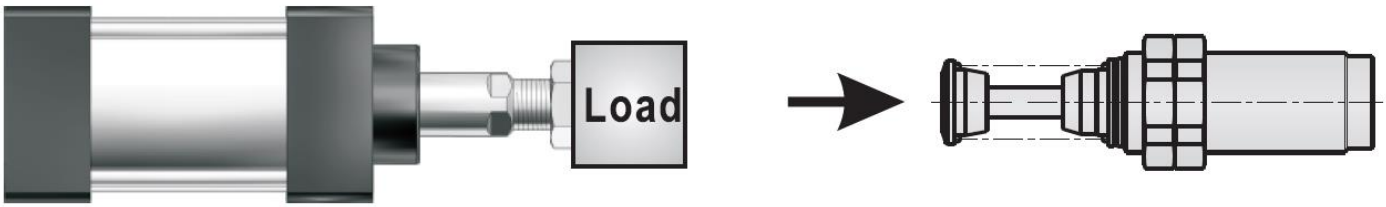
Technical Data Sheet

Date: 01.09.2020

MINIATURE SHOCK ABSORBERS
ADJUSTABLE / SELF-ADJUSTING



Application :

The shock absorbers are used to decelerate the load, and they are usually used as an effective form of external cushioning for pneumatic cylinders.

In their most basic form, shock absorbers convert the kinetic energy of a load into heat that is dissipated into the atmosphere. Shock absorbers stop moving loads with no rebound and without transmitting potentially damaging shocks and vibration to the equipment.

Shock absorbers are available with adjustable cushioning and self-adjusting cushioning:

1- Adjustable shock absorbers can accommodate varying loads and are adjusted via an adjusting screw on the outside.

2- Self-adjusting cushioning take the benefits of easy setup and installation of a shock absorber with the performance of an adjustable shock absorber.

Feature:

1- Excellent and stable deceleration and shock absorbing; if impacted by load, the resistance will automatically adjust.
2- Outer body of integrated structure is treated by Tufftride Heat Treatments, which has optimum corrosion and wear resistance and can withstand high pressure; it is easy to install and adjust for all threaded outer body which has good heat dissipation.
3- With high hardness stainless steel shaft, the shock absorber has better impact and corrosion resistance, and it can work under adverse conditions.
4- Special oiling process leads to stable shock absorbing.
5- Compact structure and high max absorbed energy.
6- We use special lubricants as buffer medium, which adapts to wide temperature range and ensures stable cushioning.

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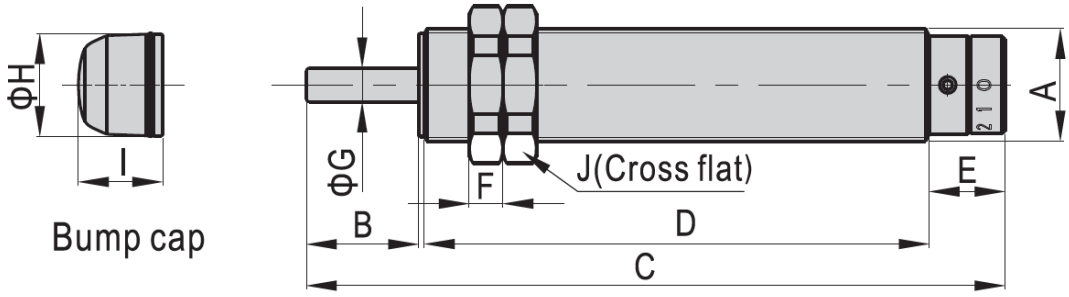
1. Miniature adjustable shock absorbers with bump cap

The miniature adjustable shock absorbers offer a design with true linear deceleration, and are adjustable over a wide range of conditions.

Specification :

Code	Connection	Stroke (mm)	Max Energy absorbed per cycle (Nm)	Max Energy absorbed/hour (Nm/h)	Max effective mass (kg)	Max Impact speed (m/s)
884607	M10x1	7	6	14500	50	4
884608	M12x1	10	10	30000	80	4
884609	M14x1.5	12	20	36000	160	4
884610	M20x1,5	20	60	50000	960	4
884611	M25x1.5	25	100	75000	1600	4

Dimension:



Code	A	B	C	D	E	F	G	H	I	J
884607	M10x1.0	7	66	45	11	4	3	8.5	7.5	14
884608	M12x1.0	10	73	51	11	4	3	10	7.5	17
884609	M14x1.5	12	91	66.5	11.5	6	4	12	12	19
884610	M20x1.5	20	124.5	90	13.5	6	6	18	15	26
884611	M25x1.5	25	132.5	92	14.5	6	6	23	16	32

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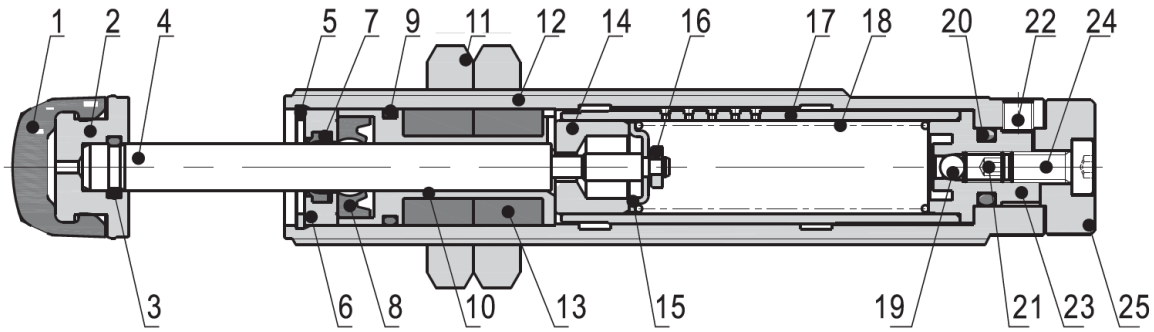
Nomenclature :



No.	Description	Material
1	Bump Cap	PA66 (M8) \ TPU (M10-M25)
2	Bump Cap (core)	No (M8) \ Steel (M10-M25)
3	O-Ring	NBR
4	Piston Rod	Stainless Steel
5	Clip	No (M8-M10) \ Steel (M12-M25)
6	Front Cover	Brass (M8) \ Steel (M10) \ Al (M12-M25)
7	Front Cover Gasket	No (M8) \ TPU (M10-M42)
8	Rod seal	NBR
9	O-Ring	NBR
10	Bearing	Brass
11	Nut	Steel
12	Body	Steel
13	Accumulator	Foamex
14	Piston	Brass
15	Pushing Nut	Spring Steel
16	Bushing	Copper (M8-M12) \ Al (M20-M25)
17	Internal Tue	Steel
18	Spring	SWPB
19	Ball	GCr15
20	O-Ring	NBR
21	Set Screw	Steel
22	Set Screw	Steel
23	Back Cover	Brass
24	Vis	Steel
25	Knob	Aluminium

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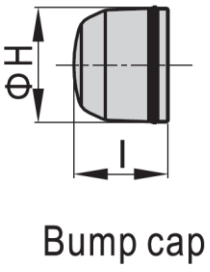
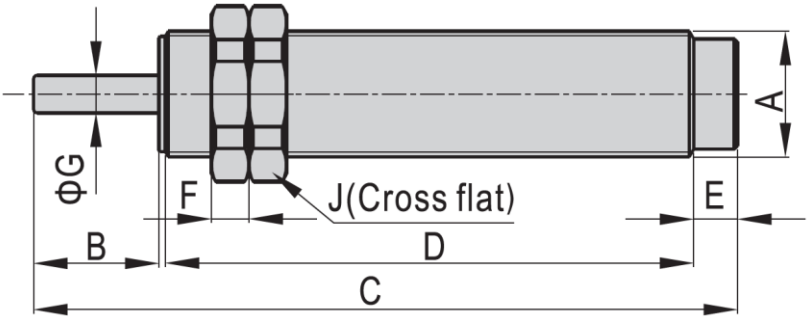
2. Miniature self-adjusting shock absorbers with bump cap

Self-compensating miniature shock absorbers automatically adjust for low load to high speed or high load to low speed applications

Code	Connection	Stroke (mm)	Max Energy absorbed per cycle (Nm)	Max Energy absorbed/hour (Nm/h)	Max effective mass (kg)	Max Impact speed (m/s)
884613	M8x1	6	3	5400	5	4
884614	M8x1	6	3	5400	20	2
884615	M10x1	7	6	14500	10	4
884616	M10x1	7	6	14500	40	2
884617	M12x1	10	10	30000	18	4
884618	M12x1	10	10	30000	60	2
884619	M14x1.5	12	12	36000	30	4
884620	M14x1.5	12	12	36000	110	2
884621	M20x1,5	20	25	50000	240	4
884622	M20x1,5	20	25	50000	660	2



Bump cap



Code	A	B	C	D	E	F	G	H	I	J
884613	M8x1.0	6	45	31	5	4	3	6.5	6	11
884614	M8x1.0	6	45	31	5	4	3	6.5	6	11
884615	M10x1.0	7	55	40	5	4	3	8.5	7.5	14
884616	M10x1.0	7	55	40	5	4	3	8.5	7.5	14
884617	M12x1.0	10	62	46	5	4	3	10	7.5	17
884618	M12x1.0	10	62	46	5	4	3	10	7.5	17
884619	M14x1.5	12	80.5	62.5	5	6	4	12	12	19
884620	M14x1.5	12	80.5	62.5	5	6	4	12	12	19
884621	M20x1.5	20	112.5	84.5	7	6	6	18	15	26
884622	M20x1.5	20	112.5	84.5	7	6	6	18	15	26

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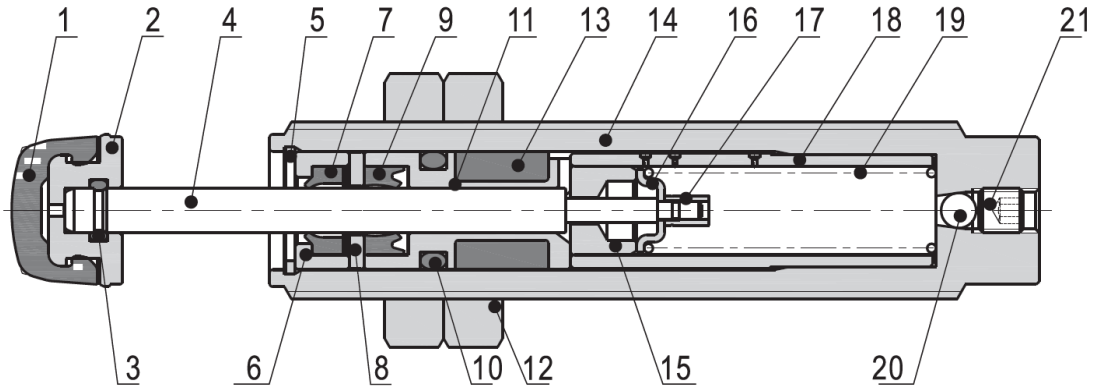

No.	Description	Material
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2	Bump Cap (core)	No (M8) \ Steel (M10-M25)
3	O-Ring	NBR
4	Piston Rod	Stainless Steel
5	Clip	No (M8-M10) \ Steel (M12-M25)
6	Front Cover	Brass (M8) \ Steel (M10) \ Al (M12-M25)
7	Front Cover Gasket	No (M8) \ TPU (M10-M42)
8	Washer	Steel
9	Rod seal	NBR
10	O-Ring	NBR
11	Bearing	Brass
12	Nut	Steel
13	Accumulator	Foamex
14	Body	Steel
15	Piston	Brass
16	Pushing Nut	Spring Steel
17	Bushing	Copper (M8-M12) \ Al (M20-M25)
18	Internal Tue	Steel
19	Spring	SWPB
20	Ball	GCr15
21	Set Screw	Steel
22	Knob	Aluminium

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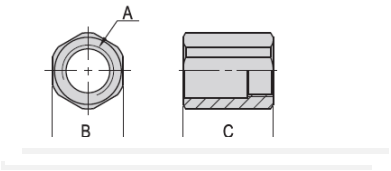
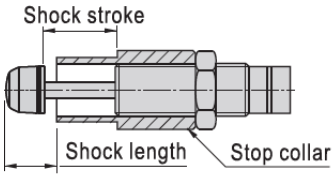
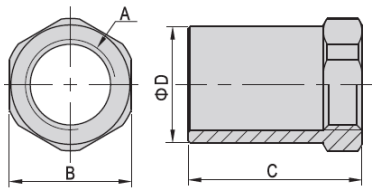
1. ACCESSORIES :

Stop Collar

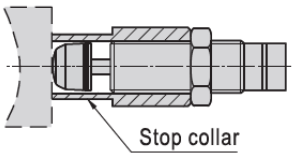


Code	A	B	C
884628	M8x1.0	11	14
884629	M10x1.0	14	16
884630	M12x1.0	17	20





Code	A	B	C	D
884631	M14x1.5	19	27	18
884632	M20x1.5	26	35	25
884633	M25x1.5	32	45	31



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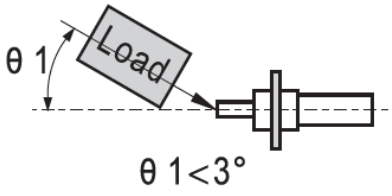
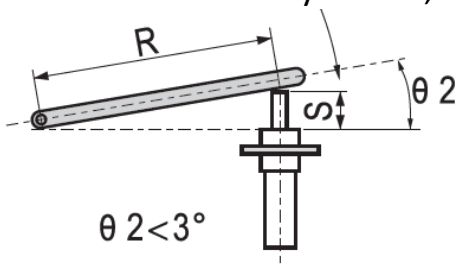
4. Installation and Operation

1. The scale range of adjustable shock absorbers is 0 to 9 (8). Factory set is at 6 (4) position. 0 means the softest, while 9 means the hardest;
2. Correct selection of shock absorbers can ensure a smooth deceleration and good shock-absorbing properties;
3. If there exists rebounding at the beginning of the stroke, it shows the effective weight is too high. In this case, self-compensation type shall be replaced by high speed type (-1), while adjustable type shall be adjusted to softer, that is closer to 0;
4. If there exists rebounding at the end of the stroke, it shows the effective weight is too low. In this case, self-compensation type shall be replaced by low speed type (-3), while adjustable type shall be adjusted to harder, that is closer to 9;
5. In the work process, lateral load should be avoided as possible as one can. Eccentric angle must be controlled within 3°. Shock absorbers shall be securely locked;





6. The operating temperature range shall be -10 to 80°C;
7. To extend the service life, piston shall be stopped 1mm before reaching the end. It is better to install set screw with positioning and precise adjustment;
8. If two or more shock absorbers are installed at the same side, please make sure that they act synchronously;
9. No painting, welding or cleaning with corrosive substance on the body as well as the piston rod.
10. when installed the absorber, the moment forced on absorber can't be out of the range given in below list or may cause the absorber damage.

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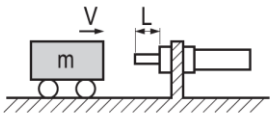
5. INSTALLATION AND OPERATION

Free horizontal impact



Impact weight (kg): m

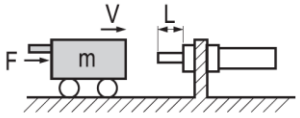
Impact speed (m/s): v

Kinetic energy (J(N.m): $E1=\frac{m \times v^2}{2}$

Propelling energy(J(N.m): E2=0

Gross energy (J(N.m): E=E1+E2

Horizontal impact with cylinder thrust



Impact weight (kg): m

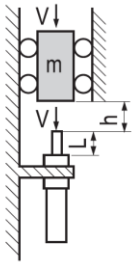
Impact speed (m/s): v

Kinetic energy (J(N.m): $E1=\frac{m \times v^2}{2}$

Propelling energy(J(N.m): E2=F × L

Gross energy (J(N.m): E=E1+E2

Free vertical impact



Impact weight (kg): m

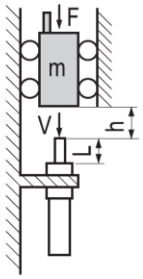
Impact speed (m/s): v

Kinetic energy (J(N.m): E1=m × g × h

Propelling energy(J(N.m): E2=m × g × L

Gross energy (JN.m): E=E1+E2

Vertical impact with cylinder thrust



Impact weight (kg): m

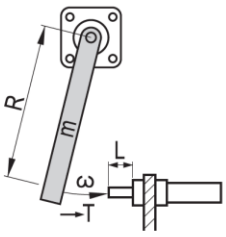
Impact speed (m/s): v

Kinetic energy (J(N.m): $E1=\frac{m \times v^2}{2}$

Propelling energy(J(N.m): E2=(mg+F) × L

Gross energy (J(N.m): E=E1+E2

Rocker



Impact weight (kg): m

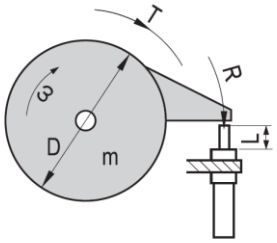
Impact speed (m/s): v=R × ω

Kinetic energy (J(N.m): $E1=\frac{I \times \omega^2}{2}$

Propelling energy(J(N.m): $E2=\frac{T \times L}{R}$

Gross energy (J(N.m): E=E1+E2

Rotation



Impact weight (kg): m

Impact speed (m/s): v=R × ω

Kinetic energy (J(N.m): $E1=\frac{I \times \omega^2}{2}$

Propelling energy(J(N.m): $E2=\frac{T \times L}{R}$

Gross energy (J(N.m): E=E1+E2

6.

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Symbol	Characteristic	Unit
m	Impact weight	Kg
V	Impact speed	m/s
E	Gross energy	J(N.m)
E1	Kinetic energy	J(N.m)
E2	Propelling energy	J(N.m)
g	Gravity acceleration	9.8 m/s^2
F	Cylinder Thrust (π x D^2 x P)/4	N
D	Nore size	mm
P	Air pressure	MPa
L	Shock stroke	m
h	Height	m
T	Torque	N.m
N	Round per Minute	rpm
R	Distance from rotation centre to impact point	m
I	Moment of Inertia	kg x m^2
ω	Angular velocity	rad/s

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