



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.

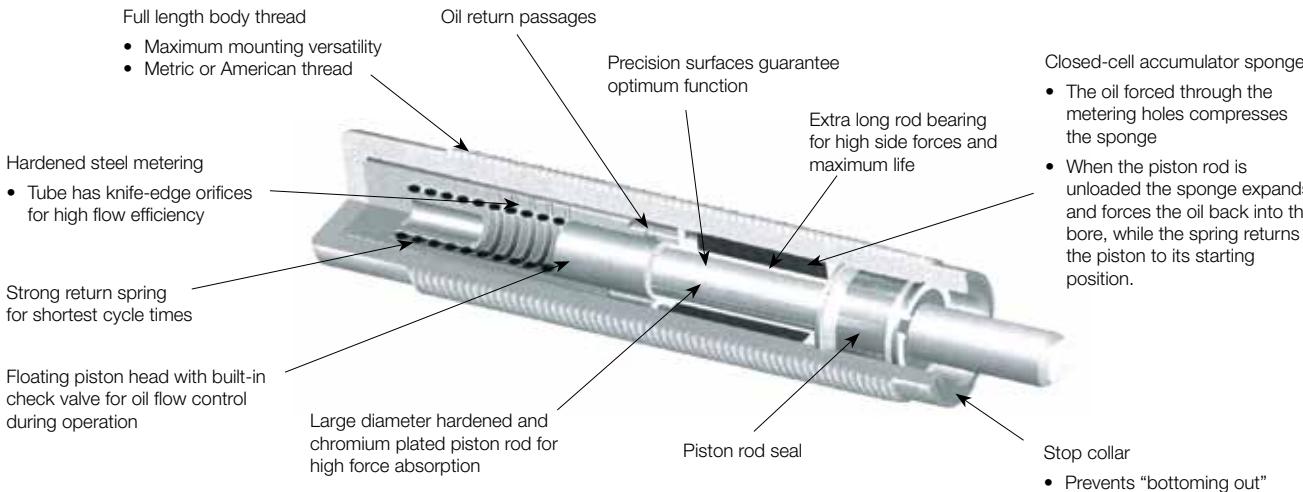
Parker shock absorbers let you

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

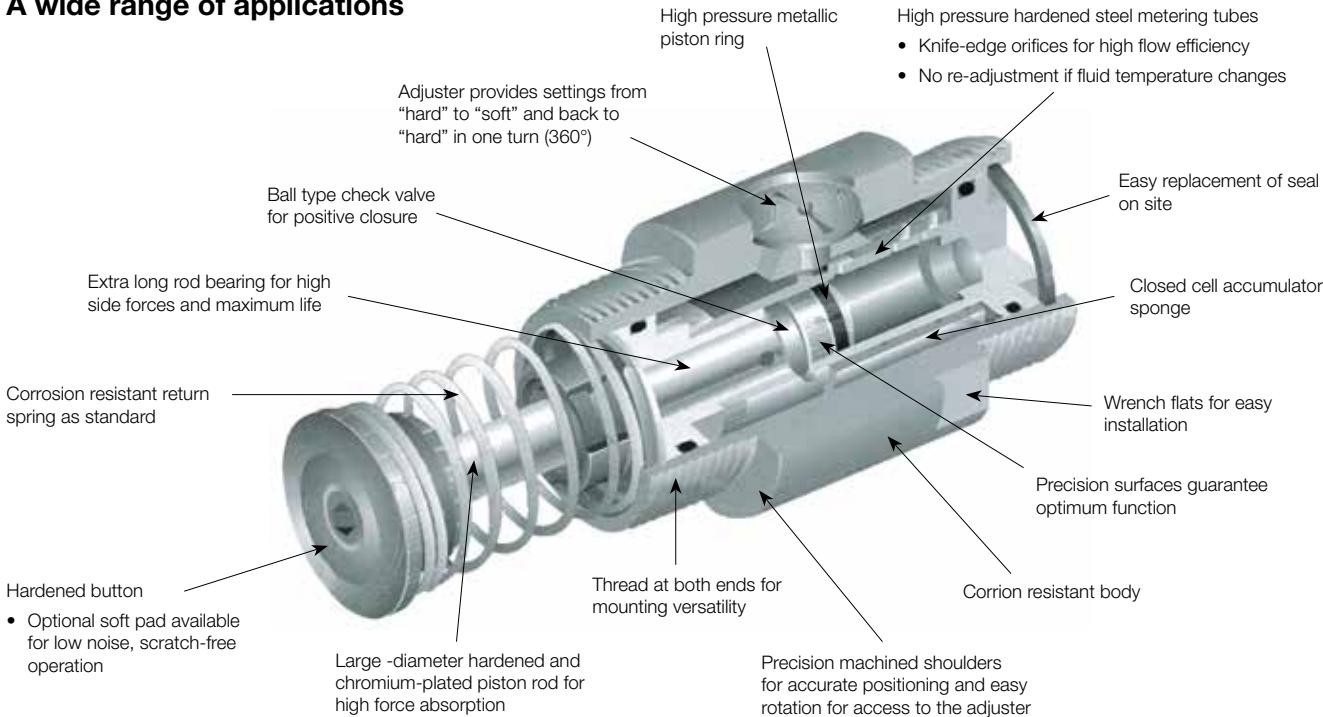
All moving parts in a production process have to be stopped without damage to themselves or to the stopping devices of the machines and plant.

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

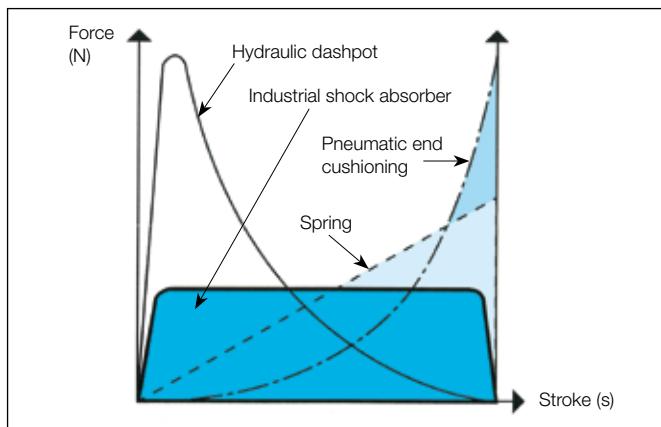
Ordinary shock absorbers, springs, buffers and pneumatic cushioning cannot match the performance of Parker shock absorbers. These shock absorbers match the speed and mass of the moving object and bring it smoothly and uniformly to rest. Springs and buffers, on the other hand, store energy rather than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

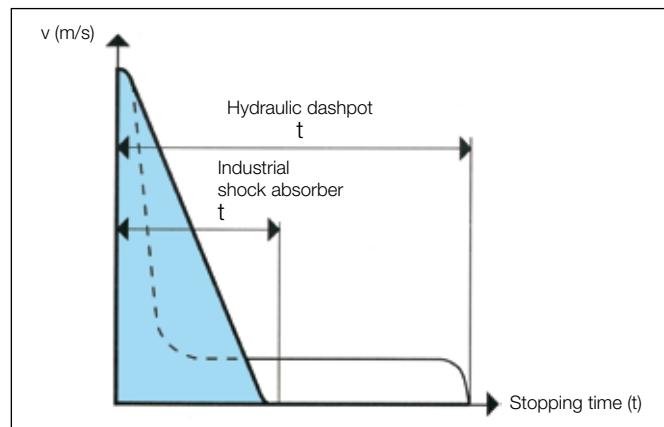
at the end of the stroke, which can lead to excessive loads on components.

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

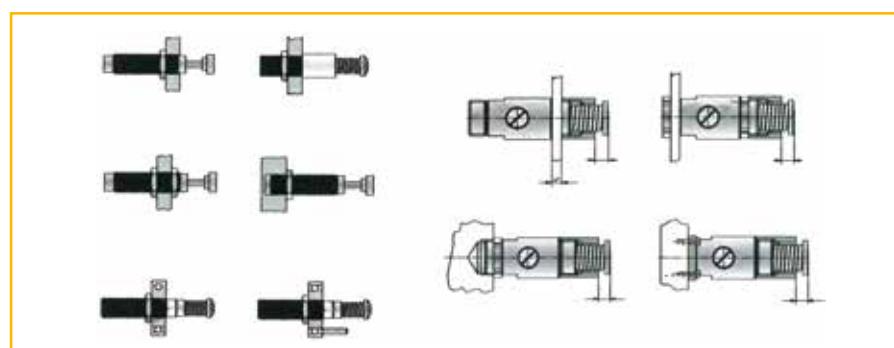
Normally shock absorbers with internal accumulators are used. This simplifies installation by eliminating external piping and oil storage. However, in applications with short cycle times and high kinetic energy the oil can become overheated. In this case an external accumulator should be used so that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

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.

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.



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 ¹⁾ | 7720FIL |
| SA 14S | 12,5 | 8,6 | 86 | 17 | 34000 | M14x1,5 ¹⁾ | 7927FIL |
| SA 14S2 | 12,5 | 68 | 205 | 17 | 34000 | M14x1,5 ¹⁾ | 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 |

¹⁾ Option: M14 x 1 thread