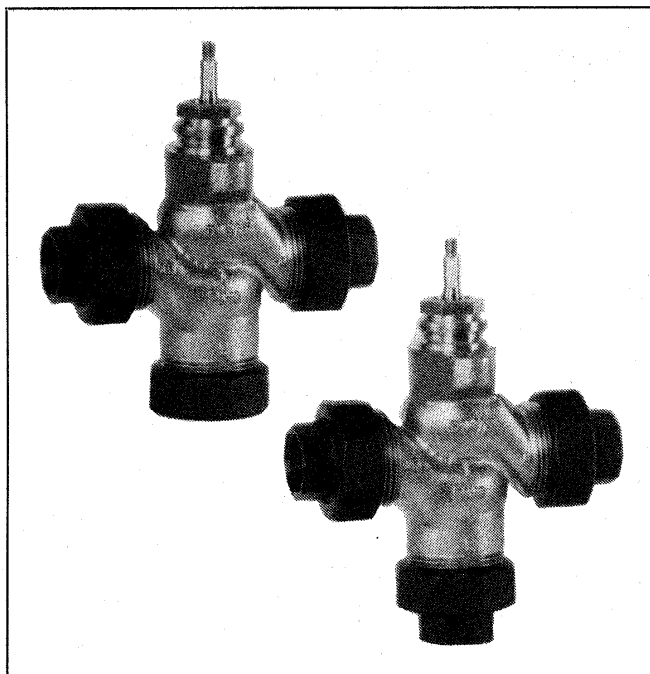


Durchgangs- / Dreiwegeventile

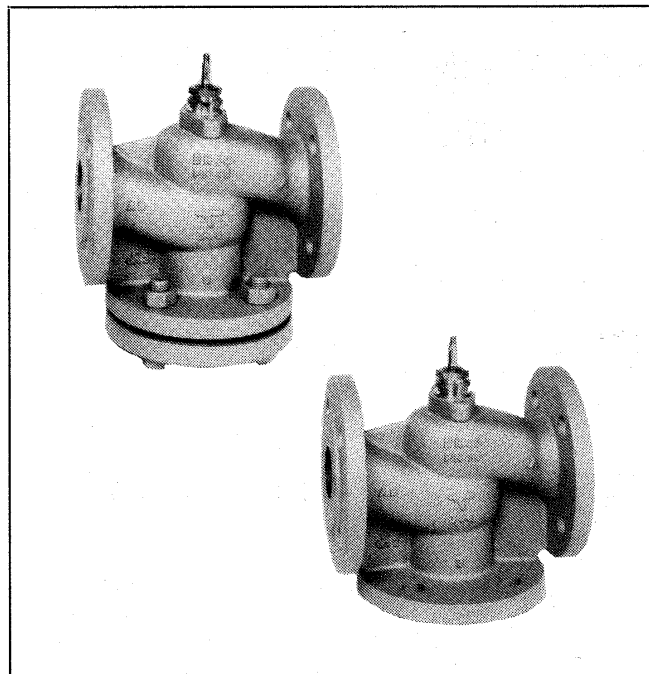
Two-way / Three-way Valves

Vannes à 2 / 3 voies



BR 216 RGA

BR 316 RGA



BR 206 / 216 GG

BR 306 / 316 GG

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1 General information

1.1 Right of modification and copyright

Regulations, guidelines, standards etc. referred to in the following pages reflect the latest information available at the time of preparing the instruction and are not updated by an amendment service. They must be applied by the operator on his own responsibility in their latest valid version.

We reserve the right to implement improvements and technical modifications to all the data, information and diagrams in this instruction at any time. No claims will be accepted for modification or improvement of linear actuators / valves already delivered.

The copyright in this operating instructions and all the rights accruing in the event of a patent being granted or a utility model being registered remain vested in the manufacturer!

1.2 Important information!

For the sake of clarity this operating instructions do not include all the detailed information about every design- and equipment variant of the linear actuators / valves, nor can it cover every possible case of installation, operation or maintenance.

If you require any further information, or if specific problems occur which are not dealt with in sufficient detail in the instructions, you can request the information you need directly from the supplier / manufacturer.

Furthermore, we emphasize that the contents of this operating instructions do not constitute part of a previously existing agreement, undertaking or legal relationship, nor is it intended to modify the latter. All the obligations of the supplier / manufacturer derive from the contract of sale, which also contains the complete and only valid warranty terms.

1.3 Validity of this operating instructions

The directions, guidelines and informations contained in this operating instructions apply to the Federal Republic of Germany. Operators outside the FRG must regard the rules given as a practical basis for safe use and must judge their implementation according to national regulations on their own responsibility.

1.4 Safety instructions and regulations

- The operator is responsible for observing the applicable occupational safety and accident prevention regulations and DIN VDE specifications when installing, operating and maintaining the linear actuators / valves!
- Persons who are entrusted with implementing any of the measures described in the following pages must have first read and understood this operating instructions!
- Installation, operating and maintenance staff must employ safe working methods for all measures taken and must refrain from working in any way which causes a risk of injury or damage of any kind to the linear actuators / valves or other property.
- The linear actuators must be reliably and safe disconnected from the power supply by qualified personnel and according to DIN VDE **before** commencing maintenance and / or repair work!



Warning

When electrical equipment is operated certain (uninsulated) parts necessarily carry dangerous voltage.

Therefore failure to observe the warning instructions may cause death, serious or fatal injury or damage to property!

Only qualified personnel (see 1.4.1) may work on or near to these linear actuators.

These persons must be thoroughly familiar with all the warning, method of installation and maintenance measures described in this operating instructions.

For trouble-free and safe operation of these linear actuators / valves it is essential to ensure proper transportation, storage, installation and assembly as well as careful operation and maintenance, taking the appropriate safety precautions.

- The instructions above and the following warnings (e.g. on page 22) do not take into account any additional regional, local or in-plant safety regulations. The operator is therefore responsible for supplementing them where necessary!

1.4.1 Qualified personnel

For the purpose of this operating instructions and the warning instructions qualified personnel means persons who are familiar with the installation, assembly, commissioning, operation and maintenance of the linear actuators / valves and who have the appropriate qualifications for the job they perform. The necessary or prescribed qualifications include:

- Training or instruction and the authorisation to switch electrical circuits and equipment / systems on and off, in accordance with EN 60204 / (DIN VDE 0100 / 0113) and the standards of safety practice.
- Training or instruction in the care and use of appropriate safety and occupational protection equipment in accordance with the standards of safety technology.
- Training in first aid.

1.5 Warranty

The scope and terms of a warranty are stated in the manufacturer's „Standard Terms of Delivery“. The latest issue valid at the time of delivery is authoritative.

Amongst other things, no liability is accepted for damage to the linear actuators / valves which results from one or more than one of the following causes:

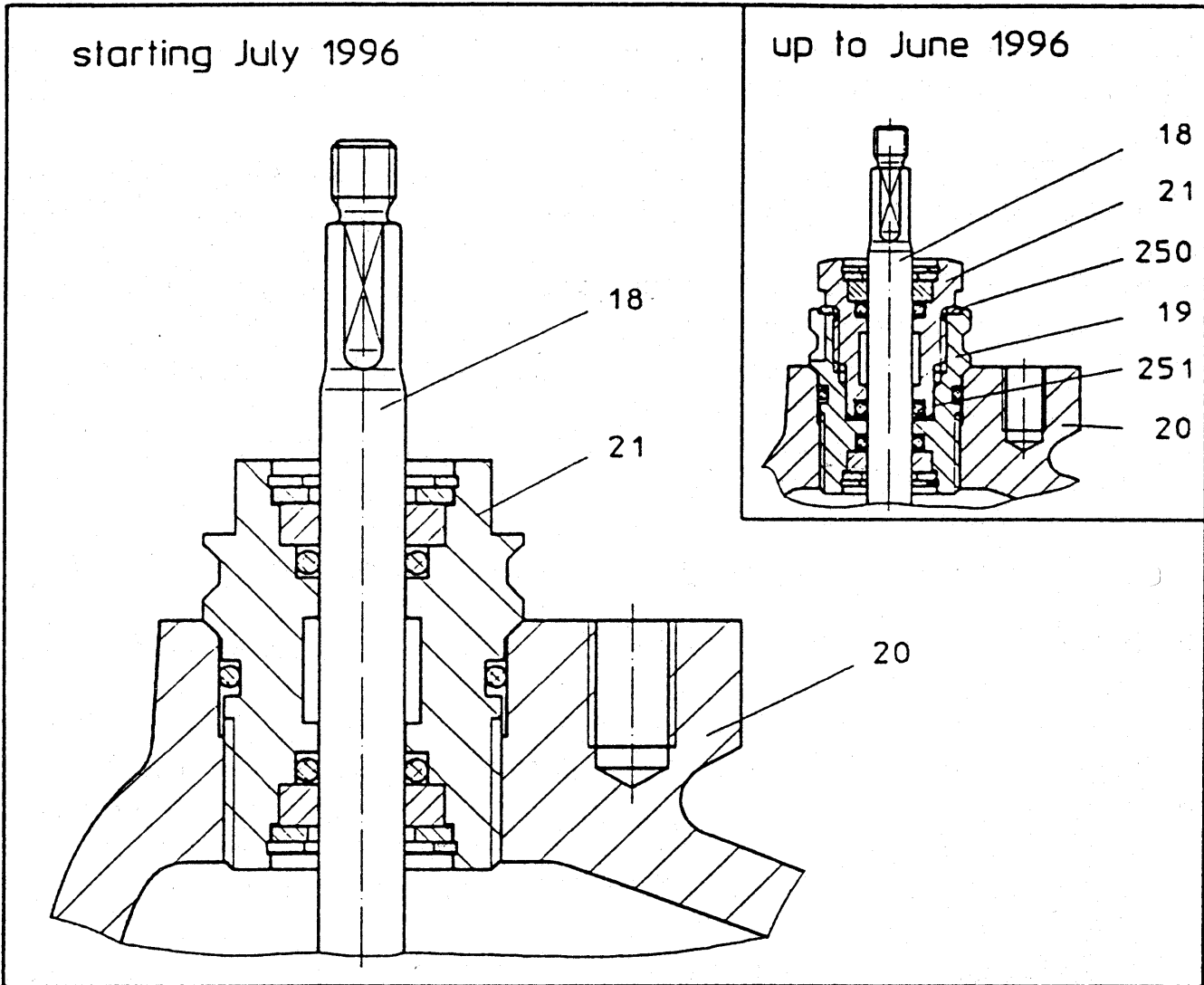
- **Ignorance of this operating instructions or failure to comply with the instructions it contains!**
- Inadequately qualified instruction, operating or maintenance personnel.
- Natural wear.
- Incorrect or negligent treatment of the linear actuators / valves.
- Chemical, electrochemical and / or electrical influences.

Furthermore, the manufacturer gives no warranty and accepts no liability in the following cases:

- **Failure to observe the accident prevention, DIN VDE and / or other safety regulations.**
- Modifications or conversions to the linear actuators / valves which are carried out improperly or without the manufacturer's prior approval.
- Defective installation, electrical connection errors, incorrect commissioning and non-permissible operation.
- Unsuitable or improper use, use for other than the intended purpose or in other than the agreed operating conditions.

If the above limitations are infringed the operator alone bears the risk in the event of bodily injury and / or damage to property!

1.6 Sectional drawing



1.7 Parts list

- 18 - valve stem
- 20 - valve body
- 21 - stem sealing assembled completely

1.8 Stem sealing attachment

RGA - valves	GG - valves	valve stroke	linear actuators**
<input type="checkbox"/> DN G $\frac{1}{2}$ - 2	<input type="checkbox"/> DN 15 - 50	14 mm	M 60 (Y) / M 80 (Y)
	<input type="checkbox"/> DN 65	20 mm	M 80 (Y)
	<input type="checkbox"/> DN 65 - 100	30 mm	M 200 (Y) / M 450 (Y)

** and linear actuators with the same construction dimensions!

2 Technical data

Series	BR 206 GG	BR 216 RGA BR 216 GG	BR 306 GG	BR 316 RGA BR 316 GG
	Pressure rating	PN 6	PN 16	PN 6
Application range	as two-way valve in heating-, ventilating- and air conditioning plants		as mixing or reversing valve in heating-, ventilating- and air conditioning plants	
Sealing	O-rings of EPDM			
Operating temperature	0.....+130°C			
Media	Chilled water, hot water with antifreeze and anticorrosive compounds (ca. 30%), glycol, ethyl alcohol glycol, propylene dichloride alcohol, mono ethyl alcohol, ethyl, methyl alcohol, glycerine, antifrogen® N+L			
Not for media based on mineral oil basis!				
Sealing	O-rings of Viton			
Operating temperature	0.....+130°C			
Media	For media based on mineral oil basis.			

3 Disassembly / Installation



Warning

To ensure safe operation of the linear actuators / valves they must be properly installed and commissioned by qualified personnel observing the warning information contained in this operating instructions.

In particular the general installation and safety rules for heating-, ventilation-, air conditioning- and pipeline installation must be observed, as must correct use of tools, welding equipment and personal protection or other safety equipment.

Failure to observe above instructions may cause death, serious or fatal injury or major damage to property!

3.1 Points to observe **before** assembly and installation in the pipeline!

- **Store the linear actuators and / or complete valves in a dry room until they are installed!**
- Transportation and storage temperature: -20 to +65°C.
- Protect linear actuators / valves against external forces (impact, vibrations etc.).
- At the place of installation: allow sufficient space for removing the cover (200).
- Do not remove the protective caps from the valve flanges / sleeves until immediately before installation!

Valve installation:

- Clean the pipelines thoroughly (flush through) before fitting the valves. Dirt / foreign bodies, welding residues, rust, installation waste etc. may cause faults and possible valve damage!
- Fit a strainer / filter upstream of the valve.
- **Important:** A straight length of pipe or steadying zone (length = approx. 10 x DN) upstream and downstream of the valve improves the control response.

- Mechanical loads (forces and moments) acting on the valve body, e.g. caused by pipeline elongation at operating temperature, are not permissible. **Fit compensators!**
- Connect pipelines free of tension; there must be no angular, central or longitudinal offset in relation to the valve connections!
- Only use accurately fitting seals. Fit flange gaskets with inside diameter \geq DN centrically!
- When installation of linear actuators with valves is completed cover them to protect against moisture and dirt until commissioning!
- Upstream and downstream of the control, valve manual shut-off valves must be provided facilitating maintenance and repair work on the control valve without draining the plant.

Installation position:

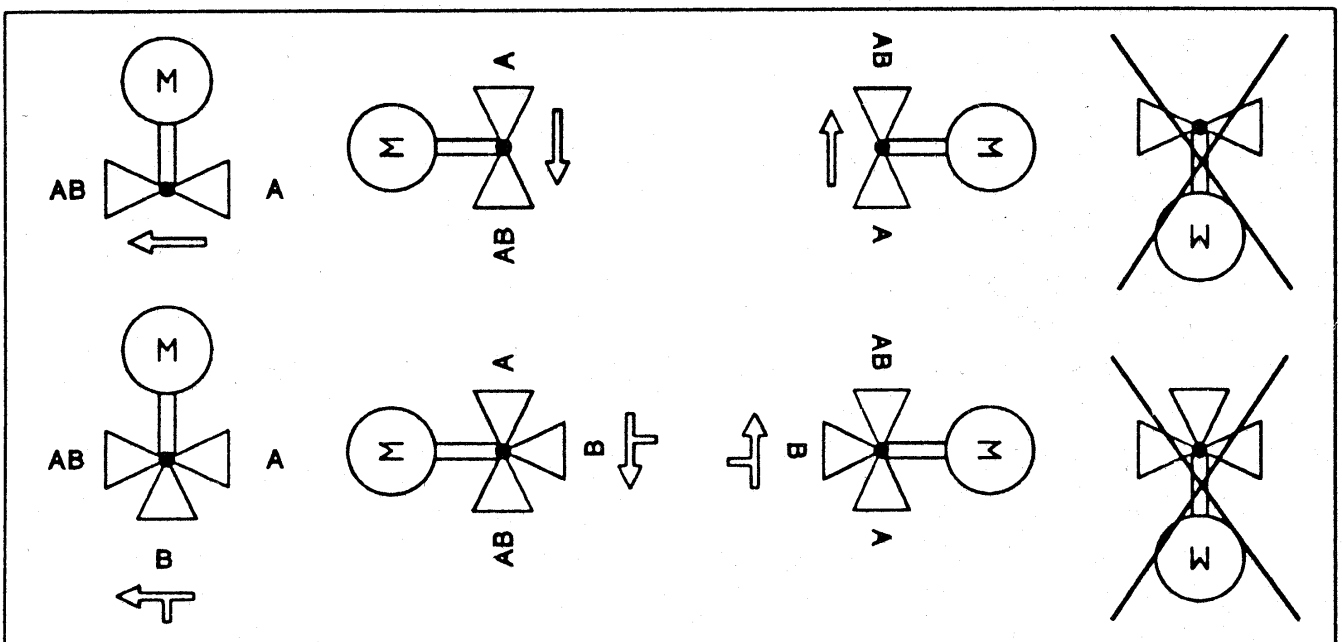
Linear actuators are **not** allowed to be arranged suspended (Fig. 3a).

Direction of flow:

Always observe the flow direction arrow on the valve body!
Reversed direction of flow impairs the control response!

Fig. 3a:

Installation position of linear actuators and valves.



3.2 Stem sealing exchange



Warning

Observe the following before commencing all work:

- Disconnect the linear actuator from the power supply!
- Work properly and safely in accordance with DIN VDE regulations as well as the warnings and directions contained in this operating manual.
- Shut off the pipeline on both sides of the valve (valve off the inlet and outlet in the line section).
- Depressurise the line section.
- Allow the valve to cool down to approximately room temperature.
- Find out what the pipe contains by consulting the safety data sheet (EU Directive 91 / 155 EEC) and empty the line section in the case of all dangerous media (Chemicals Act) and / or media endangering ground water (Water Resources Act). Use the personal protective equipment stipulated in the safety data sheet.
- Wipe away leakages, e.g. on the stem, immediately and / or collect larger quantities or medium residue in suitable containers.
- Always dispose of medium residue properly in accordance with the Waste Act. Never allow leakages / medium residue to seep into the sewerage system!

Disassembly of the linear actuator according to the corresponding operating instructions.

The stem sealing must be dismantled now as follows

- Fig. 3b: (starting July 1996)

Screw out stem sealing (21) with fork wrench size 24 / 30 and pull off valve stem (18).

Fig. 3c: (up to June 1996)

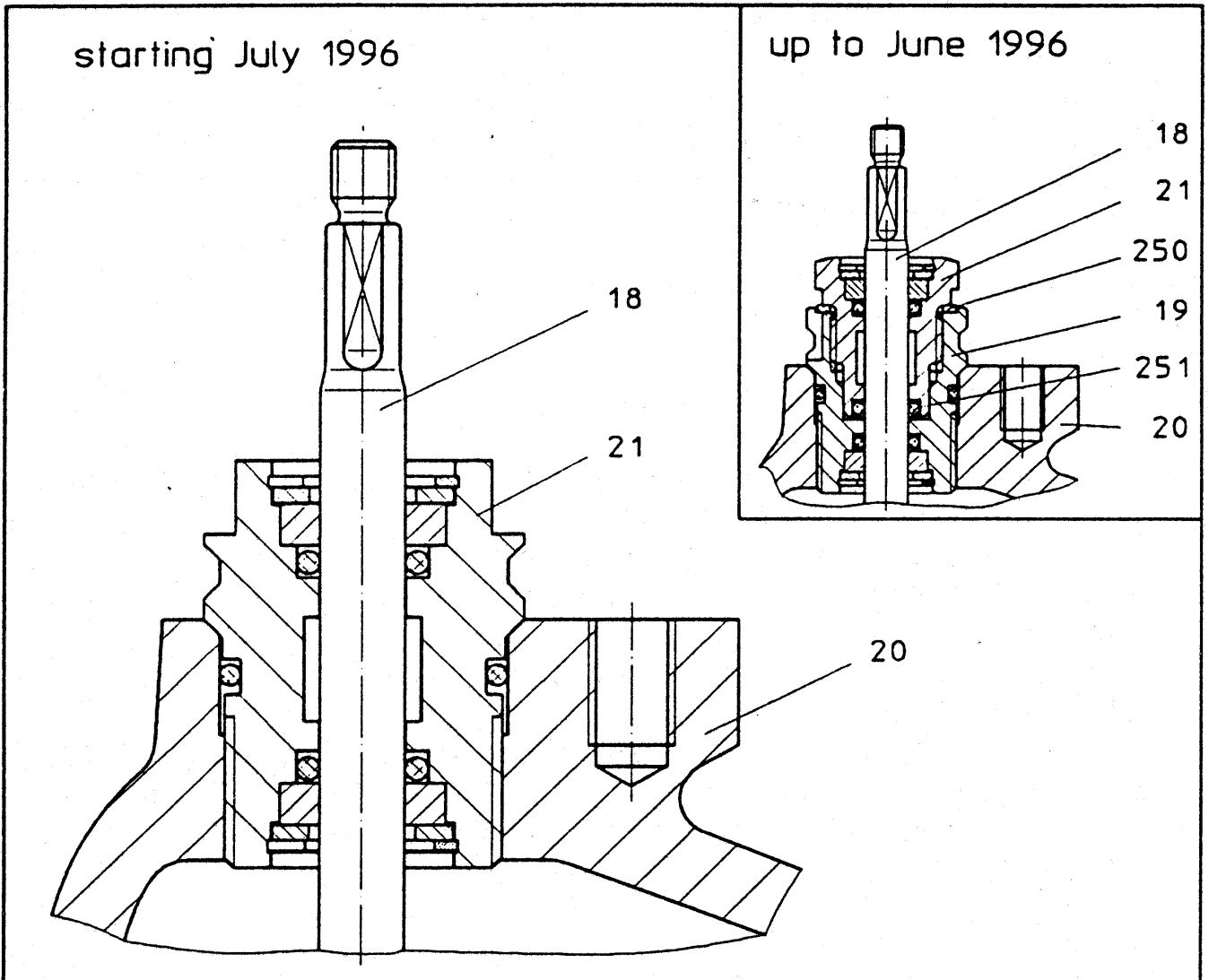
Screw out valve neck (19) and pull off valve stem (18).

- Check valve stem (18) for desposits and damage; if possible, remove them by means of a fine polishing cloth, apart from that dismount complete valve and send to the supplier / manufacturer for repair.
- If the valve stem (18) is in order, proceed with work as follows:
 - Clean valve stem (18).
 - Carefully attach new stem sealing (21) -lubricated at the factory- on the valve stem (18) and screw on tightly.

- Subsequently according to the linear actuator operating instructions:
 - Fit the linear actuator onto the valve,
 - Produce electric connection according to circuit diagram,
 - Start linear actuator / valve.

Fig 3b:
Exchange of stem sealing

Fig 3c:
Exchange of stem sealing



4 Commissioning

Attention: Before commissioning a new system, after conversion work and repairs etc., the following checks must be carried out:

- Proper completion of all installation / assembly work must be guaranteed!
- Switching can take place without risk to persons, equipment or the system!
- The actuator / actuator cover must be closed and secured!
- System (pipeline) filled, bled and checked for leaks!
- The valve stem seal and pipeline connections checked for leaks!
- The linear actuator is in automatic mode, described in the corresponding operating instructions.
- Check that the motor switches off in the end positions (limit switches)!
- Check the output signal of the respective controller and the linear actuator's direction of actuation. If necessary correct!

Routine operational monitoring of the linear actuators / valves is not necessary.

5 Care and maintenance

The linear actuators / valves only require minimal maintenance. Routine or periodic maintenance is not necessary!

The linear actuators / valves should be wiped clean with a **dry** rag at regular intervals depending on the operating conditions.

When cleaning (the system):

- Do not use a water- / steam jet for electric appliances.
Risk of short circuit!
- Do not use aggressive or highly flammable solvents or cleaning agents or ones which are harmful to health!
- If the stem sealing is not tight practise the exchange as described on page 24 / 25.