

# Industrial Shock Absorbers

Adjustable / Non-adjustable



Shock absorbers are hydraulic units that assist in bringing a moving load to rest, quickly and safely, without rebound or backward movement.

They provide a constant linear deceleration with the lowest possible reaction force in the shortest possible stopping time.

- Compact and heavy duty versions
- High energy absorption
- Low return force
- Long service life
- Increases productivity
- Reduces maintenance

**Smooth, Controlled Stopping of Moving Loads**

**Parker shock absorbers prevent damage to moving parts and to machines and plant, destructive impact forces are absorbed by controlled linear deceleration.**

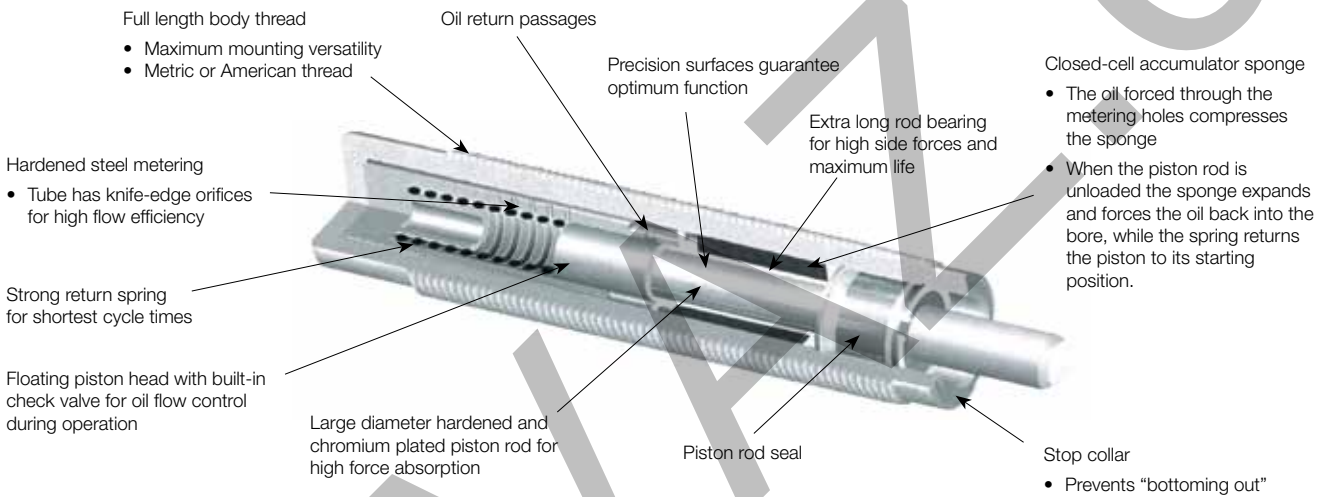
**Parker shock absorbers let you**

- Increase operating speeds
- Increase operating loads
- Increase system performance
- Increase operating reliability
- Reduce stresses on equipment
- Reduce production costs
- Reduce noise levels

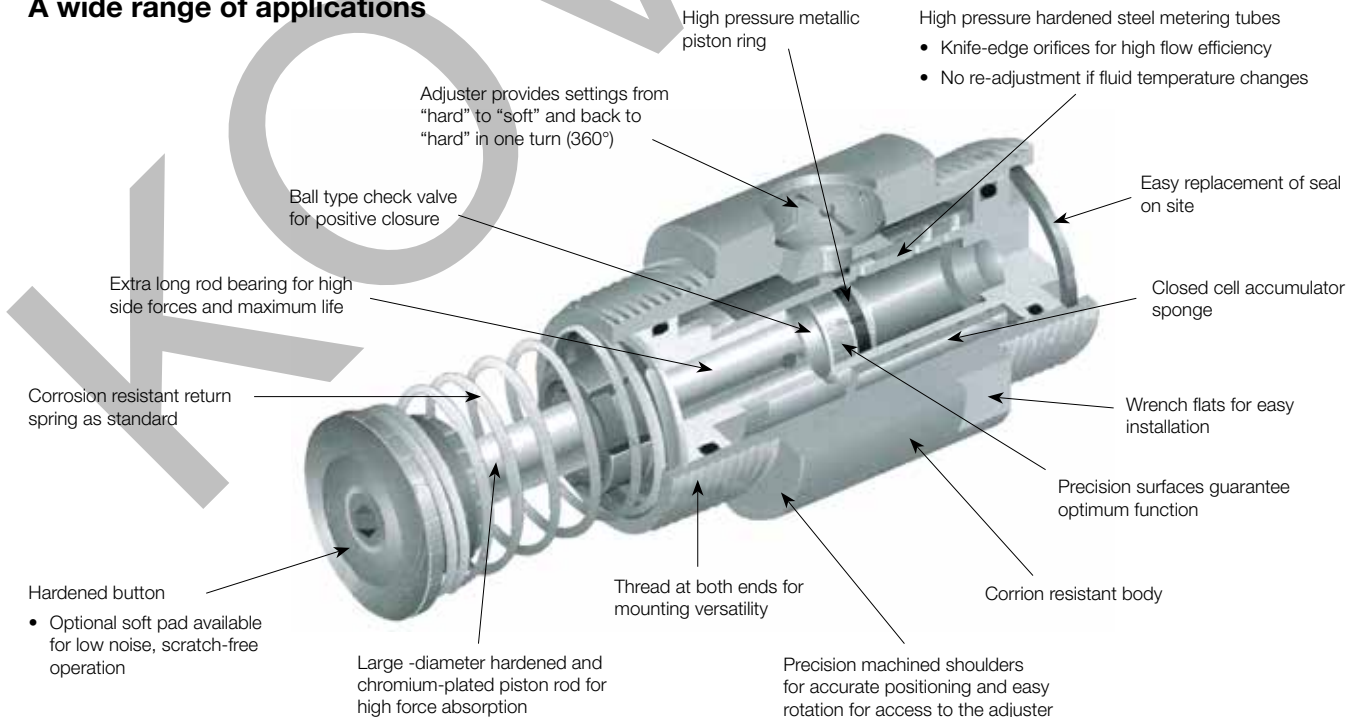
All moving parts in a production process have to be stopped without damage to themselves or to the stopping devices of the machines and plant.

The high impact forces have to be reduced in a controlled manner: to bring a moving load to a standstill, the kinetic energy generated by the movement has to be dissipated. The heavier the moving load and the faster it moves, the higher the kinetic energy. In automation especially, shorter and shorter cycle times are demanded, so that stopping times are greatly reduced while kinetic energy levels are dramatically increased. These again have to be dissipated in a controlled manner. Some commonly used stopping devices such as springs, rubber buffers or dashpots actually increase shock loading instead of reducing it - they do not dissipate energy at a uniform rate.

For smooth dissipation of the kinetic energy we recommend the use of hydraulic shock absorbers. Parker shock absorbers convert the kinetic energy generated by the deceleration of the load into thermal energy. Optimum operating conditions are achieved if the energy is dissipated almost uniformly, i.e. if the moving mass is brought to a halt in the shortest distance, in the shortest time and without sudden peak loads during the stroke.



**A wide range of applications**

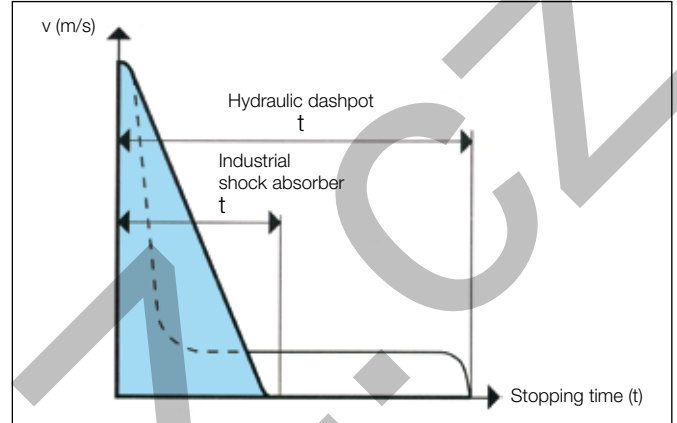
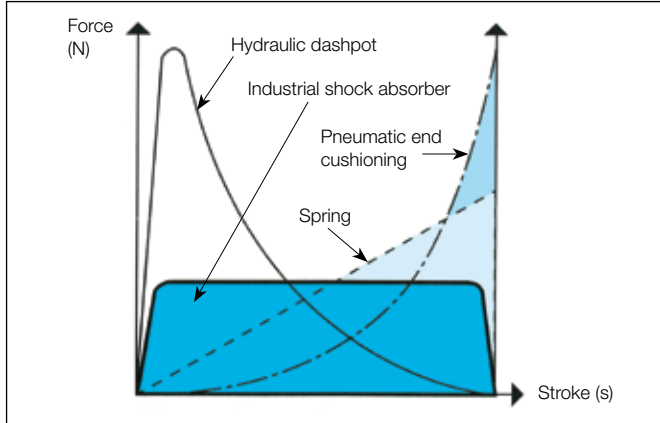


**Shock absorption**

Ordinary shock absorbers, springs, buffers and pneumatic cushioning cannot match the performance of Parker shock absorbers. These shock absorbers match the speed and mass of the moving object and bring it smoothly and uniformly to rest. Springs and buffers, on the other hand, store energy rather than dissipate it. Although the moving object is

stopped, it bounces back and this leads to fatigue in materials and components which can cause premature breakdown of the machine. Pneumatic cushioning provides a better solution because the energy is actually converted, but because of the compressibility of air the maximum braking force is generated

at the end of the stroke, which can lead to excessive loads on components. Hydraulic dashpots also cause excessive loads because peak resistance comes at the beginning of the stroke and then quickly falls away. This generates unnecessarily high braking forces.



**The Force/Stroke Diagram**

clearly shows these effects. The shock absorber curve is ideal because all the energy is dissipated by linear deceleration without initial impact or final rebound.

**Stopping time**

Both damping units stop the same mass from the same speed with the same stroke. Therefore they do the same work but the industrial shock absorber reduces the stopping time by 60 to 70%.

**Selection of Shock Absorber Type**

**Parker shock absorbers are available in two main types, to suit different applications and installation requirements. After selection of the appropriate type, sizing is determined by calculation.**

**Compact series with full-length body thread**

This compact, space-saving series is available in adjustable and non-adjustable versions and can be installed in many different ways, e.g. in a tapped blind hole, in a tapped through hole, in a clearance hole in a flange or bracket, etc.



**Universal series**

This versatile, adjustable series with various mounting accessories is designed to stop heavier loads. It is especially suited to applications which require several of the same shock absorbers with the same stroke length.



**Mounting methods**

Parker shock absorbers are designed for a variety of mountings, which can be either built into machines or supplied as accessories.

**Accumulators**

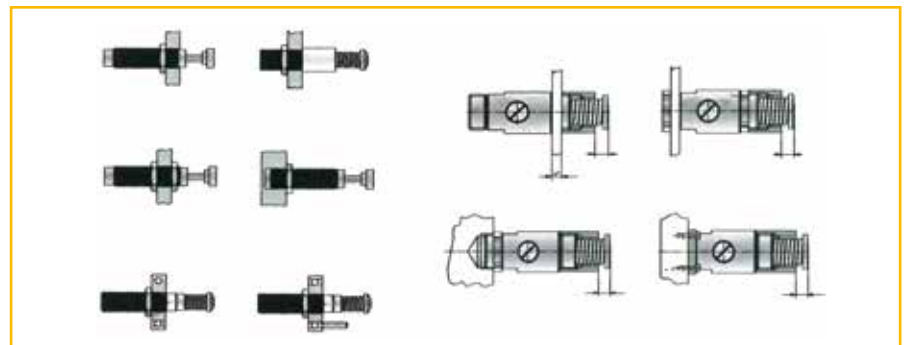
Normally shock absorbers with internal accumulators are used. This simplifies installation by eliminating external piping and oil storage. However, in applications with short cycle times and high kinetic energy the oil can become overheated. In this case an external accumulator should be used so that the oil can be cooled in the external circuit.

**Shock absorber return stroke**

- Piston rod with return spring combined with internal accumulator
- Return stroke actuated by compressed air or mechanically, combined with external accumulator. With this version a delayed return stroke is also possible.

**Options**

- Stop collars for front or rear mounting - these provide a positive stop to prevent damage caused by the piston "bottoming out". They also allow precise setting of the stroke length.
- Soft pad for the hardened steel button - to avoid surface damage and reduce noise levels.



## Non-Adjustable Shock Absorbers - SA Series

Type	Stroke [mm]	Effective Mass $m_e$ [kg]		Max Energy Absorption [Nm]		Thread Size	Order code
		Min.	Max.	per stroke $W_3$	per hour $W_4$		
SA 10N	6,5	0,7	2,2	2,8	22500	M10x1	7717FIL
SA 10SN	6,5	1,8	5,4	2,8	22500	M10x1	7718FIL
SA 10S2N	6,5	4,6	13,6	2,8	22500	M10x1	7721FIL
SA 12N	10	0,3	1,1	9,0	28200	M12x1	7719FIL
SA 12SN	10	0,9	4,8	9,0	28200	M12x1	7722FIL
SA 12S2N	10	2,7	36,2	9,0	28200	M12x1	7723FIL
SA 14	12,5	0,9	10	17	34000	M14x1,5 <sup>1)</sup>	7720FIL
SA 14S	12,5	8,6	86	17	34000	M14x1,5 <sup>1)</sup>	7927FIL
SA 14S2	12,5	68	205	17	34000	M14x1,5 <sup>1)</sup>	7928FIL
SA 20	12,5	2,3	25	25	45000	M20x1,5	7930FIL
SA 20S	12,5	23	230	25	45000	M20x1,5	7937FIL
SA 20S2	12,5	182	910	25	45000	M20x1,5	7938FIL
SAI 25	25,4	9	136	68	68000	M25x1,5	7834FIL
SAI 25S	25,4	113	1130	68	68000	M25x1,5	7835FIL
SAI 25S2	25,4	400	2273	68	68000	M25x1,5	7836FIL
SA 33x25	25,4	9	40	153	75000	M33x1,5	8041FIL
SA 33Sx25	25,4	30	120	153	75000	M33x1,5	8042FIL
SA 33S2x25	25,4	100	420	153	75000	M33x1,5	8043FIL
SA 33S3x25	25,4	350	1420	153	75000	M33x1,5	8044FIL
SA 33x50	50,8	18	70	305	85000	M33x1,5	8045FIL
SA 33Sx50	50,8	60	250	305	85000	M33x1,5	8046FIL
SA 33S2x50	50,8	210	840	305	85000	M33x1,5	8047FIL
SA 33S3x50	50,8	710	2830	305	85000	M33x1,5	8048FIL
SA 45x25	25,4	20	90	339	107000	M45x1,5	8049FIL
SA 45Sx25	25,4	80	310	339	107000	M45x1,5	8050FIL
SA 45S2x25	25,4	260	1050	339	107000	M45x1,5	8051FIL
SA 45S3x25	25,4	890	3540	339	107000	M45x1,5	8052FIL
SA 45x50	50,8	45	180	678	112000	M45x1,5	8053FIL
SA 45Sx50	50,8	150	620	678	112000	M45x1,5	8054FIL
SA 45S2x50	50,8	520	2090	678	112000	M45x1,5	8055FIL
SA 45S3x50	50,8	1800	7100	678	112000	M45x1,5	8056FIL
SA 45x75	76,2	70	270	1017	146000	M45x1,5	8057FIL
SA 45Sx75	76,2	230	930	1017	146000	M45x1,5	8058FIL
SA 45S2x75	76,2	790	3140	1017	146000	M45x1,5	8059FIL
SA 45S3x75	76,2	2650	10600	1017	146000	M45x1,5	8060FIL
SA 64x50	50,8	140	540	1695	146000	M64x2	8061FIL
SA 64Sx50	50,8	460	1850	1695	146000	M64x2	8062FIL
SA 64S2x50	50,8	1600	6300	1695	146000	M64x2	8063FIL
SA 64S3x50	50,8	5300	21200	1695	146000	M64x2	8064FIL
SA 64x100	101,6	270	1100	3390	192000	M64x2	8065FIL
SA 64Sx100	101,6	930	3700	3390	192000	M64x2	8066FIL
SA 64S2x100	101,6	3150	12600	3390	192000	M64x2	8067FIL
SA 64S3x100	101,6	10600	42500	3390	192000	M64x2	8068FIL
SA 64x150	150,1	410	1640	5084	248000	M64x2	8069FIL
SA 64Sx150	150,1	1390	5600	5084	248000	M64x2	8070FIL
SA 64S2x150	150,1	4700	18800	5084	248000	M64x2	8071FIL
SA 64S3x150	150,1	16000	63700	5084	248000	M64x2	8072FIL

<sup>1)</sup> Option: M14 x 1 thread



## Non-Adjustable Shock Absorbers - MC Series

Type	Stroke [mm]	Effective Mass $m_e$ [kg]		Max Energy Absorption [Nm]		Thread Size	Order code
		Min.	Max.	per stroke $W_3$	per hour $W_4$		
MC9M1-B	5	0,6	3,2	1	2000	M6 x 0,5	MC9M1-B
MC9M2-B	5	0,8	4,1	1	2000	M6 x 0,5	MC9M2-B
MC10ML-B	5	0,3	2,7	0,5	4000	M8 x 1	MC10ML-B
MC10MH-B	5	0,7	5,0	0,5	4000	M8 x 1	MC10MH-B
MC25ML	6,6	0,7	2,2	2,8	22500	M10 x 1	MC25ML
MC25M	6,6	1,8	5,4	2,8	22500	M10 x 1	MC25M
MC25MH	6,6	4,6	13,6	2,8	22500	M10 x 1	MC25MH
MC75M-1	10	0,3	1,1	9	28200	M12 x 1	MC75M-1
MC75M-2	10	0,9	4,8	9	28200	M12 x 1	MC75M-2
MC75M-3	10	2,7	36,2	9	28200	M12 x 1	MC75M-3
MC150M	12,5	0,9	10	17	34000	M14 x 1,5	MC150M
MC150MH	12,5	8,6	86	17	34000	M14 x 1,5	MC150MH
MC150MH2	12,5	70	200	17	34000	M14 x 1,5	MC150MH2
MC225M	12,5	2,3	25	25	45000	M20 x 1,5	MC225M
MC225MH	12,5	23	230	25	45000	M20 x 1,5	MC225MH
MC225MH2	12,5	180	910	25	45000	M20 x 1,5	MC225MH2
MC600M	25,4	9	136	68	68000	M25 x 1,5	MC600M
MC600MH	25,4	113	1130	68	68000	M25 x 1,5	MC600MH
MC600MH2	25,4	400	2300	68	68000	M25 x 1,5	MC600MH2
MC3325M-1	25	9	40	155	75000	M33 x 1,5	MC3325M-1
MC3325M-2	25	30	120	155	75000	M33 x 1,5	MC3325M-2
MC3325M-3	25	100	420	155	75000	M33 x 1,5	MC3325M-3
MC3350M-1	50	18	70	310	85000	M33 x 1,5	MC3350M-1
MC3350M-2	50	60	250	310	85000	M33 x 1,5	MC3350M-2
MC3350M-3	50	210	840	310	85000	M33 x 1,5	MC3350M-3
MC4525M-1	25	20	90	340	107000	M45 x 1,5	MC4525M-1
MC4525M-2	25	80	310	340	107000	M45 x 1,5	MC4525M-2
MC4525M-3	25	260	1050	340	107000	M45 x 1,5	MC4525M-3
MC4550M-1	50	45	180	680	112000	M45 x 1,5	MC4550M-1
MC4550M-2	50	150	620	680	112000	M45 x 1,5	MC4550M-2
MC4550M-3	50	520	2090	680	112000	M45 x 1,5	MC4550M-3
MC4575M-1	75	70	270	1020	146000	M45 x 1,5	MC4575M-1
MC4575M-2	75	230	930	1020	146000	M45 x 1,5	MC4575M-2
MC4575M-3	75	790	3140	1020	146000	M45 x 1,5	MC4575M-3
MC6450M-1	50	140	540	1700	146000	M64 x 2	MC6450M-1
MC6450M-2	50	460	1850	1700	146000	M64 x 2	MC6450M-2
MC6450M-3	50	1600	6300	1700	146000	M64 x 2	MC6450M-3
MC64100M-1	100	270	1100	3400	192000	M64 x 2	MC64100M-1
MC64100M-2	100	930	3700	3400	192000	M64 x 2	MC64100M-2
MC64100M-3	100	3150	12600	3400	192000	M64 x 2	MC64100M-3
MC64150M-1	150	410	1640	5100	248000	M64 x 2	MC64150M-1
MC64150M-2	150	1390	5600	5100	248000	M64 x 2	MC64150M-2
MC64150M-3	150	4700	18800	5100	248000	M64 x 2	MC64150M-3



## Non Adjustable Shock Absorbers - SC Series

Type	Stroke [mm]	Effective Mass $m_e$ [kg]				Max Energy Absorption [Nm]		Thread Size	Order code
		Soft contact		Self compensating		per stroke $W_3$	per hour $W_4$		
		Min.	Max.	Min.	Max.				
SC925M-1	40	22	72	14	90	110	90000	M25 x 1,5	SC925M-1
SC925M-2	40	59	208	40	272	110	90000	M25 x 1,5	SC925M-2
SC925M-3	40	181	612	113	726	110	90000	M25 x 1,5	SC925M-3



## Adjustable Shock Absorbers - SA Series

Type	Stroke [mm]	Effective Mass $m_e$ [kg]		Max Energy Absorption [Nm]		Thread Size	Order code
		Min.	Max.	per stroke $W_3$	per hour $W_4$		
SA 1/4 x 1/2N	12,7	1,0	190	20	35000	M20x1,5	7720FIL
SA 3/8 x 1D	25,4	4,5	546	70	68000	M25x1,5 <sup>2)</sup>	7840FIL
SALD 1/2 x 1M	25,4	4,5	1360	170	85000	M36x1,5	7841FIL
SALD 1/2 x 2M	50,8	9,5	2720	340	98000	M36x1,5	7842FIL
SA 1/2 x 1	25,4	4,5	1225	153	84700	M33x1,5	7970FIL
SA 1/2 x 2	50,8	9,5	2450	305	98300	M33x1,5	7975FIL
SA 3/4 x 1	25,4	9	8163	339	124300	M42x1,5	7980FIL
SA 3/4 x 2	50,8	16	14500	678	146800	M42x1,5	7985FIL
SA 3/4 x 3	76	23	20866	1017	180776	M42x1,5	7986FIL
SA 1 1/8 x 2	50,8	54	22680	1808	169478	M64x2,0	7990FIL
SA 1 1/8 x 4	102	73	45360	3616	225970	M64x2,0	7995FIL
SA 1 1/8 x 6	152	91	68040	5423	282463	M64x2,0	7996FIL
SA-A 3/4 x 1	25,4	27	3600	290	184000 <sup>3)</sup>	M42x1,5	7887FIL
SA-A 3/4 x 2	50,8	43	6350	600	230000 <sup>3)</sup>	M42x1,5	7888FIL
SA-A 3/4 x 3	76	55	9500	890	276000 <sup>3)</sup>	M42x1,5	7889FIL
SA-A 1 1/8 x 2	50,8	72	13000	1380	345000 <sup>3)</sup>	M64x2,0	7880FIL
SA-A 1 1/8 x 4	102	118	18200	2700	460000 <sup>3)</sup>	M64x2,0	7885FIL
SA-A 1 1/8 x 6	152	200	32000	4150	575000 <sup>3)</sup>	M64x2,0	7886FIL

<sup>2)</sup> Option: M27 x 3 thread      <sup>3)</sup> Operation with external air-oil tank

Further shock absorbers sizes (1 1/2", 2", 2 1/4", 3", 4") in various stroke lengths are also available on request.



For further technical data and accessories information regarding the SA-series please refer to shock absorber catalogue P-A4P018GB, for MC-SC- series please refer to catalogue PDE2524TCUK or contact your local Parker sales company.