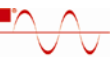


Electrical Part-Turn Actuators PME120 / RHD250 ... 4000 (Contract)

Rated torques 100 ... 4000 Nm
(80 ... 3000 lbf-ft)



HART 
COMMUNICATION PROTOCOL

PROFIBUS
PROCESS FIELD BUS

Electrical Part-Turn Actuators PME120 / RHD250 ... 4000 (Contrac)

Operating Instruction

OI/PME/RHD250_4000-EN

09.2011

Rev. A

Translation of the original instruction

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1 Safety

1.1 General information and notes for the reader

You must read these instructions carefully prior to installing and commissioning the device.

These instructions are an important part of the product and must be kept for future reference.

These instructions are intended as an overview and do not contain detailed information on all designs for this product or every possible aspect of installation, operation and maintenance.

For additional information or if specific problems occur that are not discussed in these instructions, contact the manufacturer.

The content of these instructions is neither part of any previous or existing agreement, promise or legal relationship nor is it intended to change the same.

This product is built based on state-of-the-art technology and is operationally safe. It has been tested and left the factory in perfect working order from a safety perspective. The information in the manual must be observed and followed in order to maintain this state throughout the period of operation.

Modifications and repairs to the product may only be performed if expressly permitted by these instructions.

Only by observing all of the safety instructions and all safety/warning symbols in these instructions can optimum protection of both personnel and the environment, as well as safe and fault-free operation of the device, be ensured.

Information and symbols directly on the product must be observed. They may not be removed and must be fully legible at all times.

1.2 Intended use

The actuators are used for operating final control elements (valves, vanes, etc.). They may only be operated using the appropriate Contrac electronic unit. Do not use these actuators for any other purpose. Otherwise, a hazard of personal injury or of damage to or impairment of the operational reliability of the device may arise. In addition to these operating instructions, the relevant documentation for the electronic unit and software tools must be observed.

1.3 Target groups and qualifications

Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly. The specialist personnel must have read and understood the manual and must comply with its instructions.

The operating company must strictly observe the applicable national regulations relating to the installation, function testing, repair, and maintenance of electrical products.

1.4 Warranty provisions

Using the device in a manner that does not fall within the scope of its intended use, disregarding this instruction, using underqualified personnel, or making unauthorized alterations releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

1.5 Plates and symbols

1.5.1 Safety-/ warning symbols, note symbols



DANGER – <Serious damage to health / risk to life>

This symbol in conjunction with the signal word "Danger" indicates an imminent danger. Failure to observe this safety information will result in death or severe injury.



DANGER – <Serious damage to health / risk to life>

This symbol in conjunction with the signal word "Danger" indicates an imminent electrical hazard. Failure to observe this safety information will result in death or severe injury.



WARNING – <Bodily injury>

This symbol in conjunction with the signal word "Warning" indicates a possibly dangerous situation. Failure to observe this safety information may result in death or severe injury.



WARNING – <Bodily injury>

This symbol in conjunction with the signal word "Warning" indicates a potential electrical hazard. Failure to observe this safety information may result in death or severe injury.



CAUTION – <Minor injury>

This symbol in conjunction with the signal word "Caution" indicates a possibly dangerous situation. Failure to observe this safety information may result in minor or moderate injury. This may also be used for property damage warnings.



NOTICE – <Property damage>!

The symbol indicates a potentially damaging situation.

Failure to observe this safety information may result in damage to or destruction of the product and/or other system components.



IMPORTANT (NOTE)

This symbol indicates operator tips, particularly useful information, or important information about the product or its further uses. It does not indicate a dangerous or damaging situation.

1.5.2 Name plate

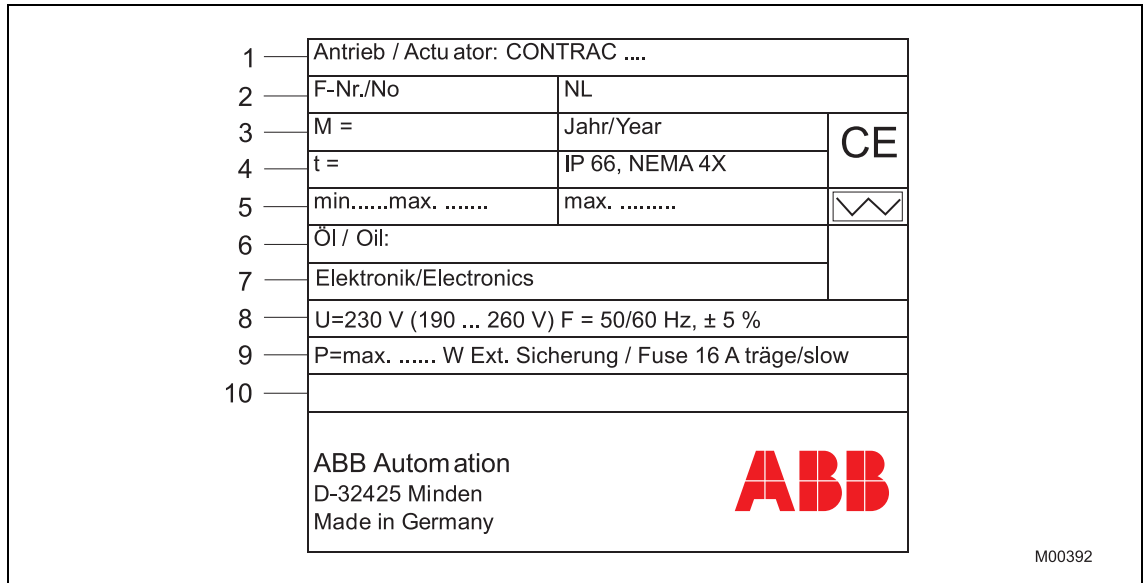


Fig. 1: PME name plate

- | | |
|--|---|
| 1 Full name of model | 6 Filled oil types |
| 2 Serial no. / NL no. (no. of non-list version) | 7 Associated Contrac electronic unit |
| 3 Output torque / Year of manufacture | 8 Permissible voltage range / mains frequency (for PME120-AI only) |
| 4 Permissible ambient temperature / protection class / CE mark | 9 Power consumption / specifications for fuse protection (for PME120-AI only) |
| 5 Min., max. stroke / max. operating speed / heater (option) | 10 Blank for customer-specific entry |

1	Antrieb / Actuator: CONTRAC		
2	F-Nr./No	NL	
3	M =	Jahr/Year	CE
4	t =	IP 66, NEMA 4X	
5	min.....max.	max.	
6	Öl / Oil:		
7	Elektronik/Electronics		
8			
9			
10			
ABB Automation			
D-32425 Minden			
Made in Germany			

M00365

Fig. 2: RHD name plate

- | | |
|--|--------------------------------------|
| 1 Full name of model | 6 Filled oil types |
| 2 Serial no. / NL no. (no. of non-list version) | 7 Associated Contrac electronic unit |
| 3 Output torque / Year of manufacture | 8 Blank |
| 4 Permissible ambient temperature / protection class / CE mark | 9 Blank |
| 5 Min., max. stroke / max. operating speed / heater (option) | 10 Blank for customer-specific entry |

1.6 Transport safety information



WARNING - Falling or toppling loads!

Risk of death or serious injury due to the device falling down or toppling over!

- Do not stand under suspended loads!
- Do not detach the hoisting equipment until installation is complete!
- Only use the dedicated load pick-up devices (eyebolts) for suspending the components!

Check the devices for possible damage that may have occurred during transport. Damages in transit must be recorded on the transport documents. All claims for damages must be claimed without delay against the shipper and before the installation.

Ensure that the specified environmental conditions in the Technical Data chapter are complied with.

1.7 Storage conditions



IMPORTANT (NOTE)

The storage data provided below assumes that the devices are fully closed and thus comply with the degree of protection stated in the technical specifications. When devices are supplied, their degree of protection is guaranteed. If they have been subsequently tested or commissioned, the degree of protection must be ensured again before they are put into storage.

The devices may be stored under moist and corrosive conditions for a short time. The equipment is protected against external corrosive influences. However, direct exposure to rain, snow, etc., must be avoided.

The permissible storage and transport temperatures must be observed.

Devices equipped with a heater are also protected by desiccant, which is placed in the following locations where condensation may be a problem:

Position sensor:	In connection chamber
Electronic unit:	In electrical connection chamber

The desiccant guarantees sufficient protection for approximately 150 days. It can be regenerated at a temperature of 90 °C (114 °F) within 4 h.

Remove the desiccant prior to commissioning the actuator or the electronic unit.

If you intend to store or transport the device for a long period of time (> 6 months), we recommend that you wrap it in plastic foil and add desiccant.

Protect uncovered metallic surfaces with an appropriate long-term corrosion inhibitor.

The relevant long-term storage temperatures must be observed.

1.8 Installation safety information



WARNING - Falling or toppling loads!

Risk of death or serious injury due to the device falling down or toppling over!

- Do not stand under suspended loads!
 - Do not detach the hoisting equipment until installation is complete!
 - Only use the dedicated load pick-up devices (eyebolts) for suspending the components!
-
- Only qualified specialists who have been trained for these tasks are authorized to mount and adjust the control actuator, and to make the electrical connection.
 - When working on the actuator itself or the electronics always observe the locally valid accident prevention regulations and the regulations concerning the construction of technical installations.
 - Make sure that no process forces are exerted on the control element.
 - Do not use the motor or handwheel to lift the actuator.
 - The load pick-up device on the actuator (eyebolt) must only be loaded in a vertical direction. Only use the load pick-up device for lifting/lowering the actuator (without final control element mounted).

1.9 Safety information for electrical installation

- The electrical connection may only be made by authorized specialist personnel and in accordance with the electrical circuit diagrams.
- The electrical connection information in the manual of the electronic unit must be observed; otherwise, the type of electrical protection may be adversely affected.
- Safe isolation of electrical circuits which are dangerous if touched is only guaranteed if the connected devices satisfy the requirements of DIN EN 61140 (VDE 0140 Part 1) (basic requirements for safe isolation).
- To ensure safe isolation, install supply lines so that they are separate from electrical circuits which are dangerous if touched, or implement additional isolation measures for them.



IMPORTANT (NOTE)

Refer to the operating instructions of the power electronic unit for the electrical connection diagrams.

1.10 Operating safety information

**Warning - risk of crushing!**

Risk of injuries due to crushing between the lever and the stops or between the lever and the coupling rod, respectively!

- Do not reach into the danger zone!
- Exclusively start the actuator with the lever cover installed!

Before switching on, ensure that the specified environmental conditions in the “Technical Data” chapter or data sheet are complied with and that the power supply voltage corresponds with the voltage specified on the name plate of the power electronic unit.

If there is a chance that safe operation is no longer possible, take the unit out of operation and secure against unintended startup.

When mounting the actuator in areas that may be accessed by unauthorized persons, take the required protective measures.

Switch off the power supply to the motor before starting handwheel operation.

1.11 Maintenance safety information

**Warning - risk of injury!**

Note that the actuator position may be changed accidentally by the repelling power of the valve when the brake is released or the motor is removed! Make sure that process forces are not exerted on the lever.

- When changing the oil of the actuator, thoroughly remove any oil that may have run down on the floor during the procedure to avoid accidents.
- Dispose of old oil according to local regulations. Make sure that no oil reaches the water cycle.
- Make sure that any oil leaking from the device cannot come into contact with hot parts.
- Switch off the supply voltage for the power electronic unit and, if necessary, disconnect the separately supplied anti-condensation heater (option) when working on the actuator or related subassemblies and take precautions to prevent unintentional switch-on.

1.12 Safety instructions related to the raw materials and supplies

Observe the manufacturer's regulations and safety data sheets!

- Mineral oil and grease can contain additives that, under special conditions, may lead to adverse effects.
- Skin contact with oil or grease may cause skin damage (skin irritations, inflammations, allergies). Avoid long-term, excessive or repeated skin contact. If lubricants contact your skin, immediately wash with water and soap! Do not allow lubricants to get in contact with open wounds!
- If lubricant splashes into the eye, rinse with plenty of water for at least 15 minutes and then consult a doctor!
- When handling lubricants use appropriate skin protection and care products or wear oil-resistant gloves.
- Lubricants that have run down to the floor are a potential source of danger, due to the slip hazard. Spread sawdust or use oil adsorbent to bind and remove the lubricants.

1.13 Returning devices

Use the original packaging or suitably secure shipping containers if you need to return the device for repair or recalibration purposes. Fill out the return form (see the Appendix) and include this with the device.

According to EC guidelines for hazardous materials, the owner of hazardous waste is responsible for its disposal or must observe the following regulations for shipping purposes:

All devices delivered to ABB Automation Products GmbH must be free from any hazardous materials (acids, alkalis, solvents, etc.).

Please contact Customer Center Service acc. to page 2 for nearest service location.

1.14 Integrated management system

ABB Automation Products GmbH operates an integrated management system, consisting of:

- Quality management system to ISO 9001:2008
- Environmental management system to ISO 14001:2004
- Occupational health and safety management system to BS OHSAS 18001:2007 and
- Data and information protection management system

Environmental awareness is an important part of our company policy.

Our products and solutions are intended to have a minimal impact on the environment and on people during manufacturing, storage, transport, use, and disposal.

This includes the environmentally-friendly use of natural resources. We conduct an open dialog with the public through our publications.

1.15 Disposal

This product is manufactured from materials that can be reused by specialist recycling companies.

1.15.1 Information on WEEE Directive 2002/96/EC (Waste Electrical and Electronic Equipment)

This product is not subject to WEEE Directive 2002/96/EC or relevant national laws (e.g., ElektroG in Germany).

The product must be disposed of at a specialist recycling facility. Do not use municipal garbage collection points. According to the WEEE Directive 2002/96/EC, only products used in private applications may be disposed of at municipal garbage facilities. Proper disposal prevents negative effects on people and the environment, and supports the reuse of valuable raw materials.

If it is not possible to dispose of old equipment properly, ABB Service can accept and dispose of returns for a fee.

1.15.2 RoHS Directive 2002/95/EC

With the Electrical and Electronic Equipment Act (ElektroG) in Germany, the European Directives 2002/96/EC (WEEE) and 2002/95/EC (RoHS) are translated into national law. ElektroG defines the products that are subject to regulated collection and disposal or reuse in the event of disposal or at the end of their service life. ElektroG also prohibits the marketing of electrical and electronic equipment that contains certain amounts of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) (also known as hazardous substances with restricted uses).

The products provided by ABB Automation Products GmbH do not fall within the current scope of the directive on waste from electrical and electronic equipment according to ElektroG. If the necessary components are available on the market at the right time, in the future these substances will no longer be used in new product development.

2 Design and function

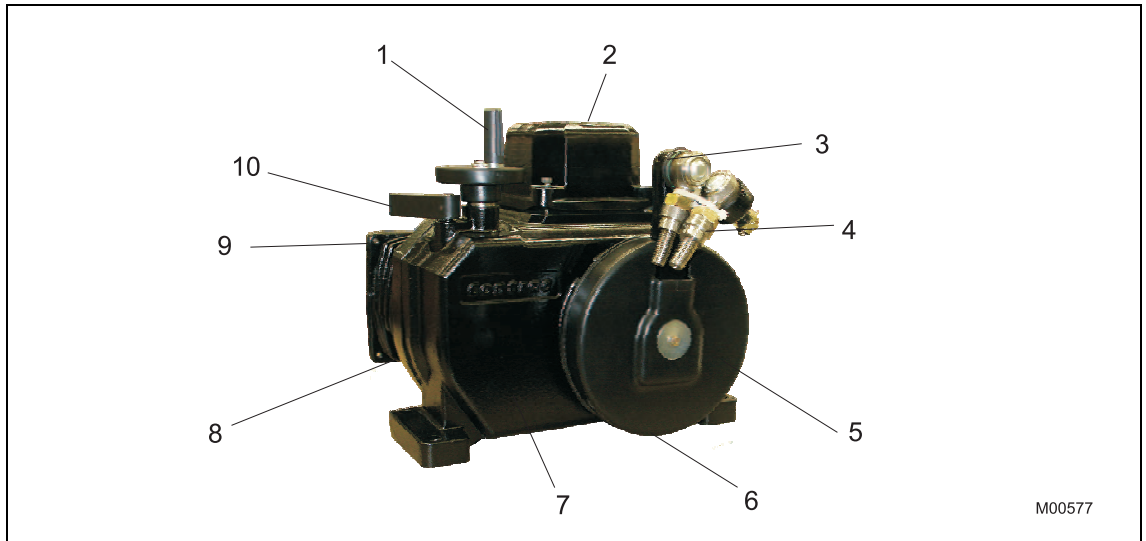


Fig. 3: PME120 (illustrations may differ from actual installation)

- | | |
|-------------------------|---|
| 1 Handwheel | 6 Adjustable stops (under the lever cover) |
| 2 Plug | 7 Gear case |
| 3 Lever | 8 Motor |
| 4 Ball-and-socket joint | 9 Cover (for PME120-AI incl. electronic unit) |
| 5 Lever cover | 10 Hand wheel release |

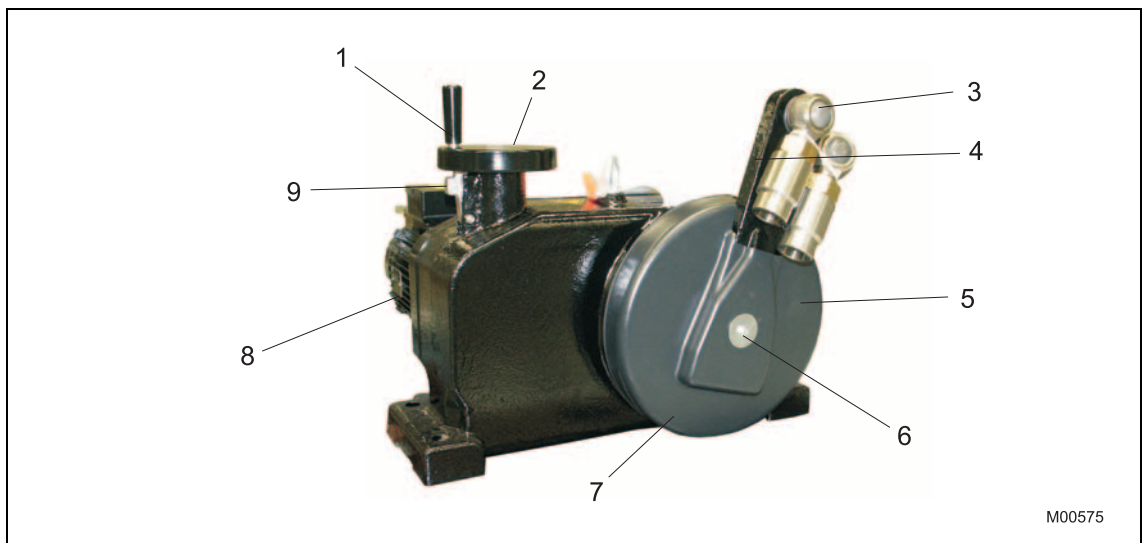


Fig. 4: RHD250...RHD4000 (illustrations may differ from actual installation)

- | | |
|-------------------------|--|
| 1 Hand wheel crank | 6 Output shaft |
| 2 Handwheel | 7 Adjustable stops (under the lever cover) |
| 3 Ball-and-socket joint | 8 Servo motor |
| 4 Damper lever | 9 Hand wheel release |
| 5 Lever cover | |

Functionality

Compact actuator for the operation of final control elements with preferably 90° rotary movement such as vanes, ball valves, etc.

The rated torque is transferred via the lever or the actuator is directly coupled to the adapter flange.

A special power electronic unit controls the actuator. The electronic unit serves as the interface between actuator and control system.

During continuous positioning the power electronic unit varies the motor torque steplessly until the actuator force and the restoring process forces are balanced. High response sensitivity and high positioning accuracy with short stroke time ensure excellent control quality and a long actuator life.

3 Mounting

**WARNING - Falling or toppling loads!**

Risk of death or serious injury due to the device falling down or toppling over!

- Do not stand under suspended loads!
- Do not detach the hoisting equipment until installation is complete!
- Only use the dedicated load pick-up devices (eyebolts) for suspending the components!

3.1 Actuator check

Before you start to install the actuator make sure that the delivery status corresponds to the ordered status and to the intended use.

- Check the oil level when installing the device in positions other than IMB 3.
- Once the actuator is installed, fasten the vent valve in the uppermost bore.
- Prior to commissioning the device, make sure that the motor and the connection chambers are free of dirt, moisture and corrosion.

3.2 Installation instructions

- Make sure that the actuator is accessible from all sides to ensure convenient handwheel operation, electrical connection, and replacement of assemblies.
- Avoid direct exposure to rain, snow and other environmental influences.
- The actuators are resistant against vibration loading up to 2 g and a frequency up to 150 Hz (acc. to EN 60068-2-6, table C.2).
- Exclusively mount the actuator on a rigid, non-vibrating support to avoid relative motions between the actuator and the valve.
- When mounting the actuator close to heat sources use an insulating layer or shielding.
- Make sure that the maximum ambient temperature is not exceeded. If required, provide a sunshield to protect against direct sunlight.

3.3 Fastening the actuator

1. Place the actuator on the fixing device in the correct position. Pay attention to the rotating direction in combination with the final control element.
2. Fasten the actuator with four screws. Use the biggest possible screw diameter and observe the tightening torque (see table "Locking and fastening elements").

3.4 Installation position

The gearings of the actuator models PME120 and RHD250 ... 4000 are oil-lubricated. They contain the maximum oil quantity when leaving the manufacturer. Once the actuator is installed, replace the uppermost check plug by the separately supplied vent valve.

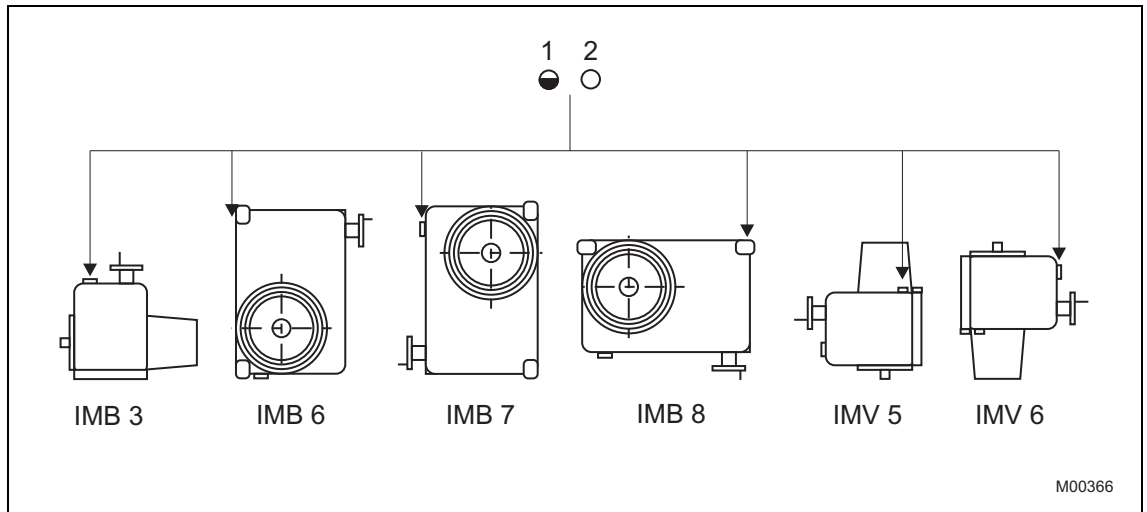


Fig. 5

1 Inspection plug

2 Venting plug

All mounting orientations shown in fig. Fig. 5 are permissible. To facilitate mounting and maintenance, however, it is recommended that you use orientation IMB 3. For each mounting position, check the oil level prior to commissioning (see chapter 6.4 “Filling capacity”).

It is important that sufficient cooling air is supplied, sufficient space is available for changing components and free access is ensured to the electronic unit cover (PME120-AI). To achieve this, allow for the following minimum distances.

Actuator	Space
PME120	60 mm (2.36 inch)
RHD250	60 mm (2.36 inch)
RHD500/800	60 mm (2.36 inch)
RHD1250/2500	80 mm (3.15 inch)
RHD4000	80 mm (3.15 inch)

3.5 Assembly with the valve

**WARNING - risk of crushing!**

Risk of injuries due to crushing between the lever and the stops or between the lever and the coupling rod, respectively!

- Prior to starting any mechanical work on the device, switch off the voltage supply to the motor and take precautions to prevent unintentional switch-on.

**CAUTION**

Vibrational loading may cause the lever cover to come off!

Secure the lever cover with the appropriate screw locking devices!

**IMPORTANT (NOTE)**

Before finally coupling the actuator to the valve, let it once overshoot the actual OPEN and CLOSED end positions by at least 10%.

3.5.1 Preparation for mounting with lever

**WARNING – Electrical voltage risk!**

When working on the actuator or the related subassembly, switch off the supply voltage for the power electronic unit and separate anti-condensation heater (option), and take precautions to prevent unintentional switch-on.

1. Make sure that the shaft and lever bore surface are clean and free of grease.
2. Determine the length of the coupling tube (not included in the scope of delivery).
3. Move the valve to the "CLOSED" position.
4. Use the handwheel to move the actuator into the proper end position. Observe the permissible angle.
5. Refer to chapter 3.7 "Dimensions" for the required length of the connection pipe.
6. In order to fasten the second ball-and-socket joint, provide a cone in the lever of the final control element, according to the dimensional drawing.
7. Insert the ball-and-socket joint, and secure with crown nut and split-pin.
8. Remove the welding bushings and weld them to the coupling tube.
9. Insert the link rod between the two ball-and-socket joints and screw it in.
10. If required adjust "L" by turning the link rod.
11. When all adjustment steps are finished, fasten the counter nuts.

3.5.2 Adjusting the stops in dependence of the travel

1. Remove the lever cover.
2. Move the driver lever / valve to the end position requiring fine adjustment.
3. Put the stop onto the tothing as close to the output lever as possible and fasten it with screws.
4. The mechanical limit stops may not be fixed within the adjusted operating range.
5. Move the driver lever towards the stop using the handwheel; turn the link rod for fine adjustment.
6. Fasten the counter nuts.
7. Fasten the stop in the other mounting position close to the end position, depending on the tothing.
8. Attach the lever cover. Observe the tightening torque!

3.5.3 Adjusting the stops in dependence of the torque

1. First proceed as described in the "Travel-dependent stop adjustment" chapter (steps 1 ... 4).
2. Prior to re-fastening the counter-nut, turn the link rod with the handwheel locked in place to provide pretension in the valve's "CLOSED" position.
3. Lock the hand wheel.
4. Turn the link rod or slightly shift the mechanical stop to get a small gap between the lever and the stop. The procedure depends on the stiffness of the linkage arrangement.
5. Tighten the counter-nuts and limit stop screws.
6. Attach the lever cover. Observe the tightening torque!

3.5.4 Preparing for installation with direct adapter for PME120

1. Make the hole in the direct adapter based on the valve shaft. For the layout, ensure that the resulting torques can be transferred safely. Observe the position of keyed connection elements in relation to the possible mounting positions for the coupling.
2. Make sure that the valve shaft and direct adapter bore are clean and free of grease.
3. The direct adapter for the actuator is designed with an F10 flange in accordance with ISO5211. A corresponding centering ring is delivered loose with the actuator. Make sure that the flange for the direct adapter fits the flange for the valve.
4. Mount the actuator on the valve flange with four screws. Make sure the actuator is centered precisely. Use screws with a torque of 50 Nm (37 lbf-ft). The valve-side and actuator-side section of the coupling must interlock.

3.5.4.1 Adjusting the stops for travel

1. Remove the cover from the adjustment screws.
2. Use the hand wheel to move the actuator coupling / valve into the proper end position.
3. Release the lock nut of the set screw for the stop lever and turn the set screw against the stop. Tighten the lock nut with a torque of 70 Nm (52 lbf-ft).
4. Attach the lever cover. Observe the tightening torque.

3.5.4.2 Adjusting the stops for torque

1. Remove the cover from the adjustment screws.
2. Make sure that the valve can be subjected to the resulting torques.
3. Use the hand wheel to move the actuator coupling / valve into the proper end position.
4. The set screw for the stop may not touch the stop lever. If the stop lever touches the set screw before reaching the end position, release the counter-nut and unscrew the set screw further. Then re-tighten the lock nut with a torque of 70 Nm (52 lbf-ft).
5. Attach the lever cover. Observe the tightening torque.

3.6 Installation variants
3.6.1 Locking and fastening elements

	PME	RHD250	RHD500 RHD800	RHD1250 RHD2500	RHD4000
Clamping screws of mechanical stops Tightening torque:	46 Nm (34 lbf-ft)	79 Nm (58 lbf-ft)	195 Nm (144 lbf-ft)	670 Nm (494 lbf-ft)	670 Nm (494 lbf-ft)
Lever clamping screw Tightening torque:	23 Nm (17 lbf-ft)	79 Nm (58 lbf-ft)	195 Nm (144 lbf-ft)	390 Nm (288 lbf-ft)	390 Nm (288 lbf-ft)
Mounting screw (property class 8.8) Bore diameter: Tensile strength: Yield strength:	12mm (0.47 inch) ≥ 800 N/mm ² (≥ 116032 pounds / square inch) ≥ 640 N/mm ² (≥ 93550 pounds / square inch)	12 mm (0.47 inch) ≥ 800 N/mm ² (≥ 116032 pounds / square inch) ≥ 640 N/mm ² (≥ 93550 pounds / square inch)	18 mm (0.71 inch) ≥ 800 N/mm ² (≥ 116032 pounds / square inch) ≥ 640 N/mm ² (≥ 93550 pounds / square inch)	20 mm (0.78 inch) ≥ 800 N/mm ² (≥ 116032 pounds / square inch) ≥ 640 N/mm ² (≥ 93550 pounds / square inch)	20 mm (0.78 inch) ≥ 800 N/mm ² (≥ 116032 pounds / square inch) ≥ 640 N/mm ² (≥ 93550 pounds / square inch)
Tightening torques of lever cover:	2.5 Nm +0.5 (1.8 lbf-ft +0.4)	2.5 Nm +0.5 (1.8 lbf-ft +0.4)	6.5 Nm +0.5 (4.8 lbf-ft +0.4)	25 Nm +5 (18.4 lbf-ft +3.9)	25 Nm +5 (18.4 lbf-ft +3.9)
Tightening torque for cover of PME direct adapter:	4,0 Nm +0.5 (2.9 lbf-ft +0.4)	-	-	-	-

Specifications for linkage of ball-and-socket valve in driver lever cone

Actuator	Ball-and-socket joint	Thread	tightening torque
PME	A19	M10x1	18 Nm (13 lbf-ft)
RHD250	A24	M14x1.5	45 Nm (33 lbf-ft)
RHD500 / 800	B30	M18x1.5	93 Nm (69 lbf-ft)
RHD1250 / 2500	B35	M20x1.5	126 Nm (93 lbf-ft)
RHD4000	B50	M30x1.5	258 Nm (190 lbf-ft)

3.6.2 Mounting with lever

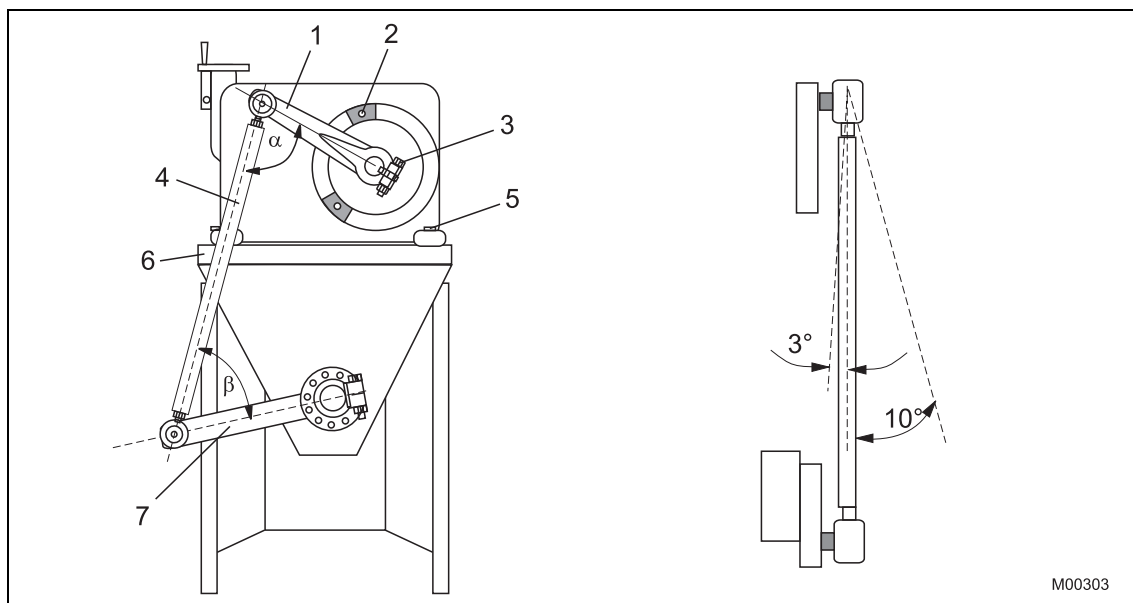


Fig. 6

- 1 Output lever
- 2 Mechanical stop with clamping screws
- 3 lever clamping screw
- 4 Link rod
- $\alpha \geq 15^\circ$ ($\geq 20^\circ$ for RHD800 ... 4000)

- 5 Fixing screws
- 6 Rigid, level support
- 7 Flap lever

β based on requirements of the valve manufacturer

3.6.3 Installation with additional drive elements

When mounting an additional drive element instead of the standard lever, the following installation conditions must be observed:

Max. permissible shaft load:

Type	radial force at distance x N (lbf)	Distance x from shaft edge mm (inch)	axial force N (lbf)	max. output torque
PME	943 (212)	30 (1.18)	164 (36.87)	Occasionally, twice the rated torque
RHD250	1767 (397.24)	40 (1.57)	310 (69.69)	Occasionally, twice the rated torque
RHD500	7542 (1695.51)	35 (1.38)	1310 (294.50)	Occasionally, twice the rated torque
RHD800	7542 (1695.51)	35 (1.38)	1310 (294.50)	Occasionally, twice the rated torque
RHD1250	10100 (2270.57)	50 (1.97)	1750 (393.42)	Occasionally, twice the rated torque
RHD2500	10100 (2270.57)	50 (1.97)	1750 (393.42)	Occasionally, twice the rated torque
RHD4000	14142 (3179.25)	55 (2.17)	2455 (551.91)	Occasionally, twice the rated torque

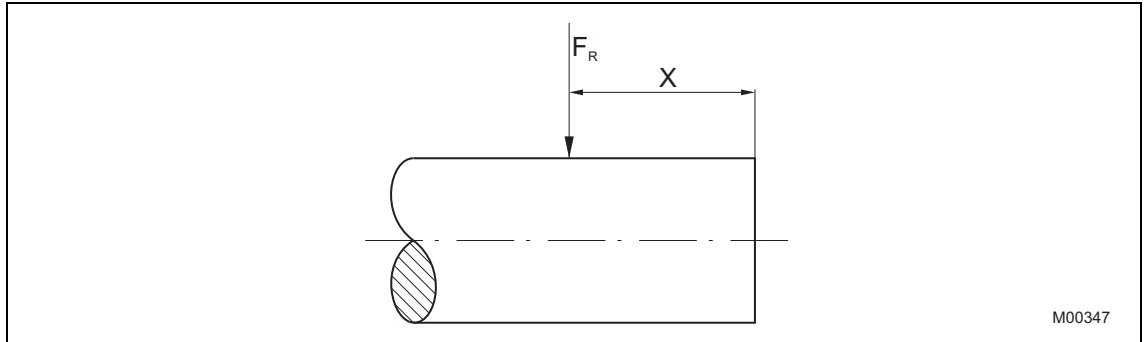


Fig. 7: Stub shaft

Configuring the drive element hub

The new drive element is mechanically connected to the drive shaft via a hole with feather key groove. This connection must be constructed so that the rated torque and any possible output torque is transmitted accurately. The drive element must be mounted securely on the drive shaft with suitable measures to prevent axial shift. For the new drive element, you can use the current mechanical stops.

The following parameters must be observed:

Type	Bore diameter mm (inches)	Key width mm (inch)	Hub length mm (inch)	Minimum yield strength of hub Rp 0.2 N/mm ² (pounds/square inch)
PME	24 +0.033 (0.944 +0.0013)	8 -0.015/-0.051 (0.31 -0.0006/-0.0020)	32 (1.26)	320 (46412.80)
RHD250	30 +0.033 (1.18 +0.0013)	8 -0.015/-0.051 (0.31 -0.0006/-0.0020)	50 (1.97)	320 (46412.80)
RHD500	50 +0.039 (1.97 +0.0015)	14 -0.018/-0.061 (0.55 -0.0007/-0.0024)	70 (2.76)	320 (46412.80)
RHD800	50 +0.039 (1.97 +0.0015)	14 -0.018/-0.061 (0.55 -0.0007/-0.0024)	70 (2.76)	320 (46412.80)
RHD1250	70 +0.075/+0.030 (2.76 +0.0030/+0.0012)	20 -0.022/-0.074 (0.79 -0.0311/-0.0029)	100 (3.94)	320 (46412.80)
RHD2500	70 +0.075/+0.030 (2.76 +0.0030/+0.0012)	20 -0.022/-0.074 (0.79 -0.0311/-0.0029)	100 (3.94)	320 (46412.80)
RHD4000	85 +0.090/+0.036 (3.35 +0.0035/+0.0014)	25 -0.018/-0.061 (0.98 -0.0007/-0.0024)	140 (5.51)	320 (46412.80)

3.7 Dimensions

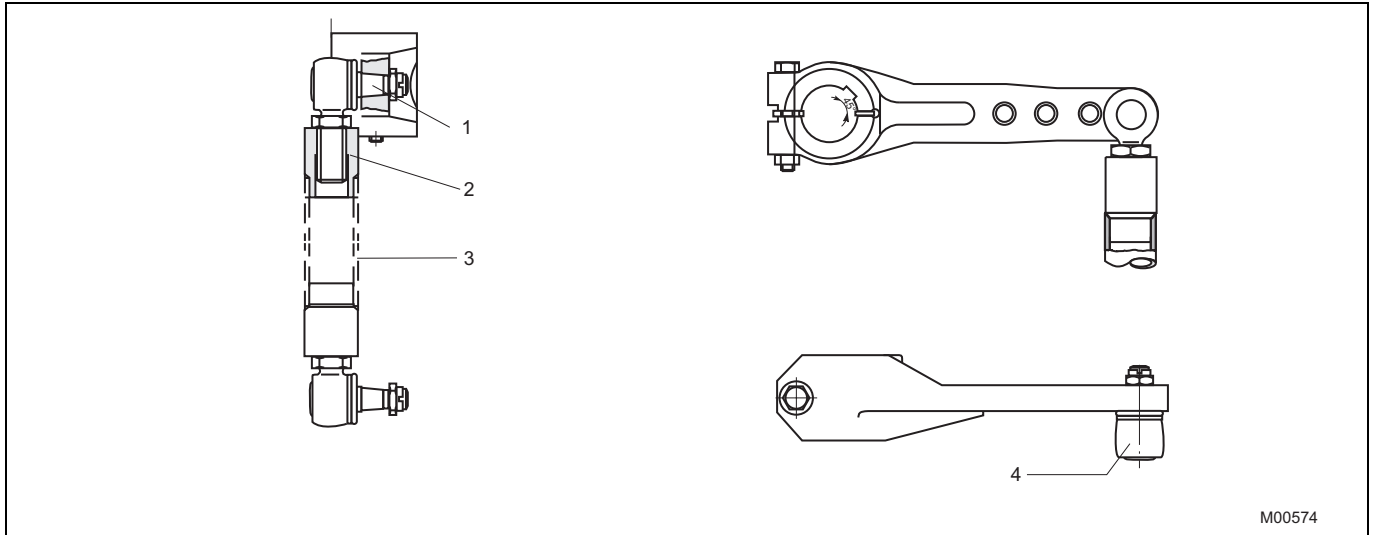


Fig. 8

	PME120	RHD250	RHD500 ... 800	RHD1250 ... 2500	RHD4000
1	Cone 1:10				
2	Welding bushings are part of shipment				
3	Connection pipe 3/4" EN 10255 / ISO 65 or 3/4 inch schedule 40 pipe. Size "L" acc. to requirements. The pipe is not included in shipment.	Connection pipe 1 1/2" EN 10255 / ISO 65 or 1 1/2 inch schedule 80 pipe. Size "L" acc. to requirements. The pipe is not included in shipment.	Connection pipe 1 1/2" EN 10255 / ISO 65 or 1 1/2 inch schedule 80 pipe. Size "L" acc. to requirements. The pipe is not included in shipment.	Connection pipe 2" EN 10255 / ISO 65 or 2 inch schedule 80 pipe. Size "L" acc. to requirements. The pipe is not included in shipment.	Connection pipe 2 1/2" EN 10255 / ISO 65 or 2 1/2 inch schedule 80 pipe. Size "L" acc. to requirements. The pipe is not included in shipment.
4	Angular deflection of ball-and-socket joint: Pointing towards the actuator: max. 3° Pointing away from the actuator: max. 10°				

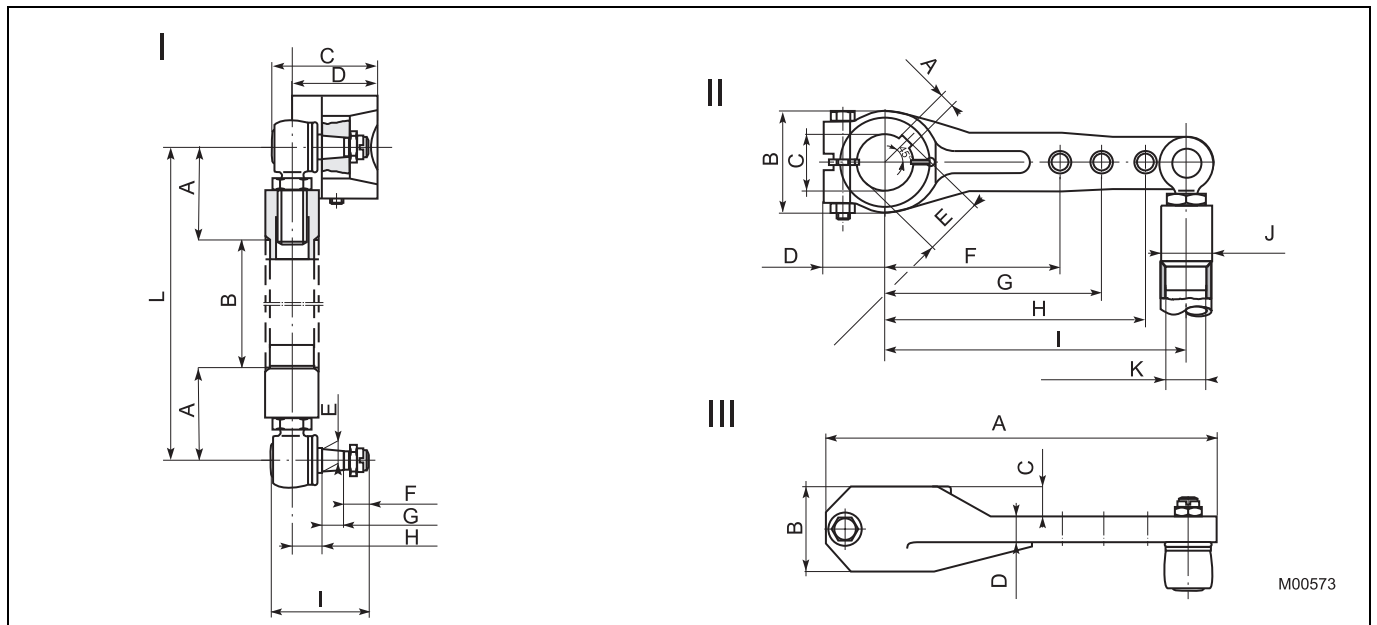


Fig. 9

All dimensions in mm

		PME120	RHD250	RHD500 ... 800	RHD1250 ... 2500	RHD4000
I	A	62 ... 78	100 ... 120	105 ... 120	100 ... 140	135 ... 165
	B	=L-(2xA)	=L-(2xA)	=L-(2xA)	=L-(2xA)	=L-(2xA)
	C	60	99	99	120	163.5
	D	46	84	79	100	125.5
	E	Ø14	Ø18	Ø22	Ø26	Ø38
	F	15	18	28	24.5	30.5
	G	14	18	21	25	37
	H	18	23	23	32	42.5
	I	61	74	91	104.5	141
II	A	8 ^(-0.015) _(-0.051)	8 ^(-0.015) _(-0.051)	14 ^(-0.018) _(-0.061)	20 ^(-0.022) _(-0.074)	25 ^(-0.018) _(-0.061)
	B	48	60	80	120	140
	C	Ø24 ^(+0.033) ₍₀₎	Ø30 ^(+0.033) ₍₀₎	Ø50 ^(+0.039) ₍₀₎	Ø70 ^(+0.076) _(+0.030)	Ø85 ^(+0.090) _(+0.036)
	D	32	40	63	75	87
	E	27 ^(+0.2)	33.3 ^(+0.2)	53.8 ^(+0.2)	74.9 ^(+0.2)	90.4 ^(+0.2)
	F	100	120	150	200	-
	G	125	150	200	250	-
	H	-	-	-	300	-
	I	150	200	250	350	400
	J	Ø25	Ø40	Ø48	Ø60	Ø76
	K	Ø21 *(Ø20)	Ø35.5 *(Ø32)	Ø41 *(Ø37.5)	Ø52.5 *(Ø48.5)	Ø68 *(Ø58)
III	A	201	265	343	460	537
	B	32	50	70	100	140
	C	9	21	26	35	43
	D	19	21	25	30	40

*Lever, US version

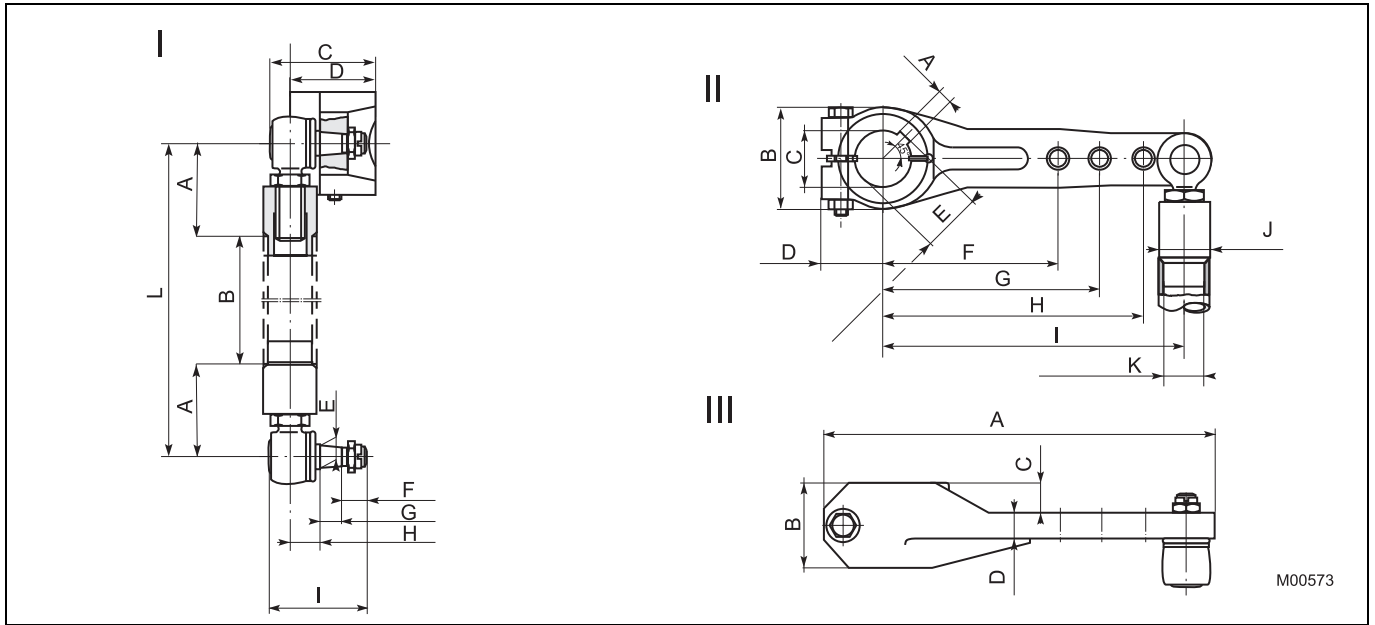


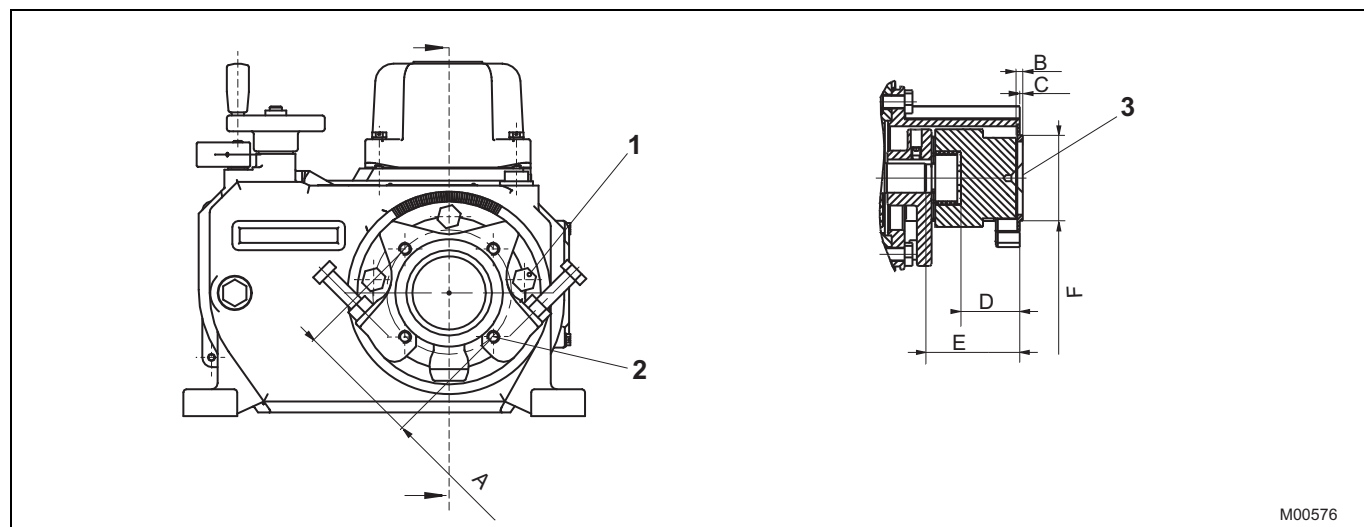
Fig. 10

All dimensions in inches

		PME120	RHD250	RHD500 ... 800	RHD1250 ... 2500	RHD4000
I	A	2.44 ... 3.07	3.94 ... 4.72	4.13 ... 4.72	4.33 ... 5.51	5.31 ... 6.50
	B	=L-(2xA)	=L-(2xA)	=L-(2xA)	=L-(2xA)	=L-(2xA)
	C	2.36	3.90	3.90	4.72	6.44
	D	1.81	3.31	3.11	3.94	4.94
	E	Ø0.55	Ø0.71	Ø 0.87	Ø1.02	Ø1.50
	F	0.59	0.71	1.10	0.96	1.20
	G	0.55	0.71	0.83	0.98	1.46
	H	0.71	0.91	0.91	1.26	1.67
	I	2.40	2.91	3.62	4.11	5.55
II	A	0.31 ^(+0.0006) _(+0.002)	0.31 ^(+0.0006) _(+0.002)	0.55 ^(-0.0007) _(-0.0024)	0.79 ^(-0.0009) _(-0.0029)	0.98 ^(-0.0007) _(-0.0024)
	B	1.89	2.36	3.15	4.72	5.51
	C	Ø0.95 ^(+0.0013) ₍₀₎	Ø1.18 ^(+0.001) ₍₀₎	Ø1.97 ^(+0.0015) ₍₀₎	Ø2.76 ^(+0.030) _(+0.001)	Ø3.35 ^(+0.090) _(+0.001)
	D	1.26	1.57	2.48	2.95	3.43
	E	1.06 ^(+0.008)	1.31 ^(+0.079)	2.12 ^(+0.0078)	2.95 ^(+0.008)	3.56 ^(+0.008)
	F	3.94	4.72	5.91	7.87	-
	G	4.92	5.91	7.87	9.84	-
	H	-	-	-	11.81	-
	I	5.91	7.97	9.84	13.78	15.75
	J	Ø0.98	Ø1.57	Ø1.89	Ø2.36	Ø2.99
III	K	Ø0.83 *(Ø0.79)	Ø1.40 *(Ø1.26)	Ø1.61 *(Ø1.48)	Ø2.07 *(1.91)	Ø2.68 *(Ø2.28)
	A	7.91	10.43	13.50	18.11	21.14
	B	1.26	1.97	2.76	3.94	5.51
	C	0.35	0.83	1.02	1.69	1.69
	D	0.75	0.83	0.98	1.57	1.57

*Lever, US version

3.7.1 Direct adapter PME120-AI/-AN



M00576

Fig. 11

- 1 $M_A = 40 \text{ Nm}$
- 2 M10; 15 deep

- 3 Centered, undrilled

	Dimensions in mm	Dimensions in inches
A	$\varnothing 102$	$\varnothing 4.02$
B	5.5	0.22
C	2.5	0.10
D	48	1.89
E	120	5.04
F	$\varnothing 70$ (-0.030) (-0.076)	$\varnothing 2.76$ (-0.030) (-0.076)

4 Electrical connections



IMPORTANT (NOTE)

Refer to the operating instructions of the power electronic unit for the electrical connection diagrams.

5 Operation



WARNING - Risk of crushing!

Risk of injuries due to crushing between the lever and the stops or between the lever and the coupling rod, respectively!

- Do not reach into the danger zone!
- Exclusively start the actuator with the lever cover installed!

5.1 Automatic mode / Handwheel mode



WARNING - Live components!

Risk of death or serious injuries due to electricity and unexpected machine movements!

In automatic mode the motor is always under power, even at standstill!

The motor triggered by the power electronic unit controls the drive shaft via the oil-lubricated gearing. This transmits the rated torque to the valve via a lever with ball-and-socket joints and a coupling rod. The position sensor detects backlash-free the current position of the drive shaft.

Adjustable limit stops prevent overloading of the valve in the event of an operating error. The motor brake locks the actuator in the current position if the power supply is cut off.

5.2 Manual operation

Handwheel mode allows you to move the actuator manually when the electrical power is off.



CAUTION - Risk of injury!

When the hand wheel lock is pressed, restoring force from the valve may be present in the hand wheel. To prevent the handwheel from turning unintentionally, hold the handwheel with one hand.

1. Press the handwheel lock.



IMPORTANT (NOTE)

When the handwheel is turned to the right, this causes a left turn of the driver lever (rotating direction with view to the handwheel shaft or drive shaft).

2. Turn the handwheel to move the driver lever to the desired position.
3. Release the lock.

5.2.1 Handwheel operation in combination with positioning time-out function

The positioning time-out function of the Contrac power electronic unit monitors the actuator's behavior. It controls whether the travel commands trigger the corresponding processes.

When the supply voltage is switched off, the positioning time-out function is disabled and the handwheel operation is no longer monitored. When the voltage supply is on and the actuator is moved via the handwheel, the time-out monitoring function recognizes this state as "Travel without travel command". The corresponding signal is output.

There are several options to reset this positioning loop error:

- Reset via the commissioning and service field (ISF)
- Reset via the graphic user interface
- Change of the setpoint signal by at least 3 % for more than 1 s
- Wiring of digital inputs DI 2 or DI 3 (not with step controller)

If the "time-out monitoring" function is disabled, the actuator continues to be monitored for "wrong direction", and the corresponding message is generated in case of an error.

6 Maintenance



WARNING - Live components!

Risk of death or serious injuries due to electricity and unexpected machine movements!
In automatic mode the motor is always under power, even at standstill!



WARNING - General risks!

All maintenance activities may only be performed by properly qualified persons.

Contrac actuators feature a robust construction. As a result, they are highly reliable and require minimal maintenance. The maintenance intervals depend upon the effective load and are therefore not specified here.

The built-in microprocessor evaluates the actual load factors (e.g. torques, forces, temperatures, etc.) and derives the remaining operating time until the next routine maintenance is required.

Use the configuration program to view this information.

6.1 Inspection and overhaul

- Only use genuine spare parts such as ball bearings, gaskets and oil to overhaul the actuators.
- Maintenance activities should be performed once the remaining calculated time has expired.
- Inspection or maintenance is due after the time specified in the table.

Overhaul intervals:

Interval	Measures
1 x per year	Visual check of the gaskets for leaks. Remove and change if leaks are present.
Max. every 10 years, preferably once the calculated time before the next maintenance operation has expired	Change oil, roller bearings and gaskets on motor and gearing. Check gear wheels for wear; replace if necessary.

Make sure that no chippings or other material get into the gearbox during the maintenance work.

Don't drive the actuator during the oil check.

6.2 Removing the motor and adjusting the brakes

**WARNING - risk of injury!**

The actuator position may be changed accidentally by the repelling power of the valve when the motor is removed or the brake is released.
Make sure that process forces are not exerted on the lever.

Since the brake is permanently released in AUT mode it is not exposed to mechanical wear. Any readjustment is not necessary. Use the test function of the configuration software to check the brake.

6.3 Oil change

**NOTIFICATION!**

Do not mix oils for different temperature ranges. Dispose of old oil according to local regulations. Make sure that the oil does not enter the water cycle.

Proceed as follows to drain or change the oil:

1. Provide a container capable of holding the expected oil quantity acc. to chapter 6.4 "Filling capacity".
2. Open and remove the vent valve, see Fig. 5.
3. Unscrew the lowermost drain plug and drain the oil.
4. Make sure all the oil is out of the actuator.
5. Screw in and tighten the oil drain plug.
6. Fill the container with the proper oil quantity and tighten the vent valve.

6.3.1 PME oil types

Actuator type	Ambient temperature		Type of oil	Motor mounting (grease)
	with heat	without heat		
PME 120 AI (with integrated electronic unit)	-25 ... 55 °C (-15 ... 130 °F)	-10 ... 55 °C (15 ... 130 °F)	Mobil SHC 629	ESSO Beacon 325
PME 120 AN (for separate electronic unit)	-25 ... 55 °C (-15 ... 130 °F)	-10 ... 65 °C (15 ... 150 °F)		
	–	-1 ... 85 °C (30 ... 185 °F)	Mobil SHC 632	

6.3.2 RHD oil types

Ambient temperature	Oil types	
	Default oil filled with delivery	Alternative oil
-10 ... 65 °C (15 ... 150 °F)	Castrol Alpha BMB 220 (L-CKC meets ISO TR 3498)	Aral Degol BMB 220 ESSO Spartan EP 220 BP Energol GR-XP 220 Shell Omala 220 Mobilgear 630
-30 ... 50 °C (-20 ... 130 °F)	Mobil SHC 629	–
-1 ... 85 °C (30 ... 185 °F)	Mobil SHC 632	–

6.4 Filling capacity

PME120-AI/-AN						
Installation position:	IMB 3	IMB 6	IMB 7	IMB 8	IMV 5	IMV 6
Minimum oil quantity, approx.:	2.2 l (0.58 gal. ¹⁾)	2.5 l (0.66 gal. ¹⁾)	2.2 l (0.58 gal. ¹⁾)	2.2 l (0.58 gal. ¹⁾)	2.5 l (0.66 gal. ¹⁾)	2.5 l (0.66 gal. ¹⁾)
Min. oil level [mm] under inspection plug:	45 mm (1.77 inch)	2 mm (0.08 inch)	42 mm (1.65 inch)	20 mm (0.79 inch)	23 mm (0.91 inch)	17 mm (0.67 inch)

RHD250					
Installation position:	IMB 3	IMB 6	IMB 7	IMV 5	IMV 6 / IMB 8
Minimum oil quantity, approx.:	4.7 l (1.24 gal. ¹⁾)	4.7 l (1.24 gal. ¹⁾)	4.7 l (1.24 gal. ¹⁾)	4.7 l (1.24 gal. ¹⁾)	4.7 l (1.24 gal. ¹⁾)
Min. oil level [mm] under inspection plug:	40 mm (1.57 inch)	12 mm (0.47 inch)	15 mm (0.59 inch)	35 mm (1.38 inch)	Lower edge of upper oil plug

RHD500 ... RHD800					
Installation position:	IMB 3	IMB 6	IMB 7	IMV 5	IMV 6 / IMB 8
Minimum oil quantity, approx.:	10 l (2.65 gal. ¹⁾)	11.5 l (3.04 gal. ¹⁾)	10 l (2.65 gal. ¹⁾)	10 l (2.65 gal. ¹⁾)	10 l (2.65 gal. ¹⁾)
Min. oil level [mm] under inspection plug:	57 mm (2.24 inch)	Lower edge of upper oil plug	15 mm (0.59 inch)	37 mm (1.46 inch)	Lower edge of upper oil plug

RHD1250 ... 2500						
Installation position:	IMB 3	IMB 6	IMB 7	IMB 8	IMV 5	IMV 6
Minimum oil quantity, approx.:	29 l (7.67 gal. ¹⁾)	32 l (8.47 gal. ¹⁾)	24 l (6.35 gal. ¹⁾)	24 l (6.35 gal. ¹⁾)	33 l (8.72 gal. ¹⁾)	26.5 l (7.01 gal. ¹⁾)
Min. oil level [mm] under inspection plug:	75 mm (2.95 inch)	90 mm (3.54 inch)	200 mm (7.87 inch)	Lower edge of upper oil plug. Delivered with 33 l (8.72 gal. ¹⁾).	34 mm (1.34 inch)	35 mm (1.38 inch)

RHD4000						
Installation position:	IMB 3	IMB 6	IMB 7	IMB 8	IMV 5	IMV 6
Minimum oil quantity, approx.:	29 l (7.67 gal. ¹⁾)	32 l (8.47 gal. ¹⁾)	24.5 l (6.48 gal. ¹⁾)	24 l (6.35 gal. ¹⁾)	34 l (8.98 gal. ¹⁾)	26.5 l (7.01 gal. ¹⁾)
Min. oil level [mm] under inspection plug:	75 mm (2.95 inch)	90 mm (3.54 inch)	200 mm (7.87 inch)	Lower edge of upper oil plug. Delivered with 33 l (8.72 gal. ¹⁾).	34 mm (1.34 inch)	35 mm (1.38 inch)

1) US liquid gallon

7 Trouble shooting

This chapter only covers hardware-related errors. For additional troubleshooting information, refer to the online help for the operator interface.

Error	Possible cause	Troubleshooting
Valve cannot be moved by actuator.	Failure either on the actuator or the valve (e.g., stuffing box tightened too much).	Disconnect actuator from valve. If the actuator moves, the valve is the possible cause. If the actuator does not move, the actuator is the possible cause.
The actuator does not respond.	Incorrect electronic unit or incorrect data record.	Compare information on name plates for actuator and electronic unit.
	Incorrectly configured electronic unit.	Check / change. Change the settings via the parameterization software.
	No communication with the control system.	Check wiring.
	Incorrect wiring between actuator and electronic unit.	Check wiring.
	Defective motor / brake.	Check the winding resistance of the motor and brake. Check the brake lock.
	Binary inputs on the electronic unit are not wired.	Make connection.
Brake does not release (no mechanical "click").	Check the brake air gap (approx. 0.25 mm (0.010 inch)) and electrical connection to the brake. Check winding resistance of the brake coil.	
Actuator does not run in AUT mode, although "AUT" is selected in the user interface.	Digital input 1 (DI 1) not wired.	Make connection. Check the software settings for the digital inputs.
Actuator does not respond to control (LED 5 flashing at 1 Hz) (software version 2.00 and higher).	Actuator to manual mode (MAN) via ISF.	Switch actuator to automatic mode (AUT).
LEDs in the commissioning and service panel (ISF) are flashing synchronously.	Actuator is not adjusted properly.	Adjust actuator.
LEDs flash alternately.	Electronic unit / drive malfunction.	Drive the actuator beyond the adjusted end position, either manually or using the buttons on the ISF; (if necessary disconnect from valve before): Drive the actuator back into the operating range and connect it to the valve. Readjust the actuator for the operating range.
Malfunction when approaching the end position.	Actuator in limit range of positioning sensor.	

7.1 Electrical test values

The specified resistance values for the motor refer to measurements between the external conductors.

	EM24	MCS 071 BA	MCS 080 BA	MC 090 BA	MC 100 BA
Winding resistance ± 5% at 20 °C (68 °F)					
Motor	LA1 (bl.) - L2 (sw): 3.4 Ω L1 (bl.) - L3 (viol.): 3.4 Ω	45.6 Ω	21.6 Ω	19 Ω	7.6 Ω
Brake	19.5 Ω	2120 Ω	2120 Ω	1620 Ω	1290 Ω

8 Specifications

8.1 PME120

	PME120-AI (integrated electronic unit)	PME120-AN (separate electronic unit)
Operating mode	S9 – 100%; stallproof acc. to IEC 60034-1 / EN 60034-1	
Ingress protection	IP 66 acc. to IEC 60529 / EN 60529 NEMA 4X acc. to CAN/CSA22.2 No. 94	
Humidity	≤ 95 % average; condensation not permitted	
Ambient temperature	-10 ... 55 °C (15 ... 130 °F) -25 ... 55 °C (-15 ... 130 °F)	-10 ... 65 °C (15 ... 150 °F) -25 ... 55 °C (-15 ... 130 °F) -1 ... 85 °C (30 ... 185 °F)
Transport and storage temperature	-25 ... 70 °C (-15 ... 160 °F)	-40 ... 70 °C (-40 ... 160 °F)
Long-term storage temperature	-25 ... 40 °C (15 ... 105 °F)	-30 ... 40 °C (-25 ... 105 °F)
Installation position	any position; preferably IMB 3 acc. to IEC 60034-7 / EN 60034-7	
Coating	2-layer component epoxy (RAL 9005, black)	
Anti-condensation heater	-	Optional (separate power supply or power feed from Contrac electronic unit)
Power supply for motor and sensors	Only via special electronic unit (refer to the data sheet for the electronic unit)	
Cable between actuator and electronic unit	-	Select from 5 m (16 ft), 10 m (32 ft) or 20 m (65 ft) Max. 30 m (98 ft) for electronic unit EAN823 Max. 480 m (1575 ft) for electronic unit EAN822 (read the data sheet for the electronic unit)

	PME120-AN; PME120-AI
Rated torque	100 Nm (80 lbf-ft), adjustable to 0.5, 0.75 or 1x rated torque
Starting torque	1.2 x rated torque (break-away torque in end positions for short time 2 x rated torque)
Rated time for 90°, adjustable	20 ... 900 s
Operating speed, adjustable	4.5 ... 0.1°/s
Rated time for 90°, adjustable (temperature version -1 ... 85 °C)	45 ... 900 s
Operating speed, adjustable (temperature version -1 ... 85 °C)	2.0 ... 0.1°/s
Operating angle	Typically 90° (min. 35°; max. 270°), see manual for reduced angle with lever and limit stop
Weight (including lever)	PME120-AI: Approx. 36 kg (79 lb) PME120-AN: Approx. 32 kg (70 lb)
Associated electronic unit (data sheet)	PME120-AI: integrated electronic unit PME120-AN: For field installation: EAN823 ¹⁾ For rack installation: EAS822 ²⁾
Motor	EM24 24 V 3~ asynchronous motor for operation with electronic unit EAN823, EAI823 or EAS822
Sensors	Position and temperature sensor always available

1) Data Sheet EBN823;(10/68-8.26)

2) Data Sheet EBS822;(10/68-8.23)

8.2 RHD250 ... 4000

RHD250...4000	
Operating mode	S9 – 100%; stallproof acc. to IEC 60034-1 / EN 60034-1
Ingress protection	IP 66 acc. to IEC 60529 / EN 60529 NEMA 4X acc. to CAN/CSA22.2 No. 94
Humidity	≤ 95 % average; condensation not permitted
Ambient temperature	-10 ... 65 °C (15 ... 150 °F) -30 ... 50 °C (-20 ... 130 °F) -1 ... 85 °C (30 ... 185 °F) ¹⁾
Transport and storage temperature	-40 ... 70 °C (-40 ... 160 °F)
Long-term storage temperature	-30 ... 40 °C (-25 ... 105 °F)
Installation position	any position; preferably IMB 3 acc. to IEC 60034-7 / EN 60034-7
Coating	2-layer component epoxy (RAL 9005, black)
Anti-condensation heater	Motor winding: Directly from electronic unit Signal space: Separate heating resistor; separately supplied or power feed from Contrac electronic unit
Electrical connection	Plug with crimp snap-in contacts or screw terminals Connecting cable for electronic unit – actuator available as an option (see ordering information for electronic unit)
Power supply for motor and sensors	Only via special electronic unit (refer to the data sheet for the electronic unit)

1) 85 °C / 185 °F - design not available for all RHD variants

RHD250-10	
Rated torque	250 Nm (200 lbf-ft), adjustable to 0.5, 0.75 or 1x rated torque
Starting torque	1.2 x rated torque (break-away torque in end positions for short time 2 x rated torque)
Rated time for 90°; adjustable	10 ... 900 s
Operating speed, adjustable	9.0 ... 0.1 °/s
Operating angle	Typically 90° (min. 35°; max. 270°), see manual for reduced angle with lever and limit stop
Weight (including lever)	Approx. 45 kg (99 lb)
Associated electronic unit (data sheet)	For field installation: EBN853 ¹⁾ For rack installation: EBS852 ²⁾
Motor	MCS 71 BA
Sensors	Position and temperature sensor always available

1) Data Sheet EBN853: 10/68-8 27

2) Data Sheet EBS852: 10/68-8 24

	RHD500-10	RHD800-10
Rated torque	500 Nm (400 lbf-ft) (adjustable to 0.5 / 0.75 or 1x rated torque)	800 Nm (600 lbf-ft) (adjustable to 0.5 / 0.75 or 1x rated torque)
Starting torque	1.2 x rated torque (break-away torque in end positions for short time 2 x rated torque)	
Rated time for 90°; adjustable	10 ... 900 s	10 ... 900 s
Operating speed, adjustable	9.0 ... 0.1 °/s	9.0 ... 0.1 °/s
Operating angle	Typically 90° (min. 35°, max. 270°). See instructions for limited operating angle if actuator is equipped with lever and limit stop.	
Weight (including lever)	Approx. 94 kg (207 lb)	Approx. 97 kg (214 lb)
Related electronics	For field installation: Model EBN853 ¹⁾ For rack installation: Model EBS852 ²⁾	
Motor type	MCS 71 BA	MCS 80 BA
Sensors	Position and temperature sensor always available	

1) Data Sheet EBN853: 10/68-8 27

2) Data Sheet EBS852: 10/68-8 24

	RHD1250-12	RHD2500-10	RHD2500-25
Rated torque	1250 Nm (1000 lbf-ft) (adjustable to 0.5 / 0.75 or 1x rated torque)	2500 Nm (1900 lbf-ft) (adjustable to 0.5 / 0.75 or 1x rated torque)	
Starting torque	1.2 x rated torque (break-away torque in end positions for short time 2 x rated torque)		
Rated time for 90°; adjustable	12 ... 900 s	10 ... 900 s	25 ... 900 s
Operating speed, adjustable	7.5 ... 0.1 °/s	9.0 ... 0.1 °/s	3.6 ... 0.1 °/s
Operating angle	Typically 90° (min. 35°, max. 270°). See instructions for limited operating angle if actuator is equipped with lever and limit stop.		
Weight (including lever)	Approx. 227 kg (500 lb)	Approx. 232 kg (511 lb)	Approx. 227 kg (500 lb)
Related electronics For field installation: For rack installation:	Model EBN853 ¹⁾ Model EBS852 ²⁾	Model EBN861 ³⁾ Model EBS862 ⁴⁾	Model EBN853 ¹⁾ Model EBS852 ²⁾
Motor type	MCS 80 BA	MC 90 BA	MCS 80 BA
Sensors	Position and temperature sensor always available		

- 1) Data Sheet EBN853: 10/68-8.27
- 2) Data Sheet EBS852: 10/68-8.24
- 3) Data Sheet EBN861: 10/68-8.22
- 4) Data Sheet EBS862: 10/68-8.25

	RHD4000-10	RHD4000-40
Rated torque	4000 Nm (3000 lbf-ft) (adjustable to 0.5 / 0.75 or 1x rated torque)	
Starting torque	1.2 x rated torque (break-away torque in end positions for short time 2 x rated torque)	
Rated time for 90°; adjustable	10 ... 900 s	40 ... 900 s
Operating speed, adjustable	9.0 ... 0.1 °/s	2.25 ... 0.1 °/s
Operating angle	Typically 90° (min. 35°, max. 270°). See instructions for limited operating angle if actuator is equipped with lever and limit stop.	
Weight (including lever)	Approx. 290 kg (639 lb)	Approx. 283 kg (624 lb)
Related electronics For field installation: For rack installation:	Model EBN861 ¹⁾ Model EBS862 ²⁾	Model EBN853 ³⁾ Model EBS852 ⁴⁾
Motor type	MC 100 BA	MC 90 BA
Sensors	Position and temperature sensor always available	


- 1) Data Sheet EBN861: 10/68-8.22
- 2) Data Sheet EBS862: 10/68-8.25
- 3) Data Sheet EBN853: 10/68-8.27
- 4) Data Sheet EBS852: 10/68-8.24

9 Appendix

9.1 Other applicable documents

- Data Sheet PME120-AI / AN (10/68-1.51)
- Data Sheet RHD250 (10/68-1.53)
- Data Sheet RHD500...RHD800 (10/68-1.55)
- Data Sheet RHD1250...RHD2500 (10/68-1.57)
- Data Sheet RHD4000 (10/68-1.59)
- Data Sheet EAS822 (10/68-8.23)
- Data Sheet EAN823 (10/68-8.26)
- Data Sheet EBS852 (10/68-8.24)
- Data Sheet EBN853 (10/68-8.27)
- Data Sheet EBN861 (10/68-8.22)
- Data Sheet EBS862 (10/68-8.25)
- Operating Instructions for Power Electronic Units EAS822, EBS852, EBS862 (Cabinet Mounting) (OI/EAS822/EBS852/EBS862)
- Operating Instructions for Power Electronic Units PME120-AI, LME620-AI (Integrated) and EAN823, EBN853, EBN861 (Field-Mounting) (OI/PME/LME/EAN823/EBN853/EBN861)
- Configuration and Parameterization Instructions (45/68-10)
- Technical Information (30/68-104)

9.2 Approvals and certifications

CE mark		<p>The version of the meter in your possession meets the requirements of the following European directives:</p> <ul style="list-style-type: none"> - EMC directive 2004/108/EC - Machinery directive 2006/42/EC
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IMPORTANT (NOTE)

All documentation, declarations of conformity, and certificates are available in ABB's download area.

www.abb.com/instrumentation



IMPORTANT (NOTE)

The original EC declaration of conformity is delivered with the device.



EG-KONFORMITÄTSERKLÄRUNG

EC DECLARATION OF CONFORMITY

Hersteller / Manufacturer:	ABB Automation Products GmbH Minden
Anschrift / Address:	Schillerstraße 72 D-32425 Minden
Produktbezeichnung: Product name:	Elektrischer Regelantrieb CONTRAC Electrical Actuator CONTRAC

Das folgende Produkt / *The following product*

Typ / Type:

Fabriknummer / Serial number:

Herstelldatum / Date of manufacture:

stimmt mit den Vorschriften folgender Europäischer Richtlinien überein:
meets the requirements of the following European directives:

2006/42/EG 2006/42/EC	Richtlinie Maschinen <i>Directive on Machinery</i>
2004/108/EG 2004/108/EC	EMV-Richtlinie <i>Electromagnetic Compatibility Directive</i>

Die Übereinstimmung mit den Vorschriften dieser Richtlinien wird nachgewiesen durch die vollständige Einhaltung folgender Normen:

Conformity with the requirements of these Directives is proven by complete adherence to the following standards:

EN 12100-1 / EN 12100-2 / EN 60204-1
EN 61 000-6-2 / EN 61 000-6-4 / EN 50 178

Die bezeichneten Produkte sind ausschließlich zum Einbau in eine Maschine bestimmt. Die Inbetriebnahme darf erst vorgenommen werden, nachdem die Konformität des Endproduktes mit den oben genannten Richtlinien festgestellt wurde. Die Sicherheitshinweise der mitgelieferten Dokumentation sind zu beachten.

The designated products are determined exclusively for installation on a machine. The introduction may only be carried out after the conformity of the final product with the above-mentioned guidelines was found. The safety remarks of the supplied documentation have to be observed.

Dokumentationsbevollmächtigter: Dr. Wolfgang Scholz
Authorised person for documentation:

Anschrift / Address: Siehe Anschrift des Herstellers
Refer to address of manufacturer

14.06.2011

Datum
Date

ppa. 
Axel Bredemeyer
Standortleiter Minden
Head of Location Minden

i.v. 

Dr. Wolfgang Scholz
Leiter R&D
Head of R&D

Statement on the contamination of devices and components

Repair and / or maintenance work will only be performed on devices and components if a statement form has been completed and submitted.

Otherwise, the device / component returned may be rejected. This statement form may only be completed and signed by authorized specialist personnel employed by the operator.

Customer details:

Company: _____

Address: _____

Contact person: _____ Telephone: _____

Fax: _____ E-mail: _____

Device details:

Type: _____ Serial no.: _____

Reason for the return/description of the defect: _____

Was this device used in conjunction with substances which pose a threat or risk to health?

Yes No

If yes, which type of contamination (please place an X next to the applicable items)?

Biological Corrosive / irritating Combustible (highly / extremely combustible)

Toxic Explosive Other toxic substances

Radioactive

Which substances have come into contact with the device?

- 1. _____
- 2. _____
- 3. _____

We hereby state that the devices / components shipped have been cleaned and are free from any dangerous or poisonous substances.

Town/city, date

Signature and company stamp

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The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.

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