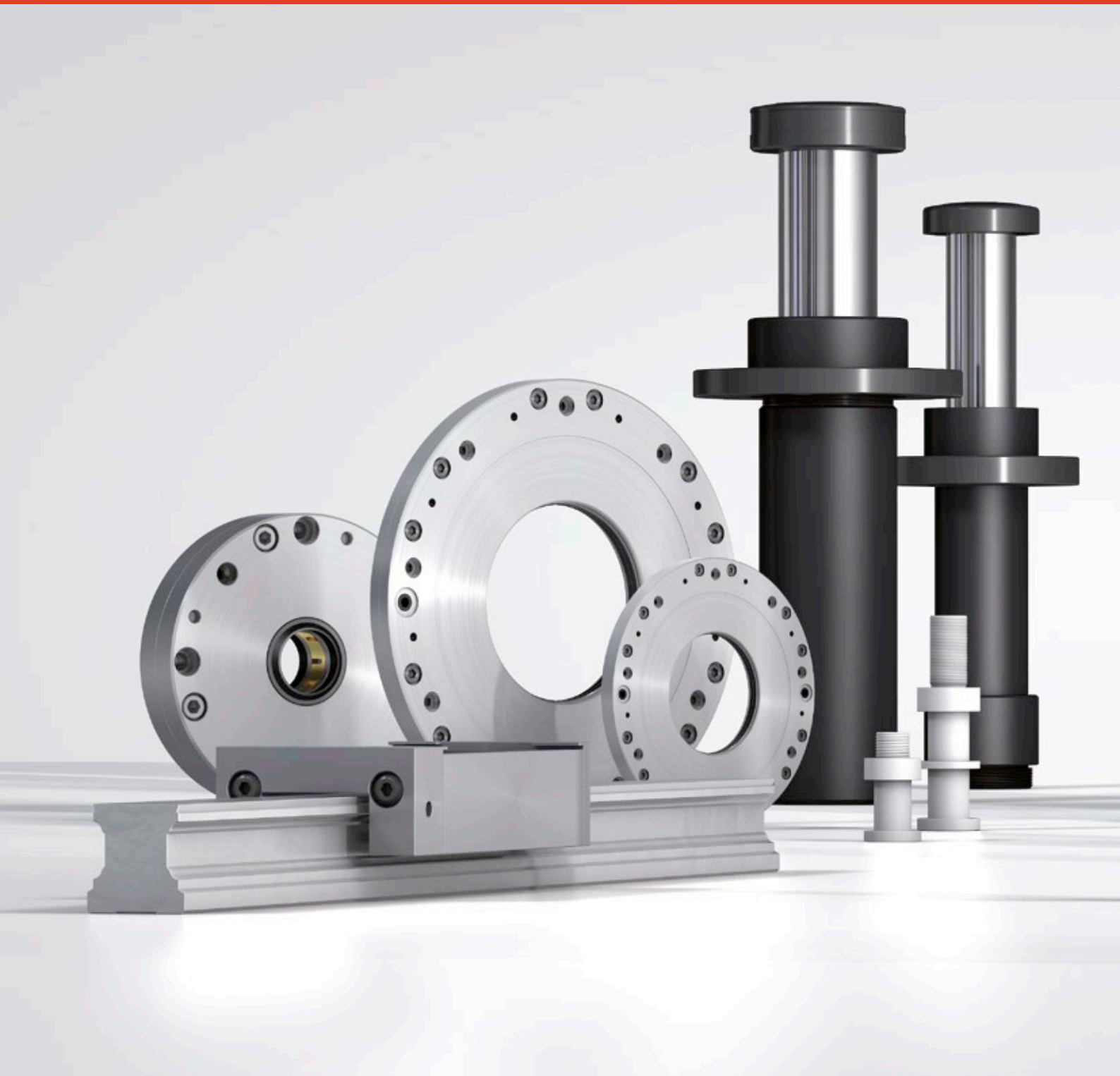


Safety Products

**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 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

Page 244

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 248

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 252

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



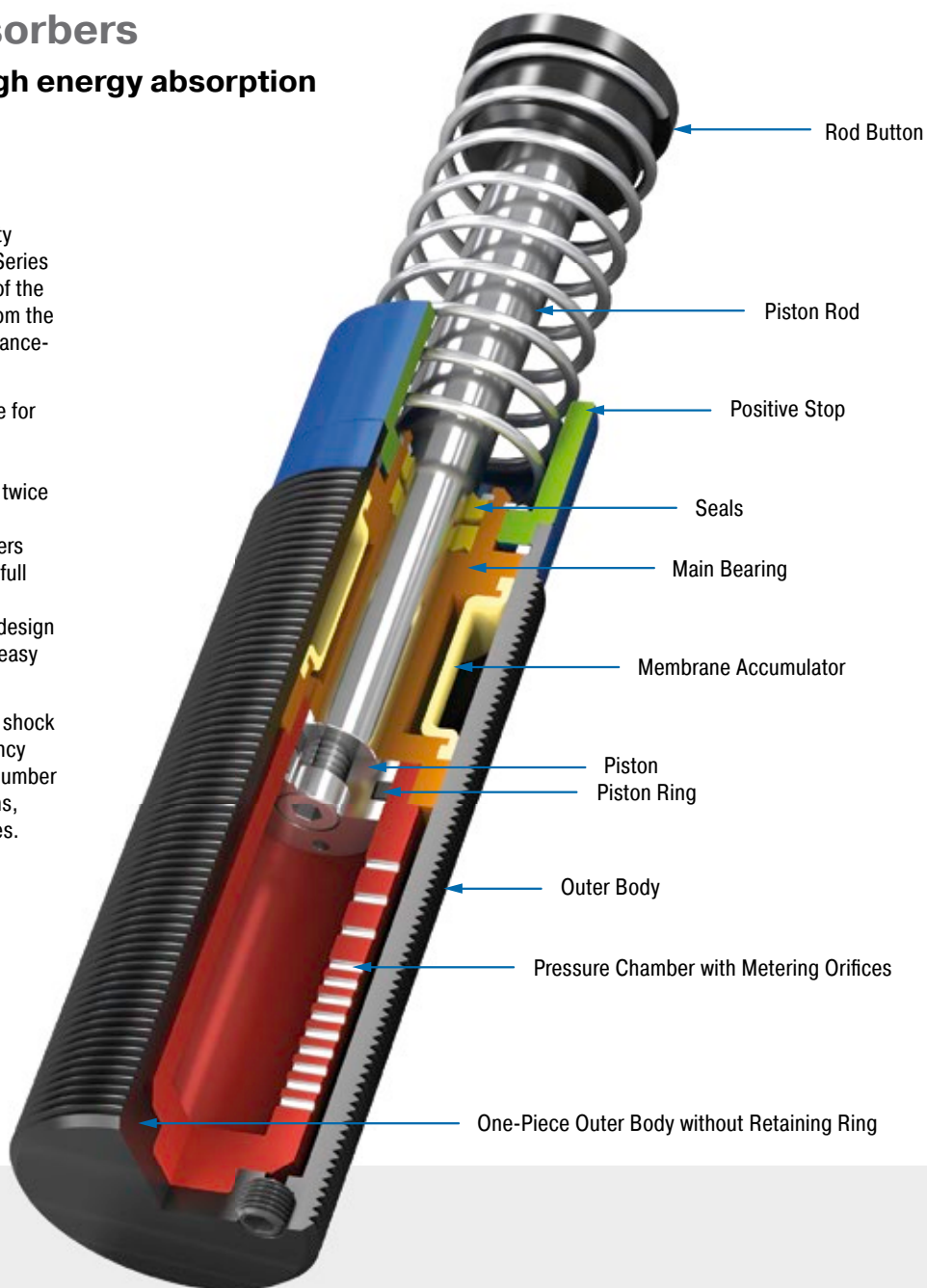
SCS33 to SCS64 Safety Shock Absorbers

Industry design with high energy absorption

Effective emergency stop: The ACE safety shock absorbers from the SCS33 to 64 Series 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

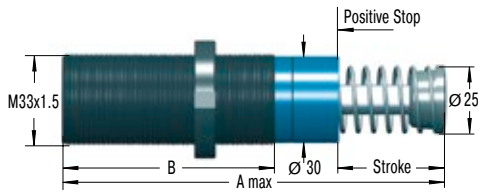
Damping medium: Automatic Transmission Fluid (ATF)

Application field: Finishing and processing centres, Conveyor systems, Portal systems, Test stations

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.

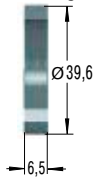
SCS33EU



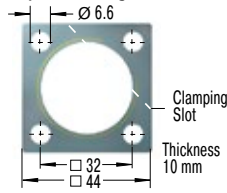
The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Accessories

NM33 Locking Ring

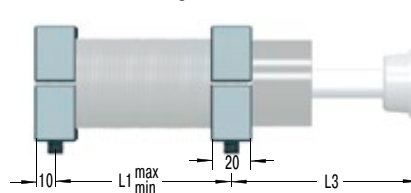


QF33 Square Flange

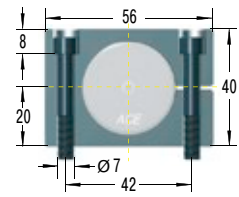


Torque max.: 11 Nm
Clamping torque: > 90 Nm
Install with 4 machine screws

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.

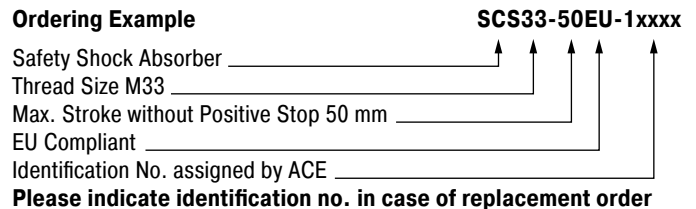


Complete details required when ordering

- 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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

Ordering Example



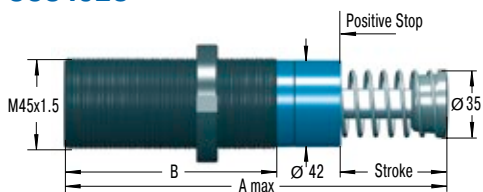
Performance and Dimensions

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	0.45
SCS33-50EU	620	950	45	135	48.6	189	108	32	86	93	2	0.54

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

Self-Compensating or Optimized Characteristic

SCS45EU

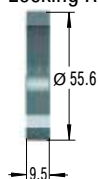


The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Accessories

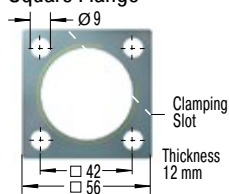
NM45

Locking Ring



QF45

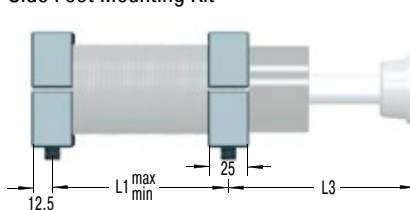
Square Flange



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

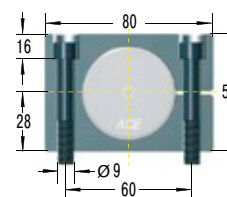
S45

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.

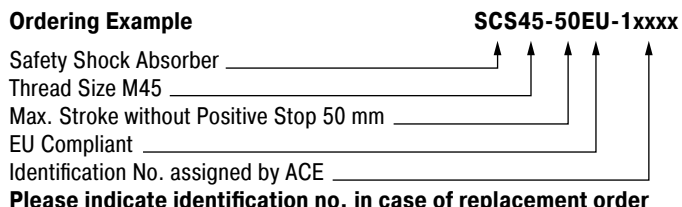


Complete details required when ordering

- 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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

Ordering Example



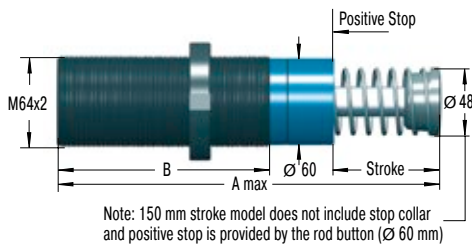
Please indicate identification no. in case of replacement order

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

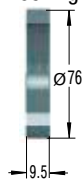


The calculation and selection of the most suitable damper should be carried out or be approved by ACE.

Accessories

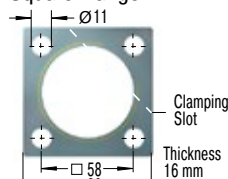
NM64

Locking Ring



QF64

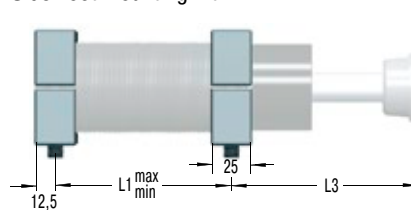
Square Flange



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

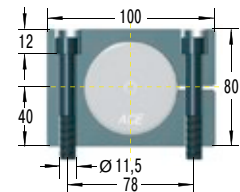
S64

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.

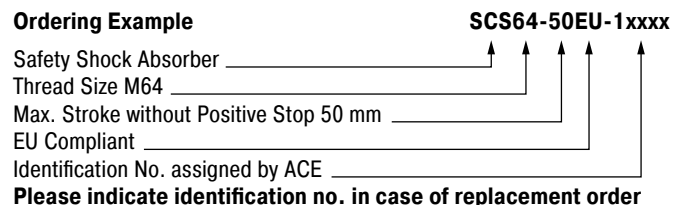


Complete details required when ordering

- 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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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										
SCS64-50EU	3,400	6,000	90	155	48.6	225	140	50	112	100	3	2.9
SCS64-100EU	6,800	12,000	105	270	99.4	326	191	64	162	152	2	4.2
SCS64-150EU	10,200	18,000	75	365	150.0	450	241	80	212	226	1	5.1

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

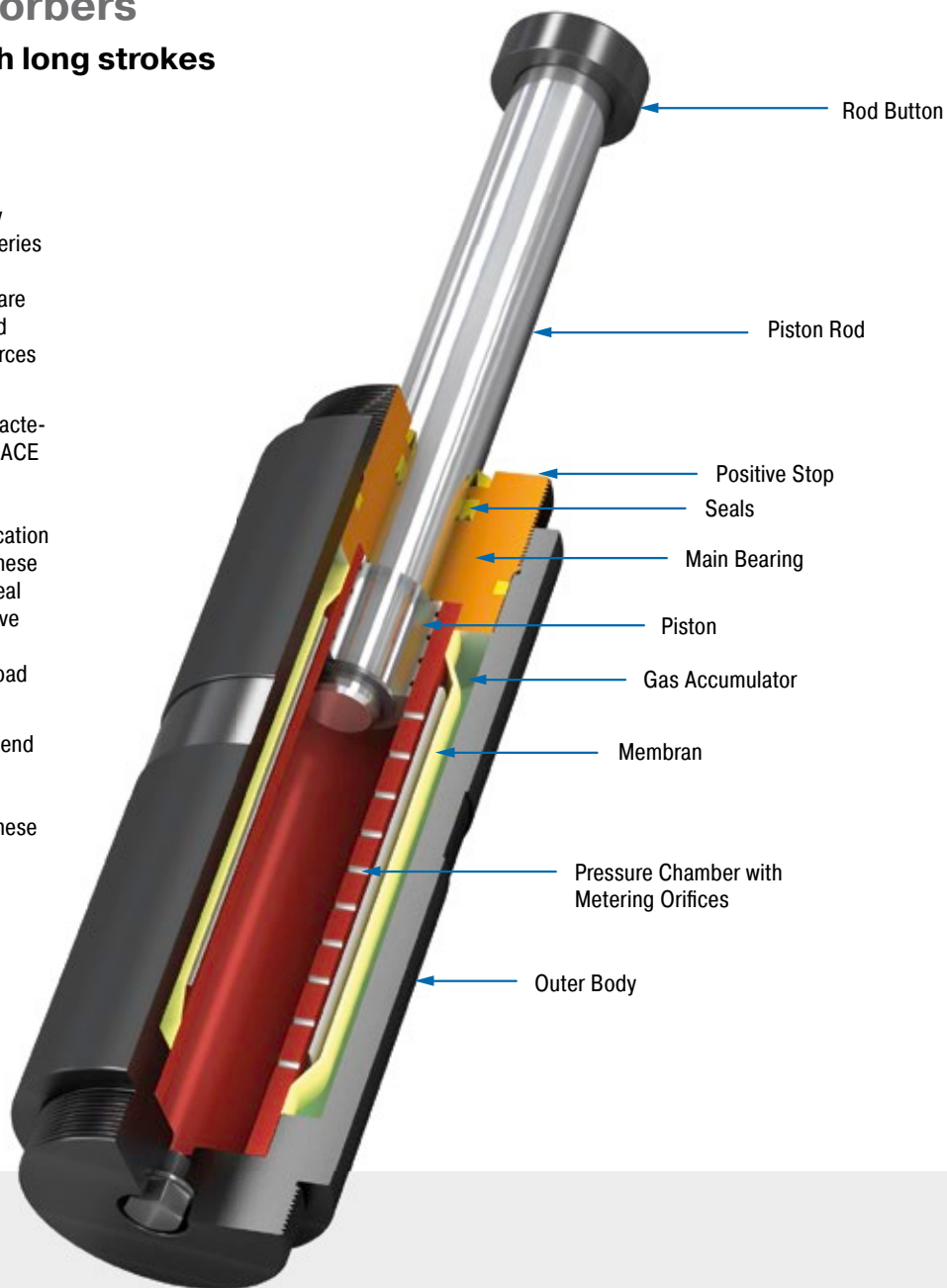
SDH38 to SDH63 Safety Shock Absorbers

Low reaction forces with long strokes

Intelligent protective measure: The safety shock absorbers from the SDH38 to 63 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

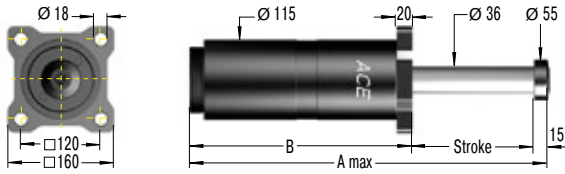
Filling pressure: Approx. 5 bar. Rod return by integrated nitrogen accumulator.

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

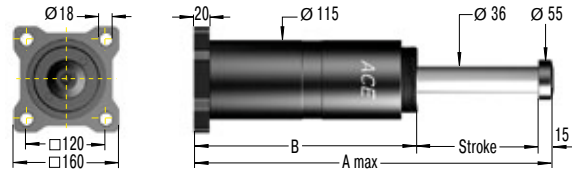
Note: For creep speed applications, please consult ACE.

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.

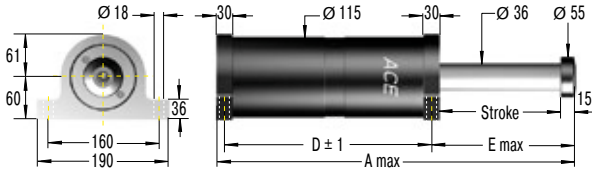
SDH38EU-F Front Flange



SDH38EU-R Rear Flange



SDH38EU-S Foot Mount



Technical Data

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

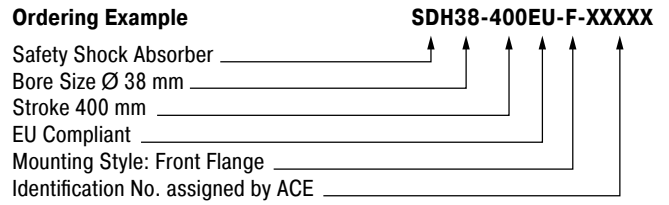
Complete details required when ordering

- 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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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

Ordering Example



Please indicate identification no. in case of replacement order

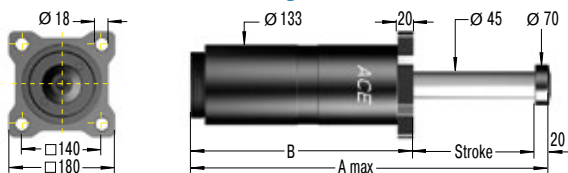
Performance and Dimensions

TYPES	¹ Energy capacity Nm/cycle	¹ Reacting force N	Return force min. N	Return force max. N	Stroke mm	A max. mm	B mm	D mm	E max. mm	Mounting Style	
										F and R Weight kg	S Weight kg
SDH38-50EU	3,600	80,000	600	700	50	270	204	165	84	13.5	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	19.5	19.7
SDH38-250EU	18,200	80,000	600	700	250	685	419	380	284	21.5	21.7
SDH38-300EU	21,800	80,000	600	700	300	800	484	445	334	23.5	23.7
SDH38-350EU	25,500	80,000	600	700	350	900	534	495	384	25.5	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

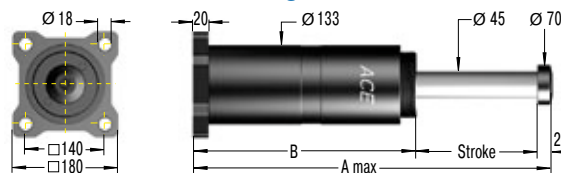
¹ The values apply to mounting style Front Flange and Foot Mounting. For mounting style Rear Flange, please consult ACE.
In case of an existing side load angle, please consult ACE.

High Rack Damper, Optimized Characteristic

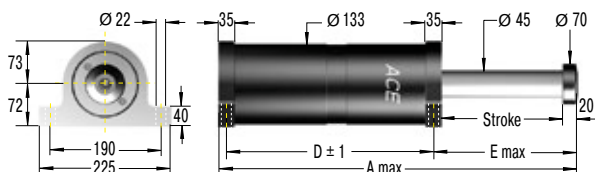
SDH50EU-F Front Flange



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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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 _____

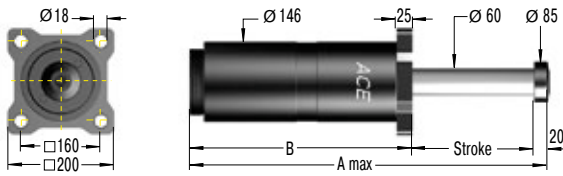
Please indicate identification no. in case of replacement order

Performance and Dimensions

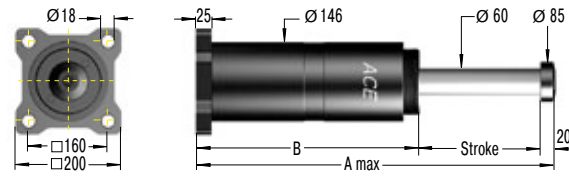
TYPES	¹ Energy capacity Nm/cycle	¹ Reacting force N	Return force min. N	Return force max. N	Stroke mm	A max. mm	B mm	D mm	E max. mm	Mounting Style	
										F and R Weight kg	S Weight kg
SDH50-100EU	14,500	160,000	1,000	1,200	100	416	297	258	139	23.5	25.0
SDH50-150EU	21,800	160,000	1,000	1,200	150	516	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.

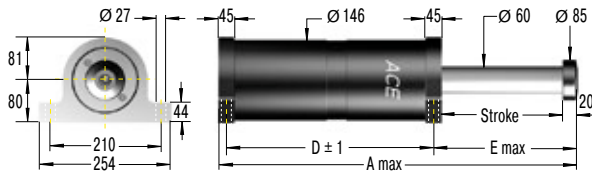
SDH63EU-F Front Flange



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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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

Ordering Example

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

SDH63-400EU-F-XXXXX

Please indicate identification no. in case of replacement order

Performance and Dimensions

TYPES	1 Energy capacity Nm/cycle	1 Reacting force N	Return force min. N	Return force max. N	Stroke mm	A max. mm	B mm	D mm	E max. mm	Mounting Style	
										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.

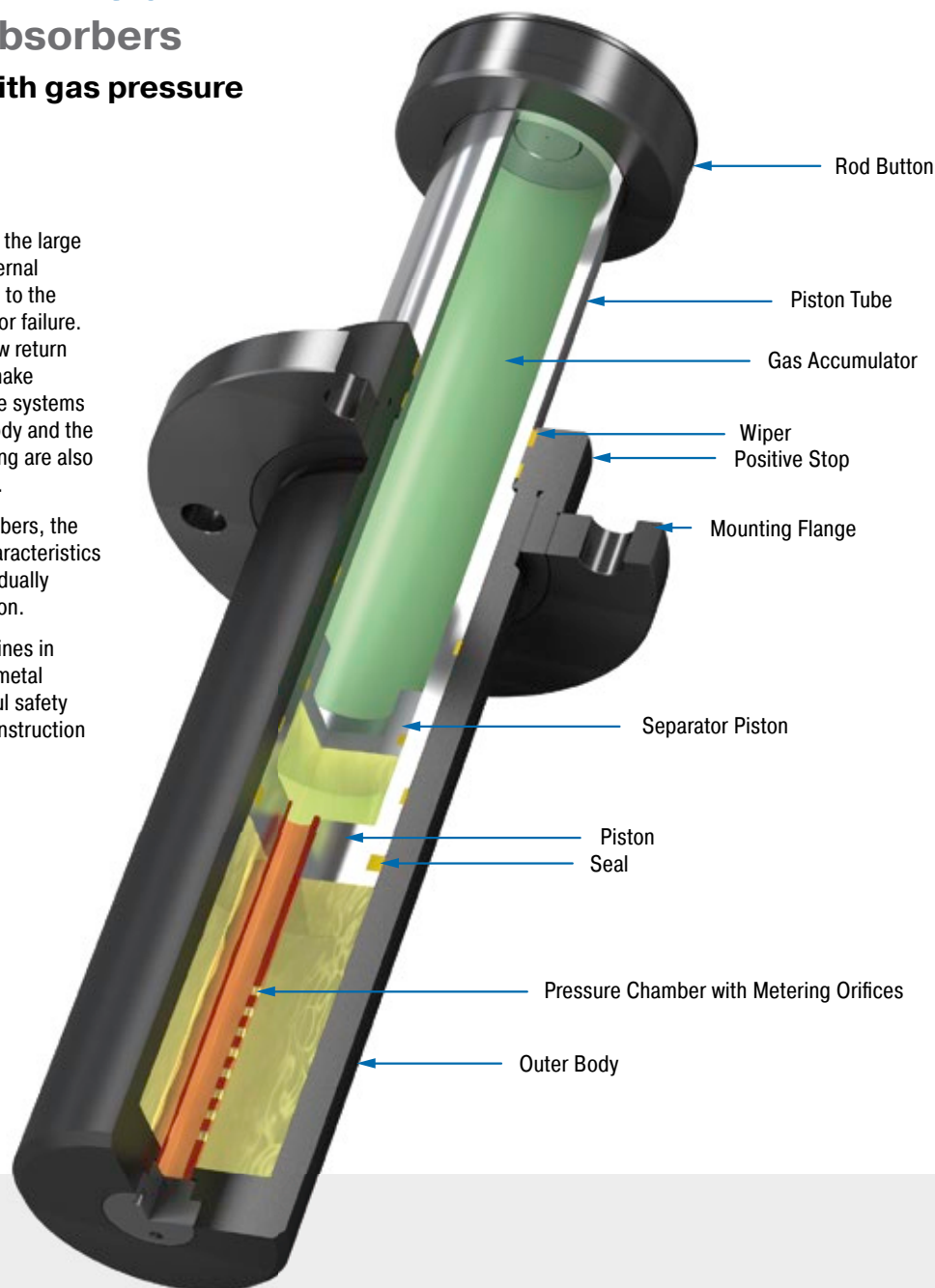
SDP63 to SDP160 Safety Shock Absorbers

High return forces with gas pressure accumulator

Reliability: The emergency stop from the large scale SDP63 to 160 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

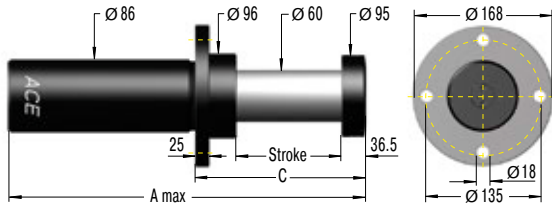
Filling pressure: Approx. 5 bar. Rod return by integrated nitrogen accumulator.

Application field: Shelf storage systems, Heavy load applications

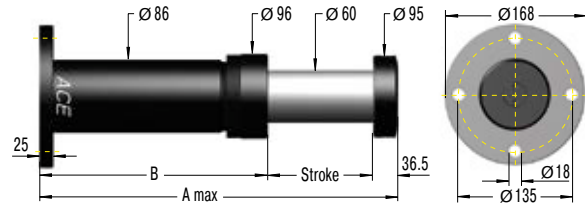
Note: The shock absorber can be pushed through its stroke. In creep speed conditions the shock absorber provides minimal resistance and there is no braking effect.

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.

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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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

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 _____ ↑

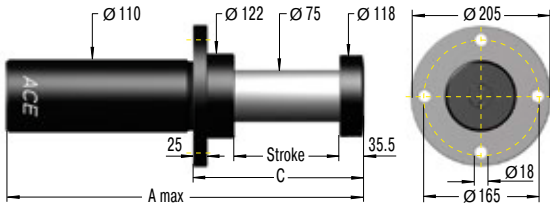
Please indicate identification no. in case of replacement order

Performance and Dimensions

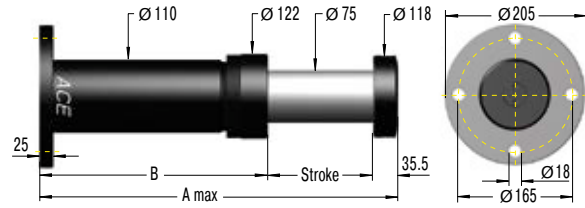
TYPES	Energy capacity Nm/cycle	Reacting force N	Return force min. N	Return force max. N	Stroke mm	A max. mm	B mm	C mm	Weight kg
SDP63-50EU	9,100	200,000	1,500	8,000	50	280	193.5	145	11
SDP63-75EU	13,600	200,000	1,500	10,000	75	360	248.5	170	12.5
SDP63-100EU	18,200	200,000	1,500	11,000	100	425	288.5	195	12.5
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.

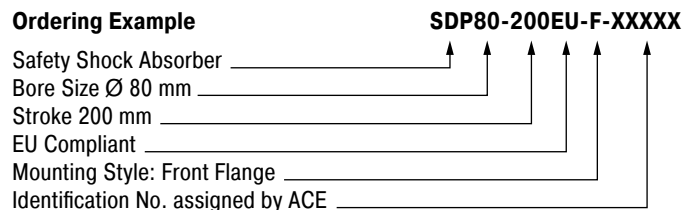
Complete details required when ordering

- 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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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

Ordering Example



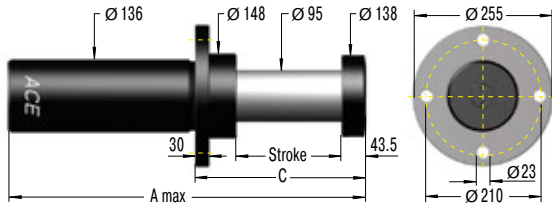
Please indicate identification no. in case of replacement order

Performance and Dimensions

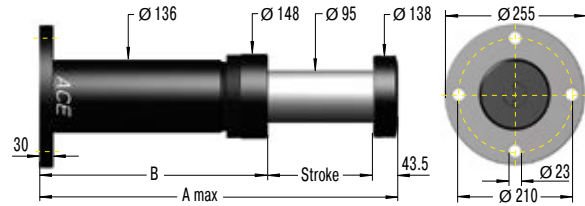
TYPES	Energy capacity Nm/cycle	Reacting force N	Return force min. N	Return force max. N	Stroke mm	A max. mm	B mm	C mm	Weight kg
SDP80-50EU	11,800	260,000	2,500	16,000	50	285	199.5	155	19
SDP80-100EU	23,600	260,000	2,500	16,000	100	440	304.5	205	23
SDP80-150EU	35,500	260,000	2,500	20,000	150	580	394.5	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.

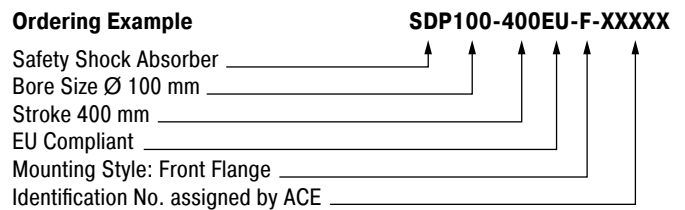
Complete details required when ordering

- 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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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

Ordering Example



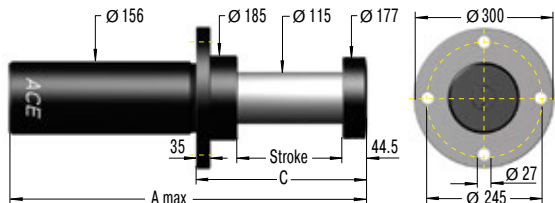
Please indicate identification no. in case of replacement order

Performance and Dimensions

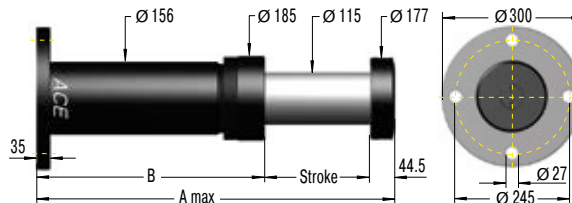
TYPES	Energy capacity Nm/cycle	Reacting force N	Return force min. N	Return force max. N	Stroke mm	A max. mm	B mm	C mm	Weight kg
SDP100-100EU	47,000	520,000	3,900	38,000	100	460	316.5	230	38
SDP100-200EU	95,000	520,000	3,900	38,000	200	750	506.5	330	53
SDP100-250EU	114,000	520,000	3,900	40,000	250	890	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.

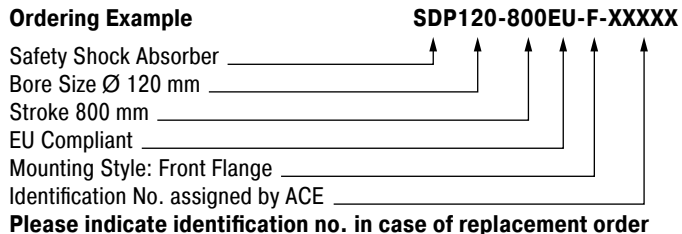
Complete details required when ordering

- 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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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

Ordering Example



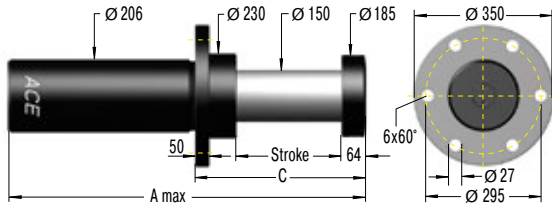
Please indicate identification no. in case of replacement order

Performance and Dimensions

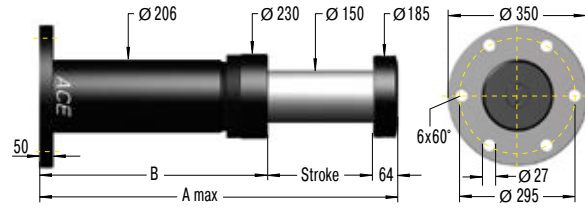
TYPES	Energy capacity Nm/cycle	Reacting force N	Return force min. N	Return force max. N	Stroke mm	A max. mm	B mm	C mm	Weight kg
SDP120-100EU	64,000	700,000	5,600	35,000	100	460	315.5	249	58
SDP120-200EU	127,000	700,000	5,600	70,000	200	750	505.5	355	72
SDP120-400EU	236,000	650,000	5,600	75,000	400	1,325	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.

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)
- Number of absorbers in parallel: n

or technical data according to formulae and calculations on page 259.

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

Ordering Example

SDP160-400EU-F-XXXXX

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

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

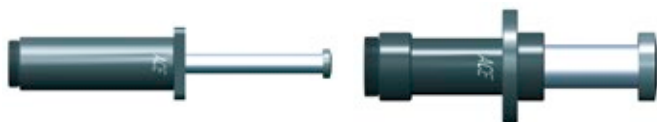
To mount the shock absorber, we recommend the use of original ACE mounting accessories shown in catalogue.

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

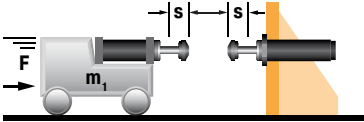
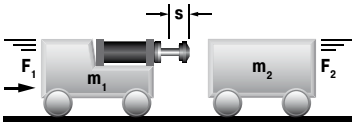
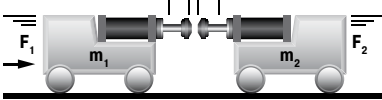
W ₁	Kinetic energy per cycle	Nm	² v _D	Impact velocity at shock absorber	m/s
W ₂	Propelling force energy per cycle	Nm	F	Propelling force	N
W ₃	Total energy per cycle (W ₁ + W ₂)	Nm	c	Cycles per hour	1/hr
¹ W ₄	Total energy per hour (W ₃ · x)	Nm/hr	s	Shock absorber stroke	m
me	Effective weight	kg	Q	Reaction 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>= 5000 Nm</td> </tr> <tr> <td>v = 2 m/s</td> <td>W₂ = 3500 · 0.10</td> <td>= 350 Nm</td> </tr> <tr> <td>F = 3500 N</td> <td>W₃ = 5000 + 350</td> <td>= 5350 Nm</td> </tr> <tr> <td>s = 0.10 m (chosen)</td> <td>v_D = 2 · 0.5</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>= 5950 Nm</td> </tr> <tr> <td>v₁ = 1.2 m/s</td> <td>W₂ = 5000 · 0.10</td> <td>= 500 Nm</td> </tr> <tr> <td>m₂ = 10000 kg</td> <td>W₃ = 5950 + 500</td> <td>= 6450 Nm</td> </tr> <tr> <td>v₂ = 0.5 m/s</td> <td>v_D = 1.2 + 0.5</td> <td>= 1.7 m/s</td> </tr> <tr> <td>F = 5000 N</td> <td></td> <td></td> </tr> <tr> <td>s = 0.10 m (chosen)</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>= 2975 Nm</td> </tr> <tr> <td>v₁ = 1.2 m/s</td> <td>W₂ = 5000 · 0.10</td> <td>= 500 Nm</td> </tr> <tr> <td>m₂ = 10000 kg</td> <td>W₃ = 2975 + 510</td> <td>= 3475 Nm</td> </tr> <tr> <td>v₂ = 0.5 m/s</td> <td>v_D = (1.2 + 0.5) : 2</td> <td>= 0.85 m/s</td> </tr> <tr> <td>F = 5000 N</td> <td></td> <td></td> </tr> <tr> <td>s = 0.10 m (chosen)</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

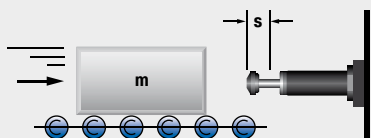
SCS45EU

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.



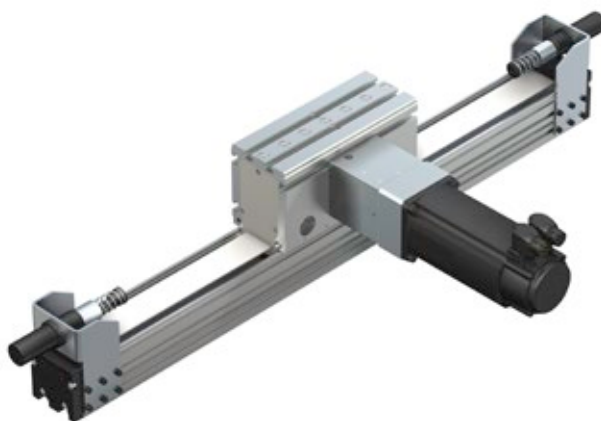
Optimally protected turntable



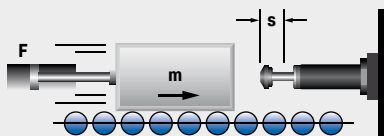
SCS33EU, SCS45EU

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.



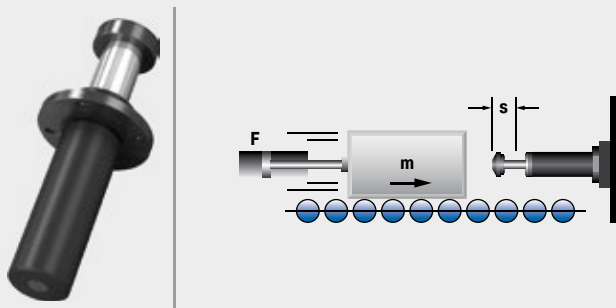
For protecting equipment and modules such as these, the SCS series from ACE is the ideal solution in the emergency stop sector
Roth GmbH & Co. KG, 90411 Nürnberg, Germany and
Bosch Rexroth AG, 97816 Lohr am Main, Germany



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.

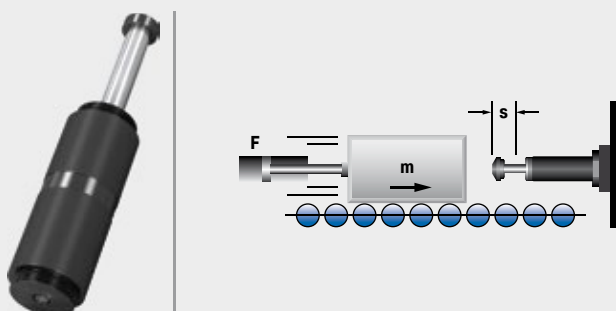


Heavy safety shock absorbers, which are specially designed for this application, are able to brake in lock masses of up to four million kg
Mourik Limburg BV, 6101 AJ Echt, Netherlands

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

Safety Dampers

Top for emergency stopping

The extremely successful TUBUS series from ACE is suitable for emergency stopping, as overrun protection or as end stop dampers. Available in different variations for heavy duty or crane installations, these profile dampers are perfect when loads do not need to be instantly decelerated or when working under extreme conditions.

Manufactured in co-polyester elastomer, the highly resistant absorbers provide high force and energy absorption in areas where other materials fail or where a similarly high service life of up to 1 million load changes cannot be achieved. They are cost-effective and distinguished by the small, light design. With energy absorption within a range of 450 and 17,810 Nm, they can be considered as an alternative to hydraulic end position damping.



Safety Dampers



TUBUS TC and TC-S

Page 264

Crane Installations

Compact powerhouse

Crane systems, Loading and lifting equipment, Hydraulic devices, Electro-mechanical drives

TUBUS TI

Page 266

Irreversible Emergency Stop Damper

Compact one-off deceleration

Emergency stop damping in linear axes, Portal systems, Test stations, Electro-mechanical drives

Extremely durable

Highly resistant co-polyester elastomers

Lightweight designs

Cost-effective use

Heavy-duty versions available



TUBUS TC and TC-S

Safety Dampers

Compact powerhouse

For even more protection: The profile dampers from the TC range of the ACE TUBUS-Series can also be used as safety dampers. These maintenance-free, ready-to-install damping elements made of co-polyester elastomer have been specially developed for use in crane systems and fulfil the international industry standards OSHA and CMAA. In the special TC-S design, managed to achieve the spring rate required for crane systems with the unique dual concept.

Whether TC-S or TC, this range of models represents a cost-effective solution with high energy absorption for energy management systems. The very small and light design of Ø 64 mm to Ø 176 mm progressively covers energy absorption within a range of 450 Nm to 17,810 Nm.

The profile dampers from the TC range protect cranes, loading and lifting equipment, hydraulic units and much more.



Profile Body

Mounting Screw

Technical Data

Energy capacity: 630 Nm/Cycle to 17,810 Nm/Cycle

Energy absorption: 31 % to 64 %

Dynamic force range: 80,000 N to 978,000 N

Operating temperature range: -40 °C to +90 °C

Construction size: 64 mm to 176 mm

Material hardness rating: Shore 55D

Material: Profile body: Co-Polyester Elastomer

Mounting: In any position

Environment: Resistant to microbes, seawater or chemical attack. Excellent UV and ozone resistance. Material does not absorb water or swell.

Impact velocity range: Max. 5 m/s

Torque max.:

M12: 50 Nm

M16: 40 Nm (DIN912)

M16: 120 Nm (shouldered screw)

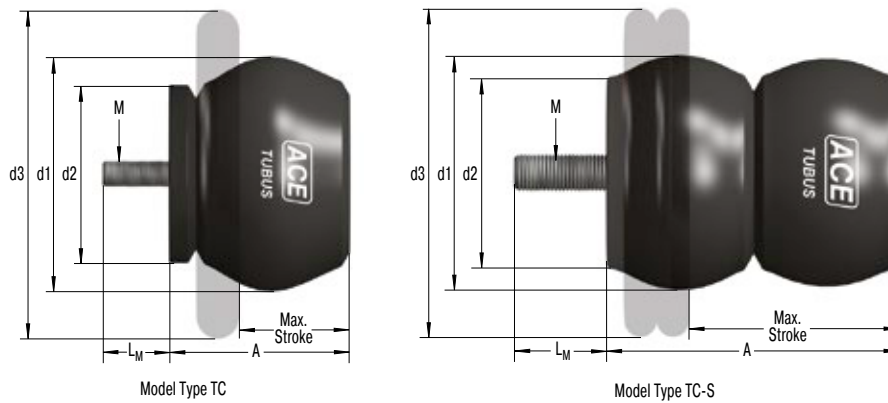
Application field: Crane systems, Loading and lifting equipment, Hydraulic devices, Electro-mechanical drives

Note: Suitable for emergency stop applications and for continuous use. For applications

with preloading and increased temperatures please consult ACE.

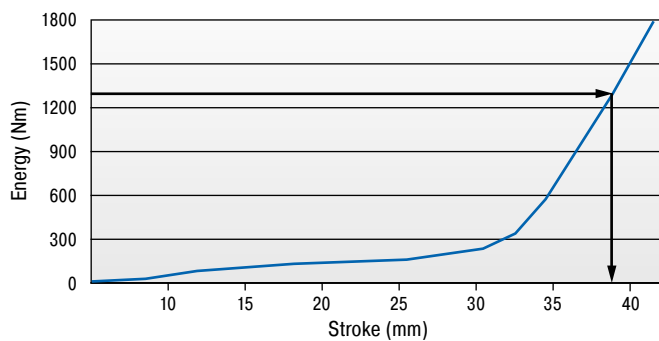
On request: Special strokes, -characteristics, -spring rates, -sizes and -materials.

TC

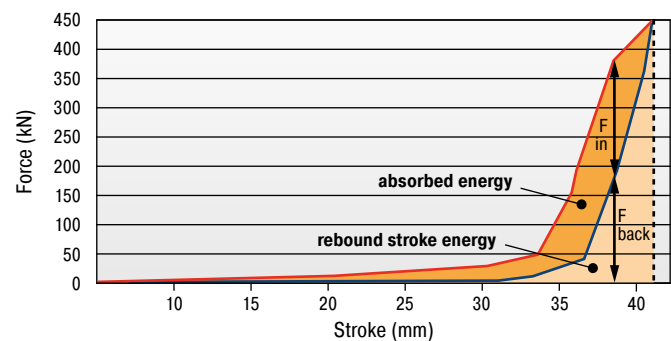


Characteristics

Type TC90-49
Energy-Stroke Characteristic (dynamic)
(with impact velocity over 0.5 m/s)



Type TC90-49
Force-Stroke Characteristic (dynamic)
(with impact velocity over 0.5 m/s)



With the aid of the characteristic curves above you can estimate the proportion of the total energy that will be absorbed.

Example: With impact energy of 1,300 Nm the Energy-Stroke diagram shows that a stroke of about 38 mm is needed.

On the Force-Stroke diagram you can estimate the proportion of absorbed energy to rebound energy at this stroke length.

Note: With these types the return force towards the end of the stroke is significant and we recommend you try to use a minimum of 90 % of the total stroke available.

Dynamic ($v > 0.5$ m/s) and static ($v \leq 0.5$ m/s) characteristics of all types are available on request.

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

Ordering Example

TUBUS Crane Buffer _____ **TC83-73-S**
 Outer-Ø 83 mm _____
 Stroke 73 mm _____
 Model Type Soft _____

Performance and Dimensions

TYPES	Emergency stop		Stroke max. mm	A mm	d1 mm	d2 mm	d3 mm	L _M mm	M	Weight kg
	¹ W ₃ Nm/cycle	W ₃ Nm/cycle								
TC64-62-S	450	630	62	79	64	52	89	12	M12	0.175
TC74-76-S	980	1,372	76	96	74	61	114	12	M12	0.261
TC83-73-S	1,940	2,715	73	94	83	69	127	12	M12	0.328
TC86-39	1,210	1,695	39	56	86	78	133	12	M12	0.284
TC90-49	1,640	2,295	49	68	90	67	124	12	M12	0.265
TC100-59	1,785	2,500	59	84	100	91	149	12	M12	0.513
TC102-63	1,970	2,760	63	98	102	82	140	22	M16	0.633
TC108-30	1,900	2,660	30	53	108	77	133	12	M12	0.392
TC117-97	3,710	5,195	97	129	117	100	188	16	M16	1.053
TC134-146-S	7,310	10,230	146	188	134	117	215	30	M16	1.573
TC136-65	4,250	5,950	65	106	136	106	178	16	M16	1.173
TC137-90	6,350	8,890	90	115	137	113	216	21	M16	1.193
TC146-67-S	8,330	11,660	67	118	146	99	191	16	M16	1.573
TC150-178-S	8,860	12,400	178	241	150	132	224	16	M16	2.581
TC153-178-S	7,260	10,165	178	226	153	131	241	16	M16	2.493
TC168-124	10,100	14,140	124	166	168	147	260	16	M16	2.533
TC176-198-S	12,725	17,810	198	252	176	150	279	16	M16	3.685

¹ Max. energy capacity per cycle for continuous use.

TUBUS TI

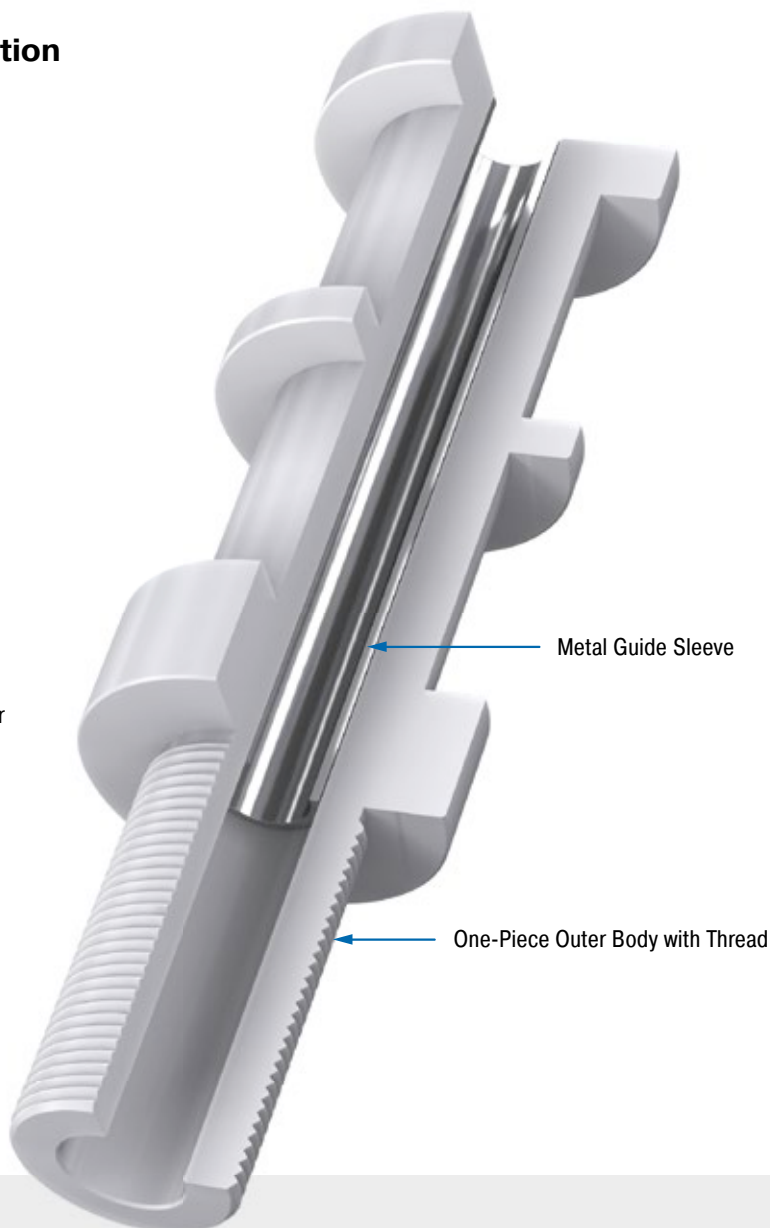
Safety Dampers

Compact one-off deceleration

Once only, but safely: ACE now offers these innovative single use TUBUS TI absorbers for emergency stop applications as an alternative to the successful TUBUS profile dampers. In comparison to standard elastomer absorbers, these safety dampers ensure energy absorption of up to 96 % without a recoil effect. The dampers are deformed in the impact and cannot be reused afterwards.

The easy to assemble and maintenance-free single hit damper are also a cost-effective alternative to the hydraulic safety shock absorbers from ACE. They are made of a high quality synthetic with an inside metal core and absorb up to 4,510 Nm energy.

The TUBUS TI is mainly used as emergency stop damping in linear axes, tool machines, servo drives with high speeds and other similar areas.



Technical Data

Energy capacity: 562 Nm/Cycle to 4,510 Nm/Cycle

Energy absorption: 91 % to 96 %

Dynamic force range: 37,100 N to 121,100 N

Operating temperature range:

-40 °C to +90 °C, Co-polyester Elastomer

-25 °C to +50 °C, Polymer

Construction size: 32 mm to 50 mm

Material: Profile body: Co-Polyester elastomer or polymer; Guide sleeve: Metal

Mounting: In any position

Environment: Resistant to lubricants and chemical attack according to resistance list. No UV resistance.

Impact velocity range: Max. 5 m/s

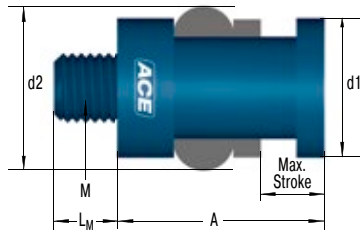
Torque max.: Finger tight

Application field: Emergency stop damping in linear axes, Portal systems, Test stations, Electro-mechanical drives

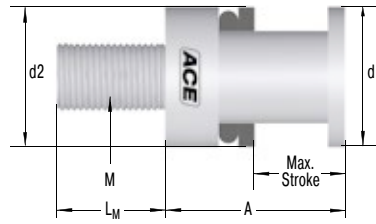
Note: The single-use damper must be replaced after each impact.

On request: Other construction sizes on request.

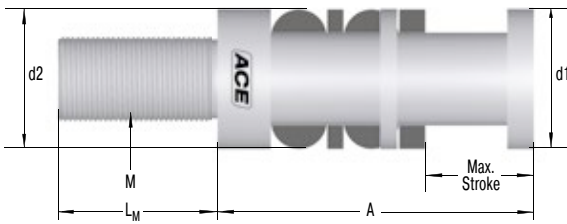
TI16



TI24



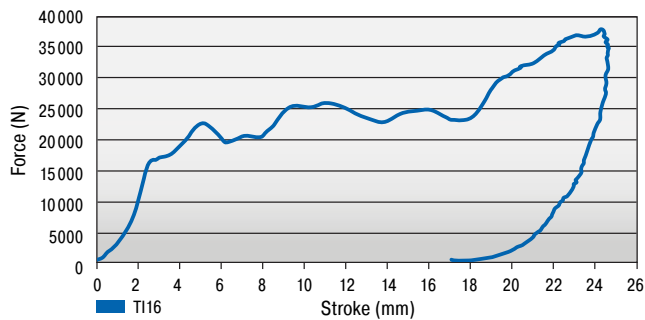
TI30



Characteristics

Force-Stroke TI16

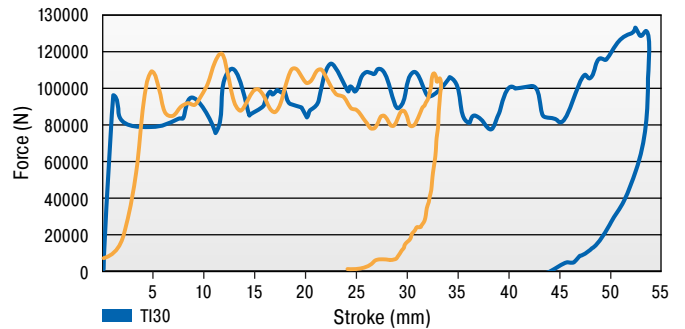
Dynamic trials on a drop test rig



Total energy: 562 Nm
Absorbed energy: 511 Nm
Efficiency: 91 %

Force-Stroke TI30 and TI24

Dynamic trials on a drop test rig



Total energy: 4,510 Nm
Absorbed energy: 4,309 Nm
Efficiency: 96 %

Total energy: 2,701 Nm
Absorbed energy: 2,545 Nm
Efficiency: 94 %

The characteristic values have been established under dynamic load.

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

Ordering Example

TUBUS irreversible _____ ↑ ↑ ↑
Thread Size M 16 _____ ↑
Stroke 25 mm _____ ↑
Number of bellows _____ ↑
TI16-25-1

Performance and Dimensions

TYPES	Energy capacity emergency use Nm/cycle	Stroke max. mm	Reacting force N	A mm	d1 mm	d2 mm	L _M mm	M	Depth thread hole min. mm	Weight kg
TI16-25-1	562	25	37,138	48	32	38	15	M16x2	25	0.050
TI24-33-1	2,701	33	113,590	64.5	50	50	40	M24x3	40	0.140
TI30-52-2	4,510	52	121,130	113	50	50	57	M30x3.5	63	0.248

Clamping Elements

On-the-spot clamping and stopping in emergencies and other situations

Clamping elements from the LOCKED series also serve the purpose of safety. These ACE products clamp and decelerate loads and are suitable for perfectly controlled holding, both linear and rotary, in all processes.

Alongside ACE LOCKED solutions for conventional rail, rod or rotation clamping, special clamps with safety function for Z-axes, which reliably help secure axes with a gravitational load, are available in the LOCKED LZ-P series. The latter solution is available for both pneumatic operation and as an electric version. Whether Z-axes, linear guide, rod or rotation clamping, the choice is (typical of ACE) as large as the performance capacity of the products, which are compatible with the solutions of all standard manufacturers.



LOCKED by ACE. After all, safe is safe.

Increased process reliability

Available as clamping and emergency stop brakes

Very short stop distances

Very high clamping forces

Compact designs

Ideal for all standard sizes



Rail Clamping

For safe deceleration of rail-guided construction elements

Safe deceleration of a mass that is traversed with the help of a rail and guide rail and track carriage combination must be complied with and not only for safety reasons; reliable clamps in the production processes are also becoming increasingly important.

Both features can be taken care of by the clamping elements from ACE. All clamping elements work with the patented spring steel plate system.

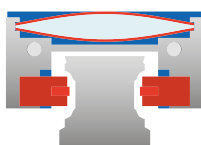
This system achieves braking and clamping forces of up to 10,000 N. The clamping elements are always individually adapted to the used linear guide. They are available for all rail sizes and profiles for all renowned manufacturers.

Function of clamping elements LOCKED PL/SL/PLK/SLK

All process and safety clamps work with the reinforced spring steel plate system.

Compressed air is introduced between the two spring plates, which are connected with a surrounding rubber coating.

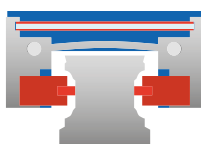
If pressure is applied, the clamping element can freely move; if the clamping element is vented clamping to the guide rail follows.



Clamping element ventilated

Released

The chamber filled with compressed air between the spring steel plates relaxes and thus releases the clamping/brake pads from the rail. The clamping element is now free to move.



Clamping element vented

Engaged

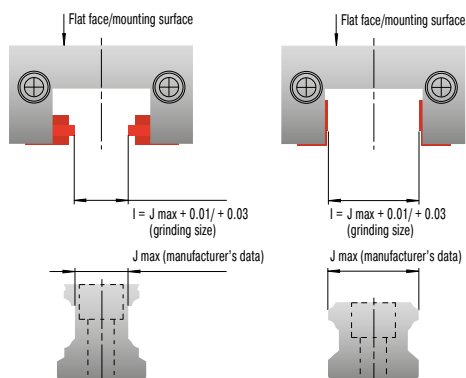
The clamping force of the mechanically pre-stressed spring steel plates is transferred to the clamping/brake pads as holding force. The clamping element is clamped on the guide rail.

Slot dimensions between braking and clamping linings and linear guide rail

The internal dimension "I" between the linings of every LOCKED rail clamping is ground to an exact value.

This is always 0.01 to 0.03 mm greater than the upper limit J max. of the respective linear guide rail (see drawing), resulting from the manufacturer's directives.

The maximum holding force results at J max. and, in the most unfavorable case, holding force losses up to 30 % can occur (see table).



Air Gap Lining/Linear Guide Rail mm	Loss in Holding Force %
0.01	5
0.03	10
0.05	20
0.07	30

Different brake pads for PL/PLK and for SL/SLK

The process clamps and safety clamps are available completely identical in their structure.

They differ only in the clamping and brake pads material.



Clamping

Position Clamping

The types of the LOCKED series PL and PLK are designed for clamping directly on the linear guide. The clamping linings are produced from tool steel and offer 100 % clamping force, even in the case of lubricated rails.



Braking

Position Clamping and Emergency Stop Braking

With the typical SL, SLK, low-wear sinter graphite linings are employed. These enable both a position clamping, as well as emergency stop braking on the linear guide. In case of lubricated rails, a stopping force of 60 % of the nominal stopping force should be considered.

Rod Clamping

The modular solution for exact holding at certain positions

Safe and reliable stopping at a position or an operating state is an important part of many production processes. This task can be performed by the clamping elements from ACE. If clamping on a rod is required, the clamping elements of the PN and PRK families are the right choice.

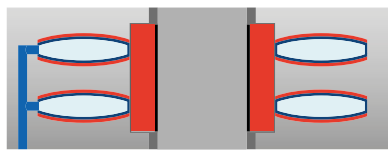
Safe and reliable stopping at a position or an operating state is an important part of many production processes. This task can be performed by the clamping elements from ACE. If clamping on a rod is required, the clamping elements of the PN and PRK families are the right choice.

The PN and PRK rod clamps can absorb both axial and rotary forces.

Function of clamping elements LOCKED PN and PRK

Consisting of a deck plate, one to three clamping units and a base plate, all rod clamps work with the reinforced spring steel plate system.

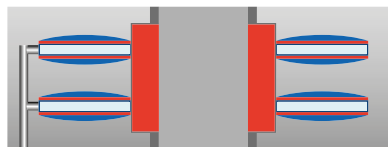
Through that, both axial and rotary forces can be absorbed.



Clamping element is released

Released

The membrane filled with compressed air relaxes the spring steel plate system and releases the clamping sleeve.



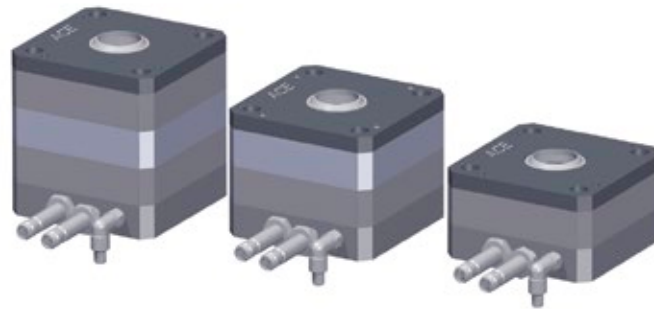
Clamping element is engaged

Engaged

The clamping force of the mechanically pre-stressed spring steel plates system is transferred as a holding force into the clamping sleeve. The rod or shaft is engaged.

Intelligent component system solution

By connecting up to three clamping units between the base and deck plates, it is possible to easily increase the clamping force.



Modular construction

Component tolerances for LOCKED PN and PRK

Design-related, the addition of the individual component tolerances leads to an elastic axial tolerance allowance. This axial tolerance allowance can be up to 500 µm in the clamped status, according to implementation!

The axis/shaft/rod must be machined with at least h9-fit (or better) above h5. Deviations from the prescribed tolerance can lead to reduction of the stopping force, or functional failure.



Rod clamping

Rotational Clamping

The reliable protection against twisting

Reliable holding and securing against a rotation of a position are important elements in many production processes.

This task can be performed by means of the clamping elements of the Locked R family. The rotational clamps can, thanks to the patented spring steel plate system, transfer holding torques of up to 4,680 Nm to the shaft.

The spring accumulator can immediately clamp the axis during a power failure.

Function of clamping elements LOCKED R

The reinforced spring steel plate system transfers holding torques in the shortest possible time.



Clamping element is released

Released

The membrane filled with compressed air relaxes the spring steel plate system and releases the clamping ring. The shaft is free to move.



Clamping element is engaged

Engaged

The clamping force of the membrane/spring steel plates systems is transferred to the holding force of the clamping ring. The shaft is clamped.

Function of clamping elements LOCKED Z with additional air

If higher holding torques are required, the rotational clamps with an additional air function are used.

With the same size, significantly higher holding torques are achieved.



Increased clamping force with additional air

Engaged with additional air

By filling the outer membrane chamber with additional compressed air (4 or 6 bar), there is the possibility to increase the clamping force. The clamping element is engaged in this condition.

Clamping Elements



LOCKED PL

Page 274

Process Clamping for Rail Systems

High clamping power for all rail profiles

 Tool machines, Transport systems, Feeder installations,
Positioning tables


LOCKED PLK

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Process Clamping for Rail Systems, Compact

High clamping power for all compact design rail profiles

 Tool machines, Transport systems, Feeder installations,
Positioning tables


LOCKED SL

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Safety Clamping for Rail Systems

Combined clamping and braking

 Tool machines, Transport systems, Feeder installations,
Positioning tables


LOCKED SLK

Page 280

Safety Clamping for Rail Systems, Compact

Combined compact design clamping and braking

 Tool machines, Transport systems, Feeder installations,
Positioning tables


LOCKED LZ-P

Page 282

Rail Clamping for Z-Axes

Certified safety clamping

Z-axes, Vertical conveyor systems, Jacking applications



LOCKED PN

Page 284

Pneumatic Rod Clamping

Rod clamping with maximum clamping force

 Jacking systems, Light presses, Punching/stamping machines,
Stacking units


LOCKED PRK

Page 286

Pneumatic Rod Clamping, Compact

Rod clamping with maximum clamping force in a compact size

 Jacking systems, Light presses, Punching/stamping machines,
Stacking units


LOCKED R

Page 288

Pneumatic Rotational Clamping

Strong holding force on the shaft

Drive shafts, Torque motors, Conveyor systems

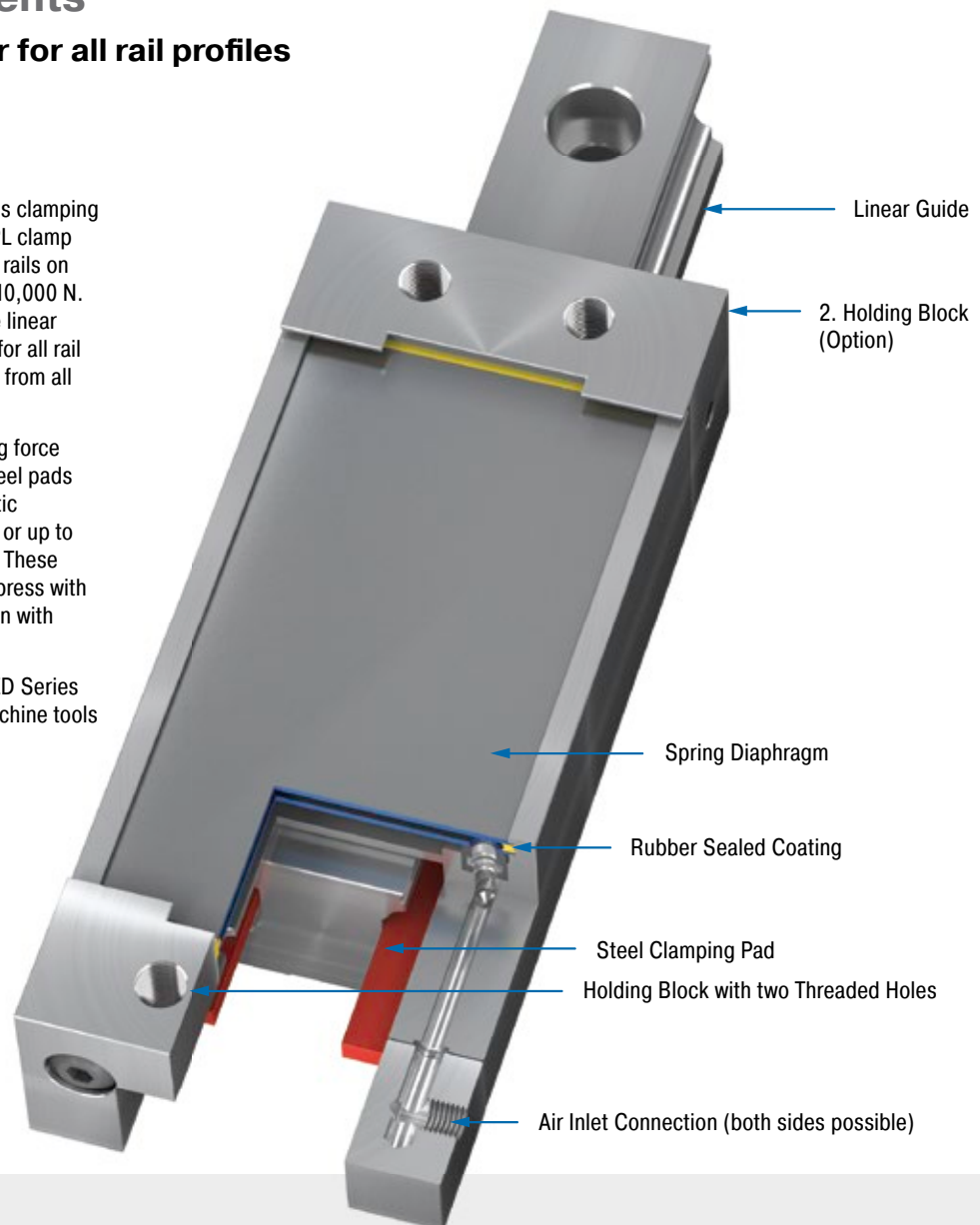
LOCKED PL Clamping Elements

High clamping power for all rail profiles

Always on the safe side: The process clamping elements from the LOCKED series PL clamp directly onto the clear area of guide rails on linear modules with forces of up to 10,000 N. They are individually adjusted to the linear guide being used and are available for all rail sizes from 20 to 65 mm and profiles from all renowned manufacturers.

This series achieves 100 % clamping force even on greased rails, due to the steel pads that are used. It offers optimum static clamping with up to 1 million cycles or up to 500 emergency braking operations. These process clamping elements also impress with their low system costs in comparison with hydraulic and electric solutions.

The various models from the LOCKED Series PL from ACE are mainly used on machine tools and customised machines.



Technical Data

Holding forces: 540 N to 10,000 N

Rail sizes: 20 mm to 65 mm

Clamping cycles: 1,000,000/500. Higher values on request.

Mounting: In any position

Operating pressure: 4 bar (automotive) or 6 bar

Material: Outer body: Tool steel

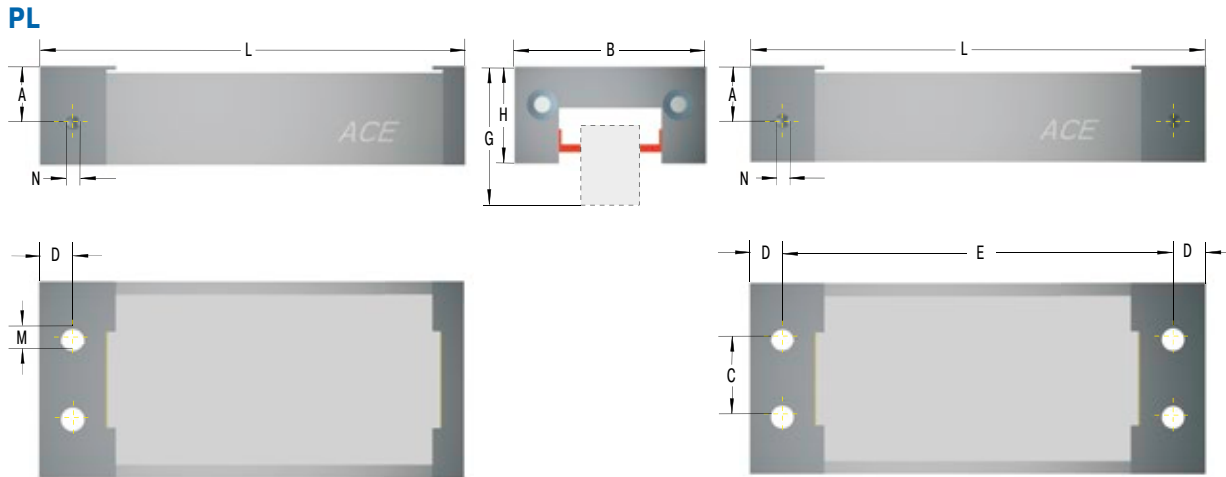
Pneumatic medium: Dried, filtered air

Operating temperature range: 15 °C to 45 °C

Application field: Tool machines, Transport systems, Feeder installations, Positioning tables

Note: If requested installation drawings of the respective types are provided.

On request: Special designs on request.



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

Complete details required when ordering

Operating pressure: 4 bar or 6 bar

Ordering Example

Linear Process Clamping PL45-2-6B-X
 Rail Nominal Size 45 mm
 Number of Holding Blocks 2
 6B = 6 bar Type
 4B = 4 bar Type
 Series Number assigned by ACE

Performance and Dimensions

TYPES	Holding force N	Operating pressure bar	B mm	C mm	D mm	E mm	L mm	Low Carriage			High Carriage			M	N	Weight kg
								A mm	G mm	H mm	A mm	G mm	H mm			
PL20-1-4B	540	4	43	12	6	-	97.5	13.5	30	19.5	-	-	-	M5	M5	0.32
PL20-1-6B	900	6	43	12	6	-	97.5	13.5	30	19.5	-	-	-	M5	M5	0.32
PL25-1-4B	780	4	47	16	6	-	117.5	15.5	36	25	19.5	40	29	M6	M5	0.50
PL25-1-6B	1,200	6	47	16	6	-	117.5	15.5	36	25	19.5	40	29	M6	M5	0.50
PL30-1-4B	1,100	4	59	18	10	-	126.5	17.0	42	29.5	20.0	45	32.5	M8	M5	0.90
PL30-1-6B	1,800	6	59	18	10	-	126.5	17.0	42	29.5	20.0	45	32.5	M8	M5	0.90
PL35-1-4B	1,800	4	69	22	10	-	156.5	22.5	48	35	29.5	55	42	M10	G1/8	1.26
PL35-1-6B	2,800	6	69	22	10	-	156.5	22.5	48	35	29.5	55	42	M10	G1/8	1.26
PL45-1-4B	2,400	4	80	28	10	-	176.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
PL45-1-6B	4,000	6	80	28	10	-	176.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
PL45-2-4B	2,400	4	80	28	10	171.2	191.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
PL45-2-6B	4,000	6	80	28	10	171.2	191.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
PL55-1-4B	3,600	4	98	34	12.5	-	202.5	28.0	70	49	38.0	80	59	M10	G1/8	3.90
PL55-1-6B	6,000	6	98	34	12.5	-	202.5	28.0	70	49	38.0	80	59	M10	G1/8	3.90
PL55-2-4B	3,600	4	98	34	12.5	196.2	221.5	28.0	70	49	38.0	80	59	M10	G1/8	4.10
PL55-2-6B	6,000	6	98	34	12.5	196.2	221.5	28.0	70	49	38.0	80	59	M10	G1/8	4.10
PL65-1-4B	6,000	4	120	44	15	-	259.5	38.0	90	64	48.0	100	74	M12	G1/8	5.00
PL65-1-6B	10,000	6	120	44	15	-	259.5	38.0	90	64	48.0	100	74	M12	G1/8	5.00
PL65-2-4B	6,000	4	120	44	15	251.5	281.5	38.0	90	64	48.0	100	74	M12	G1/8	5.20
PL65-2-6B	10,000	6	120	44	15	251.5	281.5	38.0	90	64	48.0	100	74	M12	G1/8	5.20

¹ The holding forces as shown in the capacity chart were determined on dry rails for roller systems (STAR, INA). Different holding forces may occur for other rails.

LOCKED PLK

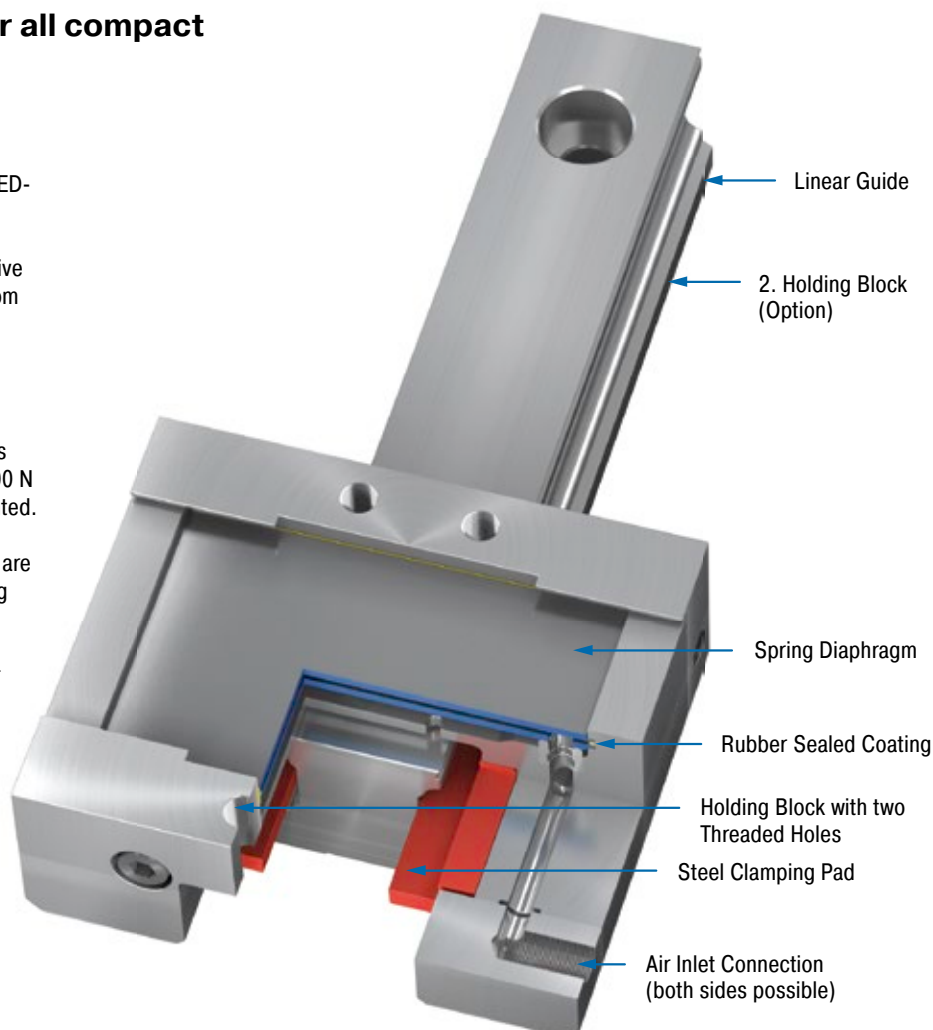
Clamping Elements

High clamping power for all compact design rail profiles

Small can clamp perfectly too: The LOCKED-Series PLK clamping elements are more compact than the Series PL components. They also clamp directly onto the respective linear guide, suit all standard rail sizes from 15 to 55 mm and profiles from the known suppliers and are extremely reliable and space-saving.

Thanks to the patented spring steel plate system, the LOCKED-Series PLK achieves clamping and holding forces of up to 2,100 N with the shortest reaction times when vented. The LOCKED-Series PLK achieves 100 % clamping force due to the steel pads that are used, even on greased rails. The clamping elements represent the maximum holding forces. Whether in the 4 or 6 bar version, they are good for up to 1 million cycles or up to 500 emergency braking operations.

Representatives of the LOCKED-Series PLK from ACE are primarily used in mechanical engineering and customised machines.



Technical Data

Holding forces: 300 N to 2,100 N

Rail sizes: 15 mm to 55 mm

Clamping cycles: 1,000,000/500. Higher values on request.

Mounting: In any position

Operating pressure: 4 bar (automotive) or 6 bar

Material: Outer body: Tool steel

Pneumatic medium: Dried, filtered air

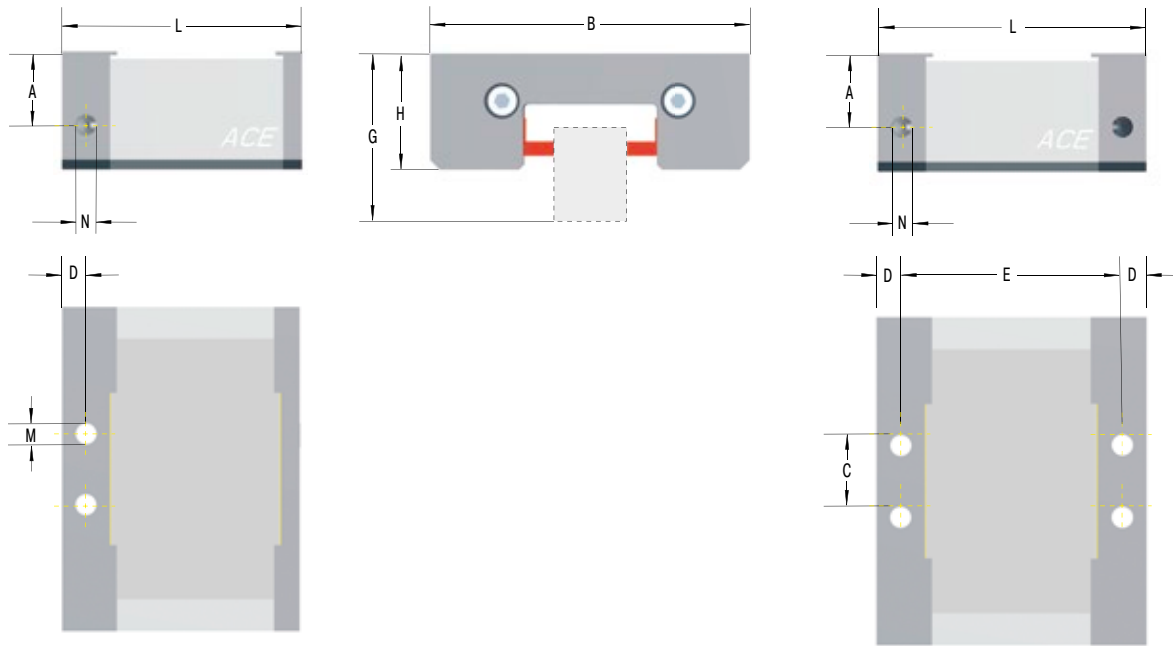
Operating temperature range: 15 °C to 45 °C

Application field: Tool machines, Transport systems, Feeder installations, Positioning tables

Note: If requested installation drawings of the respective types are provided.

On request: Special designs on request.

PLK



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

Complete details required when ordering

Operating pressure: 4 bar or 6 bar

Ordering Example

PLK55-2-6B-X

Linear Process Clamping Compact _____
 Rail Nominal Size 55 mm _____
 Number of Holding Blocks 2 _____
 6B = 6 bar Type _____
 4B = 4 bar Type _____
 Series Number assigned by ACE _____

Performance and Dimensions

TYPES	Holding force N	Operating pressure bar	Low Carriage					High Carriage			M	N	Weight kg			
			B mm	C mm	D mm	E mm	L mm	A mm	G mm	H mm						
PLK15-1-4B	300	4	45	12	5	-	55.5	14.0	24	18	14.0	-	-	M5	M5	0.50
PLK15-1-6B	450	6	45	12	5	-	55.5	14.0	24	18	14.0	-	-	M5	M5	0.50
PLK20-1-4B	430	4	54	16	5	-	55.5	16.0	30	22	16.0	-	-	M6	M5	0.60
PLK20-1-6B	650	6	54	16	5	-	55.5	16.0	30	22	16.0	-	-	M6	M5	0.60
PLK25-1-4B	530	4	75	16	5	-	55.5	16.0	36	25.5	16.0	40	29.5	M6	M5	0.70
PLK25-1-6B	800	6	75	16	5	-	55.5	16.0	36	25.5	16.0	40	29.5	M6	M5	0.70
PLK30-1-4B	750	4	82	18	8.75	-	67	21.0	42	30	21.0	45	33	M8	M5	0.90
PLK30-1-6B	1,150	6	82	18	8.75	-	67	21.0	42	30	21.0	45	33	M8	M5	0.90
PLK35-1-4B	820	4	96	22	8.75	-	67	21.2	48	35	21.2	55	42	M10	G1/8	1.27
PLK35-1-6B	1,250	6	96	22	8.75	-	67	21.2	48	35	21.2	55	42	M10	G1/8	1.27
PLK45-1-4B	950	4	116	28	10	-	80	27.5	60	45	27.5	70	55	M10	G1/8	2.00
PLK45-1-6B	1,500	6	116	28	10	-	80	27.5	60	45	27.5	70	55	M10	G1/8	2.00
PLK45-2-4B	950	4	116	28	10	72	92	27.5	60	45	27.5	70	55	M10	G1/8	2.20
PLK45-2-6B	1,500	6	116	28	10	72	92	27.5	60	45	27.5	70	55	M10	G1/8	2.20
PLK55-1-4B	1,300	4	136	34	10	-	100	30.5	70	49	30.5	80	59	M10	G1/8	2.80
PLK55-1-6B	2,100	6	136	34	10	-	100	30.5	70	49	30.5	80	59	M10	G1/8	2.80
PLK55-2-4B	1,300	4	136	34	10	92	112	30.5	70	49	30.5	80	59	M10	G1/8	3.00
PLK55-2-6B	2,100	6	136	34	10	92	112	30.5	70	49	30.5	80	59	M10	G1/8	3.00

¹ The holding forces as shown in the capacity chart were determined on dry rails for roller systems (STAR, INA). Different holding forces may occur for other rails.

LOCKED SL

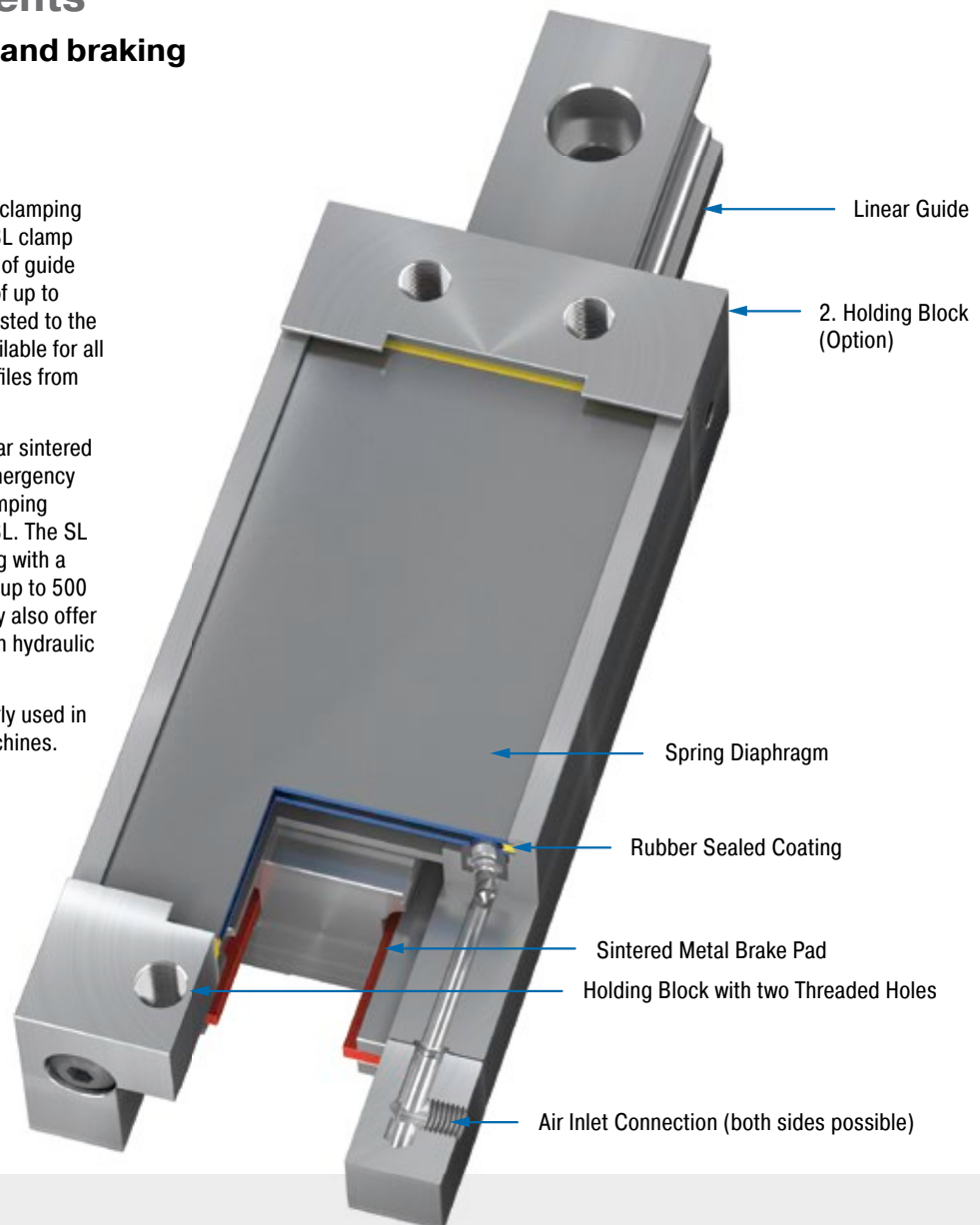
Clamping Elements

Combined clamping and braking

Always on the safe side: The safety clamping elements from the LOCKED series SL clamp and brake directly on the clear area of guide rails on linear modules with forces of up to 10,000 N. They are individually adjusted to the linear guide being used and are available for all rail sizes from 20 to 65 mm and profiles from all renowned manufacturers.

Special brake pads made of low wear sintered metal are used for the additional emergency stop braking functions in safety clamping elements from the LOCKED series SL. The SL series offer optimum static clamping with a service life up to 1 million cycles or up to 500 emergency braking operations. They also offer low system costs in comparison with hydraulic and electric solutions.

The LOCKED-Series SL is particularly used in machinery and special purpose machines.



Technical Data

Holding forces: 540 N to 10,000 N

Rail sizes: 20 mm to 65 mm

Clamping cycles/emergency use:
1,000,000/500

Higher values on request.

Mounting: In any position

Operating pressure: 4 bar (automotive)
or 6 bar

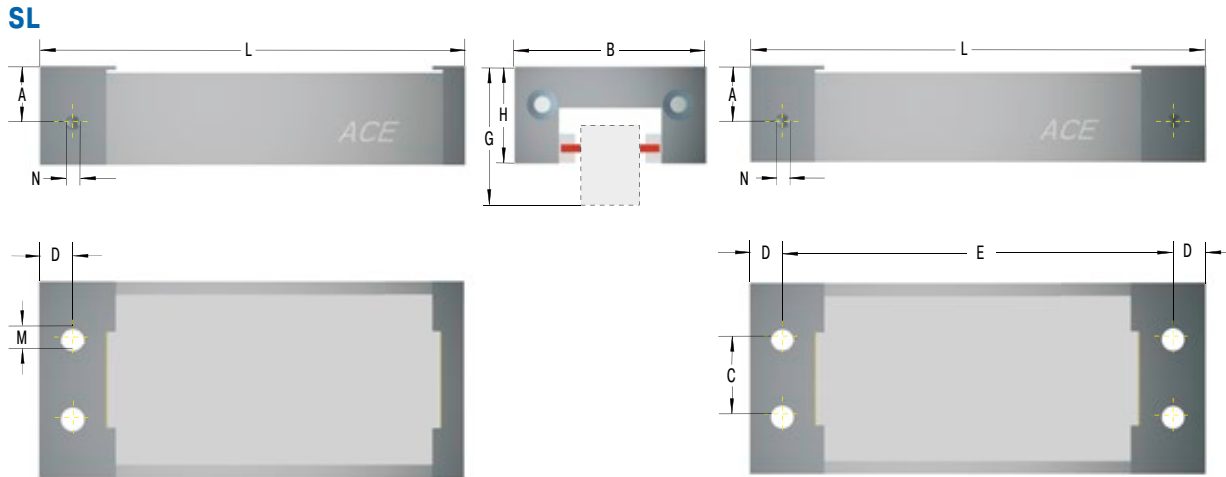
Material: Outer body: Tool steel

Pneumatic medium: Dried, filtered air

Operating temperature range: 15 °C to
45 °C

Application field: Tool machines, Transport systems, Feeder installations, Positioning tables

Note: If requested installation drawings of the respective types are provided.



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

Complete details required when ordering

Operating pressure: 4 bar or 6 bar

Ordering Example

Linear Safety Clamping **SL55-1-4B-X**
 Rail Nominal Size 55 mm
 Number of Holding Blocks 1
 4B = 4 bar Type
 6B = 6 bar Type
 Series Number assigned by ACE

Performance and Dimensions

TYPES	Holding force N	Operating pressure bar	B mm	C mm	D mm	E mm	L mm	Low Carriage			High Carriage			M	N	Weight kg
								A mm	G mm	H mm	A mm	G mm	H mm			
SL20-1-4B	540	4	43	12	6	-	97.5	13.5	30	19.5	-	-	-	M5	M5	0.32
SL20-1-6B	900	6	43	12	6	-	97.5	13.5	30	19.5	-	-	-	M5	M5	0.32
SL25-1-4B	780	4	47	16	6	-	117.5	15.5	36	25	19.5	40	29	M6	M5	0.50
SL25-1-6B	1,200	6	47	16	6	-	117.5	15.5	36	25	19.5	40	29	M6	M5	0.50
SL30-1-4B	1,100	4	59	18	10	-	126.5	17.0	42	29.5	20.0	45	32.5	M8	M5	0.90
SL30-1-6B	1,800	6	59	18	10	-	126.5	17.0	42	29.5	20.0	45	32.5	M8	M5	0.90
SL35-1-4B	1,800	4	69	22	10	-	156.5	22.5	48	35	29.5	55	42	M10	G1/8	1.26
SL35-1-6B	2,800	6	69	22	10	-	156.5	22.5	48	35	29.5	55	42	M10	G1/8	1.26
SL45-1-4B	2,400	4	80	28	10	-	176.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
SL45-1-6B	4,000	6	80	28	10	-	176.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
SL45-2-4B	2,400	4	80	28	10	171.2	191.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
SL45-2-6B	4,000	6	80	28	10	171.2	191.5	26.5	60	42	36.5	70	52	M10	G1/8	2.30
SL55-1-4B	3,600	4	98	34	12.5	-	202.5	28.0	70	49	38.0	80	59	M10	G1/8	3.90
SL55-1-6B	6,000	6	98	34	12.5	-	202.5	28.0	70	49	38.0	80	59	M10	G1/8	3.90
SL55-2-4B	3,600	4	98	34	12.5	196.2	221.5	28.0	70	49	38.0	80	59	M10	G1/8	3.90
SL55-2-6B	6,000	6	98	34	12.5	196.2	221.5	28.0	70	49	38.0	80	59	M10	G1/8	3.90
SL65-1-4B	6,000	4	120	44	15	-	259.5	38.0	90	64	48.0	100	74	M12	G1/8	5.00
SL65-1-6B	10,000	6	120	44	15	-	259.5	38.0	90	64	48.0	100	74	M12	G1/8	5.00
SL65-2-4B	6,000	4	120	44	15	251.2	281.5	38.0	90	64	48.0	100	74	M12	G1/8	5.20
SL65-2-6B	10,000	6	120	44	15	251.2	281.5	38.0	90	64	48.0	100	74	M12	G1/8	5.20

¹ The holding forces as shown in the capacity chart were determined on dry rails for roller systems (STAR, INA). Different holding forces may occur for other rails.

LOCKED SLK

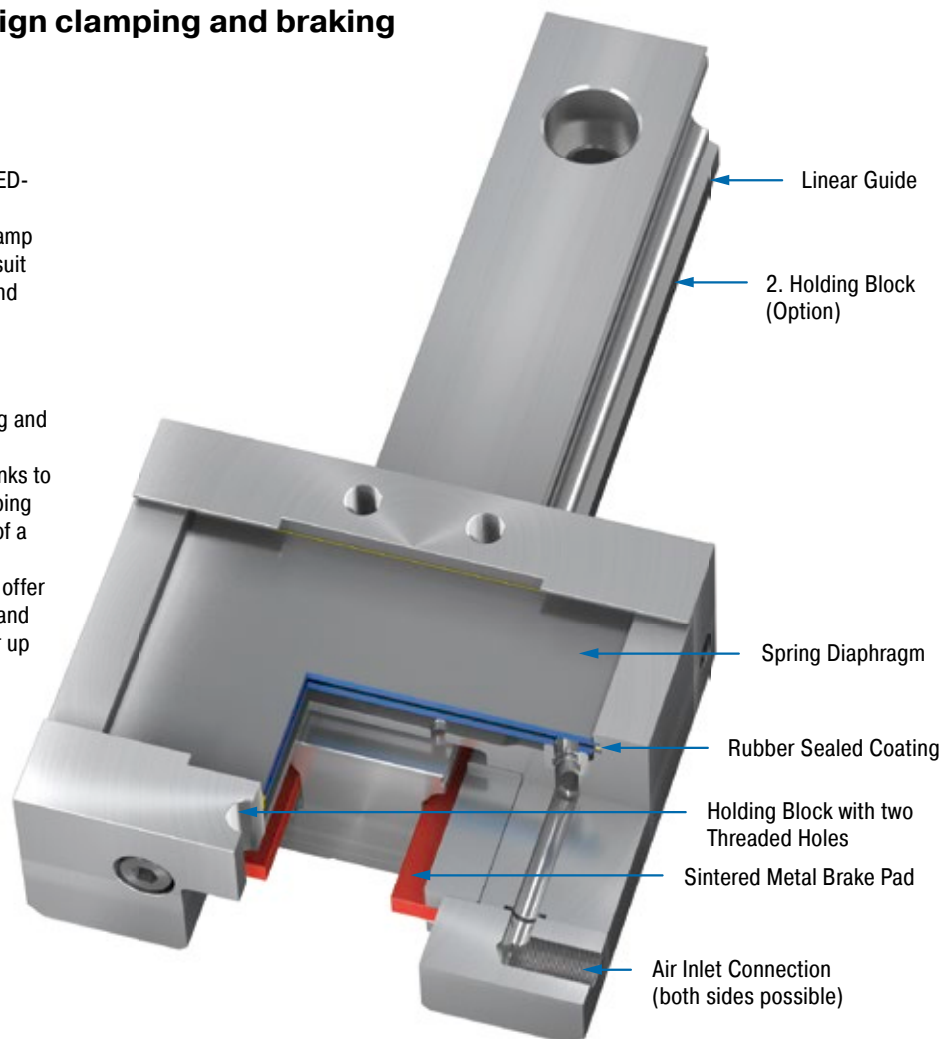
Clamping Elements

Combined compact design clamping and braking

Small can clamp perfectly too: The LOCKED-Series SLK clamping elements are more compact than the Series SL. They also clamp directly onto the respective linear guide, suit all standard rail sizes from 15 to 55 mm and profiles from the known suppliers and are extremely reliable and safe.

Thanks to the patented spring steel plate system, the Series SLK achieves clamping and holding forces of up to 2,100 N with the shortest reaction times when vented. Thanks to the sintered metal coatings and the clamping function in emergency stop (e.g. in case of a power failure), this range enables braking directly on the rail. All clamping elements offer the maximum holding and braking forces and achieve up to 1 million clamping cycles or up to a maximum of 500 emergency braking operations in the 4 and 6 bar version.

The LOCKED-Series SLK are used in mechanical engineering and customised mechanical engineering.



Technical Data

Holding forces: 300 N to 2,100 N

Rail sizes: 15 mm to 55 mm

Clamping cycles/emergency use: 1,000,000/500. Higher values on request.

Mounting: In any position

Operating pressure: 4 bar (automotive) or 6 bar

Material: Outer body: Tool steel

Pneumatic medium: Dried, filtered air

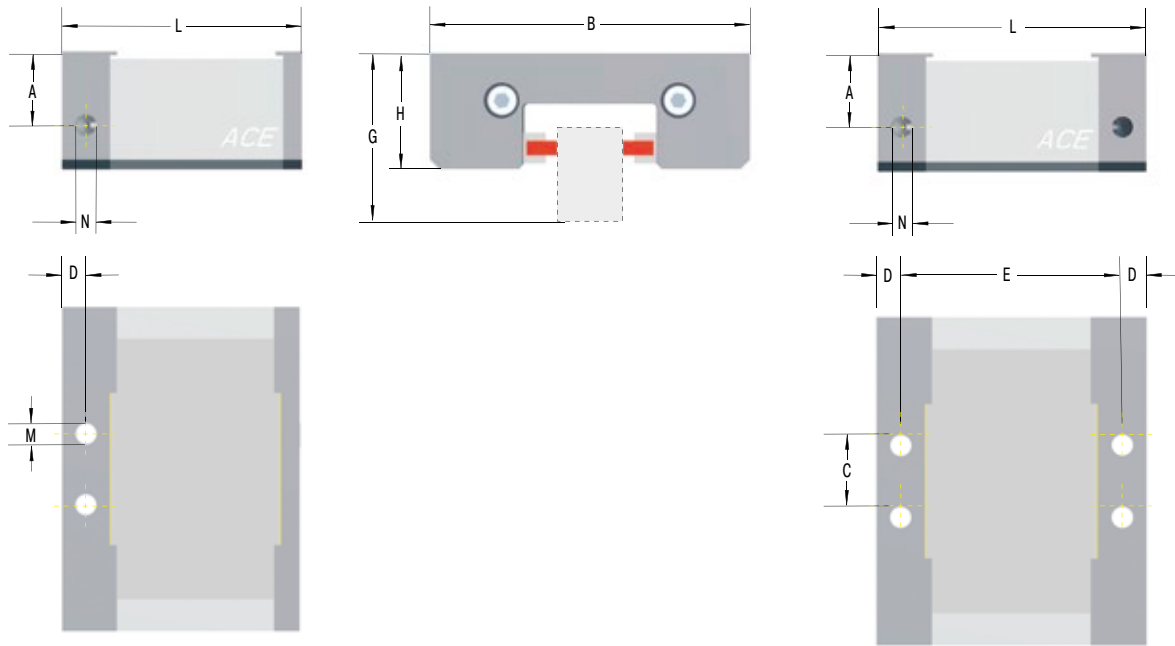
Operating temperature range: 15 °C to 45 °C

Application field: Tool machines, Transport systems, Feeder installations, Positioning tables

Note: If requested installation drawings of the respective types are provided.

On request: Special designs on request.

SLK



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

Complete details required when ordering

Operating pressure: 4 bar or 6 bar

Ordering Example

SLK45-1-4B-X

Linear Safety Clamping Compact _____
 Rail Nominal Size 45 mm _____
 Number of Holding Blocks 1 _____
 4B = 4 bar Type _____
 6B = 6 bar Type _____
 Series Number assigned by ACE _____

Performance and Dimensions

TYPES	Holding force N	Operating pressure bar	Low Carriage					High Carriage			M	N	Weight kg			
			B mm	C mm	D mm	E mm	L mm	A mm	G mm	H mm						
SLK15-1-4B	300	4	45	12	5	-	55.5	14.0	24	18	14.0	-	-	M5	M5	0.50
SLK15-1-6B	450	6	45	12	5	-	55.5	14.0	24	18	14.0	-	-	M5	M5	0.50
SLK20-1-4B	430	4	54	16	5	-	55.5	16.0	30	22	16.0	-	-	M6	M5	0.60
SLK20-1-6B	650	6	54	16	5	-	55.5	16.0	30	22	16.0	-	-	M6	M5	0.60
SLK25-1-4B	530	4	75	16	5	-	55.5	16.0	36	25.5	16.0	40	29.5	M6	M5	0.70
SLK25-1-6B	800	6	75	16	5	-	55.5	16.0	36	25.5	16.0	40	29.5	M6	M5	0.70
SLK30-1-4B	750	4	82	18	8.75	-	67	21.0	42	30	21.0	45	33	M8	M5	0.90
SLK30-1-6B	1,150	6	82	18	8.75	-	67	21.0	42	30	21.0	45	33	M8	M5	0.90
SLK35-1-4B	820	4	96	22	8.75	-	67	21.2	48	35	21.2	55	42	M10	G1/8	1.27
SLK35-1-6B	1,250	6	96	22	8.75	-	67	21.2	48	35	21.2	55	42	M10	G1/8	1.27
SLK45-1-4B	950	4	116	28	10	-	80	27.5	60	45	27.5	70	55	M10	G1/8	2.00
SLK45-1-6B	1,500	6	116	28	10	-	80	27.5	60	45	27.5	70	55	M10	G1/8	2.00
SLK45-2-4B	950	4	116	28	10	72	92	27.5	60	45	27.5	70	55	M10	G1/8	2.20
SLK45-2-6B	1,500	6	116	28	10	72	92	27.5	60	45	27.5	70	55	M10	G1/8	2.20
SLK55-1-4B	1,300	4	136	34	10	-	100	30.5	70	49	30.5	80	59	M10	G1/8	2.80
SLK55-1-6B	2,100	6	136	34	10	-	100	30.5	70	49	30.5	80	59	M10	G1/8	2.80
SLK55-2-4B	1,300	4	136	34	10	92	112	30.5	70	49	30.5	80	59	M10	G1/8	3.00
SLK55-2-6B	2,100	6	136	34	10	92	112	30.5	70	49	30.5	80	59	M10	G1/8	3.00

¹ The holding forces as shown in the capacity chart were determined on dry rails for roller systems (STAR, INA). Different holding forces may occur for other rails.

LOCKED LZ-P

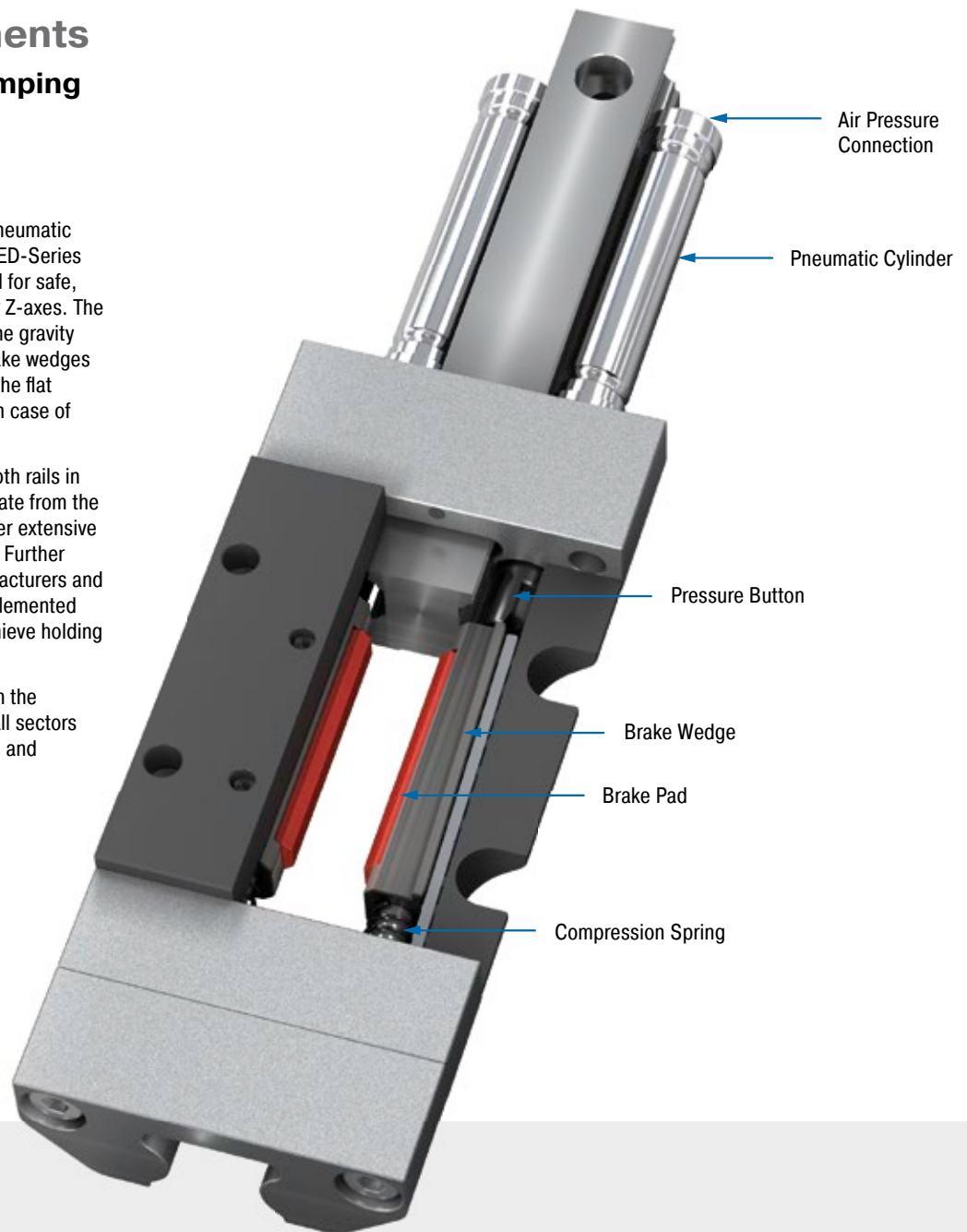
Clamping Elements

Certified safety clamping

Innovative and BG certified: The pneumatic clamping elements from the LOCKED-Series LZ-P have been specially designed for safe, reliable clamping on the vertical or Z-axes. The wedge principle makes sure that the gravity loaded axis does not drop. The brake wedges are pushed on both sides against the flat parallel surfaces of the guide rail in case of a loss of pressure.

Initially developed for Bosch-Rexroth rails in sizes 15 and 25 mm, a test certificate from the trade association was awarded after extensive tests on these clamping elements. Further certifications from other rail manufacturers and sizes are prepared and can be implemented within the shortest time. Users achieve holding forces of up to 2,500 N.

Pneumatic clamping elements from the LOCKED-Series LZ-P are used in all sectors of modern mechanical engineering and customised machine tools.



Technical Data

Holding forces: 1,500 N to 2,500 N

Rail sizes: 15 mm and 25 mm Bosch Rexroth

Clamping cycles: 1,000,000

Mounting: Vertical

Effective direction: Z-axes toward gravity

Operating pressure: 4.8 bar to 8 bar

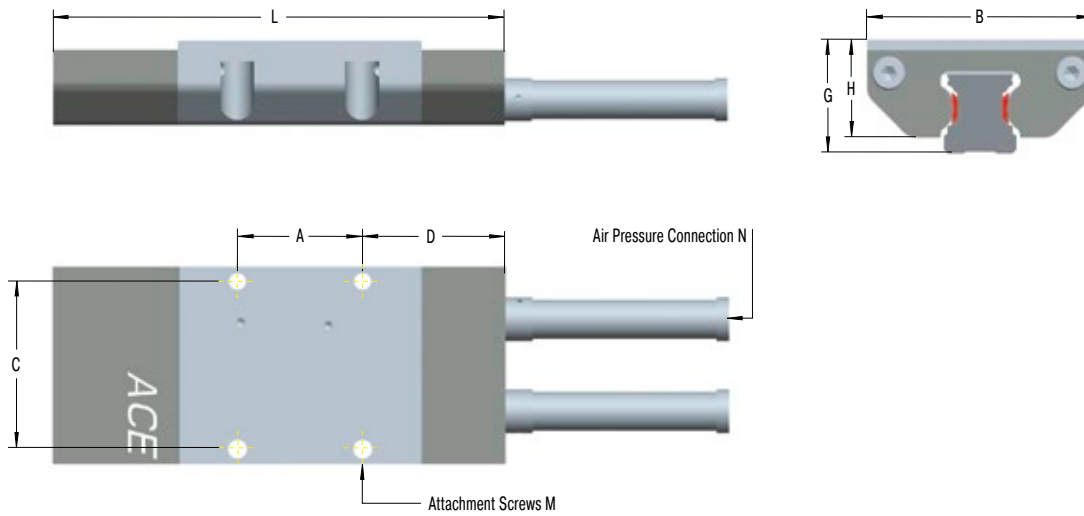
Material: Outer body: Tool steel; Brake components: Steel

Pneumatic medium: Dried, filtered air

Operating temperature range: 0 °C to 60 °C

Application field: Z-axes, Vertical conveyor systems, Jacking applications

LZ-P



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

Ordering Example

Process Clamping Z-Axis _____ **LZ-P15-X**
 Rail Nominal Size 15 mm _____
 Series Number assigned by ACE _____

Performance and Dimensions

TYPES	Holding force N	A mm	B mm	C mm	D mm	G mm	H mm	L mm	M	N	Weight kg
LZ-P15-X	1,500	30	47	40	34	24	20	108.5	M4	M3	0.4
LZ-P25-X	2,500	30	70	56	70	36	30	170.0	M6	M5	1.3

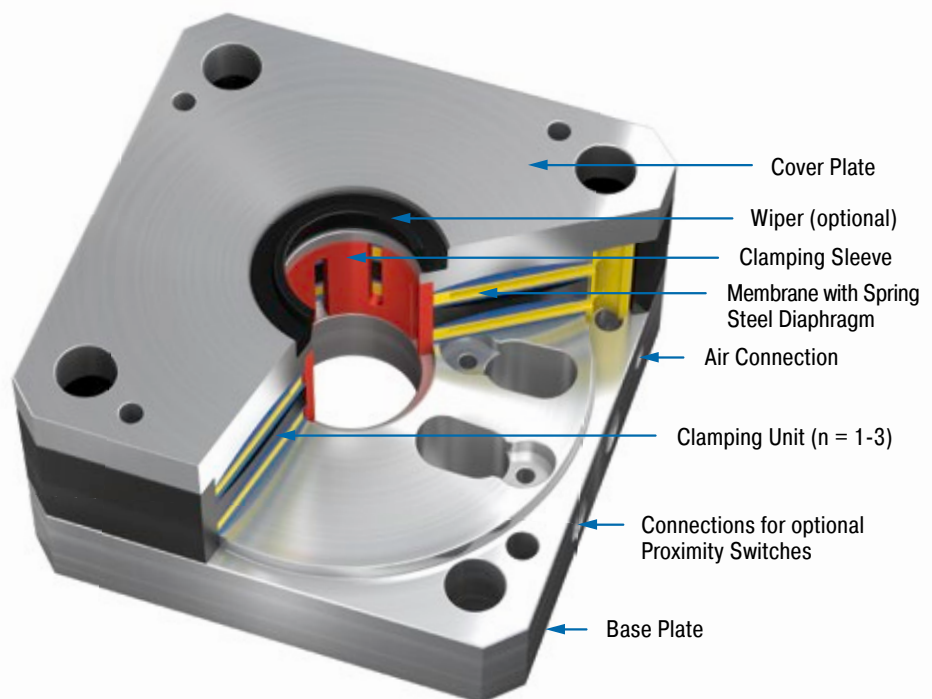
LOCKED PN Clamping Elements

Rod clamping with maximum clamping force

Immediate clamping in case of loss of pneumatics: Suitable for rods with diameters of 20 to 40 mm, the clamping elements from the LOCKED-Series PN absorb the forces axially and rotationally. With holding forces of up to 36,000 N, they reach or exceed the levels of hydraulic clamps. The system costs are however lower.

Alongside clamping in both directions of motion, the LOCKED-PN also surprises with its compact design. They need less installation space and enable short rod lengths. For versions with ISO pneumatic cylinders, the base plate is coordinated to the dimensions of the flange sizes of standard cylinders according to ISO 15552. Users appreciate the modular system. It allows several segments to be stacked so that the necessary clamping force can be attained for every application.

The areas of application for the LOCKED-Series PN are mechanical engineering and machine tools.



Technical Data

Holding torques: 15 Nm to 720 Nm

Holding forces: 1,400 N to 36,000 N

Rod diameter: Ø 20 mm to Ø 40 mm

Clamping cycles: 1,000,000. Higher values on request.

Mounting: In any position

Operating pressure: 4 bar (automotive) or 6 bar

Material: Outer body: Tool steel

Pneumatic medium: Dried, filtered air

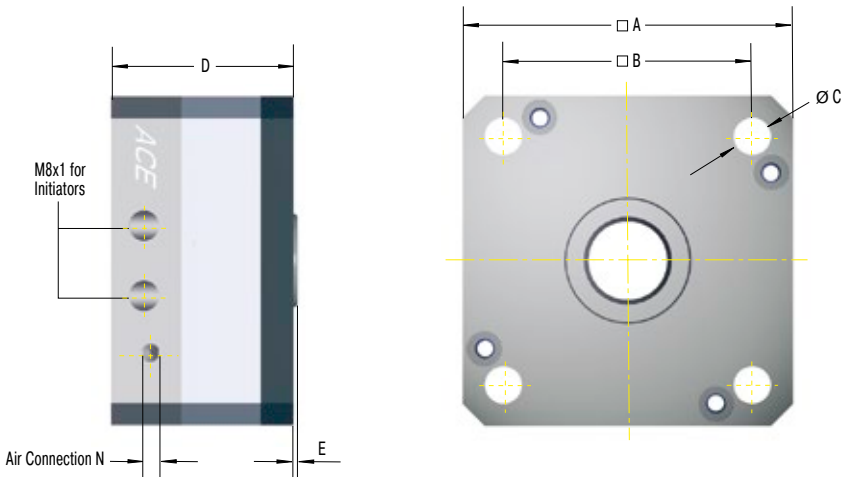
Operating temperature range: 10 °C to 45 °C

Application field: Jacking systems, Light presses, Punching/stamping machines, Stacking units

Note: When mounting, use hardened piston rod.

On request: Special designs as for example special diameters and accessories available on request.

PN



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

Ordering Example

Rod Clamping Standard Model _____
 Cylinder Nominal Diameter 80 mm _____
 Rod Diameter 25 mm _____
 Number of Clamping Units 3 _____
 6B = 6 bar Type _____
 4B = 4 bar Type _____

PN80-25-3-4B

Performance and Dimensions

TYPES	¹ Holding force N	Holding torque Nm	Operating pressure bar	A mm	B mm	C mm	D mm	E mm	N	Weight kg
PN63-20-1-4B	1,400	15	4	75	56.5	8.5	41.5	2.1	M5	0.70
PN63-20-1-6B	2,000	20	6	75	56.5	8.5	41.5	2.1	M5	0.70
PN63-20-2-4B	2,520	25	4	75	56.5	8.5	59.5	2.1	M5	1.13
PN63-20-2-6B	3,600	35	6	75	56.5	8.5	59.5	2.1	M5	1.13
PN63-20-3-4B	3,780	35	4	75	56.5	8.5	77.5	2.1	M5	1.56
PN63-20-3-6B	5,400	50	6	75	56.5	8.5	77.5	2.1	M5	1.56
PN80-25-1-4B	2,100	25	4	96	72	10.5	43.5	2.14	G1/8	1.30
PN80-25-1-6B	3,000	35	6	96	72	10.5	43.5	2.14	G1/8	1.30
PN80-25-2-4B	3,780	40	4	96	72	10.5	63.5	2.14	G1/8	2.20
PN80-25-2-6B	5,400	60	6	96	72	10.5	63.5	2.14	G1/8	2.20
PN80-25-3-4B	5,670	65	4	96	72	10.5	83.5	2.14	G1/8	3.10
PN80-25-3-6B	8,100	95	6	96	72	10.5	83.5	2.14	G1/8	3.10
PN125-40-1-4B	7,000	140	4	145	110	13	51.6	3	G1/8	3.65
PN125-40-1-6B	10,000	200	6	145	110	13	51.6	3	G1/8	3.65
PN125-40-2-4B	12,600	250	4	145	110	13	75.2	3	G1/8	5.85
PN125-40-2-6B	18,000	360	6	145	110	13	75.2	3	G1/8	5.85
PN125-40-3-4B	18,900	375	4	145	110	13	98.8	3	G1/8	8.05
PN125-40-3-6B	27,000	540	6	145	110	13	98.8	3	G1/8	8.05
PN125-40-4-4B	25,200	500	4	145	110	13	122.4	3	G1/8	10.25
PN125-40-4-6B	36,000	720	6	145	110	13	122.4	3	G1/8	10.25

¹ The listed holding forces are reached under optimum conditions. We recommend a safety factor of > 10 %. Please note that surface, material and cleanliness of the rod as well as wear and tear and the use of rod wipers lead to different holding forces. Test the clamping needed for series production or safety applications in its specific application environment and measure the actual values.

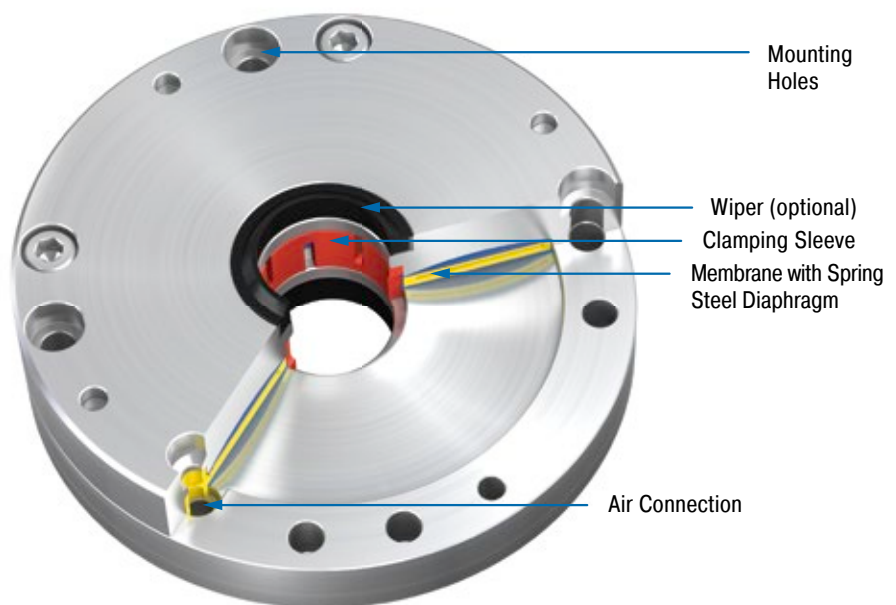
LOCKED PRK Clamping Elements

Rod clamping with maximum clamping force in a compact size

Compact and safe: when space becomes restricted, the compact clamping elements from the LOCKED-Series PRK come into their own. As pneumatic rod clamping with low heights of 28 to 34 mm, they provide clamping forces of up to 5,000 N.

Clamping is carried out by a diaphragm spring-plate system and is released when compressed air is applied. Clamping elements from the LOCKED-Series PRK absorb the forces on rods with diameters between 20 and 40 mm both axially and rotationally. The function makes them suitable for use as static clamping without pressure, because the failure or drop of pneumatic pressure triggers immediate clamping. High clamping forces with low system costs compared with hydraulic and electric solutions make these clamping elements particularly interesting.

Models from the LOCKED-Series PRK are used in mechanical engineering and customised machine tools.



Technical Data

Holding torques: 7 Nm to 100 Nm

Holding forces: 700 N to 5,000 N

Rod diameter: Ø 20 mm to Ø 40 mm

Clamping cycles: 1,000,000. Higher values on request.

Mounting: In any position

Operating pressure: 4 bar (automotive) or 6 bar

Material: Outer body: Tool steel

Pneumatic medium: Dried, filtered air

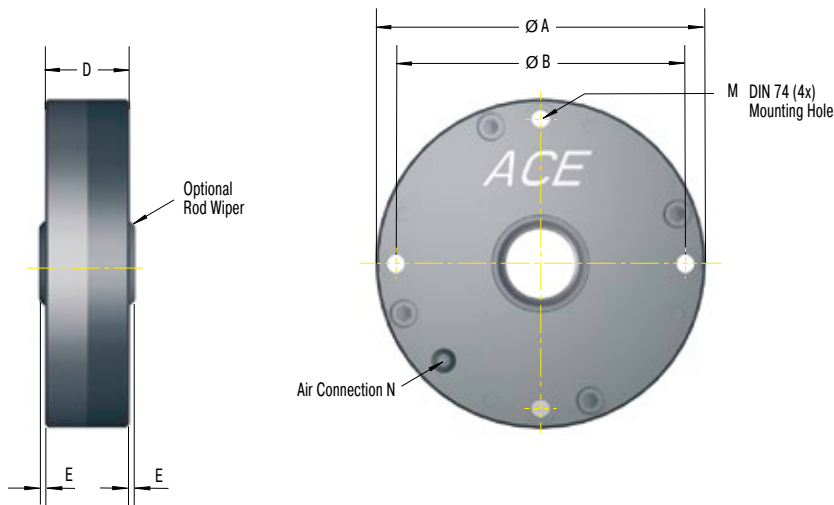
Operating temperature range: 10 °C to 45 °C

Application field: Jacking systems, Light presses, Punching/stamping machines, Stacking units

Note: When mounting, use hardened piston rod.

On request: Special designs as for example special diameters and accessories available on request.

PRK



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

Complete details required when ordering

Operating pressure: 4 bar or 6 bar

Ordering Example

PRK80-25-6B

Rod Clamping Compact _____ ↑
 Cylinder Nominal Diameter 80 mm _____ ↑
 Rod Diameter 25 mm _____ ↑
 6B = 6 bar Type _____ ↑
 4B = 4 bar Type _____ ↑

Performance and Dimensions

TYPES	¹ Holding force N	Holding torque Nm	Operating pressure bar	A mm	B mm	D mm	E mm	M	N	Weight kg
PRK63-20-4B	700	7	4	92	80	28	2.1	M5	G1/8	1.15
PRK63-20-6B	1,000	10	6	92	80	28	2.1	M5	G1/8	1.15
PRK80-25-4B	1,050	12	4	118	104	29	2.14	M6	G1/8	2.10
PRK80-25-6B	1,500	17	6	118	104	29	2.14	M6	G1/8	2.10
PRK125-40-4B	3,500	70	4	168	152	29	3	M6	G1/8	4.90
PRK125-40-6B	5,000	100	6	168	152	29	3	M6	G1/8	4.90

¹ The listed holding forces are reached under optimum conditions. We recommend a safety factor of > 10 %. Please note that surface, material and cleanliness of the rod as well as wear and tear and the use of rod wipers lead to different holding forces. Test the clamping needed for series production or safety applications in its specific application environment and measure the actual values.

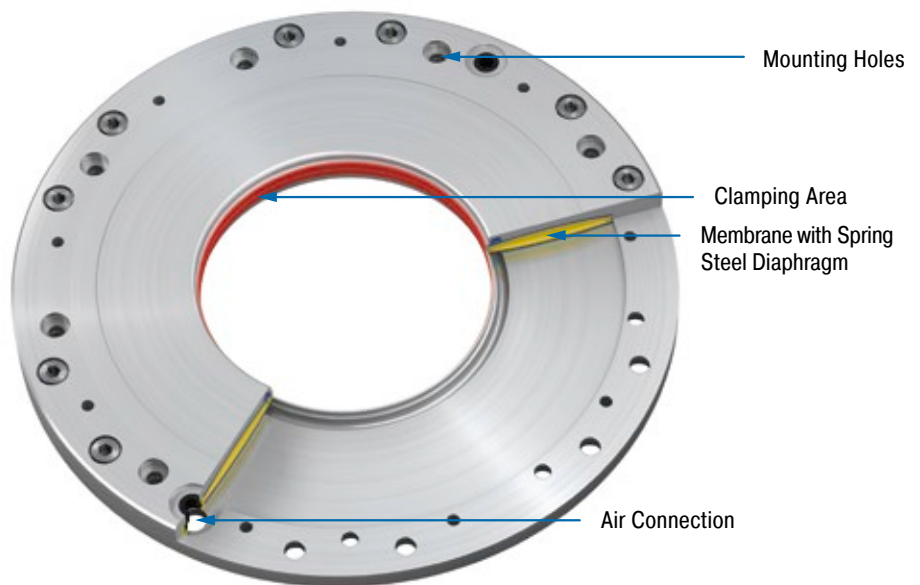
LOCKED R Clamping Elements

Strong holding force on the shaft

Direct clamping on the shaft: Rotation motions are prevented by the LOCKED-Series R. Their clamping elements are available for shaft diameters of 50 to 340 mm and ensure maximum holding forces.

The clamp is immediately applied by the diaphragm and spring-plate system when pressure is lost. Pneumatic quick-switch valves reduce the reaction times. The costs are low in comparison with hydraulic clamping systems. Their performance is, however, achieved or exceeded despite the compact and easy to assemble design. Special versions for YRT bearings as well as active clamping elements are additionally available. ACE recommends the use of the optional shaft flange as wear protection. The clamping force can be increased considerably by the use of the additional air function.

Models from the LOCKED-Series R are also used in mechanical engineering and customised machine tools.



Technical Data

Holding torques: 42 Nm to 4,680 Nm

Shaft diameter: Ø 50 mm to Ø 340 mm

Clamping cycles: 1,000,000. Higher values on request.

Mounting: In any position

Operating pressure: 4 bar (automotive) or 6 bar

Material: Outer body: Hardened fine-grain structural steel, inner bore ground

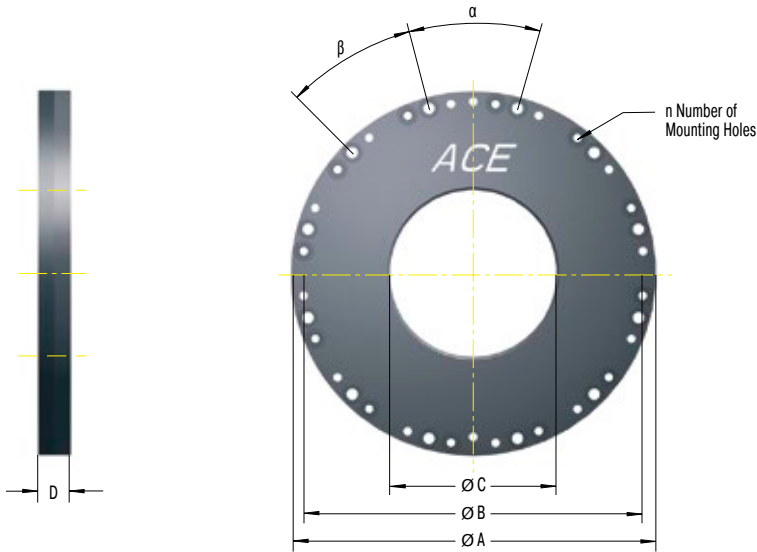
Pneumatic medium: Dried, filtered air

Operating temperature range: 10 °C to 45 °C

Application field: Drive shafts, Torque motors, Conveyor systems

Note: If requested installation drawings of the respective types are provided.

On request: Special designs and customised solutions e.g. YRT bearing up to Ø 460 mm and shaft flange available on request.

R


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

Complete details required when ordering

Operating pressure: 4 bar or 6 bar
Option: With additional air

Ordering Example

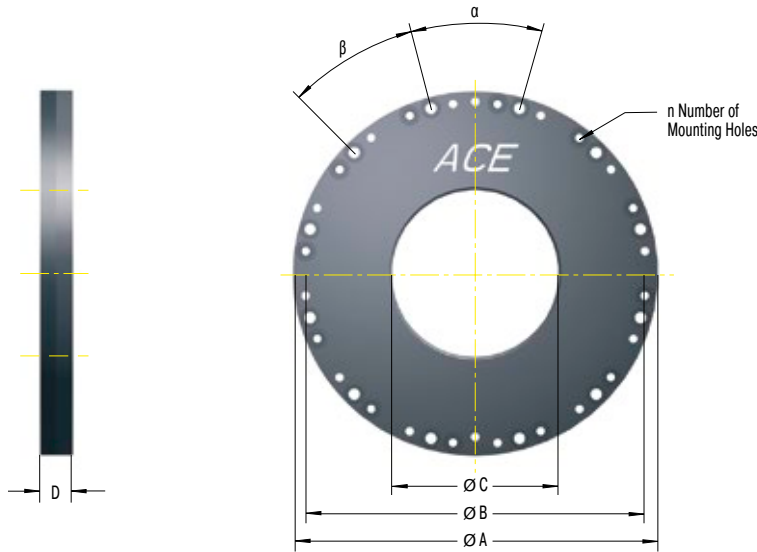
Rotational Clamping ↑ **R80-Z-6B**
 Shaft Nominal Diameter 80 mm ↑
 Z = Increased Force with Additional Air ↑
 6B = 6 bar Type ↑
 4B = 4 bar Type

Performance and Dimensions

TYPES	Holding torque Nm	Operating pressure bar	A mm	B mm	C opened mm	Shaft Diameter mm	D mm	n	α °	β °	Weight kg
R50-4B	42	4	145	134	50+0.03/+0.05	50-0.01/-0.025	15	8	45	45	1.7
R50-6B	60	6	145	134	50+0.03/+0.05	50-0.01/-0.025	15	8	45	45	1.7
R60-4B	59	4	155	144	60+0.03/+0.05	60-0.01/-0.025	15	8	45	45	1.9
R60-6B	84	6	155	144	60+0.03/+0.05	60-0.01/-0.025	15	8	45	45	1.9
R70-4B	80	4	165	154	70+0.03/+0.05	70-0.01/-0.025	15	12	30	30	2.1
R70-6B	114	6	165	154	70+0.03/+0.05	70-0.01/-0.025	15	12	30	30	2.1
R80-4B	105	4	175	164	80+0.03/+0.05	80-0.01/-0.025	15	12	30	30	2.3
R80-6B	150	6	175	164	80+0.03/+0.05	80-0.01/-0.025	15	12	30	30	2.3
R90-4B	132	4	185	174	90+0.03/+0.05	90-0.01/-0.025	15	12	30	30	2.5
R90-6B	189	6	185	174	90+0.03/+0.05	90-0.01/-0.025	15	12	30	30	2.5
R100-4B	168	4	228	210	100+0.04/+0.06	100-0.01/-0.025	16	12	40	20	4.1
R100-6B	240	6	228	210	100+0.04/+0.06	100-0.01/-0.025	16	12	40	20	4.1
R120-4B	235	4	248	230	120+0.04/+0.06	120-0.01/-0.025	16	12	40	20	4.6
R120-6B	336	6	248	230	120+0.04/+0.06	120-0.01/-0.025	16	12	40	20	4.6
R140-4B	319	4	268	250	140+0.04/+0.06	140-0.01/-0.025	16	12	40	20	5.1
R140-6B	456	6	268	250	140+0.04/+0.06	140-0.01/-0.025	16	12	40	20	5.1
R160-4B	420	4	288	270	160+0.04/+0.06	160-0.01/-0.025	16	12	40	20	5.6
R160-6B	600	6	288	270	160+0.04/+0.06	160-0.01/-0.025	16	12	40	20	5.6
R180-4B	525	4	308	290	180+0.04/+0.06	180-0.01/-0.025	20	16	30	15	7.7
R180-6B	750	6	308	290	180+0.04/+0.06	180-0.01/-0.025	20	16	30	15	7.7
R200-4B	651	4	328	310	200+0.05/+0.07	200-0.01/-0.03	20	16	30	15	8.3
R200-6B	930	6	328	310	200+0.05/+0.07	200-0.01/-0.03	20	16	30	15	8.3
R220-4B	777	4	348	330	220+0.05/+0.07	220-0.01/-0.03	20	16	30	15	8.9
R220-6B	1,110	6	348	330	220+0.05/+0.07	220-0.01/-0.03	20	16	30	15	8.9
R240-4B	945	4	368	350	240+0.05/+0.07	240-0.01/-0.03	20	24	20	10	9.5
R240-6B	1,350	6	368	350	240+0.05/+0.07	240-0.01/-0.03	20	24	20	10	9.5
R260-4B	1,092	4	388	370	260+0.05/+0.07	260-0.01/-0.03	22	24	20	10	11.2
R260-6B	1,560	6	388	370	260+0.05/+0.07	260-0.01/-0.03	22	24	20	10	11.2
R280-4B	1,260	4	408	390	280+0.05/+0.07	280-0.01/-0.03	22	24	20	10	11.9
R280-6B	1,800	6	408	390	280+0.05/+0.07	280-0.01/-0.03	22	24	20	10	11.9
R300-4B	1,470	4	428	410	300+0.05/+0.07	300-0.01/-0.03	22	24	20	10	12.6
R300-6B	2,100	6	428	410	300+0.05/+0.07	300-0.01/-0.03	22	24	20	10	12.6
R320-4B	1,638	4	448	430	320+0.05/+0.07	320-0.01/-0.03	22	24	20	10	13.1
R320-6B	2,340	6	448	430	320+0.05/+0.07	320-0.01/-0.03	22	24	20	10	13.1
R340-4B	1,806	4	468	450	340+0.05/+0.07	340-0.01/-0.03	22	24	20	10	14.0
R340-6B	2,580	6	468	450	340+0.05/+0.07	340-0.01/-0.03	22	24	20	10	14.0

Pneumatic Rotational Clamping

R-Z



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

Complete details required when ordering

Operating pressure: 4 bar or 6 bar
Option: With additional air

Ordering Example

Rotational Clamping **R80-Z-6B**
Shaft Nominal Diameter 80 mm
Z = Increased Force with Additional Air
6B = 6 bar Type
4B = 4 bar Type

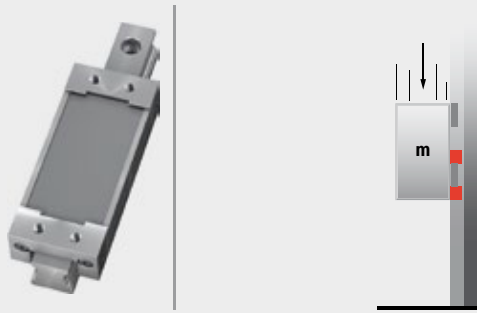
Performance and Dimensions

TYPES	Holding torque Nm	Operating pressure bar	A mm	B mm	C opened mm	Shaft Diameter mm	D mm	n	α	β	Weight kg
R50-Z-4B	76	4	145	134	50+0.03/+0.05	50-0.01/-0.025	15	8	45	45	1.7
R50-Z-6B	108	6	145	134	50+0.03/+0.05	50-0.01/-0.025	15	8	45	45	1.7
R60-Z-4B	107	4	155	144	60+0.03/+0.05	60-0.01/-0.025	15	8	45	45	1.9
R60-Z-6B	153	6	155	144	60+0.03/+0.05	60-0.01/-0.025	15	8	45	45	1.9
R70-Z-4B	147	4	165	154	70+0.03/+0.05	70-0.01/-0.025	15	12	30	30	2.1
R70-Z-6B	210	6	165	154	70+0.03/+0.05	70-0.01/-0.025	15	12	30	30	2.1
R80-Z-4B	189	4	175	164	80+0.03/+0.05	80-0.01/-0.025	15	12	30	30	2.3
R80-Z-6B	270	6	175	164	80+0.03/+0.05	80-0.01/-0.025	15	12	30	30	2.3
R90-Z-4B	239	4	185	174	90+0.03/+0.05	90-0.01/-0.025	15	12	30	30	2.5
R90-Z-6B	342	6	185	174	90+0.03/+0.05	90-0.01/-0.025	15	12	30	30	2.5
R100-Z-4B	294	4	228	210	100+0.04/+0.06	100-0.01/-0.025	16	12	40	20	4.1
R100-Z-6B	420	6	228	210	100+0.04/+0.06	100-0.01/-0.025	16	12	40	20	4.1
R120-Z-4B	420	4	248	230	120+0.04/+0.06	120-0.01/-0.025	16	12	40	20	4.6
R120-Z-6B	600	6	248	230	120+0.04/+0.06	120-0.01/-0.025	16	12	40	20	4.6
R140-Z-4B	588	4	268	250	140+0.04/+0.06	140-0.01/-0.025	16	12	40	20	5.1
R140-Z-6B	840	6	268	250	140+0.04/+0.06	140-0.01/-0.025	16	12	40	20	5.1
R160-Z-4B	756	4	288	270	160+0.04/+0.06	160-0.01/-0.025	16	12	40	20	5.6
R160-Z-6B	1,080	6	288	270	160+0.04/+0.06	160-0.01/-0.025	16	12	40	20	5.6
R180-Z-4B	966	4	308	290	180+0.04/+0.06	180-0.01/-0.025	20	16	30	15	7.7
R180-Z-6B	1,380	6	308	290	180+0.04/+0.06	180-0.01/-0.025	20	16	30	15	7.7
R200-Z-4B	1,176	4	328	310	200+0.05/+0.07	200-0.01/-0.03	20	16	30	15	8.3
R200-Z-6B	1,680	6	328	310	200+0.05/+0.07	200-0.01/-0.03	20	16	30	15	8.3
R220-Z-4B	1,428	4	348	330	220+0.05/+0.07	220-0.01/-0.03	20	16	30	15	8.9
R220-Z-6B	2,040	6	348	330	220+0.05/+0.07	220-0.01/-0.03	20	16	30	15	8.9
R240-Z-4B	1,680	4	368	350	240+0.05/+0.07	240-0.01/-0.03	20	24	20	10	8.9
R240-Z-6B	2,400	6	368	350	240+0.05/+0.07	240-0.01/-0.03	20	24	20	10	8.9
R260-Z-4B	1,974	4	388	370	260+0.05/+0.07	260-0.01/-0.03	22	24	20	10	11.2
R260-Z-6B	2,820	6	388	370	260+0.05/+0.07	260-0.01/-0.03	22	24	20	10	11.2
R280-Z-4B	2,268	4	408	390	280+0.05/+0.07	280-0.01/-0.03	22	24	20	10	11.9
R280-Z-6B	3,240	6	408	390	280+0.05/+0.07	280-0.01/-0.03	22	24	20	10	11.9
R300-Z-4B	2,604	4	428	410	300+0.05/+0.07	300-0.01/-0.03	22	24	20	10	12.6
R300-Z-6B	3,720	6	428	410	300+0.05/+0.07	300-0.01/-0.03	22	24	20	10	12.6
R320-Z-4B	2,940	4	448	430	320+0.05/+0.07	320-0.01/-0.03	22	24	20	10	13.1
R320-Z-6B	4,200	6	448	430	320+0.05/+0.07	320-0.01/-0.03	22	24	20	10	13.1
R340-Z-4B	3,276	4	468	450	340+0.05/+0.07	340-0.01/-0.03	22	24	20	10	14.0
R340-Z-6B	4,680	6	468	450	340+0.05/+0.07	340-0.01/-0.03	22	24	20	10	14.0

Application Examples

SL Special LOCKED SL elements for emergency stops

In order to secure the processing position of a special lathe in both the horizontal and the vertical axis, ACE LOCKED elements of the type SL35-1-6B are installed. They have the further advantage of preventing slippage through the vertical axis in the case of a malfunction. The products used in the SL-series not only have the correct track width and offer very high process clamping forces of up to 10,000 N, but can also apply the same force as an emergency-stop braking function. This is due to the specially integrated brake linings made of low-wear sintered metal.



ACE clamping and safety elements maintain a rock-solid hold on the axes in special lathes and secure the predetermined positions both horizontally and vertically
RASOMA Werkzeugmaschinen GmbH, 04720 Döbeln, Germany

SLK Secure rail clamping

ACE clamping elements secure machines in the tyre industry. The goods accumulator/compensator of a material dispenser carries meandering, coiled, highly tear resistant material strips, which are fed at high speed to a tyre-manufacturing machine. To prevent damaging the machine, innovative type SLK25-1-6B clamping elements are employed.

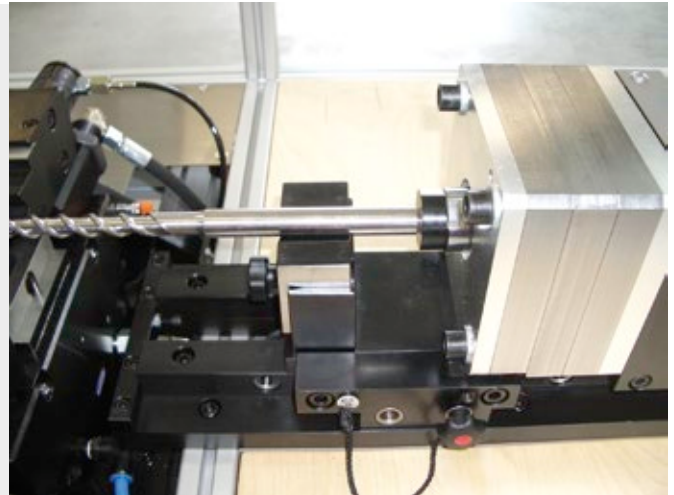
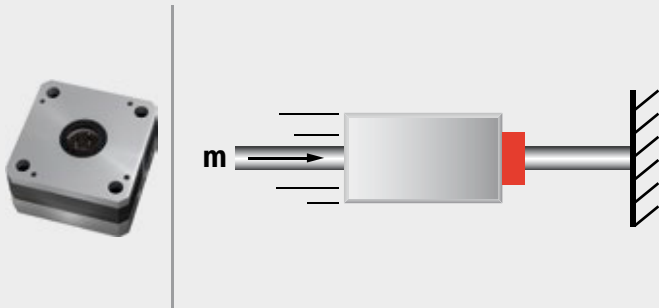


Secure material accumulator

PN

Clamping elements as a variable stop

ACE clamping elements are inserted, as a variable stop, during a joining process for the production of drilling tools. They meet the requirements for a precise positioning of the workpiece head and an adaptation of the length tolerance of up to 3 mm, ideally. ACE was awarded the contract because the clamping element is attached on a bar and its PN LOCKED series is specifically designed for this purpose. For clamping on linear guides, rails, axles and shafts, ACE offers a great range of high-performance models.

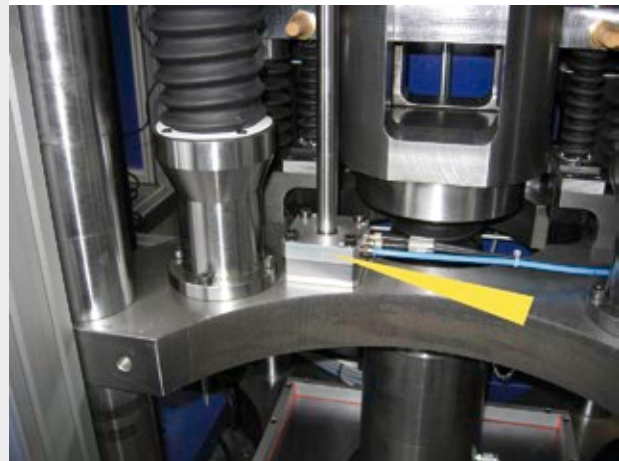


ACE clamping elements assist in the production of drilling tools: the LOCKED-P system clamps and at the same time absorbs the opposing forces of the joining process without difficulty
GRAF automation GmbH, 88214 Ravensburg, Germany

PN

Secure rod clamping

Pneumatic rod clamping allows hydraulic presses to be used for any application. With the help of hydraulic presses, cut ceramic parts are manufactured during the week. So that the rods of the upper and lower stamping plate do not sag when the press is at a standstill over the weekend or during holidays and therefore have to be setup again on the next working day, PN80-25-2-6B type rod clamps are used.



Secured Presses
KOMAGE Gellner Maschinenfabrik KG, 54427 Kell am See, Germany