MA/ML33 to MA/ML64
Industrial Shock Absorbers

High energy capacity and progressive adjustment

Adjustable

Energy capacity from 170 Nm/cycle to 6,780 Nm/cycle

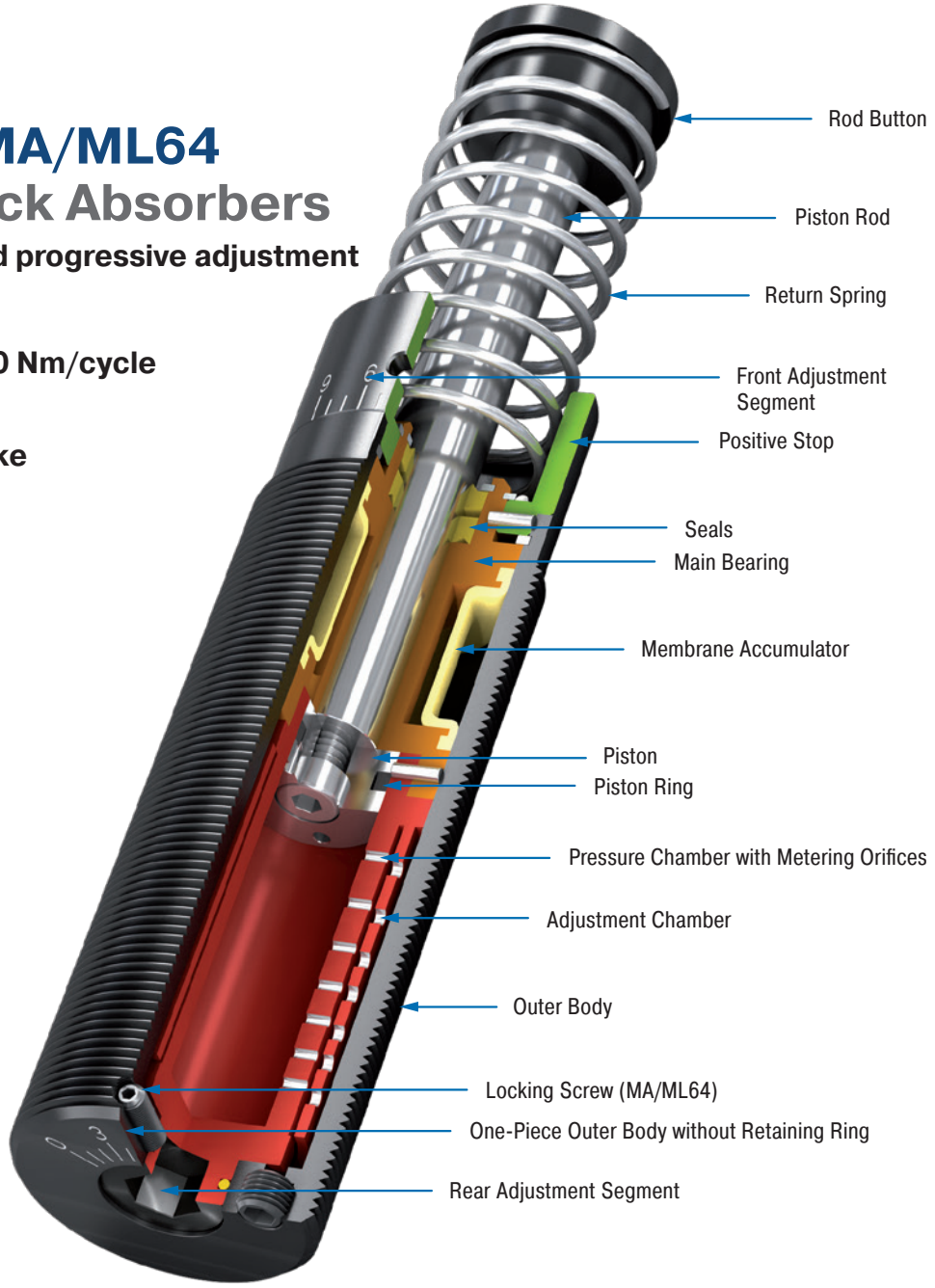
23.1 mm to 150 mm stroke

MA/ML33EUM

MA/ML45EUM

MA/ML64EUM

The identification numbers listed are the respective standard units of the corresponding shock absorber series. Special types can have deviating identification numbers.



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Industrial Shock Absorbers MA/ML33 to MA/ML64 (adjustable)

Manual

General instructions

This manual is for the disruption-free use of the product types listed on page 1; its compliance is a prerequisite for the fulfilment of any warranty claims.

Therefore, make sure to read this manual before use.

Please always maintain the specified limits from the performance table (technical data). Take into account the predominant environmental conditions and restrictions. Note the regulations of the trade association, TÜV or corresponding national, international and European regulations. Installation and commissioning only according to mounting instructions.

Safety information

WARNING

If ACE industrial shock absorbers are used where a failure of the product could lead to personal injuries and/or material damage, additional safety elements must be implemented.

Free-moving masses can lead to injuries by crushing during installation of the shock absorber. Secure moving masses against inadvertent starting with suitable safety precautions before installing the shock absorbers.

Intended use

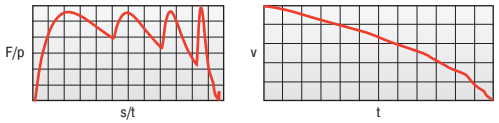
ACE industrial shock absorbers are used wherever moving masses are to be slowed down in a defined end position. The industrial shock absorbers are designed for force capacity in an axial direction. Within the permissible load limits the industrial shock absorber also acts as a stop.

Description and function

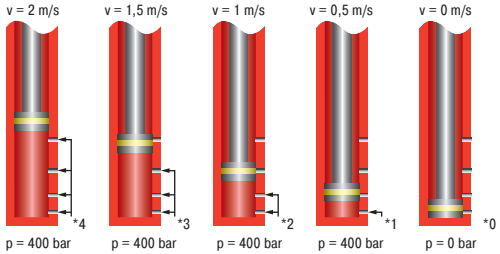
The ACE industrial shock absorbers MA/ML33 to MA/ML64 are maintenance-free, adjustable hydraulic components with numerous metering openings.

During the slowing down process the moving mass moves with kinetic energy and, if necessary, an additional drive energy in the axial direction of the piston rod with a defined impact velocity against the rod end button of the shock absorber. Alternatively, numerous shock absorbers can also be used in parallel. During the initiated slowing down process the piston rod is pushed into the shock absorber. The hydraulic oil located before the piston is displaced through all metering orifices at the same time. The number of effective metering openings reduces in proportion to the driven stroke. The retraction speed reduces. The dynamic pressure applied in front of the piston corresponds to the counterforce applied by the shock absorber and remains approximately constant over the entire stroke. A requirement for a constant rate of deceleration is the correct calculation of the industrial shock absorber and the correct adjustment of the damping according to the respective application (see mounting instructions).

General Function



F = Force (N) p = Internal pressure (bar) s = Stroke (m)
t = Deceleration time (s) v = Velocity (m/s)



* The load velocity reduces continuously as you travel through the stroke due to the reduction in the number of metering orifices (*) in action. The internal pressure remains essentially constant and thus the Force vs. stroke curve remains linear.

Calculation and design

In order to ensure an optimum, fault-free and durable function of the industrial shock absorbers they must be correctly dimensioned and designed. The following parameters must be known and used in the calculation:

- Moving mass [kg]
- Impact velocity of the mass into the shock absorber(s) [m/s]
- Additionally acting propelling force, propelling power or propelling torque [N, kW, Nm]
- Number of shock absorbers acting in parallel [n]
- Number of strokes or cycles per hour [1/h]

The correct size of the shock absorbers can be determined with the ACE online calculation programme at www.ace-ace.de. You can also send us the completed online form via e-mail for checking.

Or make use of our free calculation service by phoning:
T +49 (0)2173 - 9226-20.

WARNING

The dampers must be dimensioned in such a way that the calculated values do not exceed the maximum values of the respective performance table (technical data):

W_3 [Nm/cycle]

W_4 [Nm/h]

Effective weight me

Max. side load angle [°]

For a correct damping design the shock absorber must represent the only braking system. Additional braking systems, such as a pneumatic end position damping length, must not overlap with the end position damping length by the shock absorber and must be disabled.

Delivery and storage

- After delivery please check the shock absorber for any damage.
- The shock absorber can become damaged if it falls. Carefully remove shock absorber from the packaging.
- Shock absorbers can generally be stored in any position.
- Storage in the original packaging is preferred.
- Always store shock absorbers in a dry place in order to avoid oxidation.
- The recommended maximum storage time is three years.

Maintenance and care

Regularly check the shock absorbers for oil loss, return of the piston rod and external damage.

Shock absorbers are machine elements that are subject to continuous wear. Increased service life results in reduced damping effect. If this is no longer sufficient, the shock absorbers must be replaced or exchanged as appropriate.

Disassembly and disposal

Take account of environmental protection (recovery of problematic substances) during disposal of the shock absorber. The MA/ML industrial shock absorbers are filled with automatic transmission fluid (ATF). The corresponding data sheet is available on request.

Faulty dampers can be sent to our service department for determination of the cause of failure.

Industrial Shock Absorbers MA/ML33 (adjustable)

Mounting instructions and mounting accessories

Installation instructions

Before installation and use check whether the identification number on the damper or on the packaging matches the respective designation on the delivery note. Industrial shock absorbers are maintenance-free and ready to install.

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

Mounting: As required but always in such a way that the entire damper stroke is used. The dampers must always be mounted in such a way that the forces are introduced centrally over the piston rod. The maximum permissible side load angle (see table) must not be exceeded. If there is a side load angle, it generally leads to a reduction in service life. In the case of maximum permissible values being exceeded a side load adapter must be used.

WARNING

Temperature effect: The W_4 and me values given in the performance table (see manual or catalogue) are valid for room temperature. Deviating values apply to higher temperatures.

During installation of the dampers moving masses can lead to injuries due to inadvertent starting. Secure moving masses against inadvertent moving.

The dampers may be unsuitable for use and have an insufficient damping effect. Check the specific suitability of the dampers before installation.

If operated outside of the operating temperature range, the damper can lose its function. Operating temperature range must be maintained. Do not paint dampers due to heat emission.

Fluids, gases and dirt particles in the surrounding area can attack or destroy the seal system of the damper and cause it to fail. Protect or encapsulate piston rod and seal system from external materials in the surrounding area.

Damage to the piston rod surface can destroy the seal system. Do not grease, oil piston rod etc. and protect against dirt particles.

The piston rod can be torn from the damper. Do not load the piston rod with tensile stress.

Damper can tear off upon impact. Always lay out the connection structure in such a way that the maximum occurring forces can be absorbed with sufficient safety. The maximum reacting forces listed in the calculation range may deviate from the actually occurring reacting forces, as these are based on theoretical values.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

Commissioning and adjustment

The scale has an adjustment range of 0 to 9.

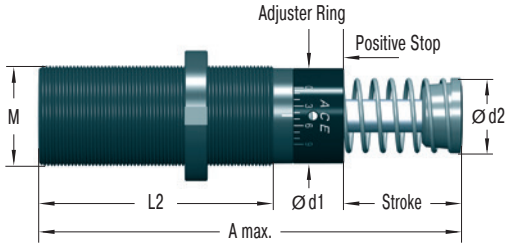
The adjustment can take place via the adjustment screw on the base or the stop collar. Both adjustment options are connected and show identical values on the scales. After mounting the shock absorber, the device is operated several times. In doing so, the stop collar or the adjustment screw is turned until the optimum braking (no hard impact at start of stroke, no striking bottom at end of stroke) is reached.

Hard impact at start of stroke, turn scale in direction of 9.
Striking bottom at end of stroke, turn scale in direction of 0.

The shock absorber is preset to 5.

Mounting accessories

Information on the corresponding mounting accessories can be found on the following pages.



Adjuster

Thread M36x1.5 and M42x1.5 on request
Thread UNF 1 1/4-12 (omit suffix -M from part number)

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MA3325EUM	23.2	138	30	25	83	M33x1.5
ML3325EUM	23.2	138	30	25	83	M33x1.5
MA3350EUM	48.6	189	30	25	108	M33x1.5
ML3350EUM	48.6	189	30	25	108	M33x1.5

Performance data

	Max. Energy Capacity				Effective Weight						
TYPES	[1] W_3 Nm/cycle	W_4 Nm/h	W_4 with Oil Tank Nm/h	W_4 with Oil Recirculation Nm/h	[2] me min. kg	[2] me max. kg	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
MA3325EUM	170	75,000	124,000	169,000	9	1,700	45	90	0.03	4	0.51
ML3325EUM	170	75,000	124,000	169,000	300	50,000	45	90	0.03	4	0.51
MA3350EUM	340	85,000	135,000	180,000	13	2,500	45	135	0.06	3	0.62
ML3350EUM	340	85,000	135,000	180,000	500	80,000	45	135	0.06	3	0.62

[1] It is permissible to exceed the stated energy in emergency stop situations. In the event of such a case, please contact ACE.
[2] The effective weight range limits can be raised or lowered on request.
[3] If side load angle is higher contact ACE.

Model type prefix

Standard types

MA: with return spring and self-contained, adjustable
ML: with return spring and self-contained, adjustable, for low impact velocities

Special types

MAA, MLA: not self-contained, without spring. Use only with external air/oil tank.
MAS, MLS: not self-contained, with spring. Use only with external air/oil tank.
MAN, MLN: not self-contained, without spring

Industrial Shock Absorbers MA/ML33 (adjustable) – mounting accessories

Mounting instructions and mounting accessories

M33x1.5 mounting accessories

MA/ML33

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

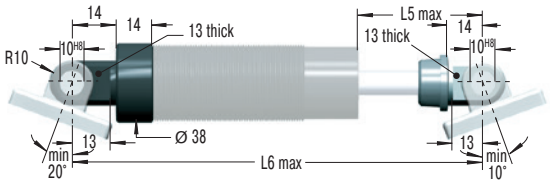
When using accessory parts and mounting elements also note the mounting instructions for accessories delivered separately.

Mounting Foot mounting kit

If the permissible reaction force of 6,800 N is exceeded, an additional support strip is required to support the damper force when foot mounting. This support strip (max. thickness 3 mm) is preferably positioned behind the rear foot flange. The slide rail prevents the fixing screws of the damper from being subjected to bending and shearing. The customer must design, manufacture and install the fixing of the support strip (welding, screw fastening, etc.) himself to ensure that it is strong enough.

C33

Clevis Mounting Kit

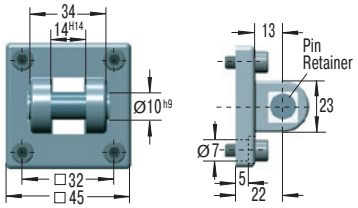


Dimensions

TYPES	L5 max. mm	L6 max. mm
MC, MA, ML3325EUM	39	168
MC, MA, ML3350EUM	64	218

SF33

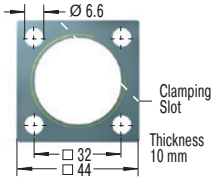
Clevis Flange



SF33 = flange + 4 screws M6x20, DIN 912
Torque max.: 7.5 Nm
Secure with pin or use additional bar.
Due to limited force capacity the respective ability should be reviewed by ACE.

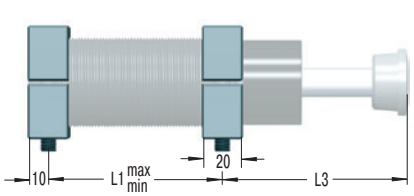
QF33

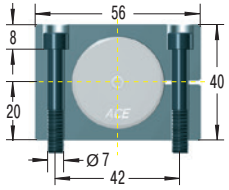
Square Flange



S33

Side Foot Mounting Kit



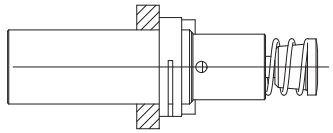


Dimensions

TYPES	L1 min. mm	L1 max. mm	L3 mm
MC, MA, ML3325EUM	25	60	68
MC, MA, ML3350EUM	32	86	93

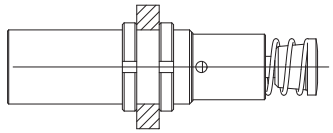
Mounting types

Mounting with Square Flange QF



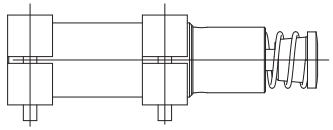
If mounted with 4 bolts
Torque max.: 11 Nm
Clamping torque: > 90 Nm

Mounting of damper in borehole with two locking rings



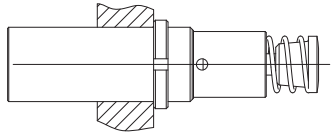
Torque: 80 Nm
Note: We recommend gluing the locknut with Loctite 243.

Mounting with Foot Mount S



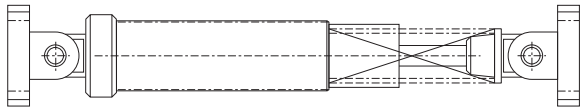
S33 = 2 flange + 4 bolts M6x50, DIN 912 Strength class 12.9
Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.
Torque: 17.4 Nm (bolt)

Screwing the damper into a threaded hole with additional locking ring



Torque: 80 Nm
Note: We recommend gluing the locknut with Loctite 243.

Mounting with Clevis Mounting Kit C



C33 = 2 clevis eyes. Delivered assembled to shock absorber.
Use positive stop at both ends of travel.

SF33 = flange + 4 bolts M6x20, DIN 912
Torque max.: 7.5 Nm
Secure with pin or use additional bar. Due to limited force absorption, the respective suitability should be reviewed by ACE.

Industrial Shock Absorbers MA/ML45 (adjustable)

Mounting instructions and mounting accessories

Installation instructions

Before installation and use check whether the identification number on the damper or on the packaging matches the respective designation on the delivery note. Industrial shock absorbers are maintenance-free and ready to install.

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

Mounting: As required but always in such a way that the entire damper stroke is used. The dampers must always be mounted in such a way that the forces are introduced centrally over the piston rod. The maximum permissible side load angle (see table) must not be exceeded. If there is a side load angle, it generally leads to a reduction in service life. In the case of maximum permissible values being exceeded a side load adapter must be used.

WARNING

Temperature effect: The W_4 and me values given in the performance table (see manual or catalogue) are valid for room temperature. Deviating values apply to higher temperatures.

During installation of the dampers moving masses can lead to injuries due to inadvertent starting. Secure moving masses against inadvertent moving.

The dampers may be unsuitable for use and have an insufficient damping effect. Check the specific suitability of the dampers before installation.

If operated outside of the operating temperature range, the damper can lose its function. Operating temperature range must be maintained. Do not paint dampers due to heat emission.

Fluids, gases and dirt particles in the surrounding area can attack or destroy the seal system of the damper and cause it to fail. Protect or encapsulate piston rod and seal system from external materials in the surrounding area.

Damage to the piston rod surface can destroy the seal system. Do not grease, oil piston rod etc. and protect against dirt particles.

The piston rod can be torn from the damper. Do not load the piston rod with tensile stress.

Damper can tear off upon impact. Always lay out the connection structure in such a way that the maximum occurring forces can be absorbed with sufficient safety. The maximum reacting forces listed in the calculation range may deviate from the actually occurring reacting forces, as these are based on theoretical values.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

Commissioning and adjustment

The scale has an adjustment range of 0 to 9.

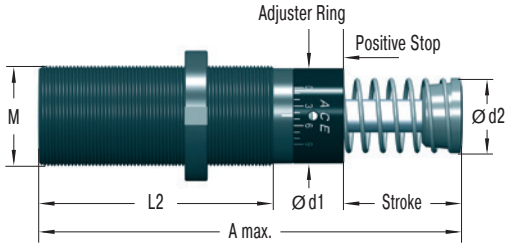
The adjustment can take place via the adjustment screw on the base or the stop collar. Both adjustment options are connected and show identical values on the scales. After mounting the shock absorber, the device is operated several times. In doing so, the stop collar or the adjustment screw is turned until the optimum braking (no hard impact at start of stroke, no striking bottom at end of stroke) is reached.

Hard impact at start of stroke, turn scale in direction of 9.
Striking bottom at end of stroke, turn scale in direction of 0.

The shock absorber is preset to 5.

Mounting accessories

Information on the corresponding mounting accessories can be found on the following pages.



Thread UNF 1 3/4-12 (omit suffix -M from part number)

Adjuster

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
MA4525EUM	23.1	145	42	35	95	M45x1.5
ML4525EUM	23.1	145	42	35	95	M45x1.5
MA4550EUM	48.5	195	42	35	120	M45x1.5
ML4550EUM	48.5	195	42	35	120	M45x1.5
MA4575EUM	73.9	246	42	35	145	M45x1.5

Performance data

	Max. Energy Capacity				Effective Weight						
TYPES	[1] W_3 Nm/cycle	W_4 Nm/h	W_4 with Oil Tank Nm/h	W_4 with Oil Recirculation Nm/h	[2] me min. kg	[2] me max. kg	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
MA4525EUM	425	107,000	158,000	192,000	40	10,000	70	100	0.03	4	1.13
ML4525EUM	425	107,000	158,000	192,000	3,000	110,000	70	100	0.03	4	1.13
MA4550EUM	850	112,000	192,000	248,000	70	14,500	70	145	0.08	3	1.37
ML4550EUM	850	112,000	192,000	248,000	5,000	180,000	70	145	0.08	3	1.37
MA4575EUM	1,300	146,000	225,000	282,000	70	15,000	50	180	0.11	2	1.59

[1] It is permissible to exceed the stated energy in emergency stop situations. In the event of such a case, please contact ACE.
[2] The effective weight range limits can be raised or lowered on request.
[3] If side load angle is higher contact ACE.

Model type prefix

Standard types

MA: with return spring and self-contained, adjustable
ML: with return spring and self-contained, adjustable, for low impact velocities

Special types

MAA, MLA: not self-contained, without spring. Use only with external air/oil tank.
MAS, MLS: not self-contained, with spring. Use only with external air/oil tank.
MAN, MLN: not self-contained, without spring

Industrial Shock Absorbers MA/ML45 (adjustable) – mounting accessories

Mounting instructions and mounting accessories

M45x1.5 mounting accessories

MA/ML45

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

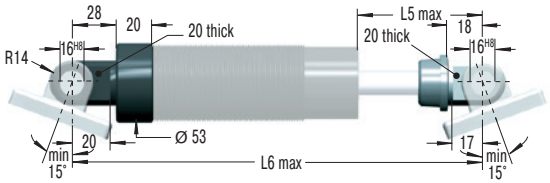
When using accessory parts and mounting elements also note the mounting instructions for accessories delivered separately.

Mounting Foot mounting kit

If the permissible reaction force of 12,400 N is exceeded, an additional support strip is required to support the damper force when foot mounting. This support strip (max. thickness 3 mm) is preferably positioned behind the rear foot flange. The slide rail prevents the fixing screws of the damper from being subjected to bending and shearing. The customer must design, manufacture and install the fixing of the support strip (welding, screw fastening, etc.) himself to ensure that it is strong enough.

C45

Clevis Mounting Kit

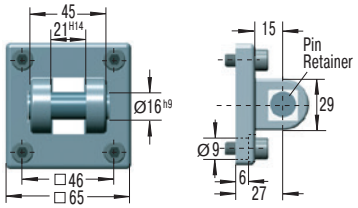


Dimensions

TYPES	L5 max. mm	L6 max. mm
MC, MA, ML4525EUM	43	200
MC, MA, ML4550EUM	68	250
MC, MA4575EUM	93	301

SF45

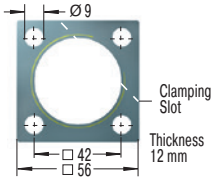
Clevis Flange



SF45 = flange + 4 screws M8x20, DIN 912
Torque max.: 7.5 Nm
Secure with pin or use additional bar.
Due to limited force capacity the respective ability should be reviewed by ACE.

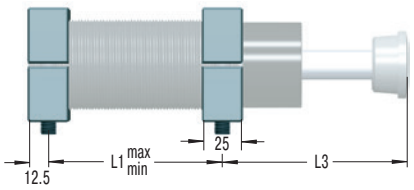
QF45

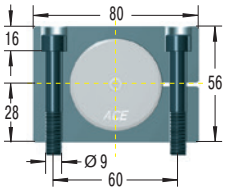
Square Flange



S45

Side Foot Mounting Kit



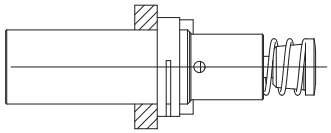


Dimensions

TYPES	L1 min. mm	L1 max. mm	L3 mm
MC, MA, ML4525EUM	32	66	66
MC, MA, ML4550EUM	40	92	91
MC, MA4575EUM	50	118	116

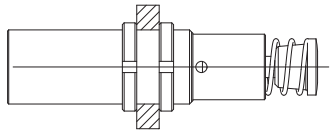
Mounting types

Mounting with Square Flange QF



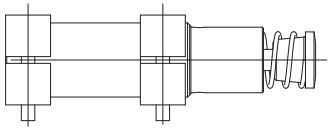
If mounted with 4 bolts
Torque max.: 27 Nm
Clamping torque: > 200 Nm

Mounting of damper in borehole with two locking rings



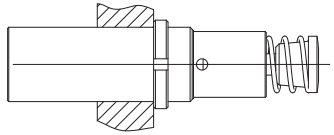
Torque: 235 Nm
Note: We recommend gluing the locknut with Loctite 243.

Mounting with Foot Mount S



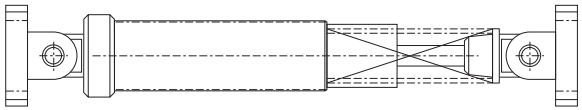
S45 = 2 flange + 4 bolts M8x60, DIN 912 Strength class 12.9
Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.
Torque: 42.2 Nm (bolt)

Screwing the damper into a threaded hole with additional locking ring



Torque: 235 Nm
Note: We recommend gluing the locknut with Loctite 243.

Mounting with Clevis Mounting Kit C



C45 = 2 clevis eyes. Delivered assembled to shock absorber.
Use positive stop at both ends of travel.

SF45 = flange + 4 bolts M8x20, DIN 912
Torque max.: 7.5 Nm
Secure with pin or use additional bar. Due to limited force absorption, the respective suitability should be reviewed by ACE.

Industrial Shock Absorbers MA/ML64 (adjustable)

Mounting instructions and mounting accessories

Installation instructions

Before installation and use check whether the identification number on the damper or on the packaging matches the respective designation on the delivery note. Industrial shock absorbers are maintenance-free and ready to install.

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

Mounting: As required but always in such a way that the entire damper stroke is used. The dampers must always be mounted in such a way that the forces are introduced centrally over the piston rod. The maximum permissible side load angle (see table) must not be exceeded. If there is a side load angle, it generally leads to a reduction in service life. In the case of maximum permissible values being exceeded a side load adapter must be used.

WARNING

Temperature effect: The W_4 and me values given in the performance table (see manual or catalogue) are valid for room temperature. Deviating values apply to higher temperatures.

During installation of the dampers moving masses can lead to injuries due to inadvertent starting. Secure moving masses against inadvertent moving.

The dampers may be unsuitable for use and have an insufficient damping effect. Check the specific suitability of the dampers before installation.

If operated outside of the operating temperature range, the damper can lose its function. Operating temperature range must be maintained. Do not paint dampers due to heat emission.

Fluids, gases and dirt particles in the surrounding area can attack or destroy the seal system of the damper and cause it to fail. Protect or encapsulate piston rod and seal system from external materials in the surrounding area.

Damage to the piston rod surface can destroy the seal system. Do not grease, oil piston rod etc. and protect against dirt particles.

The piston rod can be torn from the damper. Do not load the piston rod with tensile stress.

Damper can tear off upon impact. Always lay out the connection structure in such a way that the maximum occurring forces can be absorbed with sufficient safety. The maximum reacting forces listed in the calculation range may deviate from the actually occurring reacting forces, as these are based on theoretical values.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

Commissioning and adjustment

The scale has an adjustment range of 0 to 9.

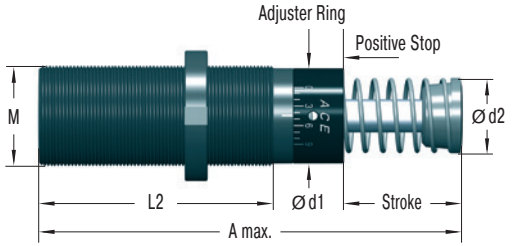
The adjustment can take place via the adjustment screw on the base or the stop collar. Both adjustment options are connected and show identical values on the scales. After mounting the shock absorber, the device is operated several times. In doing so, the stop collar or the adjustment screw is turned until the optimum braking (no hard impact at start of stroke, no striking bottom at end of stroke) is reached.

Hard impact at start of stroke, turn scale in direction of 9.
Striking bottom at end of stroke, turn scale in direction of 0.

The shock absorber is preset to 5.

Mounting accessories

Information on the corresponding mounting accessories can be found on the following pages.



Adjuster

150 mm stroke model does not include stop collar.
Positive stop is provided by the rod end button (Ø 60 mm) and a stop block.
Thread UNF 2 1/2-12 (omit suffix -M from part number)

Dimensions

TYPES	Stroke mm	A max. mm	d1 mm	d2 mm	L2 mm	M
ML6425EUM	23.2	174	60	48	114	M64x2
MA6450EUM	48.6	225	60	48	140	M64x2
ML6450EUM	48.6	225	60	48	140	M64x2
MA64100EUM	99.4	326	60	48	191	M64x2
MA64150EUM	150	450	60	48	241	M64x2

Performance data

	Max. Energy Capacity				Effective Weight						
TYPES	[1] W_3 Nm/cycle	W_4 Nm/h	W_4 with Oil Tank Nm/h	W_4 with Oil Recirculation Nm/h	[2] me min. kg	[2] me max. kg	Return Force min. N	Return Force max. N	Return Time s	[3] Side Load Angle max. °	Weight kg
ML6425EUM	1,135	124,000	248,000	332,000	7,000	300,000	120	155	0.06	5	2.5
MA6450EUM	2,275	146,000	293,000	384,000	220	50,000	90	155	0.12	4	3.0
ML6450EUM	2,275	146,000	293,000	384,000	11,000	500,000	90	155	0.12	4	3.0
MA64100EUM	4,520	192,000	384,000	497,000	270	52,000	105	270	0.34	3	3.7
MA64150EUM	6,780	248,000	497,000	644,000	330	80,000	75	365	0.48	2	5.1

[1] It is permissible to exceed the stated energy in emergency stop situations. In the event of such a case, please contact ACE.
[2] The effective weight range limits can be raised or lowered on request.
[3] If side load angle is higher contact ACE.

Model type prefix

Standard types

MA: with return spring and self-contained, adjustable
ML: with return spring and self-contained, adjustable, for low impact velocities

Special types

MAA, MLA: not self-contained, without spring. Use only with external air/oil tank.
MAS, MLS: not self-contained, with spring. Use only with external air/oil tank.
MAN, MLN: not self-contained, without spring

Industrial Shock Absorbers MA/ML64 (adjustable) – mounting accessories

Mounting instructions and mounting accessories

M64x2 mounting accessories

MA/ML64

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

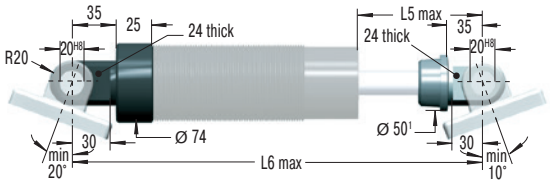
When using accessory parts and mounting elements also note the mounting instructions for accessories delivered separately.

Mounting Foot mounting kit

If the permissible reaction force of 19,500 N is exceeded, an additional support strip is required to support the damper force when foot mounting. This support strip (max. thickness 3 mm) is preferably positioned behind the rear foot flange. The slide rail prevents the fixing screws of the damper from being subjected to bending and shearing. The customer must design, manufacture and install the fixing of the support strip (welding, screw fastening, etc.) himself to ensure that it is strong enough.

C64

Clevis Mounting Kit



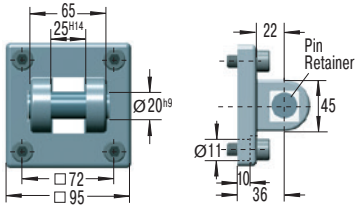
Dimensions

TYPES	L5 max. mm	L6 max. mm
ML6425EUM	60	260
MC, MA, ML6450EUM	85	310
MC, MA64100EUM	136	410
MC, MA64150EUM	187	530

¹ With 150 mm stroke Dia. 60 mm. Order C64-150.

SF64

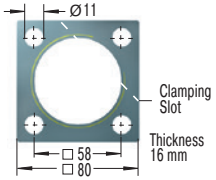
Clevis Flange



SF64 = flange + 4 screws M10x20, DIN 912
Torque max.: 15 Nm
Secure with pin or use additional bar.
Due to limited force capacity the respective ability should be reviewed by ACE.

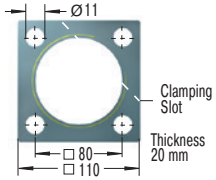
QF64

Square Flange



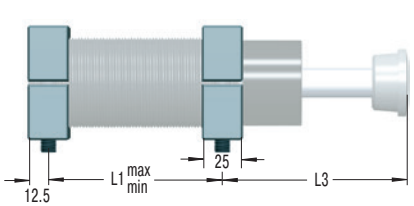
QF90

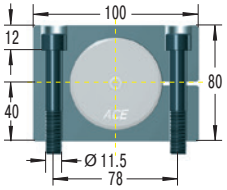
Square Flange



S64

Side Foot Mounting Kit



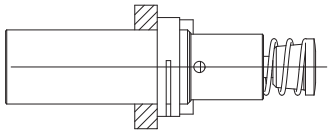


Dimensions

TYPES	L1 min. mm	L1 max. mm	L3 mm
ML6425EUM	40	86	75.5
MC, MA, ML6450EUM	50	112	100
MC, MA64100EUM	64	162	152
MC, MA64150EUM	80	212	226

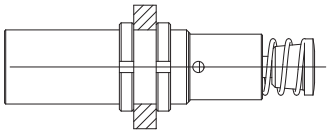
Mounting types

Mounting with Square Flange QF



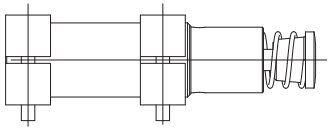
If mounted with 4 bolts
Torque max.: 50 Nm
Clamping torque: > 210 Nm

Mounting of damper in borehole with two locking rings



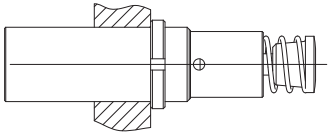
Torque: 250 Nm
Note: We recommend gluing the locknut with Loctite 243.

Mounting with Foot Mount S



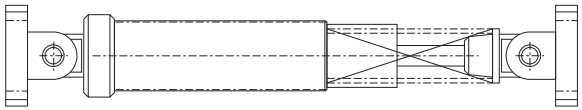
S64 = 2 flange + 4 bolts M10x90, DIN 912 Strength class 12.9
Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.
Torque: 83 Nm (bolt)

Screwing the damper into a threaded hole with additional locking ring



Torque: 250 Nm
Note: We recommend gluing the locknut with Loctite 243.

Mounting with Clevis Mounting Kit C



C64 = 2 clevis eyes. Delivered assembled to shock absorber.
Use positive stop at both ends of travel.

SF64 = flange + 4 bolts M10x20, DIN912
Torque max.: 15 Nm
Secure with pin or use additional bar. Due to limited force absorption, the respective suitability should be reviewed by ACE.

Industrial shock absorbers MA/ML33 to MA/ML64 (adjustable)

Manual

Warranty

Fundamentally, all modifications to the product by third parties lead to exclusion from the warranty.

Obvious defects must be reported to the vendor in writing immediately after delivery, no later than one week, but in any case before processing or installation, otherwise the assertion of a warranty claim is excluded. A timely dispatch is sufficient to keep the term.

The vendor is to be given an opportunity to check on site. If the complaint is justified the vendor offers warranty by repair or replacement at its own discretion. If the rectification fails, the buyer may choose to demand reduction of payment or cancellation of the contract. If there is only a minor lack of conformity, particularly with only minor defects, the buyer nevertheless has a right of withdrawal.

If, after failed rectification, the buyer chooses to cancel the contract due to a defect of title or material defect, they are not entitled to additionally claim for damages.

If, after failed fulfilment, the buyer chooses compensation, the goods remain with the buyer, if this is reasonable. The compensation is limited to the difference between the purchase price and the value of the defective item. This does not apply if the vendor maliciously causes the breach of contract.

The quality of the goods is only considered as agreed upon with the product description of the vendor. Public statements, claims or advertising of the manufacturer do not represent an additional contractual specification of quality of the goods.

If the buyer receives defective mounting instructions, the buyer is only obligated to deliver defect-free mounting instructions and only if the defect to the mounting instructions prevents proper mounting.

The warranty period is two years and begins upon completion. Exchange and return of custom products are fundamentally excluded. The factory conditions of the manufacturing factory apply to parts not manufactured and processed by the vendor, which can be viewed by the orderer at the vendor at any time. Construction and installation parts are delivered according to the present standard of engineering.

Service life

In general industrial shock absorbers are machine elements that are subject to wear. Wear parts such as seals, pressure chambers and pistons are excluded from the general warranty. The wear of seals is largely dependent upon the operating conditions and the respective application and its operating parameters.

In general with this model of industrial shock absorber with grooved ring wiper seal system an average service life of three to five million load changes can be expected. Adverse environmental and operating conditions can significantly reduce the expected service life.

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 (depending on type and calculation of effective weight). 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. Hard impact at the end of stroke, adjust the ring towards 0.

Material: Outer body: Nitride hardened steel;
Piston rod: Hard chrome plated steel
Piston rod seal: NBR
Rod end button: Steel hardened and corrosion-resistant coating
Return spring: Zinc plated or plastic-coated steel;
Accessories: Steel with black oxide finish or nitride hardened

Permissible torque of locknut:
MA/ML33: 80 Nm
MA/ML45: 235 Nm
MA/ML64: 250 Nm
Note: We recommend gluing the locknut with Loctite 243.

Damping medium: Automatic Transmission Fluid (ATF)

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

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

It is permissible to exceed the stated energy in emergency stop situations and continuous use (with external cooling). In the event of such a case, please contact ACE.

Safety instructions: External materials in the surrounding area can attack the sealing 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.