

Shock Absorbers and Rate Controls



ENIDINE



ITT Enidine Adjustable Hydraulic Series shock absorbers offer the most flexible solutions to energy absorption application requirements when input parameters vary or are not clearly defined.

ITT Enidine's **New ECO OEM Series** adjustable hydraulic shock absorbers are an expansion of our previously released ECO Series product line. These adjustable shock absorbers provide maximum flexibility in a RoHS compliant package. By simply turning an adjustment knob, the damping force can be changed to accommodate a wide range of conditions. ITT Enidine offers the broadest range of adjustable shock absorbers and mounting accessories in the marketplace today.

The ITT Enidine **OEMXT Series** provides a low profile adjustment knob offered in imperial or metric thread configurations with stroke lengths of 1 to 6 inches. For drop-in competitive interchange. **Low Range (LROEMXT) Series** products are also available to control velocities as low as 3 in./sec. and propelling forces as high as 4,000 lbs. OEMXT and OEM Large Series shock absorbers are fully field repairable.

Features and Benefits

- **Adjustable design lets you "fine-tune"** your desired damping and lock the numbered adjustment setting.
- **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 increase surface area for improved heat dissipation.
- **Operational parameters can be expanded** through the use of ITT Enidine's Low Range and High Performance products.
- **Custom orificed non-adjustable** units (CBOEM) can be engineered to meet specific application requirements or **emergency impact only requirements.**
- **Special materials and finishes** can be designed to meet specific customer requirements.
 - Optional fluids and seal packages can expand the standard operating temperature range from (15°F to 180°F) to (-30°F to 210°F)
 - Food grade options available
- **ISO quality standards** result in reliable, long-life operation.
- **Fully field repairable units are available** in mid-bore and larger bore product ranges.

Added New Features for the ECO OEM Series

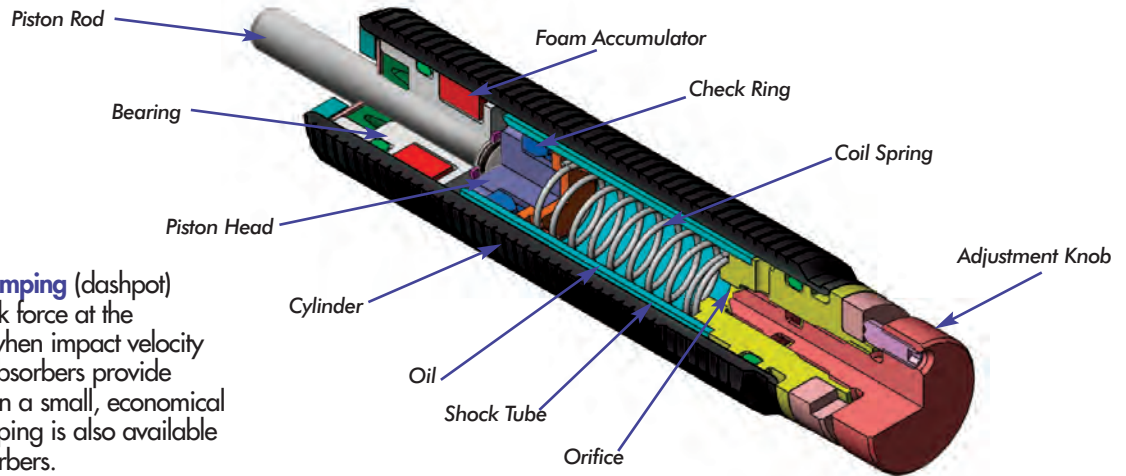
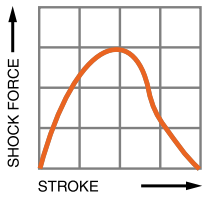
- **Environmentally friendly materials:**
 - ROHS Compliant materials
 - Bio-degradable hydraulic oil
 - Copper-Free design
 - Recyclable packaging materials
- **Introducing our new Enicote II surface finish:**
 - ROHS Compliant
 - Rated at 350 hours salt spray corrosion protection
- **Jam Nut included** with every shock absorber.
- **Wrench flats** promote ease of mounting
- **Capability to mount into pressure chambers**
- **Integrated positive stopping capabilities** up to 100 psi (7 bar).

Adjustable Series Hydraulic Shock Absorbers

ECO OEM and OEMXT Series

Overview

ITT Enidine Adjustable Single Orifice Shock Absorbers



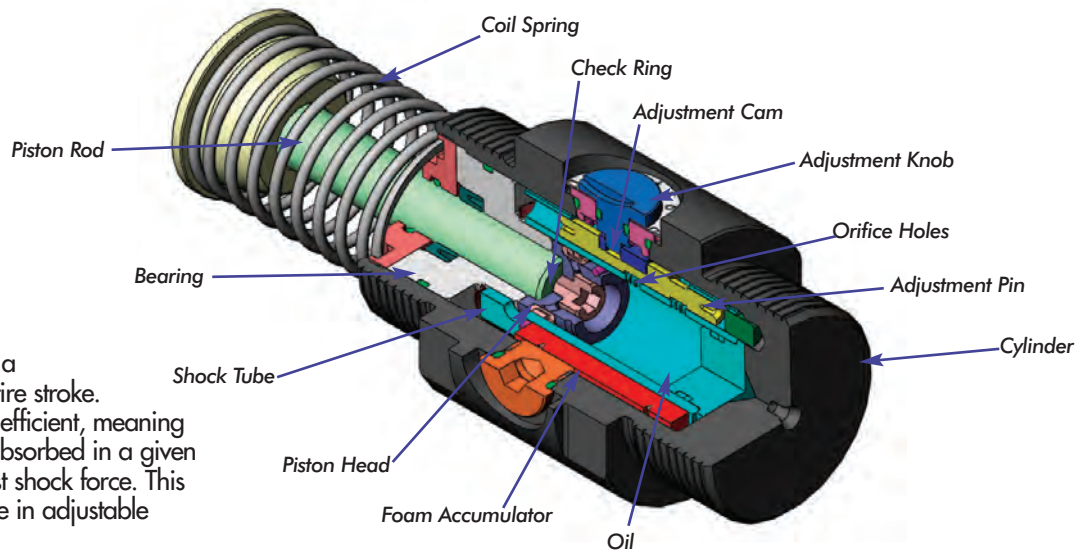
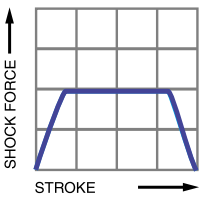
Constant orifice area damping (dashpot) provides the largest shock force at the beginning of the stroke when impact velocity is highest. These shock absorbers provide high-energy absorption in a small, economical design. This type of damping is also available in adjustable shock absorbers.

The damping force of an ITT Enidine single orifice shock absorber can be changed by turning the adjustment knob. Maximum damping force is achieved by turning the adjustment knob to eight (8), while minimum damping force is achieved by turning the adjustment knob to zero (0). Turning the adjustment knob causes the adjustment ball to increase or decrease the clearance (orifice area) between the ball and its seat, depending on rotation direction.

The internal structure of an adjustable single orifice shock absorber is shown above. When force is applied to the piston rod, the check ball is seated and the valve remains closed.

Oil is forced out of the high pressure shock tube chamber through the orifice, creating internal pressure allowing smooth, controlled deceleration of the moving load. When the load is removed, the compressed coil spring moves to reposition the piston head, the check ball unseats, opening the valve that permits rapid piston rod return to the original extended position. The closed cellular foam accumulator compensates for fluid displaced by the piston rod during compression and extension. Without the fluid displacement volume provided by the foam accumulator, the closed system would be hydraulically locked. This type of orifice design produces constant orifice area damping.

ITT Enidine Adjustable Multiple Orifice Shock Absorbers



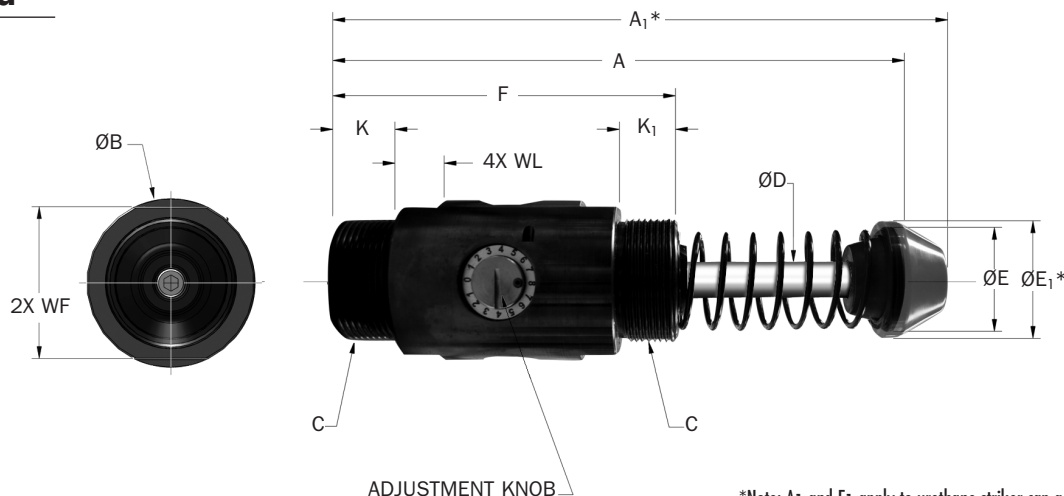
Conventional damping allows linear deceleration by providing a constant shock force over the entire stroke. This standard design is the most efficient, meaning it allows the most energy to be absorbed in a given stroke, while providing the lowest shock force. This type of damping is also available in adjustable shock absorbers.

The adjustable multiple orifice shock absorber is similar to the principles described earlier. The check ring replaces the check ball and the adjustment feature uses an adjustment pin instead of an adjustment ball. The damping force of the shock absorber can be changed by turning the adjustment knob. Maximum damping force is achieved by turning the adjustment knob to eight (8), while minimum damping force is achieved by turning the adjustment knob to zero (0).

Turning the adjustment knob rotates the adjustment cam within the shock absorber. The cam, in turn, moves the adjustment pin in the shock tube, closing or opening the orifice holes. By closing the orifice holes, the total orifice area of the shock absorber is reduced, thus increasing the damping force of the shock absorber. The adjustable shock absorber enables the user to change the damping force of the unit, should input conditions change, while still maintaining a conventional-type damping curve. Low velocity range (LR) series configurations are available for controlling velocities that fall below the standard adjustable range.

OEMXT 3/4 & OEMXT 1.5M Series

Standard



*Note: A₁ and E₁ apply to urethane striker cap accessory.

Imperial Catalog No./Model	(S) Stroke in.	Optimal Velocity Range in./sec.	(E _T) Max. in.-lbs./cycle	(E _{T-C}) Max. in.-lbs./hour	(F _p) Max. Reaction Force lbs.	Nominal Coil Spring Force		(F _D) Max. Propelling Force lbs.	Weight lbs.
						Extended lbs.	Compressed lbs.		
OEMXT 3/4 x 1	1	12-140	3,750	1,120,000	4,500	11	15	650	2.7
LROEMXT 3/4 x 1	1	3-55	3,750	1,120,000	4,500	11	15	1,500	2.7
OEMXT 3/4 x 2	2	12-140	7,500	1,475,000	4,500	7	15	650	3.7
LROEMXT 3/4 x 2	2	3-55	7,500	1,475,000	4,500	11	18	1,500	3.7
OEMXT 3/4 x 3	3	12-140	11,500	1,775,000	4,500	7	18	650	4.6

Metric Catalog No./Model	(S) Stroke mm	Optimal Velocity Range m/sec.	(E _T) Max. Nm/cycle	(E _{T-C}) Max. Nm/hour	(F _p) Max. Reaction Force N	Nominal Coil Spring Force		(F _D) Max. Propelling Force N	Mass Kg
						Extended N	Compressed N		
OEMXT 1.5M x 1	25,0	0,3-3,5	425	126 000	20 000	48	68	2 890	1,2
LROEMXT 1.5M x 1	25,0	0,08-1,3	425	126 000	20 000	48	68	6 660	1,2
OEMXT 1.5M x 2	50,0	0,3-3,5	850	167 000	20 000	29	68	2 890	1,7
LROEMXT 1.5M x 2	50,0	0,08-1,3	850	167 000	20 000	48	85	6 660	1,7
OEMXT 1.5M x 3	75,0	0,3-3,5	1 300	201 000	20 000	29	85	2 890	2,1

Imperial Catalog No./Model	C in.	A in.	A ₁ in.	B in.	D in.	E in.	E ₁ in.	F in.	K in.	K ₁ in.	WF in.	WL in.
(LR)OEMXT 3/4 x 1	1 3/4 - 12 UN	5.68	6.38	2.25	0.50	1.50	1.75	3.63	0.91	0.82	1.59	0.75
(LR)OEMXT 3/4 x 2	1 3/4 - 12 UN	7.68	8.38	2.25	0.50	1.50	1.75	4.63	0.91	0.82	1.59	0.75
(LR)OEMXT 3/4 x 3	1 3/4 - 12 UN	9.68	10.38	2.25	0.50	1.50	1.75	5.63	0.91	0.82	1.59	0.75

Metric Catalog No./Model	C mm	A mm	A ₁ mm	B mm	D mm	E mm	E ₁ mm	F mm	K mm	K ₁ mm	WF mm	WL mm
(LR)OEMXT 1.5M x 1	M42 x 1.5	144	162	58	13	38	44	92	32	32	40,5	19
(LR)OEMXT 1.5M x 2	M42 x 1.5	195	213	58	13	38	44	118	45	45	40,5	19
(LR)OEMXT 1.5M x 3	M42 x 1.5	246	264	58	13	38	44	143	57	57	40,5	19
(LR)OEMXT 45M x 1	M45 x 1.5	144	162	58	13	38	44	92	32	32	40,5	19
(LR)OEMXT 45M x 2	M45 x 1.5	195	213	58	13	38	44	118	45	45	40,5	19
(LR)OEMXT 45M x 3	M45 x 1.5	246	264	58	13	38	44	143	57	57	40,5	19

Notes: 1. For OEMXT 45M Series Accessories please see page 66 under PMXT Mid-Bore.

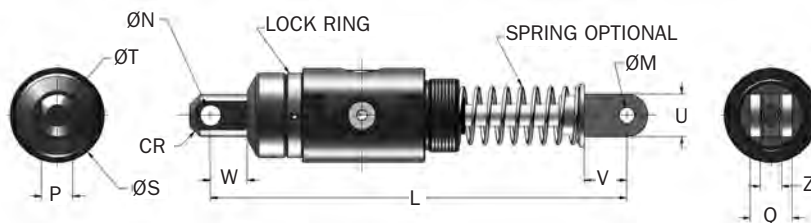
Adjustable Series Hydraulic Shock Absorbers

OEMXT Mid-Bore Series

OEMXT 3/4 & (LR)OEMXT 1.5M Series

Accessories

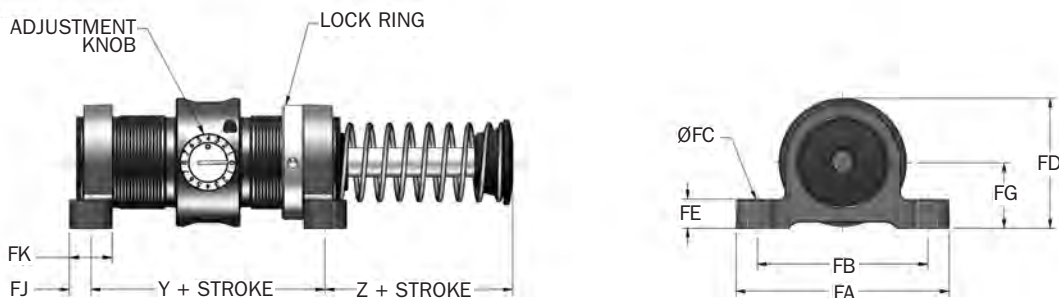
Clevis Mount



Catalog No./Model	(S) Stroke in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	Q in. (mm)	S in. (mm)	T in. (mm)	U in. (mm)	V in. (mm)	W in. (mm)	Z in. (mm)	CR in. (mm)	Weight (mass) lbs. (Kg)
Δ(LR)OEMXT 3/4 x 1 CM(S)	1.0	7.84 +0.010/-0.000	.376 +0.010/-0.000	.501 +0.000/-0.010	.750	1.00	2.00	1.00	1.00	1.01	.87 +0.020/-0.000	.505	.56	3.5
Δ(LR)OEMXT 1.5M x 1 CM(S)	(25)	(199,0)	(9,60) (+0,25/0)	(12,70) (+0,25/0)	(19,0) (0/-0,3)	(25,4)	(51,0)	(25,4)	(25,0)	(26,0)	(22,0)	(12,9) (+0,5/-0)	(14,3)	(1,59)
Δ(LR)OEMXT 3/4 x 2 CM(S)	2.0	9.84	.376 +0.010/-0.000	.501 +0.010/-0.000	.750 +0.000/-0.010	1.00	2.00	1.00	1.00	1.01	.87	.505 +0.020/-0.000	.56	3.8
Δ(LR)OEMXT 1.5M x 2 CM(S)	(50)	(250,0)	(9,60) (+0,25/0)	(12,70) (+0,25/0)	(19,0) (0/-0,3)	(25,4)	(51,0)	(25,4)	(25,0)	(26,0)	(22,0)	(12,9) (+0,5/-0)	(14,3)	(1,7)
ΔOEMXT 3/4 x 3 CM(S)	3.0	11.84	.376 +0.010/-0.000	.501 +0.010/-0.000	.750 +0.000/-0.010	1.00	2.00	1.00	1.00	1.01	.87	.505 +0.020/-0.000	.56	4.3
ΔOEMXT 1.5M x 3 CM(S)	(75)	(300,0)	(9,60) (+0,25/0)	(12,70) (+0,25/0)	(19,0) (0/-0,3)	(25,4)	(51,0)	(25,4)	(25,0)	(26,0)	(22,0)	(12,9) (+0,5/-0)	(14,3)	(1,95)

Notes: 1. "S" designates model is supplied with spring. 2. Δ = Non-standard lead time items, contact ITT Enidine.

Flange Foot Mount

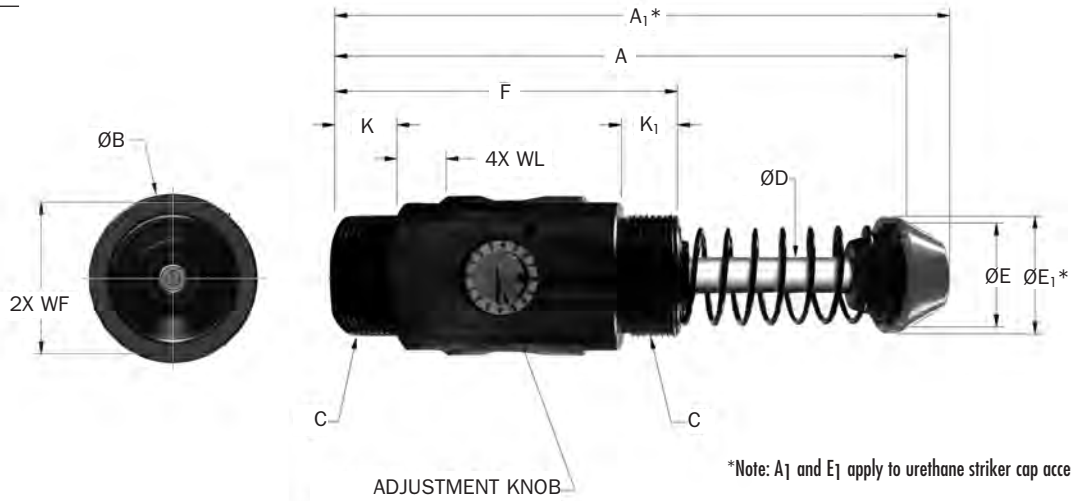


Catalog No./Model	Part Number	Model (Ref)	Y in. (mm)	Z in. (mm)	FA in. (mm)	FB in. (mm)	FC in. (mm)	FD in. (mm)	FE in. (mm)	FG in. (mm)	FJ in. (mm)	FK in. (mm)	Bolt Size in. (mm)	Weight (mass) lbs. (Kg)
FM 1 3/4-12	2FE2940	(LR)OEM 3/4	2.38	1.06	3.75	3.00	.34	2.16	0.50	1.16	0.38	0.75	3/16	12.0 oz.
FM M42 x 1.5	2F2940	(LR)OEM 1.5M	(60,5)	(26,9)	(95,3)	(76,2)	(8,6)	(55,0)	(12,7)	(29,5)	(9,7)	(19,1)	(M8)	(370)g

Adjustable Series

OEMXT 1-1/8 & OEMXT 2.0M Series

Standard



Imperial Catalog No./Model	(S) Stroke in.	Optimal Velocity Range in./sec.	(E _T) Max. in.-lbs./cycle	(E _T C) Max. in.-lbs./hour	(F _P) Max. Reaction Force lbs.	Nominal Coil Spring Force		(F _P) Max. Propelling Force lbs.	Weight lbs.
						Extended lbs.	Compressed lbs.		
Δ(LR)OEMXT 1 1/8 x 1	1	3-30	10,000	2,000,000	11,500	26	35	4,000	4.5
OEMXT 1 1/8 x 2	2	12-140	20,000	2,400,000	11,500	17	35	1,500	7.9
(LR)OEMXT 1 1/8 x 2	2	3-30	20,000	2,400,000	11,500	17	35	4,000	7.9
OEMXT 1 1/8 x 4	4	12-140	40,000	3,200,000	11,500	16	36	1,500	10.8
OEMXT 1 1/8 x 6	6	12-140	60,000	3,730,000	11,500	20	64	1,500	14.1
Metric Catalog No./Model	(S) Stroke mm	Optimal Velocity Range m/sec.	(E _T) Max. Nm/cycle	(E _T C) Max. Nm/hour	(F _P) Max. Reaction Force N	Nominal Coil Spring Force		(F _P) Max. Propelling Force N	Mass Kg
Δ(LR)OEMXT 2.0M x 1	25,0	0,08-1,35	1 130	226 000	51 000	115	155	17 760	2,1
OEMXT 2.0M x 2	50,0	0,3-3,5	2 260	271 000	51 000	75	155	6 660	3,6
LROEMXT 2.0M x 2	50,0	0,08-1,35	2 260	271 000	51 000	75	155	17 760	3,6
OEMXT 2.0M x 4	100,0	0,3-3,5	4 520	362 000	51 000	70	160	6 660	4,9
OEMXT 2.0M x 6	150,0	0,3-3,5	6 780	421 000	51 000	90	284	6 660	6,4

Note: Δ = Non-standard lead time items, contact ITT Enidine.

Imperial Catalog No./Model	C in.	A in.	A ₁ in.	B in.	D in.	E in.	E ₁ in.	F in.	K in.	K ₁ in.	WF in.	WL in.
Δ(LR)OEMXT 1 1/8 x 1	2 1/2 - 12 UN	6.90	7.55	3.00	0.75	2.00	2.25	4.50	1.03	1.03	2.75	1.00
(LR)OEMXT 1 1/8 x 2	2 1/2 - 12 UN	8.90	9.55	3.00	0.75	2.00	2.25	5.50	1.03	1.03	2.75	1.00
OEMXT 1 1/8 x 4	2 1/2 - 12 UN	12.90	13.59	3.00	0.75	2.00	2.25	7.50	1.03	1.03	2.75	1.00
OEMXT 1 1/8 x 6	2 1/2 - 12 UN	17.97	18.62	3.00	0.75	2.38	2.38	9.50	1.03	1.03	2.75	1.00
Metric Catalog No./Model	C mm	A mm	A ₁ mm	B mm	D mm	E mm	E ₁ mm	F mm	K mm	K ₁ mm	WF mm	WL mm
Δ(LR)OEMXT 2.0M x 1	M64 x 2.0	175	192	77	19	50	57	114	38	38	61.5	25
LROEMXT 2.0M x 2	M64 x 2.0	226	243	77	19	50	57	140	50	50	61.5	25
OEMXT 2.0M x 4	M64 x 2.0	328	345	77	19	50	57	191	75	75	61.5	25
OEMXT 2.0M x 6	M64 x 2.0	456	473	77	19	57	57	241	75	75	61.5	25

Note: Δ = Non-standard lead time items, contact ITT Enidine.

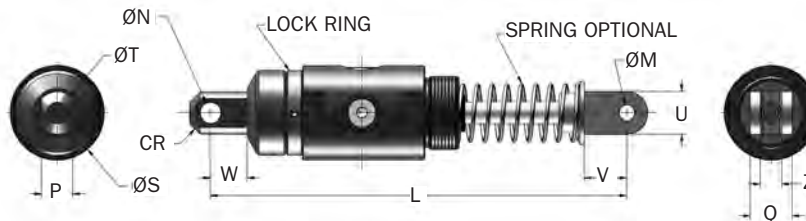
Adjustable Series Hydraulic Shock Absorbers

OEMXT Mid-Bore Series Accessories

OEMXT 1-1/8 & OEMXT 2.0M Series

Accessories

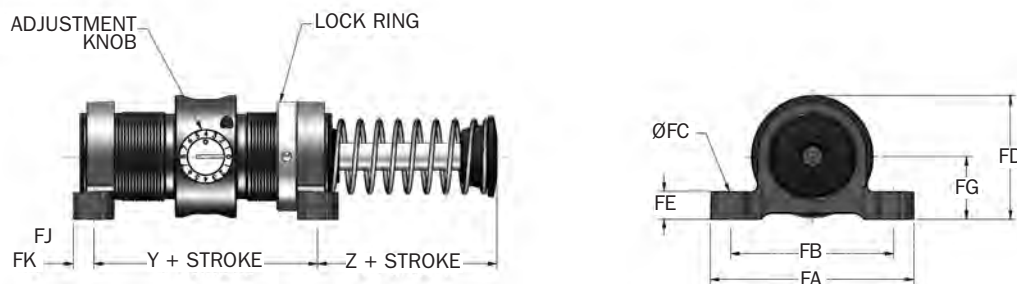
Clevis Mount



Catalog No./Model	(S) Stroke in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	Q in. (mm)	S in. (mm)	T in. (mm)	U in. (mm)	V in. (mm)	W in. (mm)	Z in. (mm)	CR in. (mm)	Weight (mass) lbs. (Kg)
Δ(LR)OEMXT 1 1/8 x 2 CM(S)	2.0	12.06	.751 +0.010/-0.000	.751 +0.010/-0.000	1.250 +0.000/-0.010	1.50 +0.030/-0.030	2.88	1.50	1.50	1.40	1.06	.640 +0.010/-0.010	.90	11.7
Δ(LR)OEMXT 2.0M x 2 CM (S)	(50)	(306,0)	(19,07) (+0,25/0)	(19,07) (+0,25/0)	(31,7) (0/-0,3)	(38,1) (+0,8/-0,8)	(73,0)	(38,1)	(38,0)	(36,0)	(26,0)	(16,3) (+0,25/-0,25)	(23,0)	(5,30)
ΔOEMXT 1 1/8 x 4 CM(S)	4.0	16.06	.751 +0.010/-0.000	.751 +0.010/-0.000	1.250 +0.000/-0.010	1.50 +0.030/-0.030	2.88	1.50	1.50	1.40	1.06	.640 +0.010/-0.010	.90	13.4
ΔOEMXT 2.0M x 4 CM(S)	(100)	(408,0)	(19,07) (+0,25/0)	(19,07) (+0,25/0)	(31,7) (0/-0,3)	(38,1) (+0,8/-0,8)	(73,0)	(38,0)	(38,0)	(36,0)	(26,0)	(16,3) (+0,25/-0,25)	(23,0)	(6,08)
ΔOEMXT 1 1/8 x 6 CM(S)	6.0	21.13	.751 +0.010/-0.000	.751 +0.010/-0.000	1.250 +0.000/-0.010	1.50 +0.030/-0.030	2.88	1.50	1.50	1.40	1.06	.640 +0.010/-0.010	.90	16.3
ΔOEMXT 2.0M x 6 CM(S)	(150)	(537,0)	(19,07) (+0,25/0)	(19,07) (+0,25/0)	(31,7) (0/-0,3)	(38,1) (+0,8/-0,8)	(73,0)	(38,0)	(38,0)	(36,0)	(26,0)	(16,3) (+0,25/-0,25)	(23,0)	(7,39)

Notes: 1. "S" designates model is supplied with spring. 2. Δ = Non-standard lead time items, contact ITT Enidine.

Flange Foot Mount

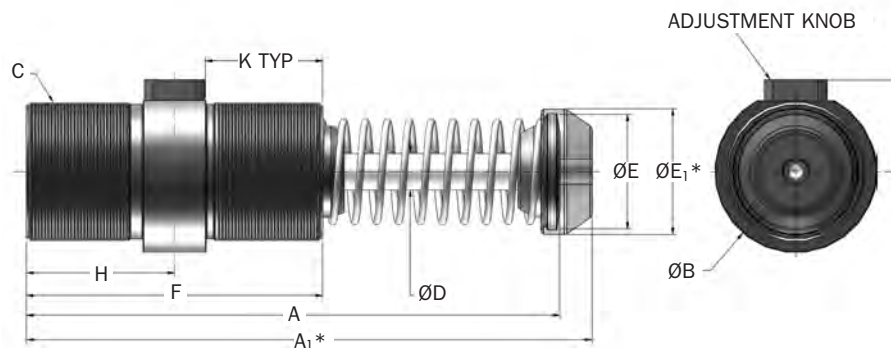


Catalog No./Model	Part Number	Model (Ref)	Y in. (mm)	Z in. (mm)	FA in. (mm)	FB in. (mm)	FC in. (mm)	FD in. (mm)	FE in. (mm)	FG in. (mm)	FJ in. (mm)	FK in. (mm)	Bolt Size in. (mm)	Weight (mass) lbs. (kg)	Notes
FM 2 1/2 - 12	2FE3010	(LR)OEM 1 1/8	3.00	1.56	5.63	4.88	.41	3.38	0.63	1.75	0.44	0.88	3/8	2.3	1
FM M64 x 2	2F3010	(LR)OEM 2.0M	(76,2)	(39,6)	(143,0)	(124,0)	(10,4)	(89,7)	(16,0)	(44,5)	(11,2)	(22,4)	M10	(1.08)	2

Notes: 1. OEM 1 1/8 x 6 'Z' dimension is 2.69 in.
2. OEM 2.0M x 6 'Z' dimension is 68,3 mm

OEM 3.0M → OEM 4.0M Series

Standard



*Note: A₁ and E₁ apply to urethane striker cap accessory.

Catalog No./Model	(S) Stroke in. (mm)	Optimal Velocity Range in./sec. (m)	(E _T) Max. in.-lbs./cycle (Nm/cycle)	(E _T C) Max. in.-lbs./hour (Nm/h)	(F _P) Max. Reaction Force lbs. (N)	Nominal Coil Spring Force		(F _P) Max. Propelling Force lbs. (N)	Weight (mass) lbs. (Kg)
						Extended lbs. (N)	Compressed lbs. (N)		
OEM 3.0M x 2	2.0 (50)	12-170 (0,3-4,3)	20,000 (2 300)	3,290,000 (372 000)	15,000 (67 000)	25 (110)	45 (200)	2,700 (12 000)	15.5 (7,0)
OEM 3.0M x 3.5	3.5 (90)	12-170 (0,3-4,3)	35,000 (4 000)	5,770,000 (652 000)	15,000 (67 000)	25 (110)	45 (200)	2,700 (12 000)	20.0 (9,1)
OEM 3.0M x 5	5.0 (125)	12-170 (0,3-4,3)	50,000 (5 700)	8,260,000 (933 000)	15,000 (67 000)	16 (71)	45 (200)	2,700 (12 000)	24.0 (10,9)
OEM 3.0M x 6.5	6.5 (165)	12-170 (0,3-4,3)	65,000 (7 300)	10,750,000 (1 215 000)	15,000 (67 000)	27 (120)	75 (330)	2,700 (12 000)	30.0 (13,6)
OEM 4.0M x 2	2.0 (50)	12-170 (0,3-4,3)	34,000 (3 800)	13,300,000 (1 503 000)	25,000 (111 000)	50 (225)	65 (290)	4,800 (21 000)	33.0 (15,0)
OEM 4.0M x 4	4.0 (100)	12-170 (0,3-4,3)	68,000 (7 700)	16,000,000 (1 808 000)	25,000 (111 000)	35 (155)	65 (290)	4,800 (21 000)	40.0 (18,2)
OEM 4.0M x 6	6.0 (150)	12-170 (0,3-4,3)	102,000 (11 500)	18,600,000 (2 102 000)	25,000 (111 000)	30 (135)	70 (310)	4,800 (21 000)	44.0 (20,0)
Δ OEM 4.0M x 8	8.0 (200)	12-170 (0,3-4,3)	136,000 (15 400)	21,300,000 (2 407 000)	25,000 (111 000)	40 (180)	80 (355)	4,800 (21 000)	66.0 (30,0)
Δ OEM 4.0M x 10	10.0 (250)	12-170 (0,3-4,3)	170,000 (19 200)	24,000,000 (2 712 000)	25,000 (111 000)	30 (135)	80 (355)	4,800 (21 000)	73.0 (33,0)

Note: Δ = Non-standard lead time items, contact ITT Enidine.

Catalog No./Model	A in. (mm)	A ₁ in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	E ₁ in. (mm)	F in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)
OEM 3.0M x 2	9.66 (245)	10.43 (265)	3.88 (98)	M85 x 2	0.88 (22)	2.75 (69)	3.00 (76)	5.53 (140)	2.77 (70)	2.25 (58)	2.02 (51)
OEM 3.0M x 3.5	12.72 (323)	13.49 (343)	3.88 (98)	M85 x 2	0.88 (22)	2.75 (69)	3.00 (76)	7.06 (179)	3.53 (90)	2.25 (58)	2.78 (71)
OEM 3.0M x 5	15.72 (399)	16.49 (419)	3.88 (98)	M85 x 2	0.88 (22)	2.75 (69)	3.00 (76)	8.50 (217)	4.28 (109)	2.25 (58)	2.78 (71)
OEM 3.0M x 6.5	19.46 (494)	20.23 (514)	3.88 (98)	M85 x 2	0.88 (22)	3.19 (81)	3.19 (81)	10.06 (256)	5.03 (128)	2.25 (58)	2.78 (71)
OEM 4.0M x 2	12.32 (313)	13.20 (335)	5.00 (127)	M115 x 2	1.38 (35)	3.50 (88)	3.75 (95)	8.00 (203)	4.00 (102)	2.89 (74)	3.13 (80)
OEM 4.0M x 4	16.32 (414)	17.20 (436)	5.00 (127)	M115 x 2	1.38 (35)	3.50 (88)	3.75 (95)	10.00 (254)	5.00 (127)	2.89 (74)	4.13 (105)
OEM 4.0M x 6	20.32 (516)	21.20 (538)	5.00 (127)	M115 x 2	1.38 (35)	3.50 (88)	3.75 (95)	12.00 (305)	6.00 (153)	2.89 (74)	4.25 (108)
OEM 4.0M x 8	25.32 (643)	26.20 (665)	5.00 (127)	M115 x 2	1.38 (35)	3.50 (88)	3.75 (95)	14.00 (356)	7.00 (178)	2.89 (74)	4.25 (108)
OEM 4.0M x 10	29.32 (745)	30.20 (767)	5.00 (127)	M115 x 2	1.38 (35)	3.50 (88)	3.75 (95)	16.00 (406)	8.00 (203)	2.89 (74)	4.25 (108)

- Notes: 1. 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.
 2. For mounting accessories, see pages 32.
 3. Rear flange mounting of OEM 3.0M x 6.5, OEM 4.0M x 8 and OEM 4.0M x 10 models not recommended when mounting horizontally.

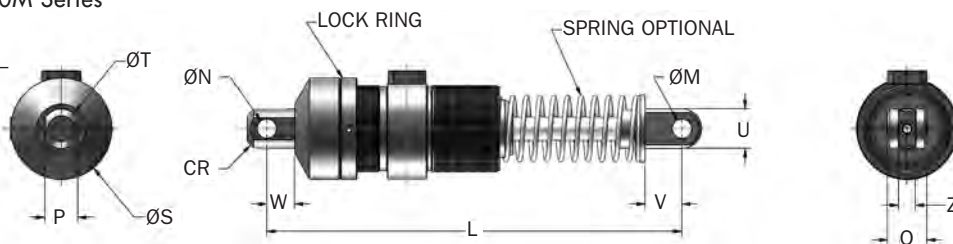
Adjustable Series Hydraulic Shock Absorbers

OEM Mid-Bore Series

Accessories

OEM 3.0M → OEM 4.0M Series

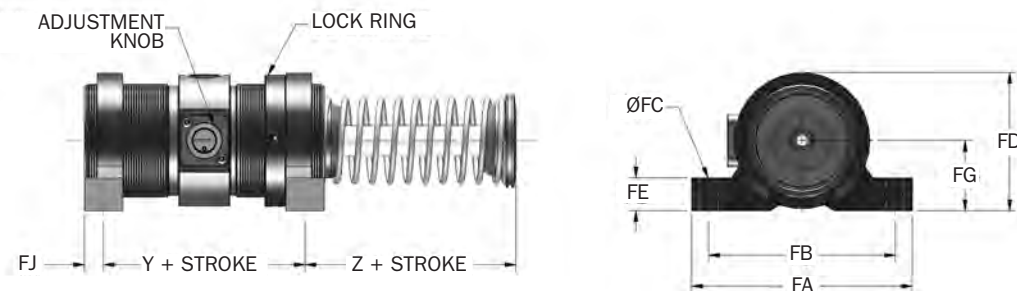
Clevis Mount



Catalog No./Model	(S) Stroke in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	Q in. (mm)	S in. (mm)	T in. (mm)	U in. (mm)	V in. (mm)	W in. (mm)	Z in. (mm)	CR in. (mm)	Weight (mass) lbs. (Kg)
ΔOEM 3.0M x 2 CM(S)	2.0 (50)	12.81 (325,0)	.751 (19,07) (+0,25/0)	.751 (19,07) (+0,25/0)	1.250 (31,7) (0/-0,3)	1.50 (38,1) (+0,8/-0,8)	3.88 (98,0)	1.50 (38,1)	1.50 (38,1)	1.40 (36,0)	1.06 (26,0)	.640 (16,3) (+0,25/-0,25)	.90 (23,0)	19.1 (8,66)
ΔOEM 3.0M x 3.5 CM(S)	3.5 (90)	15.84 (402,0)	.751 (19,07) (+0,25/0)	.751 (19,07) (+0,25/0)	1.250 (31,7) (0/-0,3)	1.50 (38,1) (+0,8/-0,8)	3.88 (98,0)	1.50 (38,1)	1.50 (38,1)	1.40 (36,0)	1.06 (26,0)	.640 (16,3) (+0,25/-0,25)	.90 (23,0)	23.6 (10,70)
ΔOEM 3.0M x 5 CM(S)	5.0 (125)	18.84 (479,0)	.751 (19,07) (+0,25/0)	.751 (19,07) (+0,25/0)	1.250 (31,7) (0/-0,3)	1.50 (38,1) (+0,8/-0,8)	3.88 (98,0)	1.50 (38,1)	1.50 (38,1)	1.40 (36,0)	1.06 (26,0)	.640 (16,3) (+0,25/-0,25)	.90 (23,0)	27.6 (12,52)
ΔOEM 3.0M x 6.5 CM(S)	6.5 (165)	22.59 (574,0)	.751 (19,07) (+0,25/0)	.751 (19,07) (+0,25/0)	1.250 (31,7) (0/-0,3)	1.50 (38,1) (+0,8/-0,8)	3.88 (98,0)	1.50 (38,1)	1.50 (38,1)	1.40 (36,0)	1.06 (26,0)	.640 (16,3) (+0,25/-0,25)	.90 (23,0)	33.6 (15,24)
ΔOEM 4.0M x 2 CM(S)	2.0 (50)	17.00 (432,0)	1.001 (25,42) (+0,25/0)	1.001 (25,42) (+0,25/0)	1.500 (38,1) (0/-0,3)	3.56 (90,5)	5.00 (127,0)	2.25 (57,2)	2.00 (51,0)	2.00 (51,0)	1.75 (44,0)	1.505 (38,2) (+0,5/0)	1.35 (35,0)	42.4 (19,23)
ΔOEM 4.0M x 4 CM(S)	4.0 (100)	21.00 (533,0)	1.001 (25,42) (+0,25/0)	1.001 (25,42) (+0,25/0)	1.500 (38,1) (0/-0,3)	3.56 (90,5)	5.00 (127,0)	2.25 (57,2)	2.00 (51,0)	2.00 (51,0)	1.75 (44,0)	1.505 (38,2) (+0,5/0)	1.35 (35,0)	49.4 (22,41)
ΔOEM 4.0M x 6 CM(S)	6.0 (150)	25.00 (635,0)	1.001 (25,42) (+0,25/0)	1.001 (25,42) (+0,25/0)	1.500 (38,1) (0/-0,3)	3.56 (90,5)	5.00 (127,0)	2.25 (57,2)	2.00 (51,0)	2.00 (51,0)	1.75 (44,0)	1.505 (38,2) (+0,5/0)	1.35 (35,0)	53.4 (24,22)
ΔOEM 4.0M x 8 CM(S)	8.0 (200)	30.00 (762,0)	1.001 (25,42) (+0,25/0)	1.001 (25,42) (+0,25/0)	1.500 (38,1) (0/-0,3)	3.56 (90,5)	5.00 (127,0)	2.25 (57,2)	2.00 (51,0)	2.00 (51,0)	1.75 (44,0)	1.505 (38,2) (+0,5/0)	1.35 (35,0)	75.4 (34,20)
ΔOEM 4.0M x 10 CM(S)	10.0 (250)	34.00 (864,0)	1.001 (25,42) (+0,25/0)	1.001 (25,42) (+0,25/0)	1.500 (38,1) (0/-0,3)	3.56 (90,5)	5.00 (127,0)	2.25 (57,2)	2.00 (51,0)	2.00 (51,0)	1.75 (44,0)	1.505 (38,2) (+0,5/0)	1.35 (35,0)	82.4 (37,37)

Notes: 1. "S" indicates model is supplied with spring. 2. Δ = Non-standard lead time items, contact ITT Enidine.

Flange Foot Mount



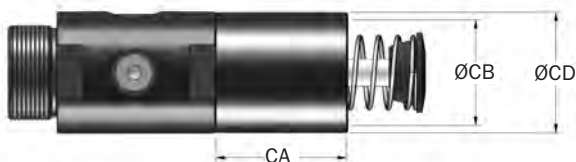
Catalog No./Model	Part Number	Model (Ref)	J in. (mm)	Y in. (mm)	Z in. (mm)	FA in. (mm)	FB in. (mm)	FC in. (mm)	FD in. (mm)	FE in. (mm)	FG in. (mm)	FJ in. (mm)	FK in. (mm)	Bolt Size in. (mm)	Weight (mass) lbs. (kg)	Notes
FM M85 x 2	2F3330	OEM 3.0M	2.25	3.19	2.32	6.50	5.50	.53	4.06	1.00	2.06	0.57	1.13	1/2	6.9	1
		OEM 3.0M	(58)	(81,0)	(59,0)	(165,0)	(139,7)	(13,5)	(103,0)	(25,4)	(52,3)	(14,1)	(28,7)	(M12)	(1 984)	1
FM M115 x 2	2F3720	OEM 4.0M	2.82	7.50	1.44	8.00	6.50	.65	5.88	1.50	3.13	0.63	2.50	5/8	8.6	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)	(3 900)	2

Notes:
 1. OEM 3.0M x 6,5, Z dimension is 77,7mm.
 2. OEM 4.0M x 8 and 4.0M x 10M, Z dimension is 62,0mm.
 3. For rear foot mount, dimension FJ is 22,4mm.

Adjustable Series

Stop Collar (SC)

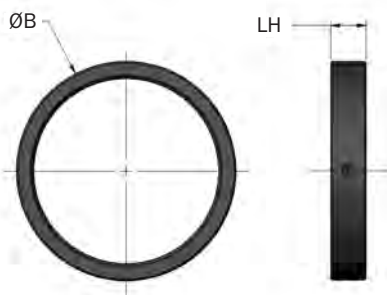
(LR)OEM 3/4 → (LR)OEM 2.0M



Catalog No./Model	Part Number	Model (Ref)	CA in. (mm)	CB in. (mm)	CD in. (mm)	Weight (mass) oz. (g)
Δ SC 1 3/4 - 12	8KE2940	(LR)OEMXT 3/4	1.94 (49,0)	1.94 (49,0)	2.22 (56,5)	12.0 (340)
Δ SC M2 1/2 - 12*						
Δ SC 2 1/2 - 12 x 2	8KE3010	(LR)OEMXT 1 1/8 x 2 & 4	2.47 (63,0)	2.54 (65,0)	3.00 (76,0)	23.0 (652)
Δ SC M2 1/2 - 12 x 2						
Δ SC 2 1/2 - 12 x 6	8KE3012	OEMXT 1 1/8 x 6	3.66 (93,0)	2.54 (65,0)	3.00 (76,0)	33.0 (936)
Δ SC M42 x 1.5 x 1	8K2940	(LR)OEMXT 1.5M x 1	2.44 (62,0)	1.94 (49,0)	2.22 (56,0)	14.0 (397)
Δ SC M42 x 1.5 x 2	8K2941	(LR)OEMXT 1.5M x 2	2.94 (75,0)	1.94 (49,0)	2.22 (56,0)	19.0 (539)
Δ SC M42 x 1.5 x 3	8K2942	OEMXT 1.5M x 3	3.44 (87,0)	1.94 (49,0)	2.22 (56,0)	23.0 (652)
Δ SC M64 x 2 x 2	8K3010 M93010057	(LR)OEMXT 2.0M x 2	3.50 (89,0)	2.54 (65,0)	3.00 (76,0)	33.0 (936)
Δ SC M64 x 2 x 4	8K3011 M93011057	OEMXT 2.0M x 4	4.50 (114,0)	2.54 (65,0)	3.00 (76,0)	42.0 (1191)
Δ SC M64 x 2 x 6	8K3012 M93012057	OEMXT 2.0M x 6	5.63 (143,0)	2.54 (65,0)	3.00 (76,0)	52.0 (1475)

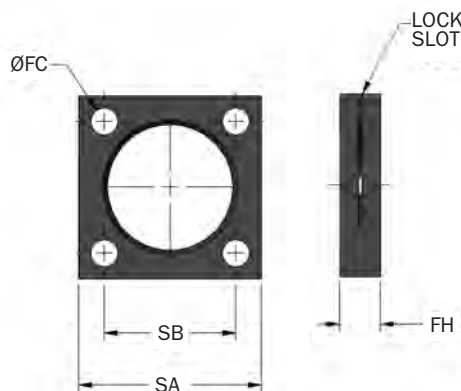
Notes: 1. * Do not use with urethane striker cap. 2. Δ = Non-standard lead time items, contact ITT Enidine.

Lock Ring (LR)



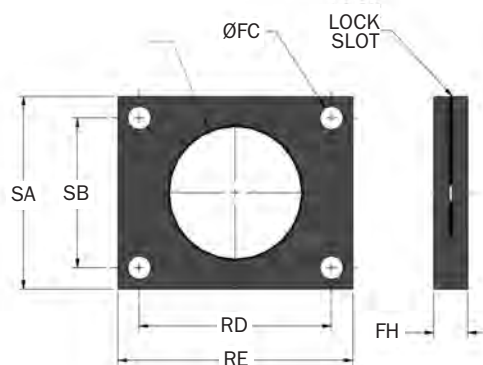
Catalog No./Model	Part Number	Model (Ref)	B in. (mm)	LH in. (mm)	Weight (mass) oz. (g)
LR 1 3/4 - 12	F8E2940049	(LR)OEMXT 3/4	2.00 (50,8)	.38 (9,5)	2.0 (57)
LR 2 1/2 - 12	F8E3010049	(LR)OEMXT 1 1/8	2.88 (73,0)	.38 (9,5)	3.0 (85)
LR M42 x 1.5	F82940049	(LR)OEMXT 1.5M	2.00 (50,8)	.38 (9,6)	3.0 (85)
LR M64 x 2	F83010049	(LR)OEMXT 2.0M	2.88 (73,0)	.50 (12,7)	4.0 (114)
LR M85 x 2	F83330049	(LR)OEM 3.0M	3.88 (98,2)	.63 (16,0)	8.0 (226)
LR M115 x 2	F83720049	(LR)OEM 4.0M	5.00 (126,7)	.88 (22,4)	14.0 (397)

Square Flange (SF)



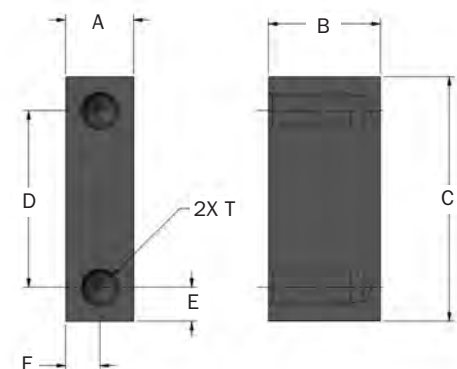
Catalog No./Model	Part Number	Model (Ref)	FC in. (mm)	FH in. (mm)	SA in. (mm)	SB in. (mm)	Bolt Size in. (mm)	Weight (mass) oz. (g)
SF 1 3/4 - 12	M4E2940129	(LR)OEMXT 3/4	.34 (8,6)	.50 (12,7)	2.25 (57,2)	1.63 (41,4)	3/16 (M8)	5.0 (140)
SF 2 1/2 - 12	M4E3010129	(LR)OEMXT 1 1/8	.41 (10,4)	.62 (15,7)	3.50 (88,9)	2.75 (69,9)	3/8 (M10)	20.0 (570)
SF M42 x 1.5	M42940129	(LR)OEMXT 1.5M	.34 (8,6)	.50 (12,7)	2.25 (57,2)	1.63 (41,4)	3/16 (M8)	5.0 (140)
SF M64 x 2	M43010141	(LR)OEMXT 2.0M	.41 (10,4)	.62 (15,7)	3.50 (88,9)	2.75 (69,9)	3/8 (M10)	20.0 (570)
SF M85 x 2	M43330141	OEM 3.0M	.53 (13,5)	.75 (19,0)	4.00 (101,6)	3.00 (76,2)	1/2 (M13)	24.0 (680)
SF M115 x 2	M43720141	OEM 4.0M	.65 (16,5)	1.00 (25,4)	5.50 (139,7)	4.38 (111,3)	3/8 (M16)	56.0 (1590)

Rectangular Flange (RF)



Catalog No./ Model	Part Number	Model (Ref)	FC in. (mm)	FH in. (mm)	RD in. (mm)	RE in. (mm)	SA in. (mm)	SB in. (mm)	Bolt Size in. (mm)	Weight (mass) oz. (g)
RF 1 3/4 -12	M5E2940129	(LR)OEMXT 3/4	.34 (8,6)	.50 (12,7)	2.38 (60,5)	3.00 (76,2)	2.25 (57,2)	1.63 (41,4)	5/16 (M8)	9.0 (260)
RF M42 x 1.5	M52940129	(LR)OEMXT 1.5M	.34 (8,6)	.50 (12,7)	2.38 (60,5)	3.00 (76,2)	2.25 (57,2)	1.63 (41,4)	5/16 (M8)	9.0 (260)
RF M85 x 2	M53330129	OEM 3.0M	.53 (13,5)	.75 (19,1)	4.00 (101,6)	5.00 (127,0)	4.00 (101,6)	3.00 (76,2)	1/2 (M13)	37.0 (1 040)

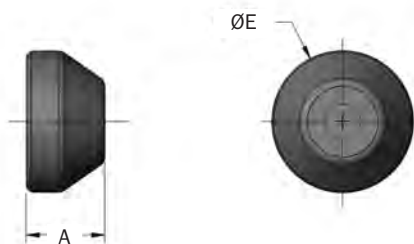
Stop Bar Kit



Kit Part Number	Model (Ref)	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	T in. (mm)	Bolt Size in. (mm)	Weight (mass) oz. (g)
ΔT58706300	OEMXT 3/4	.63 (16,0)	1.03 (26,2)	2.25 (57,2)	1.63 (41,4)	.31 (7,9)	.32 (8,1)	5/16 - 24 UNF x 3/4 DEEP	5/16	6.1 (173)
ΔT52940300		1.42 (36,1)	3.50 (88,9)	2.75 (69,9)	.38 (9,7)					
ΔT58650300	OEMXT 1 1/8	.63 (12,7)	1.42 (36,1)	3.50 (88,9)	2.75 (69,9)	.38 (9,7)	.32 (8,1)	3/8 - 24 UNF x 3/4 DEEP	3/8	10.5 (298)
ΔT53010300										

Notes: 1. Kit includes 2 Stop Bars, Rectangular Flange for OEM 3/4 and 1.5, Square Flange for 1 1/8 and 2.0 and Lock Ring.
2. Δ = Non-standard lead time items, contact ITT Enidine.

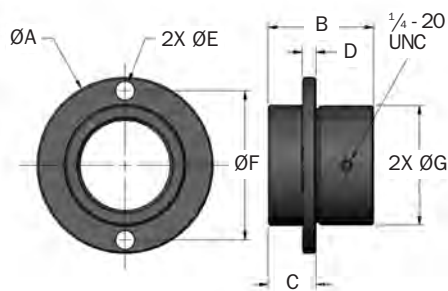
Urethane Striker Cap (UC)



Catalog No./ Model	Part Number	Model (Ref)	A in. (mm)	E ₁ in. (mm)	Weight (mass) oz. (g)
UC 2940	C92940079	(LR)OEMXT 3/4	.97 (24,5)	1.75 (44,5)	0.5 (14)
UC 3010	C93010079	(LR)OEMXT 1 1/8	.95 (24,1)	2.25 (57,0)	0.8 (23)
UC 2940	C92940079	(LR)OEMXT 1.5M	.97 (24,5)	1.75 (44,5)	0.5 (14)
UC 3010	C93010079	(LR)OEMXT 2.0M	.95 (24,1)	2.25 (57,0)	0.8 (23)
UC 3330	C93330079	OEM 3.0M	1.22 (31,4)	3.00 (76,0)	3.0 (85)
UC 3720	C93720079	OEM 4.0M	1.47 (37,5)	3.75 (95,0)	6.0 (170)

Notes: For complete shock absorber dimension with urethane striker cap, refer to engineering data, pages 27-31.

Stop Collar With Flange (SCF)



Catalog No./ Model	Part Number	Model (Ref)	A in. (mm)	B in. (mm)	C ±.002 in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	Bolt Size in. (mm)	Weight (mass) oz. (g)
ΔSCF 1 3/4 -12	M98640300	OEMXT 3/4	3.25 (83)	1.94 (49,3)	.88 (22,4)	.25 (6,4)	.34 (8,6)	2.75 (70)	2.20 (56)	5/16 (8)	20.5 (638)
ΔSCF 2 1/2 -12	M98650300	OEMXT 1 1/8	4.25 (108)	2.47 (63)	1.00 (25,4)	.38 (9,7)	.34 (8,6)	3.50 (89)	2.95 (75)	5/16 (8)	39.8 (1 238)

Notes: 1. Locking set screw feature provided as standard. 2. Δ = Non-standard lead time items, contact ITT Enidine.

Adjustable Series Hydraulic Shock Absorbers

ECO OEM/OEMXT/OEM Large Bore Series

Adjustment Techniques

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 maximum suggested 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: 40 in./sec.
2. Intersection Point: Adjustment Setting 5
3. Useable Adjustment: Setting Range 0 to 5

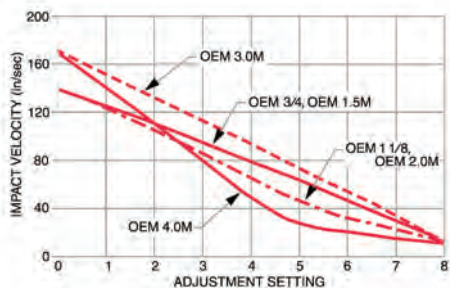
Example: (LR)OEMXT 1 1/8 x 2

1. Impact Velocity: 20 in./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.

OEMXT Large

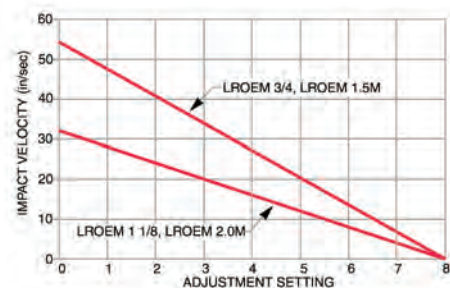


180° adjustment with setscrew locking. OEMXT 3.0M - OEM 4.0M



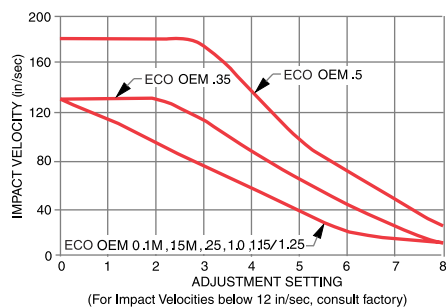
360° adjustment with setscrew locking. OEMXT 3/4 and OEMXT 1 1/8, OEMXT 1.5M and OEMXT 2.0M

(LR)OEMXT Large



360° adjustment with setscrew locking (LR)OEMXT 3/4 and (LR)OEMXT 1 1/8, (LR)OEMXT 1.5M and (LR)OEMXT 2.0M

ECO OEM Small Series

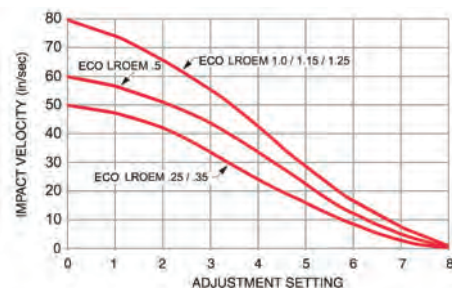


180° adjustment with setscrew locking ECO OEM 0.1M - ECO OEM .5



360° adjustment with setscrew locking ECO OEM 1.0

ECO (LR)OEM Small Series



180° adjustment with setscrew locking ECO (LR)OEM 0.15M - (LR)OEM .5



360° adjustment with setscrew locking ECO (LR)OEM 1.0

Typical Applications

Adjustable Series



Automotive Manufacturing Applications



Bottling Applications



Automated Applications