Industrial Shock Absorbers

Absorbers suited for all loads

ACE industrial shock absorbers work hard. Their application means moving loads are evenly decelerated over the full stroke. The result: the lowest braking force and shortest braking time. The MAGNUM series from ACE is viewed as the reference standard for medium-sized damping technology.

Many innovations such as diaphragm accumulators, long life seals, hardened inner pressure chambers and make a decisive contribution towards extension of the service life. This means that the effective load range can be increased considerably, providing users with more scope with respect to the absorber size and greater utilization of the machine's output. ACE offers a wide range of matching accessories for all absorber series. This eliminates internal production of assembly parts which involves high costs and loss of time.

- Innovative damping techniques
- Reference class for medium sizes
- Less stress on the machine
- Increase of production figures
- Long machine service lives

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Industrial Shock Absorbers

MC33 to MC64

Page 56

Self-Compensating
High energy absorption and robust design
Linear slides, Swivel units, Turntables, Portal systems

MC33-V4A to MC64-V4A

Page 60

Self-Compensating, Stainless Steel
Optimum corrosion protection
Linear slides, Swivel units, Turntables, Food industry

MC33-HT to MC64-HT

Page 64

Self-Compensating
Extreme temperature and high cycle applications
Linear slides, Swivel units, Turntables, Machines and plants

MC33-LT to MC64-LT

Page 68

Self-Compensating
Extreme temperature and high cycle applications
Linear slides, Swivel units, Turntables, Machines and plants

SC33 to SC45

Page 72

Self-Compensating, Piston Tube Technology
Piston tube design for maximum energy absorption
Turntables, Swivel units, Robot arms, Linear slides

MA/ML33 to MA/ML64

Page 76

Adjustable
High energy absorption and progressive adjustment
Linear slides, Swivel units, Turntables, Portal systems

SASL1 1/8

Page 80

Adjustable
Low velocity and high effective weight range
Linear slides, Pneumatic cylinders, Swivel units, Handling modules

SALD1/2 to SALD1 1/8

Page 82

Adjustable
High energy absorption and a wide effective weight range
Linear slides, Pneumatic cylinders, Swivel units, Handling modules

SALDN3/4

Page 86

Adjustable
High energy absorption and a wide effective weight range
Linear slides, Pneumatic cylinders, Swivel units, Handling modules

Issue 04.2018 – Specifications subject to change

Products for UNF and metric thread available

MC33 to MC64

High energy absorption and robust design

Self-Compensating

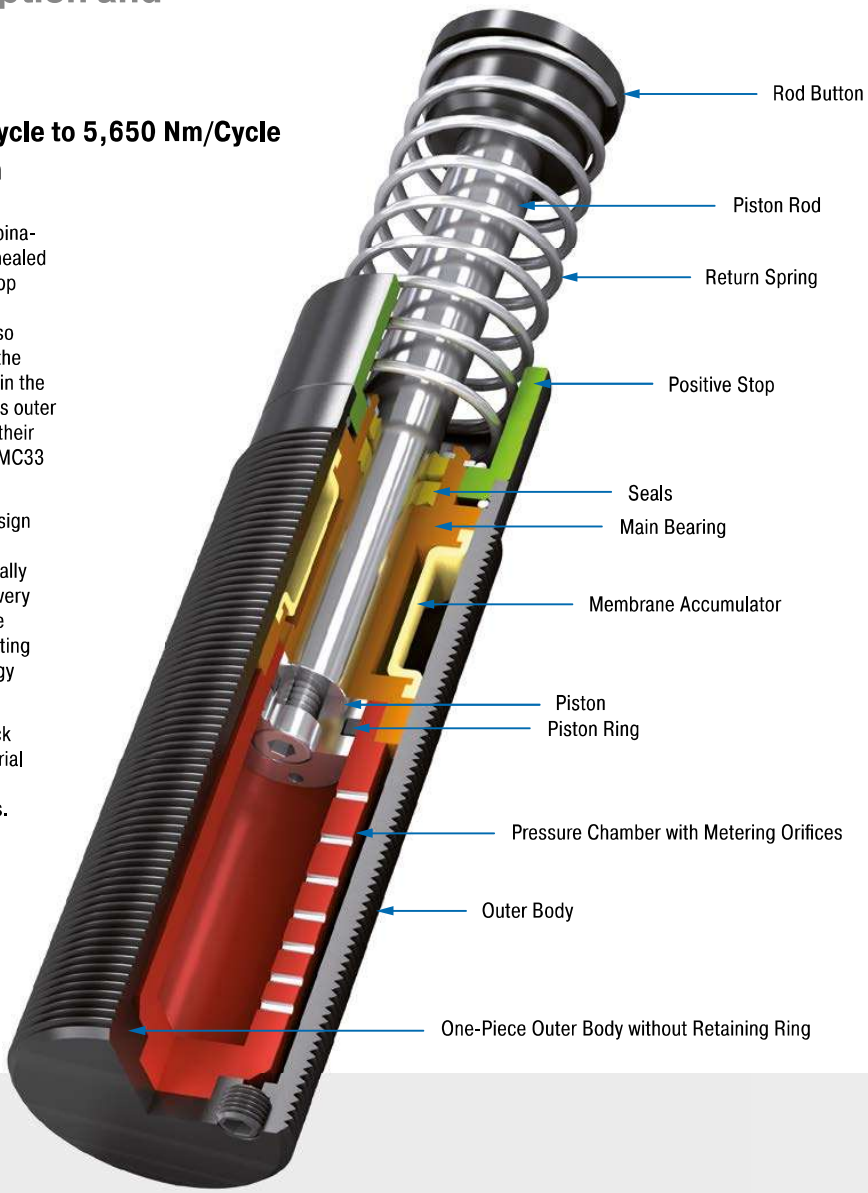
Energy capacity 170 Nm/Cycle to 5,650 Nm/Cycle

Stroke 23.1 mm to 150 mm

The latest damper technology: The combination of the latest sealing technology, annealed guide bearing and integrated positive stop make these self-compensating shock absorbers from ACE'S MAGNUM range so successful. After all, users benefit from the longer service life of the products, even in the most difficult environments. A continuous outer thread and extensive accessories make their contribution to the success story of the MC33 to MC64.

High energy absorption in a compact design and a wide damping range lead to huge advantages in practice. Alongside generally more compact designs, these small yet very powerful absorbers enable full use of the machine's performance. Self-compensating shock absorbers react to changing energy conditions, without adjustment.

These self-compensating industrial shock absorbers are used in all areas of industrial automation and machine engineering, especially in automation and for gantries.



Technical Data

Energy capacity: 170 Nm/Cycle to 5,650 Nm/Cycle

Impact velocity range: 0.15 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 with black oxide finish or nitride hardened

Damping medium: Automatic Transmission Fluid (ATF)

Application field: Linear slides, Swivel units, Turntables, Portal systems, Machines and plants, Tool machines, Machining centers, Z-axes, Impact panels, Handling modules

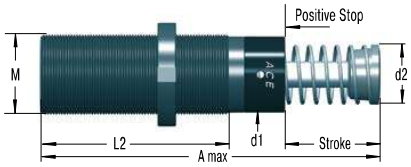
Note: A noise reduction of 3 dB to 7 dB is possible when using the special impact button. For emergency use only applications and for continous use (with additional cooling) it is sometimes possible to exceed the published max. capacity ratings. In this case, please consult ACE.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

On request: Special oils, nickel-plated, increased corrosion protection, mounting inside air cylinders or other special options are available on request.

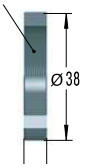
Issue 04.2018 – Specifications subject to change

MC33

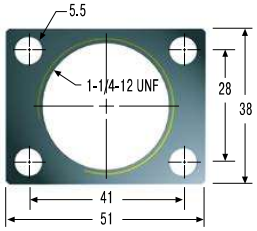


Product available for UNF and metric thread (for metric add suffix -M from part number)
M36x1.5 and M42x1.5 also available to order

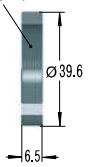
250-0038
Locking Ring
1-1/4-12 UNF



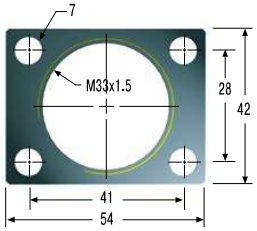
250-0016
Rectangular Flange



250-0292
Locking Ring
M33x1.5



250-0293
Rectangular Flange



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

Model Type Prefix

Standard Models
MC: Self-Contained with return spring, self-compensating
Special Models
MCA: Air/Oil return without return spring. Use only with external air/oil tank.
MCS: Air/Oil return with return spring. Use only with external air/oil tank.
MCN: Self-Contained without return spring

Ordering Example **MC3325M-1**

Self-Compensating
33 for 1-1/4-12 UNF or M33 threads
Stroke 0.98" (25 mm)
Metric Thread
(omitted when using thread UNF 1 1/4-12)
Effective Weight Range Version

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC3325	23.2	138	30	25	83	1-1/4-12 UNF / M33x1.5
MC3350	48.6	189	30	25	108	1-1/4-12 UNF / M33x1.5

Performance

	Max. Energy Capacity				Effective Weight							
TYPES	[1] E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	E_4 with Oil Recirculation Nm/h	[2] We min. kg	[2] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
MC3325-0	170	75,000	124,000	169,000	3	11	-0	45	90	0.03	4	0.51
MC3325-1	170	75,000	124,000	169,000	9	40	-1	45	90	0.03	4	0.51
MC3325-2	170	75,000	124,000	169,000	30	120	-2	45	90	0.03	4	0.51
MC3325-3	170	75,000	124,000	169,000	100	420	-3	45	90	0.03	4	0.51
MC3325-4	170	75,000	124,000	169,000	350	1,420	-4	45	90	0.03	4	0.51
MC3350-0	330	85,000	135,000	180,000	5	22	-0	45	135	0.06	3	0.63
MC3350-1	330	85,000	135,000	180,000	18	70	-1	45	135	0.06	3	0.63
MC3350-2	330	85,000	135,000	180,000	60	250	-2	45	135	0.06	3	0.63
MC3350-3	330	85,000	135,000	180,000	210	840	-3	45	135	0.06	3	0.63
MC3350-4	330	85,000	135,000	180,000	710	2,830	-4	45	135	0.06	3	0.63

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] The effective weight range limits can be raised or lowered to special order.
[3] For applications with higher side load angles please contact ACE.

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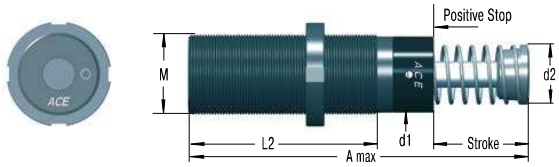
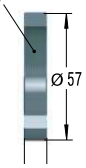
Products for UNF and metric thread available

MC45

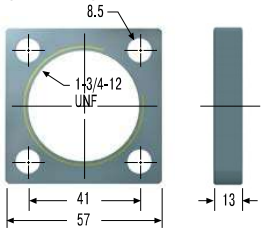


Product available for UNF and metric thread (for metric add suffix -M from part number)

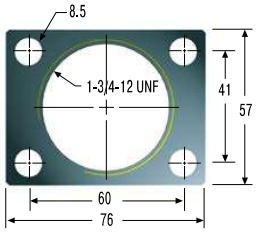
250-0041
Locking Ring
1-3/4-12 UNF



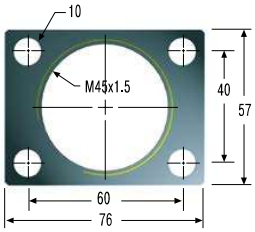
250-0023
Square Flange



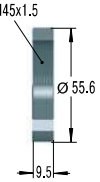
250-0024
Rectangular Flange



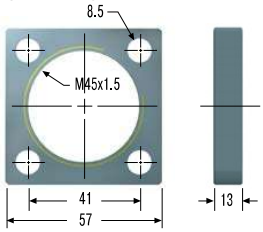
250-0299
Rectangular Flange



250-0297
Locking Ring
M45x1.5



250-0298
Square Flange



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

Model Type Prefix

Standard Models
MC: Self-Contained with return spring, self-compensating
Special Models
MCA: Air/Oil return without return spring. Use only with external air/oil tank.
MCS: Air/Oil return with return spring. Use only with external air/oil tank.
MCN: Self-Contained without return spring

Ordering Example **MC4525M-1**

Self-Compensating
45 for 1-3/4-12 UNF or M45 threads
Stroke 0.98" (25 mm)
Metric Thread
(omitted when using thread UNF 1-3/4-12)
Effective Weight Range Version

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC4525	23.1	145	42	35	95	1-3/4-12 UNF / M45x1.5
MC4550	48.5	195	42	35	120	1-3/4-12 UNF / M45x1.5
MC4575	73.9	246	42	35	145	1-3/4-12 UNF / M45x1.5

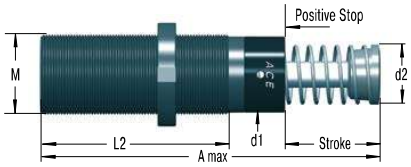
Performance

	Max. Energy Capacity				Effective Weight							
TYPES	[1] E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	E_4 with Oil Recirculation Nm/h	[2] We min. kg	[2] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
MC4525-0	370	107,000	158,000	192,000	7	27	-0	70	100	0.03	4	1.13
MC4525-1	370	107,000	158,000	192,000	20	90	-1	70	100	0.03	4	1.13
MC4525-2	370	107,000	158,000	192,000	80	310	-2	70	100	0.03	4	1.13
MC4525-3	370	107,000	158,000	192,000	260	1,050	-3	70	100	0.03	4	1.13
MC4525-4	370	107,000	158,000	192,000	890	3,540	-4	70	100	0.03	4	1.13
MC4550-0	740	112,000	192,000	248,000	13	54	-0	70	145	0.08	3	1.36
MC4550-1	740	112,000	192,000	248,000	45	180	-1	70	145	0.08	3	1.36
MC4550-2	740	112,000	192,000	248,000	150	620	-2	70	145	0.08	3	1.36
MC4550-3	740	112,000	192,000	248,000	520	2,090	-3	70	145	0.08	3	1.36
MC4550-4	740	112,000	192,000	248,000	1,800	7,100	-4	70	145	0.08	3	1.36
MC4575-0	1,130	146,000	225,000	282,000	20	80	-0	50	180	0.11	2	1.59
MC4575-1	1,130	146,000	225,000	282,000	70	270	-1	50	180	0.11	2	1.59
MC4575-2	1,130	146,000	225,000	282,000	230	930	-2	50	180	0.11	2	1.59
MC4575-3	1,130	146,000	225,000	282,000	790	3,140	-3	50	180	0.11	2	1.59
MC4575-4	1,130	146,000	225,000	282,000	2,650	10,600	-4	50	180	0.11	2	1.59

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] The effective weight range limits can be raised or lowered to special order.
[3] For applications with higher side load angles please contact ACE.

Issue 04.2018 – Specifications subject to change

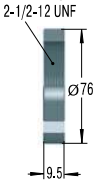
MC64



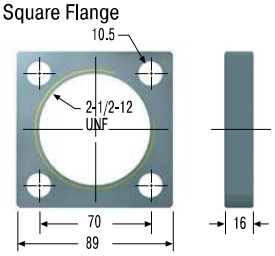
Product available for UNF and metric thread (for metric add suffix -M from part number) 150 mm stroke model does not include stop collar.

Positive stop is provided by the rod button (Ø 60 mm) and a stop block.

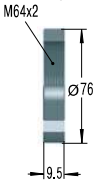
250-0042
Locking Ring



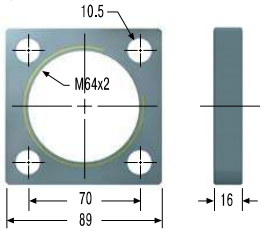
250-0028
Square Flange



250-0301
Locking Ring



250-0302
Square Flange



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

Model Type Prefix

Standard Models

MC: Self-Contained with return spring, self-compensating

Special Models

MCA: Air/Oil return without return spring. Use only with external air/oil tank.

MCS: Air/Oil return with return spring. Use only with external air/oil tank.

MCN: Self-Contained without return spring

Ordering Example **MC6450M-1**

Self-Compensating
64 for 2-1/2-12 UNF or M64 threads
Stroke 0.97" (50 mm)
Metric Thread
(omitted when using thread UNF 2-1/2-12)
Effective Weight Range Version

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC6450	48.6	225	60	48	140	2-1/2-12 UNF / M64x2
MC64100	99.4	326	60	48	191	2-1/2-12 UNF / M64x2
MC64150	150	450	60	48	241	2-1/2-12 UNF / M64x2

Performance

	Max. Energy Capacity				Effective Weight							
TYPES	[1] E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	E_4 with Oil Recirculation Nm/h	[2] We min. kg	[2] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
MC6450-0	1,870	146,000	293,000	384,000	35	140	-0	90	155	0.12	4	2.90
MC6450-1	1,870	146,000	293,000	384,000	140	540	-1	90	155	0.12	4	2.90
MC6450-2	1,870	146,000	293,000	384,000	460	1,850	-2	90	155	0.12	4	2.90
MC6450-3	1,870	146,000	293,000	384,000	1,600	6,300	-3	90	155	0.12	4	2.90
MC6450-4	1,870	146,000	293,000	384,000	5,300	21,200	-4	90	155	0.12	4	2.90
MC64100-0	3,730	192,000	384,000	497,000	70	280	-0	105	270	0.34	3	3.70
MC64100-1	3,730	192,000	384,000	497,000	270	1,100	-1	105	270	0.34	3	3.70
MC64100-2	3,730	192,000	384,000	497,000	930	3,700	-2	105	270	0.34	3	3.70
MC64100-3	3,730	192,000	384,000	497,000	3,150	12,600	-3	105	270	0.34	3	3.70
MC64100-4	3,730	192,000	384,000	497,000	10,600	42,500	-4	105	270	0.34	3	3.70
MC64150-0	5,650	248,000	497,000	644,000	100	460	-0	75	365	0.48	2	5.10
MC64150-1	5,650	248,000	497,000	644,000	140	1,640	-1	75	365	0.48	2	5.10
MC64150-2	5,650	248,000	497,000	644,000	1,390	5,600	-2	75	365	0.48	2	5.10
MC64150-3	5,650	248,000	497,000	644,000	4,700	18,800	-3	75	365	0.48	2	5.10
MC64150-4	5,650	248,000	497,000	644,000	16,000	63,700	-4	75	365	0.48	2	5.10

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] The effective weight range limits can be raised or lowered to special order.
[3] For applications with higher side load angles please contact ACE.

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MC33-V4A to MC64-V4A

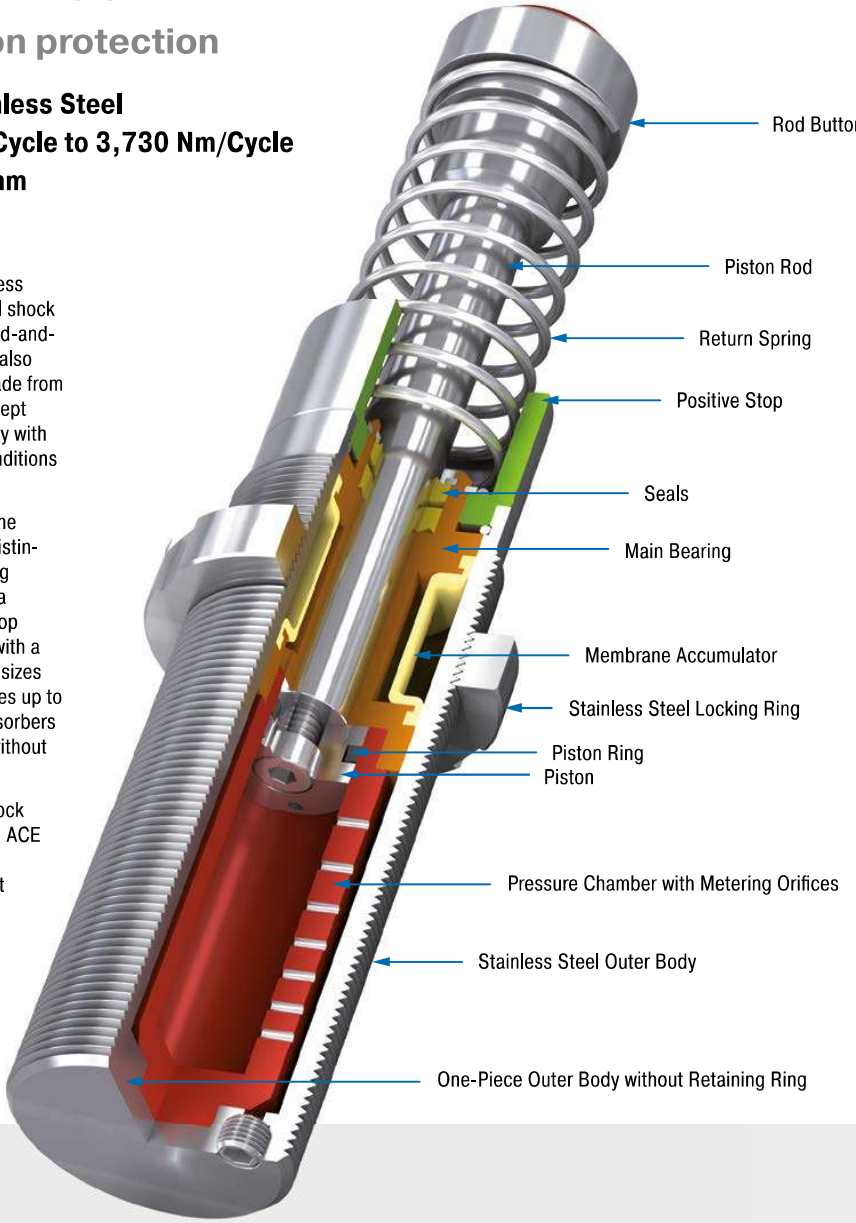
Optimum corrosion protection

Self-Compensating, Stainless Steel
Energy capacity 170 Nm/Cycle to 3,730 Nm/Cycle
Stroke 23.1 mm to 99.4 mm

The latest damper technology in stainless steel: The self-compensating industrial shock absorbers MC33 to MC64 from the tried-and-tested and popular MAGNUM range is also available with all outer components made from stainless steel, material AISI 316L (except piston rod). They are filled in the factory with special oil, which meets the permit conditions (NSF-H1) for the food industry.

Just like the standard product family, the MAGNUM stainless steel models are distinguished by their robust, modern sealing technology, high energy absorption in a compact design, integrated positive stop and a wide damping range. Equipped with a PUR head, they are available in thread sizes M33x1.5 to M64x2 with damping strokes up to 100 mm. Self-compensating shock absorbers react to changing energy conditions, without adjustment.

These self-compensating industrial shock absorbers made of stainless steel from ACE are mainly used in the food, medical, electronics and offshore industries, but also in many other markets.



Technical Data

Energy capacity: 170 Nm/Cycle to 3,730 Nm/Cycle

Impact velocity range: 0.15 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, Main bearing, Accessories, Locking ring: Stainless steel (1.4404, AISI 316L); Piston rod: Hard chrome plated steel; Rod end button: Stainless steel (1.4404, AISI 316L) with elastomer insert; Return spring: Stainless steel

Damping medium: Special oil NSF-H1 approved

Application field: Linear slides, Swivel units, Turntables, Food industry, Medical technology, Portal systems, Machines and plants, Tool machines, Machining centers, Z-axes

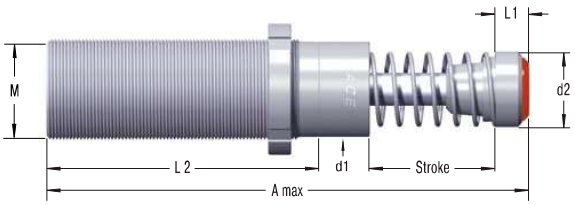
Note: Impact button for noise reduction included. For emergency use only applications and for continous use (with additional cooling) it is sometimes possible to exceed the published max. capacity ratings. In this case, please consult ACE.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

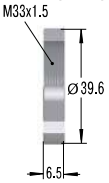
On request: Special oils, other special options and special accessories are available on request.

Issue 04.2018 – Specifications subject to change

MC33M-V4A



250-0048
Locking Ring



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

Model Type Prefix

Standard Models
MC: Self-Contained with return spring, self-compensating
Special Models
MCA: Air/Oil return without return spring. Use only with external air/oil tank.
MCS: Air/Oil return with return spring. Use only with external air/oil tank.
MCN: Self-Contained without return spring

Ordering Example **MC3325M-2-V4A**

- Self-Compensating
- Thread Size M33
- Stroke 0.98" (25 mm)
- Effective Weight Range Version
- Stainless Steel 1.4404/AISI 316L

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L1 mm	L2 mm	M
MC3325M-V4A	23.2	151.2	30	29.2	13.2	83	M33x1.5
MC3350M-V4A	48.6	202.2	30	29.2	13.2	108	M33x1.5

Performance

	Max. Energy Capacity		Effective Weight							
TYPES	E_3 Nm/cycle	E_4 Nm/h	[1] We min. kg	[1] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[2] Side Load Angle max. °	Weight kg
MC3325M-0-V4A	170	75,000	3	11	-0	45	90	0.03	4	0.51
MC3325M-1-V4A	170	75,000	9	40	-1	45	90	0.03	4	0.51
MC3325M-2-V4A	170	75,000	30	120	-2	45	90	0.03	4	0.51
MC3325M-3-V4A	170	75,000	100	420	-3	45	90	0.03	4	0.51
MC3325M-4-V4A	170	75,000	350	1,420	-4	45	90	0.03	4	0.51
MC3350M-0-V4A	330	85,000	5	22	-0	45	135	0.06	3	0.63
MC3350M-1-V4A	330	85,000	18	70	-1	45	135	0.06	3	0.63
MC3350M-2-V4A	330	85,000	60	250	-2	45	135	0.06	3	0.63
MC3350M-3-V4A	330	85,000	240	840	-3	45	135	0.06	3	0.63
MC3350M-4-V4A	330	85,000	710	2,830	-4	45	135	0.06	3	0.63

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] For applications with higher side load angles please contact ACE.

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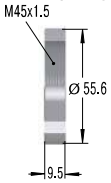
Industrial Shock Absorbers MC45M-V4A

Self-Compensating, Stainless Steel

MC45M-V4A

250-0049
Locking Ring
M45x1.5



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

Model Type Prefix

Standard Models
MC: Self-Contained with return spring, self-compensating
Special Models
MCA: Air/Oil return without return spring. Use only with external air/oil tank.
MCS: Air/Oil return with return spring. Use only with external air/oil tank.
MCN: Self-Contained without return spring

Ordering Example **MC4525M-2-V4A**

- Self-Compensating
- Thread Size M45
- Stroke 0.98" (25 mm)
- Effective Weight Range Version
- Stainless Steel 1.4404/AISI 316L

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L1 mm	L2 mm	M
MC4525M-V4A	23.1	164.5	42	42	19.4	95	M45x1.5
MC4550M-V4A	48.5	214.4	42	42	19.4	120	M45x1.5
MC4575M-V4A	73.9	265.4	42	42	19.4	145	M45x1.5

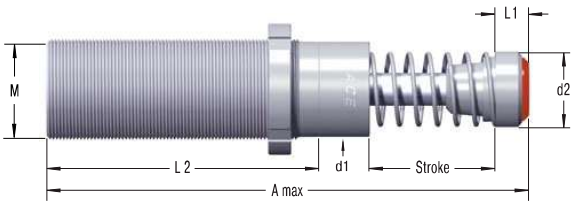
Performance

	Max. Energy Capacity		Effective Weight							
TYPES	E_3 Nm/cycle	E_4 Nm/h	[1] We min. kg	[1] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[2] Side Load Angle max. °	Weight kg
MC4525M-0-V4A	370	107,000	7	27	-0	70	100	0.03	4	1.14
MC4525M-1-V4A	370	107,000	20	90	-1	70	100	0.03	4	1.14
MC4525M-2-V4A	370	107,000	80	310	-2	70	100	0.03	4	1.14
MC4525M-3-V4A	370	107,000	260	1,050	-3	70	100	0.03	4	1.14
MC4525M-4-V4A	370	107,000	890	3,540	-4	70	100	0.03	4	1.14
MC4550M-0-V4A	740	112,000	13	54	-0	70	145	0.08	3	1.36
MC4550M-1-V4A	740	112,000	45	180	-1	70	145	0.08	3	1.36
MC4550M-2-V4A	740	112,000	150	620	-2	70	145	0.08	3	1.36
MC4550M-3-V4A	740	112,000	520	2,090	-3	70	145	0.08	3	1.36
MC4550M-4-V4A	740	112,000	1,800	7,100	-4	70	145	0.08	3	1.36
MC4575M-0-V4A	1,130	146,000	20	80	-0	50	180	0.11	2	1.59
MC4575M-1-V4A	1,130	146,000	70	270	-1	50	180	0.11	2	1.59
MC4575M-2-V4A	1,130	146,000	230	930	-2	50	180	0.11	2	1.59
MC4575M-3-V4A	1,130	146,000	790	3,140	-3	50	180	0.11	2	1.59
MC4575M-4-V4A	1,130	146,000	2,650	10,600	-4	50	180	0.11	2	1.59

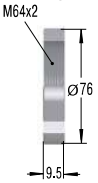
[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] For applications with higher side load angles please contact ACE.

Issue 04.2018 – Specifications subject to change

MC64M-V4A



250-0179
Locking Ring



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

Model Type Prefix

Standard Models
MC: Self-Contained with return spring, self-compensating
Special Models
MCA: Air/Oil return without return spring. Use only with external air/oil tank.
MCS: Air/Oil return with return spring. Use only with external air/oil tank.
MCN: Self-Contained without return spring

Ordering Example **MC6450M-2-V4A**

Self-Compensating
Thread Size M64
Stroke 0.97" (50 mm)
Effective Weight Range Version
Stainless Steel 1.4404/AISI 316L

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L1 mm	L2 mm	M
MC6450M-V4A	48.6	244.1	60	60	19.1	140	M64x2
MC64100M-V4A	99.4	345.1	60	60	19.1	191	M64x2

Performance

TYPES	Max. Energy Capacity E_3 Nm/cycle	Max. Energy Capacity E_4 Nm/h	Effective Weight [1] We min. kg	Effective Weight [1] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[2] Side Load Angle max. °	Weight kg
MC6450M-0-V4A	1,870	146,000	35	140	-0	90	155	0.12	4	2.90
MC6450M-1-V4A	1,870	146,000	140	540	-1	90	155	0.12	4	2.90
MC6450M-2-V4A	1,870	146,000	460	1,850	-2	90	155	0.12	4	2.90
MC6450M-3-V4A	1,870	146,000	1,600	6,300	-3	90	155	0.12	4	2.90
MC6450M-4-V4A	1,870	146,000	5,300	21,200	-4	90	155	0.12	4	2.90
MC64100M-0-V4A	3,730	192,000	70	280	-0	105	270	0.34	3	3.70
MC64100M-1-V4A	3,730	192,000	270	1,100	-1	105	270	0.34	3	3.70
MC64100M-2-V4A	3,730	192,000	930	3,700	-2	105	270	0.34	3	3.70
MC64100M-3-V4A	3,730	192,000	3,150	12,600	-3	105	270	0.34	3	3.70
MC64100M-4-V4A	3,730	192,000	10,600	42,500	-4	105	270	0.34	3	3.70

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] For applications with higher side load angles please contact ACE.

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Products for UNF and metric thread available

MC33-HT to MC64-HT

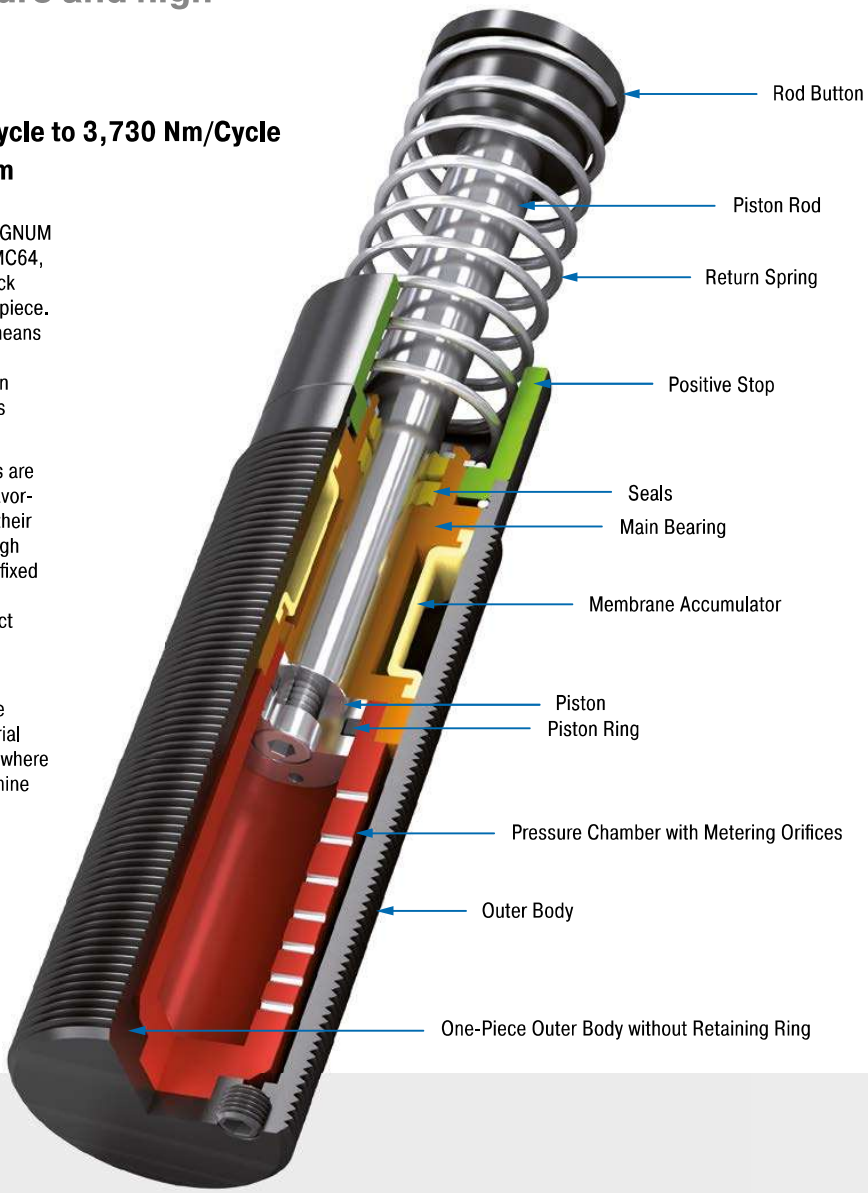
Extreme temperature and high cycle applications

Self-Compensating
Energy capacity 170 Nm/Cycle to 3,730 Nm/Cycle
Stroke 23.1 mm to 99.4 mm

Greater application range: just like all MAGNUM types from the product family MC33 to MC64, the HT (high temperature) industrial shock absorbers are also made from one solid piece. They use special seals and fluids. This means that these versions can even be used at extreme temperatures of 0 °C to 150 °C in order to safely and reliably damp masses and absorb 100 % of the kinetic energy.

These ready-to-install machine elements are recommended even under the most unfavorable conditions. Additional benefits are their robust, innovative sealing technology, high energy absorption in a compact design, fixed positive stop and a wide damping range. Self-compensating shock absorbers react to changing energy conditions, without adjustment.

Designed for use in extreme temperature ranges, these self-compensating industrial shock absorbers are suitable almost anywhere in plant, industrial, automation and machine engineering.



Technical Data

Energy capacity: 170 Nm/Cycle to 3,730 Nm/Cycle

Impact velocity range: 0.15 m/s to 5 m/s. Other speeds on request.

Operating temperature range: 0 °C to 150 °C

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 with black oxide finish or nitride hardened

Damping medium: Synthetic high temperature oil

Application field: Linear slides, Swivel units, Turntables, Machines and plants, Tool machines, Machining centers, Z-axes

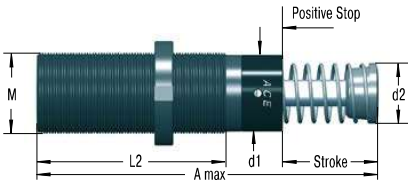
Note: A noise reduction of 3 dB to 7 dB is possible when using the special impact button.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

On request: Nickel-plated, increased corrosion protection, mounting inside air cylinders or other special options are available on request. Adjustable HT and LT shock absorbers.

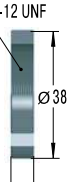
Issue 04.2018 – Specifications subject to change

MC33-HT

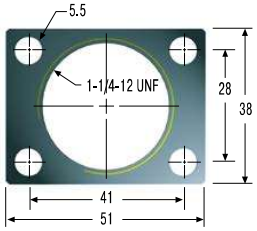


Product available for UNF and metric thread (for metric add suffix -M from part number)
M33x1.5, M36x1.5 and M42x1.5 also available to order

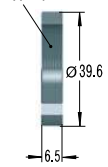
250-0038
Locking Ring
1-1/4-12 UNF



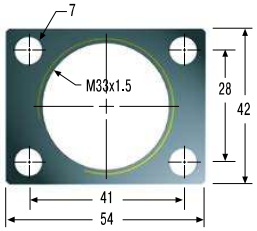
250-0016
Rectangular Flange



250-0292
Locking Ring
M33x1.5



250-0293
Rectangular Flange



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

Complete details required when ordering

Load to be decelerated: m (kg)
Impact velocity: v (m/s)
Propelling force: F (N)
Operating cycles per hour: c (/hr)
Number of absorbers in parallel: n
Ambient temperature: °C

Ordering Example **MC3350M-2-HT**

Self-Compensating
33 for 1-1/4-12 UNF or M33 threads
Stroke 1.97" (50 mm)
Metric Thread
(omitted when using thread UNF 1-1/4-12)
Effective Weight Range Version
HT = Version for High Temperature Use

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC3325-HT	23.2	138	30	25	83	1-1/4-12 UNF / M33x1.5
MC3350-HT	48.6	189	30	25	108	1-1/4-12 UNF / M33x1.5

Performance

	Max. Energy Capacity			Effective Weight				
TYPES	E_s Nm/cycle	E_4 at 20 °C Nm/h	E_4 at 100 °C Nm/h	[1] We min. kg	[1] We max. kg	Hardness	[2] Side Load Angle max. °	Weight kg
MC3325-0-HT	170	215,000	82,000	3	11	-0	4	0.51
MC3325-1-HT	170	215,000	82,000	9	40	-1	4	0.51
MC3325-2-HT	170	215,000	82,000	30	120	-2	4	0.51
MC3325-3-HT	170	215,000	82,000	100	420	-3	4	0.51
MC3325-4-HT	170	215,000	82,000	350	1,420	-4	4	0.51
MC3350-0-HT	330	244,000	93,000	5	22	-0	3	0.63
MC3350-1-HT	330	244,000	93,000	18	70	-1	3	0.63
MC3350-2-HT	330	244,000	93,000	60	250	-2	3	0.63
MC3350-3-HT	330	244,000	93,000	240	840	-3	3	0.63
MC3350-4-HT	330	244,000	93,000	710	2,830	-4	3	0.63

[1] The effective weight range limits can be raised or lowered to special order.
[2] For applications with higher side load angles please contact ACE.

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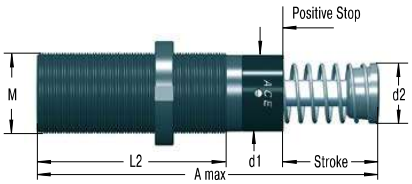
Industrial Shock Absorbers MC45-HT

Products for UNF and metric thread available

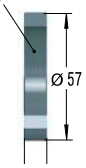
Self-Compensating

MC45-HT

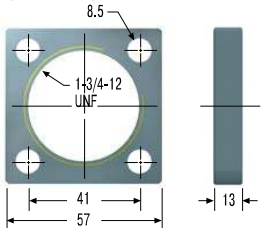


Product available for UNF and metric thread (for metric add suffix -M from part number)

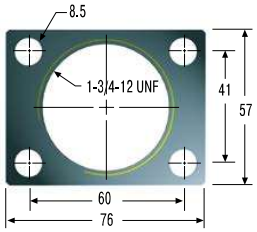
250-0041
Locking Ring
1-3/4-12 UNF



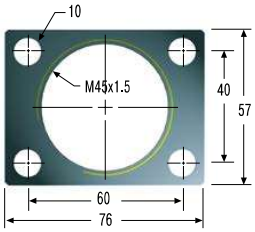
250-0023
Square Flange



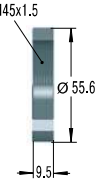
250-0024
Rectangular Flange



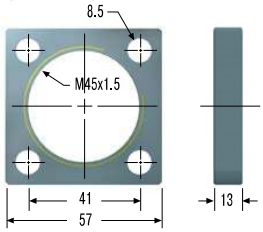
250-0299
Rectangular Flange



250-0297
Locking Ring
M45x1.5



250-0298
Square Flange



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

Complete details required when ordering

Load to be decelerated: m (kg)
Impact velocity: v (m/s)
Propelling force: F (N)
Operating cycles per hour: c (/hr)
Number of absorbers in parallel: n
Ambient temperature: °C

Ordering Example **MC4525M-2-HT**

Self-Compensating
45 for 1-3/4-12 UNF or M45 threads
Stroke 0.91" (25 mm)
Metric Thread
(omitted when using thread UNF 1-3/4-12)
Effective Weight Range Version
HT = Version for High Temperature Use

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC4525-HT	23.1	151	42	35	95	1-3/4-12 UNF / M45x1.5
MC4550-HT	48.5	195	42	35	120	1-3/4-12 UNF / M45x1.5

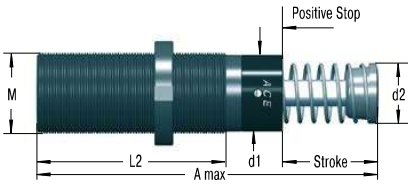
Performance

	Max. Energy Capacity			Effective Weight				
TYPES	E_3 Nm/cycle	E_4 at 20 °C Nm/h	E_4 at 100 °C Nm/h	[1] We min. kg	[1] We max. kg	Hardness	[2] Side Load Angle max. °	Weight kg
MC4525-0-HT	370	307,000	117,000	7	27	-0	4	1.13
MC4525-1-HT	370	307,000	117,000	20	90	-1	4	1.13
MC4525-2-HT	370	307,000	117,000	80	310	-2	4	1.13
MC4525-3-HT	370	307,000	117,000	260	1,050	-3	4	1.13
MC4525-4-HT	370	307,000	117,000	890	3,540	-4	4	1.13
MC4550-0-HT	740	321,000	122,000	13	54	-0	3	1.36
MC4550-1-HT	740	321,000	122,000	45	180	-1	3	1.36
MC4550-2-HT	740	321,000	122,000	154	620	-2	3	1.36
MC4550-3-HT	740	321,000	122,000	522	2,090	-3	3	1.36
MC4550-4-HT	740	321,000	122,000	1,800	7,100	-4	3	1.36

[1] The effective weight range limits can be raised or lowered to special order.
[2] For applications with higher side load angles please contact ACE.

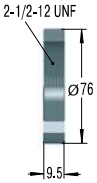
Issue 04.2018 – Specifications subject to change

MC64-HT

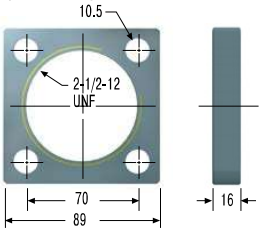


Product available for UNF and metric thread (for metric add suffix -M from part number)

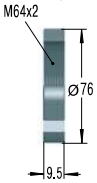
250-0042
Locking Ring



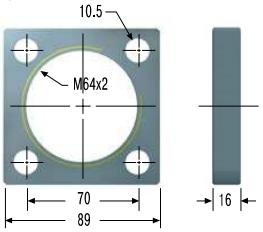
250-0028
Square Flange



250-0301
Locking Ring



250-0302
Square Flange



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

Complete details required when ordering

Load to be decelerated: m (kg)
Impact velocity: v (m/s)
Propelling force: F (N)
Operating cycles per hour: c (/hr)
Number of absorbers in parallel: n
Ambient temperature: °C

Ordering Example **MC6450M-2-HT**

Self-Compensating
64 for 2-1/2-12 UNF or M64 threads
Stroke 1.91" (50 mm)
Metric Thread
(omitted when using thread UNF 2-1/2-12)
Effective Weight Range Version
HT = Version for High Temperature Use

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC6450-HT	48.6	225	60	48	140	2-1/2-12 UNF / M64x2
MC64100-HT	99.4	326	60	48	191	2-1/2-12 UNF / M64x2

Performance

	Max. Energy Capacity			Effective Weight				
TYPES	E_s Nm/cycle	E_4 at 20 °C Nm/h	E_4 at 100 °C Nm/h	[1] We min. kg	[1] We max. kg	Hardness	[2] Side Load Angle max. °	Weight kg
MC6450-0-HT	1,870	419,000	159,000	35	140	-0	4	2.90
MC6450-1-HT	1,870	419,000	159,000	140	540	-1	4	2.90
MC6450-2-HT	1,870	419,000	159,000	460	1,850	-2	4	2.90
MC6450-3-HT	1,870	419,000	159,000	1,600	6,300	-3	4	2.90
MC6450-4-HT	1,870	419,000	159,000	5,300	21,200	-4	4	2.90
MC64100-0-HT	3,730	550,000	200,000	70	280	-0	3	3.70
MC64100-1-HT	3,730	550,000	200,000	270	1,100	-1	3	3.70
MC64100-2-HT	3,730	550,000	200,000	930	3,700	-2	3	3.70
MC64100-3-HT	3,730	550,000	200,000	3,150	12,600	-3	3	3.70
MC64100-4-HT	3,730	550,000	200,000	10,600	42,500	-4	3	3.70

[1] The effective weight range limits can be raised or lowered to special order.
[2] For applications with higher side load angles please contact ACE.

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MC33-LT to MC64-LT

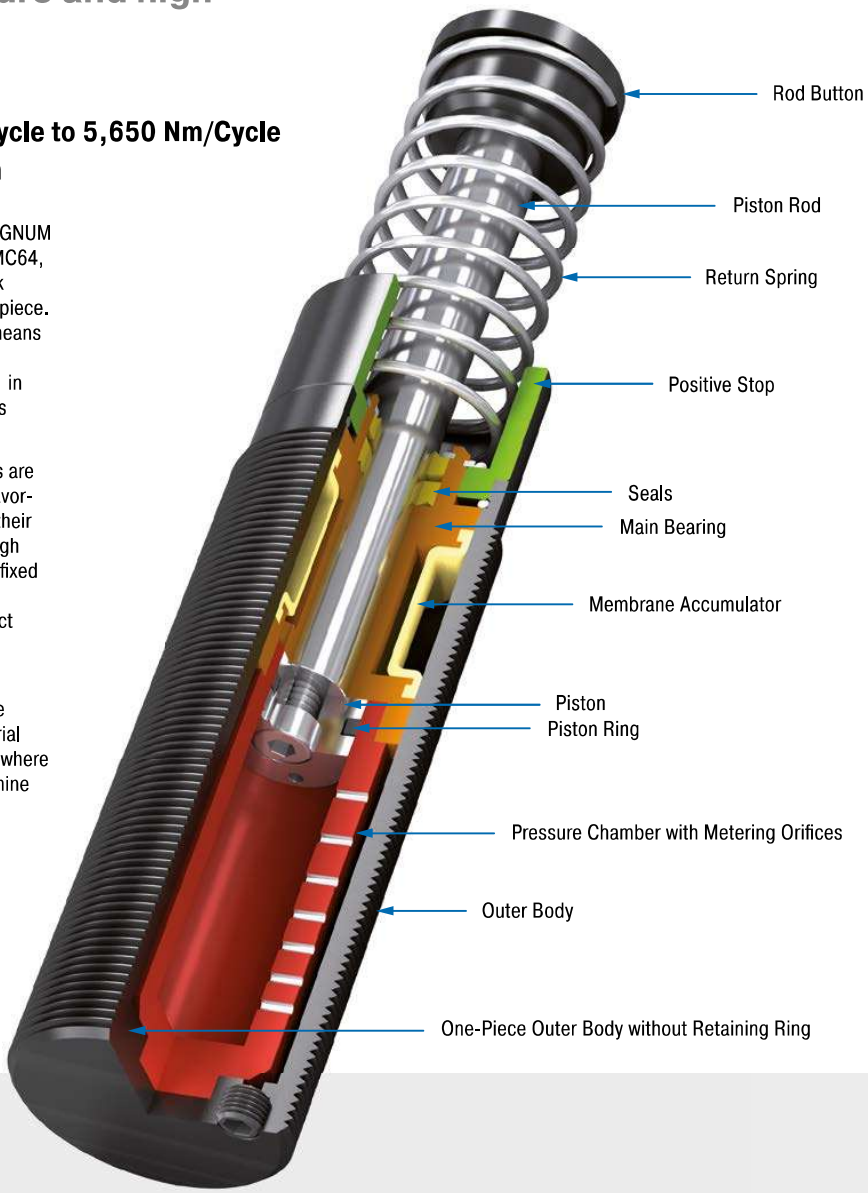
Extreme temperature and high cycle applications

Self-Compensating
Energy capacity 170 Nm/Cycle to 5,650 Nm/Cycle
Stroke 23.1 mm to 150 mm

Greater application range: just like all MAGNUM types from the product family MC33 to MC64, the LT (low temperature) industrial shock absorbers are also made from one solid piece. They use special seals and fluids. This means that these versions can even be used at extreme temperatures of -50 °C to 66 °C in order to safely and reliable damp masses and absorb 100 % of the kinetic energy.

These ready-to-install machine elements are recommended even under the most unfavorable conditions. Additional benefits are their robust, innovative sealing technology, high energy absorption in a compact design, fixed positive stop and a wide damping range. Self-compensating shock absorbers react to changing energy conditions, without adjustment.

Designed for use in extreme temperature ranges, these self-compensating industrial shock absorbers are suitable almost anywhere in plant, industrial, automation and machine engineering.



Technical Data

Energy capacity: 170 Nm/Cycle to 5,650 Nm/Cycle

Impact velocity range: 0.15 m/s to 5 m/s. Other speeds on request.

Operating temperature range: -50 °C to +66 °C

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 with black oxide finish or nitride hardened

Damping medium: Low temperature hydraulic oil

Application field: Linear slides, Swivel units, Turntables, Machines and plants, Tool machines, Machining centers, Z-axes

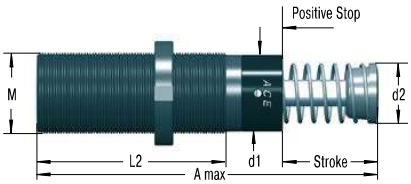
Note: A noise reduction of 3 dB to 7 dB is possible when using the special impact button.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

On request: Nickel-plated, increased corrosion protection, mounting inside air cylinders or other special options are available on request. Adjustable HT and LT shock absorbers.

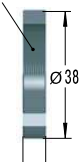
Issue 04.2018 – Specifications subject to change

MC33-LT

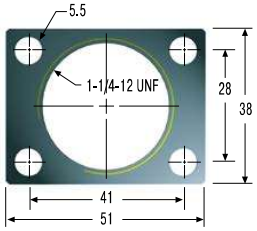


Product available for UNF and metric thread (for metric add suffix -M from part number)
M33x1.5, M36x1.5 and M42x1.5 also available to order

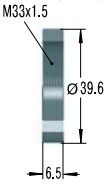
250-0038
Locking Ring
1-1/4-12 UNF



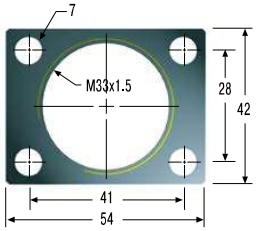
250-0016
Rectangular Flange



250-0292
Locking Ring
M33x1.5



250-0293
Rectangular Flange



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

Complete details required when ordering

Load to be decelerated: m (kg)
Impact velocity: v (m/s)
Propelling force: F (N)
Operating cycles per hour: c (/hr)
Number of absorbers in parallel: n
Ambient temperature: °C

Ordering Example **MC3325M-3-LT**

Self-Compensating
33 for 1-1/4-12 UNF or M33 threads
Stroke 0.91" (25 mm)
Metric Thread
(omitted when using thread UNF 1-1/4-12)
Effective Weight Range Version
LT = Version for High Temperature Use

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC3325-LT	23.2	138	30	25	83	1-1/4-12 UNF / M33x1.5
MC3350-LT	48.6	189	30	25	108	1-1/4-12 UNF / M33x1.5

Performance

	Max. Energy Capacity		Effective Weight					
TYPES	E_3 Nm/cycle	E_4 Nm/h	[1] We min. kg	[1] We max. kg	Hardness	[2] Return Time s	[3] Side Load Angle max. °	Weight kg
MC3325-0-LT	170	75,000	3	11	-0	0.08	4	0.51
MC3325-1-LT	170	75,000	9	40	-1	0.08	4	0.51
MC3325-2-LT	170	75,000	30	120	-2	0.08	4	0.51
MC3325-3-LT	170	75,000	100	420	-3	0.08	4	0.51
MC3325-4-LT	170	75,000	350	1,420	-4	0.08	4	0.51
MC3350-0-LT	330	85,000	5	22	-0	0.16	3	0.63
MC3350-1-LT	330	85,000	18	70	-1	0.16	3	0.63
MC3350-2-LT	330	85,000	60	250	-2	0.16	3	0.63
MC3350-3-LT	330	85,000	240	840	-3	0.16	3	0.63
MC3350-4-LT	330	85,000	710	2,830	-4	0.16	3	0.63

[1] The effective weight range limits can be raised or lowered to special order.
[2] at -50 °C
[3] For applications with higher side load angles please contact ACE.

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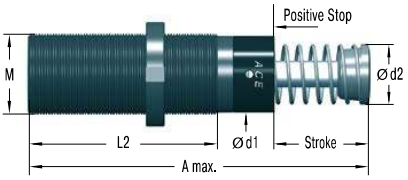
Industrial Shock Absorbers MC45-LT

Products for UNF and metric thread available

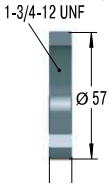
Self-Compensating

MC45-LT

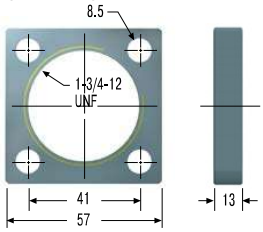


Product available for UNF and metric thread (for metric add suffix -M from part number)

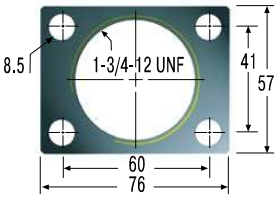
250-0041
Locking Ring
1-3/4-12 UNF



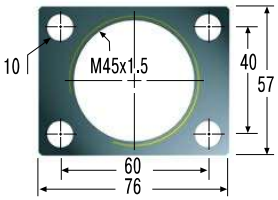
250-0023
Square Flange



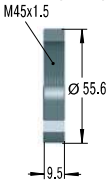
250-0024
Rectangular Flange



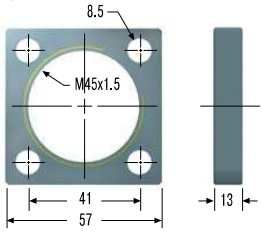
250-0299
Rectangular Flange



250-0297
Locking Ring
M45x1.5



250-0298
Square Flange



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

Complete details required when ordering

Load to be decelerated: m (kg)
Impact velocity: v (m/s)
Propelling force: F (N)
Operating cycles per hour: c (/hr)
Number of absorbers in parallel: n
Ambient temperature: °C

Ordering Example **MC4525M-3-LT**

Self-Compensating
45 for 1-3/4-12 UNF or M45 threads
Stroke 0.91" (25 mm)
Metric Thread
(omitted when using thread UNF 1-3/4-12)
Effective Weight Range Version
LT = Version for High Temperature Use

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC4525-LT	23.1	151	42	35	95	1-3/4-12 UNF / M45x1.5
MC4550-LT	48.5	195	42	35	120	1-3/4-12 UNF / M45x1.5
MC4575-LT	73.9	246	42	35	145	1-3/4-12 UNF / M45x1.5

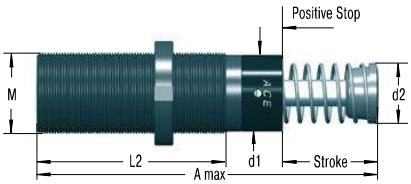
Performance

	Max. Energy Capacity		Effective Weight					
TYPES	E_2 Nm/cycle	E_4 Nm/h	[1] We min. kg	[1] We max. kg	Hardness	[2] Return Time s	[3] Side Load Angle max. °	Weight kg
MC4525-0-LT	370	107,000	7	27	-0	0.08	4	1.13
MC4525-1-LT	370	107,000	20	90	-1	0.08	4	1.13
MC4525-2-LT	370	107,000	80	310	-2	0.08	4	1.13
MC4525-3-LT	370	107,000	260	1,050	-3	0.08	4	1.13
MC4525-4-LT	370	107,000	890	3,540	-4	0.08	4	1.13
MC4550-0-LT	740	112,000	13	54	-0	0.16	3	1.36
MC4550-1-LT	740	112,000	45	180	-1	0.16	3	1.36
MC4550-2-LT	740	112,000	150	620	-2	0.16	3	1.36
MC4550-3-LT	740	112,000	520	2,090	-3	0.16	3	1.36
MC4550-4-LT	740	112,000	1,800	7,100	-4	0.16	3	1.36
MC4575-0-LT	1,130	146,000	20	80	-0	0.24	2	1.59
MC4575-1-LT	1,130	146,000	70	270	-1	0.24	2	1.59
MC4575-2-LT	1,130	146,000	230	930	-2	0.24	2	1.59
MC4575-3-LT	1,130	146,000	790	3,140	-3	0.24	2	1.59
MC4575-4-LT	1,130	146,000	2,650	10,600	-4	0.24	2	1.59

[1] The effective weight range limits can be raised or lowered to special order.
[2] at -50 °C
[3] For applications with higher side load angles please contact ACE.

Issue 04.2018 – Specifications subject to change

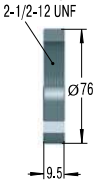
MC64-LT



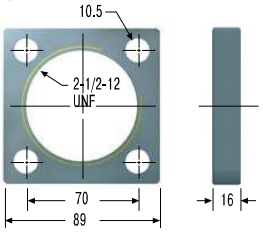
Product available for UNF and metric thread (for metric add suffix -M from part number) 150 mm stroke model does not include stop collar.

Positive stop is provided by the rod button (Ø 60 mm) and a stop block.

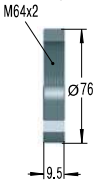
250-0042
Locking Ring



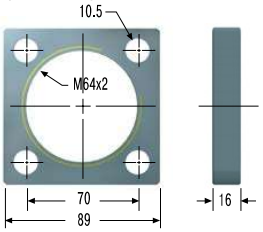
250-0028
Square Flange



250-0301
Locking Ring



250-0302
Square Flange



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

Complete details required when ordering

Load to be decelerated: m (kg)
Impact velocity: v (m/s)
Propelling force: F (N)
Operating cycles per hour: c (/hr)
Number of absorbers in parallel: n
Ambient temperature: °C

Ordering Example **MC6450M-3-LT**

Self-Compensating
64 for 2-1/2-12 UNF or M64 threads
Stroke 1.91" (50 mm)
Metric Thread
(omitted when using thread UNF 2-1/2-12)
Effective Weight Range Version
LT = Version for High Temperature Use

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MC6450-LT	48.6	225	60	48	140	2-1/2-12 UNF / M64x2
MC64100-LT	99.4	326	60	48	191	2-1/2-12 UNF / M64x2
MC64150-LT	150	450	60	48	241	2-1/2-12 UNF / M64x2

Performance

	Max. Energy Capacity		Effective Weight					
	E_3	E_4	[1] We min.	[1] We max.	Hardness	[2] Return Time	[3] Side Load Angle max.	Weight
TYPES	Nm/cycle	Nm/h	kg	kg		s	°	kg
MC6450-0-LT	1,870	146,000	35	140	-0	0.24	4	2.90
MC6450-1-LT	1,870	146,000	140	540	-1	0.24	4	2.90
MC6450-2-LT	1,870	146,000	460	1,850	-2	0.24	4	2.90
MC6450-3-LT	1,870	146,000	1,600	6,300	-3	0.24	4	2.90
MC6450-4-LT	1,870	146,000	5,300	21,200	-4	0.24	4	2.90
MC64100-0-LT	3,730	192,000	70	280	-0	0.68	3	3.70
MC64100-1-LT	3,730	192,000	270	1,100	-1	0.60	3	3.70
MC64100-2-LT	3,730	192,000	930	3,700	-2	0.68	3	3.70
MC64100-3-LT	3,730	192,000	3,150	12,600	-3	0.68	3	3.70
MC64100-4-LT	3,730	192,000	10,600	42,500	-4	0.68	3	3.70
MC64150-0-LT	5,650	248,000	100	460	-0	0.96	2	5.10
MC64150-1-LT	5,650	248,000	410	1,640	-1	0.96	2	5.10
MC64150-2-LT	5,650	248,000	1,390	5,600	-2	0.96	2	5.10
MC64150-3-LT	5,650	248,000	4,700	18,800	-3	0.96	2	5.10
MC64150-4-LT	5,650	248,000	16,000	63,700	-4	0.96	2	5.10

[1] The effective weight range limits can be raised or lowered to special order.
[2] at -50 °C
[3] For applications with higher side load angles please contact ACE.

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Products for UNF and metric thread available

SC33 to SC45

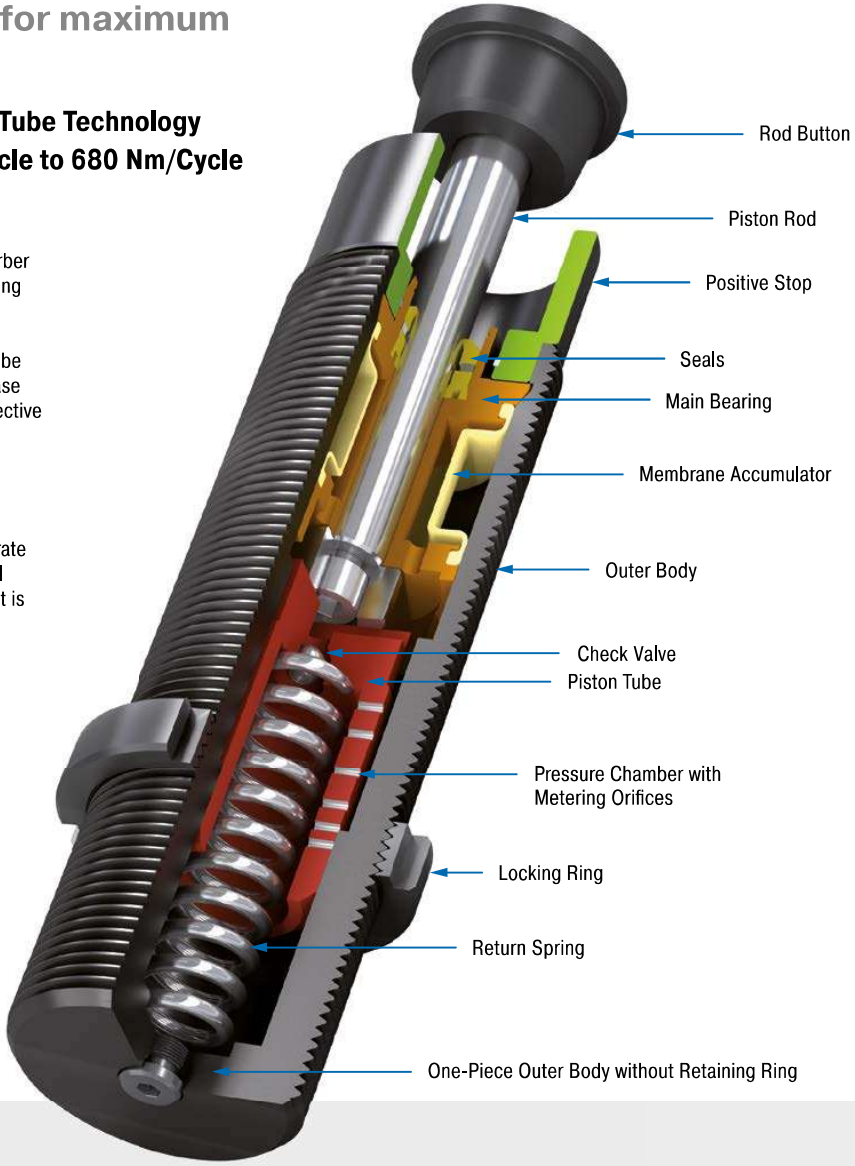
Piston tube design for maximum energy absorption

Self-Compensating, Piston Tube Technology
Energy capacity 155 Nm/Cycle to 680 Nm/Cycle
Stroke 23.1 mm to 48.6 mm

True performers: The SC33 to SC45 absorber models are strong and durable by combining the proven sealing technology from the MAGNUM range including membrane accumulator with the well-known piston tube technology from the SC² family. We increase the oil volume to ensure the maximum effective weights. Short stroke lengths of 25 mm to 50mm (.98 in to 1.96 in) deliver shorter braking times in combination with high energy absorption.

These dampers safely and reliably decelerate rotary movements without unwanted recoil effects. Installation close to the pivot point is possible. ACE's generation of piston tube manage low impact speeds with ease. Self-compensating shock absorbers react to changing energy conditions, without adjustment.

These self-compensating industrial shock absorbers can be relied on in industrial, automation and machine engineering. They are used in pivot units, rotary tables, robot arms or integrated wherever decleration is needed.



Technical Data

Energy capacity: 155 Nm/Cycle to 680 Nm/Cycle

Impact velocity range: 0.02 m/s to 0.46 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; Accessories: Steel with black oxide finish or nitride hardened

Damping medium: Low temperature hydraulic oil

Application field: Turntables, Swivel units, Robot arms, Linear slides, Pneumatic cylinders, Handling modules, Machines and plants, Finishing and processing centers

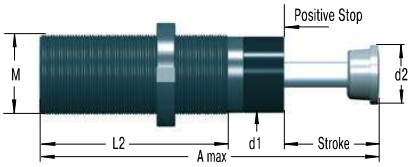
Note: A noise reduction of 3 dB to 7 dB is possible when using the special impact button.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

On request: Special oils, mounting inside air cylinders or other special options are available on request.

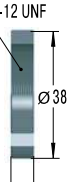
Issue 04.2018 – Specifications subject to change

SC33

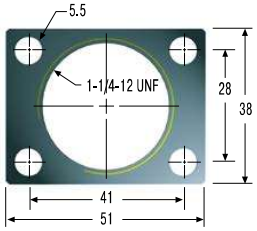


Product available for UNF and metric thread (for metric add suffix -M from part number)

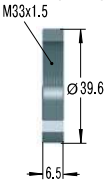
250-0038
Locking Ring
1-1/4-12 UNF



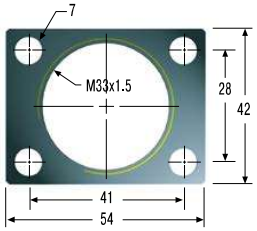
250-0016
Rectangular Flange



250-0292
Locking Ring
M33x1.5



250-0293
Rectangular Flange



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

Ordering Example **SC3325M-5**

- Self-Compensating
- 33 for 1-1/4-12 UNF or M33 threads
- Stroke 0.98" (25 mm)
- Metric Thread
- (omitted when using thread UNF 1 1/4-12)
- Effective Weight Range Version

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
SC3325	23.2	178	30	25	122	1-1/4-12 UNF / M33x1.5
SC3350	48.6	254	30	25	173	1-1/4-12 UNF / M33x1.5

Performance

	Max. Energy Capacity		Effective Weight							
TYPES	E_3 Nm/cycle	E_4 Nm/h	[1] We min. kg	[1] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[2] Side Load Angle max. °	Weight kg
SC3325-5	155	75,000	1,360	2,721	-5	44	89	0.75	4	0.68
SC3325-6	155	75,000	2,500	5,443	-6	44	89	0.75	4	0.68
SC3325-7	155	75,000	4,989	8,935	-7	44	89	0.75	4	0.68
SC3325-8	155	75,000	8,618	13,607	-8	44	89	0.75	4	0.68
SC3350-5	310	85,000	2,721	4,990	-5	51	125	0.90	3	0.92
SC3350-6	310	85,000	4,536	9,980	-6	51	125	0.90	3	0.92

[1] The effective weight range limits can be raised or lowered to special order.
[2] For applications with higher side load angles please contact ACE.

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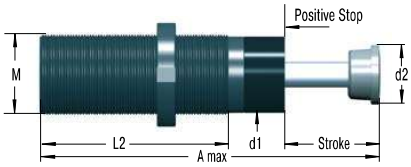
Industrial Shock Absorbers SC45

Products for UNF and metric thread available

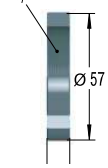
Self-Compensating, Piston Tube Technology

SC45

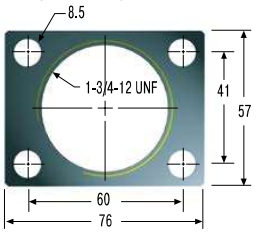


Product available for UNF and metric thread
(for metric add suffix -M from part number)

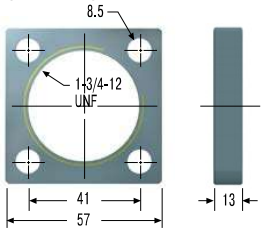
250-0041
Locking Ring
1-3/4-12 UNF



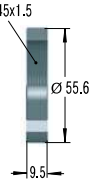
250-0024
Rectangular Flange



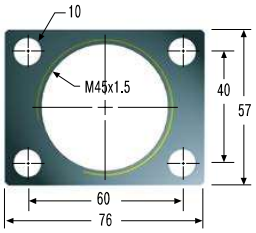
250-0023
Square Flange



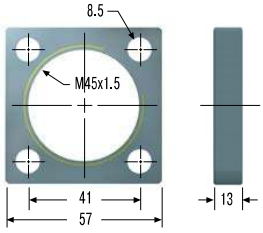
250-0297
Locking Ring
M45x1.5



250-0299
Rectangular Flange



250-0298
Square Flange



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

Ordering Example **SC4525M-5**

- Self-Compensating
- 45 for 1 3/4-12 UNF or M45 threads
- Stroke 0.98" (25 mm)
- Metric Thread
- (omitted when using thread UNF 1 3/4-12)
- Effective Weight Range Version

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
SC4525	23.1	189	42	35	139	1-3/4-12 UNF / M45x1.5
SC4550	48.5	265	42	35	190	1-3/4-12 UNF / M45x1.5

Performance

	Max. Energy Capacity		Effective Weight							
TYPES	E_3 Nm/cycle	E_4 Nm/h	[1] We min. kg	[1] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	[2] Side Load Angle max. °	Weight kg
SC4525-5	340	107,000	3,400	6,800	-5	67	104	0.8	4	1.43
SC4525-6	340	107,000	6,350	13,600	-6	67	104	0.8	4	1.43
SC4525-7	340	107,000	12,700	22,679	-7	67	104	0.8	4	1.43
SC4525-8	340	107,000	20,411	39,000	-8	67	104	0.8	4	1.43
SC4550-5	680	112,000	6,800	12,246	-5	47	242	1.0	3	1.90
SC4550-6	680	112,000	11,790	26,988	-6	47	242	1.0	3	1.90
SC4550-7	680	112,000	25,854	44,225	-7	47	242	1.0	3	1.90

[1] The effective weight range limits can be raised or lowered to special order.
[2] For applications with higher side load angles please contact ACE.

Issue 04.2018 – Specifications subject to change

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Products for UNF and metric thread available

MA/ML33 to MA/ML64

High energy absorption and progressive adjustment

Adjustable

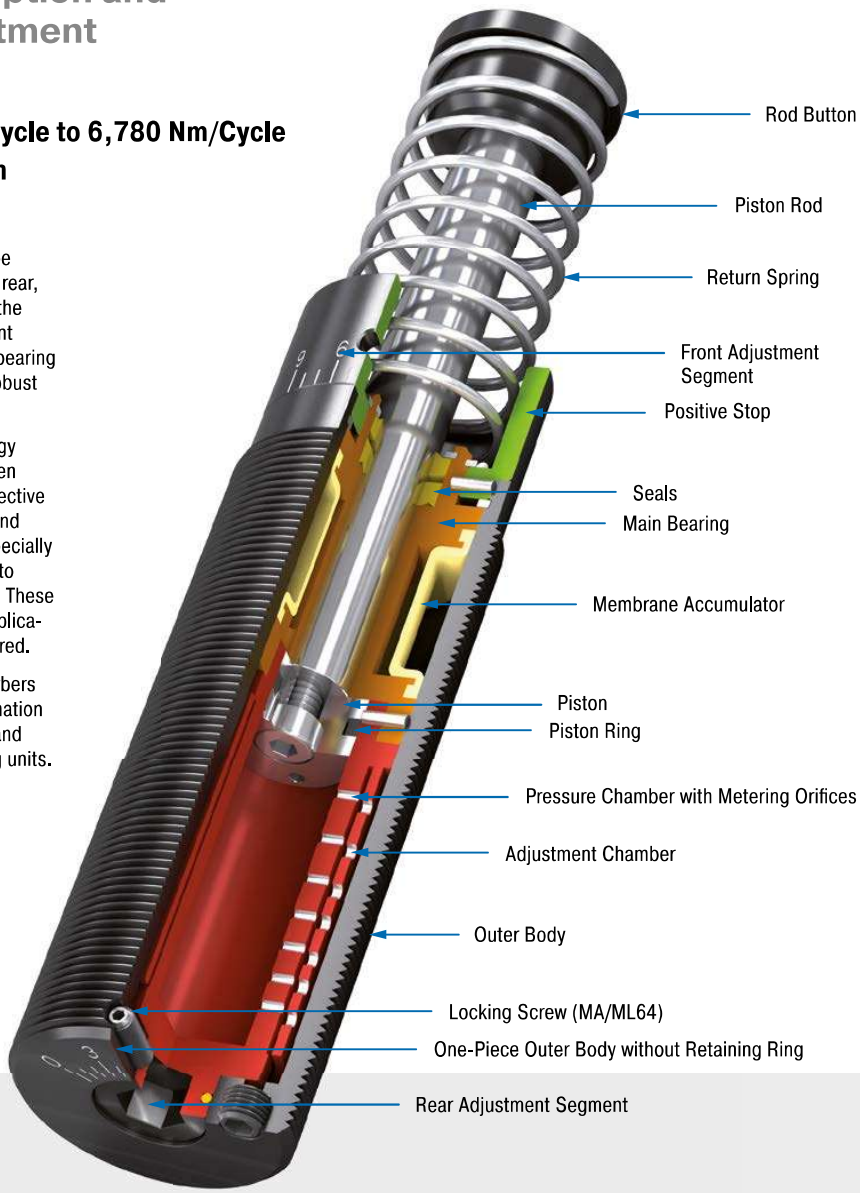
Energy capacity 170 Nm/Cycle to 6,780 Nm/Cycle

Stroke 23.1 mm to 150 mm

Adjustable and unique: These industrial shock absorbers from ACE, which can be precisely adjusted both at the front and rear, also contribute towards the success of the MAGNUM range. Equipped with excellent sealing technology, an annealed guide bearing and integrated positive stop, they are robust and durable.

These dampers absorb 50 % more energy than their predecessors but are built even more compactly. The larger range of effective loads also opens up options in design and assembly. This makes the ML range especially suitable for effective weights of 300 kg to 500,000 kg (661 lbs. to 1,102,311 lbs.). These shocks are the best option wherever application data changes and flexibility is required.

These adjustable industrial shock absorbers are used in all areas of industrial, automation and machine engineering, for gantries and integrated in linear carriages or pivoting units.



Technical Data

Energy capacity: 170 Nm/Cycle to 6,780 Nm/Cycle

Impact velocity range: MA: 0.15 m/s to 5 m/s. ML: 0.02 m/s to 0.46 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

Adjustment: Hard impact at the start of stroke, adjust the ring towards 9 or PLUS. Hard impact at the end of stroke, adjust the ring towards 0 or MINUS.

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 with black oxide finish or nitride hardened

Damping medium: Automatic Transmission Fluid (ATF)

Application field: Linear slides, Swivel units, Turntables, Portal systems, Machines and plants, Tool machines, Machining centers, Z-axes, Impact panels, Handling modules

Note: A noise reduction of 3 dB to 7 dB is possible when using the special impact button. For emergency use only applications and for continous use (with additional cooling) it is sometimes possible to exceed the published max. capacity ratings. In this case, please consult ACE.

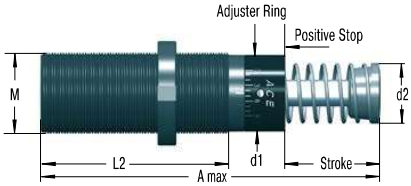
Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

On request: Special oils, nickel-plated, increased corrosion protection, mounting inside air cylinders or other special options are available on request.

Issue 04.2018 – Specifications subject to change

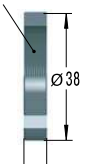
MA/ML33

Adjuster

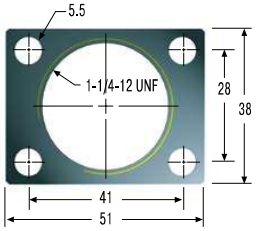


Product available for UNF and metric thread (for metric add suffix -M from part number)
M33x1.5, M36x1.5 and M42x1.5 also available to order

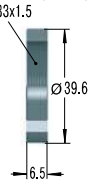
250-0038
Locking Ring
1-1/4-12 UNF



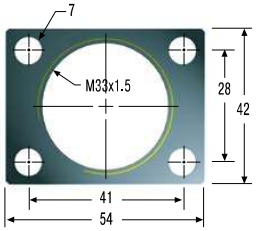
250-0016
Rectangular Flange



250-0292
Locking Ring
M33x1.5



250-0293
Rectangular Flange



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

Model Type Prefix

Standard Models
MA: Self-Contained with return spring, adjustable
ML: Self-Contained with return spring, adjustable, for lower impact velocity
Special Models
MAA, MLA: Air/Oil return without return spring. Use only with external air/oil tank.
MAS, MLS: Air/Oil Return with return spring. Use only with external air/oil tank.
MAN, MLN: Self-Contained without return spring

Ordering Example **MA/ML3325M**

Adjustable
33 for 1-1/4-12 UNF or M33 threads
Stroke 0.98" (25 mm)
Metric Thread
(omitted when using thread UNF 1 1/4-12)

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MA3325	23.2	138	30	25	83	1-1/4-12 UNF / M33x1.5
ML3325	23.2	138	30	25	83	1-1/4-12 UNF / M33x1.5
MA3350	48.6	189	30	25	108	1-1/4-12 UNF / M33x1.5
ML3350	48.6	189	30	25	108	1-1/4-12 UNF / M33x1.5

Performance

	Max. Energy Capacity				Effective Weight						
TYPES	[1] E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	E_4 with Oil Recirculation Nm/h	[2] We min. kg	[2] We max. kg	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
MA3325	170	75,000	124,000	169,000	9	1,700	45	90	0.03	4	0.45
ML3325	170	75,000	124,000	169,000	300	50,000	45	90	0.03	4	0.45
MA3350	340	85,000	135,000	180,000	13	2,500	45	135	0.06	3	0.54
ML3350	340	85,000	135,000	180,000	500	80,000	45	135	0.06	3	0.54

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] The effective weight range limits can be raised or lowered to special order.
[3] For applications with higher side load angles please contact ACE.

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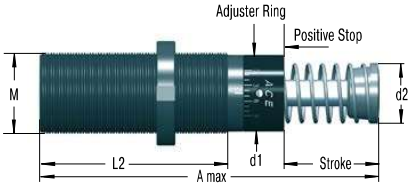
Industrial Shock Absorbers MA/ML45

Products for UNF and metric thread available

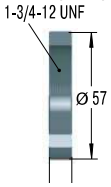
Adjustable

MA/ML45

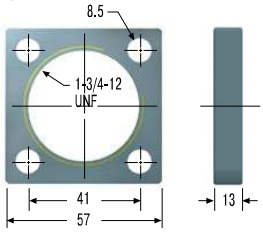


Product available for UNF and metric thread (for metric add suffix -M from part number)

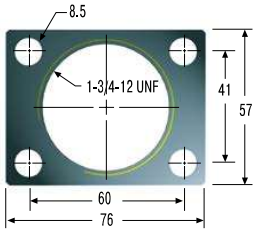
250-0041
Locking Ring



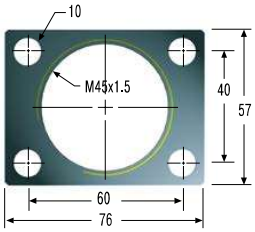
250-0023
Square Flange



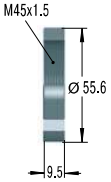
250-0024
Rectangular Flange



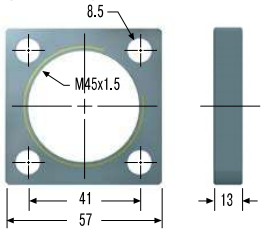
250-0299
Rectangular Flange



250-0297
Locking Ring



250-0298
Square Flange



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

Model Type Prefix

Standard Models

MA: Self-Contained with return spring, adjustable
ML: Self-Contained with return spring, adjustable, for lower impact velocity

Special Models

MAA, MLA: Air/Oil return without return spring. Use only with external air/oil tank.
MAS, MLS: Air/Oil Return with return spring. Use only with external air/oil tank.
MAN, MLN: Self-Contained without return spring

Ordering Example **MA/ML4525M**

Adjustable
45 for 1-3/4-12 UNF or M45 threads
Stroke 0.98" (25 mm)
Metric Thread
(omitted when using thread UNF 1-3/4-12)

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MA4525	23.1	145	42	35	95	1-3/4-12 UNF / M45x1.5
ML4525	23.1	145	42	35	95	1-3/4-12 UNF / M45x1.5
MA4550	48.5	195	42	35	120	1-3/4-12 UNF / M45x1.5
ML4550	48.5	195	42	35	120	1-3/4-12 UNF / M45x1.5
MA4575	73.9	246	42	35	145	1-3/4-12 UNF / M45x1.5

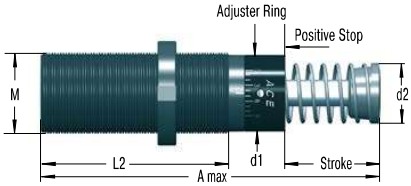
Performance

	Max. Energy Capacity				Effective Weight						
TYPES	[1] E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	E_4 with Oil Recirculation Nm/h	[2] We min. kg	[2] We max. kg	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
MA4525	425	107,000	158,000	192,000	40	10,000	70	100	0.03	4	1.13
ML4525	425	107,000	158,000	192,000	3,000	110,000	70	100	0.03	4	1.13
MA4550	850	112,000	192,000	248,000	70	14,500	70	145	0.08	3	1.36
ML4550	850	112,000	192,000	248,000	5,000	180,000	70	145	0.08	3	1.36
MA4575	1,300	146,000	225,000	282,000	70	15,000	50	180	0.11	2	1.59

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] The effective weight range limits can be raised or lowered to special order.
[3] For applications with higher side load angles please contact ACE.

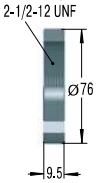
Issue 04.2018 – Specifications subject to change

MA/ML64

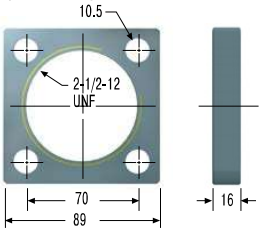


Product available for UNF and metric thread (for metric add suffix -M from part number)
150 mm stroke model does not include stop collar.
Positive stop is provided by the rod button (Ø 60 mm) and a stop block.

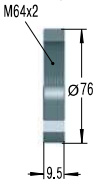
250-0042
Locking Ring



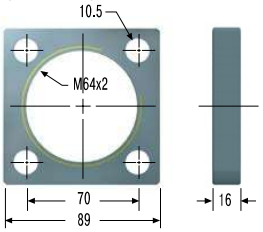
250-0028
Square Flange



250-0301
Locking Ring



250-0302
Square Flange



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

Model Type Prefix

Standard Models
MA: Self-Contained with return spring, adjustable
ML: Self-Contained with return spring, adjustable, for lower impact velocity
Special Models
MAA, MLA: Air/Oil return without return spring. Use only with external air/oil tank.
MAS, MLS: Air/Oil Return with return spring. Use only with external air/oil tank.
MAN, MLN: Self-Contained without return spring

Ordering Example **MA/ML6450M**

Adjustable
64 for 2-1/2-12 UNF or M64 threads
Stroke 1.97" (50 mm)
Metric Thread
(omitted when using thread UNF 2-1/2-12)

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
ML6425	23.2	174	60	48	114	2-1/2-12 UNF / M64x2
MA6450	48.6	225	60	48	140	2-1/2-12 UNF / M64x2
ML6450	48.6	225	60	48	140	2-1/2-12 UNF / M64x2
MA64100	99.4	326	60	48	191	2-1/2-12 UNF / M64x2
MA64150	150	450	60	48	241	2-1/2-12 UNF / M64x2

Performance

	Max. Energy Capacity				Effective Weight						
TYPES	[1] E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	E_4 with Oil Recirculation Nm/h	[2] We min. kg	[2] We max. kg	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
ML6425	1,135	124,000	248,000	332,000	7,000	300,000	120	155	0.06	5	2.50
MA6450	2,275	146,000	293,000	384,000	220	50,000	90	155	0.12	4	2.90
ML6450	2,275	146,000	293,000	384,000	11,000	500,000	90	155	0.12	4	2.90
MA64100	4,520	192,000	384,000	497,000	270	52,000	105	270	0.34	3	3.70
MA64150	6,780	248,000	497,000	644,000	330	80,000	75	365	0.48	2	5.10

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] The effective weight range limits can be raised or lowered to special order.
[3] For applications with higher side load angles please contact ACE.

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SASL1 1/8

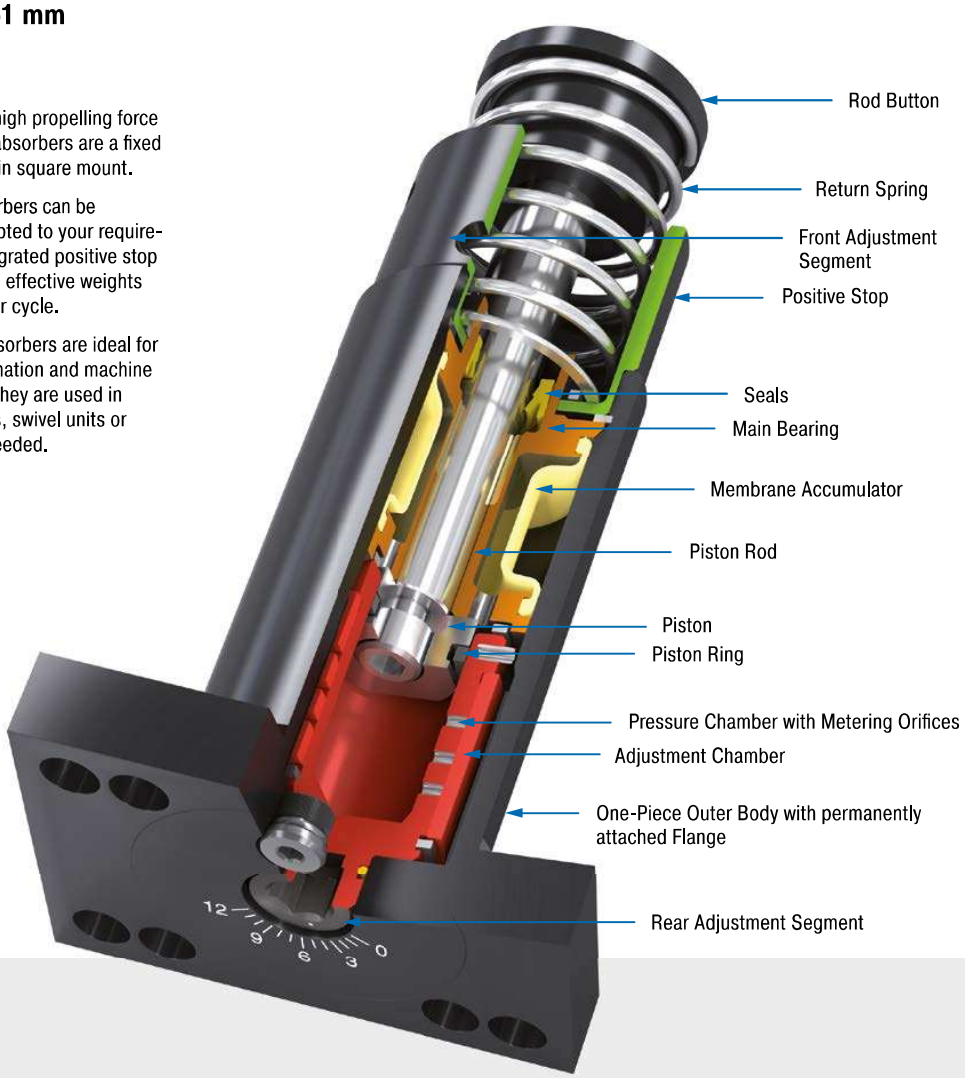
Low velocity and high effective weight range

Adjustable
Energy capacity 900 Nm/Cycle to 1,800 Nm/Cycle
Stroke 25 mm to 51 mm

Designed for low velocity, high propelling force applications, SASL shock absorbers are a fixed flange product with a built-in square mount.

SASL industrial shock absorbers can be adjusted and precisely adapted to your requirements; they feature an integrated positive stop and are designed to handle effective weights from 1,800 to 5,400 Nm per cycle.

These adjustable shock absorbers are ideal for all areas of industrial automation and machine engineering applications. They are used in linear slides, tool machines, swivel units or wherever deceleration is needed.



Technical Data

Energy capacity: 900 Nm/Cycle to 1,800 Nm/Cycle

Impact velocity range: 0.08 m/s to 0.61 m/s

Operating temperature range: -12 °C to +66 °C

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

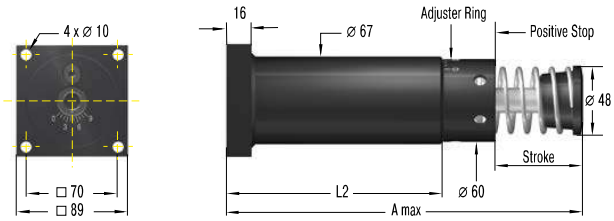
Damping medium: Automatic Transmission Fluid (ATF)

Application field: Linear slides, Pneumatic cylinders, Swivel units, Handling modules, Machines and plants, Finishing and processing centers, Measuring tables, Tool machines, Machining centers, Locking systems

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

Issue 04.2018 – Specifications subject to change

SASL 1 1/8-R Rear Flange



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

Model Type Prefix

SASL: Internal accumulator, spring return
ASLA: Internal accumulator, mechanical return
ASLS: External accumulator, spring return
ASL: External accumulator, air or mechanical return

Ordering Example

SASL11/8x1-R

Adjustable
Bore 1 1/8" (28.5 mm)
Stroke 1" (25 mm)
Rear Flange

Dimensions

TYPES	Stroke mm	A max. mm	L2 mm
SASL11/8X1-R	23	175	100
SASL11/8X2-R	48.5	225	124

Performance

	Max. Energy Capacity			Effective Weight		
TYPES	E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	[1] We min. kg	[1] We max. kg	Weight kg
SASL11/8X1-R	900	142,000	282,000	318	320,000	3.67
SASL11/8X2-R	1,800	170,000	340,000	385.5	590,000	4.17

[1] The effective weight range limits can be raised or lowered to special order.

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SALD1/2 to SALD1 1/8

High energy absorption and a wide effective weight range

Adjustable

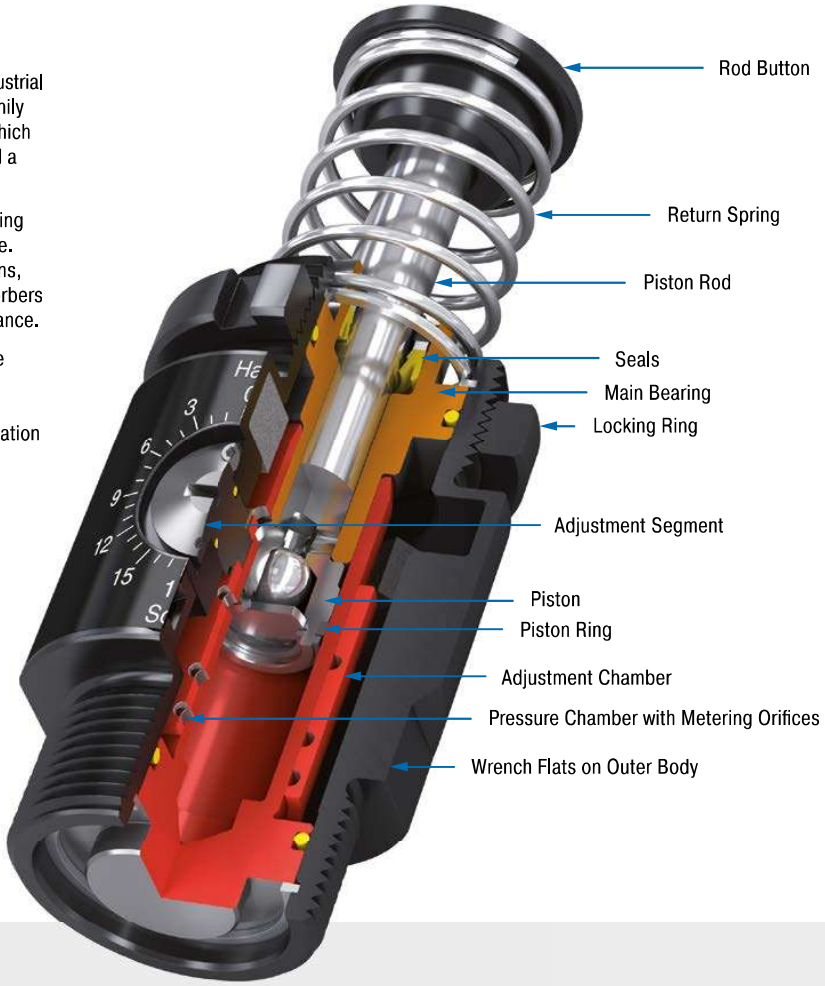
Energy capacity 153 Nm/Cycle to 5,400 Nm/Cycle

Stroke 25 mm to 152 mm

Ideal for high-speed moving machines,industrial shock absorbers of the SALD product family feature a built-in external positive stop which prevents damage from bottoming out and a positive work-positioning point.

High energy absorption and a wide damping range lead to huge advantages in practice. Alongside generally more compact designs, these small yet very powerful shock absorbers enable full use of the machine's performance.

These adjustable shock absorbers can be adjusted and precisely adapted to your requirements, making them suitable for a variety of applications in industrial automation and machine engineering applications, especially in automation and gantries.



Technical Data

Energy capacity: 153 Nm/Cycle to 5,400 Nm/Cycle

Impact velocity range: 0.3 m/s to 4.6 m/s

Operating temperature range: -12 °C to +66 °C

Mounting: In any position

Positive stop: External

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

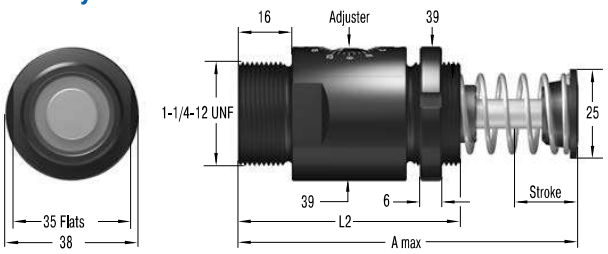
Damping medium: Automatic Transmission Fluid (ATF)

Application field: Linear slides, Pneumatic cylinders, Swivel units, Handling modules, Machines and plants, Finishing and processing centers, Measuring tables, Tool machines, Machining centers, Locking systems

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

Issue 04.2018 – Specifications subject to change

SALD1/2-P Primary



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

Model Type Prefix

SALD: Internal accumulator, spring return
ALDA: Internal accumulator, mechanical return
ALDS: External accumulator, spring return
ALD: External accumulator, air or mechanical return

Ordering Example **SALD1/2x1-P**

Adjustable
Bore 1/2" (12.7 mm)
Stroke 1" (25 mm)
Primary

Dimensions

TYPES	Stroke mm	A max. mm	L2 mm
SALD1/2X1-P	23.2	138	82
SALD1/2X2-P	48.5	189	102

Performance

	Max. Energy Capacity			Effective Weight		
TYPES	E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	[1] We min. kg	[1] We max. kg	Weight kg
SALD1/2X1-P	153	85,000	147,000	4.5	1,225	0.68
SALD1/2X2-P	305	98,000	158,000	9.5	2,585	0.83

[1] The effective weight range limits can be raised or lowered to special order.

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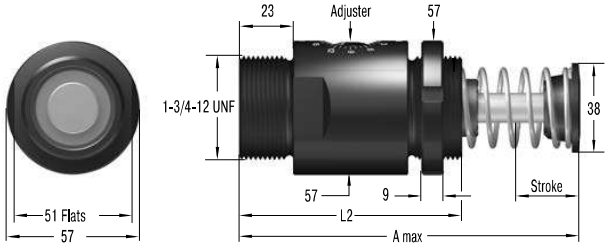
SALD3/4-P Primary



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

Model Type Prefix

SALD: Internal accumulator, spring return
ALDA: Internal accumulator, mechanical return
ALDS: External accumulator, spring return
ALD: External accumulator, air or mechanical return

Ordering Example **SALD3/4x1-P**

Adjustable
Bore 3/4" (19 mm)
Stroke 1" (25 mm)
Primary

Dimensions

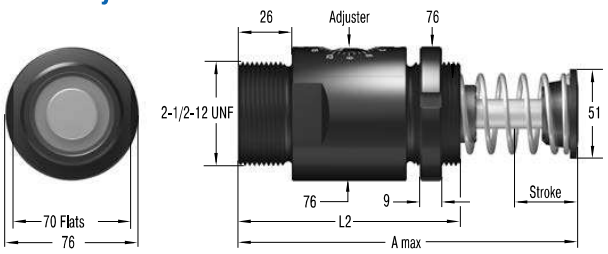
TYPES	Stroke **mm**	A max. **mm**	L2 **mm**
SALD3/4X1-P	23.2	151	101
SALD3/4X2-P	48.5	202	126
SALD3/4X3-P	74	252	152

Performance

	Max. Energy Capacity			Effective Weight		
TYPES	E_3 **Nm/cycle**	E_4 **Nm/h**	E_4 with Air/Oil Tank **Nm/h**	[1] We min. **kg**	[1] We max. **kg**	Weight **kg**
SALD3/4X1-P	340	124,000	181,000	9	8,100	1.47
SALD3/4X2-P	680	147,000	225,000	15.9	14,500	1.81
SALD3/4X3-P	1,000	181,000	2,700,000	22.7	21,000	2.24

[1] The effective weight range limits can be raised or lowered to special order.

SALD1 1/8-P Primary



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

Model Type Prefix

SALD: Internal accumulator, spring return
ALDA: Internal accumulator, mechanical return
ALDS: External accumulator, spring return
ALD: External accumulator, air or mechanical return

Ordering Example **SALD3/4x1-P**

Adjustable
Bore 1 1/8" (28.5 mm)
Stroke 1" (25 mm)
Primary

Dimensions

TYPES	Stroke **mm**	A max. **mm**	L2 **mm**
SALD11/8X2-P	48.5	226	140
SALD11/8X4-P	99	327	190
SALD11/8X6-P	150	451	241

Performance

	Max. Energy Capacity			Effective Weight		
TYPES	E_3 **Nm/cycle**	E_4 **Nm/h**	E_4 with Air/Oil Tank **Nm/h**	[1] We min. **kg**	[1] We max. **kg**	Weight **kg**
SALD11/8X2-P	1,800	170,000	340,000	54	22,700	3.97
SALD11/8X4-P	3,600	225,000	452,000	72.5	45,000	5.22
SALD11/8X6-P	5,400	280,000	565,000	91	68,000	7.04

[1] The effective weight range limits can be raised or lowered to special order.

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SALDN3/4

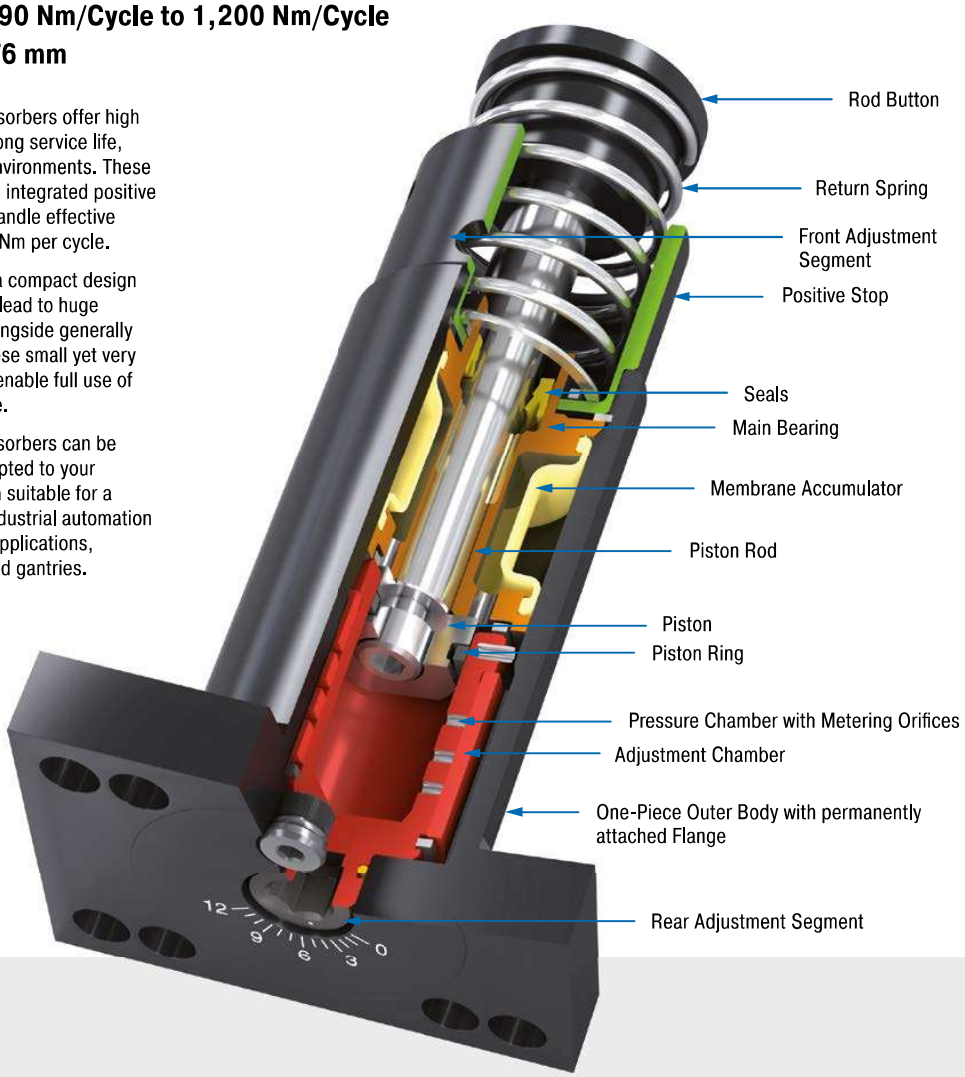
High energy absorption and a wide effective weight range

Adjustable
Energy capacity 390 Nm/Cycle to 1,200 Nm/Cycle
Stroke 25 mm to 76 mm

SALDN industrial shock absorbers offer high performance levels and a long service life, even in the most difficult environments. These shock absorbers feature an integrated positive stop and are designed to handle effective weights from 390 to 1,200 Nm per cycle.

High energy absorption in a compact design and a wide damping range lead to huge advantages in practice. Alongside generally more compact designs, these small yet very powerful shock absorbers enable full use of the machine's performance.

These adjustable shock absorbers can be adjusted and precisely adapted to your requirements, making them suitable for a variety of applications in industrial automation and machine engineering applications, especially in automation and gantries.



Technical Data

Energy capacity: 390 Nm/Cycle to 1,200 Nm/Cycle

Impact velocity range: 0.1 m/s to 5 m/s

Operating temperature range: -12 °C to +66 °C

Mounting: In any position

Positive stop: Integrated

Adjustment: Rear of shock

Damping medium: Automatic Transmission Fluid (ATF)

Application field: Linear slides, Pneumatic cylinders, Swivel units, Handling modules, Machines and plants, Finishing and processing centers, Measuring tables, Tool machines, Machining centers, Locking systems

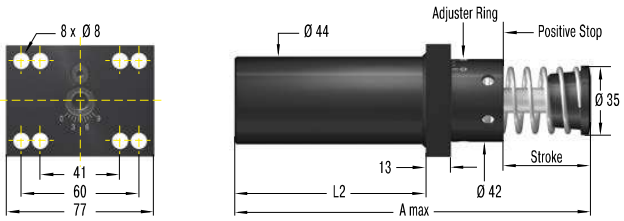
Note: ACE recommends selecting a model with 20 % more capacity than your calculations indicate necessary. This extra capacity allows for changes in weight, velocity or cycle rates increase in the future.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

On request: Special oils, nickel-plated, increased corrosion protection, mounting inside air cylinders, additional impact velocity ranges or other special options are available on request.

Issue 04.2018 – Specifications subject to change

SALDN3/4-RF Front Flange



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

Model Type Prefix

SALDN: Internal accumulator, spring return
ALDAN: Internal accumulator, mechanical return
ALDSN: External accumulator, spring return
ALDN: External accumulator, air or mechanical return

Ordering Example **SALDN3/4x1-RF**

Adjustable
Bore 3/4" (19 mm)
Stroke 1" (25 mm)
Series (RF = Front Flange)

Dimensions

TYPES	Stroke mm	A max. mm	L2 mm
SALDN3/4X1-RF	25	145	82
SALDN3/4X2-RF	50	195	107
SALDN3/4X3-RF	75	246	133

Performance

	Max. Energy Capacity			Effective Weight						
TYPES	E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	[1] We min. kg	[1] We max. kg	Return Force min. N	Return Force max. N	Return Time s	Side Load Angle max. °	Weight kg
SALDN3/4X1-RF	390	107,000	158,000	45	10,000	7	10	0.03	4	1.13
SALDN3/4X2-RF	780	113,000	190,000	72.6	14,500	7	14.5	0.08	3	1.37
SALDN3/4X3-RF	1,200	147,000	226,000	115	15,000	5	18.25	0.11	2	1.59

[1] The effective weight range limits can be raised or lowered to special order.

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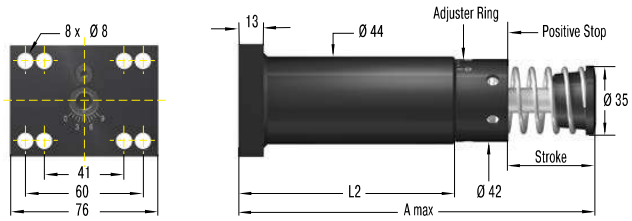
SALDN3/4-RR Rear Flange



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

Model Type Prefix

SALDN: Internal accumulator, spring return
ALDAN: Internal accumulator, mechanical return
ALDSN: External accumulator, spring return
ALDN: External accumulator, air or mechanical return

Ordering Example **SALDN3/4x1-RR**

Adjustable
Bore 3/4" (19 mm)
Stroke 1" (25 mm)
Series (RR = Rear Flange)

Dimensions

TYPES	Stroke mm	A max. mm	L2 mm
SALDN3/4X1-RR	25	145	82
SALDN3/4X2-RR	50	195	107
SALDN3/4X3-RR	75	246	133

Performance

	Max. Energy Capacity			Effective Weight						
TYPES	E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	[1] We min. kg	[1] We max. kg	Return Force min. N	Return Force max. N	Return Time s	Side Load Angle max. °	Weight kg
SALDN3/4X1-RR	390	107,000	158,000	43	10,000	7	10	0.03	4	1.13
SALDN3/4X2-RR	780	113,000	190,000	72.6	14,500	7	14.5	0.08	3	1.37
SALDN3/4X3-RR	1,200	147,000	226,000	115	15,000	5	18.25	0.11	2	1.59

[1] The effective weight range limits can be raised or lowered to special order.

High Performance

for PET Stretch Blow Machines

PET 20 and PET 27

20 million cycles – up to 107 °C – aluminium outer body
hardened pressure chamber – corrosion protection

=

extended service life – low-wear – faster
reduced downtime – improved system performance
increased production volume – high cost efficiency

For all information see our Website www.acecontrols.com

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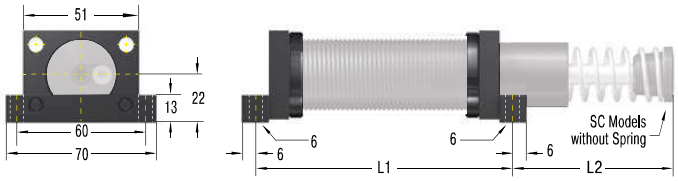
M33x1.5

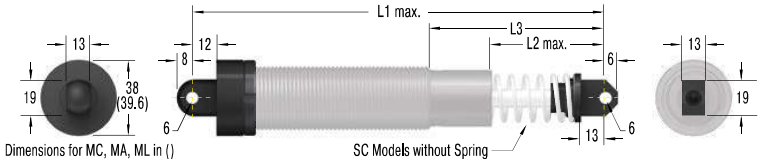
250-0294
Side Foot Mounting Kit



Dimensions		
TYPES	L1 mm	L2 mm
MC, MA, ML3325	95.3	49.3
MC, MA, ML3350	120.7	74.7
SC3325	134.9	49.3
SC3350	185.7	74.7
SCS33-25	95.3	49.3
SCS33-50	120.7	74.7

250-0294 = 1 locknut, 2 flanges, 2 bars, 4 screws M6x40, DIN 912
Torque max.: 11 Nm
Clamping torque: 90 Nm
Bolts to mount assembled shock & mount not included.

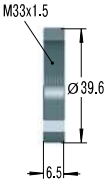
250-0323
Clevis Mount Assembly



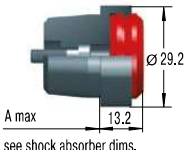
Dimensions			
TYPES	L1 max. mm	L2 max. mm	L3 mm
MC, MA, ML3325	167.13	34.54	67.05
MC, MA, ML3350	217.93	59.94	92.46
SC3325	206.76	34.67	67.31
SC3350	282.96	60.20	92.71

Use positive stop at both ends of travel.

250-0292
Locking Ring

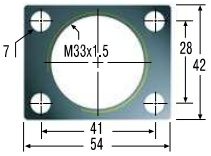


250-0091
Poly Button

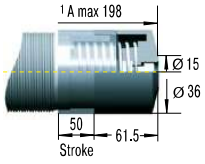


Supplied ready mounted onto the shock absorber.

250-0293
Rectangular Flange

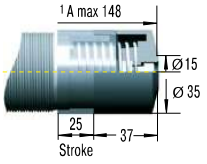


250-0130
Steel Shroud



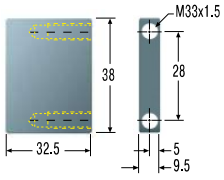
[1] Total installation length of the shock absorber inc. steel shroud

250-0730
Steel Shroud

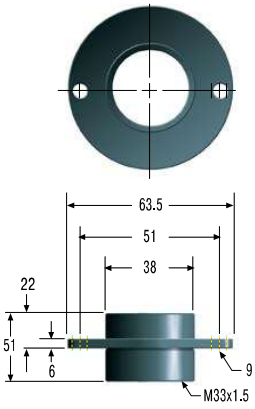


[1] Total installation length of the shock absorber inc. steel shroud

250-0427
Stop Bar



250-0071
Flanged Stop Collar

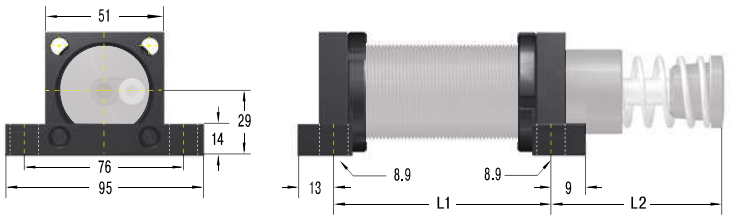


Mounting, installation, ... see page 96.

Issue 04.2018 – Specifications subject to change

M45x1.5

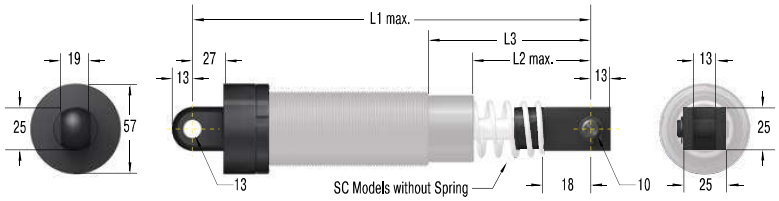
250-0300
Side Foot Mounting Kit



Dimensions	L1	L2
TYPES	mm	mm
MC, MA, ML4525	88.9	49.3
MC, MA, ML4550	111.8	77.7
MC, MA4575	136.6	103.1
SC4525	129.5	53.9
SC4550	180.3	78.5
SCS45-25	88.9	49.3
SCS45-50	111.8	77.7
SCS45-75	136.6	103.1

250-0300 = 1 locknut, 2 flanges, 2 bars, 4 screws M8x50, DIN 912
Torque max.: 27 Nm
Clamping torque: 350 Nm
Bolts to mount assembled shock & mount not included.

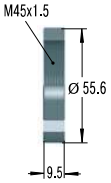
250-0325
Clevis Mount Assembly



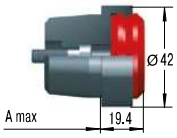
Dimensions	L1 max.	L2 max.	L3
TYPES	mm	mm	mm
MC, MA, ML4525	199.39	38.35	65.27
MC, MA, ML4550	250.19	63.75	90.67
MC, MA4575	300.99	89.15	116.07
SC4525	243.84	38.35	65.28
SC4550	320.04	63.75	90.68

Use positive stop at both ends of travel.

250-0297
Locking Ring



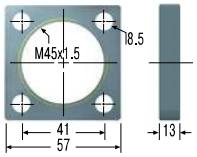
250-0092
Poly Button



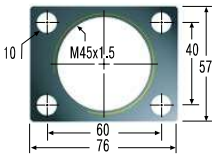
see shock absorber dims.

Supplied ready mounted onto the shock absorber.

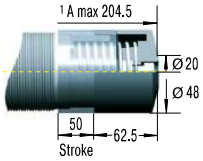
250-0298
Square Flange



250-0299
Rectangular Flange

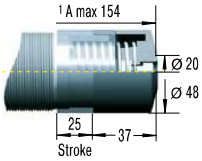


250-0778
Steel Shroud



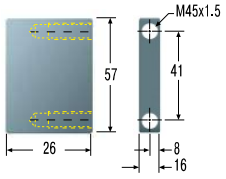
1 Total installation length of the shock absorber inc. steel shroud

250-0731
Steel Shroud

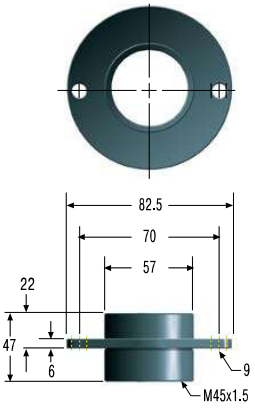


1 Total installation length of the shock absorber inc. steel shroud

250-0639
Stop Bar



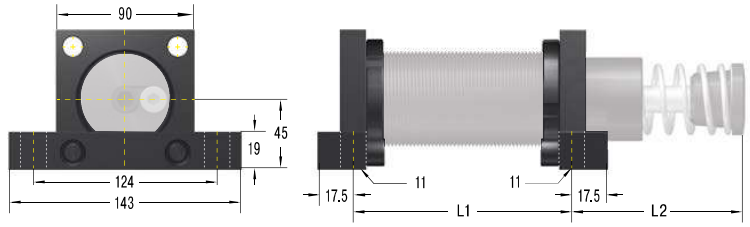
250-0073
Flanged Stop Collar



Mounting, installation, ... see page 96.

M64x2

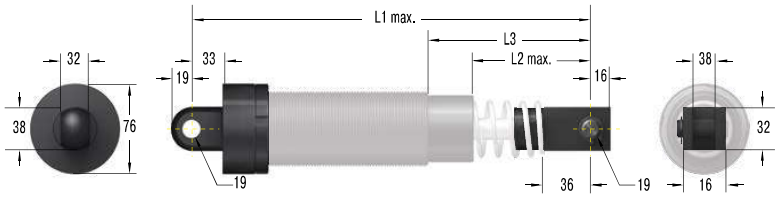
250-0304
Side Foot Mounting Kit



Dimensions	L1	L2
TYPES	mm	mm
ML6425	101.6	64.5
MC, MA, ML6450	127.0	89.9
MC, MA64100	177.8	140.7
MC, MA64150	228.6	213.9
SCS64-50	127.0	89.9
SCS64-100	177.8	140.7
SCS64-150	228.6	213.9

250-0304 = 1 locknut, 2 flanges, 2 bars, 4 screws M10x80, DIN 912
Torque max.: 50 Nm
Clamping torque: 350 Nm
Bolts to mount assembled shock & mount not included.

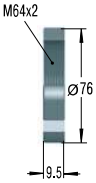
250-0626
Clevis Mount Assembly



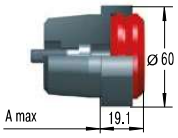
Dimensions	L1 max.	L2 max.	L3
TYPES	mm	mm	mm
ML6425	257.10	58.70	95.50
MC, MA, ML6450	307.90	84.10	120.70
MC, MA64100	409.50	134.90	171.50
MC, MA64150	530.10	204.70	241.30

Use positive stop at both ends of travel.

250-0301
Locking Ring

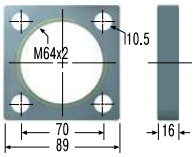


250-0093
Poly Button

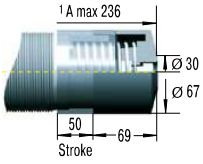


see shock absorber dims.
Supplied ready mounted onto the shock absorber.

250-0302
Square Flange

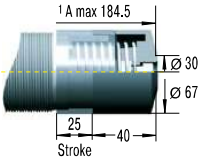


250-0787
Steel Shroud



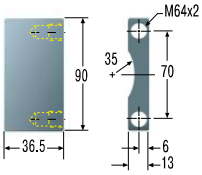
[1] Total installation length of the shock absorber inc. steel shroud

250-0839
Steel Shroud



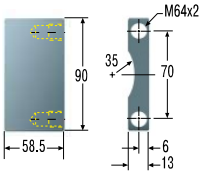
[1] Total installation length of the shock absorber inc. steel shroud

250-0640
Stop Bar



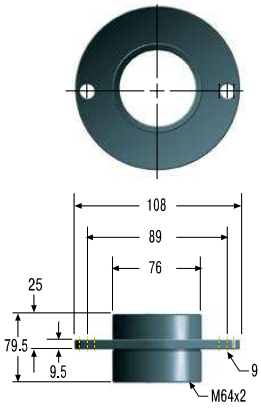
For MC/MA/ML6425M to 64100M models

250-0641
Stop Bar



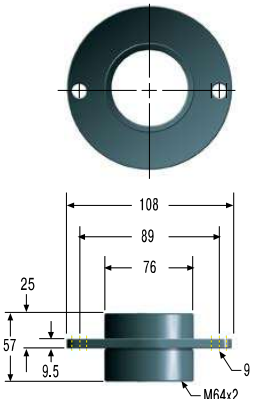
For MC/MA/ML64150M model

250-0077
Flanged Stop Collar



For MC/MA/ML64150M model

250-0075
Flanged Stop Collar

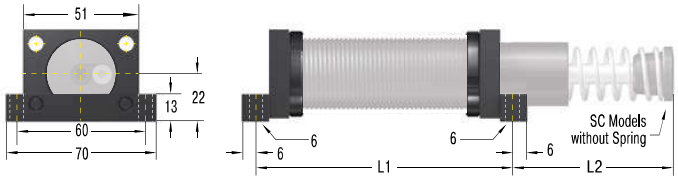


For MC/MA/ML6425M to 64100M models

Mounting, installation, ... see page 96.

1-1/4-12 UNF

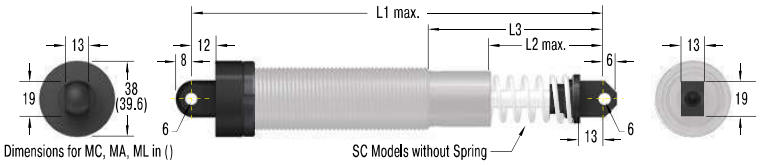
250-0015
Side Foot Mounting Kit



Dimensions	L1	L2
TYPES	mm	mm
MC, MA, ML3325	95.3	49.3
MC, MA, ML3350	120.7	74.7
SC3325	134.9	49.3
SC3350	185.7	74.7
SCS33-25	95.3	49.3
SCS33-50	120.7	74.7

250-0015 = 1 locknut, 2 flanges, 2 bars, 4 screws 1-1/4-12 UNF, DIN 912
Torque max.: 11 Nm
Clamping torque: 90 Nm
Bolts to mount assembled shock & mount not included.

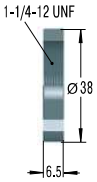
250-0225
Clevis Mount Assembly



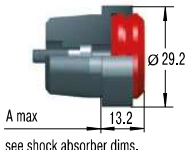
Dimensions	L1 max.	L2 max.	L3
TYPES	mm	mm	mm
MC, MA, ML3325	167.13	34.54	67.05
MC, MA, ML3350	217.93	59.94	92.46
SC3325	206.76	34.67	67.31
SC3350	282.96	60.20	92.71

Use positive stop at both ends of travel.

250-0038
Locking Ring

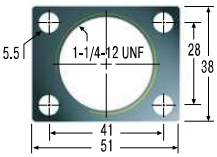


250-0091
Poly Button

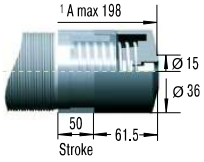


Supplied ready mounted onto the shock absorber.

250-0016
Rectangular Flange

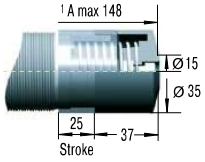


250-0130
Steel Shroud



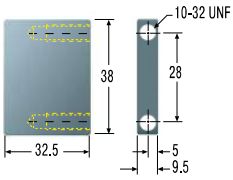
[1] Total installation length of the shock absorber inc. steel shroud

250-0730
Steel Shroud

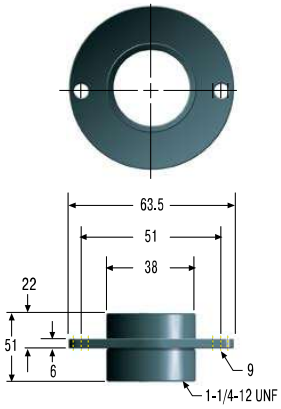


[1] Total installation length of the shock absorber inc. steel shroud

250-0426
Stop Bar



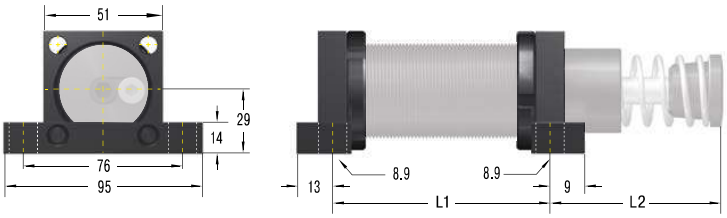
250-0070
Flanged Stop Collar



Mounting, installation, ... see page 96.

1-3/4-12 UNF

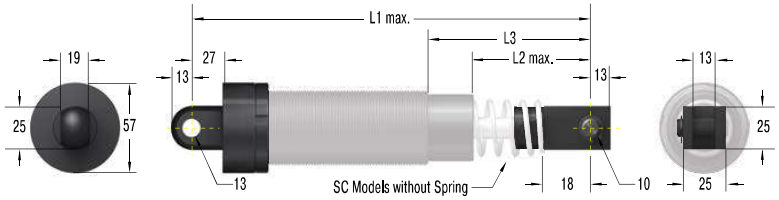
250-0025
Side Foot Mounting Kit



Dimensions	L1	L2
TYPES	mm	mm
MC, MA, ML4525	88.9	49.3
MC, MA, ML4550	111.8	77.7
MC, MA4575	136.6	103.1
SC4525	129.5	53.9
SC4550	180.3	78.5
SCS45-25	88.9	49.3
SCS45-50	111.8	77.7
SCS45-75	136.6	103.1

250-0025 = 1 locknut, 2 flanges, 2 bars, 4 screws 1-3/4-12 UNF, DIN 912
Torque max.: 27 Nm
Clamping torque: 350 Nm
Bolts to mount assembled shock & mount not included.

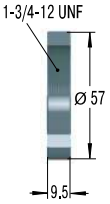
250-0324
Clevis Mount Assembly



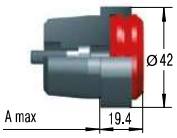
Dimensions	L1 max.	L2 max.	L3
TYPES	mm	mm	mm
MC, MA, ML4525	199.39	38.35	65.27
MC, MA, ML4550	250.19	63.75	90.67
MC, MA4575	300.99	89.15	116.07
SC4525	243.84	38.35	65.28
SC4550	320.04	63.75	90.68

Use positive stop at both ends of travel.

250-0041
Locking Ring



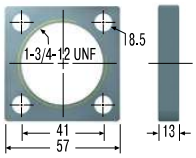
250-0092
Poly Button



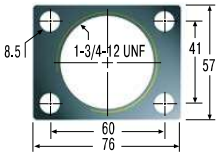
see shock absorber dims.

Supplied ready mounted onto the shock absorber.

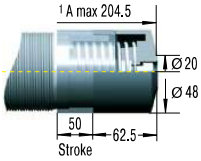
250-0023
Square Flange



250-0024
Rectangular Flange

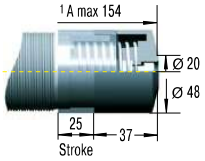


250-0778
Steel Shroud



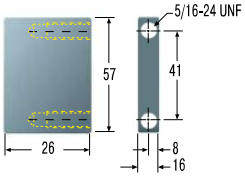
[1] Total installation length of the shock absorber inc. steel shroud

250-0731
Steel Shroud

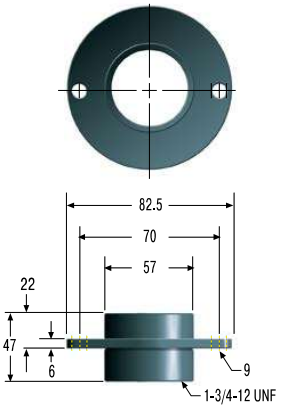


[1] Total installation length of the shock absorber inc. steel shroud

250-0428
Stop Bar



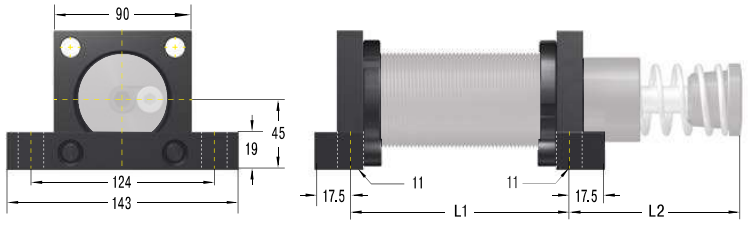
250-0072
Flanged Stop Collar



Mounting, installation, ... see page 96.

2-1/2-12 UNF

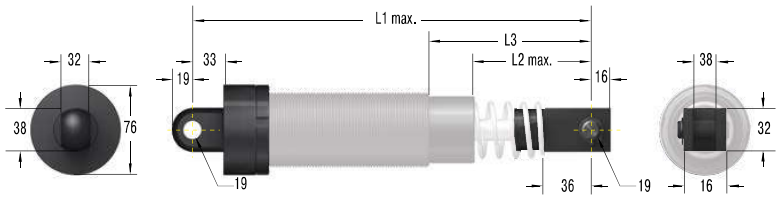
250-0030
Side Foot Mounting Kit



Dimensions	L1	L2
TYPES	mm	mm
ML6425	101.6	64.5
MC, MA, ML6450	127.0	89.9
MC, MA64100	177.8	140.7
MC, MA64150	228.6	213.9
SCS64-50	127.0	89.9
SCS64-100	177.8	140.7
SCS64-150	228.6	213.9

250-0030 = 1 locknut, 2 flanges, 2 bars, 4 screws 2-1/2-12 UNF, DIN 912
Torque max.: 50 Nm
Clamping torque: 50 Nm
Bolts to mount assembled shock & mount not included.

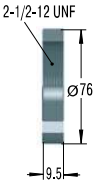
250-0625
Clevis Mount Assembly



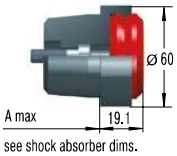
Dimensions	L1 max.	L2 max.	L3
TYPES	mm	mm	mm
ML6425	257.10	58.70	95.50
MC, MA, ML6450	307.90	84.10	120.70
MC, MA64100	409.50	134.90	171.50
MC, MA64150	530.10	204.70	241.30

Use positive stop at both ends of travel.

250-0042
Locking Ring

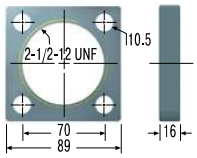


250-0093
Poly Button

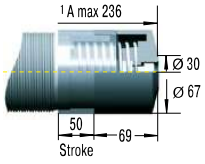


see shock absorber dims.
Supplied ready mounted onto the shock absorber.

250-0028
Square Flange

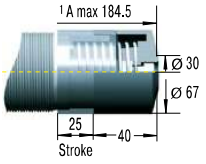


250-0787
Steel Shroud



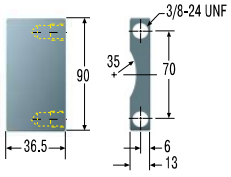
[1] Total installation length of the shock absorber inc. steel shroud

250-0839
Steel Shroud



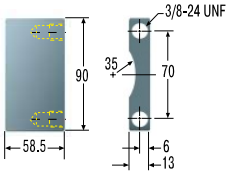
[1] Total installation length of the shock absorber inc. steel shroud

250-0430
Stop Bar



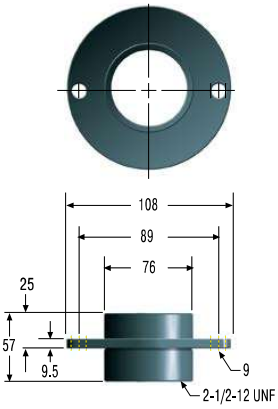
For MC/MA/ML6425 to 64100 models

250-0432
Stop Bar



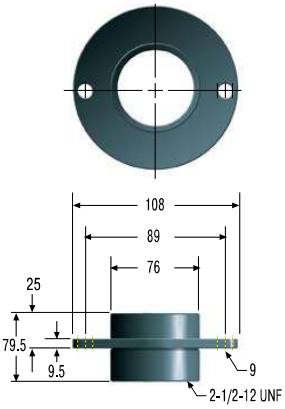
For MC/MA/ML64150 models

250-0074
Flanged Stop Collar



For MC/MA/ML 6425 to 64100 models

250-0076
Flanged Stop Collar



For MC/MA/ML64150M model

Mounting, installation, ... see page 96.

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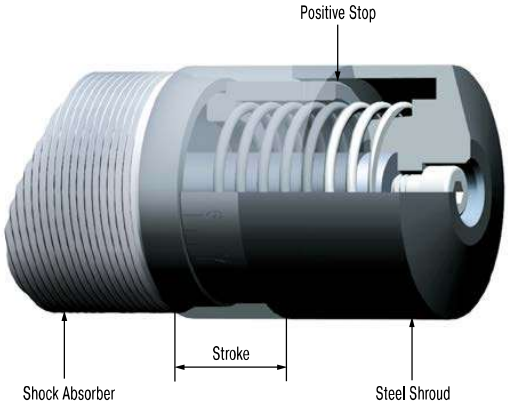


Steel Shroud

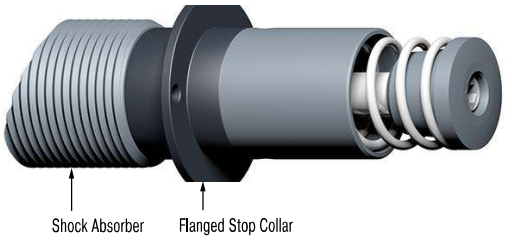
For industrial shock absorbers with a 25 or 50 mm stroke.

Grinding beads, sand, welding splatter, paints and adhesives etc. can adhere to the piston rod. They then damage the rod seals and the shock absorber quickly fails. In many cases the installation of the optional steel shroud can provide worthwhile protection and increase lifetime.

Material
Hardened high tensile steel

Mounting information
To mount the steel shroud it's necessary to remove the rod end button of the shock absorber.

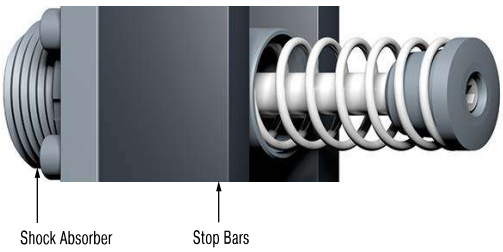
Safety information
When installing don't forget to allow operating space for the shroud to move as the shock absorber is cycled.



Flanged Stop Collar

Flanged stop collars provide industrial shock absorbers with a secure front mount and a positive mechanical stop. No specific mounting panel thickness is required.

Material
Hardened high tensile steel



Stop Bar

Stop bars are used in pairs and come two per package for assembly. Hard metric stop bars are aviailable upon request.

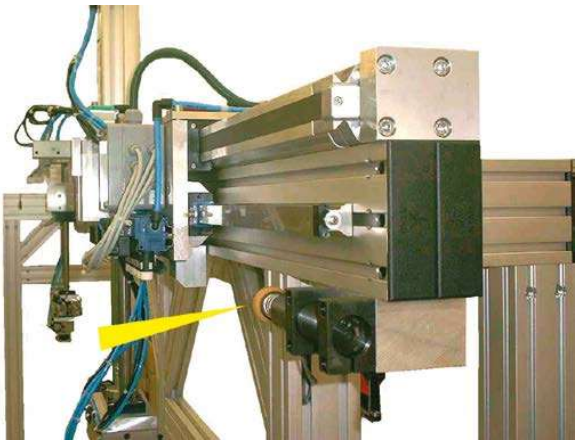
Material
Hardened high tensile steel

Application Examples

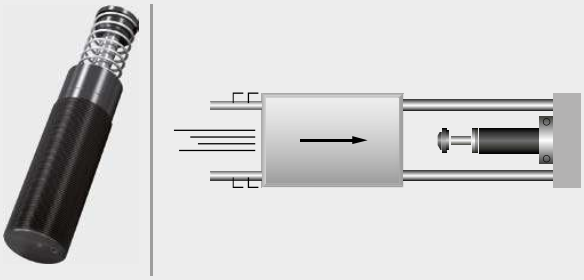
MC33

Quicker, gentle positioning

ACE industrial shock absorbers optimize portals for machine loading and increase productivity. This device is driven by piston rodless pneumatic cylinders where two gripper slides are moving independently of each other at speeds of 2 to 2.5 m/sec., is equipped with industrial shock absorbers as brake systems. Their function is to stop a mass of 25 kg up to 540 times per hour. The MC3350-1-S model was chosen for this application, allowing easy and extremely accurate adjustment of the end positions of the adjustable limit stops. In comparison to brake systems with other function principles, shock absorbers allow higher travel speeds and shorter cycle sequences.



Industrial shock absorbers optimize portal operation

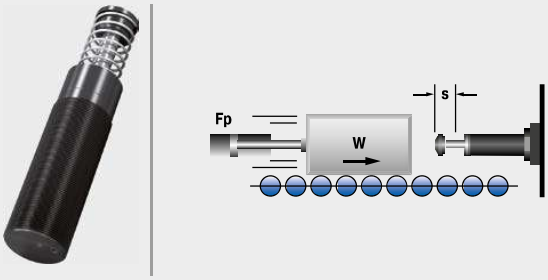


MC45

MAGNUM protection of carriage construction

Serving a similar purpose, several ACE dampers are installed in Jada, the triple-axis, free-moving badminton robot. In order for the badminton robot to be capable of playing, it must be able to change direction in the shortest time possible. Jada is designed therefore to brake at a maximum of 30 m/s². For this task, linear modules are limited by the use of industrial shock absorbers of the type MC4575-0. Miniature shock absorbers and profile dampers are also installed at the location of the „racket hand“. In all cases, the modern ACE machine elements serve to protect the end positions of the construction.

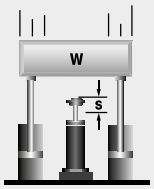
A variety of different dampers are used to slow the rapid movements of a badminton robot
FMTC vzw, 3001 Leuven, Belgium



MC64-VA

MAGNUM damper for safety under water

A pipeline from the rig to the well head that is as flexible as possible is considered to be a quick-disconnect connection in an emergency. Nevertheless, this connection made at the oil source on the sea floor is an Achilles heel. If the connection snaps or if it cannot be separated quickly enough during hazards such as storms, unpredictable, often serious consequences can hardly be prevented. With the so-called XR connector, the safety at this critical point is significantly increased. In the innovative design 10 industrial shock absorbers per connection from the MAGNUM series from ACE master this important task.

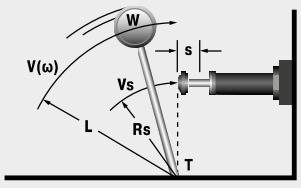


MAGNUMS allow for emergency quick disconnection of the pipelines from the oil rigs
Subsea Technologies Ltd, Aberdeen, AB12 3AY, UK

MC64M

Emergency exits made safer with MAGNUM shock absorbers

MAGNUM 64150 industrial shock absorbers are integrated into the overall safety design for the Amsterdam metro system. In contrast to previous solutions, ACE shocks ensure rapid opening and stopping for a five-ton barrier located at the end of an emergency escape route. In this application, over 5,100 Nm of energy are able to be absorbed per stroke. Through installing shock absorbers in end positions of the design, over 63,700 kg of effective weight are able to be absorbed. ACE provided an excellent solution, even with an impact speed of approximately 1.8 meters per second and the barrier exit grille at an unusual impact angle.

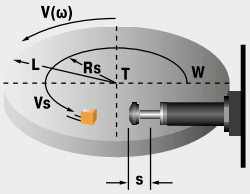


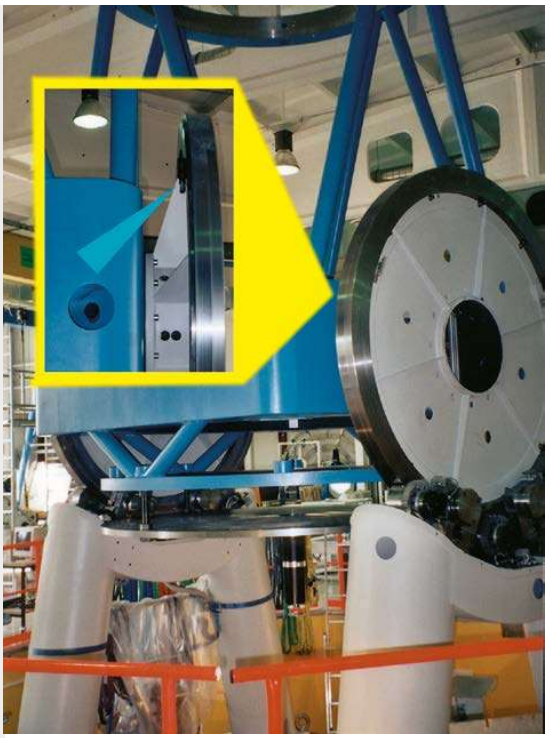
A heavy, five-ton barrier safely stopped by MAGNUM shock absorbers
J.P. van Eesteren B.V., 1006 BD Amsterdam, Netherlands

MA/ML33

Safe swiveling

ACE industrial shock absorbers offer safety to spare for swiveling or braking of large telescope. The optical system of this telescope for special observations is moveable in two space coordinates. The structure in which the telescope is mounted weighs 15,000 kg and consists of a turntable with drives and two wheel disks rotating on bearings. It enables a rotation by ±90° from horizon to horizon. To safeguard the telescope in case of overshooting the respective swiveling limits, ML3325 industrial shock absorbers are used as braking elements. Should the telescope inadvertently overshoot the permissible swivel range, they will safely damp the travel of the valuable telescope.



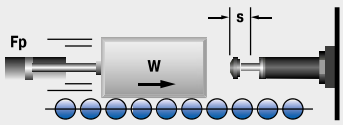


Perfect overshoot protection for precision telescope

MA/ML64

MAGNUM helps in the fight against people not buckling up

The Central-Hessian police department has developed an accident simulator with the help of ACE Stoßdämpfer GmbH aimed at significantly increasing the number of road traffic seatbelt wearers. The mobile simulator demonstrates strikingly that the smallest impact velocities lead to enormous forces, even when wearing seat belts, and can cause serious injuries when not. Adjustable MAGNUM type MA64150 dampers are installed to protect the simulator passengers and the end points of the construction at various speeds and moving masses. These are the largest adjustable dampers of the ACE product range; stronger special constructions are possible at any time.



MAGNUM dampers ensure the reliable braking of moving masses on the seat and the protection of the entire carriage construction
Central Hessian Police Department, Karl-Glöckner-Straße 2, 35394 Gießen, Germany

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Heavy Industrial Shock Absorbers

Effective shock absorption for heavy loads

The heavy industrial shock absorbers from ACE top off the company's offerings in damping technology. This ACE category gives Designers a choice between self-compensating and adjustable machine elements.

Whichever design is chosen, this type of shock absorber impresses with its robustness and operational readiness wherever heavy loads need to be reliably stopped on-the-spot and at a precise point.

The CA4 models can absorb up to 126,500 Nm of energy. The series of heavy duty, self-compensating "CA" types are equally suitable for use as an emergency stop as are the adjustable types with the designations "A". The range of effective loads covered is increased considerably for this purpose.

Heavy Industrial Shock Absorbers

CA2 to CA4

Page 102

Self-Compensating
Deceleration of heavy loads
Portal systems, Machines and plants, Conveyor systems, Crane systems

A1 1/2 to A3

Page 106

Adjustable
Deceleration of heavy loads and progressive adjustment
Portal systems, Machines and plants, Conveyor systems, Crane systems

Rugged and powerful

Gently stops heavy loads with high precision

Also ideal for emergency stop utilization

Safe, reliable production

Maintenance-free and ready-to-install

Special versions available

CA2 to CA4

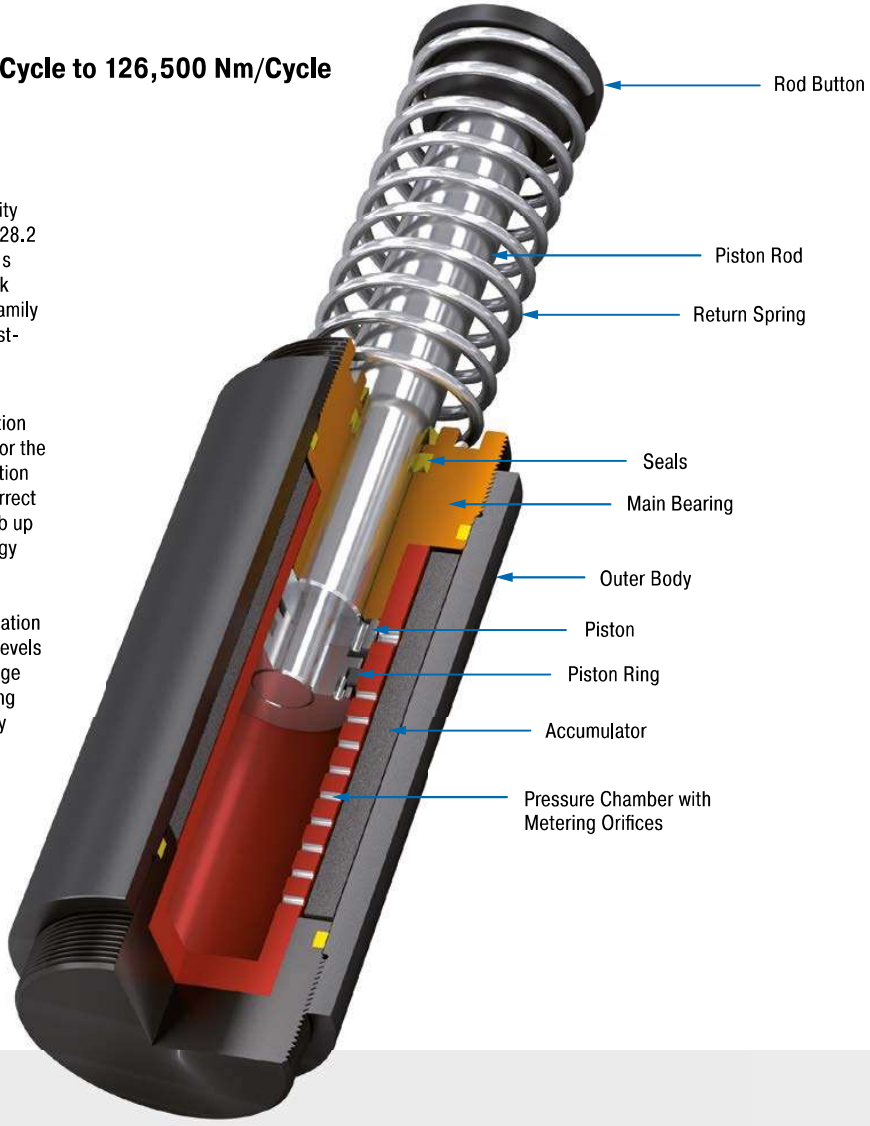
Deceleration of heavy loads

Self-Compensating
Energy capacity 3,600 Nm/Cycle to 126,500 Nm/Cycle
Stroke 50 mm to 406 mm

Powerful: The weight of these high capacity absorbers are between 12.8 and 146 kg (28.2 lbs and 322 lbs.). They complement ACE's product range of self-compensating shock absorbers. All models from this product family are designed for applications where robustness and large energy absorption are important.

ACE uses our proprietary custom calculation program to design each shock absorber for the specific customer application. Customization helps reduce the risk of crashes and incorrect product sizing. The CA models can absorb up to 126,500 Nm (1,119,620 in-lbs) of energy and can be used in the area of effective weights between 700 kg and 326,000 kg (1,543 lbs and 718,707 lbs.). The combination of being extremely solid, absorbing high levels of energy and having a large damping range makes them invaluable. Self-compensating shock absorbers react to changing energy conditions, without adjustment.

These heavy duty self-compensating industrial shock absorbers are primarily used in heavy mechanical engineering e.g. on lift bridges and steel structures or for damping sluice systems.



Technical Data

Energy capacity: 3,600 Nm/Cycle to 126,500 Nm/Cycle

Impact velocity range: 0.3 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: External positive stops 2.5 mm to 3 mm before the end of stroke provided by the customer.

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

Damping medium: Automatic Transmission Fluid (ATF)

Application field: Portal systems, Machines and plants, Conveyor systems, Crane systems, Loading and lifting equipment, Shelf storage systems, Heavy load applications, Swivel units

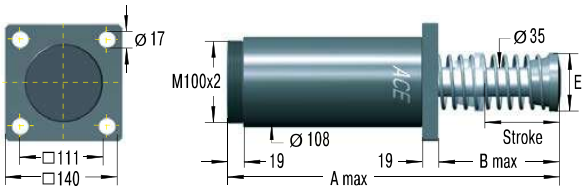
Note: For emergency use only applications and for continous use it is possible to exceed the published max. capacity ratings. In this case, please consult ACE.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

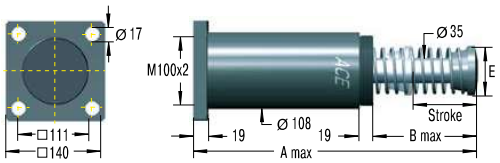
On request: Special oils, nickel-plated, increased corrosion protection or other special options are available on request.

Issue 04.2018 – Specifications subject to change

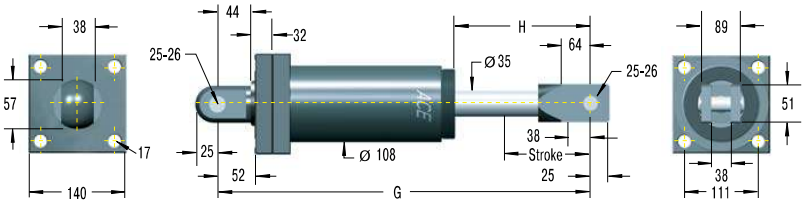
CA2-F Front Flange



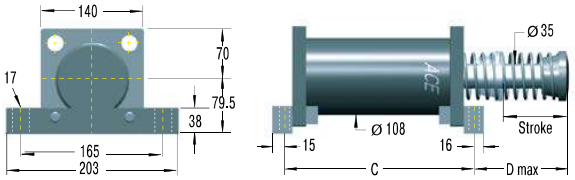
CA2-R Rear Flange



CA2-C Clevis Mount



CA2-S 2“ Bore Foot Mount



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

Model Type Prefix

Standard Models

CA: Self-contained with return spring, self-compensating

Special Models

CAA: Air/Oil return without return spring. Use only with external air/oil tank.

CNA: Self-Contained without return spring

CSA: Air/Oil return with return spring. Use only with external air/oil tank.

Ordering Example **CA2x4F-3**

- Self-Compensating
- Bore Size ⌀ 2"
- Stroke Length 4" (102 mm)
- Front Flange Mounting
- Effective Weight Range Version

Dimensions

TYPES	Stroke mm	A max. mm	B max. mm	C mm	D max. mm	E mm
CA2X2	50	313	110	173	125	70
CA2X4	102	414	160	224	175	70
CA2X6	152	516	211	275	226	70
CA2X8	203	643	287	326	302	92
CA2X10	254	745	338	377	353	108

Performance

	Max. Energy Capacity			Effective Weight							
TYPES	[1] E_3 Nm/cycle	[2] E_4 Nm/h	[2] E_4 with Air/Oil Tank Nm/h	[3] We min. kg	[3] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	Side Load Angle max. °	Weight kg
CA2X2-1	3,600	1,100,000	1,350,000	700	2,200	-1	210	285	0.25	3	12.8
CA2X2-2	3,600	1,100,000	1,350,000	1,800	5,400	-2	210	285	0.25	3	12.8
CA2X2-3	3,600	1,100,000	1,350,000	4,500	13,600	-3	210	285	0.25	3	12.8
CA2X2-4	3,600	1,100,000	1,350,000	11,300	34,000	-4	210	285	0.25	3	12.8
CA2X4-1	7,200	1,350,000	1,700,000	1,400	4,400	-1	150	285	0.50	3	14.8
CA2X4-2	7,200	1,350,000	1,700,000	3,600	11,000	-2	150	285	0.50	3	14.8
CA2X4-3	7,200	1,350,000	1,700,000	9,100	27,200	-3	150	285	0.50	3	14.8
CA2X4-4	7,200	1,350,000	1,700,000	22,600	68,000	-4	150	285	0.50	3	14.8
CA2X6-1	10,800	1,600,000	2,000,000	2,200	6,500	-1	150	400	0.60	3	16.9
CA2X6-2	10,800	1,600,000	2,000,000	5,400	16,300	-2	150	400	0.60	3	16.9
CA2X6-3	10,800	1,600,000	2,000,000	13,600	40,800	-3	150	400	0.60	3	16.9
CA2X6-4	10,800	1,600,000	2,000,000	34,000	102,000	-4	150	400	0.60	3	16.9
CA2X8-1	14,500	1,900,000	2,400,000	2,900	8,700	-1	230	650	0.70	3	19.3
CA2X8-2	14,500	1,900,000	2,400,000	7,200	21,700	-2	230	650	0.70	3	19.3
CA2X8-3	14,500	1,900,000	2,400,000	18,100	54,400	-3	230	650	0.70	3	19.3
CA2X8-4	14,500	1,900,000	2,400,000	45,300	136,000	-4	230	650	0.70	3	19.3
CA2X10-1	18,000	2,200,000	2,700,000	3,600	11,000	-1	160	460	0.80	3	22.8
CA2X10-2	18,000	2,200,000	2,700,000	9,100	27,200	-2	160	460	0.80	3	22.8
CA2X10-3	18,000	2,200,000	2,700,000	22,600	68,000	-3	160	460	0.80	3	22.8
CA2X10-4	18,000	2,200,000	2,700,000	56,600	170,000	-4	160	460	0.80	3	22.8

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] Figures for oil recirculation systems on request.
[3] The effective weight range limits can be raised or lowered to special order.

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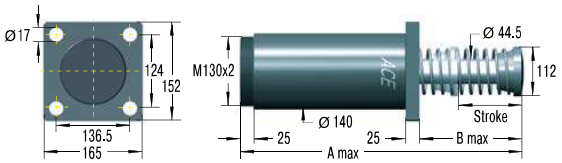
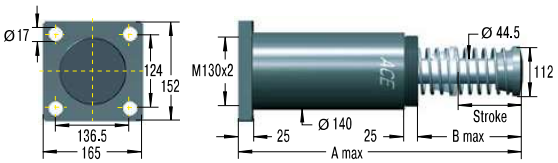
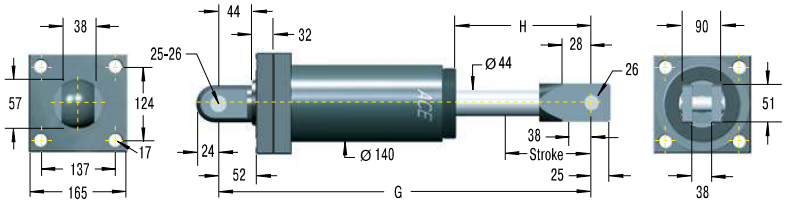
CA3-F Front Flange



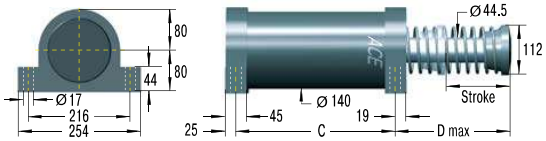
CA3-R Rear Flange



CA3-C Clevis Mount



CA3-S Foot Mount



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Model Type Prefix

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CNA: Self-Contained without return spring

CSA: Air/Oil return with return spring. Use only with external air/oil tank.

Ordering Example **CA3x5-3F**

- Self-Compensating
- Bore Size Ø 3"
- Stroke Length 5" = 127 mm
- Effective Weight Range Version
- Front Flange Mounting

Dimensions

TYPES	Stroke mm	A max. mm	B max. mm	C mm	D max. mm
CA3X5	127	490.5	211	254	224
CA3X8	203	641	286	330	300
CA3X12	305	890	434	432	447

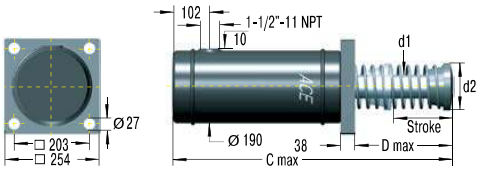
Performance

	Max. Energy Capacity			Effective Weight							
TYPES	[1] E_3 Nm/cycle	[2] E_4 Nm/h	[2] E_4 with Air/Oil Tank Nm/h	[3] We min. kg	[3] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	Side Load Angle max. °	Weight kg
CA3X5-1	14,125	2,260,000	2,800,000	2,900	8,700	-1	270	710	0.6	3	28.9
CA3X5-2	14,125	2,260,000	2,800,000	7,250	21,700	-2	270	710	0.6	3	28.9
CA3X5-3	14,125	2,260,000	2,800,000	18,100	54,350	-3	270	710	0.6	3	28.9
CA3X5-4	14,125	2,260,000	2,800,000	45,300	135,900	-4	270	710	0.6	3	28.9
CA3X8-1	22,600	3,600,000	4,520,000	4,650	13,900	-1	280	740	0.8	3	33.4
CA3X8-2	22,600	3,600,000	4,520,000	11,600	34,800	-2	280	740	0.8	3	33.4
CA3X8-3	22,600	3,600,000	4,520,000	29,000	87,000	-3	280	740	0.8	3	33.4
CA3X8-4	22,600	3,600,000	4,520,000	72,500	217,000	-4	280	740	0.8	3	33.4
CA3X12-1	33,900	5,400,000	6,780,000	6,950	20,900	-1	270	730	1.2	3	40.6
CA3X12-2	33,900	5,400,000	6,780,000	17,400	52,200	-2	270	730	1.2	3	40.6
CA3X12-3	33,900	5,400,000	6,780,000	43,500	130,450	-3	270	730	1.2	3	40.6
CA3X12-4	33,900	5,400,000	6,780,000	108,700	326,000	-4	270	730	1.2	3	40.6

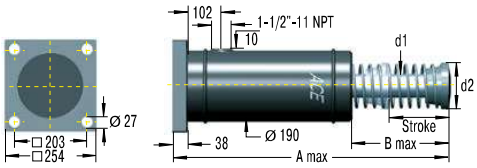
[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] Figures for oil recirculation systems on request.
[3] The effective weight range limits can be raised or lowered to special order.

Issue 04.2018 – Specifications subject to change

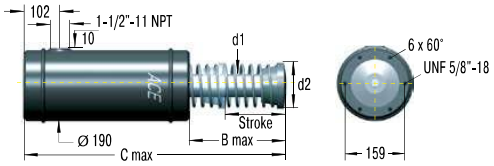
CA4-F Front Flange



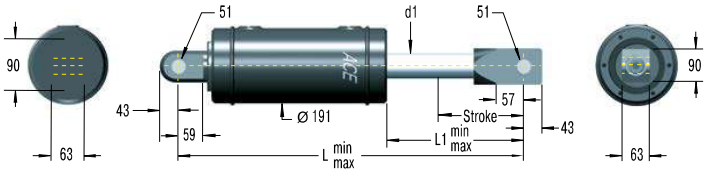
CA4-R Rear Flange



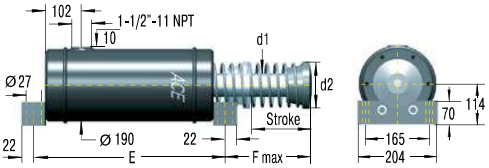
CA4-FRP 6 Tapped Holes, Primary Mounting



CA4-C Clevis Mount



CA4-S Foot Mount



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

Model Type Prefix

Standard Models

CA: Self-contained with return spring, self-compensating

Special Models

CAA: Air/Oil return without return spring. Use only with external air/oil tank.

CNA: Self-Contained without return spring

CSA: Air/Oil return with return spring. Use only with external air/oil tank.

Ordering Example **CA4x8R-5**

- Self-Compensating
- Bore Size ⌀ 4"
- Stroke Length 8" (203 mm)
- Rear Flange Mounting
- Effective Weight Range Version

Dimensions

TYPES	Stroke mm	A max. mm	B max. mm	C max. mm	D max. mm	d1 mm	d2 mm	E mm	F mm
CA4X6	152	716	278	678	240	54	114	444	256
CA4X8	203	818	329	780	291	54	114	495	307
CA4X16	406	1,300	608.5	1,262.6	569	63.5	127	698	585

Performance

	Max. Energy Capacity				Effective Weight						
TYPES	[1] E_3 Nm/cycle	E_4 Nm/h	E_4 with Air/Oil Tank Nm/h	E_4 with Oil Recirculation Nm/h	[2] We min. kg	[2] We max. kg	Hardness	Return Force min. N	Return Force max. N	Return Time s	Weight kg
CA4X6-3	47,500	3,000,000	5,100,000	6,600,000	3,500	8,600	-3	480	1,000	1.8	60.0
CA4X6-5	47,500	3,000,000	5,100,000	6,600,000	8,600	18,600	-5	480	1,000	1.8	60.0
CA4X6-7	47,500	3,000,000	5,100,000	6,600,000	18,600	42,700	-7	480	1,000	1.8	60.0
CA4X8-3	63,300	3,400,000	5,600,000	7,300,000	5,000	11,400	-3	310	1,000	2.3	68.0
CA4X8-5	63,300	3,400,000	5,600,000	7,300,000	11,400	25,000	-5	310	1,000	2.3	68.0
CA4X8-7	63,300	3,400,000	5,600,000	7,300,000	25,000	57,000	-7	310	1,000	2.3	68.0
CA4X16-3	126,500	5,600,000	9,600,000	12,400,000	10,000	23,000	-3	310	1,000	ask	146.0
CA4X16-5	126,500	5,600,000	9,600,000	12,400,000	23,000	50,000	-5	310	1,000	ask	146.0
CA4X16-7	126,500	5,600,000	9,600,000	12,400,000	50,000	115,000	-7	310	1,000	ask	146.0

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.

[2] The effective weight range limits can be raised or lowered to special order.

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A1 1/2 to A3

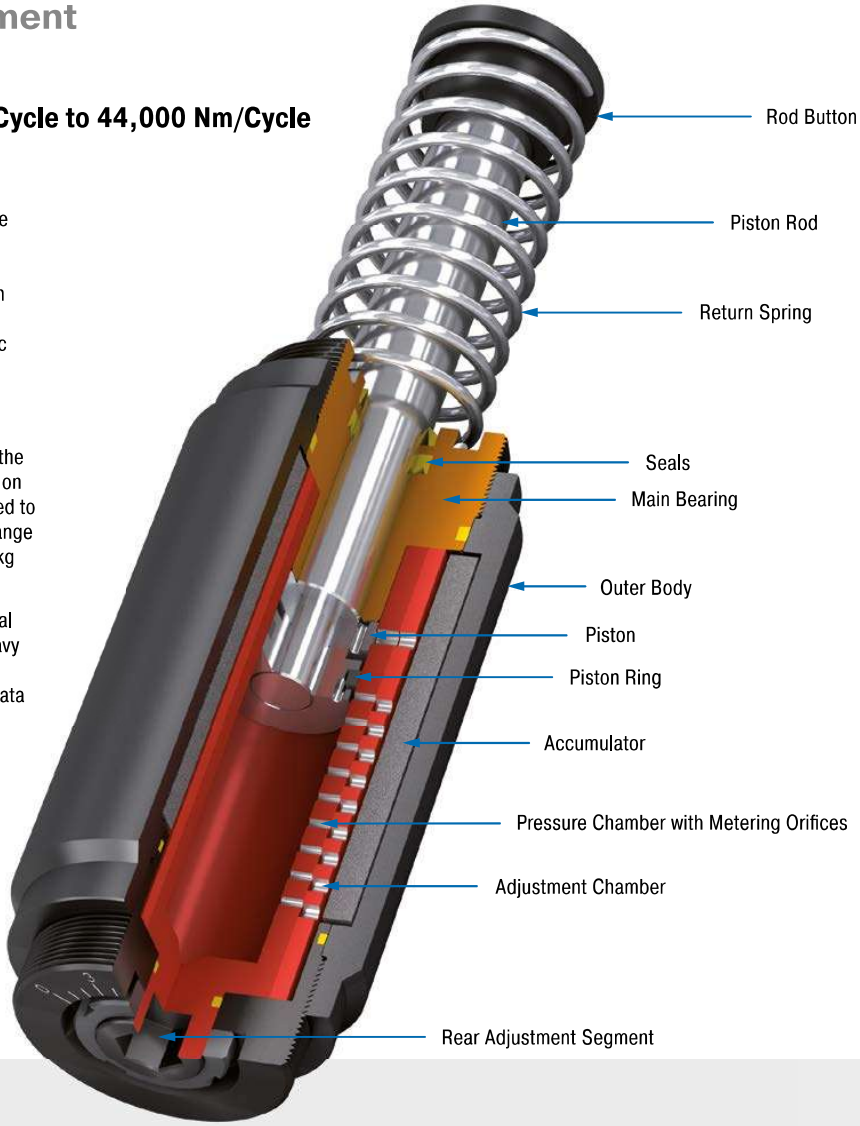
Deceleration of heavy loads and progressive adjustment

Adjustable
Energy capacity 2,350 Nm/Cycle to 44,000 Nm/Cycle
Stroke 50 mm to 305 mm

Strong and adjustable: Also in ACE's range of units ares heavy duty industrial shock absorbers, which can be adjusted. The models from the A1 1/2 to A3 range, which weigh between 7.55 kg and 48 kg, are extremely robust, ready-to-install hydraulic machine elements with impressively high energy absorption levels and a wide range of damping rates.

Their special aspect is the flexibility,as all the absorbers can be adjusted using a socket on the absorber base and be perfectly adapted to the required data. The A models cover a range of effective loads from 0.3 kg to 204,000 kg and can absorb up to 44,000 Nm energy.

These heavy duty, adjustable ACE industrial shock absorbers are the first choice in heavy duty applications and generally in heavy mechanical engineering when the usage data has not been exactly determined.



Technical Data

Energy capacity: 2,350 Nm/Cycle to 44,000 Nm/Cycle

Impact velocity range: 0.1 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: External positive stops 2.5 mm to 3 mm before the end of stroke provided by the customer.

Adjustment: Hard impact at the start of stroke, adjust the ring towards 9. Hard impact at the end of stroke, adjust the ring towards 0.

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

Damping medium: Automatic Transmission Fluid (ATF)

Application field: Portal systems, Machines and plants, Conveyor systems, Crane systems, Loading and lifting equipment, Impact panels, Heavy load applications, Swivel units, Shelf storage systems

Note: For emergency use only applications and for continous use it is possible to exceed the published max. capacity ratings. In this case, please consult ACE.

Safety information: External materials in the surrounding area can attack the seal components and lead to a shorter service life. Please contact ACE for appropriate solution suggestions. Do not paint the shock absorbers due to heat emission.

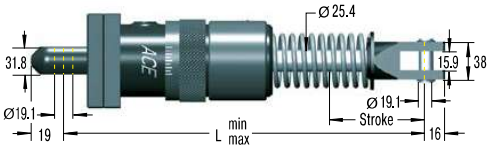
On request: Special oils, nickel-plated, increased corrosion protection or other special options are available on request.

Issue 04.2018 – Specifications subject to change

A1 1/2-F Front Flange

A1 1/2-R Rear Flange

A1 1/2-C Clevis Mount



A1 1/2-S Foot Mount

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

Model Type Prefix

Standard Models

A: Self-contained with return spring, adjustable

Special Models

AA: Air/Oil return without return spring. Use only with external air/oil tank.
NA: Self-contained without return spring
SA: Air/Oil return with return spring. Use only with external air/oil tank.

Ordering Example **A1½x2R**

Adjustable
Bore Size ⌀ 1½"
Stroke Length 2" (50.8 mm)
Rear Flange Mounting

Dimensions

TYPES	Stroke mm	L min. mm	L max. mm	L1 mm	L2 mm	L3 mm	L4 mm
A11/2X2	50	277.8	328.6	195.2	54.2	-	-
A11/2X31/2	89	316.6	405.6	233	54.2	170	58.6
A11/2X5	127	354.8	481.8	271.5	54.2	208	58.6
A11/2X61/2	165	412	577	329	73	246	78

Performance

	Max. Energy Capacity			Effective Weight						
TYPES	[1] E_3 Nm/cycle	[2] E_4 Nm/h	[2] E_4 with Air/Oil Tank Nm/h	[3] We min. kg	[3] We max. kg	Return Force min. N	Return Force max. N	Return Time s	Side Load Angle max. °	Weight kg
A11/2X2	2,350	362,000	452,000	195	32,000	160	210	0.10	5	7.6
A11/2X31/2	4,150	633,000	791,000	218	36,000	110	210	0.25	4	8.9
A11/2X5	5,900	904,000	1,130,000	227	41,000	90	230	0.40	3	9.4
A11/2X61/2	7,700	1,180,000	1,469,000	308	45,000	90	430	0.40	2	12.0

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] Figures for oil recirculation systems on request.
[3] The effective weight range limits can be raised or lowered to special order.

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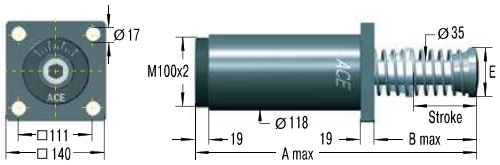
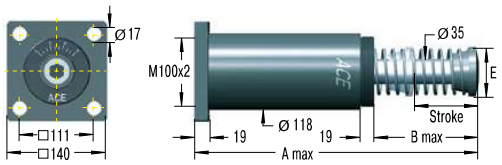
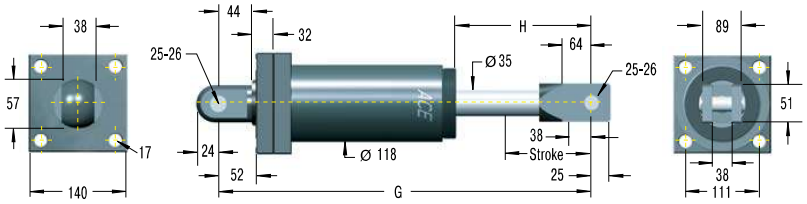
A2-F Front Flange



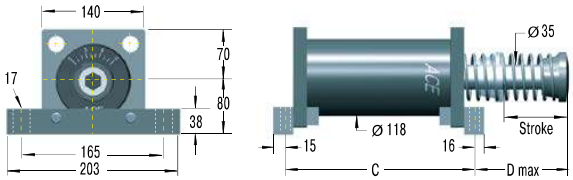
A2-R Rear Flange



A2-C Clevis Mount



A2-S 2“ Bore Foot Mount



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

Model Type Prefix

Standard Models

A: Self-contained with return spring, adjustable

Special Models

AA: Air/Oil return without return spring. Use only with external air/oil tank.

NA: Self-contained without return spring

SA: Air/Oil return with return spring. Use only with external air/oil tank.

Ordering Example **A2x6-R**

Adjustable

Bore Size Ø 2"

Stroke Length 6" = 152 mm

Rear Flange Mounting

Dimensions

TYPES	Stroke mm	A max. mm	B max. mm	C mm	D max. mm	E mm
A2X2	50	313	110	173	125	70
A2X4	102	414	160	224	175	70
A2X6	152	516	211	275	226	70
A2X8	203	643	287	326	302	92
A2X10	254	745	338	377	353	108

Performance

	Max. Energy Capacity			Effective Weight						
TYPES	[1] E_3 Nm/cycle	[2] E_4 Nm/h	[2] E_4 with Air/Oil Tank Nm/h	[3] We min. kg	[3] We max. kg	Return Force min. N	Return Force max. N	Return Time s	Side Load Angle max. °	Weight kg
A2X2	3,600	1,100,000	1,350,000	250	77,000	210	285	0.25	3	14.3
A2X4	9,000	1,350,000	1,700,000	250	82,000	150	285	0.50	3	16.7
A2X6	13,500	1,600,000	2,000,000	260	86,000	150	400	0.60	3	19.3
A2X8	19,200	1,900,000	2,400,000	260	90,000	230	650	0.70	3	22.3
A2X10	23,700	2,200,000	2,700,000	320	113,000	160	460	0.80	3	26.2

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] Figures for oil recirculation systems on request.
[3] The effective weight range limits can be raised or lowered to special order.

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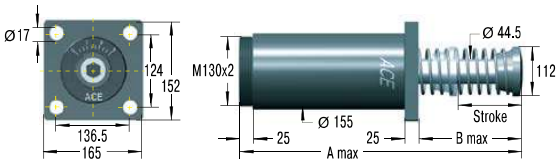
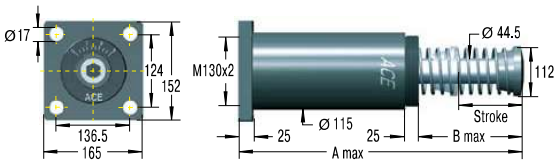
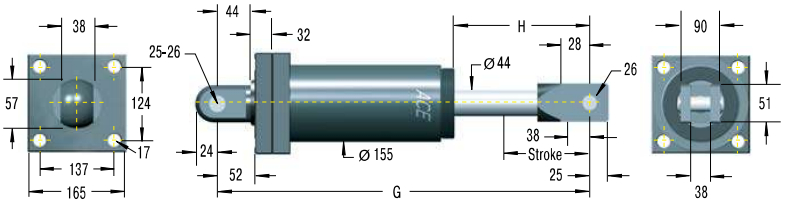
A3-F Front Flange



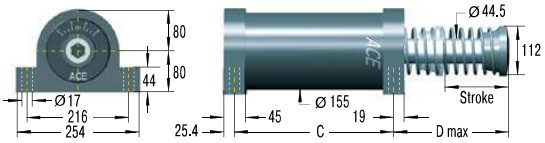
A3-R Rear Flange



A3-C Clevis Mount



A3-S Foot Mount



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

Model Type Prefix

Standard Models
A: Self-contained with return spring, adjustable
Special Models
AA: Air/Oil return without return spring. Use only with external air/oil tank.
NA: Self-contained without return spring
SA: Air/Oil return with return spring. Use only with external air/oil tank.

Ordering Example **A3x8R**

Adjustable
Bore Size Ø 3"
Stroke Length **8"** (203 mm)
Rear Flange Mounting

Dimensions

TYPES	Stroke mm	A max. mm	B max. mm	C mm	D max. mm
A3X5	127	490.5	211	254	224
A3X8	203	641	286	330	300
A3X12	305	890	434	432	447

Performance

	Max. Energy Capacity			Effective Weight						
TYPES	[1] E_3 Nm/cycle	[2] E_4 Nm/h	[2] E_4 with Air/Oil Tank Nm/h	[3] We min. kg	[3] We max. kg	Return Force min. N	Return Force max. N	Return Time s	Side Load Angle max. °	Weight kg
A3X5	15,800	2,260,000	2,800,000	480	154,000	270	710	0.6	3	32.7
A3X8	28,200	3,600,000	4,520,000	540	181,500	280	740	0.8	3	38.5
A3X12	44,000	5,400,000	6,780,000	610	204,000	270	730	1.2	3	48.0

[1] For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.
[2] Figures for oil recirculation systems on request.
[3] The effective weight range limits can be raised or lowered to special order.

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Air/Oil Tanks
for industrial shock absorbers

For high cycle rates and extreme temperatures with limited mounting space

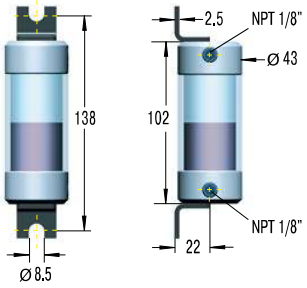
Shock absorbers convert the introduced energy into heat. The more frequently a shock absorber is stressed per hour, the hotter the oil volume becomes over time. If the requirements placed on the impact frequency of a shock absorber are especially high, use of an air-oil tank is the solution.

Thanks to increased oil volume and resulting heat dissipation, the upper limit of the possible hourly energy capacity of the shock absorber increases significantly.

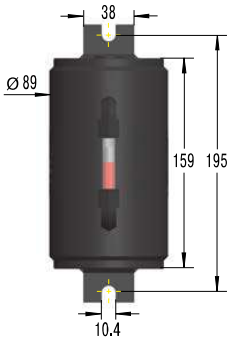
In addition, the air-oil tank provides an opportunity for controlled piston return if no permanent return force through an integrated spring in the shock absorber is desired.

Air/Oil Tanks AO

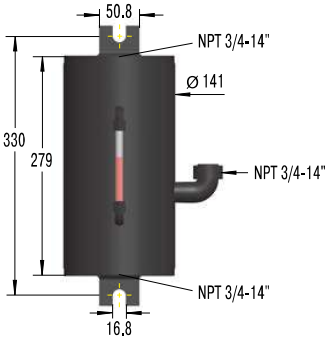
AO1
Oil capacity 20 cm³
Material: Aluminium caps



AO3
Oil capacity 370 cm³
Material: Steel



AO6
Oil capacity 2,600 cm³
Material: Steel



Detail drawings on request

Technical Data

Operating pressure: Max. 8 bar (116 psi)
Operating temperature range: 80 °C
Damping medium: ATF-Oil 42 cSt at 40 °C
Mount air/oil tank higher than shock absorber. Bleed all air from system before operating.

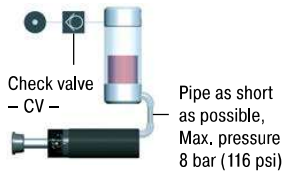
Safety instructions: Exhaust tank before carrying out service. Check valve holds pressure!

Suggested air/oil tanks in accordance with E_4 ratings

Issue 04.2018 – Specifications subject to change

Connection Examples

1

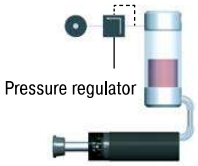


Piston rod returns immediately to extended position when load moves away. Operation without main air supply possible for short periods.

2

Return stroke may be sequenced by pneumatic valve at any desired time. No return force until valve energised.

3

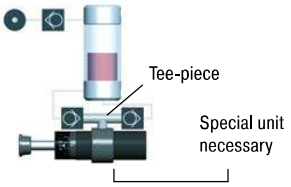


Return force can be adjusted by pressure regulator. Ensure safe minimum pressure to return shock absorber.

4

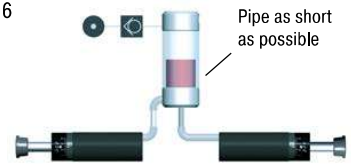
Spring return with air/oil tank. No air supply connected. Note: Will extend return time.

5



Oil recirculation circuit for extreme high cycle rates. Warm oil is positively circulated through air/oil tank for increased heat dissipation.

6



Connection of two shock absorbers to one air/oil tank is possible. Use next larger size tank. Combination with examples 2, 3 and 5 possible.

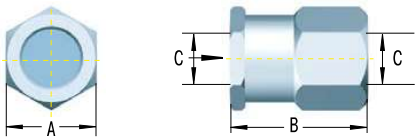
Selection Chart Air/Oil Tanks

	With Tank Example 1 to 4		With Recirc. Circuits Example 5 to 6		Min. Conn. Pipe Ø	Thread Sizes for Connection to Air/Oil Tank	
Shock Absorber Type	Tank	Check Valve	Tank	Check Valve	mm	Thread Bottom	[2] Thread Side
MCA, MAA, MLA33...	AO1	CV1/8	AO3	CV1/4	4	[1] 1/8-27 NPTF inside	1/8-27 NPTF inside
MCA, MAA, MLA45...	AO1	CV1/8	AO3	CV3/8	6	1/8-27 NPTF inside	1/8-27 NPTF inside
MCA, MAA, MLA64...	AO3	CV1/4	AO6	CV3/4	8	1/4-18 NPTF inside	1/4-18 NPTF inside
CAA, AA2...	AO6	CV3/4	AO82	CV3/4	15	–	–
CAA, AA3...	AO6	CV3/4	AO82	CV3/4	19	–	–
CAA4...	AO82	CV3/4	AO82	CV3/4	38	–	–

AO82 and connection accessories: Details on request
[1] adapted
[2] on request (add suffix -PG/-P)

Check Valves CV

Through an oil circuit fresh oil is drawn in from the industrial shock absorber and warm oil is pumped off (see example 5). To obtain this function, ACE offers suitable check valves of the CV series.



Technical Data

Operating pressure: 20 bar (290 psi)
Operating temperature range: 95 °C
Suitable for: Oil, air, water
Material: Aluminium

Check Valves – Dimensions

TYPES	A mm	B mm	C
CV1/8	19	24	1/8-27 NPT
CV1/4	29	33	1/4-18 NPT
CV3/8	29	33	3/8-18 NPT
CV1/2	41	40	1/2-14 NPT
CV3/4	48	59	3/4-14 NPT

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