



# **MWA/MWB** **Roundline Cylinders**

*For working pressures up to  
160 and 250 bar*

*Catalogue HY07-1216/UK  
June 2001*



**Standard MW Cylinders**

Parker's MW range of cylinders is designed for medium and heavy duty industrial and mobile applications. Two versions are available; the MWA Series for use at working pressures up to 250 bar, and the MWB Series for 160 bar applications. The MW range of cylinders is of welded construction at the cap end, with a threaded rod bearing at the head housing the gland seals. Standard cylinders are suitable for use with mineral oil, and are available in a choice of mounting styles.

**Custom Designed Cylinders**

This catalogue describes the basic range of MW cylinders; in practice, many of these cylinders are designed as 'specials' to the customer's unique specification. Some examples of these special cylinders are illustrated below. For more information, please contact your nearest Parker sales office.



**Standard Specification**

Max. working pressure – MWA	250 bar
– MWB	160 bar
Bore sizes – MWA	50mm to 200mm
– MWB	32mm to 200mm
Piston rod diameters – MWA	32mm to 125mm
– MWB	14mm to 125mm
Standard stroke lengths	up to 4000mm
Operating temperature range	–30°C to +80°C
Maximum piston speed	0.5m/s
Standard fluid	hydraulic fluid to ISO 6743/4
Viscosity range	2.8 – 380 mm <sup>2</sup> /s

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is a world leader in the manufacture of components and systems for motion control. Parker has more than 800 product lines for hydraulic, pneumatic and electro-mechanical applications in some 1200 industrial and aerospace markets.

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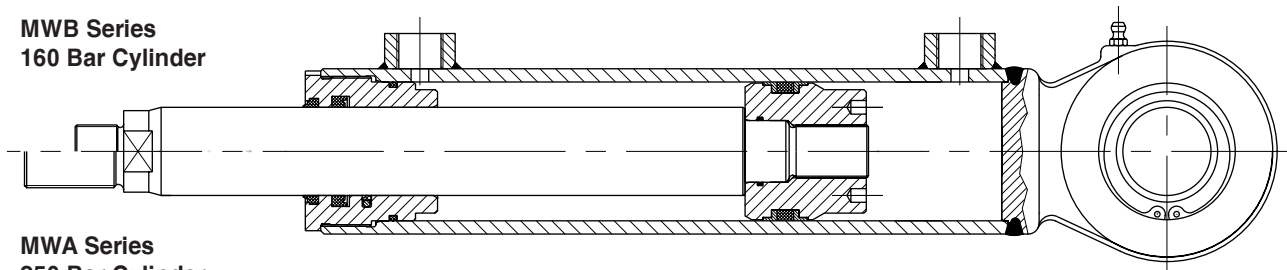
Catalogues describing our standard products are available from your nearest Parker sales office – please see the rear cover of this catalogue for details, or visit us at [www.parker.com](http://www.parker.com). Where an application demands a non-standard approach, special products can be designed to order – our engineers will be pleased to advise.



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Note: In line with our policy of continuing product improvement, specifications in this catalogue are subject to change without notice.

**Sectional View of MWA and MWB Cylinders**



**MWB Series  
160 Bar Cylinder**

**MWA Series  
250 Bar Cylinder**

Note heavier duty gland sealing, and larger diameter and extended rod end thread to provide fatigue-free performance at 250 bar.

**Standard Features**

- Construction: threaded head, welded cap
- Piston rod material: precision ground high tensile carbon steel, hard chrome plated to min. 20µm thickness and polished
- Tube material: cold drawn tubing, skived and roller burnished
- Piston seal: twin wear/anti-extrusion rings with elastomeric sealing element
- Rod seal: MWA (250 bar) cylinders – polyurethane lipseal plus PTFE seal with energizer and wiper seal; MWB (160 bar) cylinders – polyurethane lipseal and wiper seal
- Standard ports: BSPP threaded ports to DIN 3852 Pt.2

**Optional Features**

- Ports: metric threaded ports to DIN 3852 Pt.1 and ISO 6149. Other styles and positions to order.
- Strokes: to any practicable length
- Rod end threads: custom thread forms and lengths
- Mountings: special designs to customer order
- Seals: alternative seal and bearing materials to suit application
- Fluids: seal materials for all common hydraulic fluids including water-based and 'green' fluids
- Integrated valve and manifold designs
- Spherical bearing and plain bearing rod end eyes
- Air bleeds
- Position switches
- Linear transducers
- Custom paint finishes

**Standard and Optional Threaded Ports**

Bore dia.	Standard	Optional	
	BSPP DIN 3852 Pt.2	DIN 3852 Pt.1	ISO 6149 DIN 3852 Pt.3
32	G <sup>3</sup> / <sub>8</sub>	M16x1.5	M16x1.5
40	G <sup>3</sup> / <sub>8</sub>	M16x1.5	M16x1.5
50	G <sup>1</sup> / <sub>2</sub>	M22x1.5	M22x1.5
63	G <sup>1</sup> / <sub>2</sub>	M22x1.5	M22x1.5
80	G <sup>1</sup> / <sub>2</sub>	M22x1.5	M22x1.5
90	G <sup>3</sup> / <sub>4</sub>	M27x2 / M26x1.5	M27x2 / M26x1.5
100	G <sup>3</sup> / <sub>4</sub>	M27x2 / M26x1.5	M27x2 / M26x1.5
110	G1	M33x2	M33x2
125	G1	M33x2	M33x2
140	G1 <sup>1</sup> / <sub>4</sub>	M42x2	M42x2
160	G1 <sup>1</sup> / <sub>4</sub>	M42x2	M42x2
180	G1 <sup>1</sup> / <sub>4</sub>	M42x2	M42x2
200	G1 <sup>1</sup> / <sub>4</sub>	M42x2	M42x2

**Custom Cylinder Designs**

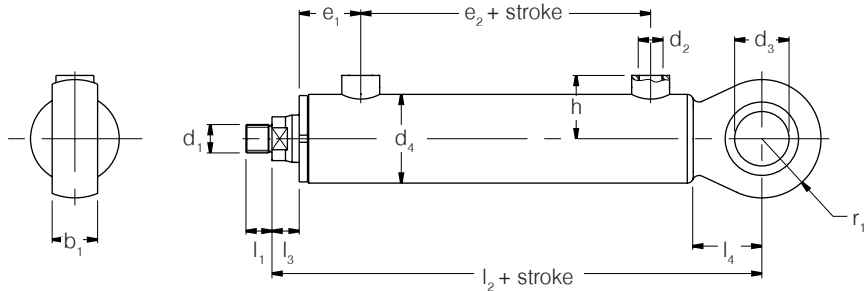
Parker's wide experience and extensive design and manufacturing facilities are available to assist with your custom cylinder projects. Please contact your nearest Parker Sales Office for details – see addresses on rear cover.

All dimensions are in millimetres unless otherwise stated.



**Style B1**

Cap Fixed Eye  
(ISO Style MP3)



**Dimensions – B1** See also Optional Port Dimensions, page 3

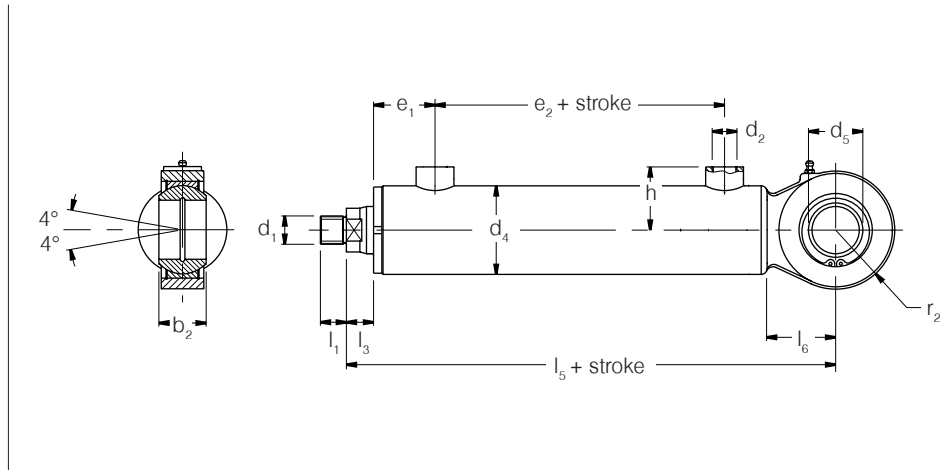
**MWA MWB**

Bore	Pressure Bar	Rod Dia.	b <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	e <sub>1</sub>	e <sub>2</sub>	h	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r <sub>1</sub>
			h <sub>11</sub>	6g	6H	C11	-	-	-	-	min	max			
32	160	14	20	M12x1.5	G <sup>3</sup> / <sub>8</sub>	20	42	34	25	34	12	130	14	22	20
	160	20													
40	160	18	25	M16x1.5	G <sup>3</sup> / <sub>8</sub>	25	50	43	33.5	38	14	149	15	28	25
	160	25													
50	160	22	32	M18x1.5	G <sup>1</sup> / <sub>2</sub>	32	60	48	36	45	16	170	17	33	32
	160	32													
	250	32													
63	160	28	40	M24x1.5	G <sup>1</sup> / <sub>2</sub>	40	75	52	45	53	22	200	22	43	40
	160	40													
	250	40													
80	160	36	50	M30x1.5	G <sup>1</sup> / <sub>2</sub>	50	95	64	42	63	28	240	26	53	50
	160	50													
	250	50													
90	160	40	55	M36x1.5	G <sup>3</sup> / <sub>4</sub>	55	110	68	49	72	34	260	29	58	55
	160	56													
	250	56													
100	160	45	60	M36x1.5	G <sup>3</sup> / <sub>4</sub>	60	120	80	59	77	34	290	34	63	60
	160	63													
	250	63													
110	160	50	65	M42x2	G1	65	130	88	61	85	38	310	35	70	65
	160	70													
125	160	56	75	M48x3	G1	75	145	102	65	93	44	345	36	80	75
	160	80													
	250	80													
140	160	63	85	M52x3	G <sup>1</sup> / <sub>4</sub>	85	170	97	83	107	48	390	43	87	80
	160	90													
160	160	70	100	M60x4	G <sup>1</sup> / <sub>4</sub>	100	190	110	90	117	54	420	44	95	90
	160	100													
	250	100													
180	160	80	100	M68x4	G <sup>1</sup> / <sub>4</sub>	100	210	115	112	132	60	460	58	95	90
	160	110													
200	160	90	120	M72x4	G <sup>1</sup> / <sub>4</sub>	120	235	117	120	142	65	495	70	105	100
	160	125													
	250	125													
			125	M100x3	G <sup>1</sup> / <sub>4</sub>	125	235	117	120	142	112	495	70	105	100

All dimensions are in millimetres unless otherwise stated.



**Style B2**  
 Cap Fixed Eye  
 with Spherical Bearing  
 (ISO style MP5)



**Dimensions – B2** See also Optional Port Dimensions, page 3

**MWA MWB**

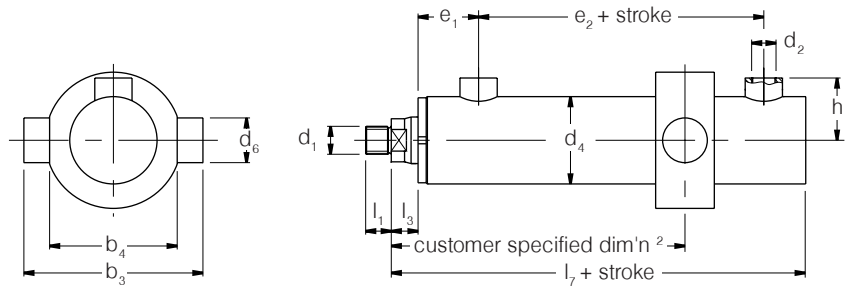
Bore	Pressure Bar	Rod Dia.	b <sub>2</sub> -0.5	d <sub>1</sub> 6g	d <sub>2</sub> 6H	d <sub>5</sub>	d <sub>4</sub> -	e <sub>1</sub>	e <sub>2</sub> -	h -	l <sub>1</sub>	l <sub>3</sub> -	l <sub>5</sub>	l <sub>6</sub> min	r <sub>2</sub> max
32	160	14	24	M12x1.5	G <sup>3</sup> / <sub>8</sub>	20	42	34	25	34	12	14	138	31	28
	160	20													
40	160	18	30	M16x1.5	G <sup>3</sup> / <sub>8</sub>	25	50	43	33.5	38	14	15	161	39	35
	160	25													
50	160	22	34	M18x1.5	G <sup>1</sup> / <sub>2</sub>	30	60	48	36	45	16	17	184	47	45
	160	32													
	250	32													
63	160	28	40	M24x1.5	G <sup>1</sup> / <sub>2</sub>	40	75	52	45	53	22	22	213	56	52
	160	40													
	250	40													
80	160	36	50	M30x1.5	G <sup>1</sup> / <sub>2</sub>	50	95	64	42	63	28	26	255	68	65
	160	50													
	250	50													
90	160	40	60	M36x1.5	G <sup>3</sup> / <sub>4</sub>	60	110	68	49	72	34	29	280	78	75
	160	56													
	250	56													
100	160	45	60	M36x1.5	G <sup>3</sup> / <sub>4</sub>	60	120	80	59	77	34	34	310	83	80
	160	63													
	250	63													
110	160	50	65	M42x2	G1	70	130	88	61	85	38	35	335	95	90
	160	70													
	250	70													
125	160	56	75	M48x3	G1	80	145	102	65	93	44	36	375	110	105
	160	80													
	250	80													
140	160	63	-	M52x3	G <sup>1</sup> / <sub>4</sub>	-	170	97	83	107	48	43	-	-	-
	160	90													
160	160	70	-	M60x4	G <sup>1</sup> / <sub>4</sub>	-	190	110	90	117	54	44	-	-	-
	160	100													
	250	100													
180	160	80	-	M68x4	G <sup>1</sup> / <sub>4</sub>	-	210	115	112	132	60	58	-	-	-
	160	110													
	250	110													
200	160	90	-	M72x4	G <sup>1</sup> / <sub>4</sub>	-	235	117	120	142	65	70	-	-	-
	160	125													
	250	125													
			125	M100x3	G <sup>1</sup> / <sub>4</sub>	125	235	117	120	142	112	70	570	165	160

All dimensions are in millimetres unless otherwise stated.





**Style C1**  
 Intermediate Trunnion  
 (ISO Style MT4)



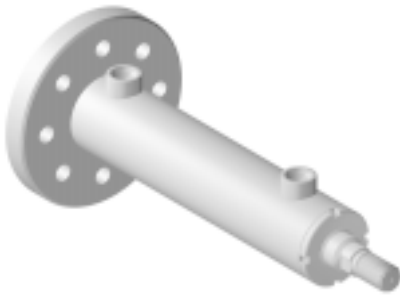
<sup>2</sup> Preferred position =  $2x(e_1 + l_3)$

**Dimensions – C1** See also Optional Port Dimensions, page 3

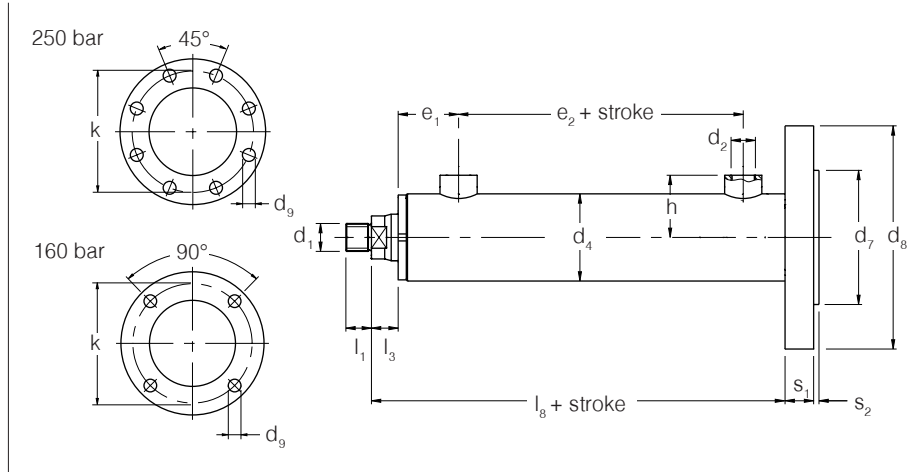
**MWA MWB**

Bore	Pressure Bar	Rod Dia.	b <sub>3</sub>	b <sub>4</sub> -0.5	d <sub>1</sub> 6g	d <sub>2</sub> 6H	d <sub>4</sub> -	d <sub>6</sub> 19	e <sub>1</sub>	e <sub>2</sub> -	h -	l <sub>1</sub>	l <sub>3</sub> -	l <sub>7</sub> max
32	160	14	90	60	M12x1.5	G <sup>3</sup> / <sub>8</sub>	42	20	34	25	34	12	14	117
	160	20												
40	160	18	100	70	M16x1.5	G <sup>3</sup> / <sub>8</sub>	50	25	43	33.5	38	14	15	122
	160	25												
50	160	22	120	80	M18x1.5	G <sup>1</sup> / <sub>2</sub>	60	30	48	36	45	16	17	137
	160	32												
	250	32												
63	160	28	145	100	M24x1.5	G <sup>1</sup> / <sub>2</sub>	75	40	52	45	53	22	22	158
	160	40												
	250	40												
80	160	36	180	120	M30x1.5	G <sup>1</sup> / <sub>2</sub>	95	45	64	42	63	28	26	187
	160	50												
	250	50												
90	160	40	190	130	M36x1.5	G <sup>3</sup> / <sub>4</sub>	110	55	68	49	72	34	29	203
	160	56												
100	160	45	200	140	M36x1.5	G <sup>3</sup> / <sub>4</sub>	120	60	80	59	77	34	34	228
	160	63												
	250	63												
110	160	50	230	160	M42x2	G1	130	70	88	61	85	38	35	240
	160	70												
125	160	56	260	180	M48x3	G1	145	80	102	65	93	44	36	265
	160	80												
	250	80												
140	160	63	290	200	M52x3	G <sup>1</sup> / <sub>4</sub>	170	90	97	83	107	48	43	303
	160	90												
160	160	70	320	220	M60x4	G <sup>1</sup> / <sub>4</sub>	190	100	110	90	117	54	44	325
	160	100												
	250	100												
180	160	80	340	240	M68x4	G <sup>1</sup> / <sub>4</sub>	210	110	115	112	132	60	58	365
	160	110												
200	160	90	370	260	M72x4	G <sup>1</sup> / <sub>4</sub>	235	120	117	120	142	65	70	390
	160	125												
	250	125												
			370	260	M100x3	G <sup>1</sup> / <sub>4</sub>	235	120	117	120	142	112	70	390

All dimensions are in millimetres unless otherwise stated.



**Style S2**  
 Cap Circular Flange  
 (ISO Style MF4)



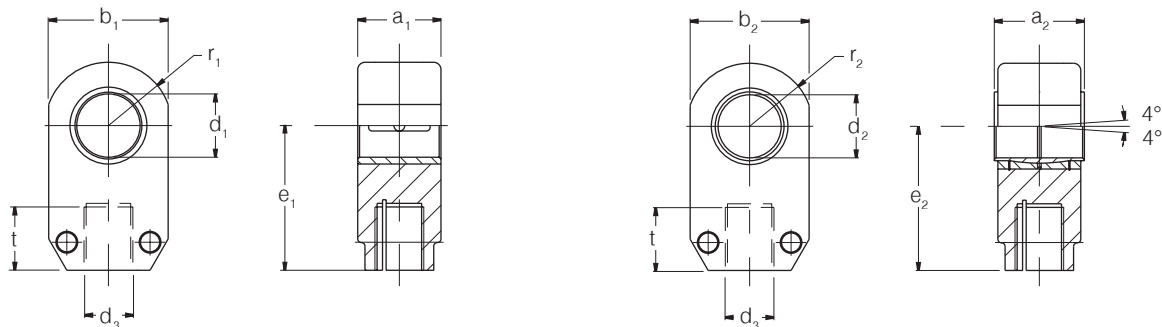
**Dimensions – S2** See also Optional Port Dimensions, page 3

**MWA MWB**

Bore	Pressure Bar	Rod Dia.	d <sub>1</sub> 6g	d <sub>2</sub> 6H	d <sub>4</sub> ~	d <sub>7</sub> f9	d <sub>8</sub>	d <sub>9</sub>	e <sub>1</sub>	e <sub>2</sub> ~	h ~	l <sub>1</sub>	l <sub>3</sub> ~	l <sub>8</sub>	k	s <sub>1</sub>	s <sub>2</sub>
32	160	14	M12x1.5	G <sup>3</sup> / <sub>8</sub>	42	63	108	9	34	25	34	12	14	119	86	16	3
	160	20															
40	160	18	M16x1.5	G <sup>3</sup> / <sub>8</sub>	50	75	125	11	43	33.5	38	14	15	133	100	16	3
	160	25															
50	160	22	M18x1.5	G <sup>1</sup> / <sub>2</sub>	60	90	147	13.5	48	36	45	16	17	155	120	20	3
	160	32															
50	250	32	M27x2	G <sup>1</sup> / <sub>2</sub>	60	90	147	13.5	48	36	45	36	17	155	120	20	3
63	160	28	M24x1.5	G <sup>1</sup> / <sub>2</sub>	75	100	170	17.5	52	45	53	22	22	175	135	25	3
	160	40															
63	250	40	M33x2	G <sup>1</sup> / <sub>2</sub>	75	100	170	17.5	52	45	53	45	22	175	135	25	3
80	160	36	M30x1.5	G <sup>1</sup> / <sub>2</sub>	95	125	195	17.5	64	42	63	28	26	202	160	32	3
	160	50															
80	250	50	M42x2	G <sup>1</sup> / <sub>2</sub>	95	125	195	17.5	64	42	63	56	26	202	160	32	3
90	160	40	M36x1.5	G <sup>3</sup> / <sub>4</sub>	110	140	216	22	68	49	72	34	29	217	180	32	3
	160	56															
100	160	45	M36x1.5	G <sup>3</sup> / <sub>4</sub>	120	150	226	22	80	59	77	34	34	240	190	32	3
	160	63															
100	250	63	M48x2	G <sup>3</sup> / <sub>4</sub>	120	150	226	22	80	59	77	63	34	240	190	32	3
110	160	50	M42x2	G1	130	170	265	26	88	61	85	38	35	261	220	32	3
	160	70															
125	160	56	M48x3	G1	145	180	285	30	102	65	93	44	36	284	235	32	5
	160	80															
125	250	80	M64x3	G1	145	180	285	30	102	65	93	85	36	284	235	32	5
140	160	63	M52x3	G <sup>1</sup> / <sub>4</sub>	170	200	322	33	97	83	107	48	43	330	260	40	5
	160	90															
160	160	70	M60x4	G <sup>1</sup> / <sub>4</sub>	190	230	356	36	110	90	117	54	44	345	290	45	5
	160	100															
160	250	100	M80x3	G <sup>1</sup> / <sub>4</sub>	190	230	356	36	110	90	117	95	44	345	290	45	5
180	160	80	M68x4	G <sup>1</sup> / <sub>4</sub>	210	250	395	39	115	112	132	60	58	383	320	50	5
	160	110															
200	160	90	M72x4	G <sup>1</sup> / <sub>4</sub>	235	280	445	45	117	120	142	65	70	408	360	56	6
	160	125															
200	250	125	M100x3	G <sup>1</sup> / <sub>4</sub>	235	280	445	45	117	120	142	112	70	408	360	56	6

All dimensions are in millimetres unless otherwise stated.

**Rod End Eyes for 160 Bar Cylinders**



**Plain Bearing Eye (PBE)**

**Spherical Bearing Eye (SBE)**

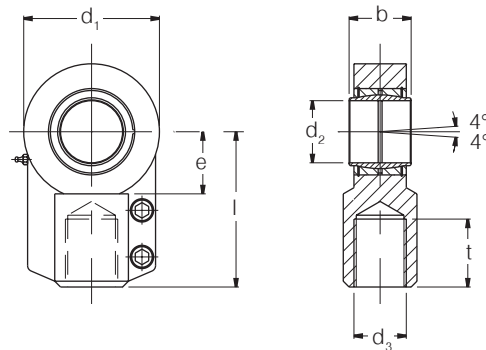
To 125mm bore size only

Bore dia.	Thread d <sub>3</sub> 6H	a <sub>1</sub>	a <sub>2</sub> -0.5	b <sub>1</sub> max	b <sub>2</sub> max	d <sub>1</sub> C11	d <sub>2</sub> K7	e <sub>1</sub>	e <sub>2</sub>	r <sub>1</sub> max	r <sub>2</sub> max	t min	Mass – kg	
													PBE	SBE
32	M12x1.5	20 <sup>+0.5</sup> <sub>-0.8</sub>	24	38	50	20	20	30	35	22	28	13	0.2	0.3
40	M16x1.5	25 <sup>+0.5</sup> <sub>-0.7</sub>	30	45	56	25	25	35	40	25	32	15	0.3	0.5
50	M18x1.5	32 <sup>+0.5</sup> <sub>-0.7</sub>	34	58	70	32	30	45	45	32	38	17	0.6	1.1
63	M24x1.5	39.5 ±0.6	40	72	85	40	40	55	60	40	50	23	1.2	1.8
80	M30x1.5	49.5 ±0.8	50	86	105	50	50	65	70	50	60	29	2.2	3.2
90	M36x1.5	54.5 ±0.8	60	94	120	55	60	75	82	52	65	35	3.3	4
100	M36x1.5	60 <sup>+1</sup> <sub>-1.5</sub>	60	105	135	60	60	80	85	60	73	36	4	4
110	M42x2	65 <sup>+1</sup> <sub>-1.5</sub>	65	110	150	65	70	90	95	65	84	40	6	6
125	M48x3	75 <sup>+1</sup> <sub>-2</sub>	75	130	175	75	80	105	110	75	95	47	8	8
140	M52x3	85 <sup>+1.5</sup> <sub>-2</sub>	–	140	–	85	–	115	–	83	–	51	11	–
160	M60x4	100 <sup>+2</sup> <sub>-3</sub>	–	160	–	100	–	130	–	90	–	58	16	–
180	M68x4	100 <sup>+2</sup> <sub>-3</sub>	–	170	–	100	–	140	–	100	–	65	17	–
200	M72x4	120 <sup>+2</sup> <sub>-3</sub>	–	200	–	120	–	155	–	115	–	70	24	–

**Rod End Eyes for 250 Bar Cylinders**

**Spherical Bearing Eye to ISO 6982**

Bore dia.	Part No.	Thread d <sub>3</sub>	b h12	d <sub>1</sub>	d <sub>2</sub> H7	e	l	t	Mass kg
50	145241	M27x2	32	70	32	32	80	37	1.2
63	145242	M33x2	40	89	40	41	97	46	2.1
80	145243	M42x2	50	108	50	50	120	57	4.4
100	145244	M48x2	63	132	63	62	140	64	7.6
125	145245	M64x3	80	168	80	78	180	86	14.5
160	148724	M80x3	100	210	100	98	210	96	28
200	148726	M100x3	125	262	125	120	260	113	43



Plain rod eyes with dimensions to ISO 6981 are available on request – please contact factory.

All dimensions are in millimetres unless otherwise stated.



**Push and Pull Forces**

Bore	Pressure Bar	Rod Dia. $\varphi$	Stroke Range at full rated pressure			Theoretical Force N		
			Min	Max $\varphi = 1.25$ $\varphi = 1.6$		Extension $\varphi = 1.25$	Retraction $\varphi = 1.6$	
32	160	14 <sup>1.25</sup>	25	160	400	12620	10210	7690
	160	20 <sup>1.6</sup>						
40	160	18 <sup>1.25</sup>	25	250	500	19720	15730	12020
	160	25 <sup>1.6</sup>						
50	160	22 <sup>1.25</sup>	25	320	630	30820	24850	18200
	160	32 <sup>1.6</sup>						
	250	32 <sup>1.6</sup>						
63	160	28 <sup>1.25</sup>	25	400	800	48930	39260	29200
	160	40 <sup>1.6</sup>						
	250	40 <sup>1.6</sup>						
80	160	36 <sup>1.25</sup>	25	500	1000	78900	62920	48080
	160	50 <sup>1.6</sup>						
	250	50 <sup>1.6</sup>						
90	160	40 <sup>1.25</sup>	25	500	1250	99850	80130	61190
	160	56 <sup>1.6</sup>						
100	160	45 <sup>1.25</sup>	40	630	1250	123280	98310	74350
	160	63 <sup>1.6</sup>						
	250	63 <sup>1.6</sup>						
110	160	50 <sup>1.25</sup>	40	630	1600	149160	118350	88760
	160	70 <sup>1.6</sup>						
125	160	56 <sup>1.25</sup>	40	800	1600	192620	153960	113720
	160	80 <sup>1.6</sup>						
	250	80 <sup>1.6</sup>						
140	160	63 <sup>1.25</sup>	40	800	2000	241620	192690	141770
	160	90 <sup>1.6</sup>						
160	160	70 <sup>1.25</sup>	63	1000	2000	315590	255180	192310
	160	100 <sup>1.6</sup>						
	250	100 <sup>1.6</sup>						
180	160	80 <sup>1.25</sup>	63	1000	2500	399410	320520	250250
	160	110 <sup>1.6</sup>						
200	160	90 <sup>1.25</sup>	63	1250	2500	493100	393250	300490
	160	125 <sup>1.6</sup>						
	250	125 <sup>1.6</sup>						

$\varphi$  = differential area – annular/full bore sides of piston

**Model Codes and Ordering**  
**MWA and MWB Series Cylinders**

Feature	Description	Page	Symbol
Series	MWA (250 bar)	2	MWA
	MWB (160 bar)	2	MWB
Pressure	Bar	2	250 160
Mounting	Cap fixed eye	4	B1
	Cap spherical eye	5	B2
	Intermediate trunnion	6	C1
	Cap circular flange	7	S2
Bore	Millimetres	4-7	–
Rod dia.	Millimetres	4-7	–
Stroke	Millimetres	–	–
Port	Indicate thread	3	G*

**Example**

An MWA 250 bar cylinder with cap end spherical bearing eye mounting, 50mm bore with 32mm rod diameter, 500mm stroke and standard (DIN3852 pt.2) ports would have the following model code:

**MWA 250 B2 50/32 x 500 G<sup>1/2</sup>**

Where optional or special features are required, these should be described clearly as accompanying text.

**Rod End Eyes**

160 bar plain bearing and spherical bearing rod eyes should be ordered as shown in the table and example below. 250 bar spherical bearing rod eyes should be ordered using the part numbers shown in the table on page 8.

Feature	Description	Page	Symbol
Series	MWB (160 bar)	2	MWB
Rod end eye	Plain bearing (160 bar)	8	A
	Spherical bearing (160 bar)	8	B
Cylinder Bore	Millimetres	–	–
Pin dia.	Millimetres	–	–

**Example**

A spherical bearing rod eye rated at 160 bar with a pin diameter (dimension  $d_2$ ) of 80mm for use with an MWB cylinder of 125mm bore would have the following model code:

**MWB B 125/80**

All dimensions are in millimetres unless otherwise stated.

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