SEW EURODRIVE

Operating Instructions

Modular Electric Cylinder

CMSM..63 – 71

Edition 10/2014

21256993/EN

Contents

21256993/EN – 10/2014

21256993/EN – 10/2014

1 General information

1.1 About this documentation

This documentation is an integral part of the product. The documentation is intended for all employees who perform assembly, installation, startup, and service work on the product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the entire documentation and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes.

Signal word	Meaning	Consequences if disregarded
⚠ **DANGER**	Imminent hazard	Severe or fatal injuries.
⚠ **WARNING**	Possible dangerous situation	Severe or fatal injuries
⚠ **CAUTION**	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the drive system or its environment.
INFORMATION	Useful information or tip: Simplifies handling of the drive system.	

1.2.2 Structure of section-related safety notes

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard symbols used either indicate a general hazard or a specific hazard.

Section-related safety notes are structured as follows:

SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent hazard.

21256993/EN – 10/2014

Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
	General hazard
	Warning of dangerous electrical voltage
	Warning of hot surfaces
	Warning of risk of crushing
	Warning of suspended load
	Warning of automatic restart

1.2.3 Structure of embedded safety notes

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous action.

Embedded safety notes are structured as follows:

- ⚠ **SIGNAL WORD** Type and source of hazard.

  Possible consequence(s) if disregarded.

  – Measure(s) to prevent hazard.

21256993/EN – 10/2014

1.3 Rights to claim under limited warranty

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. Read the documentation before you start working with the product.

1.4 Exclusion of liability

You must comply with the information contained in this documentation to ensure safe operation and to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

1.5 Product names and trademarks

The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.6 Copyright

21256993/EN – 10/2014

2 Safety notes

2.1 Preliminary information

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and observed. Ensure that persons responsible for the machinery and its operation as well as persons who work on the unit independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, please contact SEW-EURODRIVE.

The following safety notes are primarily concerned with the use of the unit described in these operating instructions. If you use other components from SEW-EURODRIVE, also refer to the safety notes for these particular components in the corresponding documentation.

Also observe the additional safety notes provided in the individual chapters of this document.

2.2 Target group

Any mechanical work may only be performed by adequately qualified personnel. Qualified personnel in the context of this documentation are persons familiar with the design, mechanical installation, troubleshooting and servicing of the product who possess the following qualifications:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting and servicing of the product who possess the following qualifications:

- Training in electrical engineering, e.g. as an electrician, electronics or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately.

All qualified personnel must wear appropriate protective clothing.

21256993/EN – 10/2014

2.3 Designated use

The CMSM.. modular electric cylinders are drive motors designed for use in industrial and commercial systems. Loads deviating from those specified in the operating instructions and on the nameplate must only be realized after consultation with SEW-EURODRIVE.

According to the 2006/42/EC Machinery Directive, the CMSM.. modular electric cylinders are components for the installation in machines and plants. Within the scope of the Directive, you must not operate the machine in the designated fashion until you have established that the end product complies with EC directive 2006/42/EC (Machinery Directive).

Observe the technical data and information on the installation as provided on the nameplate and in the documentation.

Using these products in potentially explosive atmospheres is prohibited, unless specifically designated otherwise.

2.4 Other Applicable Documentation

The following publications and documents have to be observed as well:

- "Electric Cylinders CMS..50 – 71" catalog
- "CMP40 – 112, CMPZ71 – CMPZ100 Synchronous Servomotors" operating instructions
- "Synchronous Servomotors" catalog

2.5 Transport / storage

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If necessary, suspend startup.

Tighten the eyebolts securely. They are designed for the weight of the CMSM.. modular electric cylinder only; do not attach any additional loads.

The installed lifting eyebolts are in accordance with DIN 580. The loads and regulations specified in that document must always be observed. If the CMSM.. modular electric cylinder is equipped with two eyebolts, then both of these should be used for transportation. In this case, the tension force vector of the slings must not exceed a 45° angle in accordance with DIN 580.

Use suitable, sufficiently rated handling equipment if necessary. Reattach these in the case of further transportation.

Store the CMSM.. modular electric cylinder in a dry, dust-free environment if it is not to be installed straight away. The CMSM.. modular electric cylinder can be stored for one year without requiring any special measures before startup.

21256993/EN – 10/2014

2.5.1 Storage conditions

CMSM.. modular electric cylinders are treated with an anti-corrosion agent as standard.

The modular unit is protected against corrosion for 2 years in closed original packaging.

Note the following storage conditions:

- Store the CMSM.. modular electric cylinders indoors
- Keep the storage area clean and dry
- Maintain a storage temperature between -10 °C and +70 °C
- The relative humidity must not exceed 95%
- The original packaging must not be damaged

2.6 Installation and assembly

Ensure that the unit is installed and cooled according to the regulations in this documentation.

Protect the unit from excessive strain. Ensure that components are not deformed and that insulation spaces are maintained, particularly during transportation. Electric components must not be mechanically damaged or destroyed.

The following applications are prohibited unless explicitly permitted:

- Use in potentially explosive atmospheres.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.
- Use in applications that are subject to mechanical vibration and shock loads in excess of the requirements in EN 61800-5-1.

Observe the notes in the chapter "Mechanical installation".

2.6.1 Operating temperatures

CMSM.. modular electric cylinders are designed for use in a temperature range between -20 °C and +40 °C.

Contact SEW-EURODRIVE if the CMSM.. modular electric cylinder are operated outside this temperature range.

21256993/EN – 10/2014

2.7 Startup/operation

Do not deactivate monitoring and protection devices even for a test run.

When in doubt, switch off the unit whenever changes occur in relation to normal mode (e.g. increased temperatures, noise, oscillation). Determine the cause of the fault and consult SEW-EURODRIVE, if necessary.

Where required, systems in which such units are installed must be equipped with additional monitoring and protection devices in accordance with the respective applicable safety regulations, e.g. the law governing technical equipment, accident prevention regulations, etc.

Additional protective measures may be necessary for applications with increased potential risk. You must check the functionality of protection devices each time you change the configuration.

2.7.1 Surface temperature during operation

CMSM.. modular electric cylinders get very hot during operation with a motor.

Touching the modular unit or the motor when it has not cooled down could result in burns. Surface temperatures of more than 100 °C may occur during operation.

Never touch the modular unit and motor during operation or in the cool down phase after it has been switched off.

21256993/EN – 10/2014

3 Structure

3.1 Functional description

An CMP63 or CMP71 servomotor is used as the drive for the modular unit. Depending on the design, the servomotor is mounted to the modular unit using different coupling adapters (/ACA/ACH). The use of a third-party motor is also possible.

The threaded spindle with guide is located in the modular unit. The installed servomotor turns the threaded spindle via a coupling while the nut is fixed. The nut is routed in an aluminum extruded housing via T-slot nuts.

The nut and piston rod are connected to each other. The piston rod has a smooth, high-quality corrosion-proof surface and is sealed with a sealing system. The joint head is connected to the piston rod. An oil bath lubrication system supplies the bearing points, threaded spindle and seals with lubricant.

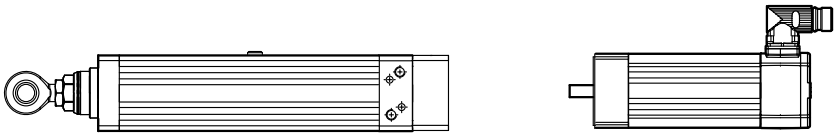
All CMSM.. modular electric cylinders are filled with lubricant (optionally with food grade lubricant) at the factory in mounting position M0 (universal).

3.2 Combination options

The CMSM.. modular electric cylinder is a separate modular unit of the standard CMS.. electric cylinders. They can be combined with the servomotors of the CMP series via the following adapters. The use of a third-party motor is also possible.

- ACA for motors with key
- ACH for motors without key

The following figure shows the combination options of CMSM.. modular electric cylinders with adapter and CMP series servomotors:



3.2.1 Stroke lengths

	Stroke length									
	60	**100**	**160**	**180**	**200**	**400**	**600**	**800**	**1000**	**1200**
CMSMB63	X	X	X	X	X	X	X	–	–	–
CMSMB71	–	X	X	–	X	X	X	X	X	X

Key:

X Possible

– Not possible

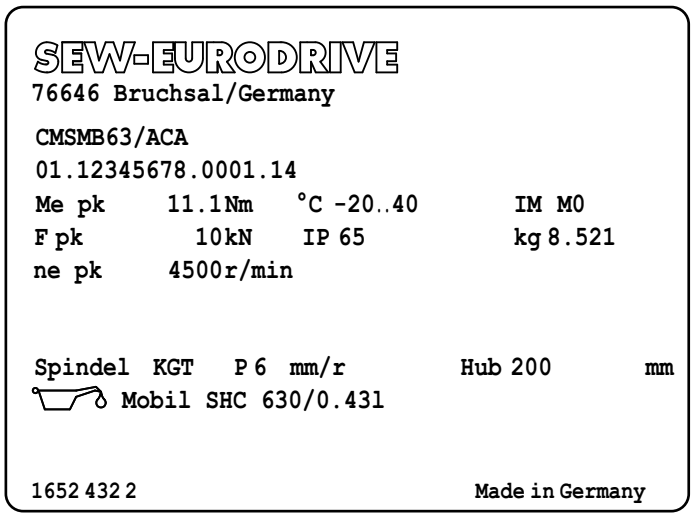
21256993/EN – 10/2014

3.3 Type designation

CMSM.. modular electric cylinders		
Product	**CMSM**	CMSM.. modular electric cylinders
Generation	**B**	B = with oil bath lubrication and piston rod
Size	**63**	63, 71
Mounting position	**/ACA**	• /ACA = Motor with key (CMP) • /ACH = Motor with smooth shaft (CMP)
Stroke length		
	–	• **CMSMB63**: 60, 100, 160, 180, 200, 200, 400, 600 • **CMSMB71**: 100, 160, 200, 400, 600, 800, 1000, 1200

3.4 Modular unit nameplate

CMSM.. modular electric cylinders are equipped with an additional nameplate on the modular unit. The following figure shows an example of a nameplate.



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M_{epk}	Max. permitted torque
°C	Ambient temperature range
IM	Mounting position
F_{pk}	Peak feed force
IP	Degree of protection
kg	Weight
n_{epk}	Maximum mechanically permitted speed
Spindle	Spindle type
P	Spindle pitch
Stroke	Stroke length
	Lubricant

3.5 Serial number

The following information can be read from the serial number of the CMSM.. modular electric cylinder.

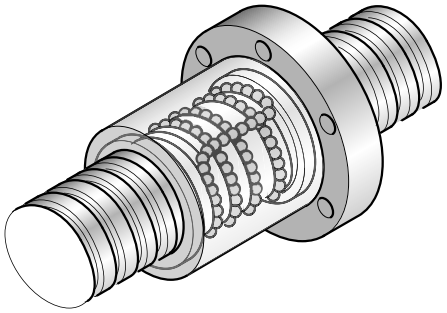
Example: 01. 12212343 01. 0001. 14	
01.	Sales organization
12212343	Order number (8 digits)
01.	Order item (2 digits)
0001	Quantity (4 digits)
14	End digits of the year of manufacture (2 digits)

3.6 Scope of delivery

- CMSM.. modular electric cylinder with smooth piston rod.
- Prepared with screwed-on adapter and rotary couplings for mounting to servomotors from SEW-EURODRIVE.
- Various optional connecting parts (fixed mount-on components, pivot bearings).
- Prepared for flange mounting, 4 screws and 4 pins included.

3.7 Operating principle of the recirculating ball screw

Recirculating ball screws are used for CMSM.. modular electric cylinders.



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The recirculating ball screw transfers the load from the threaded spindle to the nut via ball bearings (power transmission by ball bearings).

21256993/EN – 10/2014

4 Mechanical installation

4.1 Installation of motor CMSM.. modular electric cylinders with motor

⚠ WARNING

Risk of unexpected restart of the drive.

Severe or fatal injuries or damage to property.

- De-energize the CMSM.. modular electric cylinder before you start working on the unit.
- Secure the CMSM.. modular electric cylinder with motor against unintended power-up.

⚠ CAUTION

The CMSM.. modular electric cylinder can get very hot during operation.

Risk of burns.

- Never touch the CMSM.. modular electric cylinder during operation or during the cool-down phase once it has been switched off.

NOTICE

Improper mounting may result in damages to the CMSM.. modular electric cylinder with motor.

Possible damage to property.

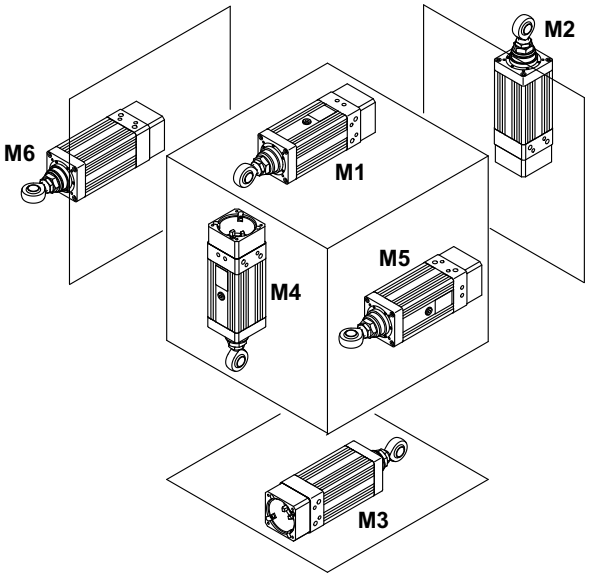
- Observe the following notes.

- Mount the CMSM.. modular electric cylinder only on a level, vibration-free and torsionally rigid support structure.
- Make sure the customer's counter-bearing is unobstructed and can move freely.
- Carefully align the CMSM.. modular electric cylinder and the driven machine to avoid placing any unacceptable strain on the spindle (observe permissible axial load data).
- Make sure that the CMSM.. modular electric cylinder is not subject to overhung loads and bending moments.
- Do not jolt or hammer the spindle end.
- Protect the threaded spindle and the piston rod against mechanical damage.
- Mount the CMSM.. modular electric cylinder only in the specified mounting position.
- Make sure that the warm exhaust air of other devices is not sucked in.

21256993/EN – 10/2014

4.2 Installation situation at the customer

The CMSM.. modular electric cylinder can be installed in the following mounting positions:



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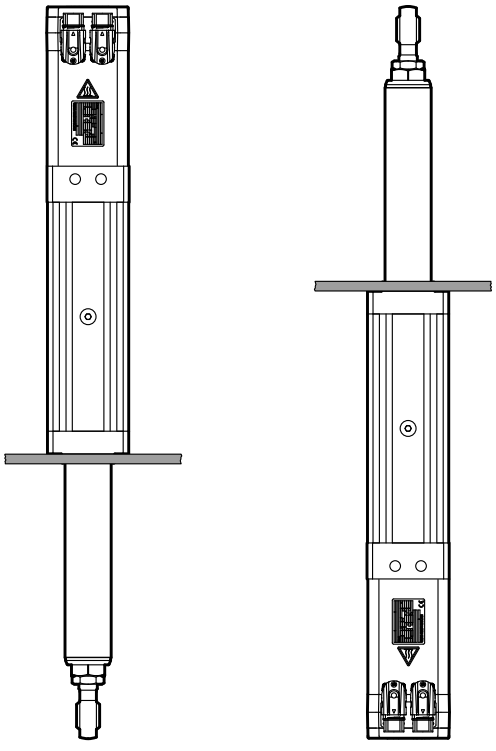
4.2.1 Installation notes CMSMB63 – 71 (/ACH /ACA)

Attachment on the output end of the piston rod



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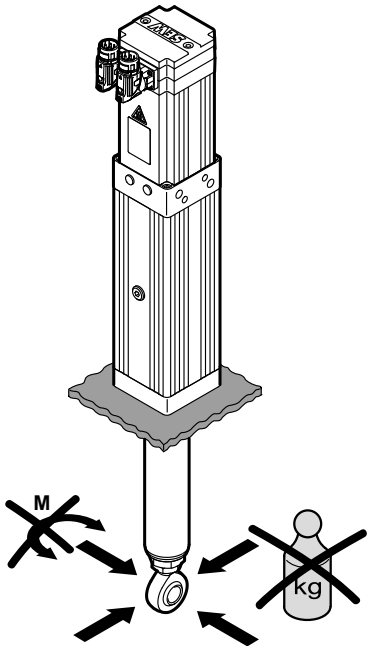
- Attachment only on the output end of the piston rod is only permitted in vertical installation (max. ± 5° from the ideal vertical) with the piston rod pointing downwards or upwards.

21256993/EN – 10/2014



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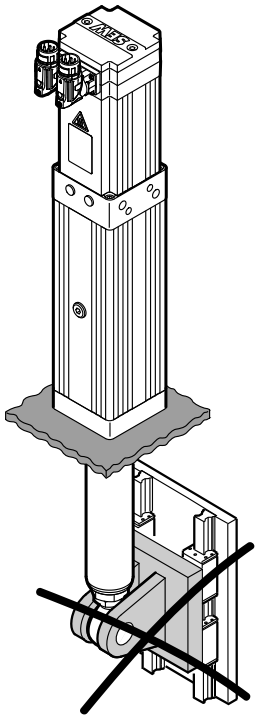
- No overhung loads and torques on the piston rod



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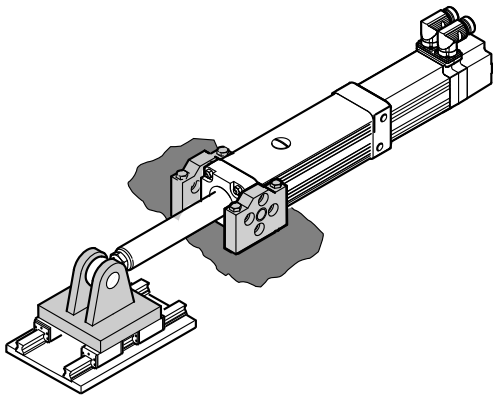
- No additional guides of the piston rod

21256993/EN – 10/2014

Attachment via pivot bearing



- Attachment only on the output end of the piston rod only permitted for CMSMB63 with stroke of 100 mm

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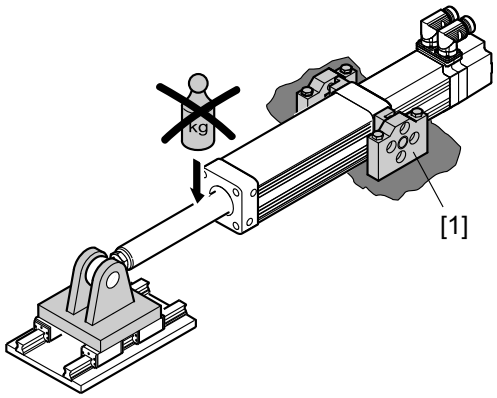

- No overhung loads on the drive

[1] Pivot bearing

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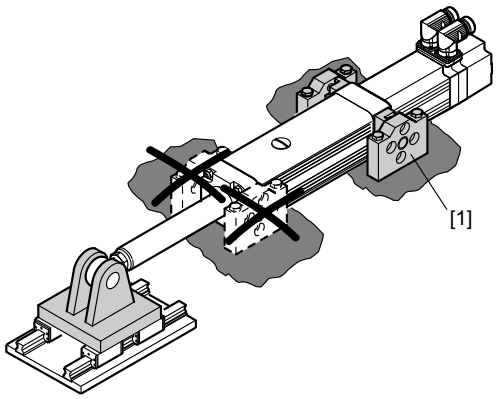

- No statically redundant bearing
- No additional attachments when pivot bearing are used

[1] Pivot bearing

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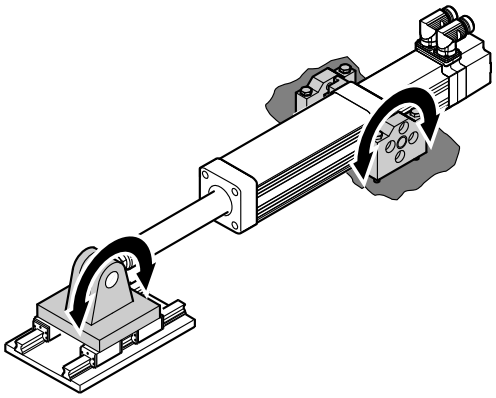
21256993/EN – 10/2014



- Joint must be free to move; do not clamp in place

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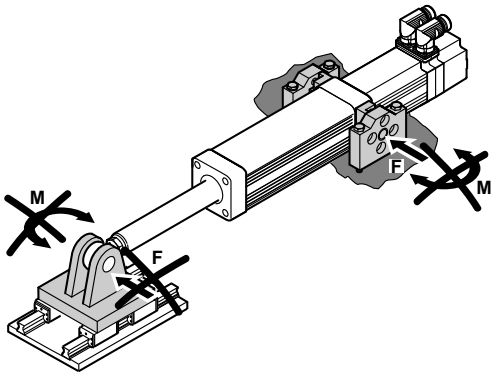

- Do not induce loads and torques via joints

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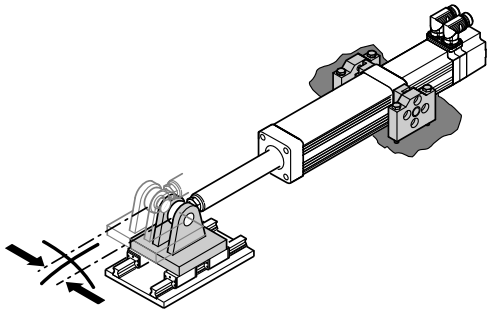

- Do not offset the installed components

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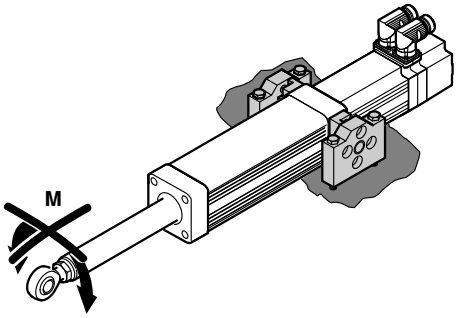

- Do not induce torque loads over the piston rod

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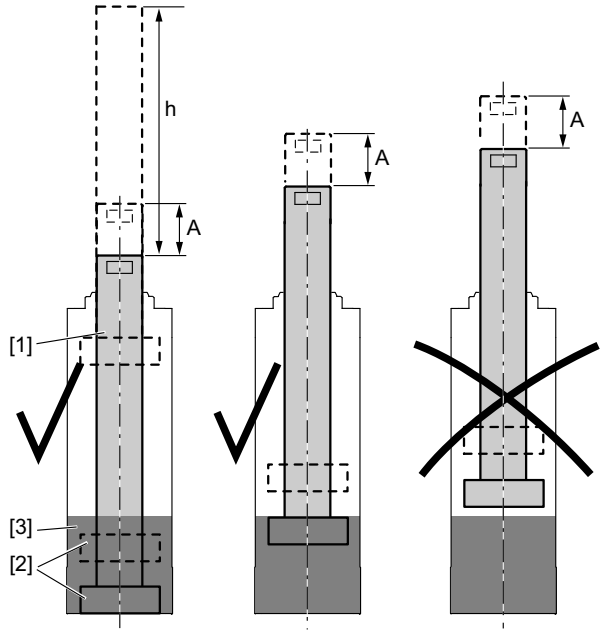
21256993/EN – 10/2014

4.2.2 Installation situation and stroke range for CMSMB63 – 71

Installation with piston rod pointing upwards

During installation, note that the spindle nut is not lubricated in case of incorrect stroke setting. With short working strokes [A], the end position of the spindle nut [2] must be smaller than half the stroke length [1/2 h] of the total stroke [h] of the electric cylinder.



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[1] Piston rod
[2] Spindle nut
[3] Oil

21256993/EN – 10/2014

Installation with piston rod pointing downwards

For applications where the piston rod extends downwards, a lubricant pump is integrated to ensure lubrication.

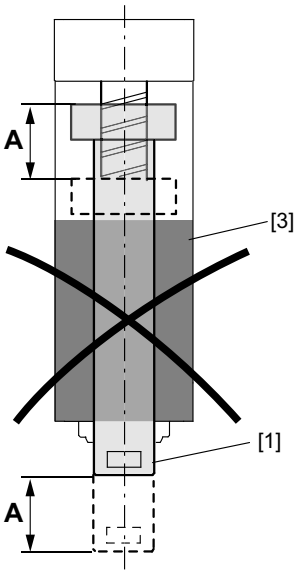
The pumping effect of the extending and retracting piston rod is used via internal valves to ensure lubrication of the CMSM.. modular electric cylinder.

Observe the following restrictions during installation:

- For ambient temperatures of -10 °C – +40 °C
  - n_{min} 180 rpm
  - s_{min} 50 mm
- For ambient temperatures of -20 °C – +40 °C
  - n_{min} 500 rpm
  - s_{min} 50 mm

Observe the following stroke settings when installing the CMSM.. modular electric cylinder:

- Short, permanent working strokes [A] from retracted piston rod position [1], above medium stroke position (above the oil level [3]), are not permitted.



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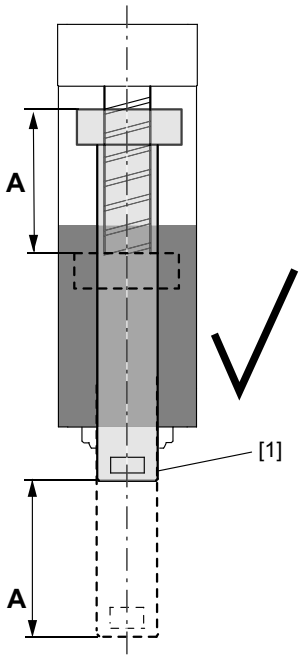
INFORMATION

- For applications with the working stroke above the oil level, please contact SEW-EURODRIVE.
- Please note the following restrictions. They have general character. In addition, the lubrication system provides a broader spectrum that must be checked for individual customer applications. Consult SEW-EURODRIVE.

- Working strokes [A] from retracted piston rod position [1] must be extended at least up to half the stroke length +25 mm.



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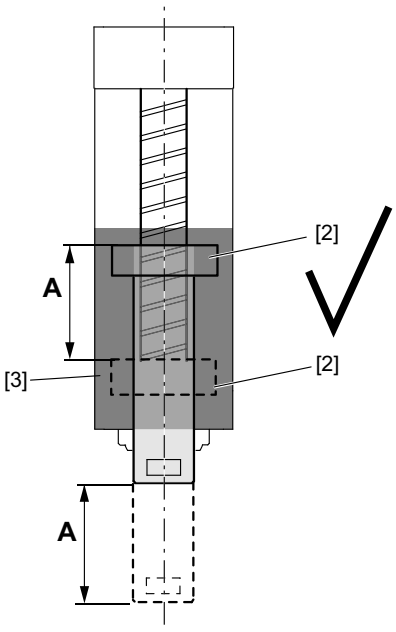
- Working strokes [A] below the medium stroke position of the nominal stroke are permitted if the spindle nut [2] is completely immersed in the oil [3]. The working stroke [A] must be at least 8 mm.



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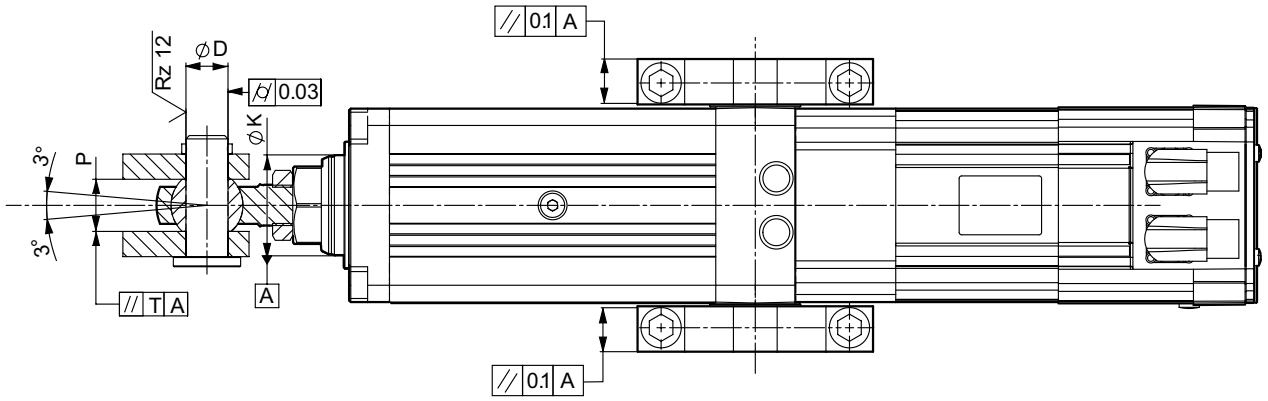
21256993/EN – 10/2014

4.2.3 Tolerances of installation tolerances by the customer for CMSMB63 – 71

The following figure describes the mounting situation for both mounting sides of the drive.



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Type	K	D	P	T
CMSMB63	Ø 50	Ø 20 h7	25 +0.1	0.1 for stroke 100 – 200
				0.2 for stroke 400 – 600
CMSMB71	Ø 60	Ø 25 h7	31 +0.1	0.1 for stroke 100 – 200
				0.2 for stroke 400 – 600
				0.3 for stroke 800 – 1200

4.2.4 Mechanical stroke limiting

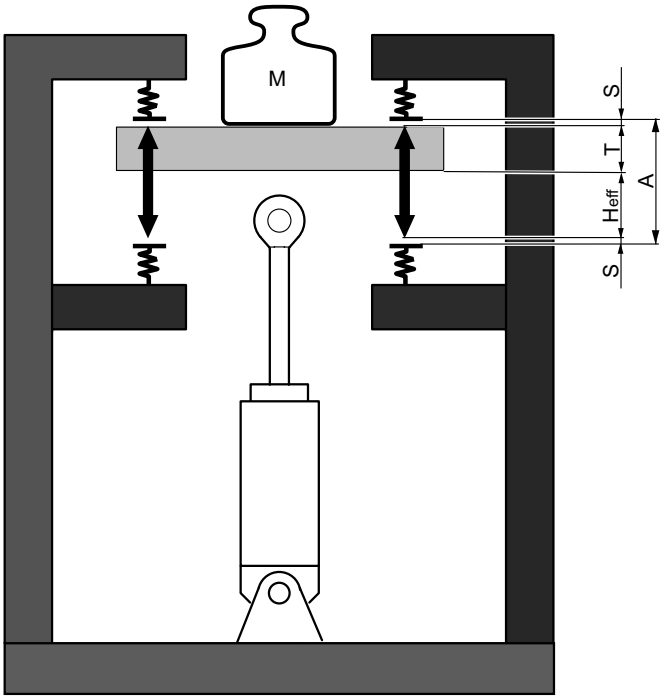
INFORMATION

The customer must limit the stroke of the CMSM.. modular electric cylinder by providing for appropriate measures in the extended and retracted position, e.g. by using limit stops, cushioning or shock absorbers.

The maximum permitted feed force of the CMSM.. modular electric cylinder must not be exceeded. That is why the mechanical limiting elements built-in by the customer must be able to absorb the reactive forces and kinetic energy that is created when the end position stops are reached. Soft, damping elements are necessary. Their purpose is to absorb the energy and then limit the end position mechanically. As a rule, you should use cushioning or shock absorbers that are dimensioned accordingly.

INFORMATION

The rated stroke length (H_{CMS}), e.g. stroke 200 mm, is only available in limited form for the customer application because safety distances (S) to the limit stops restrict the effective stroke (H_{eff}).



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[H_{eff}]	Effective stroke	[A]	Distance between limit stops
[H_{CMS}]	Nominal stroke CMS	[T]	Partial width
[S]	Safety distance	[M]	Weight

Calculating the effective stroke

The effective stroke can be calculated as follows:

$H_{eff} = A - T - 2 \times S$

or

$H_{eff} = H_{CMS} - 2 \times S$

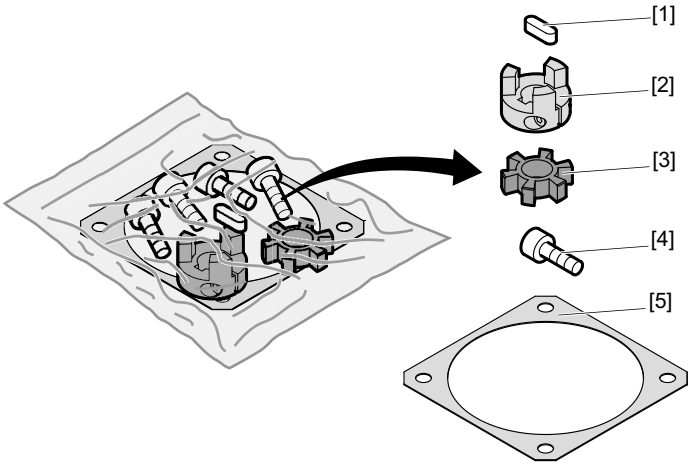
$\rightarrow H_{eff} < H_{CMS}$

21256993/EN – 10/2014

4.3 Installing the CMSMB63 modular unit with servomotor

4.3.1 ACA adapter with mounting kit

Part number 16522362



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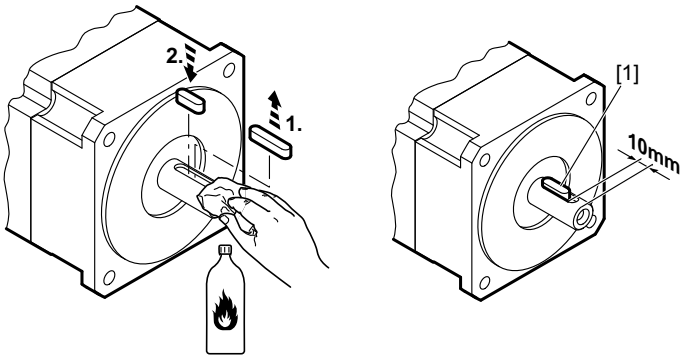
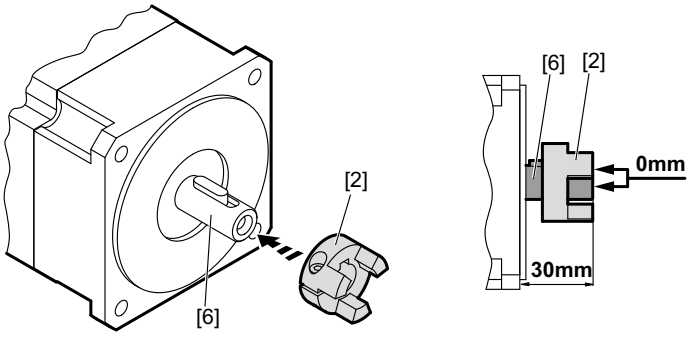
The delivery of the CMSM.. modular electric cylinder includes the following mounting kit for mounting to a servomotor. The mounting kit comprises: 1 x key [1], 1 x coupling hub [2], 1 x elastomer star [3], 4 x screws M6 [4] and 1 x gasket [5].



12672991371

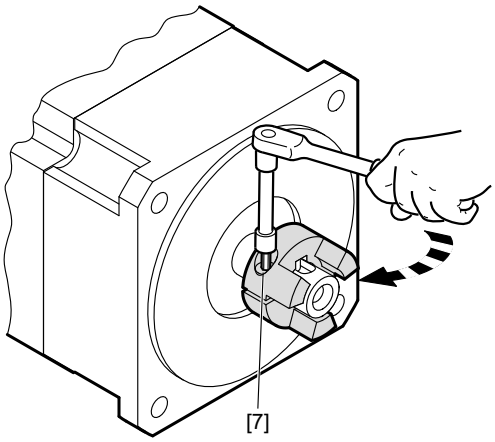
Clean the motor shaft. Next replace the existing key with the key [1] of the mounting kit. During assembly, make sure the distance between shaft end and key [1] is 10 mm.



12672926091

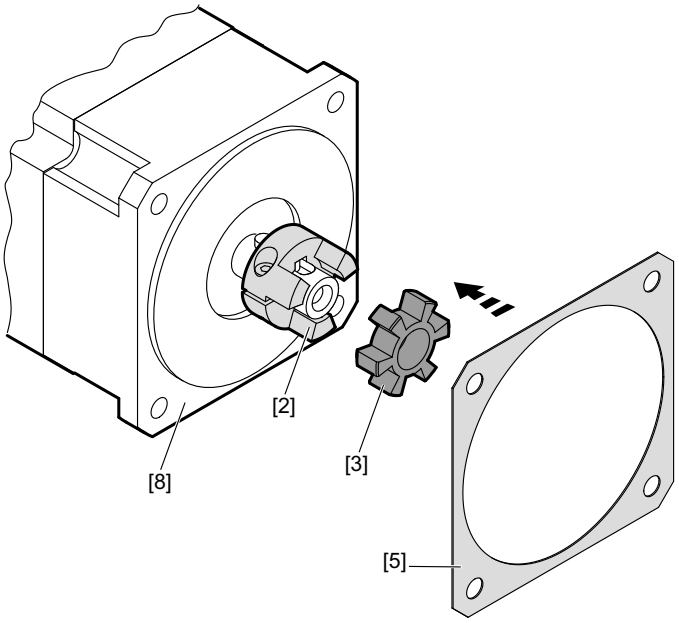
Push the coupling hub [2] onto the motor shaft [6]. Make sure that the coupling hub [2] is flush with the end of the motor shaft.

21256993/EN – 10/2014



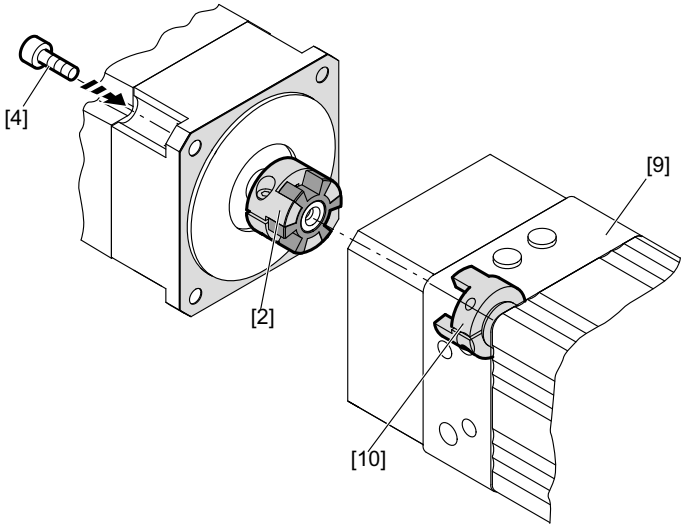
12673059595

Tighten the clamping screw M4 [7] of the coupling hub [2] with a tightening torque of 4 Nm.



12673062283

Push the elastomer star [3] onto the coupling hub [2].



12672931467

Clean the motor mounting surface [8]. Next, place the gasket [5] onto the mounting surface of the motor.

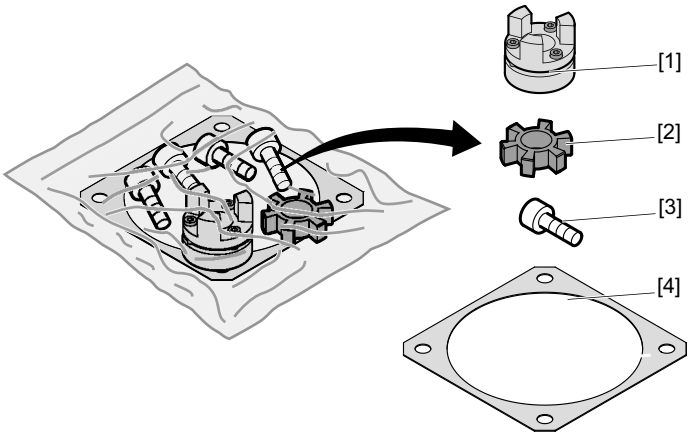
Push the motor onto the modular unit [9] in such a way that the coupling halves [2/10] mesh.

Insert the screws 4x M6 [4] and secure them with a tightening torque of 10 Nm.

21256993/EN – 10/2014

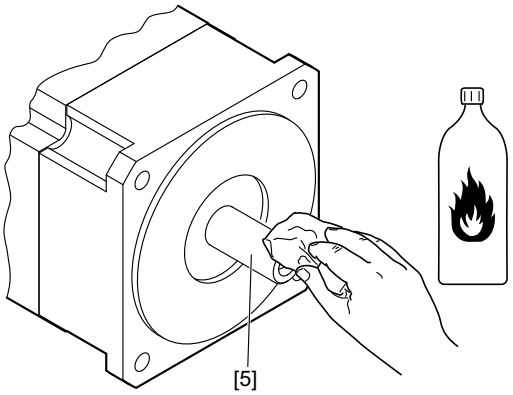
4.3.2 ACH adapter with mounting kit

Part number 16522745



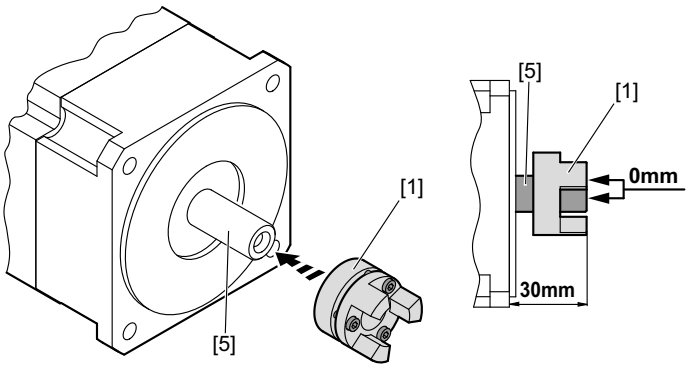
12673157771

The delivery of the CMSM.. modular electric cylinder includes the following mounting kit for mounting to a servomotor. The mounting kit comprises: 1 x coupling hub [1], 1 x elastomer star [2], 4 x screws M6 [3] and 1 x gasket [4].



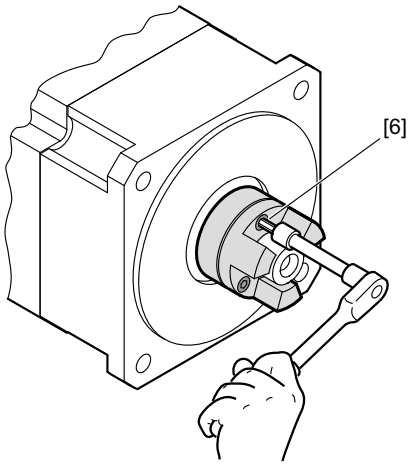
12673155083

Clean the motor shaft [5].



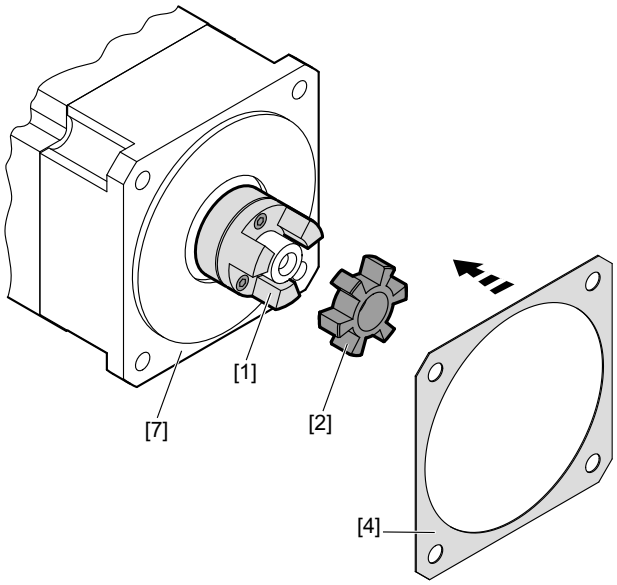
12672936843

Push the coupling hub [1] onto the motor shaft [5]. Make sure that the coupling hub [5] is flush with the end of the motor shaft.



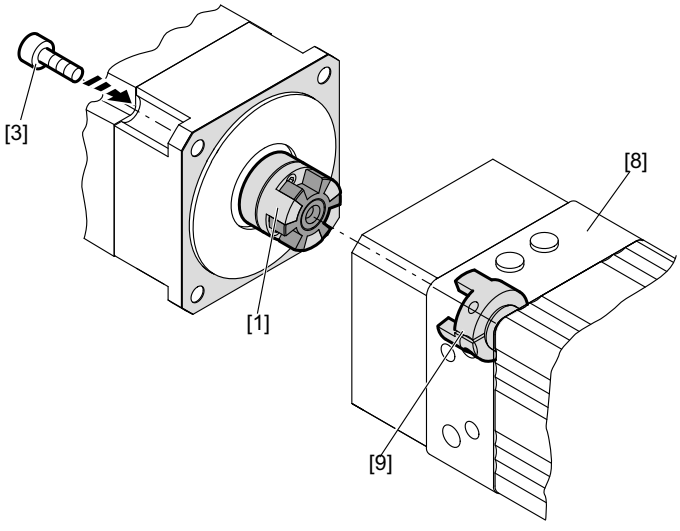
12672980619

Tighten the clamping screw 3 × M3 [6] of the coupling hub with a tightening torque of 2 Nm.



12673162891

Push the elastomer star [2] onto the coupling hub [1].



12672983307

Clean the motor mounting surface [7]. Next, place the gasket [4] onto the mounting surface of the motor.

Push the motor onto the modular unit [8] in such a way that the coupling halves [1/9] mesh.

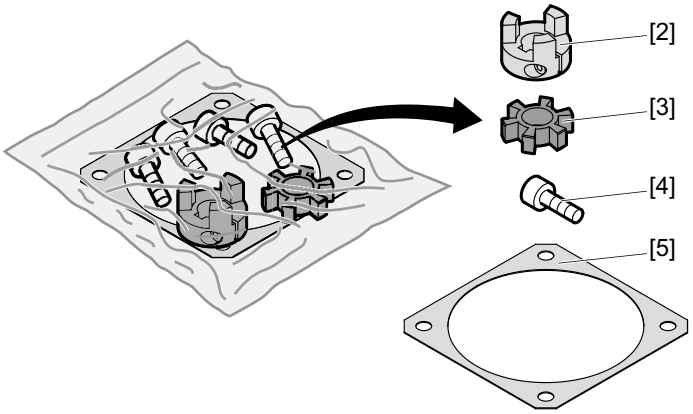
Insert the screws 4 × M6 [3] and secure them with a tightening torque of 10 Nm.

21256993/EN – 10/2014

4.4 Installing the CMSMB71 modular unit with servomotor

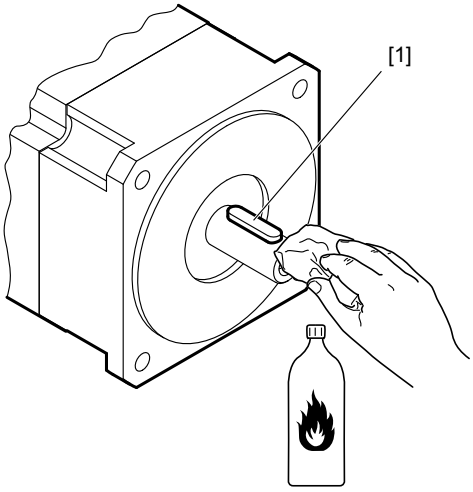
4.4.1 ACA adapter with mounting kit

Part number 16524896



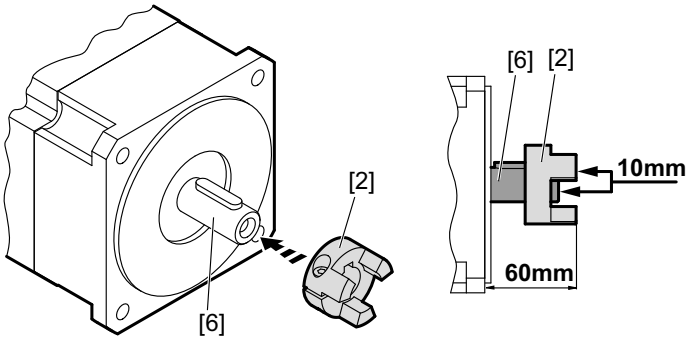
12672988683

The delivery of the CMSM.. modular electric cylinder includes the following mounting kit for mounting to a servomotor. The mounting kit comprises: 1 x coupling hub [2], 1 x elastomer star [3], 4 x screws M8 [4] and 1 x gasket [5].



12672994059

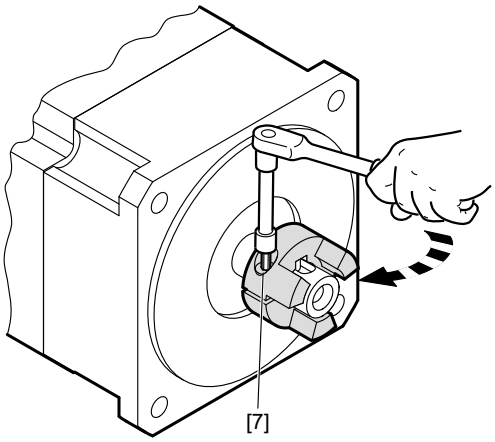
Clean the motor shaft.



12672928779

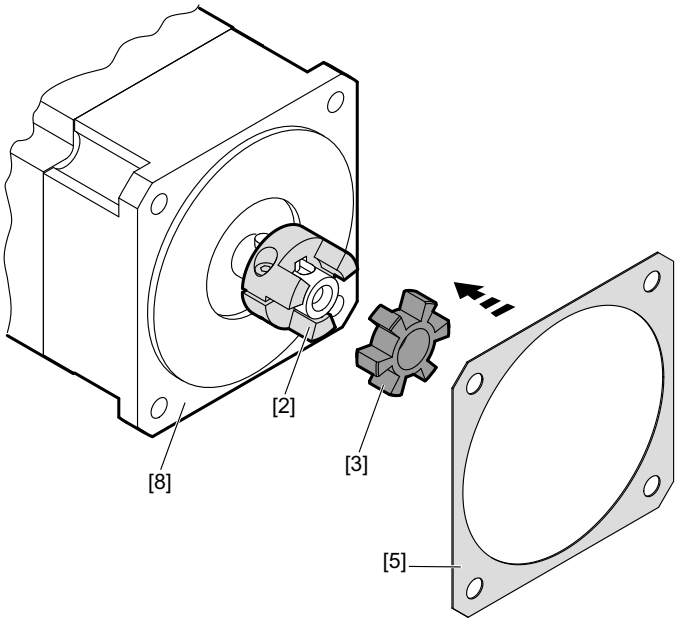
Push the coupling hub [2] onto the motor shaft [6]. The coupling hub [2] and motor shaft end have an offset of 10 mm.

21256993/EN – 10/2014



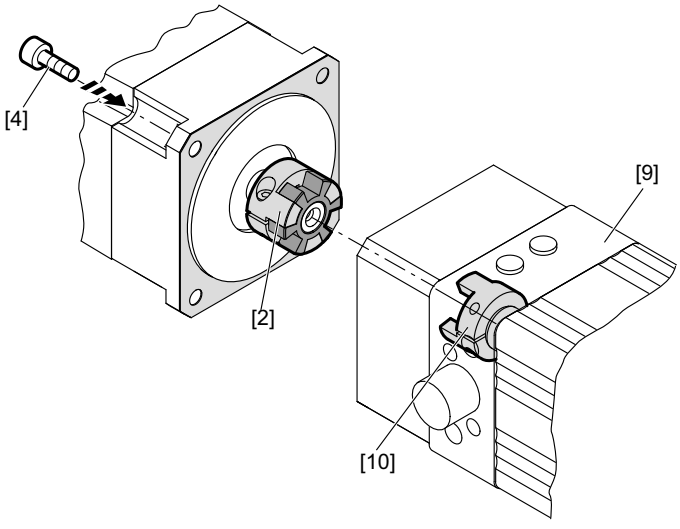
12673059595

Tighten the clamping screw M6 [7] of the coupling hub [2] with a tightening torque of 15 Nm.



12673062283

Push the elastomer star [3] onto the coupling hub [2].



12729073163

Clean the motor mounting surface [8]. Next, place the gasket [5] onto the mounting surface of the motor.

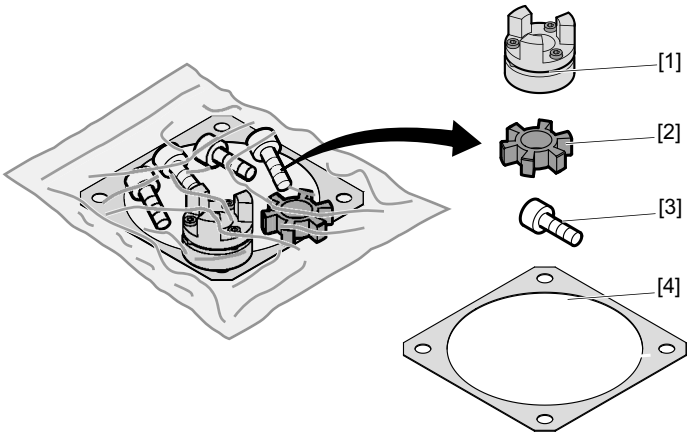
Push the motor onto the modular unit [9] in such a way that the coupling halves [2/10] mesh.

Insert the screws 4 × M8 [4] and secure them with a tightening torque of 27 Nm.

21256993/EN – 10/2014

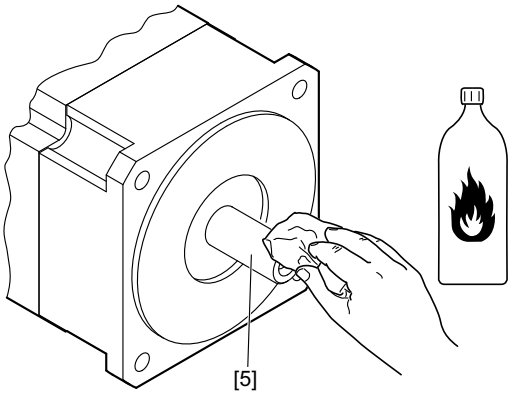
4.4.2 ACH adapter with mounting kit

Part number 16524772



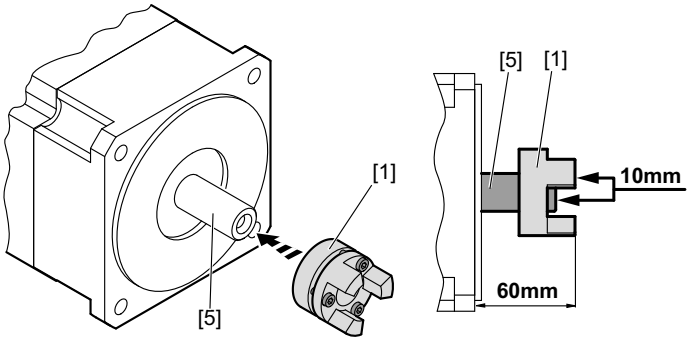
12673157771

The delivery of the CMSM.. modular electric cylinder includes the following mounting kit for mounting to a servomotor. The mounting kit comprises: 1 x coupling hub [1], 1 x elastomer star [2], 4 x screws M8 [3] and 1 x gasket [4].



12673155083

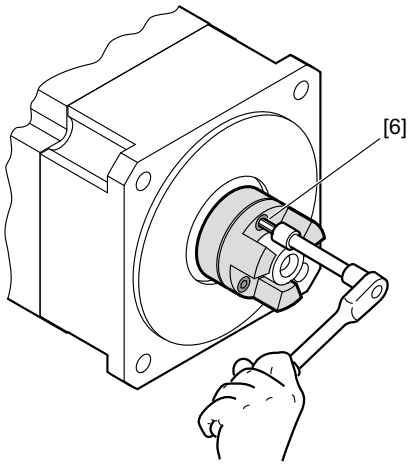
Clean the motor shaft [5].



12672977931

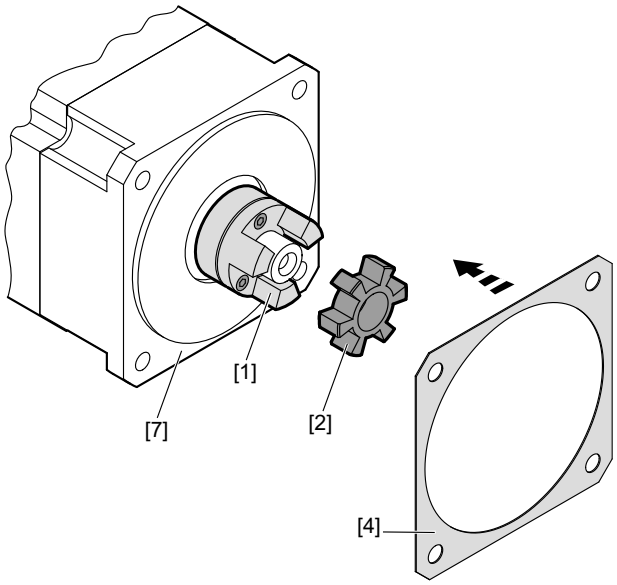
Push the coupling hub [1] onto the motor shaft [5]. The coupling hub [5] and motor shaft end have an offset of 10 mm.

21256993/EN – 10/2014



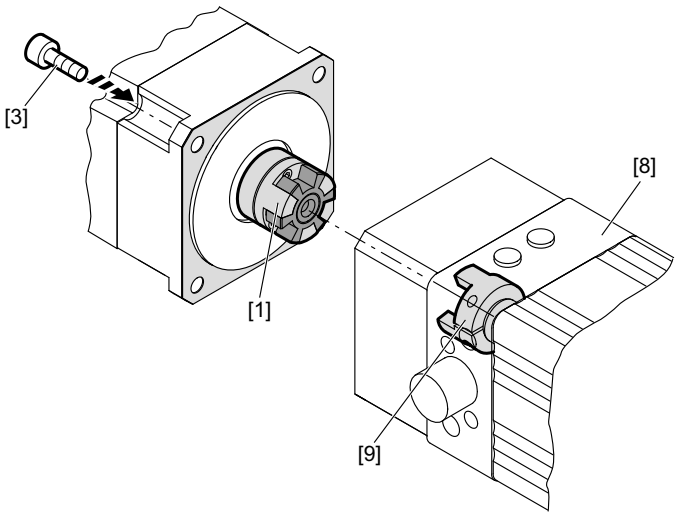
12672980619

Tighten the clamping screw 4 × M5 [6] of the coupling hub with a tightening torque of 6 Nm.



12673162891

Push the elastomer star [2] onto the coupling hub [1].



12672934155

Clean the motor mounting surface [7]. Next, place the gasket [4] onto the mounting surface of the motor.

Push the motor onto the modular unit [8] in such a way that the coupling halves [1/9] mesh.

Insert the screws 4 × M8 [3] and secure them with a tightening torque of 27 Nm.

21256993/EN – 10/2014

5 Startup

5.1 Important notes on startup

⚠ WARNING

Risk of injury due to electric shock.

Severe or fatal injuries.

- Observe the following notes.

- It is essential to comply with the safety notes in chapter 2 during installation!
- Switch contacts in utilization category AC-3 to EN 60947-4-1 must be used for switching the motor and the brake.
- When motors are powered by inverters, you must adhere to the wiring instructions issued by the inverter manufacturer.
- Observe the operating instructions of the servo inverter.

⚠ WARNING

CMSM.. modular electric cylinders may not execute any safety functions without master safety systems.

Severe or fatal injuries.

- Use master safety systems to ensure that equipment and personnel are protected.

⚠ WARNING

Incorrect use, installation or operation represents a crushing hazard due to the vertical movement of the spindle.

Severe or fatal injuries.

- Take measures to prevent inadvertent contact.

⚠ CAUTION

The CMSM.. modular electric cylinder can get very hot during operation.

Risk of burns.

- Never touch the electric cylinder during operation or in the cool down phase once it has been switched off.

NOTICE

The rated speed (n_N) of the motor can be higher than the mechanically permitted speed (n_{epk}).

Possible damage to property.

- Limit the maximum speed at the servo inverter. For information on the procedure, refer to the documentation of the servo inverter.

21256993/EN – 10/2014

NOTICE

The maximum permitted input torque (M_{epk}) must not be exceeded with CMSM.. modular electric cylinders, not even in acceleration processes.

Possible damage to property.

- Limit the maximum current/the maximum torque on the servo inverter.

5.2 Before startup

- The drive must be undamaged and not blocked.
- All connections have to be made correctly.
- All protective covers have to be fitted correctly.
- All motor protection devices must be active.
- There must not be any other sources of danger.
- The motor surface must not be covered by heat-sensitive or insulating materials.

21256993/EN – 10/2014

6 Inspection/maintenance

⚠ WARNING

Risk of unexpected restart of the drive.

Severe or fatal injuries or damage to property.

- De-energize the CMSM.. modular electric cylinder before you start working on the unit.
- Secure the CMSM.. modular electric cylinder with motor against unintended power-up.

⚠ CAUTION

The CMSM.. modular electric cylinder can get very hot during operation.

Risk of burns.

- Never touch the CMSM.. modular electric cylinder during operation or during the cool-down phase once it has been switched off.

NOTICE

Improper maintenance may result in damages to the CMSM.. modular electric cylinder.

Possible damage to property.

- Observe the following notes.

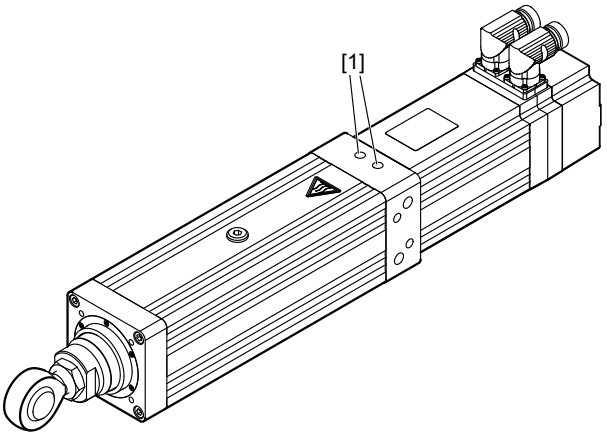
- Strictly observe the safety notes in the individual chapters.
- Components may be subject to mechanical loads. Before removing the CMSM.. modular electric cylinder, ensure that the structure provided by the customer is supported and secured.
- Use only genuine spare parts in accordance with the valid spare parts list.

21256993/EN – 10/2014

6.1 Water cooling CMSMB63 – 71

The CMSMB63 – 71 is equipped with a water cooling connection option as standard.

The inlet and outlet connections for the cooling water can be swapped.



9007204622448523

[1] Cooling water connection 2x G1/8 (flange seal and screw fitting supplied by the customer)
- CMSMB63 cooling water connection G1/8, thread depth 7 mm
- CMSMB71 cooling water connection G1/4, thread depth 12 mm

Water cooling can increase the thermal capacity of the drive by up to 25%. The data for water cooling in the power diagrams for the thermal limit torque are based on the following parameters:

- Cooling water input temperature: 25 °C
- Temperature increase at cooling water outlet: about 5 °C
- Flow rate CMSMB63: 4 l/min
- Flow rate CMSMB71: 8 l/min

Higher flow rates increase the cooling effect only slightly.

Cooling water requirements:

- Max. operating pressure: 2 bar
- demineralized and desalinated
- No foreign objects and sediments
- Frost protection, if necessary

The components through which the cooling waters flows are corrosion-protected. The cooling water must not contain chemical, aggressive additives. Contact SEW-EURODRIVE in such cases.

21256993/EN – 10/2014

6.2 Oil bath lubrication for CMSMB63 – 71

The CMSMB63 – 71 modular electric cylinders are equipped with an oil bath lubrication with little maintenance requirements. The only required maintenance measure is a regular visual check for leaks. The oil need not be changed in usual applications.

An oil change might make sense for applications with the following higher requirements:

- Travel cycles with a cyclic duration factor > 60% and an operational performance of > 1 km/hour.
- Working strokes < 10 mm with stroke frequencies > 5 Hz
- Expected service life > 10000 hours of nominal operation

Please contact SEW-EURODRIVE in such cases.

CMSMB63 – 71 modular electric cylinders are filled at the plant with the lubricant Mobil SHC630 as standard. This lubricant is used for recirculating ball screws and planetary roller screws.

Instead, you can order CMSMB63/71 with food-grade Castrol OPTIMOL OPTILEB GT from SEW-EURODRIVE.

6.2.1 Maintenance work oil bath lubrication

INFORMATION

The oil screw plug of the electric cylinder must not be opened.

The sealing system and the components have been developed and tested to complement each other. Observe the following notes in order not to reduce the service life:

- Do not paint the piston rod
- Do not expose the piston rod to potential damage resulting from hard components
- Protect the piston rod from clinging foreign substances (e.g. cleaning agent, sweat)
- Make sure that the joints are free to move
- Visually check for any leakages regularly, at least every other week

Replacement interval of wearing parts

The drive reaches the end of its service life after 10 000 hours of nominal operation. A general overhaul and refit of the drive is not recommended.

Electric cylinder	Replacement intervals of the components	
CMSMB63 CMSMB71	Threaded spindle	Not necessary
	A- and B-end bearing	Not necessary
	Gasket	Not necessary

6.3 Operating life

An estimated service life of the CMSM.. modular electric cylinders of 10000 operating hours can be achieved based on the loads listed in the following table.

This information applies to the standard oil filling.

CMS type		Mean speed rpm	eff. Force N	Operational performance km
CMSMB63	KGT 25x6	1000	2400	4500
CMSMB71	KGT 32x6	1000	5000	2100

The following conditions apply:

- Horizontal mounting position
- Max. acceleration with M_0
- Ambient temperature +5 to +40 °C
- Steady motion without impulsive loads

21256993 / EN – 10/2014

7 Technical data

The following table lists the short symbols used in the "Technical data" tables.

n_{epk}	Maximum mechanically permitted speed
M_{epk}	Maximum permitted input torque
J	Additional mass moment of inertia
P	Spindle pitch
D	Nominal spindle diameter
P_{pk}	Peak feed force[1)]
M	Weight, variant without brake

1) Depending on max. amplifier current, dynamic or static load of spindle; contact SEW-EURODRIVE prior to project planning with maximum force.

7.1 Rated data

This data is given on the nameplate (→ 🗎 13) of the modular unit. In accordance with IEC 34 (EN 60034), the nameplate data apply to a maximum ambient temperature of +40 °C and an installation altitude of 1000 m above sea level. Please contact SEW-EURODRIVE for installation altitudes above 1000 m.

7.2 General features

Variant	
Ambient temperature	-20 °C to +40 °C
Noise levels / EN 60034	Below specified value
Vibration class	"B" to EN 60034-14
Positioning accuracy (repetition accuracy) at constant force and temperature	± 0.05 mm

21256993/EN – 10/2014

7.3 CMSMB63

7.3.1 Features

Variant	
Degree of protection	IP65
Mounting position	M0
Cooling	Natural convection/water cooling
Lubrication	Optional: Food-grade lubricant
Spindle protection	Smooth piston rod with sealing system

7.3.2 Data

INFORMATION

- The maximum permitted input torque M_{epk} must not be exceeded
- Maximum mechanical speed n_{epk} = 4500 rpm

The following tables show the technical data.

Spindle	Stroke length	M_{epk}	J	F_{pk}	m
D x P	mm	Nm	$kgcm^2$	kN	kg
25x6	60	11.1	0.82	10	6.0
	100		0.91		7.1
	160		1.11		7.6
	180		1.15		7.9
	200		1.14		8.7
	400		1.63		12.9
	600		2.09		16.2

21256993/EN – 10/2014

7.4 CMSMB71

7.4.1 Features

Variant	
Degree of protection	IP65
Mounting position	M0
Cooling	Natural convection/water cooling
Lubrication	Optional: Food-grade lubricant
Spindle protection	Smooth piston rod with sealing system

7.4.2 Data

INFORMATION

- The maximum permitted input torque M_{epk} must not be exceeded
- Maximum mechanical speed n_{epk} = 4500 rpm

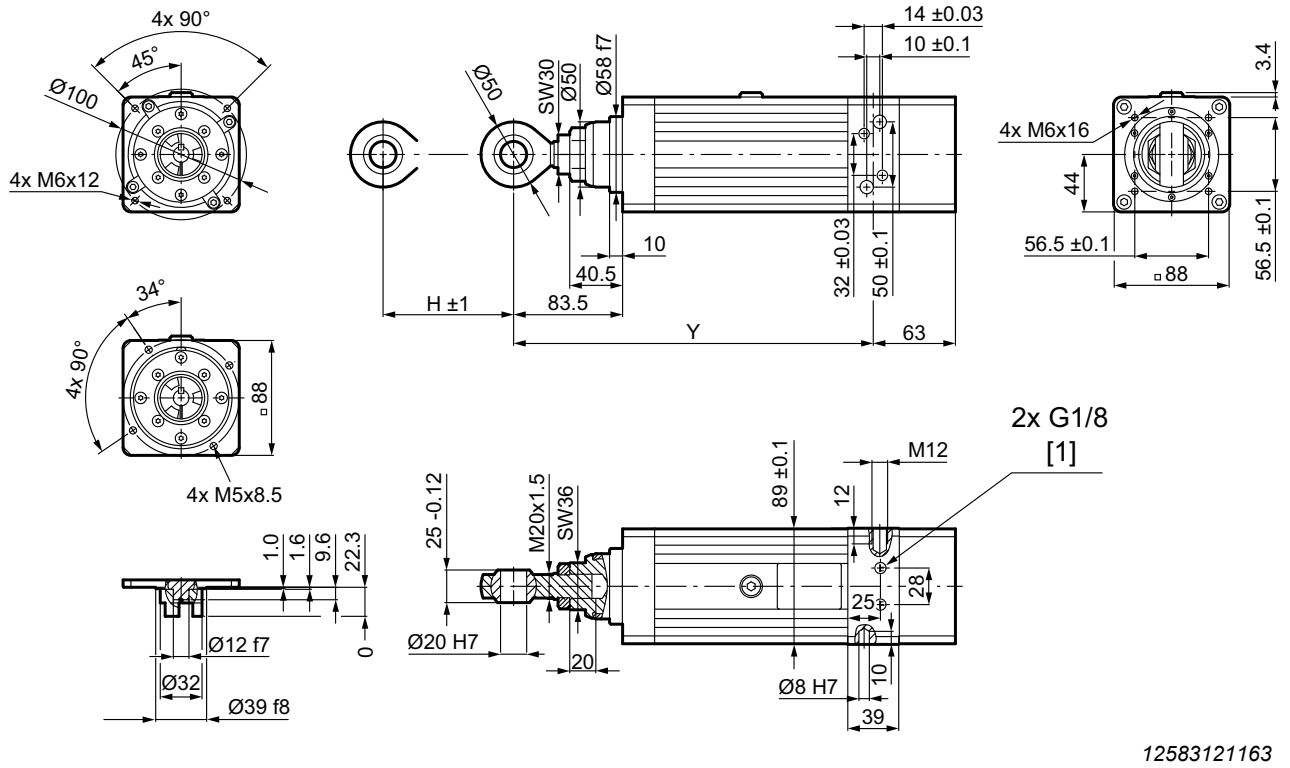
The following tables show the technical data.

Spindle	Stroke length	M_{epk}	J	F_{pk}	m
D x P	mm	Nm	$kgcm^2$	kN	kg
KGT 32x6	100	25	5.89	24	15.4
	160		6.26		16.8
	200		6.5		17.7
	400		7.82		24.5
	600		9.04		29.1
	800		10.27		33.3
	1000		11.49		37.9
	1200		12.71		42.5

21256993/EN – 10/2014

7.5 Installation dimensions

7.5.1 Installation dimensions CMSMB63



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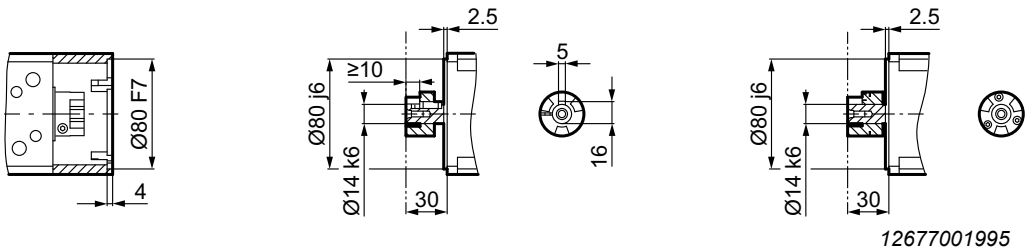
CMSMB63 **ACA** **ACH**



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[1] Cooling water connection

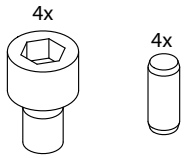
Type	H mm	Y mm
CMSMB63	60	235.5
	100	275.5
	160	335.5
	180	355.5
	200	375.5
	400	607.5
	600	807.5

21256993/EN – 10/2014

Each CMSM.. modular electric cylinder comes with an accessory bag for flange or pivot bearing mounting.

Accessory bag

Part number: 16521137

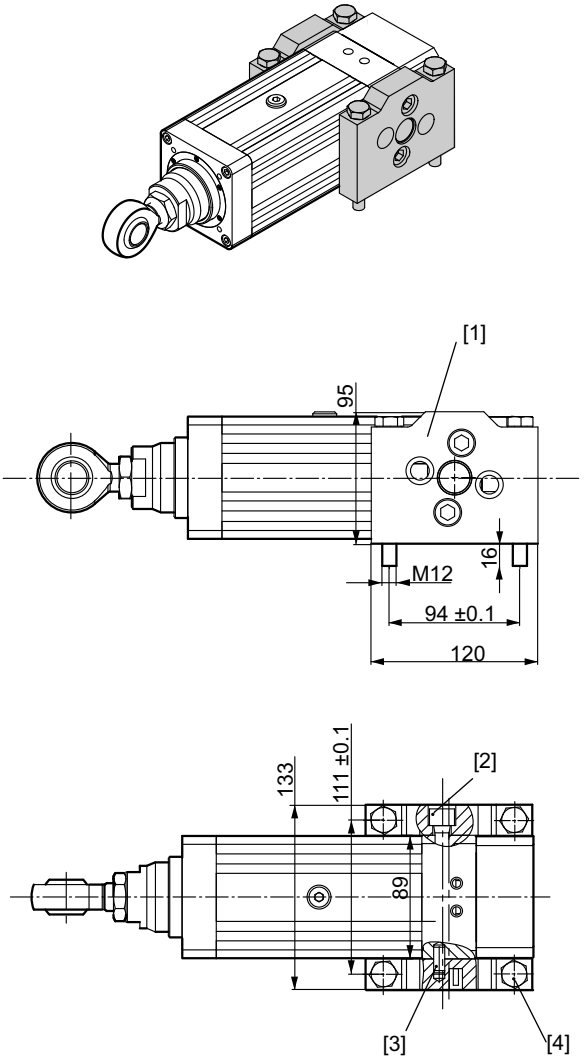


21256993/EN – 10/2014

Additional mounting options

Flange mounting

The following figure shows the flange mounting option for the CMSM.. modular electric cylinder. The modular electric cylinder is attached to a mounting surface with the gray-shaded mount-on components. The mount-on components can be mounted in steps of 90°.



12583453707

[1] can be mounted in 4 x 90° steps

[2] 2 x cap screws ISO 4762-M12×16 tightening torque 87 Nm

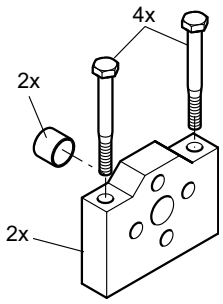
[3] 2 x parallel pins ISO 8734 8×20

[4] 2 x hex head screw, ISO 4014-M12×100

21256993/EN – 10/2014

Flange mounting kit

Part number: 16521102



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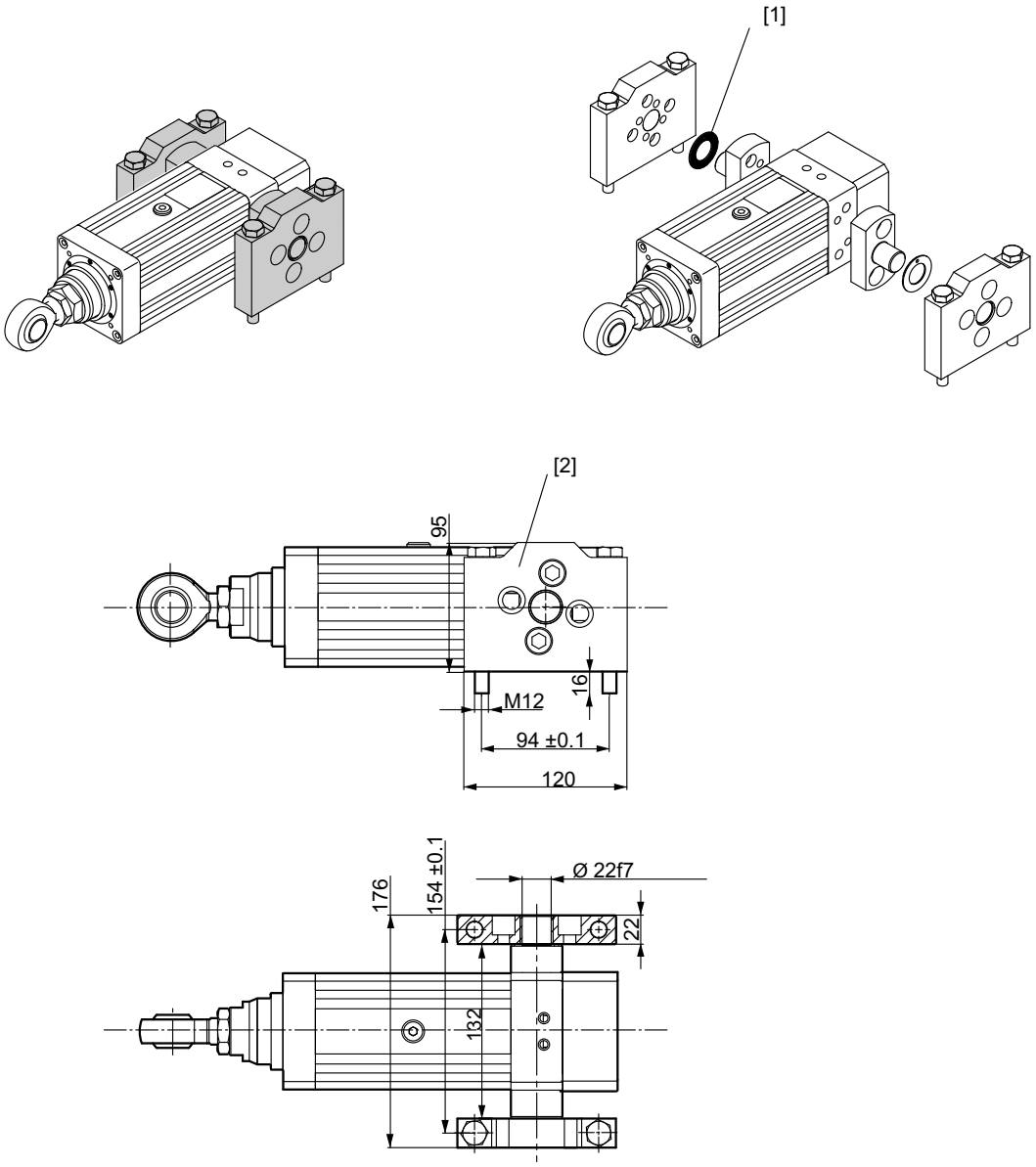
21256993/EN – 10/2014

Pivot bearing mounting

The following figure shows the pivot bearing mounting option for the CMSM.. modular electric cylinder. This should be attached to a mounting surface with the gray-shaded mount-on components.



12583518987

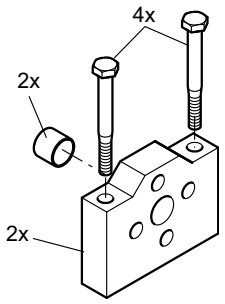
[1] Insert the thrust washer with bearing surface, aligned to the motor end.

[2] can be mounted in 4 x 90° steps

21256993/EN – 10/2014

Flange mounting kit

Part number: 16521102



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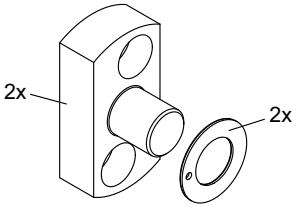
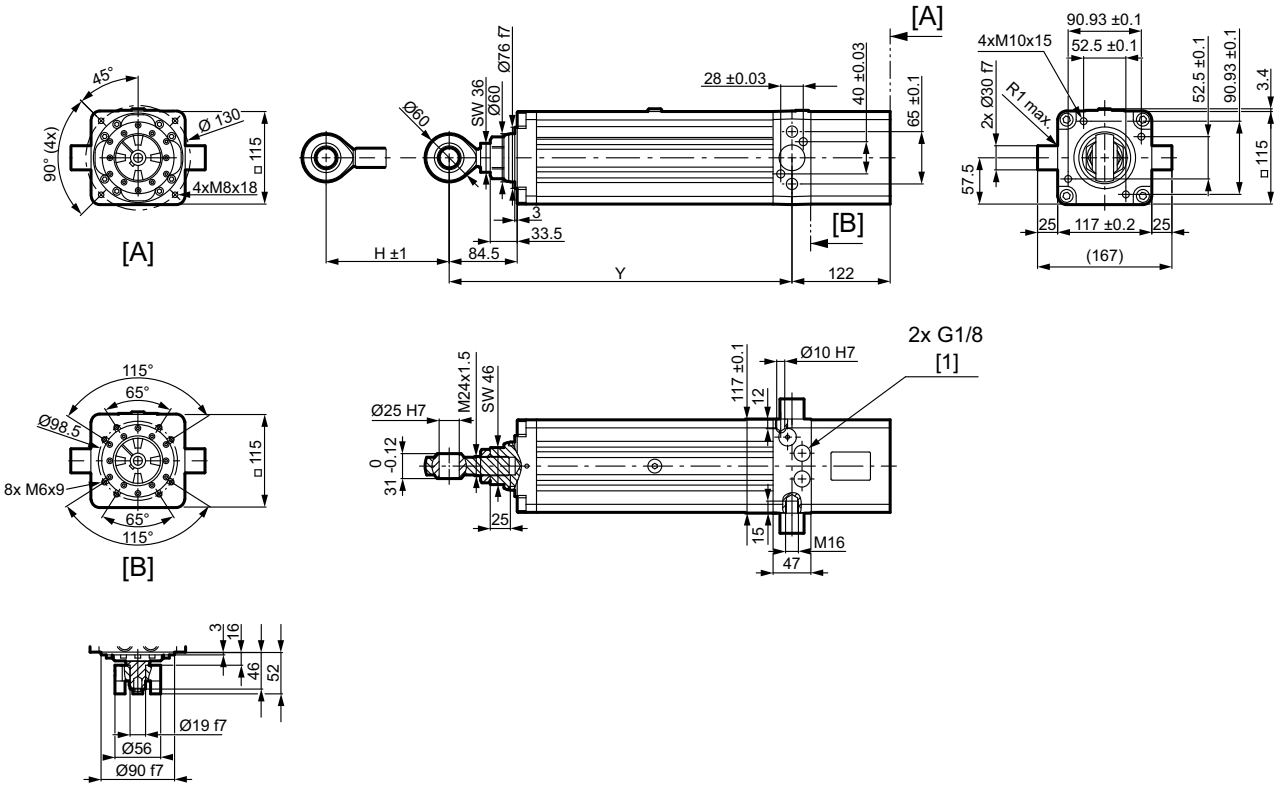
Pivot bearing mounting kit

Part number: 16521129



21256993/EN – 10/2014

7.5.2 Installation dimensions CMSMB71



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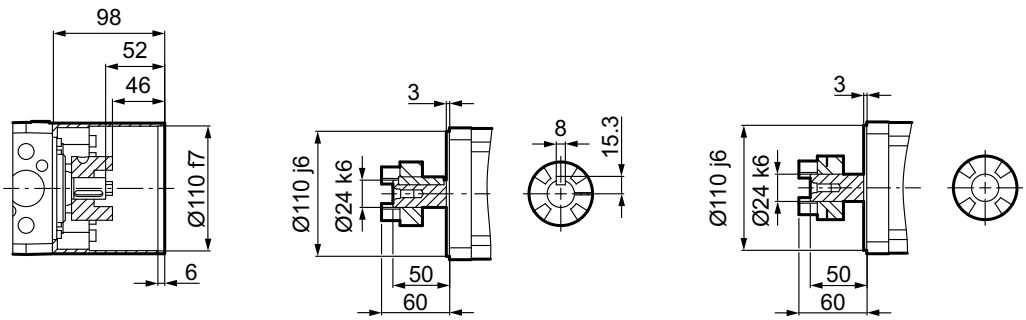
CMSMB71 **ACA** **ACH**



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[1] Cooling water connection

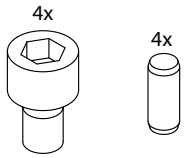
21256993/EN – 10/2014

Type	H mm	Y mm
CMSMB71	100	326
	160	386
	200	426
	400	686
	600	886
	800	1146
	1000	1346
	1200	1546

Each CMSM.. modular electric cylinder comes with an accessory bag for flange or pivot bearing mounting.

Accessory bag

Part number: 16524160

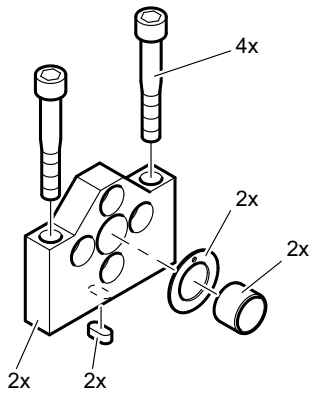


Additional mounting options

The flange mounting kit can be used to realize flange mounting and pivot bearing mounting for CMSMB71.

Flange mounting kit

Part number: 16524144



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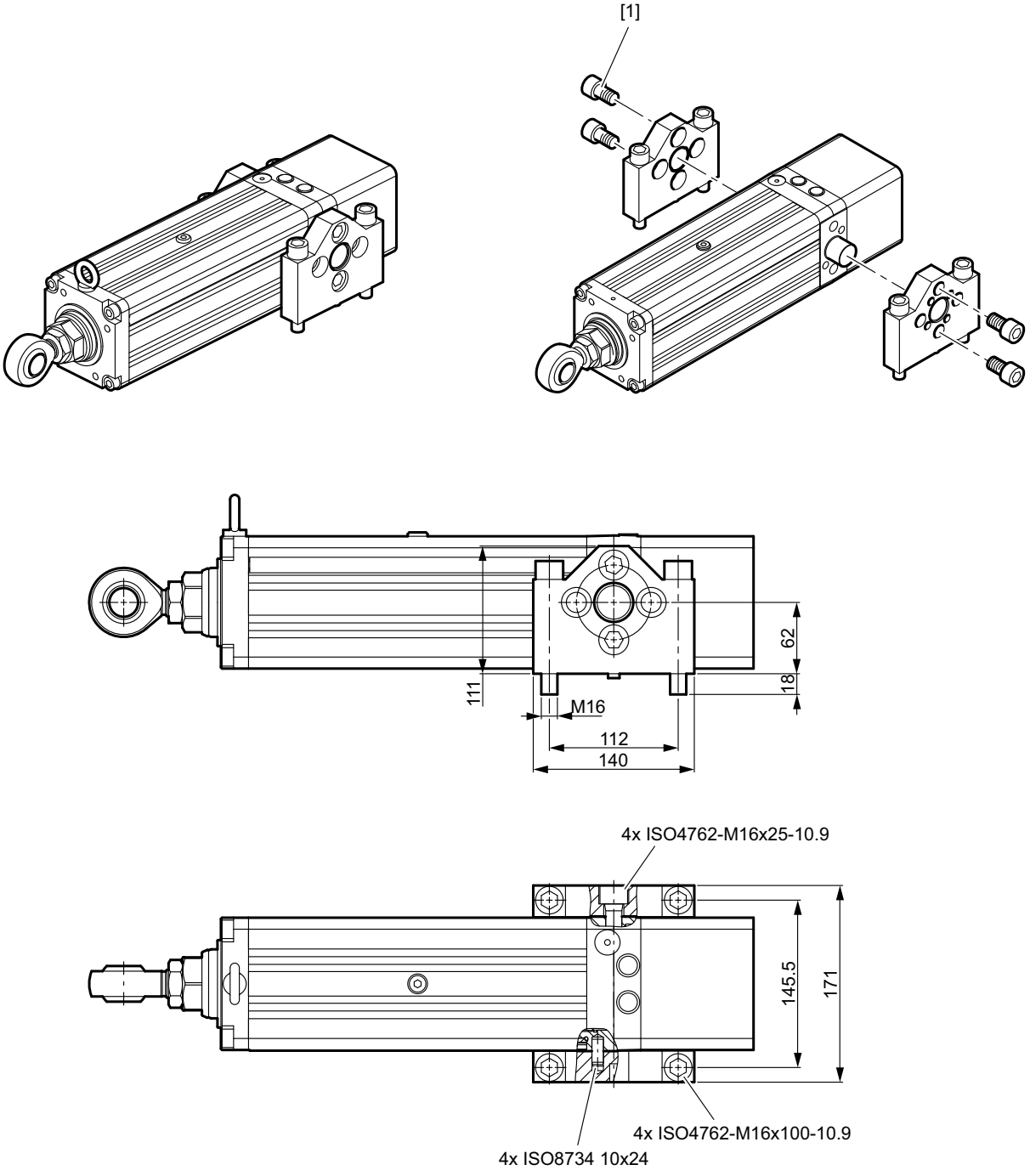
21256993/EN – 10/2014

Flange mounting

The following figure shows the flange mounting option for the CMSM.. modular electric cylinder. The modular electric cylinder is attached to a mounting surface with the gray-shaded mount-on components. The mount-on components can be mounted in steps of 90°.

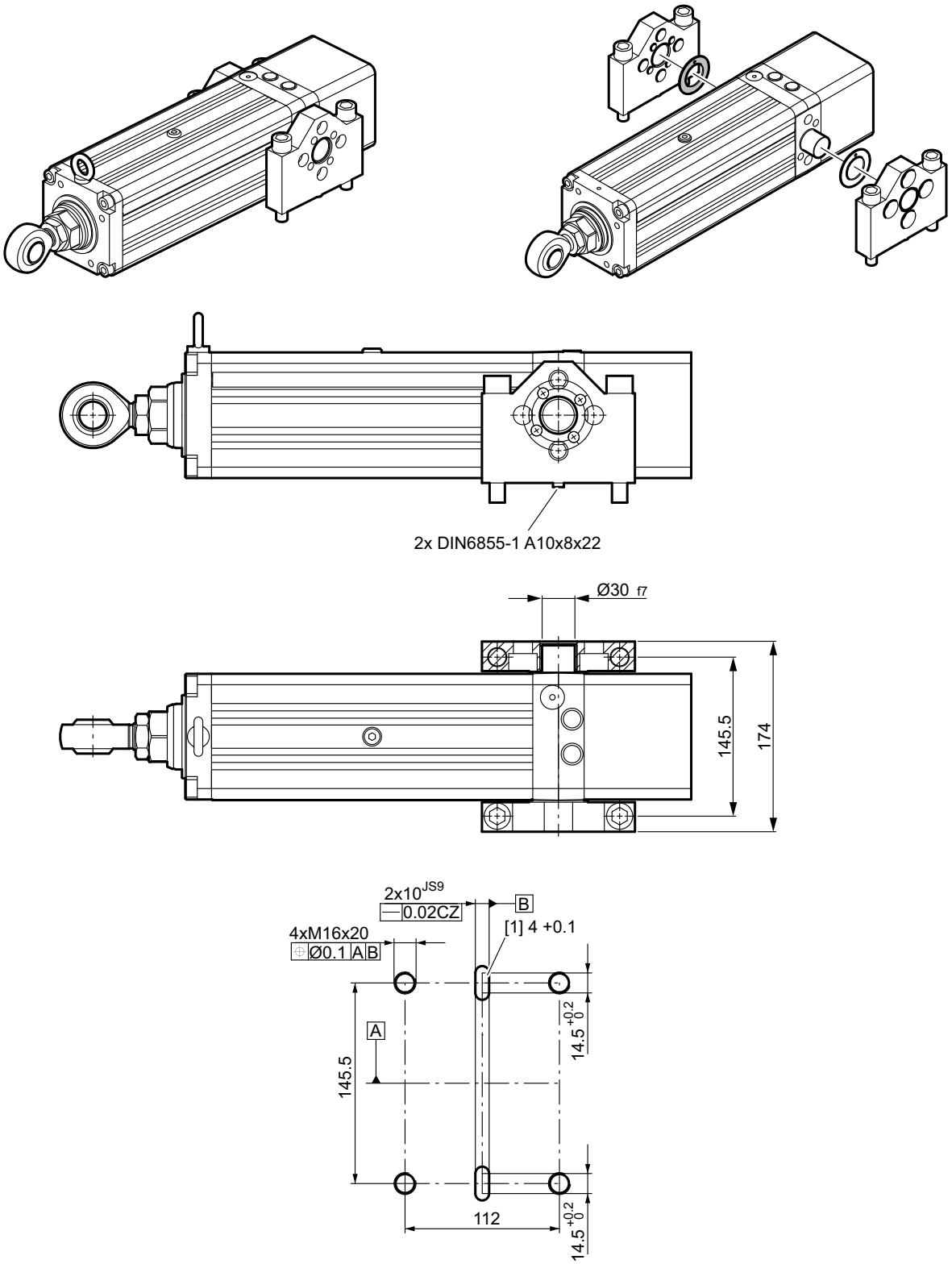


12677505547

[1] Screw from accessory bag

Pivot bearing mounting

The following figure shows the pivot bearing mounting option for the CMSM.. modular electric cylinder. This should be attached to a mounting surface with the gray-shaded mount-on components.



12677649035

[1] Depth of the keyway

8 Malfunctions

8.1 Failure of CMSM.. modular electric cylinders with motor

Fault	Possible cause	Measure
Electric cylinder does not start	Supply cable interrupted	Check connections, correct if necessary
	Fuse blown	Replace fuse
	Motor protection tripped	Check motor protection for correct setting, correct fault if necessary
	Servo inverter faulty, overloaded, incorrectly wired or incorrectly set	Check servo inverter, check wiring
Incorrect direction of rotation	Electric cylinder connected incorrectly	Check servo inverter, check setpoints
Electric cylinder hums and has high current consumption	Drive is blocked	Check drive
	Brake does not release	→ Chapter "Brake faults"
	Encoder cable malfunction	Check encoder cable
Electric cylinder heats up excessively (measure temperature)	Overload	Measure the power, use larger motor or reduce load if necessary
	Insufficient cooling	Correct cooling air supply or clear cooling air passages, retrofit forced cooling fan or use water cooling if necessary
	Ambient temperature too high	Observe permitted temperature range
	Nominal duty cycle (S1 to S10, DIN 57530) exceeded, e.g. caused by excessive starting frequency	Adjust the nominal duty cycle of the motor to the required operating conditions; consult a professional to determine the proper drive, if necessary
Running noise on electric cylinder	Bearing damage/spindle damage	Consult SEW-EURODRIVE.
Position of the piston rod does not match the controller specification or changes independently	mechanical damages to the CMS internally	Consult SEW-EURODRIVE.

21256993/EN – 10/2014

8.2 Customer service

Please have the following information available if you require customer service assistance:

- Complete nameplate data
- Nature and extent of the problem
- Time the failure occurred and any accompanying circumstances
- Assumed cause
- Digital photo if possible

8.3 Disposal

This product consists of:

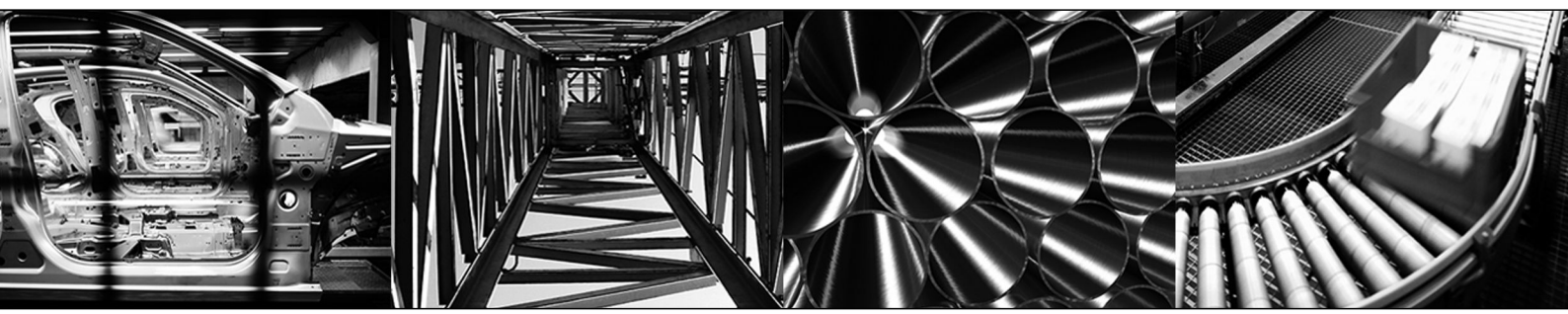
- Iron
- Aluminum
- Copper
- Plastics

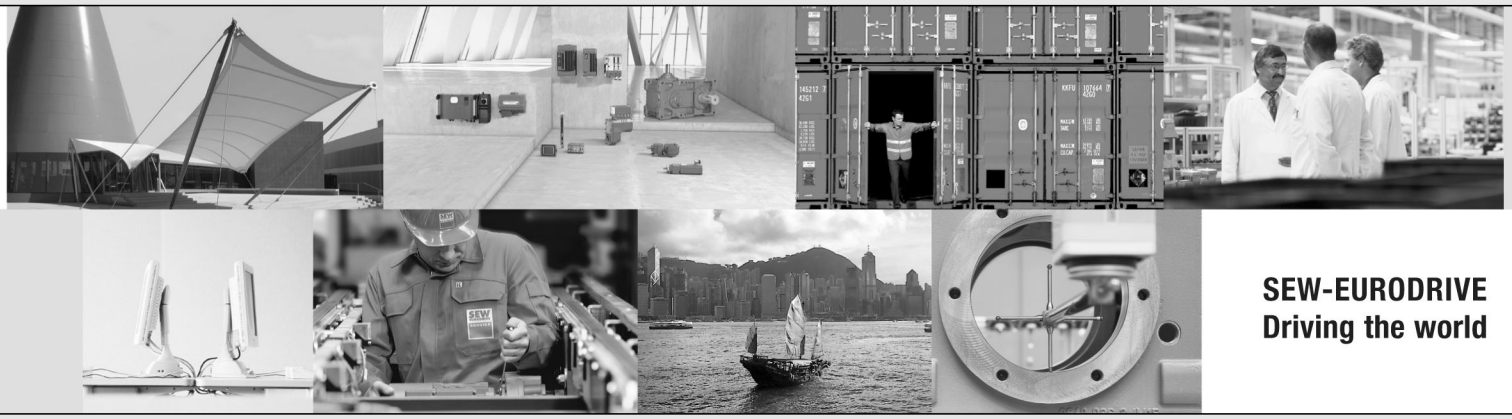
Dispose of all components in accordance with applicable regulations.

21256993/EN – 10/2014

Index

21256993/EN – 10/14





SEW-EURODRIVE
Driving the world

SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023
76642 BRUCHSAL
GERMANY
Phone +49 7251 75-0
Fax +49 7251-1970
sew@sew-eurodrive.com
➞ **www.sew-eurodrive.com**