

Damping Technology

ACE: Your partner for industrial shock absorbers,
gas springs and vibration control

Main Catalogue 2017



Safety Products

**Safety Shock Absorbers, Safety Dampers
Clamping Elements**



Highest Protection under any Circumstances

For any budget and all requirements

Safely slowing down damaging forces from moving loads or Emergency braking are united in this product group from ACE. Although the safety shock absorbers, profile dampers and clamping elements differ so much in design, every single ACE component provides the best protection for your machine.

They demonstrate their main advantages in emergency stop situations and, based on the protection they provide, are very cost-effective. Furthermore, they can all be easily integrated in the existing construction designs and largely work independent of energy supplies.



Safety Shock Absorbers

Perfect protection for the worst case scenario

As a cheaper alternative to the standard shock absorber, Safety shock absorbers are the tried and tested low cost method of preventing those occasional emergency stops. Designed for occasional use, they primarily serve as reliable, effective protection in emergency stopping for construction designs.

The maintenance-free and ready-to-install machine elements are characterised in every respect by the well-known high ACE quality and maximum energy absorption of up to 480,000 Nm/Cycle. This means, in the product family SCS33 up to SCS64 a service life of up to 1,000 full load emergency cycles is achieved. Safety shock absorbers from ACE are available in a large choice with strokes of 23 mm to 1,200 mm, and the arrangement of orifice pattern can be calculated and produced specifically to the customer's requirements and depending on the application.



Safety Shock Absorbers



SCS33 to SCS64

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Self-Compensating or Optimized Characteristic
Industry design with high energy absorption

Finishing and processing centres, Conveyor systems, Portal systems,
 Test stations



SDH38 to SDH63

Page 254

High Rack Damper, Optimized Characteristic
Low reaction forces with long strokes

Shelf storage systems, Test stations, Heavy load applications,
 Conveyor systems



SDP63 to SDP160

Page 258

Crane Installations, Optimized Characteristic
High return forces with gas pressure accumulator
 Shelf storage systems, Heavy load applications

Top machine protection

Latest damping technology

Attractive cost-benefit ratio

Maximum traverses

Wide application spectrum

Robust design



SCS33 to SCS64

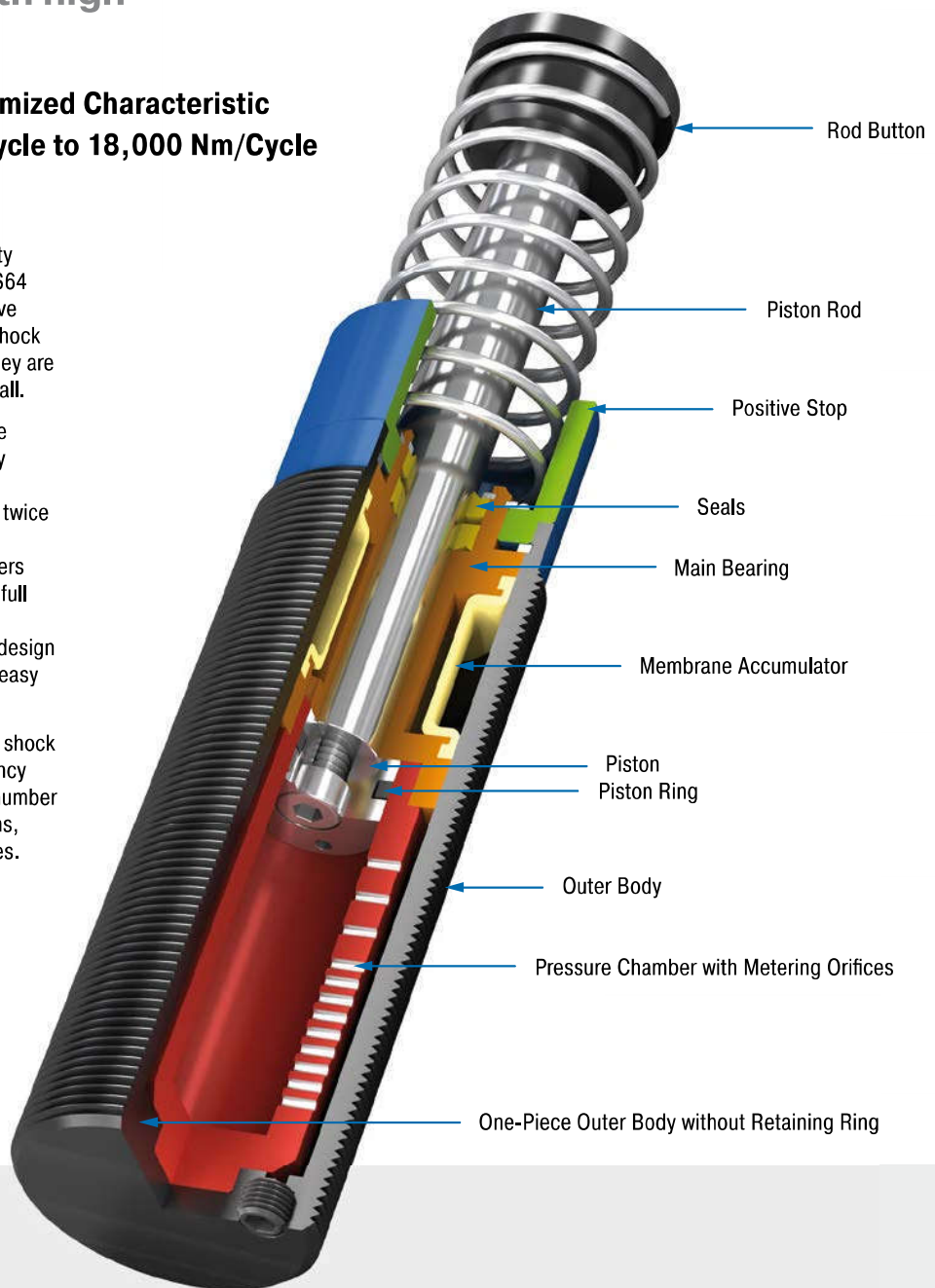
Industry design with high energy absorption

Self-Compensating or Optimized Characteristic
Energy capacity 310 Nm/Cycle to 18,000 Nm/Cycle
Stroke 23.1 mm to 150 mm

Effective emergency stop: The ACE safety shock absorbers from the SCS33 to SCS64 product family are based on the innovative technology of the successful industrial shock absorbers from the MAGNUM-Series. They are also maintenance-free and ready-to-install.

Due to the optimised characteristic curve for the respective application, the energy absorption of these hydraulic machine elements can be increased to more than twice the level of the MAGNUM model of ACE industrial shock absorber per stroke. Users benefit from a service life of up to 1,000 full load emergency cycles with a very good price-performance ratio. Their compact design in sizes M33x1.5 to M64x2 makes them easy to integrate into current applications.

These slimline, high-performance safety shock absorbers are only designed for emergency stop situations. They can be used for a number of tasks in gantries and conveyor systems, processing centres or assembly machines.



Technical Data

Energy capacity: 310 Nm/Cycle to 18,000 Nm/Cycle

Impact velocity range: 0.02 m/s to 5 m/s. Other speeds on request.

Operating temperature range: -12 °C to +66 °C. Other temperatures on request.

Mounting: In any position

Positive stop: Integrated

Material: Outer body: Nitride hardened steel; Piston rod: Hard chrome plated steel; Rod end button: Hardened steel and corrosion-resistant coating; Return spring: Zinc plated or plastic-coated steel; Accessories: Steel corrosion-resistant coating

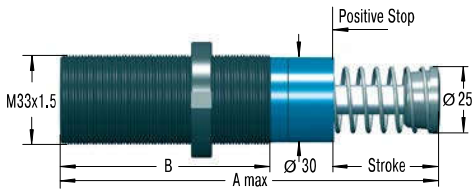
Damping medium: Automatic Transmission Fluid (ATF)

Application field: Finishing and processing centres, Conveyor systems, Portal systems, Test stations, Machines and plants, Swivel units, Cranes

Note: The shock absorber can be pushed through its stroke. In creep speed conditions the shock absorber provides minimal resistance and there is no braking effect.

On request: Special oils, special flanges etc.

SCS33EU

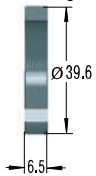


The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Accessories

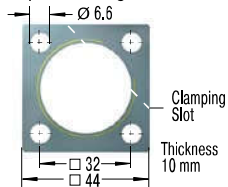
NM33

Locking Ring



QF33

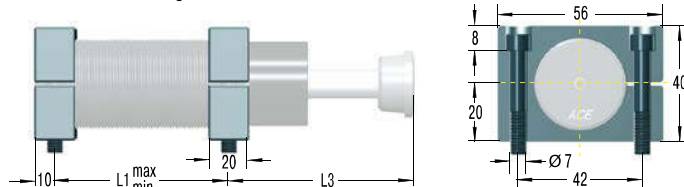
Square Flange



Torque max.: 11 Nm
Clamping torque: > 90 Nm
Install with 4 machine screws

S33

Side Foot Mounting Kit



S33 = 2 flanges + 4 screws M6x40, DIN 912
Torque max.: 11 Nm
Clamping torque: 90 Nm
Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

Ordering Example

Safety Shock Absorber _____ **SCS33-50EU-1xxxx**
 Thread Size M33 _____
 Max. Stroke without Positive Stop 50 mm _____
 EU Compliant _____
 Identification No. assigned by ACE _____

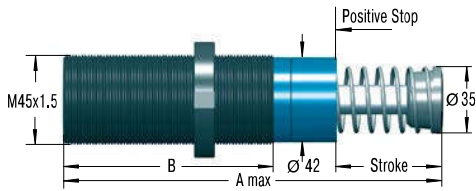
Please indicate identification no. in case of replacement order

Performance and Dimensions

| TYPES | Max. Energy Capacity | | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | L1 min. mm | L1 max. mm | L3 mm | Side Load Angle max. ° | Weight kg |
|------------|---|-----------------------------------|---------------------|---------------------|-----------|-----------|------|------------|------------|-------|------------------------|-----------|
| | W ₃ Self-compensating Nm/cycle | W ₃ Optimised Nm/cycle | | | | | | | | | | |
| SCS33-25EU | 310 | 500 | 45 | 90 | 23.2 | 138 | 83 | 25 | 60 | 68 | 3 | 0.51 |
| SCS33-50EU | 620 | 950 | 45 | 135 | 48.6 | 189 | 108 | 32 | 86 | 93 | 2 | 0.63 |

¹ The values are reduced by 20 % at max. side load angle.

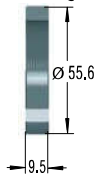
SCS45EU



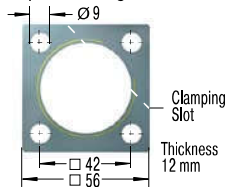
The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Accessories

NM45
Locking Ring

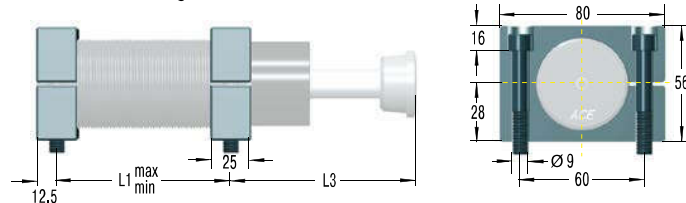


QF45
Square Flange



Torque max.: 27 Nm
Clamping torque: > 200 Nm
Install with 4 machine screws

S45
Side Foot Mounting Kit



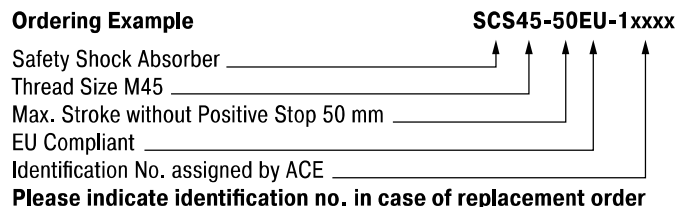
S45 = 2 flanges + 4 screws M8x50, DIN 912
Torque max.: 27 Nm
Clamping torque: 350 Nm
Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

Ordering Example



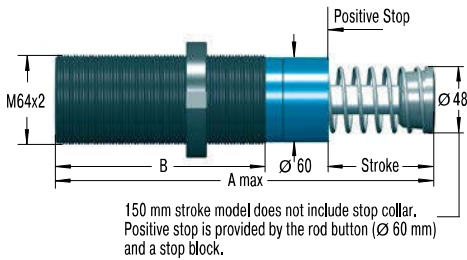
Please indicate identification no. in case of replacement order

Performance and Dimensions

| TYPES | Max. Energy Capacity | | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | L1 min. mm | L1 max. mm | L3 mm | Side Load Angle max. ° | Weight kg |
|------------|---|-----------------------------------|---------------------|---------------------|-----------|-----------|------|------------|------------|-------|------------------------|-----------|
| | W ₃ Self-compensating Nm/cycle | W ₃ Optimised Nm/cycle | | | | | | | | | | |
| SCS45-25EU | 680 | 1,200 | 70 | 100 | 23.1 | 145 | 95 | 32 | 66 | 66 | 3 | 1.13 |
| SCS45-50EU | 1,360 | 2,350 | 70 | 145 | 48.5 | 195 | 120 | 40 | 92 | 91 | 2 | 1.36 |
| SCS45-75EU | 2,040 | 3,500 | 50 | 180 | 73.9 | 246 | 145 | 50 | 118 | 116 | 1 | 1.59 |

¹ The values are reduced by 20 % at max. side load angle.

SCS64EU

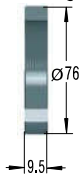


The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Accessories

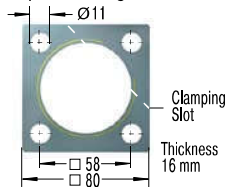
NM64

Locking Ring



QF64

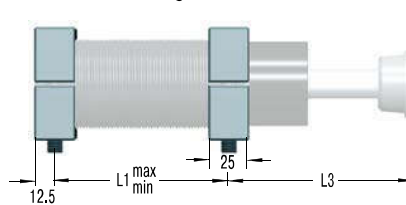
Square Flange



Torque max.: 50 Nm
Clamping torque: > 210 Nm
Install with 4 machine screws

S64

Side Foot Mounting Kit

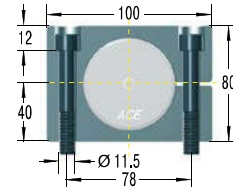


S64 = 2 flanges + 4 screws M10x80, DIN 912

Torque max.: 50 Nm

Clamping torque: 350 Nm

Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.



Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

Ordering Example

SCS64-50EU-1xxxx
 Safety Shock Absorber _____
 Thread Size M64 _____
 Max. Stroke without Positive Stop 50 mm _____
 EU Compliant _____
 Identification No. assigned by ACE _____
Please indicate identification no. in case of replacement order

Performance and Dimensions

| TYPES | Max. Energy Capacity | | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | L1 min. mm | L1 max. mm | L3 mm | Side Load Angle max. ° | Weight kg |
|-------------|---|-----------------------------------|---------------------|---------------------|-----------|-----------|------|------------|------------|-------|------------------------|-----------|
| | W ₃ Self-compensating Nm/cycle | W ₃ Optimised Nm/cycle | | | | | | | | | | |
| SCS64-50EU | 3,400 | 6,000 | 90 | 155 | 48.6 | 225 | 140 | 50 | 112 | 100 | 3 | 2.90 |
| SCS64-100EU | 6,800 | 12,000 | 105 | 270 | 99.4 | 326 | 191 | 64 | 162 | 152 | 2 | 3.70 |
| SCS64-150EU | 10,200 | 18,000 | 75 | 365 | 150.0 | 450 | 241 | 80 | 212 | 226 | 1 | 5.10 |

¹ The values are reduced by 20 % at max. side load angle.

SDH38 to SDH63

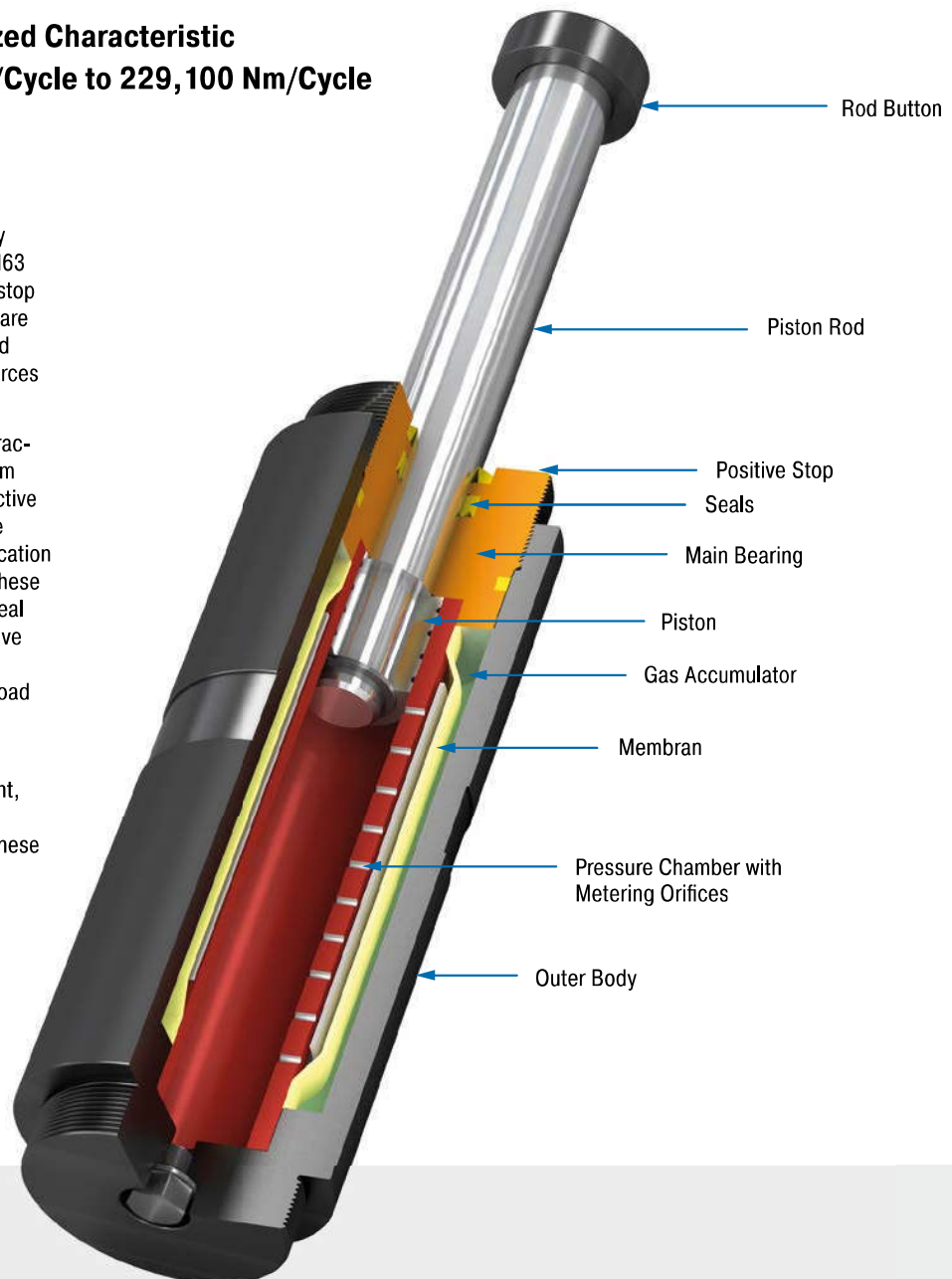
Low reaction forces with long strokes

High Rack Damper, Optimized Characteristic
Energy capacity 3,600 Nm/Cycle to 229,100 Nm/Cycle
Stroke 100 mm to 800 mm

Intelligent protective measure: The safety shock absorbers from the SDH38 to SDH63 series are also designed for emergency-stop applications. Strokes of up to 1,200 mm are possible with these maintenance-free and ready-to-install dampers. Low support forces result due to the large strokes.

The characteristic curve or damping characteristics of all safety shock absorbers from ACE is individually adjusted to the respective application, specific to the customer. The metering orifices for the respective application are specially calculated and produced. These tailor-made machine elements are the ideal protection because they are less expensive than industrial shock absorbers and are effective with up to 1,000 maximum full load emergency cycles possible.

Anyone who wants to reliably protect the end positions of rack operating equipment, conveyor and crane systems, heavy duty applications and test benches chooses these safety shock absorbers from ACE.



Technical Data

Energy capacity: 3,600 Nm/Cycle to 229,100 Nm/Cycle

Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

Reacting force: At max. capacity rating = 51 kN to 210 kN

Operating temperature range: -20 °C to +60 °C. Other temperatures on request.

Mounting: In any position

Positive stop: Integrated

Material: Outer body: Painted steel; Piston rod: Hard chrome plated steel; Rod end button: Steel

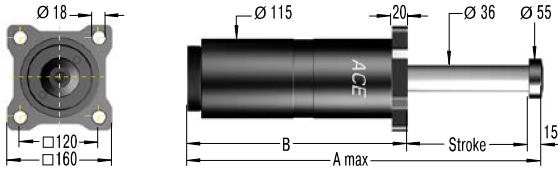
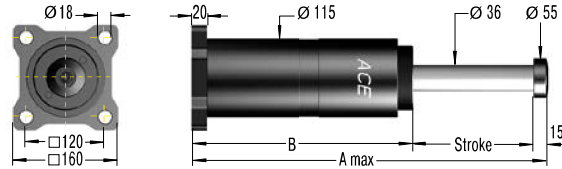
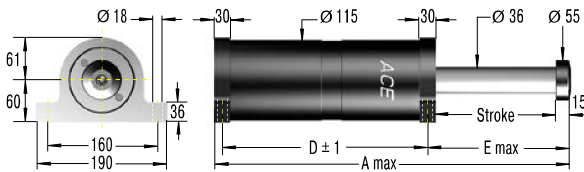
Damping medium: HLP 46

Filling pressure: Approx. 5 bar. Rod return by integrated nitrogen accumulator.

Application field: Shelf storage systems, Test stations, Heavy load applications, Conveyor systems, Portal systems

Note: For creep speed applications, please consult ACE.

On request: Special oils, special flanges, additional corrosion protection etc. Integrated rod sensor for indicating the complete extension of the piston rod. Type normally closed or normally open, option PNP or NPN switch.

SDH38EU-F Front Flange

SDH38EU-R Rear Flange

SDH38EU-S Foot Mount

Technical Data
Impact velocity range: 0.9 m/s to 4.6 m/s

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

The calculation and selection of the most suitable damper should be carried out or be approved by ACE.
Ordering Example
SDH38-400EU-F-XXXXX

- Safety Shock Absorber _____
- Bore Size Ø 38 mm _____
- Stroke 400 mm _____
- EU Compliant _____
- Mounting Style: Front Flange _____
- Identification No. assigned by ACE _____

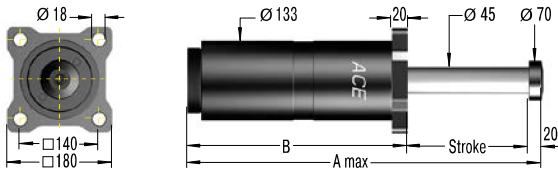
Please indicate identification no. in case of replacement order
Performance and Dimensions

| TYPES | ¹ Energy capacity Nm/cycle | ¹ Reacting Force N | Return Force | | Stroke mm | A max. mm | B mm | D mm | E max. mm | Mounting Style | |
|-------------|-------------------------------|-----------------------|--------------|-----------|--------------|--------------|---------|---------|--------------|-------------------------|-------------------|
| | | | min. N | max. N | | | | | | F and R Weight kg | S Weight kg |
| SDH38-50EU | 3,600 | 80,000 | 600 | 700 | 50 | 270 | 204 | 165 | 84 | 14.0 | 13.7 |
| SDH38-100EU | 7,300 | 80,000 | 600 | 700 | 100 | 370 | 254 | 215 | 134 | 15.5 | 15.7 |
| SDH38-150EU | 10,900 | 80,000 | 600 | 700 | 150 | 470 | 304 | 265 | 184 | 17.0 | 17.2 |
| SDH38-200EU | 14,500 | 80,000 | 600 | 700 | 200 | 585 | 369 | 330 | 234 | 20.0 | 19.7 |
| SDH38-250EU | 18,200 | 80,000 | 600 | 700 | 250 | 685 | 419 | 380 | 284 | 22.0 | 21.7 |
| SDH38-300EU | 21,800 | 80,000 | 600 | 700 | 300 | 800 | 484 | 445 | 334 | 24.0 | 23.7 |
| SDH38-350EU | 25,500 | 80,000 | 600 | 700 | 350 | 900 | 534 | 495 | 384 | 26.0 | 25.7 |
| SDH38-400EU | 29,100 | 80,000 | 600 | 700 | 400 | 1,015 | 599 | 560 | 434 | 28.0 | 28.2 |
| SDH38-500EU | 36,400 | 80,000 | 600 | 700 | 500 | 1,230 | 714 | 675 | 534 | 32.0 | 32.2 |
| SDH38-600EU | 43,600 | 80,000 | 600 | 700 | 600 | 1,445 | 829 | 790 | 634 | 36.0 | 36.2 |
| SDH38-700EU | 50,900 | 80,000 | 600 | 700 | 700 | 1,660 | 944 | 905 | 734 | 40.0 | 40.2 |
| SDH38-800EU | 58,200 | 80,000 | 600 | 700 | 800 | 1,875 | 1,059 | 1,020 | 834 | 44.0 | 44.2 |

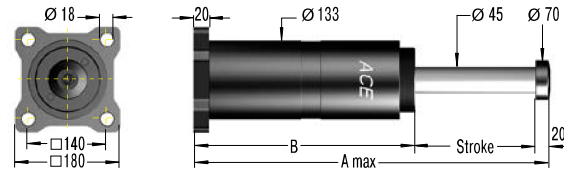
¹ The values apply to mounting style Front Flange and Foot Mounting. For mounting style Rear Flange, please consult ACE.
In case of an existing side load angle, please consult ACE.

High Rack Damper, Optimized Characteristic

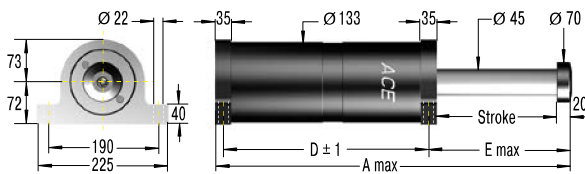
SDH50EU-F Front Flange



SDH50EU-R Rear Flange



SDH50EU-S Foot Mount



Technical Data

Impact velocity range: 0.6 m/s to 4.6 m/s

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Ordering Example

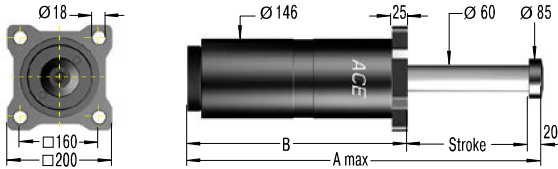
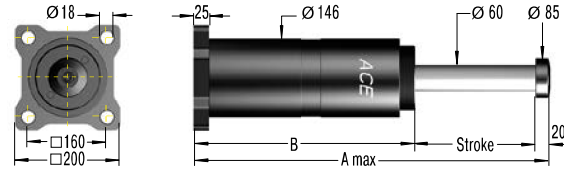
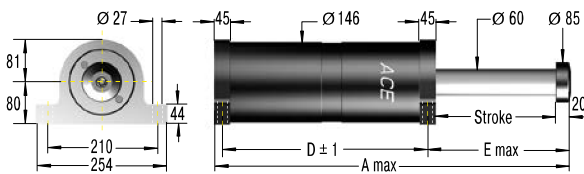
SDH50-400EU-F-XXXXX
 Safety Shock Absorber _____
 Bore Size Ø 50 mm _____
 Stroke 400 mm _____
 EU Compliant _____
 Mounting Style: Front Flange _____
 Identification No. assigned by ACE _____

Please indicate identification no. in case of replacement order

Performance and Dimensions

| TYPES | ¹ Energy capacity Nm/cycle | ¹ Reacting Force N | Return Force | | Stroke mm | A max. mm | B mm | D mm | E max. mm | Mounting Style | |
|--------------|-------------------------------|-----------------------|--------------|-----------|--------------|--------------|---------|---------|--------------|-------------------------|-------------------|
| | | | min. N | max. N | | | | | | F and R Weight kg | S Weight kg |
| SDH50-100EU | 14,500 | 160,000 | 1,000 | 1,200 | 100 | 416 | 297 | 258 | 139 | 23.5 | 25.0 |
| SDH50-150EU | 21,800 | 160,000 | 1,000 | 1,200 | 150 | 516 | 347 | 308 | 189 | 26.0 | 27.5 |
| SDH50-200EU | 29,100 | 160,000 | 1,000 | 1,200 | 200 | 616 | 397 | 358 | 239 | 28.5 | 30.0 |
| SDH50-250EU | 36,400 | 160,000 | 1,000 | 1,200 | 250 | 731 | 462 | 423 | 289 | 32.0 | 33.5 |
| SDH50-300EU | 43,600 | 160,000 | 1,000 | 1,200 | 300 | 831 | 512 | 473 | 339 | 34.5 | 36.0 |
| SDH50-350EU | 50,900 | 160,000 | 1,000 | 1,200 | 350 | 931 | 562 | 523 | 389 | 37.0 | 38.5 |
| SDH50-400EU | 58,200 | 160,000 | 1,000 | 1,200 | 400 | 1,046 | 627 | 588 | 439 | 40.0 | 41.5 |
| SDH50-500EU | 72,700 | 160,000 | 1,000 | 1,200 | 500 | 1,261 | 742 | 703 | 539 | 46.0 | 47.5 |
| SDH50-600EU | 87,300 | 160,000 | 1,000 | 1,200 | 600 | 1,476 | 857 | 818 | 639 | 52.0 | 53.5 |
| SDH50-700EU | 101,800 | 160,000 | 1,000 | 1,200 | 700 | 1,691 | 972 | 933 | 739 | 58.0 | 59.5 |
| SDH50-800EU | 116,400 | 160,000 | 1,000 | 1,200 | 800 | 1,906 | 1,087 | 1,048 | 839 | 64.0 | 65.5 |
| SDH50-1000EU | 145,500 | 160,000 | 1,000 | 1,200 | 1,000 | 2,336 | 1,317 | 1,278 | 1,039 | 75.0 | 76.5 |

¹ The values apply to mounting style Front Flange and Foot Mounting. For mounting style Rear Flange, please consult ACE.
In case of an existing side load angle, please consult ACE.

SDH63EU-F Front Flange

SDH63EU-R Rear Flange

SDH63EU-S Foot Mount

Technical Data
Impact velocity range: 0.5 m/s to 4.6 m/s

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

The calculation and selection of the most suitable damper should be carried out or be approved by ACE.
Ordering Example

SDH63-400EU-F-XXXXX

Safety Shock Absorber _____ ↑

Bore Size Ø 63 mm _____ ↑

Stroke 400 mm _____ ↑

EU Compliant _____ ↑

Mounting Style: Front Flange _____ ↑

Identification No. assigned by ACE _____ ↑

Please indicate identification no. in case of replacement order
Performance and Dimensions

| TYPES | ¹ Energy capacity Nm/cycle | ¹ Reacting Force N | Return Force | | Stroke mm | A max. mm | B mm | D mm | E max. mm | Mounting Style | |
|--------------|-------------------------------|-----------------------|--------------|-----------|--------------|--------------|---------|---------|--------------|-------------------------|-------------------|
| | | | min. N | max. N | | | | | | F and R Weight kg | S Weight kg |
| SDH63-100EU | 19,100 | 210,000 | 1,500 | 2,500 | 100 | 420 | 301 | 252 | 144 | 32 | 35 |
| SDH63-150EU | 28,600 | 210,000 | 1,500 | 2,500 | 150 | 520 | 351 | 302 | 194 | 35 | 38 |
| SDH63-200EU | 38,200 | 210,000 | 1,500 | 2,500 | 200 | 620 | 401 | 352 | 244 | 39 | 42 |
| SDH63-250EU | 47,700 | 210,000 | 1,500 | 2,500 | 250 | 720 | 451 | 402 | 294 | 43 | 46 |
| SDH63-300EU | 57,300 | 210,000 | 1,500 | 2,500 | 300 | 850 | 531 | 482 | 344 | 48 | 51 |
| SDH63-350EU | 66,800 | 210,000 | 1,500 | 2,500 | 350 | 950 | 581 | 532 | 394 | 52 | 55 |
| SDH63-400EU | 76,400 | 210,000 | 1,500 | 2,500 | 400 | 1,080 | 661 | 612 | 444 | 60 | 63 |
| SDH63-500EU | 95,500 | 210,000 | 1,500 | 2,500 | 500 | 1,280 | 761 | 712 | 544 | 68 | 71 |
| SDH63-600EU | 114,500 | 210,000 | 1,500 | 2,500 | 600 | 1,510 | 891 | 842 | 644 | 78 | 81 |
| SDH63-700EU | 133,600 | 210,000 | 1,500 | 2,500 | 700 | 1,740 | 1,021 | 972 | 744 | 88 | 91 |
| SDH63-800EU | 152,700 | 210,000 | 1,500 | 2,500 | 800 | 1,970 | 1,151 | 1,102 | 844 | 98 | 101 |
| SDH63-1000EU | 190,900 | 210,000 | 1,500 | 2,500 | 1,000 | 2,430 | 1,411 | 1,362 | 1,044 | 118 | 121 |
| SDH63-1200EU | 229,100 | 210,000 | 1,500 | 2,500 | 1,200 | 2,890 | 1,671 | 1,622 | 1,244 | 138 | 141 |

¹ The values apply to mounting style Front Flange and Foot Mounting. For mounting style Rear Flange, please consult ACE.
In case of an existing side load angle, please consult ACE.

SDP63 to SDP160

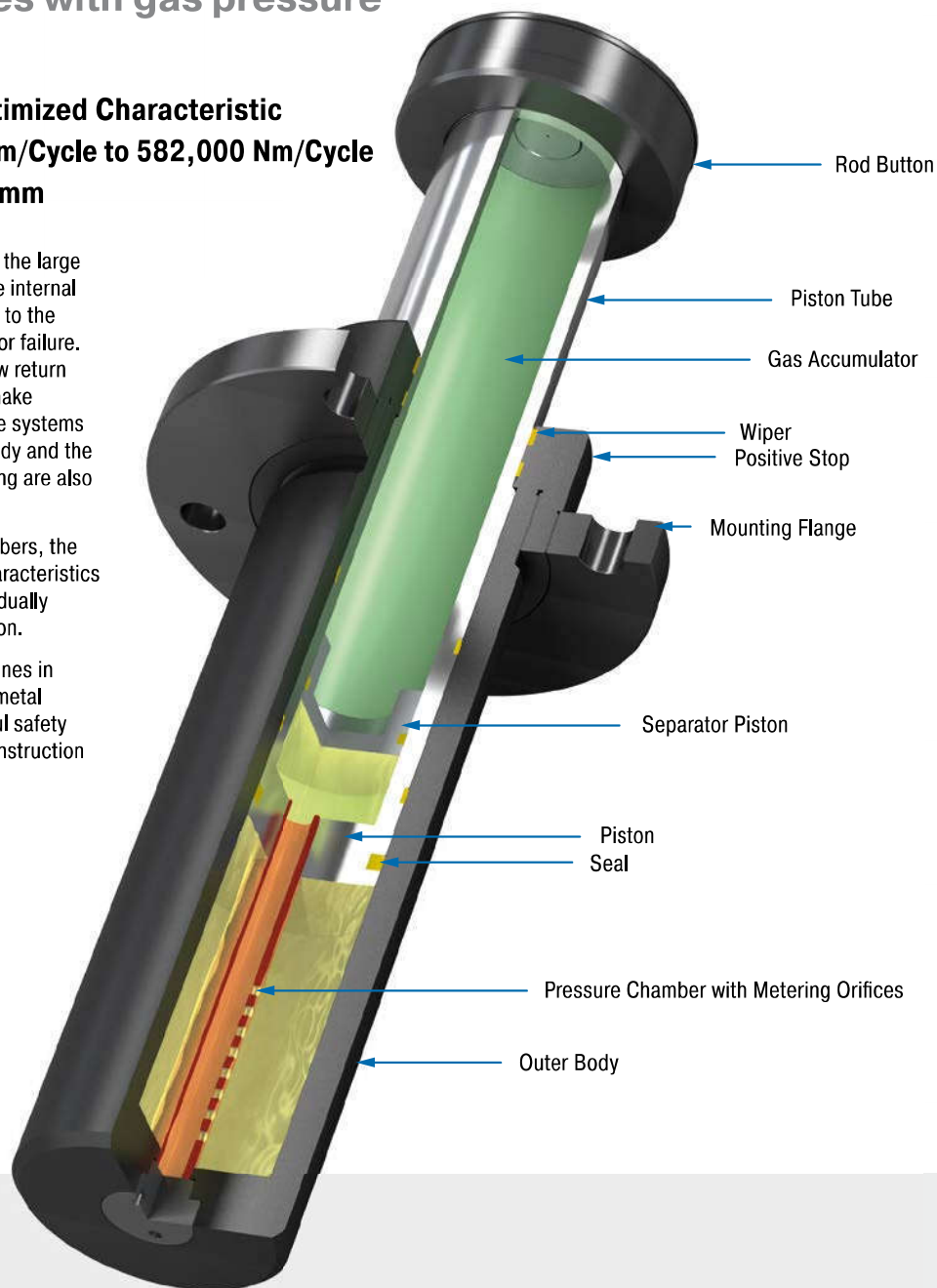
High return forces with gas pressure accumulator

Crane Installations, Optimized Characteristic
Energy capacity 9,100 Nm/Cycle to 582,000 Nm/Cycle
Stroke 50 mm to 1,200 mm

Reliability: The emergency stop from the large scale SDP63 to SDP160 series have internal system seals. Even dirt or damages to the piston rod do not lead to a leakage or failure. Compressed gas accumulators allow return forces of up to 100 kN, which can make applications in multiple bridge crane systems safer, for example. The absorber body and the robust, large-sized piston rod bearing are also designed for heavy duty operations

Just like all ACE safety shock absorbers, the characteristic curve or damping characteristics of each individual absorber is individually adjusted to the respective application.

Whether its crane systems or machines in heavy duty applications e.g. in the metal industry or in mining, these powerful safety shock absorbers reliably protect construction designs against expensive failure.



Technical Data

Energy capacity: 9,100 Nm/Cycle to 582,000 Nm/Cycle

Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

Reacting force: At max. capacity rating = 110 kN to 1.000 kN

Operating temperature range: -20 °C to +60 °C. Other temperatures on request.

Mounting: In any position

Positive stop: Integrated

Material: Outer body: Painted steel; Rod end button: Steel; Piston tube: Hard chrome plated steel

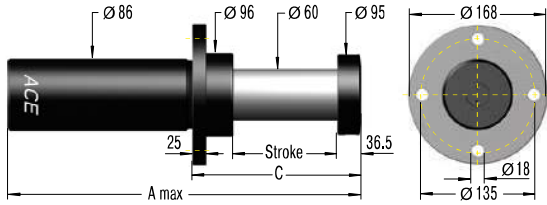
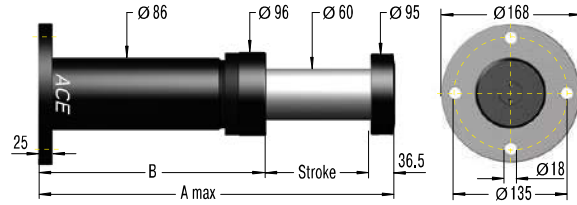
Damping medium: HLP 46

Filling pressure: Approx. 5 bar. Rod return by integrated nitrogen accumulator.

Application field: Shelf storage systems, Heavy load applications

Note: The shock absorber can be pushed through its stroke. In creep speed conditions the shock absorber provides minimal resistance and there is no braking effect.

On request: Special oils, special flanges, additional corrosion protection etc.

SDP63EU-F Front Flange

SDP63EU-R Rear Flange

Technical Data
Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

The calculation and selection of the most suitable damper should be carried out or be approved by ACE.
Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

Ordering Example

SDP63-400EU-F-XXXXX

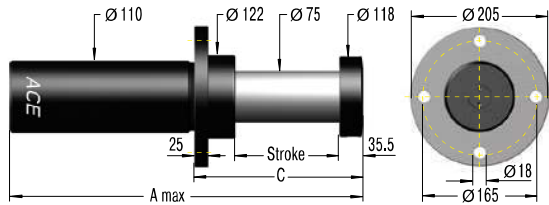
Safety Shock Absorber _____
 Bore Size Ø 63 mm _____
 Stroke 400 mm _____
 EU Compliant _____
 Mounting Style: Front Flange _____
 Identification No. assigned by ACE _____

Please indicate identification no. in case of replacement order
Performance and Dimensions

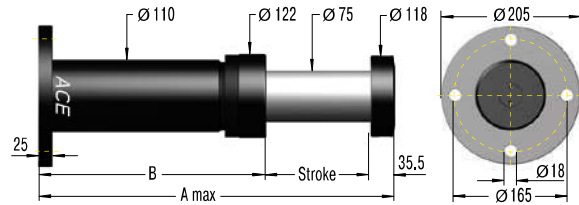
| TYPES | Energy capacity Nm/cycle | Reacting Force N | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | C mm | Weight kg |
|-------------|-----------------------------|---------------------|------------------------|------------------------|--------------|--------------|---------|---------|--------------|
| SDP63-50EU | 9,100 | 200,000 | 1,500 | 8,000 | 50 | 280 | 193.5 | 145 | 11 |
| SDP63-75EU | 13,600 | 200,000 | 1,500 | 10,000 | 75 | 360 | 248.5 | 170 | 12.5 |
| SDP63-100EU | 18,200 | 200,000 | 1,500 | 11,000 | 100 | 425 | 288.5 | 195 | 14 |
| SDP63-150EU | 27,300 | 200,000 | 1,500 | 15,000 | 150 | 560 | 373.5 | 245 | 17 |
| SDP63-200EU | 36,400 | 200,000 | 1,500 | 17,000 | 200 | 700 | 463.5 | 295 | 19 |
| SDP63-250EU | 43,200 | 190,000 | 1,500 | 18,000 | 250 | 840 | 553.5 | 345 | 21 |
| SDP63-300EU | 49,100 | 180,000 | 1,500 | 20,000 | 300 | 980 | 643.5 | 395 | 24 |
| SDP63-400EU | 54,500 | 150,000 | 1,500 | 20,000 | 400 | 1,265 | 828.5 | 495 | 29 |
| SDP63-500EU | 59,100 | 130,000 | 1,500 | 20,000 | 500 | 1,555 | 1,018.5 | 595 | 34 |
| SDP63-600EU | 60,000 | 110,000 | 1,500 | 20,000 | 600 | 1,840 | 1,203.5 | 695 | 39 |

In case of an existing side load angle, please consult ACE.

SDP80EU-F Front Flange



SDP80EU-R Rear Flange



Technical Data

Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

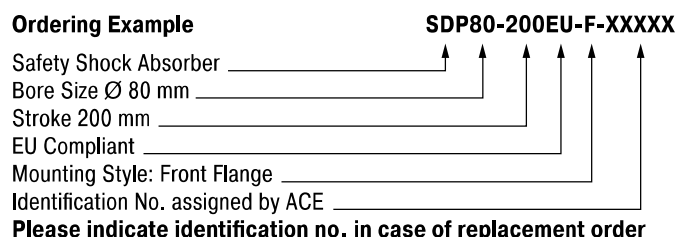
The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

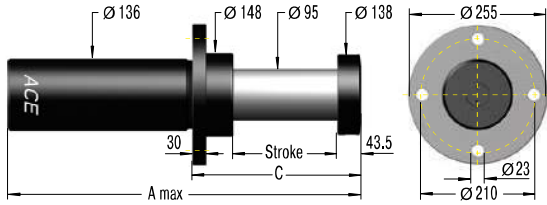
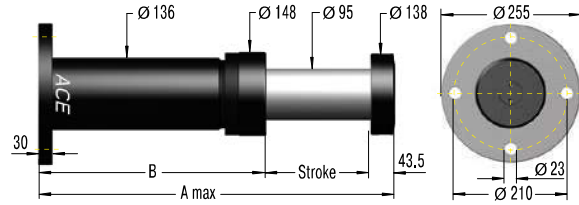
Ordering Example



Performance and Dimensions

| TYPES | Energy capacity Nm/cycle | Reacting Force N | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | C mm | Weight kg |
|-------------|-----------------------------|---------------------|------------------------|------------------------|--------------|--------------|---------|---------|--------------|
| SDP80-50EU | 11,800 | 260,000 | 2,500 | 16,000 | 50 | 285 | 199.5 | 155 | 19 |
| SDP80-100EU | 23,600 | 260,000 | 2,500 | 16,000 | 100 | 440 | 304.5 | 205 | 23 |
| SDP80-150EU | 35,500 | 260,000 | 2,500 | 20,000 | 150 | 580 | 394.5 | 255 | 27 |
| SDP80-200EU | 47,300 | 260,000 | 2,500 | 20,000 | 200 | 730 | 494.5 | 305 | 32 |
| SDP80-250EU | 56,800 | 250,000 | 2,500 | 25,000 | 250 | 865 | 579.5 | 355 | 35 |
| SDP80-300EU | 65,500 | 240,000 | 2,500 | 25,000 | 300 | 1,010 | 674.5 | 405 | 39 |
| SDP80-400EU | 80,000 | 220,000 | 2,500 | 30,000 | 400 | 1,285 | 849.5 | 505 | 47 |
| SDP80-500EU | 90,900 | 200,000 | 2,500 | 30,000 | 500 | 1,575 | 1,039.5 | 605 | 55 |
| SDP80-600EU | 98,200 | 180,000 | 2,500 | 30,000 | 600 | 1,865 | 1,229.5 | 705 | 64 |
| SDP80-800EU | 101,800 | 140,000 | 2,500 | 30,000 | 800 | 2,450 | 1,614.5 | 905 | 80 |

In case of an existing side load angle, please consult ACE.

SDP100EU-F Front Flange

SDP100EU-R Rear Flange

Technical Data

Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

Ordering Example

SDP100-400EU-F-XXXX

Safety Shock Absorber _____ ↑

Bore Size Ø 100 mm _____ ↑

Stroke 400 mm _____ ↑

EU Compliant _____ ↑

Mounting Style: Front Flange _____ ↑

Identification No. assigned by ACE _____ ↑

Please indicate identification no. in case of replacement order

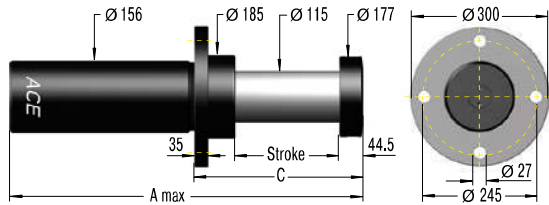
Performance and Dimensions

| TYPES | Energy capacity Nm/cycle | Reacting Force N | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | C mm | Weight kg |
|---------------|-----------------------------|---------------------|------------------------|------------------------|--------------|--------------|---------|---------|--------------|
| SDP100-100EU | 47,000 | 520,000 | 3,900 | 38,000 | 100 | 460 | 316.5 | 230 | 38 |
| SDP100-200EU | 95,000 | 520,000 | 3,900 | 38,000 | 200 | 750 | 506.5 | 330 | 53 |
| SDP100-250EU | 114,000 | 520,000 | 3,900 | 40,000 | 250 | 890 | 596.5 | 380 | 59 |
| SDP100-300EU | 131,000 | 500,000 | 3,900 | 40,000 | 300 | 1,035 | 691.5 | 430 | 66 |
| SDP100-400EU | 160,000 | 480,000 | 3,900 | 40,000 | 400 | 1,325 | 881.5 | 530 | 81 |
| SDP100-500EU | 182,000 | 440,000 | 3,900 | 40,000 | 500 | 1,610 | 1,066.5 | 630 | 93 |
| SDP100-600EU | 196,000 | 360,000 | 3,900 | 46,000 | 600 | 1,880 | 1,236.5 | 730 | 103 |
| SDP100-800EU | 218,000 | 300,000 | 3,900 | 46,000 | 800 | 2,450 | 1,606.5 | 930 | 125 |
| SDP100-1000EU | 236,000 | 260,000 | 3,900 | 46,000 | 1,000 | 3,020 | 1,976.5 | 1,130 | 160 |

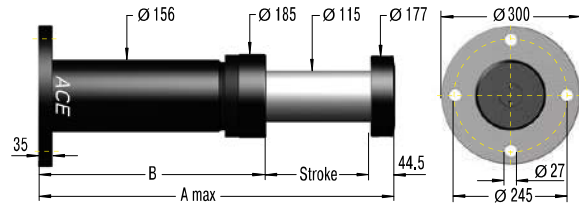
In case of an existing side load angle, please consult ACE.



SDP120EU-F Front Flange



SDP120EU-R Rear Flange



Technical Data

Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

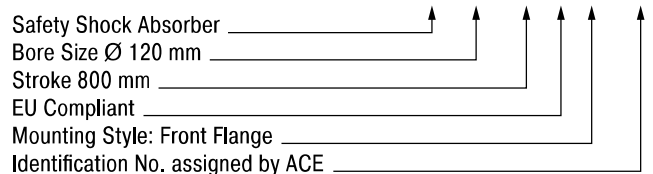
Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 265.

Ordering Example

SDP120-800EU-F-XXXXX

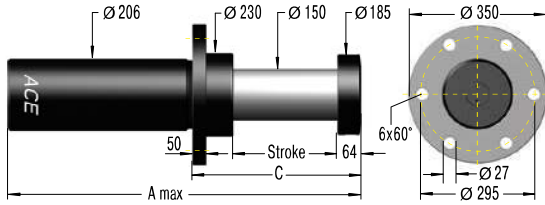
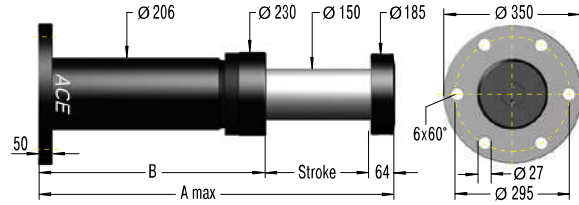


Please indicate identification no. in case of replacement order

Performance and Dimensions

| TYPES | Energy capacity Nm/cycle | Reacting Force N | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | C mm | Weight kg |
|---------------|-----------------------------|---------------------|------------------------|------------------------|--------------|--------------|---------|---------|--------------|
| SDP120-100EU | 64,000 | 700,000 | 5,600 | 35,000 | 100 | 460 | 315.5 | 249 | 58 |
| SDP120-200EU | 127,000 | 700,000 | 5,600 | 70,000 | 200 | 750 | 505.5 | 355 | 72 |
| SDP120-400EU | 236,000 | 650,000 | 5,600 | 75,000 | 400 | 1,325 | 880.5 | 555 | 99 |
| SDP120-600EU | 300,000 | 550,000 | 5,600 | 75,000 | 600 | 1,880 | 1,235.5 | 755 | 125 |
| SDP120-800EU | 327,000 | 450,000 | 5,600 | 75,000 | 800 | 2,450 | 1,605.5 | 955 | 160 |
| SDP120-1000EU | 364,000 | 400,000 | 5,600 | 75,000 | 1,000 | 3,020 | 1,975.5 | 1,155 | 192 |
| SDP120-1200EU | 436,000 | 400,000 | 5,600 | 75,000 | 1,200 | 3,590 | 2,345.5 | 1,355 | 225 |

In case of an existing side load angle, please consult ACE.

SDP160EU-F Front Flange

SDP160EU-R Rear Flange

Technical Data

Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Creep speed: vs (m/s)
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

Ordering Example

SDP160-400EU-F-XXXX

Safety Shock Absorber _____ ↑

Bore Size Ø 160 mm _____ ↑

Stroke 400 mm _____ ↑

EU Compliant _____ ↑

Mounting Style: Front Flange _____ ↑

Identification No. assigned by ACE _____ ↑

Please indicate identification no. in case of replacement order

or technical data according to formulae and calculations on page 265.

Performance and Dimensions

| TYPES | Energy capacity Nm/cycle | Reacting Force N | Return Force min. N | Return Force max. N | Stroke mm | A max. mm | B mm | C mm | Weight kg |
|---------------|-----------------------------|---------------------|------------------------|------------------------|--------------|--------------|---------|---------|--------------|
| SDP160-200EU | 182,000 | 1,000,000 | 1,000 | 80,000 | 200 | 860 | 596 | 440 | 105 |
| SDP160-400EU | 345,000 | 950,000 | 1,000 | 80,000 | 400 | 1,485 | 1,021 | 640 | 165 |
| SDP160-500EU | 409,000 | 900,000 | 1,000 | 90,000 | 500 | 1,765 | 1,201 | 740 | 195 |
| SDP160-600EU | 469,000 | 860,000 | 1,000 | 95,000 | 600 | 2,065 | 1,401 | 840 | 230 |
| SDP160-800EU | 545,000 | 750,000 | 1,000 | 100,000 | 800 | 2,660 | 1,796 | 1,040 | 290 |
| SDP160-1000EU | 545,000 | 600,000 | 1,000 | 110,000 | 1,000 | 3,225 | 2,161 | 1,240 | 350 |
| SDP160-1200EU | 545,000 | 500,000 | 1,000 | 110,000 | 1,200 | 3,815 | 2,551 | 1,440 | 410 |
| SDP160-1600EU | 582,000 | 400,000 | 1,000 | 110,000 | 1,600 | 4,995 | 3,331 | 1,840 | 530 |

In case of an existing side load angle, please consult ACE.



General Instructions

Permitted Use

ACE safety shock absorbers are machine elements to brake moving masses in a defined end position in emergency stop situations for axial forces. The safety shock absorbers are not designed for regular operational usage.

Calculation of safety shock absorbers

The calculation of safety shock absorbers should generally be performed or checked by ACE.

Deceleration Properties

The orifice sizing and drill pattern in the pressure chamber are individually designed for each safety shock absorber. The respective absorption characteristic is optimised corresponding to the maximum mass that occurs in the emergency stop and the impact speed. Correspondingly, each safety shock absorber is given an individual identification number.

Model Code

For types SCS33 to 64, the individual five-digit identification numbers can be taken from the last digits of the shock absorber model code shown on the label. Example: SCS33-50EU-1XXXX. For type series SDH38 to SDH63 and SDP63 to SDP160, the identification number is a five digit number. Example: SDH38-400EU-F-XXXXX. In addition to the model code, the label also shows the authorised maximum impact velocity and maximum authorised impact mass for the unit.

Mounting

To mount the shock absorber, we recommend the use of original ACE mounting accessories shown in catalogue.

The mounting of each shock absorber must be exactly positioned so that the reaction force (Q) can be adequately transmitted into the mounting structure.

ACE recommends installation via the front flange -F mounting style that ensures the maximum protection against buckling. The damper must be mounted so that the moving loads are decelerated with the least possible side loading to the piston rod. The maximum permissible side load angles are detailed in our current catalogue.

The entire stroke length must be used for deceleration because only using part of the stroke can lead to overstressing and damage to the unit.

Mounting style front flange

Safety Shock Absorber SDH

Safety Shock Absorber SDP

Environmental Requirements

The permissible **temperature range** for each shock absorber type can be found in our current catalogue.

Caution: Usage outside the specified temperature range can lead to premature breakdown and damage of the shock absorbers which can then result in severe system damage or machine failures.

Trouble free operation outdoors or in damp environments is only warranted if the dampers are coated with a specific corrosion protection finish.

Initial Start-Up Checks

First impacts on the shock absorber should only be tried after correctly mounting and with reduced impact speeds and – if possible – with reduced load. Differences between calculated and actual operating data can then be detected early on, and damage to your system can be avoided. If the shock absorbers were selected on calculated data that does not correspond to the maximum possible loading (i.e. selection based on drive power being switched off or at reduced impact speed) then these restricted impact conditions must not be exceeded during initial testing or subsequent use of the system. Otherwise you risk damaging the shock absorbers and/or your machine by overstressing materials. After the initial trial check that the piston rod fully extends again and that there are no signs of oil leakage. Also check that the mounting hardware is still securely tightened. You need to satisfy yourself that no damage has occurred to the piston rod, the body, or the mounting hardware.

Fixed Mechanical Stop

Safety shock absorbers do not need an external stop as a stroke limiter. The stroke of the safety absorber is limited by the stop of the impact head on the shock absorber. For types SCS33 to SCS64, the fixed stop point is achieved with the integrated stop collar.

What Needs to be Checked after a Full Load Impact?

Safety shock absorbers that were originally checked only at reduced speed or load need to be checked again after a full load impact (i.e. emergency use) has occurred. Check that the piston rod fully extends to its full out position, that there are no signs of oil leakage and that the mounting hardware is still securely fixed. You need to satisfy yourself that no damage has occurred to the piston rod, the body, or the mounting hardware. If no damage has occurred, the safety shock absorber can be put back into normal operation (see **initial start-up**).

Maintenance

Safety shock absorbers are sealed systems and do not need special maintenance. Safety shock absorbers that are not used regularly (i.e. that are intended for emergency stop systems) should be checked within the normal time frame for safety checks, but **at least once a year**. At this time special attention must be paid to checking that the piston rod resets to its fully extended position, that there is no oil leakage and that the mounting brackets are still secure and undamaged. The piston rod must not show any signs of damage. Safety shock absorbers that are **in use regularly** should be checked **every three months**.

Repair Notice

If any damage to the shock absorber is detected or if there are any doubts as to the proper functioning of the unit please send the unit for service to ACE. Alternatively contact your local ACE office for further advice.

[Detailed information on the above listed points can be taken from the corresponding operating and assembly instructions.](#)

Calculation Bases for the Design of Safety Shock Absorbers

More formulae on page 10 to 13

ACE shock absorbers provide linear deceleration and are therefore superior to other kinds of damping element. It is easy to calculate around 90 % of applications knowing only the following four parameters:

1. Mass to be decelerated (weight) **m** [kg]
2. Impact velocity at shock absorber **v_D** [m/s]
3. Propelling force **F** [N]
4. Number of absorbers in parallel **n**

Key to symbols used

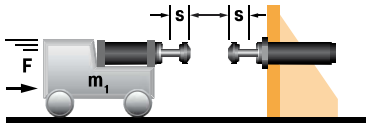
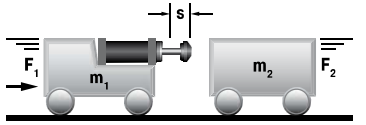
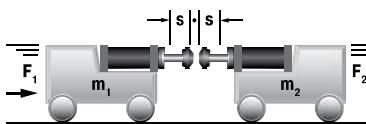
| | | | | | |
|-----------------------------|---|-------|-----------------------------|-----------------------------------|------------------|
| W ₁ | Kinetic energy per cycle | Nm | ² v _D | Impact velocity at shock absorber | m/s |
| W ₂ | Propelling force energy per cycle | Nm | F | Propelling force | N |
| W ₃ | Total energy per cycle (W ₁ + W ₂) | Nm | c | Cycles per hour | 1/hr |
| ¹ W ₄ | Total energy per hour (W ₃ · x) | Nm/hr | s | Shock absorber stroke | m |
| me | Effective weight | kg | Q | Reaction force | N |
| m | Mass to be decelerated | kg | t | Deceleration time | s |
| n | Number of shock absorbers (in parallel) | | a | Deceleration | m/s ² |
| ² v | Velocity at impact | m/s | | | |

¹ All mentioned values of W4 in the capacity charts are only valid for room temperature. There are reduced values at higher temperature ranges.

² v or v_D is the final impact velocity of the mass. With accelerating motion the final impact velocity can be 1.5 to 2 times higher than the average. Please take this into account when calculating kinetic energy.

In all the following examples the choice of shock absorbers made from the capacity chart is based upon the values of (W₃), (W₄), (me) and the desired shock absorber stroke (s).

Note: When using several shock absorbers in parallel, the values (W₃), (W₄) and (me) are divided according to the number of units used.

| Application | Formulae | Example | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|-----------------|--|---|----------------|--------------------------|------------------------------------|---|---------------|---------------------------|-----------------------------------|---|----------------|--------------------------|--|---|-----------------|------------|--|--|--|---------------------|--|--|--|
| 19 Wagon against 2 shock absorbers  | $W_1 = m \cdot v^2 \cdot 0.25$ $W_2 = F \cdot s$ $W_3 = W_1 + W_2$ $v_D = v \cdot 0.5$ | <table border="0"> <tr> <td>m = 5000 kg</td> <td>W₁ = 5000 · 2² · 0.25</td> <td>=</td> <td>5000 Nm</td> </tr> <tr> <td>v = 2 m/s</td> <td>W₂ = 3500 · 0.10</td> <td>=</td> <td>350 Nm</td> </tr> <tr> <td>F = 3500 N</td> <td>W₃ = 5000 + 350</td> <td>=</td> <td>5350 Nm</td> </tr> <tr> <td>s = 0.10 m (chosen)</td> <td>v_D = 2 · 0.5</td> <td>=</td> <td>1 m/s</td> </tr> </table> <p>Chosen from capacity chart: Model SDH38-100EU self-compensating</p> | m = 5000 kg | W₁ = 5000 · 2² · 0.25 | = | 5000 Nm | v = 2 m/s | W₂ = 3500 · 0.10 | = | 350 Nm | F = 3500 N | W₃ = 5000 + 350 | = | 5350 Nm | s = 0.10 m (chosen) | v_D = 2 · 0.5 | = | 1 m/s | | | | | | | | |
| m = 5000 kg | W₁ = 5000 · 2² · 0.25 | = | 5000 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| v = 2 m/s | W₂ = 3500 · 0.10 | = | 350 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| F = 3500 N | W₃ = 5000 + 350 | = | 5350 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| s = 0.10 m (chosen) | v_D = 2 · 0.5 | = | 1 m/s | | | | | | | | | | | | | | | | | | | | | | | |
| 20 Wagon against wagon  | $W_1 = \frac{m_1 \cdot m_2}{(m_1 + m_2)} \cdot (v_1 + v_2)^2 \cdot 0.5$ $W_2 = F \cdot s$ $W_3 = W_1 + W_2$ $v_D = v_1 + v_2$ | <table border="0"> <tr> <td>m = 7000 kg</td> <td>W₁ = $\frac{7000 \cdot 10000}{(7000 + 10000)} \cdot 1.7^2 \cdot 0.5$</td> <td>=</td> <td>5950 Nm</td> </tr> <tr> <td>v₁ = 1.2 m/s</td> <td>W₂ = 5000 · 0.10</td> <td>=</td> <td>500 Nm</td> </tr> <tr> <td>m₂ = 10000 kg</td> <td>W₃ = 5950 + 500</td> <td>=</td> <td>6450 Nm</td> </tr> <tr> <td>v₂ = 0.5 m/s</td> <td>v_D = 1.2 + 0.5</td> <td>=</td> <td>1.7 m/s</td> </tr> <tr> <td>F = 5000 N</td> <td></td> <td></td> <td></td> </tr> <tr> <td>s = 0.10 m (chosen)</td> <td></td> <td></td> <td></td> </tr> </table> <p>Chosen from capacity chart: Model SDH50-100EU self-compensating</p> | m = 7000 kg | W₁ = $\frac{7000 \cdot 10000}{(7000 + 10000)} \cdot 1.7^2 \cdot 0.5$ | = | 5950 Nm | v ₁ = 1.2 m/s | W₂ = 5000 · 0.10 | = | 500 Nm | m ₂ = 10000 kg | W₃ = 5950 + 500 | = | 6450 Nm | v ₂ = 0.5 m/s | v_D = 1.2 + 0.5 | = | 1.7 m/s | F = 5000 N | | | | s = 0.10 m (chosen) | | | |
| m = 7000 kg | W₁ = $\frac{7000 \cdot 10000}{(7000 + 10000)} \cdot 1.7^2 \cdot 0.5$ | = | 5950 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| v ₁ = 1.2 m/s | W₂ = 5000 · 0.10 | = | 500 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| m ₂ = 10000 kg | W₃ = 5950 + 500 | = | 6450 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| v ₂ = 0.5 m/s | v_D = 1.2 + 0.5 | = | 1.7 m/s | | | | | | | | | | | | | | | | | | | | | | | |
| F = 5000 N | | | | | | | | | | | | | | | | | | | | | | | | | | |
| s = 0.10 m (chosen) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 Wagon against wagon 2 shock absorbers  | $W_1 = \frac{m_1 \cdot m_2}{(m_1 + m_2)} \cdot (v_1 + v_2)^2 \cdot 0.25$ $W_2 = F \cdot s$ $W_3 = W_1 + W_2$ $v_D = \frac{v_1 + v_2}{2}$ | <table border="0"> <tr> <td>m = 7000 kg</td> <td>W₁ = $\frac{7000 \cdot 10000}{(7000 + 10000)} \cdot 1.7^2 \cdot 0.25$</td> <td>=</td> <td>2975 Nm</td> </tr> <tr> <td>v₁ = 1.2 m/s</td> <td>W₂ = 5000 · 0.10</td> <td>=</td> <td>500 Nm</td> </tr> <tr> <td>m₂ = 10000 kg</td> <td>W₃ = 2975 + 510</td> <td>=</td> <td>3475 Nm</td> </tr> <tr> <td>v₂ = 0.5 m/s</td> <td>v_D = (1.2 + 0.5) : 2</td> <td>=</td> <td>0.85 m/s</td> </tr> <tr> <td>F = 5000 N</td> <td></td> <td></td> <td></td> </tr> <tr> <td>s = 0.10 m (chosen)</td> <td></td> <td></td> <td></td> </tr> </table> <p>Chosen from capacity chart: Model SDH38-100EU self-compensating</p> | m = 7000 kg | W₁ = $\frac{7000 \cdot 10000}{(7000 + 10000)} \cdot 1.7^2 \cdot 0.25$ | = | 2975 Nm | v ₁ = 1.2 m/s | W₂ = 5000 · 0.10 | = | 500 Nm | m ₂ = 10000 kg | W₃ = 2975 + 510 | = | 3475 Nm | v ₂ = 0.5 m/s | v_D = (1.2 + 0.5) : 2 | = | 0.85 m/s | F = 5000 N | | | | s = 0.10 m (chosen) | | | |
| m = 7000 kg | W₁ = $\frac{7000 \cdot 10000}{(7000 + 10000)} \cdot 1.7^2 \cdot 0.25$ | = | 2975 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| v ₁ = 1.2 m/s | W₂ = 5000 · 0.10 | = | 500 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| m ₂ = 10000 kg | W₃ = 2975 + 510 | = | 3475 Nm | | | | | | | | | | | | | | | | | | | | | | | |
| v ₂ = 0.5 m/s | v_D = (1.2 + 0.5) : 2 | = | 0.85 m/s | | | | | | | | | | | | | | | | | | | | | | | |
| F = 5000 N | | | | | | | | | | | | | | | | | | | | | | | | | | |
| s = 0.10 m (chosen) | | | | | | | | | | | | | | | | | | | | | | | | | | |

Application Examples

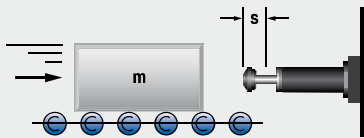
SCS45EU

Controlled emergency stop

ACE safety shock absorbers protect precision assembly jigs for the aircraft industry. The basic mount of this coordinate measuring machine for the production of parts in the aircraft industry is made of granite and must not be damaged. To avoid damage from operating errors or mishandling, all movement axes were equipped with safety shock absorbers of the type SCS45-50EU. If the turntables malfunction the safety shock absorbers decelerate the loads before expensive damage can occur to the granite measuring tables.



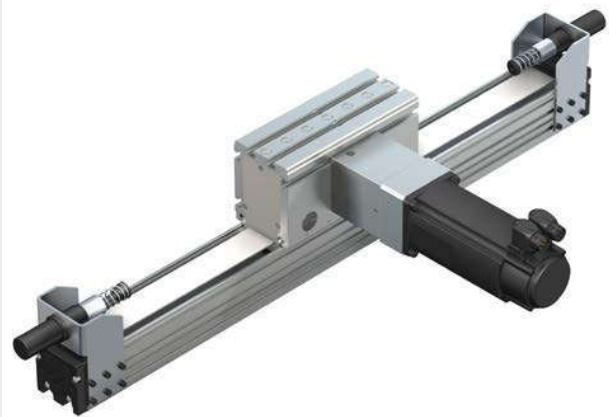
Optimally protected turntable



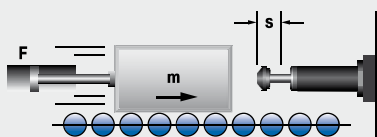
SCS33EU, SCS45EU

High-level protection of linear modules

Safety shock absorbers produced by ACE are installed in the top linear system models of one of the most prestigious companies in the field of drive and control technology. Their job: to protect the z-axis from damage caused by uncontrolled movements. Various safety dampers are used for different load ranges. Tests have shown that, in the worst case, a collision speed of up to 5 m/s might occur. To be on the safe side, the interpretations were based in all cases on a slightly higher value.



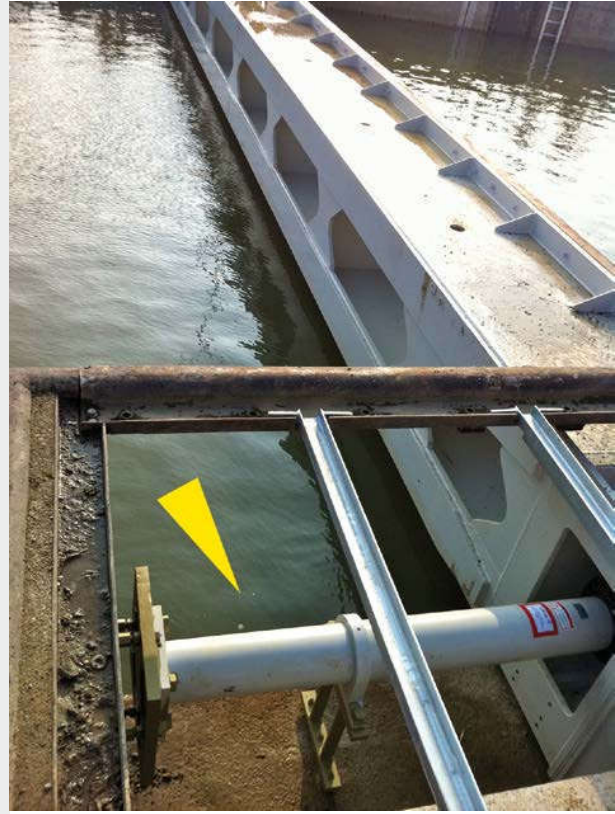
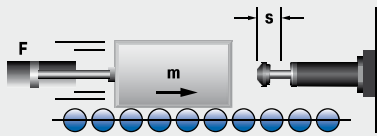
For protecting equipment and modules such as these, the SCS series from ACE is the ideal solution in the emergency stop sector
Roth GmbH & Co. KG, 90411 Nürnberg, Germany and Bosch Rexroth AG, 97816 Lohr am Main, Germany



SDP160EU

Customized buffer beam dampers

Driving into lock gates should be specifically facilitated when navigating through Dutch river locks. That is why ACE developed special dampers, based on existing safety shock absorbers but with optimized characteristics, a fixed stop and a stroke of 800 mm. These are able to absorb 500,000 Nm, which means they can cope with fully loaded ships and also the mechanical impacts resulting from water movement. To return to the initial position, the safety shock absorbers operate on the same nitrogen-based principle as the gas springs produced by the damping specialists in Langenfeld.

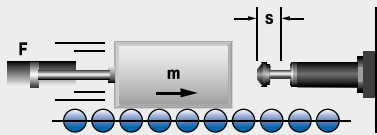


Heavy safety shock absorbers, which are specially designed for this application, are able to brake in lock masses of up to four million kg
Mourik Limburg BV, 6101 AJ Echt, Netherlands

SDH38EU

Safe driving to the end positions

The aim was to protect a driving simulation capsule on two of its eight axes. The demands placed on a potential emergency stopper were high because it was clear that its failure would lead to massive damage to the complete construction as well as to the capsule. Even the possibility of damage to the health of the test personnel could not be ruled out and was taken into consideration in a diverse range of mass-speed combinations. Two ACE safety shock absorbers now safely contain destructive forces, e.g. during power outages, and eliminate high risks.



ACE safety shock absorbers protect end positions in two axes of a driving simulator
Bosch Rexroth BV, Boxel 5281 RV, The Netherlands
and University of Stuttgart - FKFS, 70569 Stuttgart, Germany