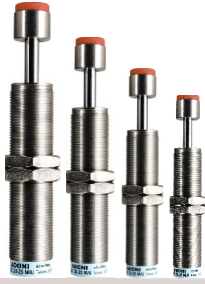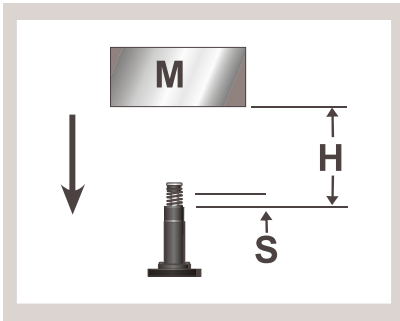# adoni

INDUSTRIAL SHOCK ABSORBERS

Guidelines For Selecting A Shock absorbers

In order to select the Industrial Shock absorber suitable for your application collect the data as per the case of impact as shown below. calculate the Energy to be absorbed using the given set of formulate and select the shock absorber whose utilization is the maximum.
Also share the calculations with the authorised representative for a confirmation.
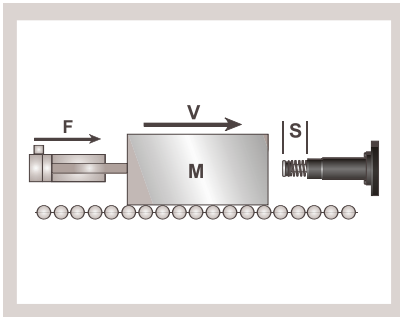
Case 1 - Free Faling Mass

Input Data		Formulae			
m	=20 Kgs	Ek=m x g x H	= 20x9.8x0.3	=58.8
H	=0.3M	Ep=m x g x s	= 20x9.8x0.025	=4.9
S	=0.025	Et =Ek + Ep	= 58.8+ 4.9	=63.7
	(Expected Stroke)	Et/Hr = Et x X	= 63.7x300	=19110
X	=300 Stroke per hour	Me= 2 x Et / (2 x g x H)^0.5		

= 2 x 63.7 / (2 x 9.8 x 0.3)
= 21

So we search a shock absorber whose energy capacity is greater than 63.7 and Energy capacity per hour is greater than 19110 and effective mass is in near 21 Kgs. Reffering to the catalouges ew find AD-25-M (M for metric threading) suitable for the application.
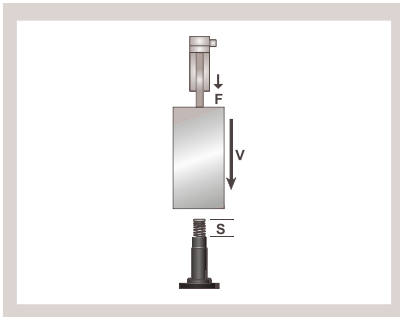
Case 2 - Mass With Propeling Force

M	=300 Kgs	Ek = 0.5 x m x v2 = 37.5
V	= 0.5 M/sec (cylinder)	Ep= F x S = 180
F	= 2400 N	Et = Ek + Ep = 217.5
S	=0.075	Et/Hr = Et x X = 45675
X	=210/H	Me = 2 x Et / V2 = 1740

We shall look for Et > 217.5 Et / Hr > 45675
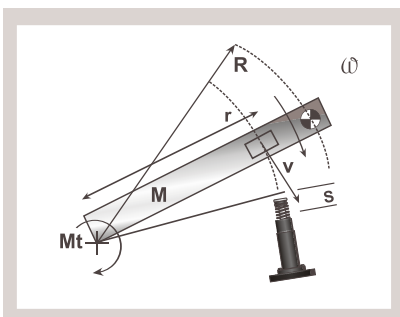Me > = 1740
We select AD-30-50 , AD-33-50, AD37-50, AD-42-75

Case 3 - Mass With Propelling Force- Vertical

M	= 150 Kgs	Ek = 0.5 x m x v^2 = 0.75
V	= 0.1 m/ sec	Ep = (F + m x g)xS = 193 (F - mxg if load is in
F	= 2400	Et = Ek + EP = 193.75 upward direction)
S	= 0.05 M	Et/Hr = Et x X = 58125
X	= 300/Hr	Me = 2 x Et / V^2 = 38750

We select AD-42-50-M-Hard
Note lower impact speed result in higher Me hence a harder version is required for the same energy to be absorbed in the stroke.

Case 4 - Swinging Mass

M	= 190 Kgs	Ek = m x v2 / 2 or J x w2 = 95 NM
V	= 1 m/sec	Ep = M* S/r = 25NM
r	= 0.3M	Et = Ek + Ep =120NM
M	= 300 NM	Et/Hr = Et x X = 70800NM
R	= 0.9 M	Ve= r x w or V x R /r = 0.33m/sec
S	= 0.025 M	Me = 2 x Et / V^2 = 2.203 Kg
X	= 590/Hr	

Here Mt is the Torque in NM
J- Moment of Inertia (Kg/M2)
w- (1/s) Angular velocity
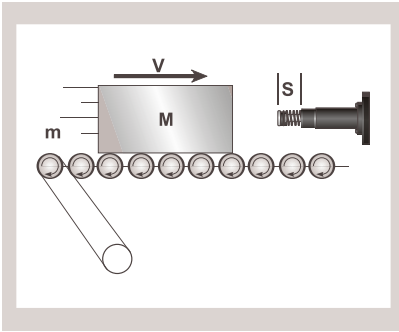
CASE 5 - Mass on Rollers

M	= 800 Kgs	Ek	= m x v^2/2	= 576
V	= 1.2 m/sec	Ep	= m x g x S x m	= 11.7
U	= 0.3	Et	= Ek + Ep	= 587
S	= 0.05 M	Et/Hr	= Et x X	=70531
X	= 120/Hr	Me	= 2 x Et / V2	= 815

m is coeffecient of friction of steel assumed 0.2
We select AD-42-75-SOFT as Et of the application is 587 and
Et of AD-42-75 is 750 NM
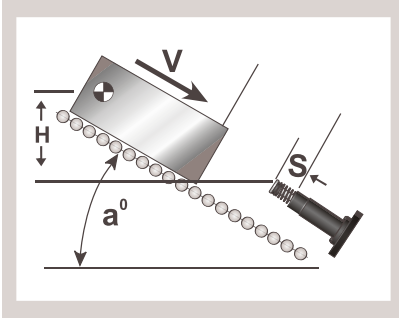
CASE 6 - Mass on Incline

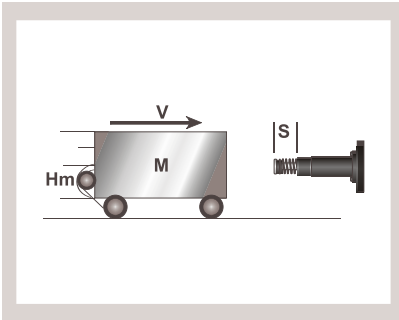|				
m	= 200 Kgs	Ek	= m x g x H	= 589.NM
H	= 0.3 M	Ep	= m x g x H x sin a x S	= 21NM
a	= 25 deg	Et	= Ek + Ep	= 610 NM
s	= 0.025 M	Et/Hr	= Et x X	=121866 NM
X	= 200 / H	Me =	2 x Et / (2 x g x H)	= 208 kg

We select AD-42-75-m-soft

CASE 7 - Motorised Trolley

M	= 1200 KG	EK	= m x v2 / 2	= 1350NM
V	= 1.5M/SEC	Ep	= 2.5 x HP x 1000 x S/v	= 375NM
HM	= 2.5	Et	= Ek + Ep	=1725NM
P	= 3kw	Et / Hr	= Et x X	= 86250 NM/hr
S	= 0.075 M	Me	= 2 x Et /V2	= 1534
X	= 50 / hr			

P - (KW) Motor Power
Select AD- 64-100-m-
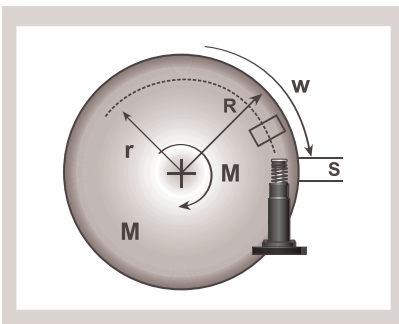
CASE 8 - Rotary Table

J	= 320 kgm2	Ek	= m x v2 / 2 or J x w2	= 640 NM
w	= 2 S - 1	Ep	= M x S/r	= 50 NM
M	= 1000NM	Et	= Ek + Ep	= 650 NM
r	= 0.5 M	Et/Hr	= Et x X	= 13800 NM
s	= 0.025 M	Ve	= r x w or V x R/r	= 1.0 m/sec
X	= 20 / h	Me	= 2 x Et / V22	= 275 kg

we select AD- 42 - 75 - M
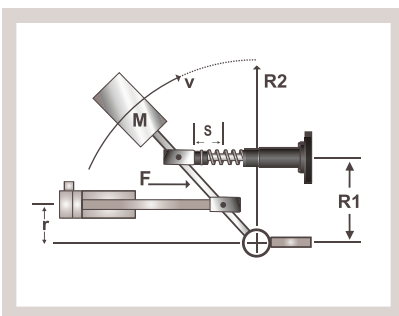
CASE 9 - Swinging Mass with Force

M	= 100 kg	Ek	= m x v2 / 2	= 112.5 NM
v	= 1.5 m/sec	Ep	= M x S/r = F x r x S/R1	= 25NM
F	= 1000NM	Et	= Ek + Ep	= 137.5 NM
S	= 0.025M	Et/Hr	= Et x X	= 16500 NM
r	= 0.5 M	V2	= R1 x w or V x R1 /R2	= 1.0m/sec
R1	= 0.6 M	Me	= 2 x Et / V22	= 275kg
R2	= 0.9 M	X	= 120 /h	

we select AD- 30-50-m or AD-37-50-M
*** In case any further assistance required please contact us.

Mini Series
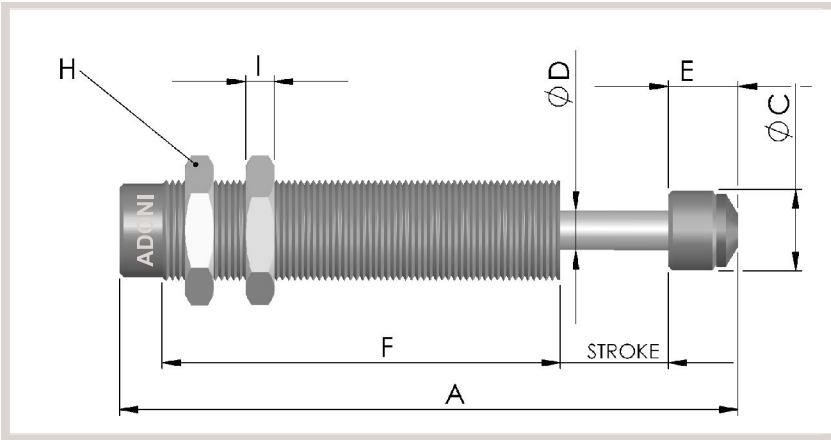
- Two locknuts inclusive
- Hydraulic Hardness fixed type
- Spring Return
- Ureathane striker Cap
- Special Anticorrosive Finish
- Hardened and Polished Rod
- special Viton Seals
- Nitrided wear parts for higher life
- Stainless steel model available
- Special versions available on request

Technical Details

Dimensions in Millimeters

Model	Thread	A	B	C	D	E	F	H	I
AC 8-6 -F	M 8X1.0	50	38	6.6	2.8	6	33	11	3
AC 10-5-F	M 10X1.0	38.7	27.7z	8.6	3	6	22.9	12.7	3
AC 10-8-F	M 10X1.0	57	43	8.6	3	6	38	12.7	3
AC 12-10-F	M 12X 1.0	69.5	50	10.3	3	9.5	45.5	14	4
AC 14-12-M	M 14X1.5	102.3	76	12	4	14.3	67	19	5

Performance Table

Model	Stroke	Energy	Absorbtion		Effective Mass (Kg)			
		Nm/stroke	Nm/h	Very soft	soft	Hard	Wt. Gm	
AC 8-6-F	6	2	8,800	0.5-2.0	2.0-6.0	2.0-6.0	11	
AC 10-5-F	5	3	10,800	1.0-3.0	3.0-7.0	3.0-7.0	14	
AC 10-8-F	8	4	15,200	2.0-4.0	4.0-9.0	4.0-9.0	20	
AC 12-10-F	10	5	17,640	5.0-10.0	10.0-30.0	10.0-30.0	31.5	
AC 14-12-M	12	15	30,000	8.0-50	50.0-100.0	50.0-100.0	80	

Ordering Information

AD- 42- 50- M- SOFT- +Foot Mounting

Type of Shock absorber
AC- Fixed Hardness
AD- Adjustabe Hardness

Available options for Diameters
8 , 10 , 12 , 14 , 16 , 20 , 22, 25 , 27
30, 36 , 37
42 , 64 , 85 , 115

Available Standard Strokes
5 , 8 , 10 , 12 , 14 , 13 ,15 , 20 , 25 ,
50 , 75 ,150 , 165 , 200, 250

Mounting
Foot
Flange
Clevis

Hardness
Depending on
effective mass
calculated as per
the sizing guidelines

For AC (Mini) Series
Consult Factory

Threading
F- Fine Threading
M- Metric Threading
U- UNF
X- Special threading

Small Series

- Two locknuts inclusive
- Hydraulic Hardness Adjustable
- Spring Return
- Ureathane Striker Cap
- Special Anticorrossive Finish
- Hardened and polished rod
- Special Viton Seals
- Adjustment axialy at Bottom
- Nitrided wear parts for higher life
- Stainless steel model available on request

Technical Details

Dimensions in Millimeters

Model	Thread	A	B	C	D	E	F	G	H	AF
AD 14-10-F	M 14X1	84	61	10.5	4	10	8	3.5	4	19
AD 14-10-M	M 14X1.5	84	61	10.5	4	10	8	3.5	4	19
AD 14-10-U	9/16-18UNF	3.3	2.4	0.4	0.2	0.4	0.3	0.1	0.2	0.7
AD 16-13-F	M 16X1	107	74	10.5	6	14	12	3.5	5	22
AD 16-13 M	M 16X1.5	107	74	10.5	6	14	12	3.5	5	22
AD 20-20M	M 20X1.5	128	88	10.5	6	14	12	5.5	6	26
AD 20-20U	3/4-16 UNF	5.0	3.5	0.4	0.2	0.6	0.5	0.2	0.2	1.0
AD 20-50 M	M 20X1.5	229.0	160.0	10.5	6.0	14.0	12.0	5.5	6.0	26.0
AD 22-20M	M 22X1.5	128	88	10.5	6	14.0	12.0	5.5	6	26
AD 25-25-M	M25X1.5	151	108	12	8	16	12	5.5	7	30
AD 25-25-U	1-12 UNF	5.9	4.3	0.5	0.3	0.6	0.5	0.2	0.3	1.2
AD 26-25-M	M26X1.5	151	108	12	8	16	12	5.5	7	30
AD 25-40-M	M25X1.5	189	129	12	8	16	12	5.5	7	30
AD 25-40 U	1-12 UNF	7.4	5.1	0.5	0.3	0.6	0.5	0.2	0.3	1.2

Performance Table

Model	Stroke	Energy	Absorbtion	Effective Mass		Spring Force		
		Nm/stroke	Nm/h	Min.Kg.	Max.Kg.	Min.N.	Max.N.	Wt. Gm
AD 14-10 FMU	10	5	15000	0.7	55	4	8	65
AD 16-13 FM	13	17	25000	1.5	160	4	11	105
AD 20-20 MU	20	25	35000	2	220	12	19	190
AD 20-50 MU	50	60	60000	10	400	6	17	219
AD 22-22 M	20	25	35000	2	220	12	9	90
AD 25-25 MU	25	85	70000	10	1500	12	28	340
AD 26-25 M	25	85	70000	10	1500	12	28	345
AD 25-40 MU	40	130	117,000	10	2100	6	17	395

Note- Dimensions are subject to changes without prior notice.

adoniTech
Industrial Shock Absorbers

Medium Series

- Two locknuts inclusive
- Hydraulic Hardness Adjustable
- Spring Return (External)
- Ureathane striker Cap
- Special Anticorrosive Finish
- Hardened and Polished Rod
- Special Viton Seals
- Adjustment axially at Bottom
- Nitrided wear parts for higher life
- Stainless steel model available
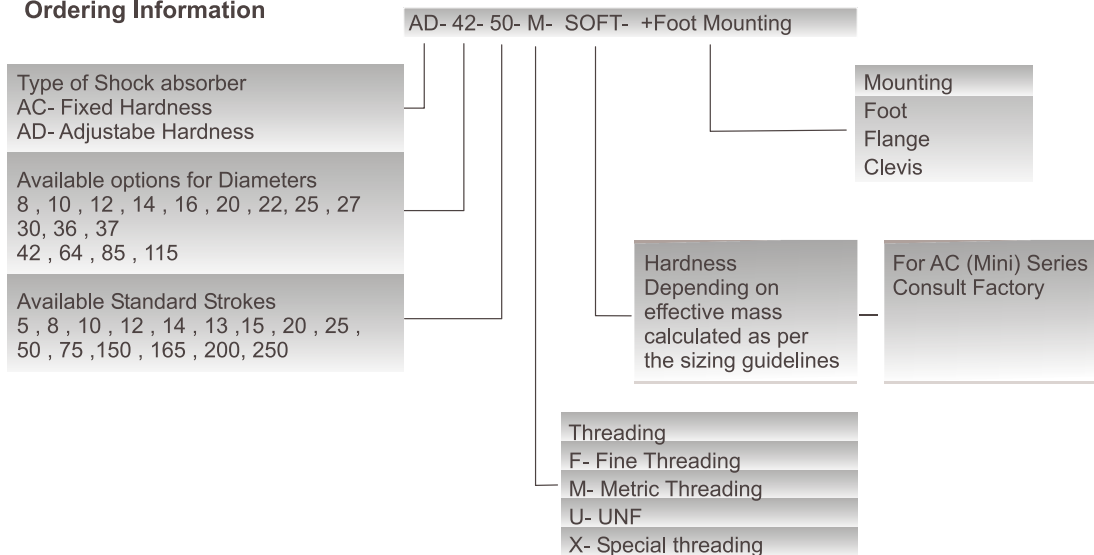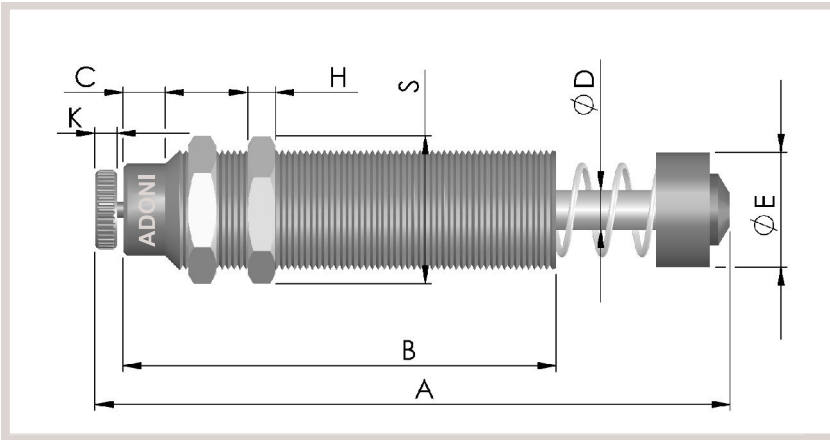- special versions available on request

Technical Details

Dimensions in Millimeters									
Model	Thread	A	B	C	D	E	F	G	H
AD 30-25 M	M 30X1.5	157	95	12	10	28	8	25	7
AD 33-25 M	M 33X1.5	157	95	12	10	28	8	25	7
AD 33-25 U	1 1/4-12U	6.2	3.7	0.5	0.4	1.1	0.3	1.0	0.3
AD 36-25 M	M 36X1.5	157	95	12	10	28	8	25	7
AD 37-25 M	M 37X1.5	157	95	12	10	28	8	25	7
AD 30-50 M	M 30X1.5	207	120	12	10	28	8	50	7
AD 33-50 M	M 33X1.5	207	120	12	10	28	8	50	7
AD 36-50 M	M 36X1.5	207	120	12	10	28	8	50	7
AD 37-50 M	M 37X1.5	207	120	12	10	28	8	50	7
AD 37-75 M	M 37X1.5	262	145	12	10	28	8	75	7

Performance Table

Model	Stroke	Energy	Absorbtion	Effective Mass		Spring Force		
		Nm/stroke	Nm/h	Min.Kg.	Max.Kg.	Min.N.	Max.N.	Wt. Gm
AD 30-25 M	25	120	82,000	10	1,800	40	70	640
AD 33-25 M U	25	120	82,000	10	1,800	40	70	640
AD 36-25 M	25	120	82,000	10	1,800	40	70	640
AD 37-25 M	25	120	82,000	10	1,800	40	70	640
AD 30-50 M	50	250	97,000	13	2,700	45	80	650
AD 33-50 M	50	250	97,000	13	2,700	45	80	655
AD 36-50 M	50	250	97,000	13	2,700	45	80	655
AD 37-50 M	50	250	97,000	13	2,700	45	80	660
AD 37-75 M	75	380	1,20,000	13	2,700	45	80	680

Note- Dimensions are subject to changes without prior notice.

Large Series

- Two locknuts inclusive
- Hydraulic Hardness Adjustable
- Spring Return
- Ureathane Striker Cap
- Special Anticorrossive Finish
- Hardened and Polished Rod
- Special Viton Seals
- Nitrided wear parts for higher life
- Stainless steel model available
- special versions available on request
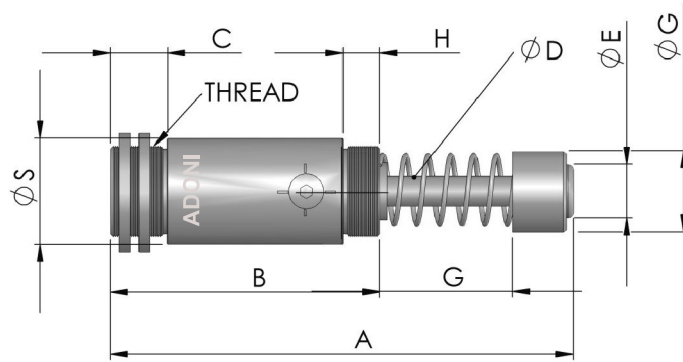
Technical Details

Dimensions in Millimeters

Model	Thread	A	B	C	D	E	F	G	H	S
AD 42-25 M	M 42X1.5	155	94	30	14	38	25	56	23	57
AD 42-25 U	1 1/1-12 UNF	6.1	3.7	1.2	0.6	1.5	1.0	2.2	0.9	2.2
AD 42-50 M	M 42X1.5	213	120	30	14	38	50	75	25	57
AD 42-50 U	1 1/1-12 UNF	8.4	4.7	1.2	0.6	1.5	2.0	3.0	1.0	2.2
AD 42-75 M	M 42X1.5	252	145	30	14	38	75	100	30	57
AD 42-75 U	1 1/1-12 UNF	9.9	5.7	1.2	0.6	1.5	3.0	3.9	1.2	2.2
AD 64-50 M	M 64X2	238	140	40	25	58	50	90	26	75
AD 64-50 U	2 1/2-12 UNF	9.4	5.5	1.6	1.0	2.3	2.0	3.5	1.0	3.0
AD 64-100 M	M 64X2	340	190	40	25	58	100	130	26	75
AD 64-100 U	2 1/2-12 UNF	13.4	7.5	1.6	1.0	2.3	3.9	5.1	1.0	3.0
AD 85-125 M	M 85X2	429	220	46	28	78	125	148	30	99
AD 85-150 M	M 85X2	494	260	46	28	78	150	200	30	99
AD 115-150 M	M 115X2	566	310	80	35	109	150	224	55	127
AD 115-200 M	M 115X2	641	355	80	35	109	200	274	55	127
AD 115-250 M	M 115X2	746	410	80	35	109	250	325	55	127

Performance Table

Model	Stroke	Et Energy Nm/stroke	Et/Hr Absorbtion Nm/h	Me Effective Mass Min.Kg.	Max.Kg.	Spring Force Min.N.	Max.N.	Wt. Gm
AD 42-25 MU	25	250	132,000	35-3500	3000-10000	60	90	1200
AD 42-50 MU	50	500	150,000	50-1650	4800-17000	60	120	1500
AD 42-75 MU	75	750	190,000	60-10000	8500-200000	50	140	1900
AD 64-50 MU	50	1,200	174,000	70-12000	10000-450000	60	130	3500
AD 64-100 MU	100	2,300	235,000	150-15000	12500-450000	60	180	4500
AD 85-125 M	125	5,500	935,000	300-44000	42000-50000	90	330	10800
AD 85-150 M	150	6,000	1,500,000	320-48000	45000-500000	90	330	10470
AD 115-150 M	150	11,000	2,090,000	355-88000	-	150	320	20000
AD 115-200 M	200	14,500	2,320,000	390-116000	-	170	380	23500
AD 115-250 M	250	18,500	2,683,000	450-148000	-	120	380	28000

Note - Dimensions are subject to changes without prior notice.

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Industrial Shock Absorbers
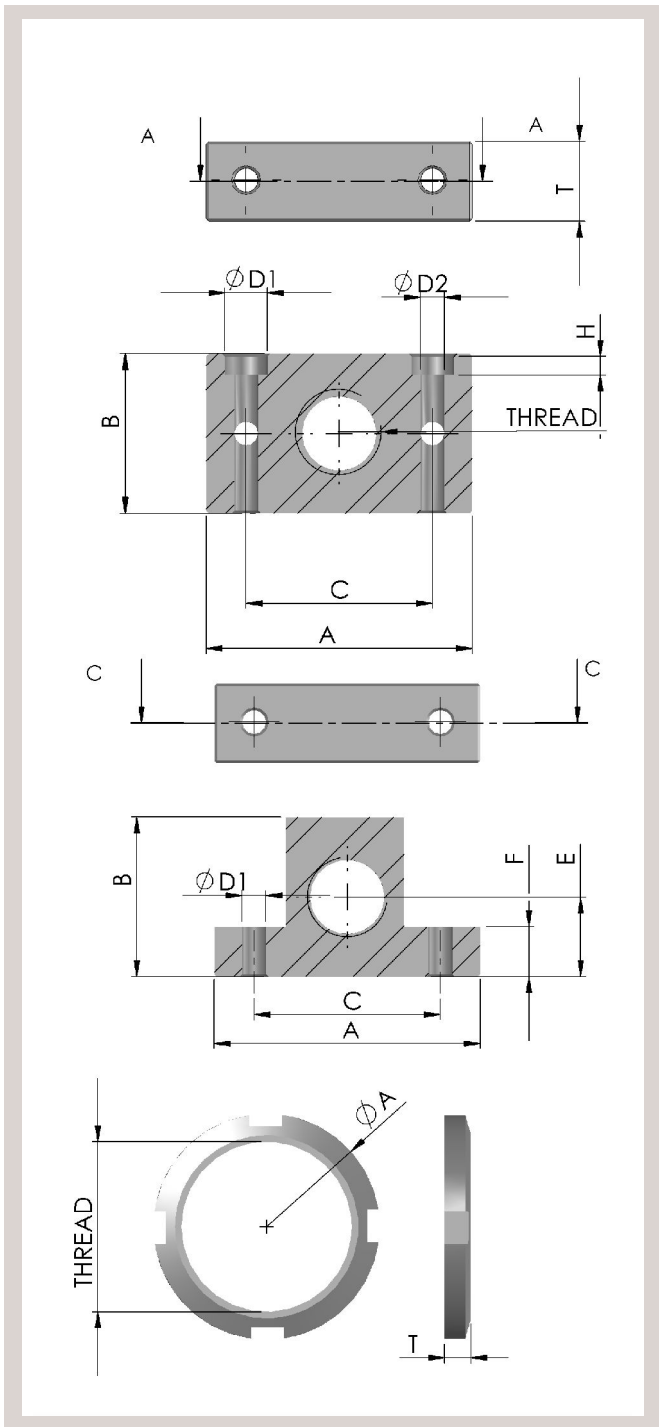
Thread	A	B	C	D1	D2	T	H
M 14X1 M 14X1.5 9/16-18UN M 16X1 M 16X1.5	46	30	35	8	4.5	15	5
M 20X1.5 3/4-16 UNF M 22X1.5 M 25X1.5 1-12 UNF M 26X1.5	48	36	35	10	5.5	15	10

Thread	A	B	C	E	F	D1	T
M 30X1.5 M 33X1.5 1 1/4-12 UNF	76	45	63	24	10	6.5	10
M 36X1.5 M 37X1.5	96	60	76	31	12	8.5	12
M 42X1.5 1 1/1-12 U	100	65	76	s	12	8.5	12
M 64X2 2 1/2-12 U	146	90	124	46	15	11	18
M 85X2	158	105	134	54	19	13	18
M 115X2	204	150	165	81	37	17	25

Thread	A	T
M 30X1.5	40	7
M 33X1.5	40	7
1 1/4-12 UNF	40	7
M 36X1.5	45	7
M 37X1.5	50	7
M 42X1.5	58	8

Cad files available on request

Call local representatives for sizing and trials

Log on to http://www.adonitech.co.in

Local Representitive

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Industrial Shock Absorbers