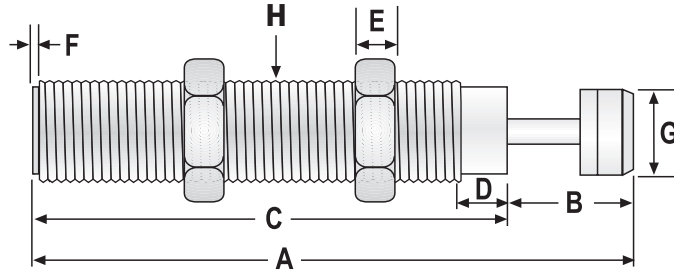


Self Compensating Minibuffers



EFM Series

- Operating Temperature: 14° to 176°F (-10° to 80°C)
- Two locknuts provided with each minibuffer
- Flange and Footlug mounts available



SPECIFICATIONS: EFM MINIBUFFERS

DIMENSIONS IN INCHES (MM)									
MODEL	STROKE	A	B	C	D	E	F	G	H
EFM 08-06-6C, 7C, 8C	.24 (6)	1.97 (50)	.48 (12)	1.50 (38)	-	.12 (3)	.20 (5)	.26 (6.6)	M8 X 1.0
EFM 10-08-6C, 7C, 8C	.31 (8)	2.24 (57)	.55 (14)	1.70 (43)	-	.12 (3)	.20 (5)	.34 (8.6)	M10 X 1.0
EFM 12-10-6C, 7C, 8C	.39 (10)	2.74 (69.5)	.77 (19.5)	1.97 (50)	-	.16 (4)	.22 (5.5)	.41 (10.3)	M12 X 1.0
EFM 10-20-1C, 2C	.80 (20)	4.90 (125)	1.36 (35)	3.54 (90)	.12 (3)	.31 (8)	.43 (11)	.71 (18)	7/8-14 UNF (-1,-2)
EFM 10-20-6C, 7C									M20 X 1.5 (-6,-7)
EFM 11-25-1C, 2C	1.0	5.06	1.71	3.35	.55	.39	.12	.87	1-12 UNF (-1, -2)
EFM 11-25-6C, 7C	(25)	(128)	(43)	(85)	(14)	(10)	(3)	(22)	M25 X 2.0 (-6, -7)
EFM 27-25-7C, 8C	1.0 (25)	5.93 (151)	1.56 (40)	4.4 (111)	-	.25 (6)	.39 (10)	.89 (23)	M27 X 3.0
EFM 11-40-1C	1.6	8.31	3.25	5.06	.55	.39	.12	.87	1-12 UNF (-1)
EFM 11-40-6C	(40)	(211)	(83)	(129)	(14)	(10)	(3)	(22)	M25 X 2.0 (-6)
EFM 20-50-2C	2.0 (50)	9.57 (243)	3.47 (88)	6.10 (155)	.71 (18)	.59 (15)	.55 (14)	1.18 (30)	M36 X 1.5

SIZE SELECTION

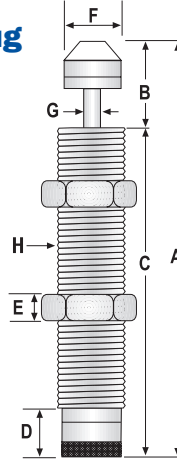
MODEL	EFFECTIVE WEIGHT	ENERGY PER CYCLE	ENERGY PER HOUR	MAX IMPACT SPEED	SPRING FORCE		MAX CYCLES PER MINUTE	WEIGHT
	lbs (kg)	In lbs (Nm)	In lbs (Nm)	In/Sec (m/sec)	Ext.	Comp.		
EFM 08-06-6C	1.1 (0.5)	17.8 (2)	78,200 (8,800)	78 (2)	.4 (.18)	.9 (.41)	70	.02 (11)
EFM 08-06-7C	4.4 (2)	17.8 (2)	78,200 (8,800)	39 (1)	.4 (.18)	.9 (.41)	70	.02 (11)
EFM 08-06-8C	13.2 (6)	17.8 (2)	78,200 (8,800)	20 (0.5)	.4 (.18)	.9 (.41)	70	.02 (11)
EFM 10-08-6C	4.4 (2)	35.6 (4)	135,000 (15,200)	117 (3)	.5 (.23)	1.0 (.45)	63	.04 (20)
EFM 10-08-7C	8.8 (4)	35.6 (4)	135,000 (15,200)	59 (1.5)	.5 (.23)	1.0 (.45)	63	.04 (20)
EFM 10-08-8C	19.8 (9)	35.6 (4)	135,000 (15,200)	31 (0.8)	.5 (.23)	1.0 (.45)	63	.04 (20)
EFM 12-10-6C	11 (5)	44.44 (5)	156,800 (17,640)	117 (3)	.8 (1.8)	3.7 (1.7)	59	.07 (31.5)
EFM 12-10-7C	22 (10)	44.44 (5)	156,800 (17,640)	59 (1.5)	.8 (1.8)	3.7 (1.7)	59	.07 (31.5)
EFM 12-10-8C	66 (30)	44.44 (5)	156,800 (17,640)	31 (0.8)	.8 (1.8)	3.7 (1.7)	59	.07 (31.5)
EFM 10-20-1C	66 (30)	260 (29)	468,000 (52,800)	55 (1.4)	2.0 (0.9)	5.1 (2.3)	30	.4 (181)
EFM 10-20-6C								
EFM 10-20-2C	33 (15)	260 (29)	468,000 (52,800)	79 (2.0)	2.0 (0.9)	5.1 (2.3)	30	.4 (181)
EFM 10-20-7C								
EFM 11-25-1C	242 (110)	712 (80)	640,800 (72,300)	47 (1.2)	4.4 (2.0)	7.1 (3.2)	15	.64 (290)
EFM 11-25-6C								
EFM 11-25-2C	75 (34)	712 (80)	640,800 (72,300)	87 (2.2)	4.4 (2.0)	7.1 (3.2)	15	.64 (290)
EFM 11-25-7C								
EFM 27-25-7C	952 (433)	690 (78)	621,400 (70,200)	79 (2.0)	4.4 (2.0)	7.1 (3.2)	15	.79 (359)
EFM 27-25-8C	3812 (1733)	690 (78)	621,400 (70,200)	47 (1.2)	4.4 (2.0)	7.1 (3.2)	15	.79 (359)
EFM 11-40-1C								
EFM 11-40-6C	662 (300)	1042 (118)	750,240 (84,700)	118 (3.0)	4.4 (2.0)	12.6 (5.7)	12	1.32 (595)
EFM 20-50-2C	2205 (1002)	3472 (392)	1,666,560 (188,100)	118 (3.0)	6.6 (3.0)	18.3 (8.3)	8	2.21 (1000)

Adjustable Minibuffers

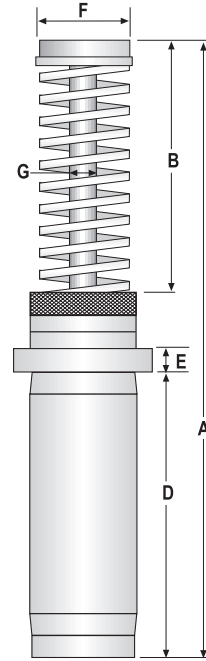
EFMA & EFA Series



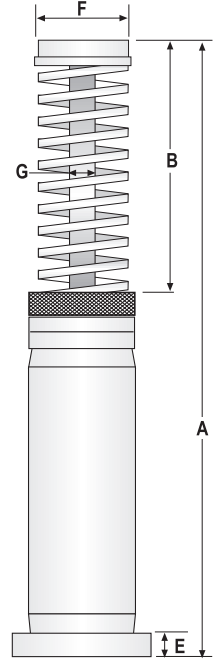
- **Operating Temperature:** 14° to 176°F (-10° to 80°C)
- **Two locknuts provided with each minibuffer**
- **Flange and Footlug mounts available**



EFMA

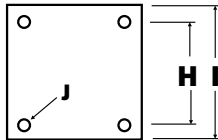


EFA 20-50-FC



EFA 20-50-RC

EFA Mounting Dimensions



H - 38 (1.50)
I - 50 (1.97)
J - 5.5 (0.22) dia.

SPECIFICATIONS: EFA & EFMA MINIBUFFERS

DIMENSIONS IN INCHES (MM)									
MODEL	STROKE	A	B	C	D	E	F	G	H
EFMA 7-15-1C	.60	4.33	1.01	3.32	.49	.24	.47	.14	5/8-18 UNF (-1)
EFMA 7-15-6C	(15)	(110)	(26)	(84)	(12)	(6)	(12)	(4)	M14 X 1.0 (-6)
EFMA 20-16-1C	.63	5.12	1.18	3.9	.6	.31	.71	.20	3/4-16 UNF
EFMA 10-20-1C	.80	5.08	1.37	3.71	.49	.31	.71	.20	7/8-14 UNF (-1)
EFMA 10-20-6C	(20)	(129)	(35)	(94)	(12)	(8)	(18)	(5)	M20 X 1.5 (-6)
EFMA 11-25-1C	1.0	6.02	1.73	4.29	.47	.39	.87	.35	1-12 UNF (-1)
EFMA 11-25-6C	(25)	(153)	(44)	(109)	(12)	(10)	(22)	(9)	M25 X 2.0 (-6)
EFMA 27-25-6C	2.0	6.14	1.56	4.6	.63	.39	.90	.31	M27 X 3.0
EFMA 27-25-6C	(25)	(156)	(40)	(117)	(16)	(10)	(23)	(8)	
EFA 20-50-FC	2.0	9.06	3.54	-	3.92	.39	1.10	.39	-
EFA 20-50-FC	(50)	(230)	(90)	-	(100)	(10)	(28)	(10)	-
EFA 20-50-RC	2.0	9.06	3.54	-	.63	.39	1.10	.39	-
EFA 20-50-RC	(50)	(230)	(90)	-	(16)	(10)	(28)	(10)	-

SIZE SELECTION

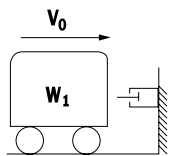
MODEL	MAX EFFECTIVE WEIGHT				ENERGY PER CYCLE In lbs (Nm)	ENERGY PER HOUR In lbs (Nm)	MAX IMPACT SPEED				SPRING FORCE lbs (kgf)		MAX CYCLES PER MINUTE	WEIGHT lbs. (g)
	STEP 1	STEP 2	STEP 3	STEP 4			EXT.	COMP						
EFMA 7-15-1C	STEP 1	STEP 2	STEP 3	STEP 4	87 (10)	313,200 (35,900)	STEP 1	STEP 2	STEP 3	STEP 4	0.9 (0.4)	2.4 (1.1)	60	.26 (118)
EFMA 7-15-6C	7.5 (3.4)	18 (8)	44 (20)	75 (34)			95 (2.4)	63 (1.6)	39 (1.0)	31 (.8)				
EFMA 20-16-1C	500 (227)				250 (29)	450,000 (50,800)	125 (3.2)				2.0 (0.9)	5.1 (2.3)	30	.48 (218)
EFMA 10-20-1C	STEP 1	STEP 2	STEP 3	STEP 4			STEP 1	STEP 2	STEP 3	STEP 4				
EFMA 10-20-6C	18 (8)	33 (15)	66 (30)	161 (73)	260 (30)	468,000 (52,800)	106 (2.7)	79 (2.0)	55 (1.4)	35 (.9)	2.0 (0.9)	5.1 (2.3)	30	.4 (181)
EFMA 11-25-1C	STEP 1	STEP 2	STEP 3	STEP 4	712 (82)	640,800 (72,300)	STEP 1	STEP 2	STEP 3	STEP 4	4.4 (2.0)	7.1 (3.2)	15	.64 (290)
EFMA 11-25-6C	42 (19)	75 (34)	242 (110)	728 (330)			114 (2.9)	87 (2.2)	47 (1.2)	28 (.7)				
EFMA 27-25-6C	1375 (625)				690 (78)	621,400 (70,200)	79 (2.0)				4.4 (2.0)	7.1 (3.2)	15	.83 (377)
EFA 20-50-FC	2200 (1000)				3472 (392)	1,666,560 (188,100)	118 (3.0)				6.6 (3.0)	18.3 (8.3)	8	2.21 (1000)
EFA 20-50-RC														

	Horizontal Impact (Stationary)	Horizontal Impact (Movable)	Horizontal Impact With Pushing Force	Horizontal Impact With Rotation	Impact with Some Incline	Rotary
Applications						
Effective Impact Weight kgf (lbs.)	$We = \frac{W_1}{n}$	$We = \frac{W_1 \times W_2}{(W_1 + W_2) n}$	$We = \frac{W_1 + \frac{2g f S}{V_0^2}}{n}$	$We = \frac{W_1 + \frac{1}{4} GD^2 \left(\frac{\omega^2}{V_0^2}\right)}{n}$	$We = \frac{W_1 + \left(1 + \frac{2g \sin\theta S}{V_0^2}\right)}{n}$	$We = \frac{I g}{\ell^2 \cdot n}$ $(V_0 = \ell \cdot \omega)$
Absorption Energy	$E = \frac{W_1 \cdot V_0^2}{2g \cdot n}$	$E = \frac{W_1 \cdot W_2 \cdot V_0^2}{2g (W_1 + W_2) n}$	$E = \frac{W_1 \cdot V_0^2}{2gn} + \frac{f \cdot S}{n}$	$E = \frac{W_1 \cdot V_0^2}{2gn} + \frac{GD^2 \omega^2}{8gn}$	$E = \frac{W_1 \cdot V_0^2}{2gn} + WS \sin\theta$	$E = \frac{I \omega^2}{2n}$ $(\omega = \frac{2\pi n}{60})$
	Free Fall Impact	Cylinder Bottoming	Cylinder Topping	<p>E = Absorption Energy [kgf m (in. lbs.)] We = Effective Impact Weight [kgf (lbs.)] W1, W2 = Impact Weight [kgf (lbs.)] V0 = Impact Speed [m/s (in./s)] S = Stroke [m (in)] f = Pushing Force [kgf (lbs.)] n = No. of Buffers g = Acceleration of Gravity [= 9.8 m/s² (= 386 in/s²)] ω = Angular Velocity [rad/s (rad/s)] ℓ = Distance [m (in.)] H = Fall Height [m (in.)] I = Moment of Inertia [kgf m s² (in. lbs. - sec²)] N = Rotation Speed [rpm] θ = Inclined Angle [rad] GD² = Rotational Inertia [kgf m² (lbs. in²)]</p>		
Applications						
Effective Impact Weight kgf (lbs.)	$We = \frac{W_1 \left(1 + \frac{2gS}{V_0^2}\right)}{n}$ $(V_0 = \sqrt{2gH})$	$We = \frac{W_1 + \frac{2gS(f+W_1)}{V_0^2}}{n}$	$We = \frac{W_1 + \frac{2gS(f-W_1)}{V_0^2}}{n}$			
Absorption Energy	$E = \frac{W_1 \cdot V_0^2}{2gn} + \frac{W_1 S}{n}$	$E = \frac{W_1 \cdot V_0^2}{2gn} + \frac{(f+W_1)S}{n}$	$E = \frac{W_1 \cdot V_0^2}{2gn} + \frac{(f-W_1)S}{n}$			

EXAMPLES:

Application: Factory Conveyor

Example A - Speed and weight of conveyed object is constant, needing only a fixed setting Minibuffer.



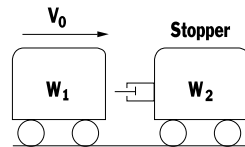
Weight W_1 : 200 lbs.
Speed V_0 : 45 in/sec

$$We = \frac{W_1}{n} = \frac{200}{1} = 200$$

$$E = \frac{W_1 \cdot V_0^2}{2g \cdot n} = \frac{200 \times (45)^2}{2 \times 386 \times 1} = 525$$

Select EFM 11-25-1 from specification chart on page 26.

Example B - Two different object are conveyed, requiring an adjustable Minibuffer.



Weight W_1 : 150 lbs.
 W_2 : 30 lbs.
Speed V_0 : 35 in/sec

$$We_1 = \frac{W_1}{n} = \frac{150}{1} = 150$$

$$E_1 = \frac{W_1 \cdot V_0^2}{2g \cdot n} = \frac{150 \times (35)^2}{2 \times 386 \times 1} = 238$$

$$We_2 = \frac{W_2}{n} = \frac{30}{1} = 30$$

$$E_2 = \frac{W_2 \cdot V_0^2}{2g \cdot n} = \frac{30 \times (35)^2}{2 \times 386 \times 1} = 47.6$$

Select EFMA 10-20-1 from specification chart on page 27.