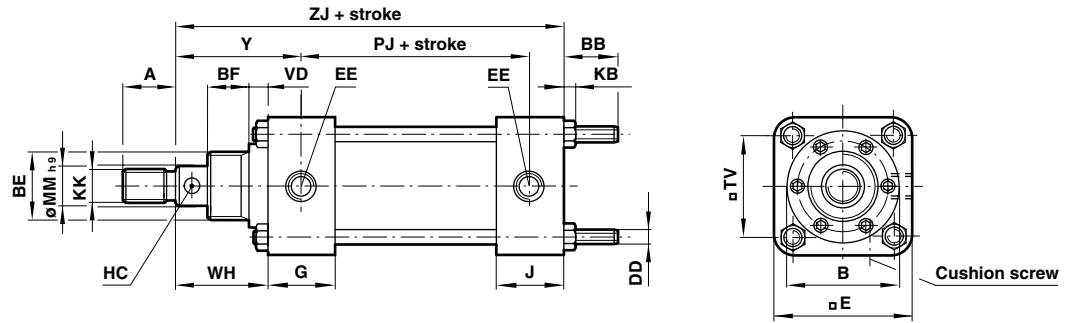
Model	Cushion length (mm)	Initial cushion volume (cm ³)	Theoretical forces (N) at 6 bar		Air consumption (l/cm) per stroke at 6 bar	
			outstroke	instroke	outstroke	instroke
1020	25,5	34,3	1225	1055	0,143	0,107
1025	25,5	85,2	1930	1626	0,225	0,189
1030	25,5	126,2	2721	2417	0,317	0,282
1040	38	339	4902	4420	0,572	0,515
1050	38	528	7600	7118	0,886	0,830
1060	38	737	10887	9954	1,270	1,161
1080	51	895	19419	18486	2,265	2,157
1101	63,5	1554	30402	27680	3,547	3,229
1121	63,5	2368	43837	41115	5,114	4,797

Weights of Cylinders and Mountings (kg)

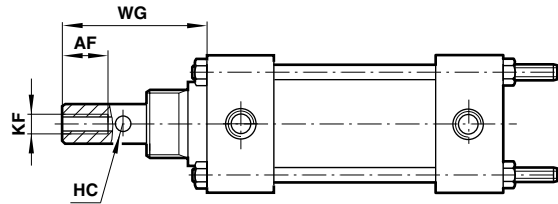
Model	Weight at 0 mm	Weight per 25 mm	Model	Weight at 0 mm	Weight per 25 mm	Style 'B'	Style 'C'	Style 'D'
1020	3,27	0,27	-	-	-	0,20	0,20	0,25
1025	4,49	0,35	1026	4,57	0,41	0,25	0,25	0,50
1030	5,63	0,45	1031	5,73	0,50	0,45	0,40	1,00
1040	10,92	0,62	1041	11,33	0,69	1,00	0,05	1,25
1050	15,26	0,79	1051	15,82	0,94	1,50	1,00	2,50
1060	27,23	1,17	1061	28,00	1,37	2,40	2,50	3,50
1080	61,18	1,57	1081	62,00	1,77	5,50	3,80	7,00
1101	122,00	2,75	-	-	-	12,00	9,50	-
1121	160,00	3,74	-	-	-	14,00	11,50	-
Model	Style 'F'	Style 'G'	Style 'H'	Style 'K'	Style 'L'	Style 'M'	Style 'N'	Style 'R'
1020	0,40	0,20	0,60	0,25	1,20	1,00	0,06	0,55
1025	0,40	0,25	0,90	0,50	1,25	1,00	0,06	0,80
1030	0,40	0,45	1,25	1,00	1,50	1,00	0,06	0,90
1040	0,90	1,00	2,50	1,25	3,50	2,00	0,18	2,60
1050	0,90	1,50	3,50	2,50	5,00	2,00	-	3,60
1060	1,70	2,40	5,00	3,50	11,00	6,00	-	6,20
1080	1,70	6,00	10,00	7,00	17,50	6,00	-	11,50
1101	7,00	12,00	25,00	-	25,00	11,50	-	12,60
1121	7,00	14,00	35,00	-	30,00	11,50	-	17,30



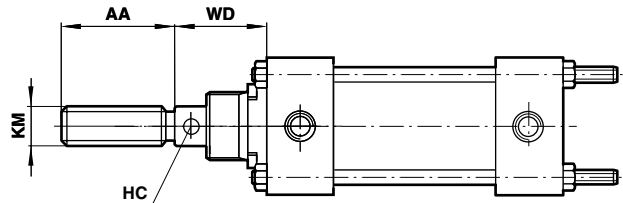
Basic Dimensions



Piston Rod End Style 'X'



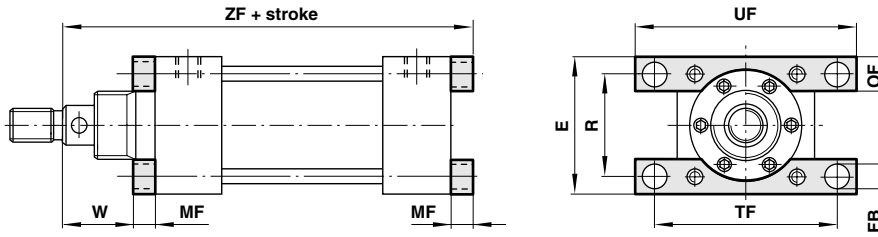
Piston Rod End Style 'Y'



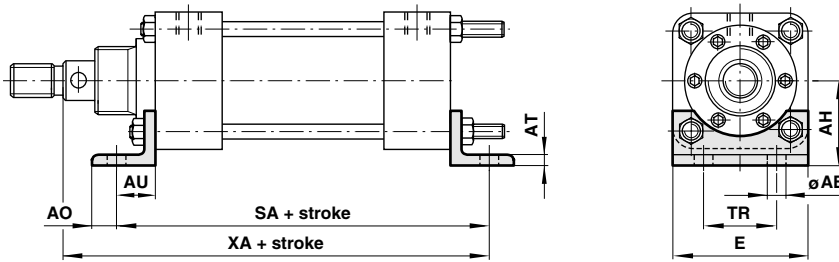
Model	1020	1025	1026	1030	1031	1040	1041	1050	1051	1060	1061	1080	1081	1101	1121
∅ inch	2	2 1/2		3		4		5		6		8		10	12
A	33,5	33,5	38	33,5	38	38	47,5	38	57	57	76	57	76	95,5	95,5
AA	58	58	73	58	73	73	88	73	103	103	134	103	134	180	180
AF	29	29	38	29	38	38	48	38	57	57	76	57	76	95	95
B	51	58		64		89		108		127		168		210	210
BB	28	31		37		29		39		48		57		68	68
BE	M 45 x 2	M 52 x 2		M 52 x 2		M 64 x 2		-		-		-		-	-
BF	30	35		38		46		41		52,5		65		76,5	76,5
DD	M 8	M8		M10		M 10		M 12		M 16		M 18		M 24	M 24
□ E	63,5	76		90		114		140		167		219		270	321
EE	G 1/4	G 3/8		G 1/2		G 1/2		G 1/2		G 3/4		G1		G1	G1
G	37	37		38		46		48		43		60		70	70
∅ HC	8	8		8		8	10	8	10	10		10		16	16
J	37	37		38		46		48		43		60		70	70
KB	7,5	7,5		9		9		11		14		16,5		20,5	20,5
KF	M 18	M 18	M 24	M 18	M 24	M 24	M 30	M 24	M 30	M 30	M 42	M 30	M 42	M 64 x 4	M 64 x 4
KK	M 22	M 22	M 24	M 22	M 24	M 24	M 30	M 24	M 36	M 36	M 48	M 36	M 48	M 64 x 4	M 64 x 4
KM	M 24	M 24	M 30	M 24	M 30	M 30	M 36	M 30	M 42	M 42	M 56 x 4	M 42	M 56 x 4	M 76 x 4	M 76 x 4
∅ MM h9	1	1	1 1/4	1	1 1/4	1 1/4	1 1/2	1 1/4	1 3/4	1 3/4	2 1/4	1 3/4	2 1/4	3	3
PJ	90,5	92,5		98,5		98,5		114,5		114,5		140		197	197
□ TV	47,5	55,5		66,5		89		108		128,5		168,5		209,5	246
VD	9,5	12,5		14,5		11		13		16		19		22	22
WD	58	65,5	66,5	70,5	71	79	80	76	77,5	101,5	102	117	118	134	134
WG	84	91,5	104,5	99,5	109,5	117	127	114	133	157	176	173	195	228,5	228,5
WH	55,5	63		68		76		73	76	100		115,5		130	130
Y	71	80,5		85,5		103		100	103	123,5		150,5		174,5	174,5
ZJ	178	190,5		201,5		228,5		241,5	244,5	262		325,5		416	416



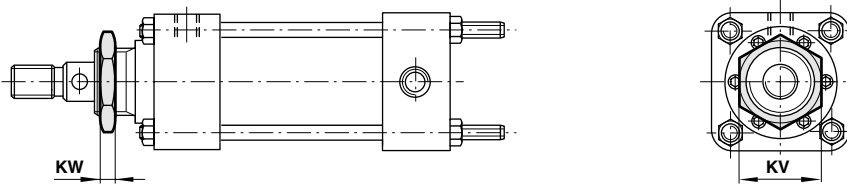
**Rear Flange Mounting Style 'B', Front Flange Mounting Style 'G'
Front and Rear Flange Mounting Style 'BG'**



Foot Mounting Style 'C'



Nose Mounting Style 'N'

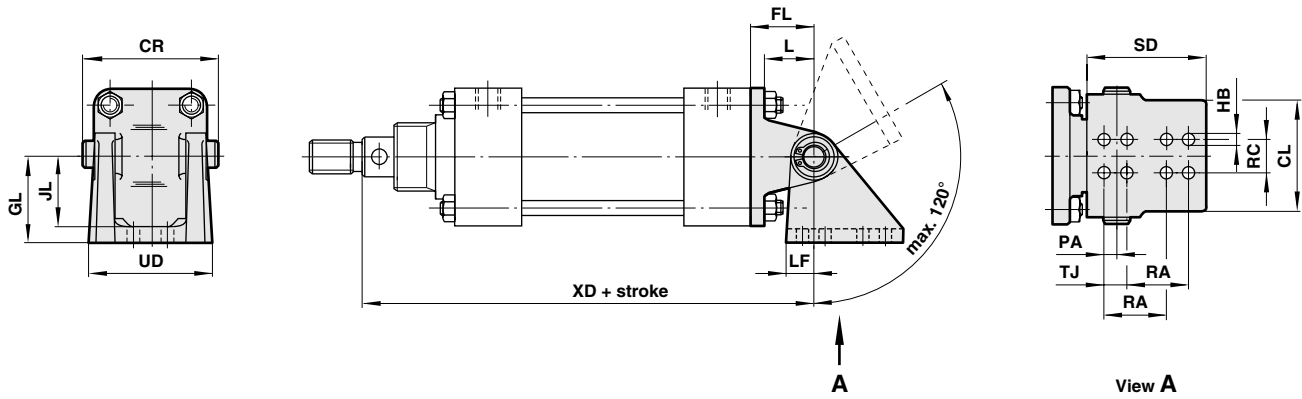


Model 'B'	QM/871	QM/877	QM/984	QM/987	QM/988	QM/884/1	QM/889/1	QM/882/2	QM/889/1
Model 'B' + 'G'	QM/1182	QM/1184	QM/1185	QM/1187	QM/1188	QM/1189	–	–	–
Model 'C'	QM/751	QM/748	QM/747	QM/746	QM/981	QM/826	QM/745	QM/744	QM/743
Model 'G'	QM/875	QM/876	QM/878	QM/887	QM/886	QM/884/2	QM/883/2	QM/882/2	QM/889/2
Model 'N'	M/P9693/1	M/P9693/2	M/P9693/2	M/P9693/4					
∅ inch	2	2 1/2	3	4	5	6	8	10	12
∅ AB	13	13	12	13,5	16,5	16,5	16,5	26	26
AH	43	47	52,5	70	82,5	99,5	122	159	177
AO	11	11	11	24,5	21,5	25	22	46	46
AT	5	5	5	8	8	10	10	15	15
AU	19	19	19	25,5	28,5	35	38	54	54
E	63,5	75,5	88,5	121	148	168,5	218,5	274,5	311
∅ FB	8,7	8,7	10,3	13,5	13,5	16,7	20	26,2	26,2
KV (A/F)	56	65,5	65,5	80	–	–	–	–	–
KW	8	9,5	9,5	16	–	–	–	–	–
MF	10	10	16	16	20	20	25	30	30
OF	16	20	22	32	40	40	50	65	65
R	47,5	55,5	66,5	89	108	128,5	168,5	209,5	246
SA	160	165	171	203	225	232	285	394	394
TF	85,5	93,5	111	146	171,5	205	263,5	333,5	384
TR	–	–	28,5	51	57	70	82,5	114,5	139
UF	105	113	133,5	178	203	243	314,5	397	448
W	45,5	53	52	60	53*	80	90,5	100	100
XA	196,5	209,5	220,5	253,5	269,5*	297,5	363	470,5	470,5
ZF	187,5	200,5	217,5	244	261*	282,5	350	446,5	446,5

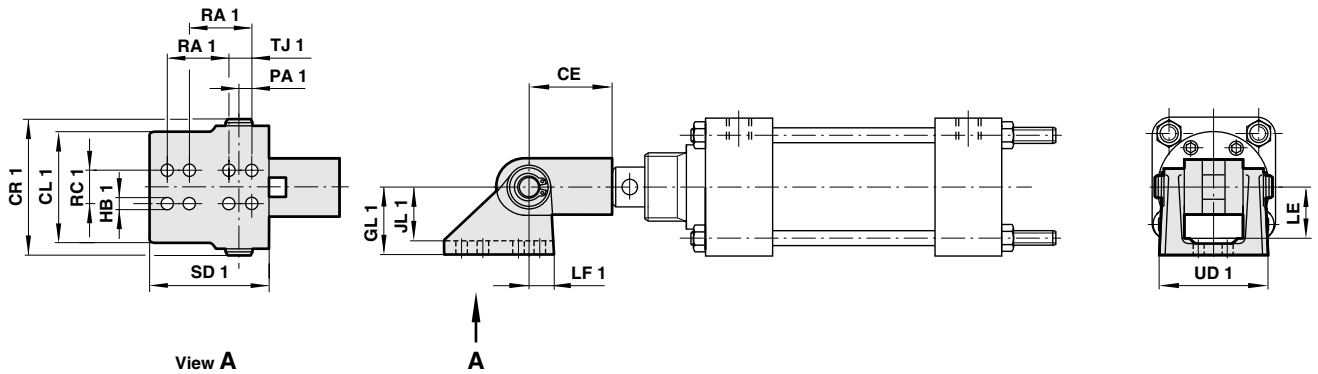
* Values for M/1051: W = 56,5, XA = 273, ZF = 264,5



Rear Hinge Mounting Style 'L'



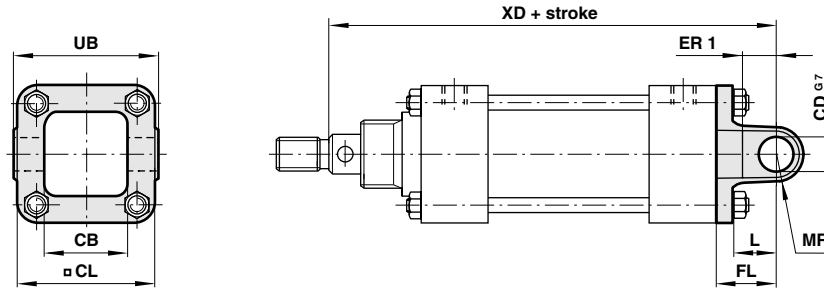
Front Hinge Mounting Style 'M'



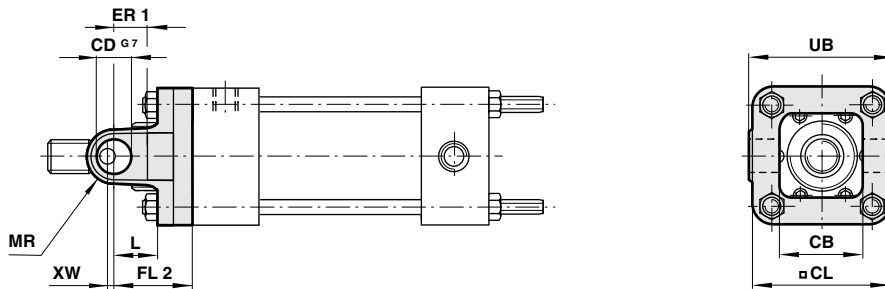
Model 'L'	QM/909	QM/910	QM/910	QM/911	QM/911	QM/912	QM/912	QM/913	QM/913	QM/914	QM/914	QM/915	QM/915	QM/917	QM/918
Model 'M'	QM/901	QM/901	QM/902	QM/901	QM/902	QM/902	QM/903	QM/902	QM/904	QM/904	QM/906	QM/904	QM/906	QM/921	QM/921
For Cylinder	1020	1025	1026	1030	1031	1040	1041	1050	1051	1060	1061	1080	1081	1101	1121
∅ inch	2	2 1/2	2 1/2	3	3	4	4	5	5	6	6	8	8	10	12
CE	58,5	58,5	66,5	58,5	66,5	66,5	79,5	66,5	95,5	95,5	120,5	95,5	120,5	146	146
CL	60	60	60	60	60	70	70	70	70	98,5	98,5	100	100	151	151
CL 1	60	60	70	60	70	70	79,5	70	98,5	98,5	114,5	98,5	114,5	146	146
CR	73	73	73	73	73	82,5	82,5	82,5	82,5	114,5	114,5	114,5	114,5	178	178
CR 1	73	73	82,5	73	82,5	82,5	92	82,5	114,5	114,5	132	114,5	132	165	165
FL	35	35	35	35	35	51	51	57	57	70	70	79,5	79,5	95,5	95,5
GL	47,5	47,5	47,5	47,5	47,5	74,5	74,5	74,5	74,5	89	89	116	116	171,5	171,5
GL 1	47,5	47,5	74,5	47,5	74,5	74,5	89	74,5	89	89	116	89	116	116	116
∅ HB	8,3	8,3	8,3	8,3	8,3	12	12	12	12	13,5	13,5	16,5	16,5	27	27
∅ HB 1	8,5	8,5	12	8,5	12	12	10,3	12	13,5	13,5	13,5	13,5	13,5	23	23
JL	39,5	39,5	39,5	39,5	39,5	39,5	39,5	65	65	76	76	100	100	151	151
JL 1	39,5	39,5	65	39,5	65	65	79,5	65	76	76	103	76	103	100	100
L	25,5	25,5	25,5	25,5	25,5	30	30	33,5	33,5	43	43	47,5	47,5	57	57
LE	35	35	57	35	57	57	79,5	57	55,5	55,5	103	55,5	103	100	100
LF	15,5	15,5	15,5	15,5	15,5	23,5	23,5	23,5	23,5	28	28	31,5	31,5	44,5	44,5
LF 1	16	16	24	16	24	24	28,5	24	28,5	28,5	35	28,5	35	45	45
PA	6,5	6,5	6,5	6,5	6,5	11	11	11	11	12,5	12,5	16	16	16	16
PA 1	6,5	6,5	11	6,5	11	11	16	11	12,5	12,5	16	12,5	16	19	19
RA	47,5	47,5	47,5	47,5	47,5	76	76	76	76	101,5	101,5	114,5	114,5	133,5	133,5
RA 1	47,5	47,5	76	47,5	76	76	89	76	102	102	121	102	121	114,5	114,5
RC	19	19	19	19	19	22	22	22	22	32	32	32	32	51	51
RC 1	19	19	22	19	22	22	22	22	32	32	38	32	38	41	41
SD	66,5	66,5	66,5	66,5	66,5	101,5	101,5	101,5	101,5	165	165	184	184	247,5	247,5
SD 1	67	67	102	67	102	102	114,5	102	165	165	159	165	159	210	210
TJ	-	-	-	-	-	-	-	-	-	32	32	38	38	57	57
TJ 1	-	-	-	-	-	-	-	-	32	32	-	32	-	44,5	44,5
UD	68,5	68,5	68,5	68,5	68,5	82,5	82,5	82,5	82,5	108	108	117,5	117,5	159	159
UD 1	68,5	68,5	82,5	68,5	82,5	82,5	79,5	82,5	108	108	114,5	108	114,5	146	146
XD	212,5	225,5	225,5	236,5	236,5	279	279	298	301,5	332	332	404,5	404,5	511,5	511,5



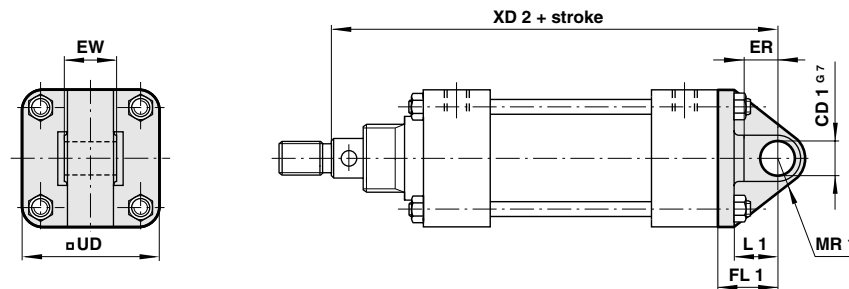
Rear Clevis Mounting Style 'D'



Front Clevis Mounting Style 'K'



Rear Eye Mounting Style 'R'

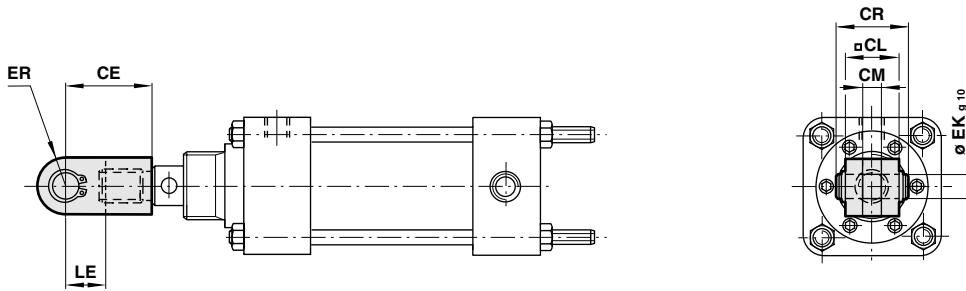


Model 'D'	M/P9822	M/P9825	M/P9828	QM/758/2	QM/759/2	QM/761/2	QM/762/2	-	-
Model 'K'	QM/963	QM/965	QM/967	QM/758/1	QM/759/1	QM/761/1	QM/762/1	-	-
Model 'R'	M/P10349	M/P10351	M/P10353	QM/763	QM/764	QM/765	QM/766	QM/767	QM/768
∅ inch	2	2 1/2	3	4	5	6	8	10	12
CB	47,5	54	57	70	92	106,5	122	-	-
∅ CD G7	16	16	20	22	25	32	38	-	-
∅ CD1 G7	16	16	16	18	18	25	25	38	38
□ CL	63,5	76	89	114,5	139,5	166,5	217,5	-	-
EN	12	14	14	19	19	19	31	37	37
ER	19	19	19	25,5	28,5	28,5	32	44,5	44,5
ER 1	19	19	22	36	31	34	38	-	-
EW	38,1	38,1	38,1	44,5	44,5	63,5	63,5	101,6	101,6
FL	28,5	28,5	32	57	70	76	85,5	-	-
FL 1	35	35	35	51	57	70	79,5	95,5	95,5
FL 2	38,5	44,5	47	57	70	76	85,5	-	-
L	20,5	20,5	24	38	44,5	49	57	-	-
L 1	25,5	25,5	25,5	30	33,5	43	47,5	57,5	57,5
MR	14	13	14	19	24	29	38	-	-
MR 1	14	14	16	21	21	25,5	25,5	41	41
UB	69,9	82,6	95,3	122,5	152,5	181	237	-	-
□ UD	62	74	87,5	112	138	165	217,5	268,5	319
XD	206	219	233,5	285,5	311*	338,5	411	-	-
XD 1	212,5	225,5	236,5	279	298*	332	404,5	511,5	511,5
XW	17	19	21,5	19	3	24	30,5	-	-

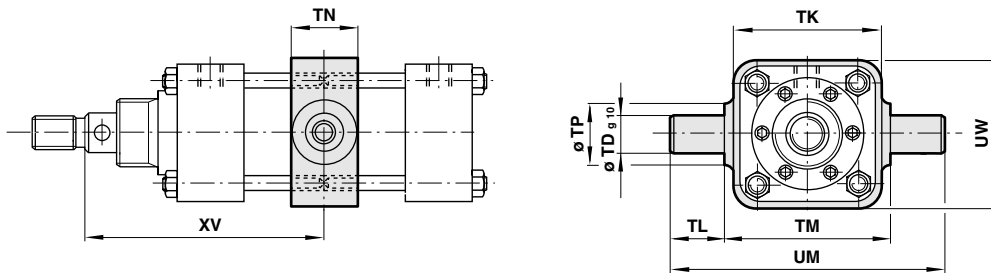
* Values for M/1051: XD = 314, XD1 = 301,5



Piston Rod Clevis Mounting Style 'F'



Central Trunnion Mounting Style 'H'

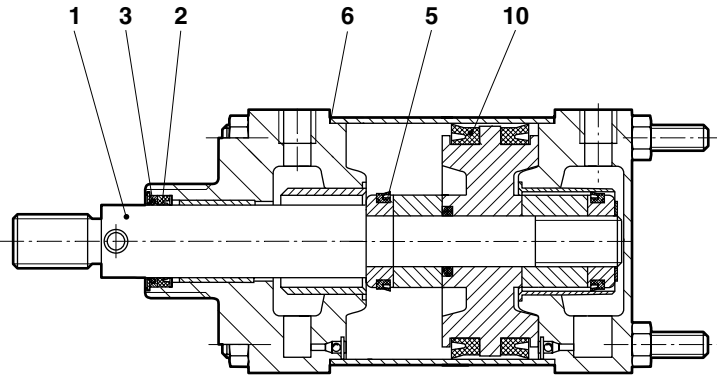


Note: These mountings are only supplied assembled complete with the cylinder. Unless otherwise specified, units will be supplied with dimension 'XV' plus half the stroke length.

Model 'F'	QM/407	QM/407	QM/408	QM/407	QM/408	QM/408	QM/409	QM/408	QM/410	QM/410	QM/411	QM/410	QM/411	QM/412	QM/412
Model 'H'	M/P8635	M/P8636	M/P8636	M/P8637	M/P8637	M/P8638	M/P8638	M/P8639	M/P8639	M/P8640	M/P8640	M/P8645	M/P8645	M/P8667	M/P8670
For Cylinder	1020	1025	1026	1030	1031	1040	1041	1050	1051	1060	1061	1080	1081	1101	1121
∅ inch	2	2 1/2	2 1/2	3	3	4	4	5	5	6	6	8	8	10	12
CE	58,5	58,5	66,5	58,5	66,5	66,5	79,5	66,5	95,5	95,5	120,5	95,5	120,5	146	146
□ CL	38	38	44,5	38	44,5	44,5	51	44,5	63,5	63,5	76	63,5	76	89	89
CM	14	14	16	14	16	16	20	16	25	25	32	25	32	38	38
CR	47	47	53	47	53	53	60	53	74	74	87	74	87	99	99
∅ EK g10	16	16	18	16	18	18	22	18	25	25	32	25	32	38	38
ER	19	19	22	19	22	22	25	22	32	32	38	32	38	45	45
LE	25,5	25,5	28,5	25,5	28,5	28,5	32	28,5	38	38	44,5	38	44,5	51	51
∅ TD g10	18	22	22	25	25	32	32	38	38	38	38	45	45	65	75
TK	70	81	81	95	95	127	127	152,5	152,5	187,5	187,5	241,5	241,5	330	381
TL	25,5	32	32	38	38	41,5	41,5	51	51	51	51	54	54	76	76
TM	79,5	90,5	90,5	108	108	139,5	139,5	165	165	192	192	247,5	247,5	330	381
TN	32	38	38	38	38	44,5	44,5	51	51	51	51	70	70	76	89
∅ TP	29	35	35	38	38	45	45	51	51	51	51	64	64	114,5	127
UM	130	154	154	184	184	222,5	222,5	266,5	266,5	293,5	293,5	355,5	355,5	482,5	533,5
UW	70	81	81	95	95	127	127	152,5	152,5	187,5	187,5	245	245	318	369
XV min.	108,5	119	119	125	125	144,5	144,5	146,5	149,5	168,5	168,5	210,5	210,5	238	244,5
XV max.	123	134,5	134,5	144,5	144,5	160	160	168	171	193,5	193,5	230,5	230,5	308	301,5



Spares



Model	Spares kit	Comprising:			Piston rod Item 1
		Item	Description	Quantity	
M/1020	QM/1020/00	2	Piston rod seal	1	P 9780/*
M/1025	QM/1025/00	3	Wiper seal	1	P 9782/*
M/1026	QM/1026/00	5	Cushion seal	2	P 9784/*
M/1030	QM/1030/00	6	Seal	2	P 9786/*
M/1031	QM/1031/00	10	Piston seal	2	P 9788/*
M/1040	QM/1040/00				P 9790/*
M/1041	QM/1041/00				P 9792/*
M/1050	QM/1050/00				P 9794/*
M/1051	QM/1051/00				P 9819/*
M/1060	QM/1060/00				P 9796/*
M/1061	QM/1061/00				P 9798/*
M/1080	QM/1080/00				P 9800/*
M/1081	QM/1081/00				P 9802/*
M/1101	QM/1101/00				P 10412/*
M/1121	QM/1121/00				P 10412/*

* Insert stroke length

Note: Please quote the cylinder type number when ordering spare parts

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.