

ADJUSTABLE HYDRAULIC SERIES

The Adjustable Hydraulic Series shock absorbers offer the most flexible solutions in solving your energy absorption needs when input parameters either vary or are not clearly defined.

By simply turning an adjustment knob, the damping force can be changed to accommodate a wide range of conditions. Enidine offers the broadest range of adjustable shock absorbers and mounting accessories in the marketplace today.

Features and Benefits



Adjustable design lets you “fine tune” your desired damping and lock the numbered adjustment setting in place.



Internal orifice design provides deceleration with the most efficient damping characteristics, resulting in the lowest reaction forces in the industry.



Threaded cylinders provide mounting flexibility and increased surface area for improved heat dissipation.



Optional fluids and seal packages are available to expand the standard operational temperature range from (-10°C to 80°C) to (-30°C to 100°C).



Enicote™ surface protection maintains the original quality appearance and provides long-term corrosion resistance.



Operational parameters can be expanded through the use of Enidine's Low Range and High Performance products.



Fully field repairable units are available in bore sizes of 20 mm and larger.



Strict quality standards result in reliable, long-life operation.



Custom orificed non-adjustable units (CBOEM) are available to meet specific application requirements (OEM Models only).



OEM SMALL OEM SMALL OEM SMALL OEM SMALL

The OEM Small Series is the widest range of small adjustable shock absorbers in the industry.

Fully adjustable hydraulic shock absorbers designed to decelerate light to medium loads.

Small envelope size to accommodate space constraints.



OEM LARGE OEM LARGE OEM LARGE OEM LARGE OEM

OEM Large Models are available with metric threads and bore diameters from 20 mm to 50 mm. These models are designed to decelerate medium to large loads.

Low Range (LROEM) models are available to control velocities as low as 0,08 m/sec and propelling forces as high as 44 500 N.

Fully field repairable.



OEM LOW PROFILE OEM LOW PROFILE OEM LOW PROFILE

The **OEM Low Profile** design provides a non-protruding adjustment knob along with imperial threads and bore diameters of 20 mm and 30 mm for drop-in competitive interchange.

Low Range (LROEM) models are available to control velocities as low as 0,08 m/sec and propelling forces as high as 17 790 N.

Fully field repairable.



HP HP HP HP HP HP HP HP HP HP HP HP HP HP HP HP

High performance (HP) design is capable of softly decelerating impact velocities as high as 6,10 m/sec.

Wide range adjustability and multiple damping rates accommodate exact application needs.

Supplied complete with two jam nuts.

Shock Absorber Sizing

1. Determine load weight (Kg), impact velocity (m/sec), propelling force (N), if any, cycles per hour, and stroke (mm) required.
2. Calculate total energy per cycle (Nm/c) and total energy per hour (Nm/hr). Consult this catalog's sizing section (pages 72-77) for assistance if required.
3. Compare the calculated total energy per cycle (Nm/c), total energy per hour (Nm/hr) and propelling force (N) to the values listed in the Adjustable Hydraulic Series Engineering Data chart (pages 16, 18 and 22).
4. Select appropriate adjustable model.
5. Compare application's maximum velocity to the Adjustable Hydraulic Series "Useable Adjustment Setting Range" graphs (pages 21 and 23) to confirm that the velocity does not exceed the selected model's capability.

Example: Horizontal Application

1. Weight (W): 350 Kg
Velocity (V): 2,75 m/sec
Propelling Force (F_p): None
Cycles/Hour (C): 100 cycles/hr
Stroke (S): 50 mm
2. Total Energy/Cycle (E_T): 1 323 Nm/c
Total Energy/Hour (E_TC): 132 300 Nm/hr
3. Compare total energy/cycle (1 323 Nm/c) and total energy/hour (132 300 Nm/hr) to the Adjustable Hydraulic Series Engineering Data chart (pages 16, 18 and 22).
4. Selection: OEM 2.0M x 2 or OEM 1 1/8 x 2.
5. Application's maximum velocity (2,75 m/sec) does not exceed the selected model's capability (refer to page 21).

$$E = \frac{1}{2} MV^2$$

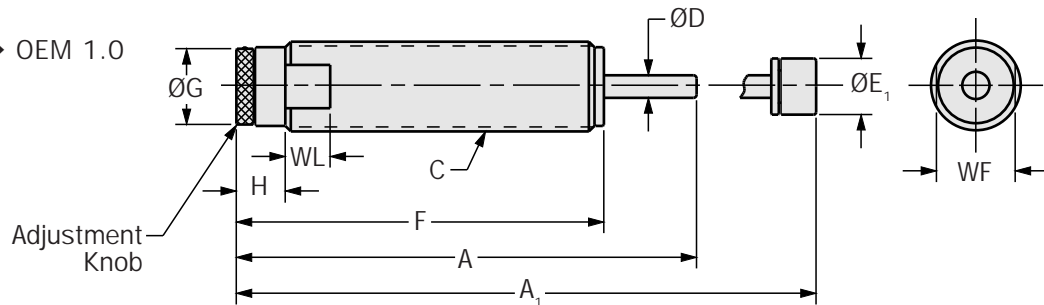
Sizing - See Page 72.

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Engineering Data

OEM Small

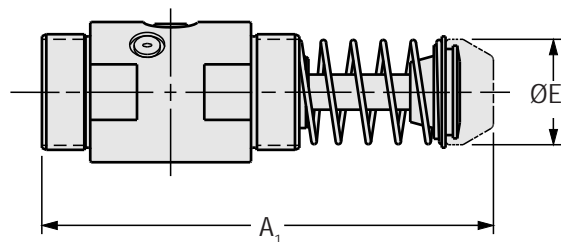
OEM 0.1M → OEM 1.0



Catalog No. (Model)	Bore Size mm	(S) Stroke mm	(E _p) Max. Nm Per Cycle	(E _{1C}) Max. Nm Per Hour	(F _p) Max. Shock Force N	Nominal Coil Spring Force		(F _p) Max. Propelling Force N	Model Weight Grams
						Extension N	Compression N		
OEM 0.1M (B)	6,1	7	5,5	12 000	1 220	2,2	4,4	350	30
OEM .25M (B)	6,4	10	5,5	20 000	950	3,5	7,5	350	60
OEM .35M (B)	7,1	12	17,0	34 000	2 000	4,9	9,8	540	90
OEM .5M (B)	7,1	12	12,0	32 000	1 330	7,0	9,0	670	125
OEM 1.0M (B)	12,7	25	74,0	70 000	4 440	13,0	26,0	1 330	285
OEM 1.25M x 1	15,9	25	125,0	91 000	7 500	40,0	58,0	2 220	570
OEM 1.25M x 2	15,9	50	250,0	111 000	7 500	22,0	58,0	2 220	740

- Notes:
- (B) indicates button model. A₁ and E₁ apply to button models OEM 0.1MB through OEM 1.0MB and to the urethane striker cap accessory for OEM 1.25M models.
 - All shock absorbers will function satisfactorily at 5% of their maximum rated energy per cycle. If less than 5%, a smaller model should be specified.
 - Custom orificed non-adjustable CBOEM models available.

OEM Low Profile

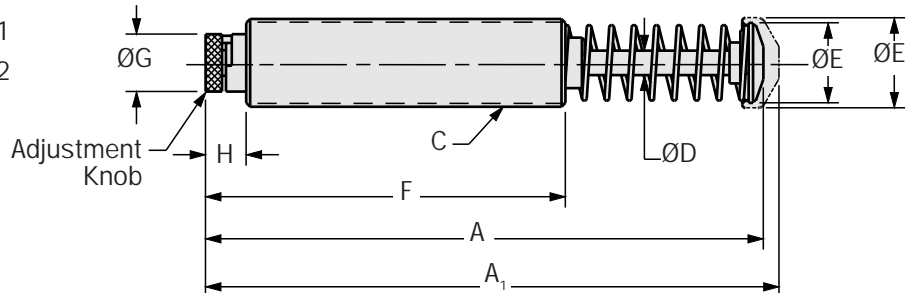


Catalog No. (Model)	Bore Size mm	(S) Stroke mm	(E _p) Max. Nm Per Cycle	(E _{1C}) Max. Nm Per Hour	(F _p) Max. Shock Force N	Nominal Coil Spring Force		(F _p) Max. Propelling Force N	Model Weight Kg
						Extension N	Compression N		
OEM ³ / ₄ x 1	20	25	260	126 000	13 300	49	68	2 890	1,2
LROEM ³ / ₄ x 1	20	25	260	126 000	13 300	49	68	6 670	1,2
OEM ³ / ₄ x 2	20	50	520	167 000	13 300	32	68	2 890	1,3
LROEM ³ / ₄ x 2	20	50	520	167 000	13 300	49	80	6 670	1,3
OEM ³ / ₄ x 3	20	75	780	201 000	13 300	32	80	2 890	1,6
LROEM 1 ¹ / ₈ x 1	30	25	680	226 000	34 700	115	155	17 790	2,9
OEM 1 ¹ / ₈ x 2	30	50	1 360	271 000	34 700	76	155	6 670	4,5
LROEM 1 ¹ / ₈ x 2	30	50	1 360	271 000	34 700	76	155	17 790	4,5
OEM 1 ¹ / ₈ x 4	30	100	2 710	362 000	34 700	71	160	6 670	5,3
OEM 1 ¹ / ₈ x 6	30	150	4 070	421 000	34 700	90	285	6 670	6,6

- Notes:
- All shock absorbers will function satisfactorily at 5% of their maximum rated

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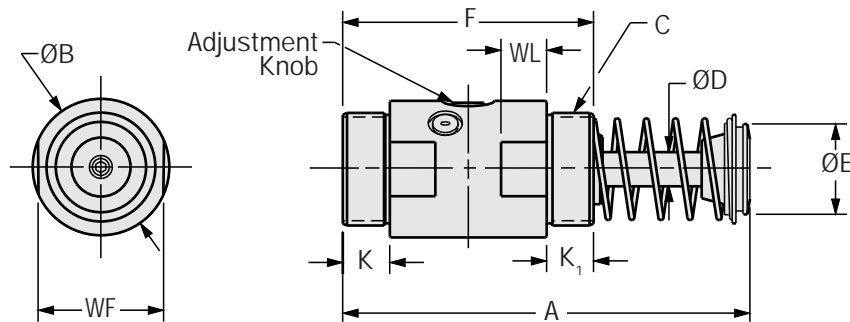
OEM 1.25M x 1
OEM 1.25M x 2



A	A ₁	C	D	E	E ₁	F	G	H	WF	WL	(S) Stroke mm	Catalog No. (Model)
57,0	67,0	M10 x 1,0	3,15	NA	8,6	49,4	8,6	10,2	NA	NA	7	OEM 0.1M (B)
81,8	91,2	M14 x 1,5	3,18	NA	11,0	71,4	10,9	14,2	NA	NA	10	OEM .25M (B)
101,0	111,0	M16 x 1,5	4,00	NA	11,0	88,0	11,0	14,5	NA	NA	12	OEM .35M (B)
98,6	110,5	M20 x 1,5	4,76	NA	12,7	84,1	16,0	17,0	NA	NA	12	OEM .5M (B)
130,0	142,7	(M) M27 x 3 (MF) M25 x 1,5	6,35	NA	15,8	104,0	22,0	14,0	23,0	12,7	25	OEM 1.0M (B)
165,6	171,5	M36 x 1,5	9,53	31,0	35,0	113,0	22,4	14,7	NA	NA	25	OEM 1.25M x 1
216,4	222,2	M36 x 1,5	9,53	31,0	35,0	138,4	22,4	14,7	NA	NA	50	OEM 1.25M x 2

4. For mounting accessories see pages 24-27.

All dimensions in millimeters.



A	A ₁	B	C	D	E	E ₁	F	K	K ₁	WF	WL	(S) Stroke mm	Catalog No. (Model)
144	162	58	1 ³ / ₄ - 12 UN	13	38	44	92	23	21	51	10	25	OEM ³ / ₄ x 1
144	162	58	1 ³ / ₄ - 12 UN	13	38	44	92	23	21	51	10	25	LROEM ³ / ₄ x 1
195	213	58	1 ³ / ₄ - 12 UN	13	38	44	118	23	21	51	12	50	OEM ³ / ₄ x 2
195	213	58	1 ³ / ₄ - 12 UN	13	38	44	118	23	21	51	12	50	LROEM ³ / ₄ x 2
246	264	58	1 ³ / ₄ - 12 UN	13	38	44	143	23	21	51	12	75	OEM ³ / ₄ x 3
175	193	77	2 ¹ / ₂ - 12 UN	19	50	57	114	26	26	70	12	25	LROEM 1 ¹ / ₈ x 1
226	243	77	2 ¹ / ₂ - 12 UN	19	50	57	140	26	26	70	25	50	OEM 1 ¹ / ₈ x 2
226	243	77	2 ¹ / ₂ - 12 UN	19	50	57	140	26	26	70	25	50	LROEM 1 ¹ / ₈ x 2
328	345	77	2 ¹ / ₂ - 12 UN	19	50	57	191	26	26	70	25	100	OEM 1 ¹ / ₈ x 4
456	473	77	2 ¹ / ₂ - 12 UN	19	60	60	241	26	26	70	25	150	OEM 1 ¹ / ₈ x 6

3. Air/Oil (AOEM, LRAOEM) models – max. Nm per hour is 20%

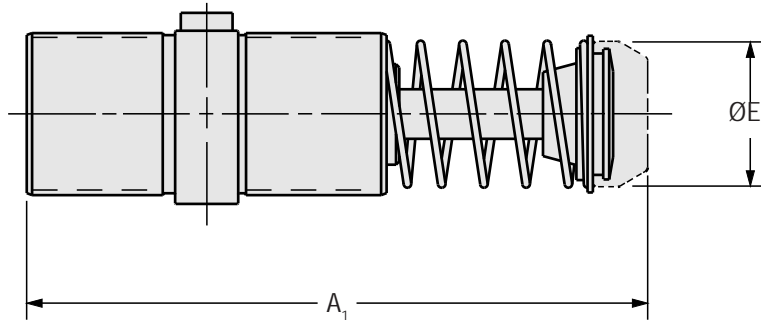
4. For mounting accessories see pages 24-27.

All dimensions in millimeters.

ADJUSTABLE HYDRAULIC SERIES

Engineering Data

OEM Large



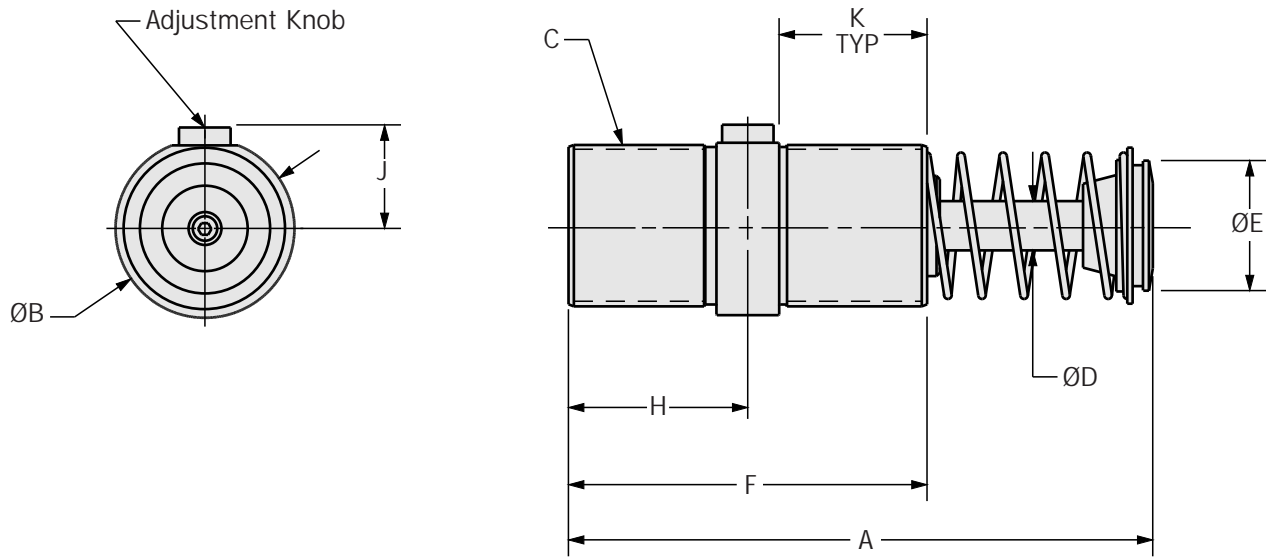
Catalog No. (Model)	Bore Size mm	(S) Stroke mm	(E_1) Max. Nm Per Cycle	(E_1, C) Max. Nm Per Hour	(F_p) Max. Shock Force N	Nominal Coil Spring Force		(F_p) Max. Propelling Force N	Model Weight Kg
						Extension N	Compression N		
OEM 1.5M x 1	20	25	260	126 000	13 000	49	68	2 890	0,9
LROEM 1.5M x 1	20	25	260	126 000	13 000	49	68	6 660	0,9
OEM 1.5M x 2	20	50	520	167 000	13 000	32	68	2 890	1,0
LROEM 1.5M x 2	20	50	520	167 000	13 000	49	80	6 660	1,0
OEM 1.5M x 3	20	75	780	201 000	13 000	32	80	2 890	1,2
OEM 2.0M x 2	30	50	1 360	271 000	34 500	76	155	6 660	3,4
LROEM 2.0M x 2	30	50	1 360	270 000	34 500	76	155	17 760	3,4
OEM 2.0M x 4	30	100	2 710	362 000	34 500	71	160	6 660	4,0
OEM 2.0M x 6	30	150	4 070	421 000	34 500	90	285	6 660	5,0
OEM 3.0M x 2	40	50	2 300	372 000	67 000	110	200	12 000	7,0
OEM 3.0M x 3.5	40	90	4 000	652 000	67 000	110	200	12 000	9,1
OEM 3.0M x 5	40	125	5 700	933 000	67 000	71	200	12 000	10,9
OEM 3.0M x 6.5	40	165	7 300	1 215 000	67 000	120	330	12 000	13,6
OEM 4.0M x 2	50	50	3 800	1 503 000	111 000	225	290	21 000	15,0
OEM 4.0M x 4	50	100	7 700	1 808 000	111 000	155	290	21 000	18,2
OEM 4.0M x 6	50	150	11 500	2 102 000	111 000	135	310	21 000	20,0
OEM 4.0M x 8	50	200	15 400	2 407 000	111 000	180	355	21 000	30,0
OEM 4.0M x 10	50	250	19 200	2 712 000	111 000	135	355	21 000	33,0

Notes:

1. A_1 and E_1 apply to the urethane striker cap accessory.
2. All shock absorbers will function satisfactorily at 5% of their maximum rated energy per cycle. If less than 5%, a smaller model should be specified.

3. Air/Oil (AOEM, LRAOEM) models – max. Nm per hour is 20% higher than the standard OEM/LROEM models.
4. For mounting accessories see pages 24-27.
5. Rear flange mounting of longest stroke OEM 2.0M and OEM 4.0M models not recommended when mounting horizontally.

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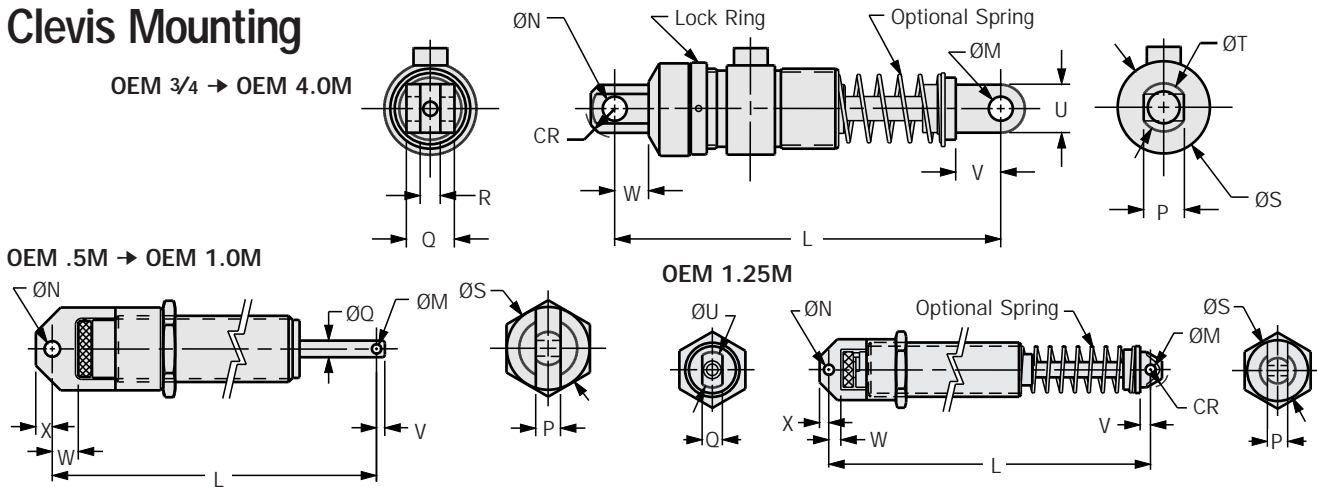


	A	A ₁	B	C	D	E	E ₁	F	H	J	K	(S) Stroke mm	Catalog No. (Model)
	144	162	51	M42 x 1,5	13	38	44	92	46	37	32	25	OEM 1.5M x 1
	144	162	51	M42 x 1,5	13	38	44	92	46	37	32	25	LROEM 1.5M x 1
	195	213	51	M42 x 1,5	13	38	44	118	59	37	45	50	OEM 1.5M x 2
	195	213	51	M42 x 1,5	13	38	44	118	59	37	45	50	LROEM 1.5M x 2
	246	264	51	M42 x 1,5	13	38	44	143	72	37	57	75	OEM 1.5M x 3
	226	243	73	M64 x 2	19	50	57	140	70	48	50	50	OEM 2.0M x 2
	226	243	73	M64 x 2	19	50	57	140	70	48	50	50	LROEM 2.0M x 2
	328	345	73	M64 x 2	19	50	57	191	96	48	76	100	OEM 2.0M x 4
	456	473	73	M64 x 2	19	60	60	241	241	48	76	150	OEM 2.0M x 6
	245	265	98	M85 x 2	22	69	76	140	70	58	51	50	OEM 3.0M x 2
	323	343	98	M85 x 2	22	69	76	179	90	58	71	90	OEM 3.0M x 3.5
	399	419	98	M85 x 2	22	69	76	217	109	58	71	125	OEM 3.0M x 5
	494	514	98	M85 x 2	22	81	81	256	128	58	71	165	OEM 3.0M x 6.5
	313	335	127	M115 x 2	35	88	95	203	102	74	80	50	OEM 4.0M x 2
	415	437	127	M115 x 2	35	88	95	254	127	74	105	100	OEM 4.0M x 4
	516	538	127	M115 x 2	35	88	95	305	153	74	108	150	OEM 4.0M x 6
	644	666	127	M115 x 2	35	88	95	356	178	74	108	200	OEM 4.0M x 8
	745	767	127	M115 x 2	35	88	95	406	203	74	108	250	OEM 4.0M x 10

All dimensions in millimeters.

ADJUSTABLE HYDRAULIC SERIES

Clevis Mounting



Catalog No. (Model)	(S) Stroke mm	L	M	N	P	Q	R	S	T	U	V	W	X	CR	Model Weight
OEM .5M CMS	12	117,5	2,38 +0,13/-0,00	6,02 +0,13/-0,00	9,5 +0,0/-0,3	4,8 +0,0/-0,1	NA	25,4	NA	NA	2,6	9,5	6,4	NA	235 g
OEM 1.0M CMS	25	162,0	3,58 +0,13/-0,00	6,02 +0,13/-0,00	9,5 +0,0/-0,3	6,4 +0,0/-0,1	NA	32,0	NA	NA	3,2	9,0	6,4	NA	394 g
OEM 1.25M x 1 CM(S)	25	179,6	6,02 +0,13/-0,00	6,02 +0,13/-0,00	12,7 +0,0/-0,3	12,7 +0,0/-0,3	NA	38,0	NA	22,3	6,0	8,3	6,0	10,0	725 g
OEM 1.25M x 2 CM(S)	50	230,4	6,02 +0,13/-0,00	6,02 +0,13/-0,00	12,7 +0,0/-0,3	12,7 +0,0/-0,3	NA	38,0	NA	22,3	6,0	8,3	6,0	10,0	861 g
(LR) OEM 3/4 x 1 CM(S)	25	199,0	9,55 +0,25/-0,00	12,73 +0,25/-0,00	19,0 +0,0/-0,3	25,4	12,8 +0,5/-0,0	51,0	25,0	25,0	26,0	22,0	NA	15,0	1,59 Kg
(LR) OEM 3/4 x 2 CM(S)	50	250,0	9,55 +0,25/-0,00	12,73 +0,25/-0,00	19,0 +0,0/-0,3	25,4	12,8 +0,5/-0,0	51,0	25,0	25,0	26,0	22,0	NA	15,0	1,72 Kg
OEM 3/4 x 3 CM(S)	75	300,0	9,55 +0,25/-0,00	12,73 +0,25/-0,00	19,0 +0,0/-0,3	25,4	12,8 +0,5/-0,0	51,0	25,0	25,0	26,0	22,0	NA	15,0	1,95 Kg
(LR) OEM 1 1/8 x 2 CM(S)	50	306,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	73,0	38,0	38,0	36,0	26,0	NA	23,0	5,30 Kg
OEM 1 1/8 x 4 CM(S)	100	408,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	73,0	38,0	38,0	36,0	26,0	NA	23,0	6,08 Kg
OEM 1 1/8 x 6 CM(S)	150	537,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	73,0	38,0	38,0	36,0	26,0	NA	23,0	7,39 Kg
(LR) OEM 1.5M x 1 CM(S)	25	199,0	9,55 +0,25/-0,00	12,73 +0,25/-0,00	19,0 +0,0/-0,3	25,4	12,8 +0,5/-0,0	51,0	25,0	25,0	26,0	22,0	NA	15,0	1,33 Kg
(LR) OEM 1.5M x 2 CM(S)	50	250,0	9,55 +0,25/-0,00	12,73 +0,25/-0,00	19,0 +0,0/-0,3	25,4	12,8 +0,5/-0,0	51,0	25,0	25,0	26,0	22,0	NA	15,0	14,1 Kg
OEM 1.5M x 3 CM(S)	75	300,0	9,55 +0,25/-0,00	12,73 +0,25/-0,00	19,0 +0,0/-0,3	25,4	12,8 +0,5/-0,0	51,0	25,0	25,0	26,0	22,0	NA	15,0	1,59 Kg
(LR) OEM 2.0M x 2 CM(S)	50	306,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	73,0	38,0	38,0	36,0	27,0	NA	23,0	4,26 Kg
OEM 2.0M x 4 CM(S)	100	408,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	73,0	38,0	38,0	36,0	27,0	NA	23,0	4,85 Kg
OEM 2.0M x 6 CM(S)	150	537,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	73,0	38,0	38,0	36,0	27,0	NA	23,0	5,85 Kg
OEM 3.0M x 2 CM(S)	50	325,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	98,0	38,0	38,0	36,0	27,0	NA	23,0	8,66 Kg
OEM 3.0M x 3.5 CM(S)	90	402,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	98,0	38,0	38,0	36,0	27,0	NA	23,0	10,70 Kg
OEM 3.0M x 5 CM(S)	125	479,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	98,0	38,0	38,0	36,0	27,0	NA	23,0	12,52 Kg
OEM 3.0M x 6.5 CM(S)	165	574,0	19,07 +0,25/-0,00	19,07 +0,25/-0,00	31,8 +0,0/-0,3	38,0	16,0 +0,5/-0,0	98,0	38,0	38,0	36,0	27,0	NA	23,0	15,24 Kg
OEM 4.0M x 2 CM(S)	50	432,0	25,42 +0,25/-0,00	25,42 +0,25/-0,00	38,1 +0,0/-0,3	90,5	38,2 +0,5/-0,0	127,0	57,0	51,0	51,0	44,5	NA	35,0	19,23 Kg
OEM 4.0M x 4 CM(S)	100	533,0	25,42 +0,25/-0,00	25,42 +0,25/-0,00	38,1 +0,0/-0,3	90,5	38,2 +0,5/-0,0	127,0	57,0	51,0	51,0	44,5	NA	35,0	22,41 Kg
OEM 4.0M x 6 CM(S)	150	635,0	25,42 +0,25/-0,00	25,42 +0,25/-0,00	38,1 +0,0/-0,3	90,5	38,2 +0,5/-0,0	127,0	57,0	51,0	51,0	44,5	NA	35,0	24,22 Kg
OEM 4.0M x 8 CM(S)	200	762,0	25,42 +0,25/-0,00	25,42 +0,25/-0,00	38,1 +0,0/-0,3	90,5	38,2 +0,5/-0,0	127,0	57,0	51,0	51,0	44,5	NA	35,0	34,20 Kg
OEM 4.0M x 10 CM(S)	250	864,0	25,42 +0,25/-0,00	25,42 +0,25/-0,00	38,1 +0,0/-0,3	90,5	38,2 +0,5/-0,0	127,0	57,0	51,0	51,0	44,5	NA	35,0	37,37 Kg

Notes: Clevis mount not recommended for models OEM 2.0M x 6 and OEM 4.0M x 10 when mounted horizontally. (S) indicates model comes with spring. Clevis mounted units supplied as shown above. All dimensions in millimeters.

ADJUSTABLE HYDRAULIC SERIES

Useable Adjustment Settings

After properly sizing the shock absorber, the useable range of adjustment settings for the application can be determined:

1. Locate the intersection point of the application's impact velocity and the selected model graph line.
2. The intersection is the **maximum** adjustment setting to be used. Adjustments exceeding this setting could overload the shock absorber.
3. The useable adjustment setting range is from the 0 setting to the **maximum** adjustment setting as determined in step 2.

Example: OEM 1.25 x 1

1. Impact Velocity: 1,0 m/sec
2. Intersection Point: Adjustment Setting 5
3. Useable Adjustment Setting Range: 0 to 5

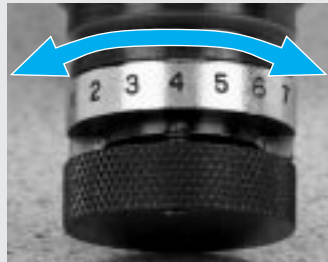
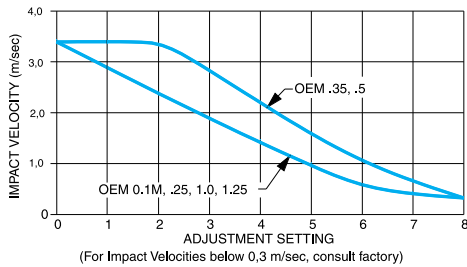
Example: LROEM 1 1/8 x 2

1. Impact Velocity: 0,5 m/sec
2. Intersection Point: Adjustment Setting 3
3. Useable Adjustment Setting Range: 0 to 3

Useable Adjustment Setting Range

Position 0 provides minimum damping force, position 8 provides maximum damping force.

OEM Small

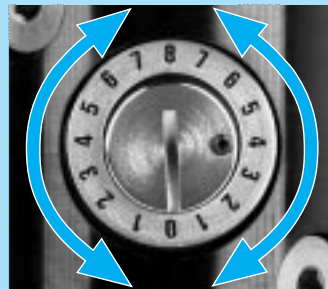
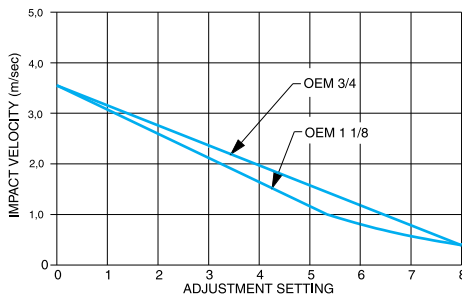


180° adjustment with setscrew locking.



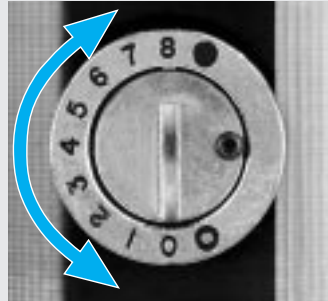
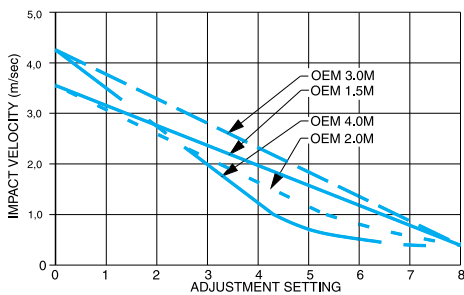
360° adjustment with setscrew locking. (OEM 1.0)

OEM Low Profile



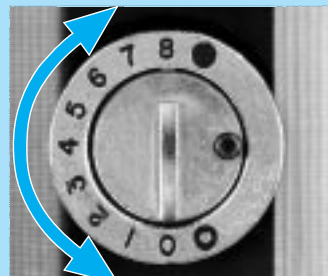
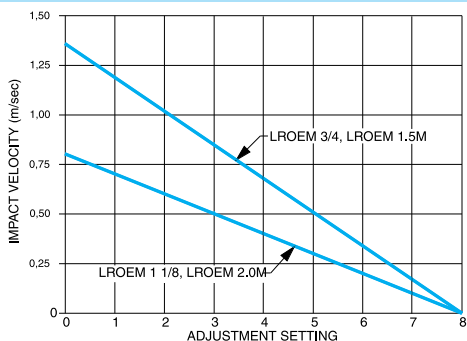
360° adjustment with setscrew locking

OEM Large

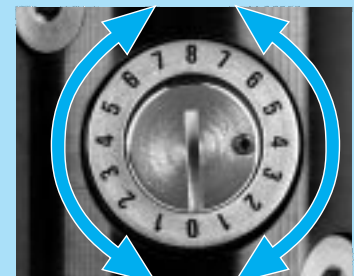


180° adjustment with setscrew locking

Low Range (LROEM) Models



180° adjustment with setscrew locking (LROEM 1.5M and LROEM 2.0M)



360° adjustment with setscrew locking (LROEM 3/4 and LROEM 1 1/8)



Catalog No. (Model)	Bore Size mm	(S) Stroke mm	(V) Velocity Range m/sec	(E _T) Max. Nm Per Cycle	(E _T C) Max. Nm Per Hour	(F _D) Max. Shock Force N	Nominal Coil Spring Force		(F _D) Max. Propelling Force N	Model Weight Grams
							Extension N	Compression N		
HP 110 MF-1	14	40	4,0 — 6,0	190	75 000	7 500	18	49	2 200	454
HP 110 MF-2	14	40	2,0 — 4,5	190	75 000	7 500	18	49	2 200	454
HP 110 MF-3	14	40	0,75 — 3,0	190	75 000	7 500	18	49	2 200	454
HP 110 MC-1	14	40	4,0 — 6,0	190	75 000	7 500	18	49	2 200	454
HP 110 MC-2	14	40	2,0 — 4,5	190	75 000	7 500	18	49	2 200	454
HP 110 MC-3	14	40	0,75 — 3,0	190	75 000	7 500	18	49	2 200	454

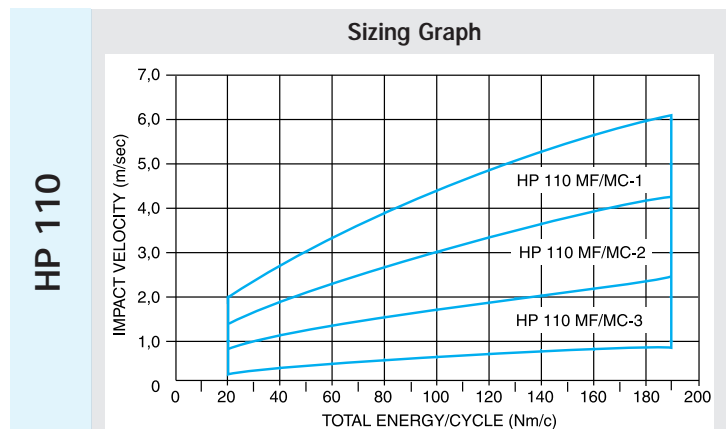
NOTE: Enidine stop collar or external positive stop is required to prevent bottoming of shock absorber.

Shock Absorber Sizing

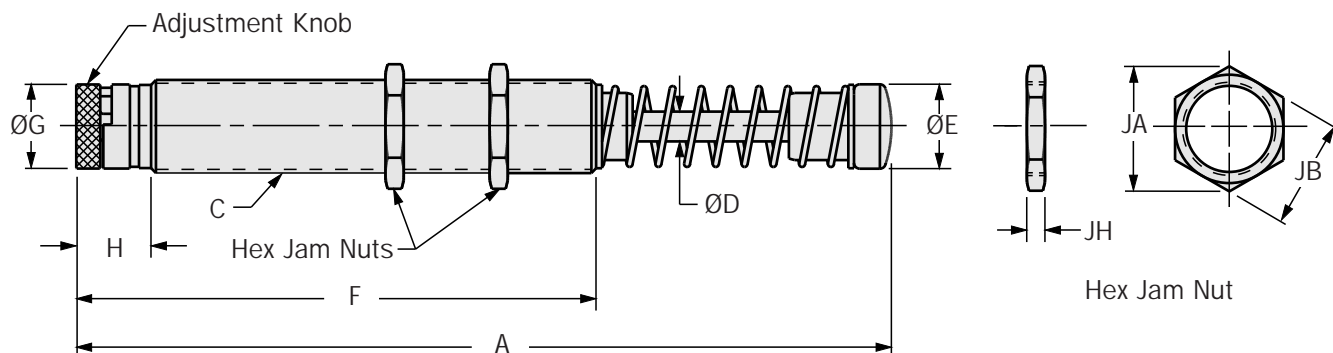
- Determine load weight (Kg), impact velocity (m/sec), propelling force (N) if any, and cycles per hour.
- Calculate total energy per cycle (Nm/c) and total energy per hour (Nm/hr). Consult this catalog's sizing section (pages 72-77) for assistance if required.
- Compare the calculated total energy per cycle (Nm/c), total energy per hour (Nm/hr) and propelling force (Kg) to the values listed above.
- Locate the intersection point of the determined impact velocity (m/sec) and total energy per cycle (Nm/c) on the sizing graph to select the appropriate model.
- Contact Enidine for applications with requirements which fall outside the sizing graph.

Example: Horizontal Application

- Weight (W): 16 Kg
Impact Velocity (V): 4,5 m/sec
Propelling Force (F_D): None
Cycles/Hour (C): 80
- Total Energy/Cycle (E_T): 162 Nm/c
Total Energy/Hour (E_TC): 12 960 Nm/hr
- Compare total energy/cycle (162 Nm) and total energy/hour (12 960 Nm/hr) to the HP Engineering Data chart.
- Intersection Point: HP 110 MC-1



ADJUSTABLE HYDRAULIC SERIES



A	C	D	E	F	G	H	JA	JB	JH	(S) Stroke mm	Catalog No. (Model)
215	M25 x 1,5	8	22	138	22	20	36,7	31,8	4,6	40	HP 110 MF-1
215	M25 x 1,5	8	22	138	22	20	36,7	31,8	4,6	40	HP 110 MF-2
215	M25 x 1,5	8	22	138	22	20	36,7	31,8	4,6	40	HP 110 MF-3
215	M25 x 2,0	8	22	138	22	20	36,7	31,8	4,6	40	HP 110 MC-1
215	M25 x 2,0	8	22	138	22	20	36,7	31,8	4,6	40	HP 110 MC-2
215	M25 x 2,0	8	22	138	22	20	36,7	31,8	4,6	40	HP 110 MC-3

All dimensions in millimeters.

Useable Adjustment Settings

After properly sizing the shock absorber, the useable range of adjustment settings for the application can be determined.

1. Locate the intersection point of the application's impact velocity and the selected HP model graph line.
2. The intersection is the **maximum** adjustment setting to be used. Adjustments exceeding this setting could overload the shock absorber.
3. The useable adjustment range is from the 0 setting to the **maximum** adjustment setting as determined in step 2.

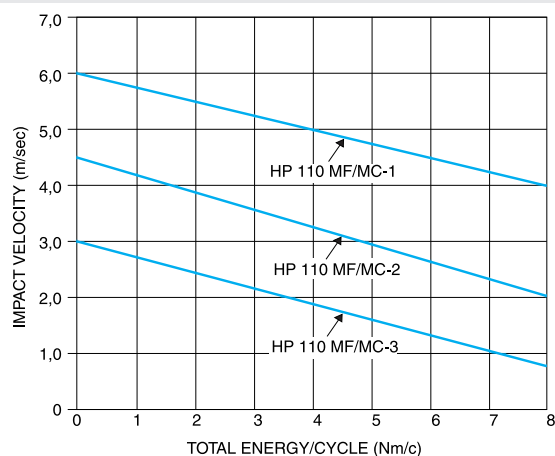
Example: HP 110 MC-1

1. Impact Velocity: 4,5 m/sec
2. Intersection Point: Adjustment Setting 6
3. Useable Adjustment Setting Range: 0 to 6

Useable Adjustment Settings

Position 0 provides minimum damping force, position 8 provides maximum damping force.

HP 110



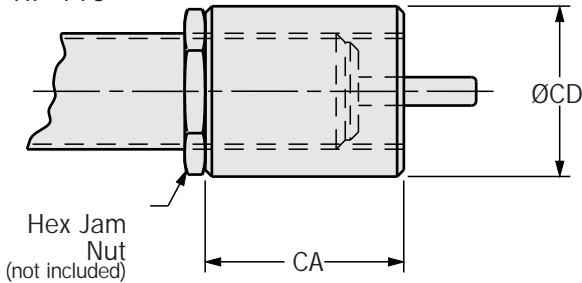
180° adjustment with setscrew locking.

ADJUSTABLE HYDRAULIC SERIES

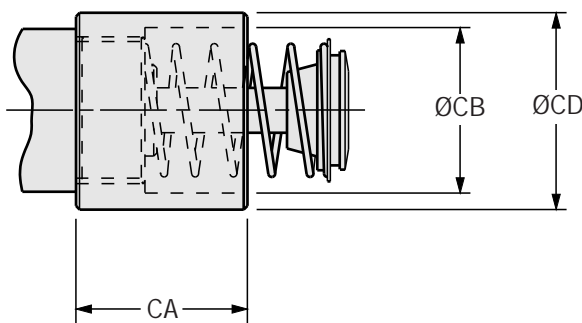
Accessories

STOP COLLAR

OEM 0.1M → OEM 1.25
HP 110



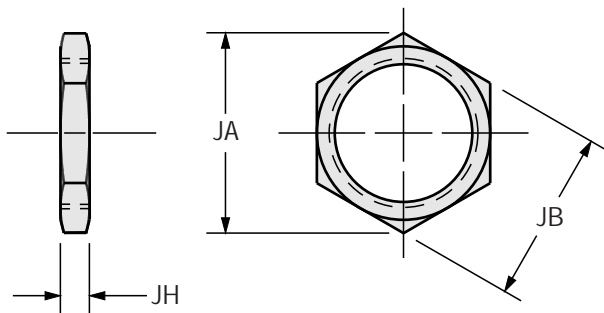
OEM 3/4 → OEM 2.0M



Catalog No.	Model (Ref)	CA	CB	CD	Wt (g)
SC M10 x 1	OEM 0.1M (B)	19,0	NA	14,3	11
SC M14 x 1,5	OEM .25M (B)	25,4	NA	19,0	38
SC M16 x 1,5	OEM .35M (B)	25,4	NA	19,0	18
SC M20 x 1,5	OEM .5M (B)	38,0	NA	25,4	63
SC M27 x 3	OEM 1.0M (B)	44,5	NA	38,0	215
SC M25 x 1,5	OEM 1.0MF (B)	44,5	NA	38,1	215
SC M36 x 1,5	OEM 1.25M	63,5	NA	43,0	210
SC 1 ³ / ₄ -12	(LR) OEM ³ / ₄	49,3	49,6	56,5	340
SC 2 ¹ / ₂ -12 x 2	(LR) OEM 1 ¹ / ₈ x 2&4	63,0	65,0	76,0	652
SC 2 ¹ / ₂ -12 x 6	OEM 1 ¹ / ₈ x 6	93,0	65,0	76,0	936
SC M42 x 1,5 x 1	(LR) OEM 1.5M x 1	62,0	49,0	56,0	397
SC M42 x 1,5 x 2	(LR) OEM 1.5M x 2	75,0	49,0	56,0	539
SC M42 x 1,5 x 3	OEM 1.5M x 3	87,0	49,0	56,0	652
SC M64 x 2 x 2	(LR) OEM 2.0M x 2	89,0	65,0	76,0	936
SC M64 x 2 x 4	OEM 2.0M x 4	114,0	65,0	76,0	1191
SC M64 x 2 x 6	OEM 2.0M x 6	143,0	65,0	76,0	1475
SC M25 x 2 x 1,56	HP 110 MC	44,5	NA	38,0	215
SC M25 x 1,5 x 1,56	HP 110 MF	44,5	NA	38,0	215

All dimensions in millimeters.

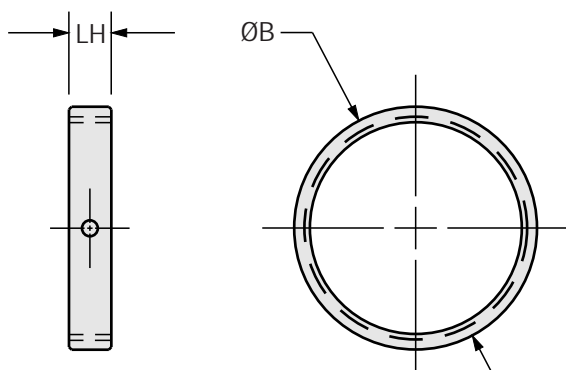
JAM NUT



Catalog No.	Model (Ref)	JA	JB	JH	Wt (g)
JN M10 x 1	OEM 0.1M	15,0	13,0	3,2	2
JN M14 x 1,5	OEM .25M	19,7	17,0	4,0	3
JN M16 x 1,5	OEM .35M	20,0	19,0	6,0	5
JN M20 x 1,5	OEM .5M	27,7	24,0	4,6	9
JN M27 x 3	OEM 1.0MC	37,0	32,0	4,6	15
JN M25 x 1,5	OEM 1.0 MF (B)	37,0	32,0	4,6	15
JN M36 x 1,5	OEM 1.25M	47,3	41,0	6,4	27

All dimensions in millimeters.

LOCK RING

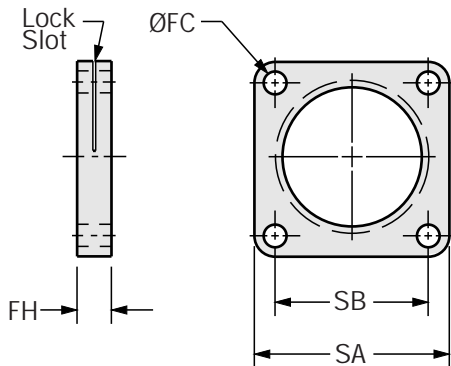


Catalog No.	Model (Ref)	B	LH	Wt (g)
LR 1 ³ / ₄ -12	(LR) OEM ³ / ₄	50,8	9,5	57
LR 2 ¹ / ₂ -12	(LR) OEM 1 ¹ / ₈	73,0	9,5	85
LR M42 x 1.5	(LR) OEM 1.5M	50,8	9,6	85
LR M64 x 2	(LR) OEM 2.0M	73,0	12,7	114
LR M85 x 2	(LR) OEM 3.0M	98,2	16,0	226
LR M115 x 2	(LR) OEM 4.0M	126,7	22,4	397

All dimensions in millimeters.

ADJUSTABLE HYDRAULIC SERIES

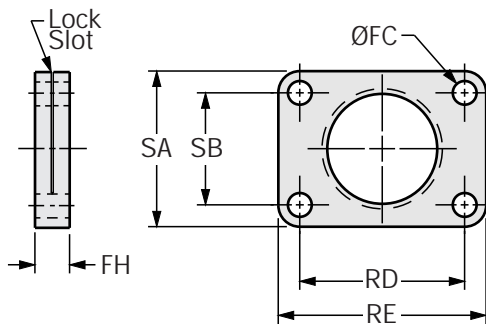
SQUARE FLANGE



Catalog No.	Model (Ref)	FC	FH	SA	SB	Bolt Size	Wt (g)
SF 1 ³ 4-12	(LR) OEM 3 ⁴	8,6	12,7	57,2	41,3	M8	140
SF 2 ¹ 2-12	(LR) OEM 1 ¹ 8	10,4	15,7	89,0	70,0	M10	570
SF M42 x 1.5	(LR) OEM 1.5M	8,6	12,7	57,2	41,3	M8	140
SF M64 x 2	(LR) OEM 2.0M	10,4	15,7	89,0	70,0	M10	570
SF M85 x 2	OEM 3.0M	13,5	19,0	101,6	76,2	M13	680
SF M115 x 2	OEM 4.0M	16,5	25,4	139,7	111,3	M16	1590

All dimensions in millimeters.

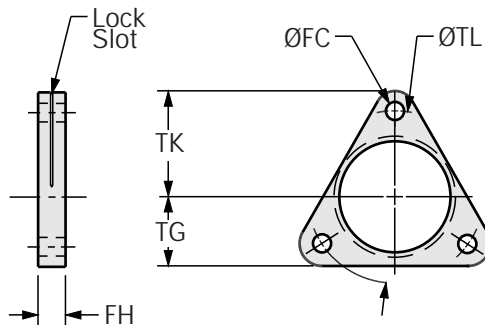
RECTANGULAR FLANGE



Catalog No.	Model (Ref)	FC	FH	RD	RE	SA	SB	Bolt Size	Wt (g)
RF M36 x 1,5	OEM 1.25M	5,6	9,5	41,3	51,0	44,5	28,6	M5	30
RF 1 ³ 4-12	(LR) OEM 3 ⁴	8,6	12,7	60,5	76,2	57,2	41,3	M8	250
RF M42 x 1.5	(LR) OEM 1.5M	8,6	12,7	60,5	76,2	57,2	41,3	M8	260
RF M85 x 2	OEM 3.0M	13,5	19,1	101,6	127,0	101,6	76,2	M13	1040

All dimensions in millimeters.

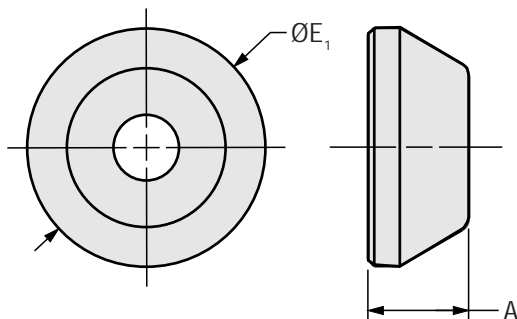
TRIANGULAR FLANGE



Catalog No.	Model (Ref)	FC	FH	TG	TK	TL	Bolt Size	Wt (g)
TF M42 x 1.5	(LR) OEM 1.5M	8,7	12,7	26,2	40,6	63,5	M8	170
TF M64 x 2	(LR) OEM 2.0M	10,4	15,7	39,5	60,5	98,4	M10	450
TF M85 x 2	OEM 3.0M	13,5	19,0	54,0	81,0	127,0	M13	1000
TF M115 x 2	OEM 4.0M	16,5	25,4	73,0	101,6	158,8	M16	1025

All dimensions in millimeters.

URETHANE STRIKER CAP



Catalog No.	Model (Ref)	A	E ₁	Wt (g)
UC4858	OEM 1.25M	14,7	35,0	6
UC2940	(LR) OEM 3 ⁴	25,0	44,0	14
UC3010	(LR) OEM 1 ¹ 8	24,5	44,0	23
UC2940	(LR) OEM 1.5M	25,0	44,0	14
UC3010	(LR) OEM 2.0M	24,5	57,0	23
UC3330	OEM 3.0M	31,4	76,0	85
UC3720	OEM 4.0M	37,5	95,0	170

Note: For complete shock absorber dimension with urethane striker cap, refer to engineering data pages 16-19.

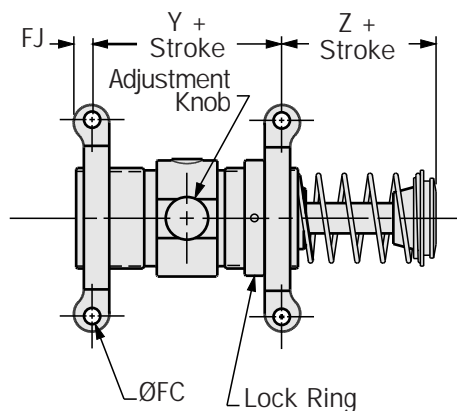
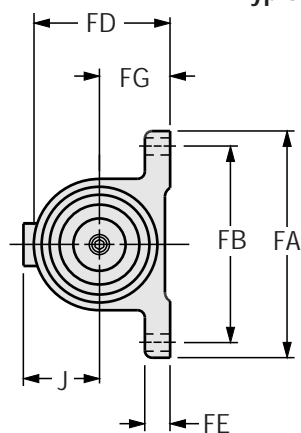
All dimensions in millimeters.

ADJUSTABLE HYDRAULIC SERIES

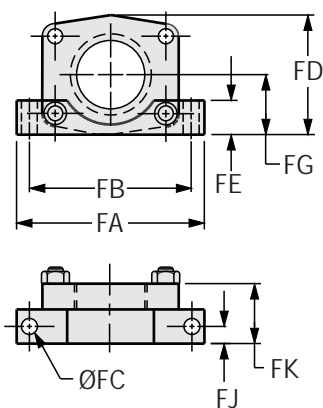
Accessories

Foot Mount Kit

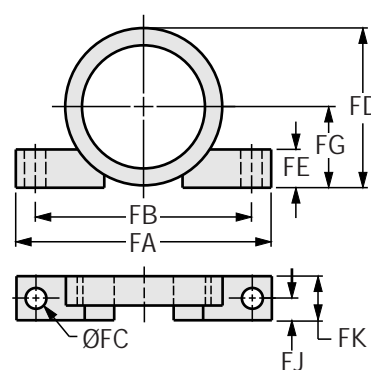
Typical Foot Mount Installation



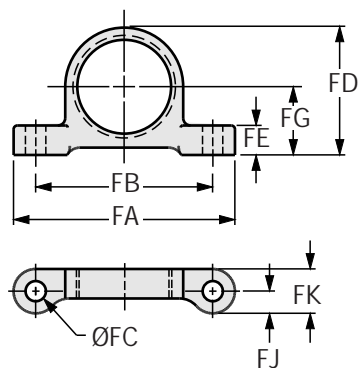
OEM 1.25



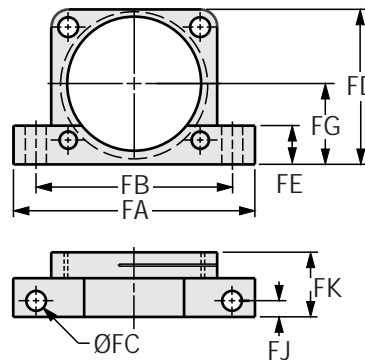
OEM 3.0M



OEM 3/4, OEM 1 1/8,
OEM 1.5M and OEM 2.0M



OEM 4.0M



Catalog No.	Model (Ref)	J	Y	Z	FA	FB	FC	FD	FE	FG	FJ	FK	Bolt Size	Weight (g)	Notes
FM M36 x 1,5	OEM 1.25M	NA	63,2	43,2	70,0	60,5	6,0	44,5	12,7	23,0	6,4	22,4	M5	100	—
FM 1 3/4-12	(LR) OEM 3/4	NA	60,5	27,0	55,3	76,2	8,6	55,0	12,7	29,5	9,7	19,1	M8	350	—
FM 2 1/2-12	(LR) OEM 1 1/8	NA	76,2	39,6	143,0	124,0	10,4	86,0	16,0	44,5	11,2	22,4	M10	1050	1
FM M42 x 1.5	(LR) OEM 1.5M	37	60,5	27,0	95,3	76,2	8,6	55,0	12,7	29,5	9,7	19,1	M8	370	—
FM M64 x 2	(LR) OEM 2.0M	48	76,2	39,6	143,0	124,0	10,4	86,0	16,0	44,5	11,2	22,4	M10	1080	2
FM M85 x 2	OEM 3.0M	58	81,0	59,0	165,0	139,7	13,5	103,0	25,4	52,3	14,5	28,7	M12	1984	3
FM M115 x 2	OEM 4.0M	74	190,5	37,0	203,2	165,0	16,8	149,4	38,0	79,5	16,0	50,8	M16	3900	4,7

Notes:

- OEM 1 1/8 x 6, Z dimension is 68,3 mm.
- OEM 2.0M x 6, Z dimension is 68,3 mm.
- OEM 3.0M x 6.5, Z dimension is 77,7 mm.
- OEM 4.0M x 8 and 4.0M x 10, Z dimension is 62,0 mm.

5. Shock absorber must be ordered separately from the foot mount kit.

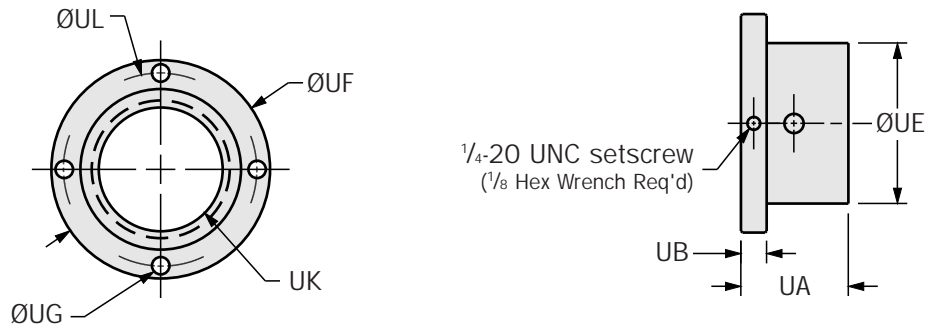
6. All foot mount kits include two foot mounts. A lock ring is also supplied with all kits but the OEM 1.25 foot mount kit.

7. For rear foot mount, dimension FJ is 22,4 mm.

All dimensions in millimeters.

ADJUSTABLE HYDRAULIC SERIES

UNIVERSAL RETAINING FLANGE KIT



Catalog No.	Model (Ref)	UA	UB	UE	UF	UG	UK	UL	Bolt Size	Wt (g)
UF 1 ³ 4-12	(LR) OEM ³ / ₄	39,4	12,7	59,4	85,4	8,7	1 ³ / ₄ -12 UN	73,0	M8	653
UF 2 ¹ 2-12 x 2	(LR) OEM 1 ¹ / ₈ -2,4	53,1	12,7	79,5	108,0	8,7	2 ¹ / ₂ -12 UN	95,3	M8	1078
UF 2 ¹ 2-12 x 6	OEM 1 ¹ / ₈ x 6	83,3	12,7	79,5	108,0	8,7	2 ¹ / ₂ -12 UN	95,3	M8	1760

Note: Universal Retaining Flange Kit includes a lock ring.

All dimensions in millimeters.

Ordering Information

SHOCK ABSORBERS

10 - OEM 1.0M

Select quantity

- Select catalog number
- OEM, HP (Adjustable)
 - CBOEM (Non-adjustable)
 - LROEM (Low range adjustable)
 - AOEM/LRAOEM (Adjustable and low range adjustable air/oil return)
 - CBAOEM (Non-adjustable air/oil return)

B

- Select piston rod type
- "B" (Button model, OEM 0.1M, .25M, .35M, .5M and 1.0M only)
 - "_" (No button)
 - "CM" (Clevis mount)
 - "CMS" (Clevis mount with spring)

Application Data

- Specify for CBOEM and CBAOEM models only
- Vertical or Horizontal motion
 - Weight
 - Impact velocity
 - Propelling force (if any)
 - Other (temperature or other environmental conditions)
 - Cycles per hour



ACCESSORIES

Example 1

10 **JN M27 x 3** Jam Nut (thread designation)

Select quantity

Select catalog

Example 2

5 **UC 2940** Urethane Striker Cap

Select quantity

Select catalog