



Actuator

1080292-1080293

USER MANUAL

Ball Valve with actuator

2- and 3-ways ball valve with electrical actuator in dimension

DN10 / DN15 / DN20 / DN25 / DN32 / DN40 / DN50

User manuel



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1. Copyrights

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Knowledge of the instructions contained in this operation manual is indispensable for preventing failure and ensuring faultless operation of the EO510IND. Therefore, it is essential, that the person in charge of operating the equipment is familiar with the present documentation

2. Introduction to operation manual

This operation manual is intended to facilitate familiarization with the actuator and utilization of the same for the intended purpose.

This operation manual contains important information for safe, proper and economical operation of the actuator. Compliance with these instructions will contribute to

- preventing danger
- reducing repair costs and equipment failure, and
- increasing the liability and service life of the actuator

This operation manual supplements the instructions provided by existing accident prevention and environmental protection regulations. It must be available at the place of utilization of the equipment at any time and must be read by each person intending to use the actuator. This means

- operation, including
- correction measures in case of faulty operation and
- maintenance

In addition to the operation manual and the compulsory accident prevention regulations applicable at the place of utilization of the equipment, the generally subject specific technical rules must be taken into account.

3. Warranty and liability

Warranty and liability claims in the context of damage to person or property shall be excluded where such damage results from one or several of the causes listed below:

- Improper use of the actuator
- Improper installation, putting into operation, operation and maintenance of the actuator
- Operation of the actuator with defective or improper safety devices
- Non-compliance with the instructions contained in the operation manual for installation, putting into operation, operation and maintenance of the actuator
- Unauthorized modification of the actuator
- Insufficient monitoring of components subject to wear and tear
- Inadequately performed repair of the actuator
- Damage of the actuator resulting from foreign matter or Force Majeure

Leak and function tests have to be carried out before commissioning. After the pressure test, all nuts and screws of the entire pipe system must be retightened in a depressurized state.

We recommend a maintenance service (testing of functionality and tightness) and careful visual inspection in regular maintenance intervals, whereas with high aggressive media, strong vibrations and significant variations of temperature, the intervals must be shortened. Seals must be considered as wear materials and must be lubricated and/or changed regularly. With unfiltered media we recommend the installation of line strainers.

Enduring damage due to neglect of the operation manual or due to damaging sealed parts lead to a lapse of the warranty. We do not take any liability for resulting damages thereof! Please read the operation manual carefully before starting operation.

4. Instructions for safety at work

- Each person, involved in the user's facility, in the installation, dismantling, putting into operation, operation or maintenance of the actuator must have read and understood the entire operation manual and, in particular, the chapter 'Safety Instructions'.
- The instruction and warning signs calling attention to dangers must be taken into account!



Dangerous voltage!
This is for your own safety

5. Safety instructions

- This equipment has been built and examined according to safety precaution for electronic devices and has left the plant in a perfect safety-related condition
- To keep this status and to guarantee a safe operation, the user must observe the safety instructions, which are included in these instructions
- This installation work may only be undertaken by an authorized and licensed installer or electrical business
- This equipment is not intended for it by persons (including children) with reduced physical, sensory or mental abilities or for lack of experience and/or for lack of knowledge to be used it is, it by a person responsible for their security is supervised or received from it instructions, how the equipment is to be used. Children should be supervised, in order to guarantee that they do not play with the equipment.
- The electrical installations must be carried out according to the respective local and regional regulations (e.g. ÖVE, VDE,...) and possible official regulations
- the electrical connection must have separating device built into the permanently installed electrical installation, which enables the disconnection of all electrical contacts with a contact space of min. 3 mm from the mains. Pay attention that the supply voltage is correctly protected and an earth-leakage circuit breaker ≤ 30 mA is installed.
- Only use the equipment in dry rooms, in which no combustible gasses and vapors are present.
- Do not put the equipment into operation immediately if it has been taken from a cold to a warm area. The thereby developing condensation water could destroy your equipment
- If the equipment has visible damages, does not work anymore or has been stored under adverse conditions for longer periods, then it is to be expected that a safe operation is no more possible. In this case the equipment is to be secured against unintentional start-up and if necessary to be decommissioned.
- Live parts can be uncovered when opening the cover or removing parts. Before an alignment, maintenance, a repair or change of parts or devices, the equipment must be separated from all voltage supplies, if opening the equipment is necessary. If after that an alignment, maintenance or a repair on the opened equipment under voltage is inevitable, it may only be done by experienced, skilled staff, which has knowledge of the associated dangers and/or the relevant regulations.
- Capacitors in the equipment can still be charged, even if the equipment is separated from all voltage supplies.
- Assembly and/or disassembly of the valve only in a pressure-free status (i.e. empty piping beforehand).
- Assembly according to the specified installation position (see technical data).
- Valve flow and/or direction of flow must be considered.

Each person involved in the operation and maintenance of the equipment must have read and understood the present operation manual!

It is for your own safety!

6. Residual Risk

6.1. Hazard generated by current



Manipulation of the actuator by operating staff is strictly prohibited and may only be performed by duly authorized staff, qualified for electrical work. Compliance with the corresponding instruction and prohibition signs is required.

6.2. Hazard generated by human error



The operating staff must be instructed in regard to the residual danger resulting from electricity and familiarized with correct operation. Efficiency of the safety training must be verified.

6.3. Hazard generated by current during cleaning work



Cleaning of the actuator may only be performed after disconnection from power supply (lever switch).

7. General

The actuator controls are significant technical products, which are manufactured with high accuracy to the most modern technical production methods. Entitled complaints will naturally be rectified as fast as possible if they occur. The equipment has a warranty after valid European law. The warranty begins with the purchase date.

ATTENTION! Always rotate valve with manual override upon first installation or if valve has not been in use for more than 2 months!

ATTENTION! Hand tighten union nuts. Make sure that O-rings are in proper position

8. Directions for use

The ball valve with electric actuator correspond to the regulations of the following european standards:

CE

Electromagnetic compatibility (2014/30/EU)
Low Voltage Directive (2014/35/EU)
Machinery Directive (2006/42/EG)

EN 55022

EN 60335-1

EN IEC 61000-6-3

EN IEC 61000-6-2

EN IEC 61000-6-1

UKCA

Electromagnetic Compatibility Regulations 2016
Electrical Equipment (Safety) Regulations 2016
Supply of Machinery (Safety) Regulations 2008

BS EN 55022

BS EN 60335-1

BS EN IEC 61000-6-3

BS EN IEC 61000-6-2

BS EN IEC 61000-6-1

TECHNICAL DATA

2-way and 3-way ball valve with electric actuator

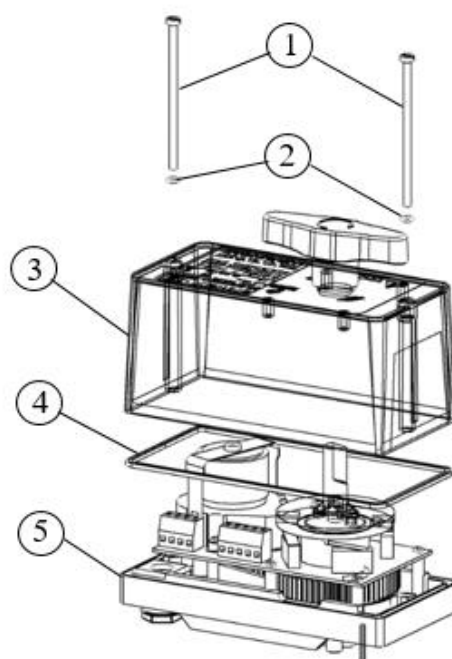
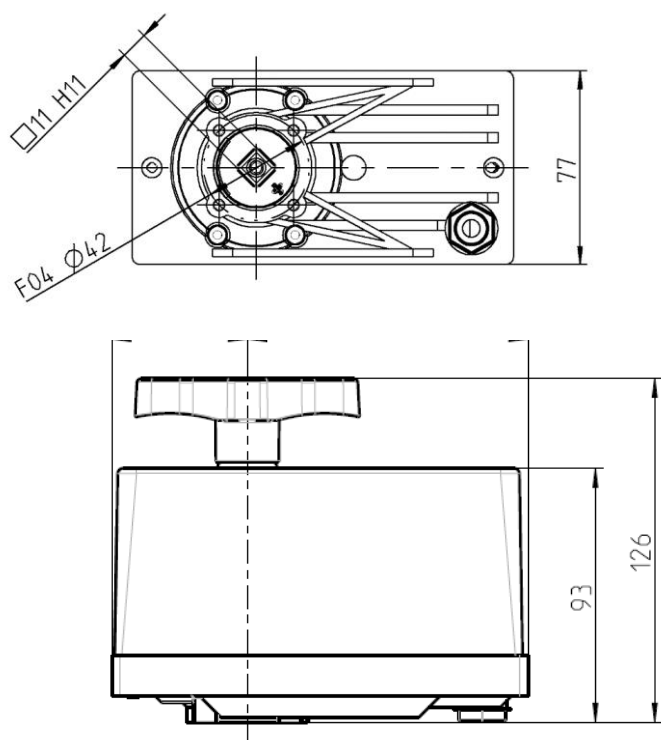
9. Actuator

Operation Voltage:	12 – 24V DC
24V AC 50/60 Hz	
Type of protection:	IP65
Duration:	60% / max. 20 min.
Power Consumption:	$P = 4 \text{ Watt} / P_{\text{max}} = 8 \text{ Watt}$
Ambient temperature:	-10°C to +60°C
Screw torque:	0,4 Nm
Installation position:	not upside-down (handle pointing vertical downward)

ATTENTION: When closing the housing, make sure that the sealing cord is neatly inserted in the intended contour on the housing base and that the sealing rings are present between the screw head and the housing cover.

ATTENTION: When screwing, comply with the specified screw torque for the housing screws (1).

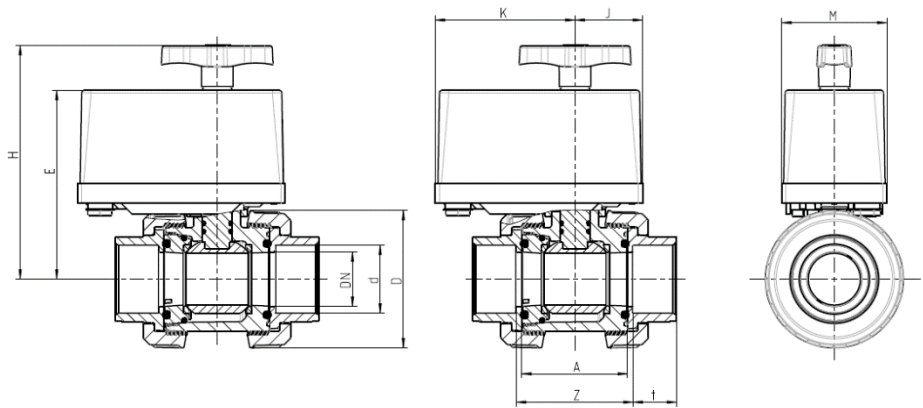
ATTENTION: The installed manual operation is an EMERGENCY OPERATION: The manual must be turned in clockwise (look at the arrow on the handle).



- 1...screws (0,4 Nm)
- 2...sealing rings
- 3...housing cover
- 4...sealing cord
- 5...housing base

10. Dimensions 2-way ball valve (PVC-U):

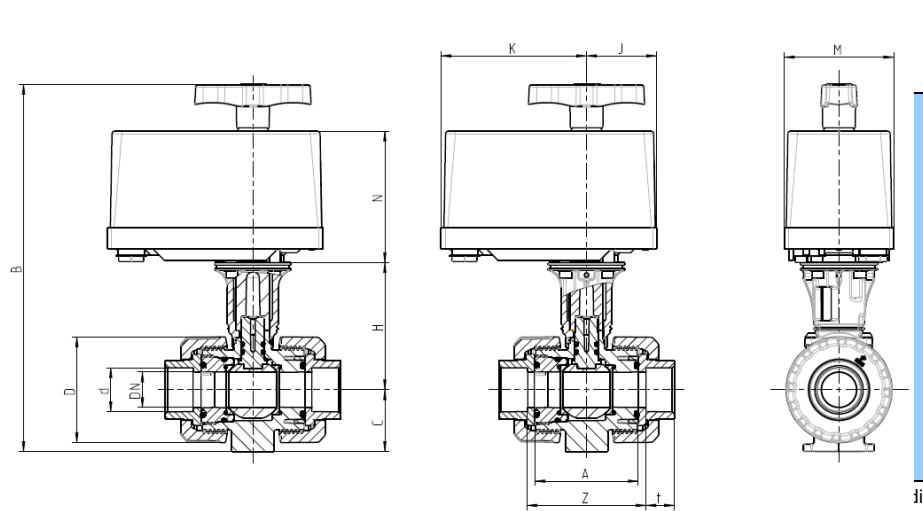
DN32-50 / S6



	DN	32	40	50
	d	40	50	63
ball valve PVC-U	A	77	77	87
	D	101,5	101,5	115,3
	t _{sso} ¹	26,5	31,5	38,5
	Z	87	87	99
	PN	3	3	3
actuator	E	138,5	138,5	143,5
	H	172	172	177
	M	77	77	77
	J	49,5	49,5	49,5
	K	102,5	102,5	102,5

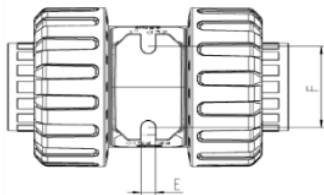
mensions in mm ¹ SSO = solvent socket

DN10-25 / M1



	DN	10	15	20	25
	d ISO F flange	16 F04	20 F04	25 F04	32 F04
ball valve PVC-U	A	45	45	53,5	54
	B	239	239	251,5	257
	C	33	33	40	43
	D	55,5	55,5	62	70
	E	5,5	5,5	5,5	6,5
	F	34	34	36	38
	H	80	80	85,5	88
	J	49,5	49,5	49,5	49,5
	K	102,5	102,5	102,5	102,5
	t _{sso} ¹	16	16,5	19,5	23
	Z _{sso} ¹	51	50	59,5	60
	M	77	77	77	77
	N	93	93	93	93

dimensions in mm ¹ SSO = solvent socket

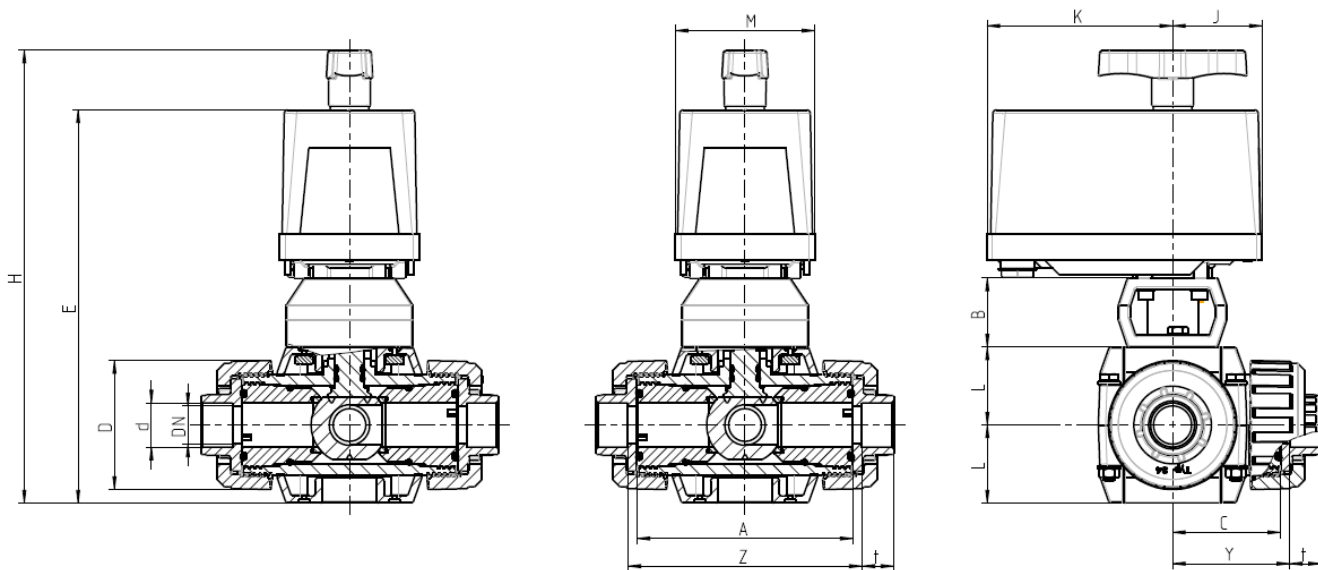


11. Dimensions 3-way ball valve (PVC-U):

						without console	
ball valve PVC-U	DN	10	15	20	25	32	40
	d	16	20	25	32	40	50
	A	100	100	120	120	162	162
	C	50	50	60	60	81	81
	D	53	53	70	70	101	101
	t _{sso} ¹	16,5	16,5	20	22,5	27,5	31,5
	Y	53	53	63	63	84,5	85,5
	Z _{sso} ¹	106	106	126	126	169	171
	bar	10	10	10	10	3	3
bracket / actuator	E	196,5	196,5	216,5	216,5	205	205
	H	229,5	229,5	249,5	249,5	238	238
	M	77	77	77	77	77	77
	J	49,5	49,5	49,5	49,5	49,5	49,5
	K	102,5	102,5	102,5	102,5	102,5	102,5
	L	33	33	43	43	56	56
	B	38	38	38	38	-	-

¹ SSO = solvent socket

dimensions in mm

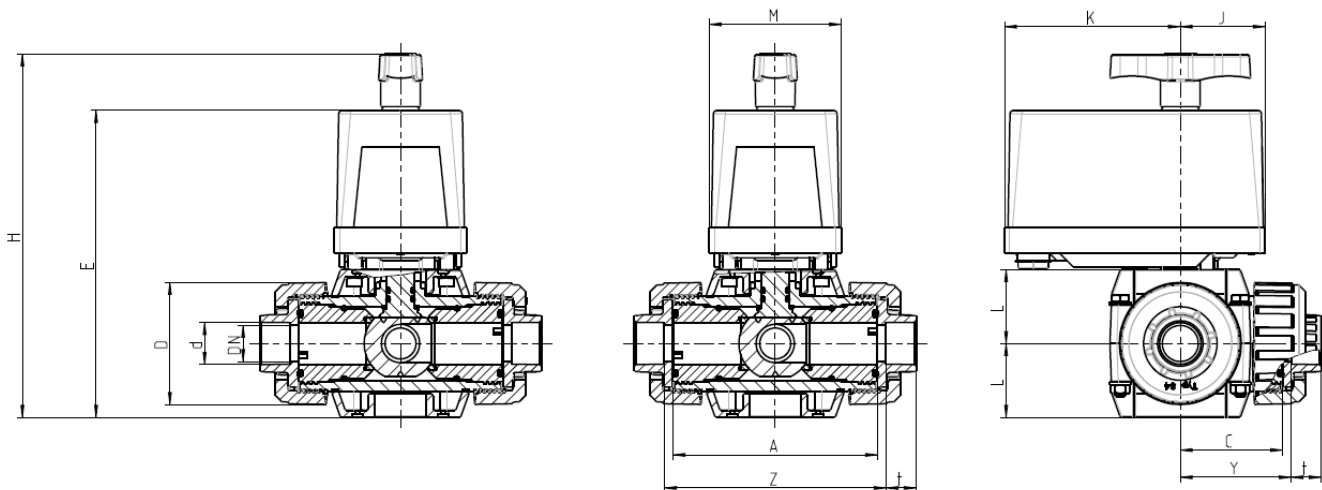


12. Dimensions 3-way Solar ball valve (PVC-U):

DN		32	40	50
d		40	50	63
ball valve PVC-U	A	162	162	181
	C	81	81	90,5
	D	101	101	124,5
	t _{SSO} ¹	27,5	31,5	38,5
	Y _{SSO} ¹	85	85	96
	Z _{SSO} ¹	170	171	192
	bar	3	3	3
	bar	3	3	3
actuator	E	205	205	221
	H	238	238	254
	L	56	56	65
	M	77	77	77
	J	49,5	49,5	49,5
	K	102,5	102,5	102,5

¹ SSO = solvent socket

dimensions in mm

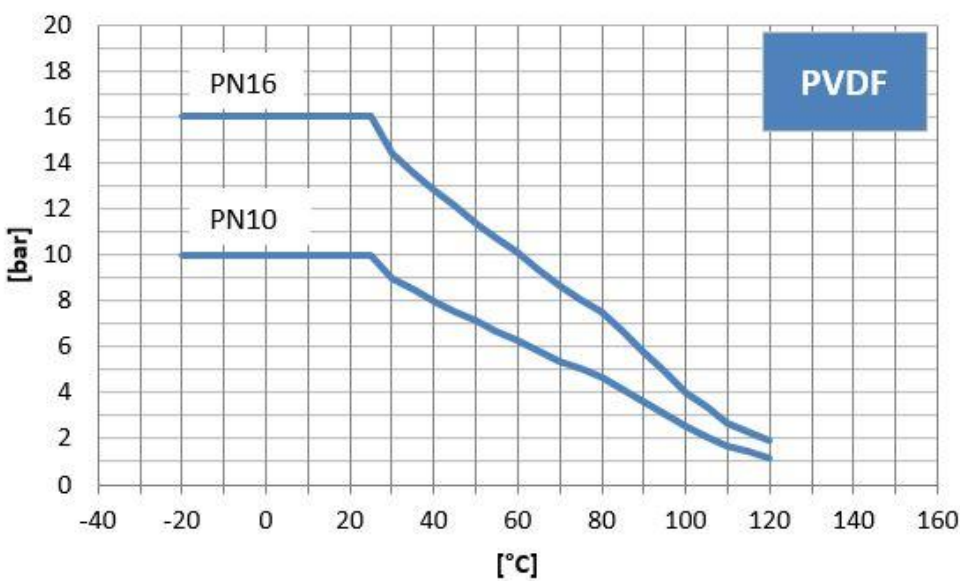
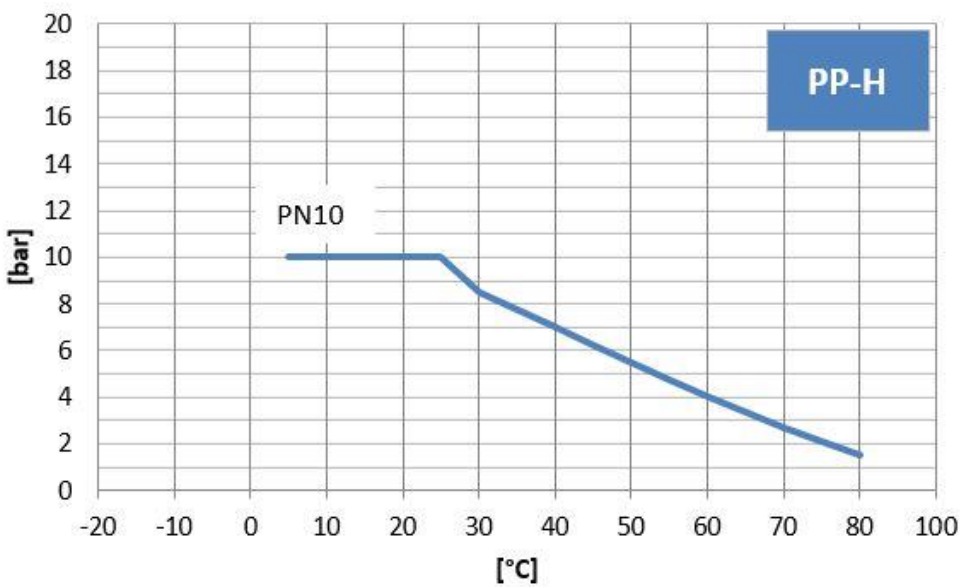
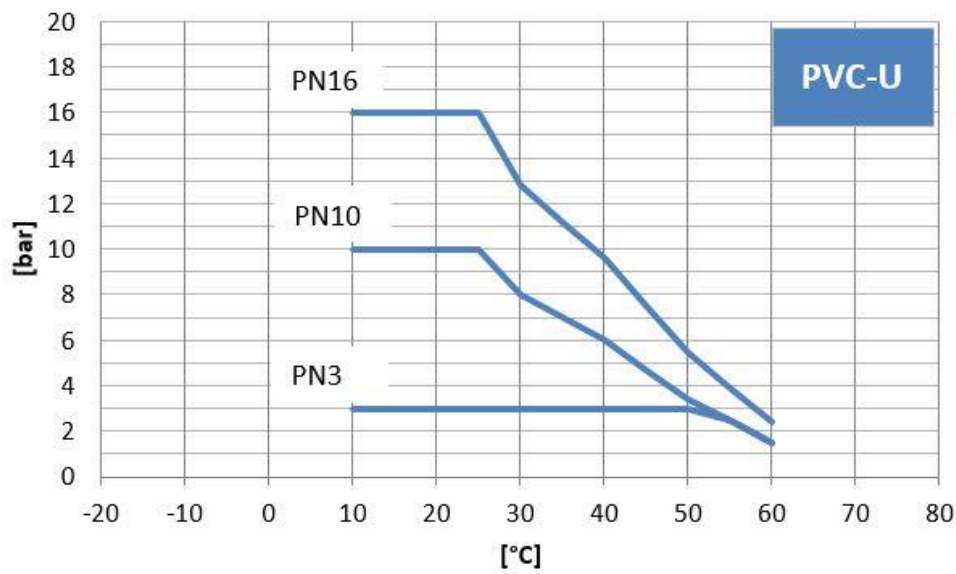


12.1. Comments to the 3-way Solar ball valve:

The ball seating joint with the pressure compensation system must always be installed on the side with the higher pressure (pump side) because it is otherwise non-functional and the ball valve may be destroyed. The ball seating joint with the pressure compensation board can be converted using the spanner provided. In as-delivered condition, it is in the middle position.

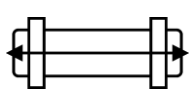
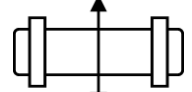
IMPORTANT: The solar ball valve has got a pressure-compensation-system, to avoid a rise in pressure change-over. If a change over process is interrupted (e.g. failure of the current supply), a position can be reset manually (manual override).

13. Pressure - Temperatur Diagram 2- and 3-way ball valve



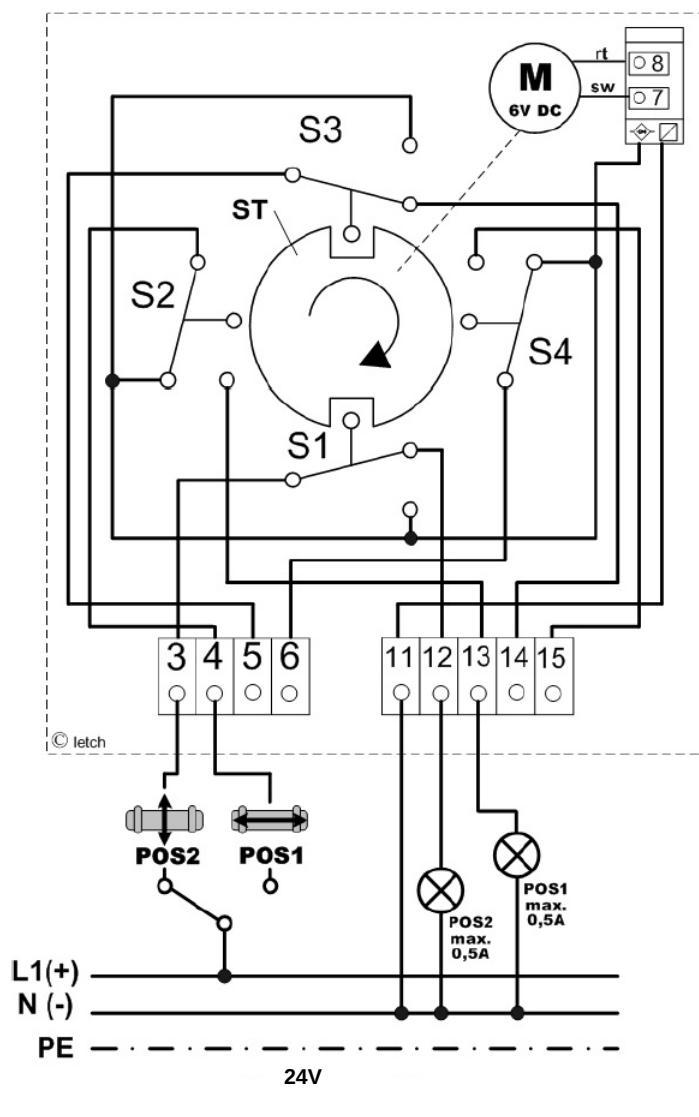
WIRING AND CONNECTION DIAGRAM

14. 2-ways ball valve

Position of ball valve		Position 1	Position 2
			
No. of terminal	Common Point	11	
	Supply	4	3
	Connection for position indication	13	12
Changing over time		12 sec	12 sec

Wiring diagram:

S1 ... contact switch 1
 S2 ... contact switch 2
 M ... motor
 ST ... disc cam

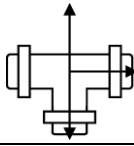
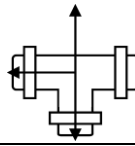


U ... electricity supply
 DC

50/60 Hz

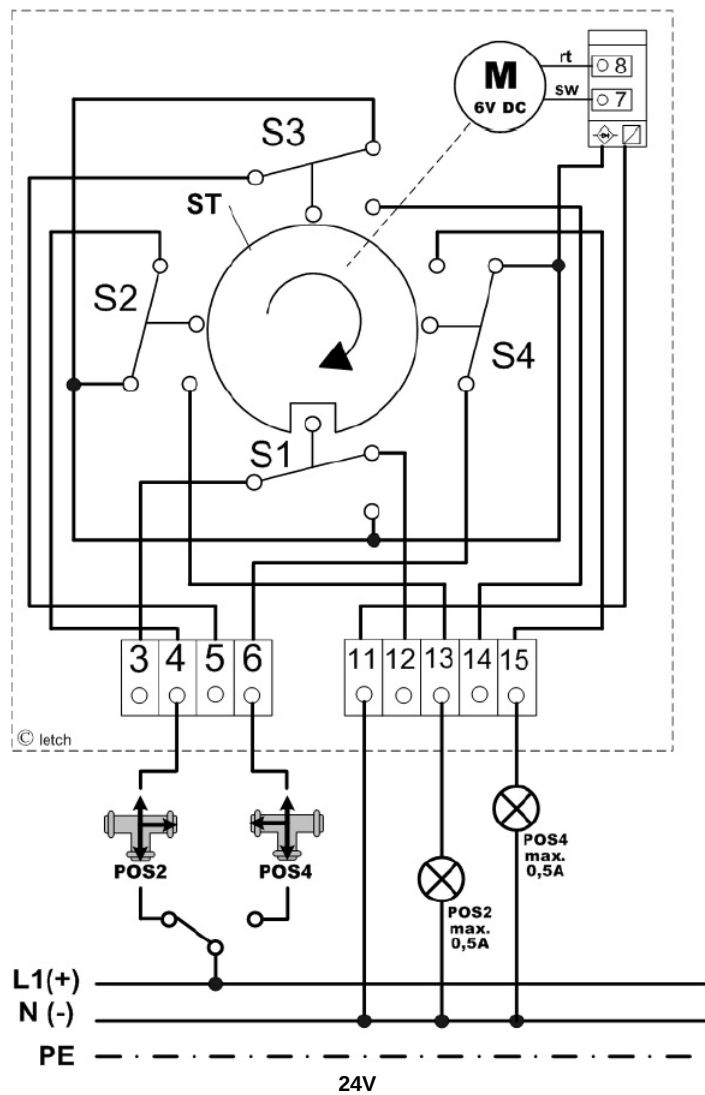
12 – 24V
 24V AC

15. Solar 3-ways T-ball 2-position

Position of ball valve		Position 2 	Position 4 
No. of terminal	Common point	11	
	Supply	4	6
	Connection for position indication	13	15
Changing over time		24 sec	24 sec

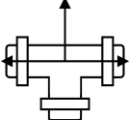
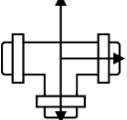
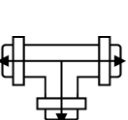
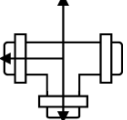
Wiring diagram:

S1 ... contact switch 1
 S2 ... contact switch 2
 M ... motor
 ST ... disc cam



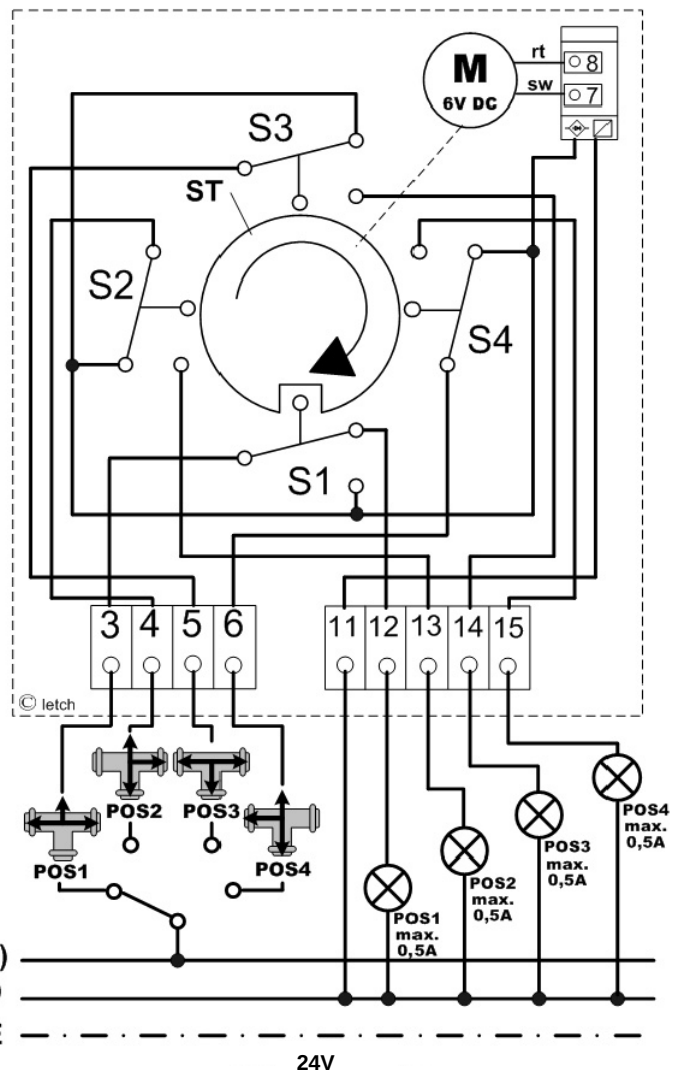
U ... electricity supply
 24V DC

16. 3-ways T-ball

Position of ball valve		 Position 1	 Position 2	 Position 3	 Position 4
No. of terminal	Common Point	11			
	Supply	3	4	5	6
	Connection for position indication	12	13	14	15
Changing over time		12 sec	12 sec	12 sec	12 sec

Wiring diagram:

S1	...	contact switch 1
S2	...	contact switch 2
S3	...	contact switch 3
S4	...	contact switch 4
M	...	motor
ST	...	disc cam



U ... electricity supply
24V DC

50/60 Hz

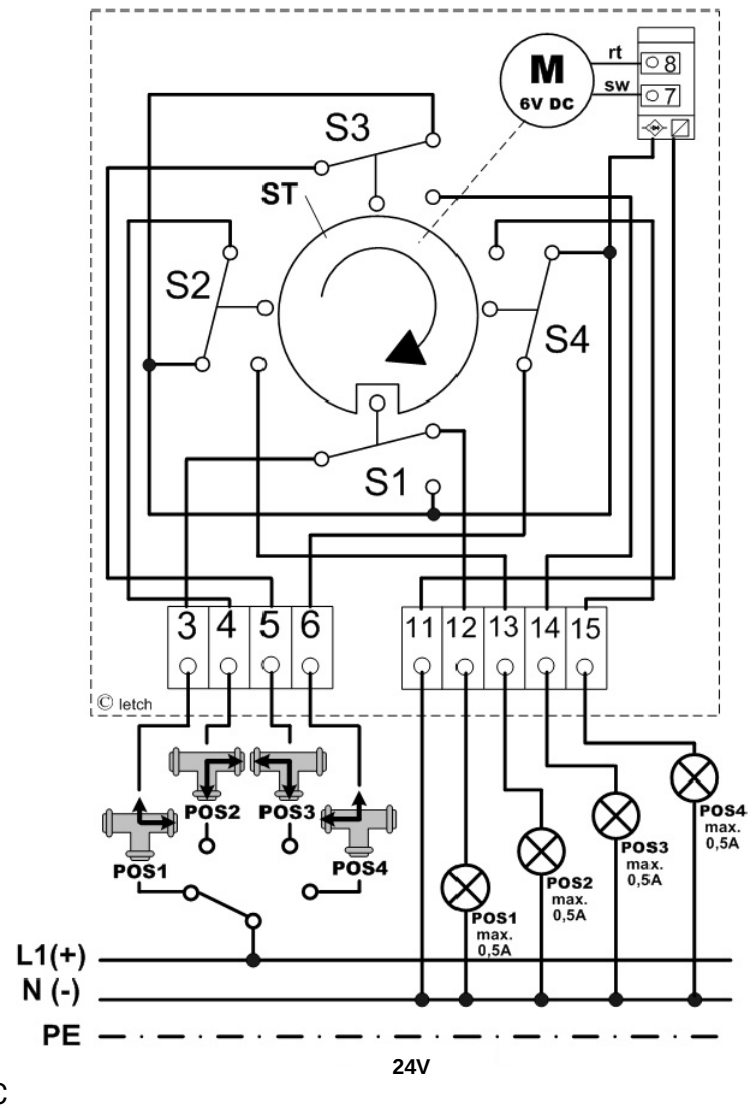
17. 3-ways L-ball

Position of ball valve		Position 1	Position 2	Position 3	Position 4
No. of terminal	Common Point	11			
	Supply	3	4	5	6
	Connection for position indication	12	13	14	15
Changing over time		12 sec	12 sec	12 sec	12 sec

en

Wiring diagram:

- S1 ... contact switch 1
 S2 ... contact switch 2
 S3 ... contact switch 3
 S4 ... contact switch 4
 M ... motor
 ST ... disc cam



U ... electricity supply
24V DC

50/60 Hz

18. Troubleshooting:

- The ball valve does not move freely
 - The thrust collar was over-tightened
 - The ball valve is preset and the thrust collars must not be modified
 - Reset the thrust collar to the original position
 - The union nut was over-tightened
 - Loosen the union nut and tighten manually
 - The compensating thrust collar on the solar ball valve is in the wrong position
 - 12.1 Comments to the 3-way Solar ball valve:
 - Temperatures in the system too high
 - Use the right ball valve material for the temperatures in question
 - Please ask our service engineers
 - The medium does not match the material
 - Use the right ball valve material for the medium in question
 - Please ask our service engineers
- The drive is no longer rotating
 - No voltage
 - Check the voltage at the terminals
 - Check the electrical installation
 - Incorrect voltage at the terminals
 - Check the voltage at the terminals
 - Provide voltage to the terminals as specified on the type plate.
 - Extended period of disuse
 - Rotate the ball valve manually
 - The compensating thrust collar on the solar ball valve is in the wrong position
 - See item 12.1 Comments to the 3-way Solar ball valve:
 - Foreign matter in the system
 - Remove the foreign matter
 - Integrate a filter into the system
 - Damage to the ball and seal
 - Replace the ball and seals
 - Integrate a filter into the system
- The ball valve is leaking
 - You are using a Solar ball valve
 - The Solar ball valve does not provide a hermetic seal
 - 12.1 Comments to the 3-way Solar ball valve:
 - Foreign matter in the system
 - Remove the foreign matter
 - Integrate a filter into the system
 - Damage to the ball and seal
 - Replace the ball and seals
 - Integrate a filter into the system