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TBS Series
Ball Valve

Operating, Installation,
&
Maintenance Manual

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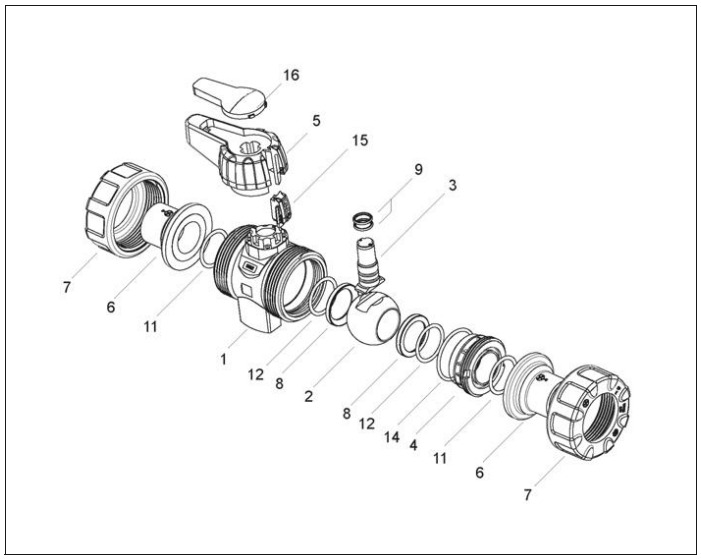
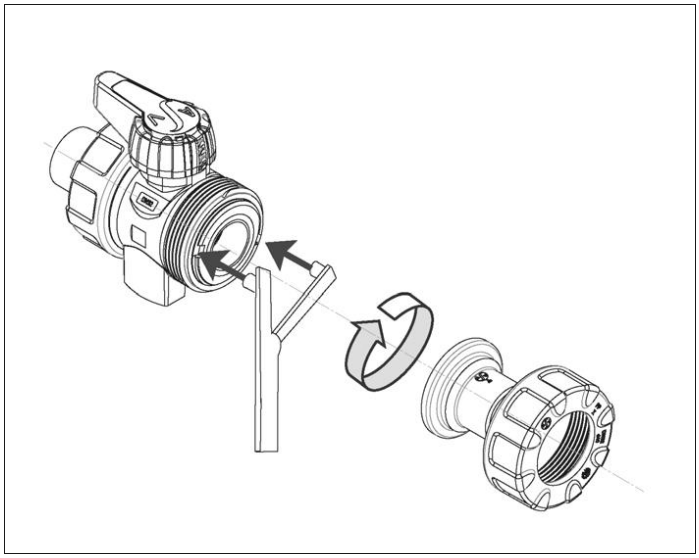
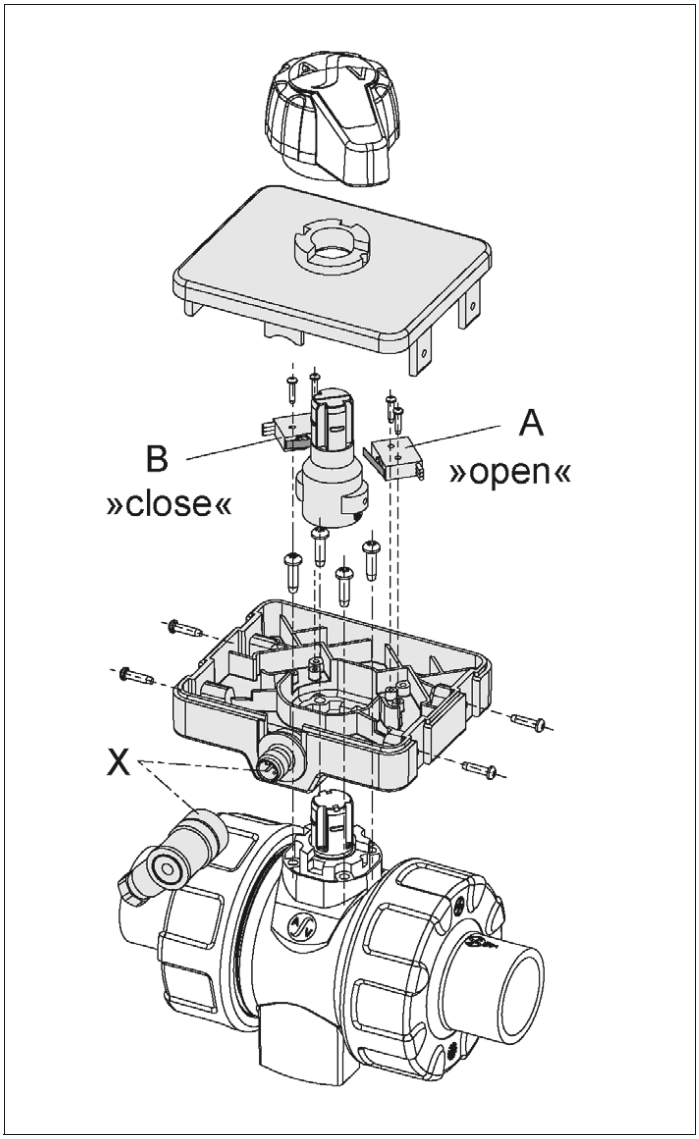
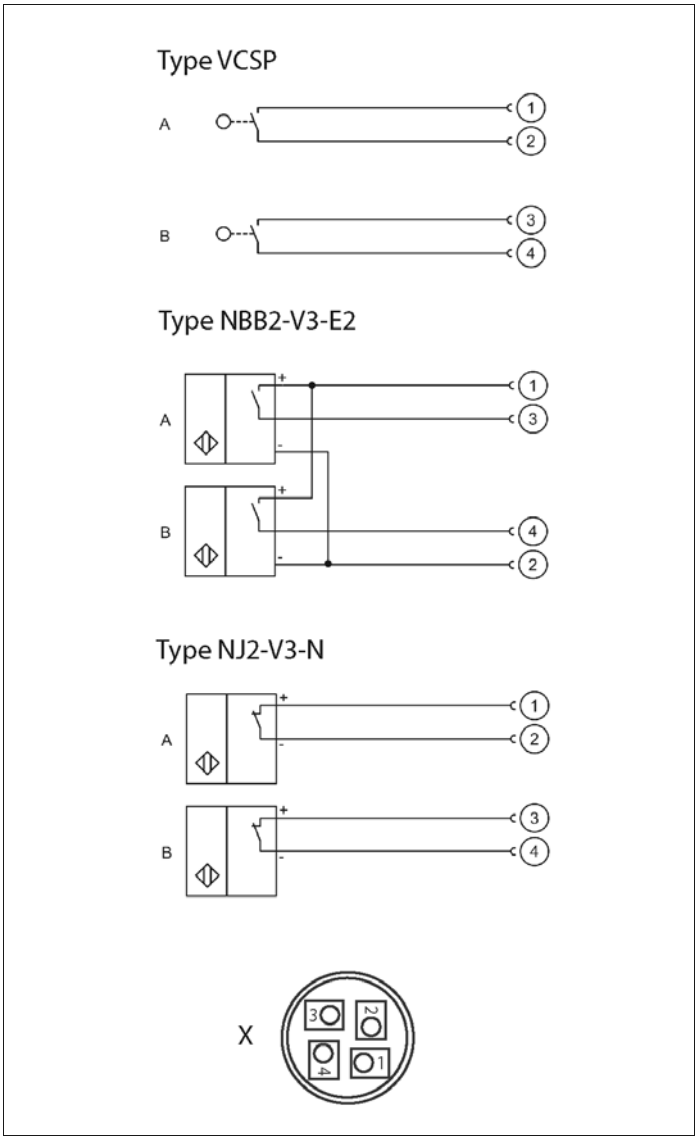
TBS Series Ball Valves - Operating, Installation, and Maintenance Instructions









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1. Warning signs and symbols

1.1 The following warning signs and symbols are used in this operating manual:

Sign	Hazard rating	Consequences of non-observance
 Danger!	Imminent danger	Death or serious injuries!
 Danger!	Imminent danger	Death or serious injuries due to explosion!
 Danger!	Imminent danger	Death or serious injuries due to live components!
 Caution!	Possibly dangerous situation	Minor injuries or damage to assets!

1.2 Symbole

Symbols	Purpose	Consequences
	Indicates a hazard due to the effect of crushing	Do not insert your fingers or hands into the valve passage!
 First read	First read and understand the information ... then install the product!	Non-observance may lead to serious injuries or even death!
 Protective clothing/PPE	Wear/use protective clothing/ personal protection equipment suitable for the respective fluid.	Non-observance may lead to serious injuries or even death!
 Note/ Attention	Indicates important information intended for the user.	Non-observance can lead to impairment of the valve function!
 Incorrect	Indicates the consequences of non-observance of the specified measures.	Non-observance may lead to serious injuries or even death!
 Correct	Indicates measures intended to prevent injuries or damage to assets.	Non-observance may lead to serious injuries or even death!

2. Safety information

2.1 General safety information

 Danger!	Observe these safety instructions, the accident prevention regulations, as well as the owner/user's in-house work, operating and safety regulations!
	Non-observance can lead to hazards to persons, the environment and other system/plant components!
	This operating manual contains fundamental information to be observed during installation, operation, maintenance and repair.

2.2 Safety information for the user/owner

 Danger!	Incorrect assembly/installation, operation, inspection, maintenance and repair work will lead to valve failure.
	In the event of failure of the valve chemical, toxic, cold or hot fluids may leak and cause injuries or even death!
	Before work is started, check that the personnel have suitable qualifications for performing the necessary work. If the personnel do not have the correct qualifications, train and instruct them accordingly.

- Ensure that the contents of the operating manual are fully understood and applied by all personnel.
- Inform all personnel instructed with the work about the potential dangers emanating from the fluid and/or plant/system.
- Provide the qualified specialist personnel with personal protective clothing/ personal protection equipment suitable for the fluid.
- Ensure that any hazardous fluid leaks are drained and disposed of in such a way as to prevent any risk to persons or the environment.
- Ensure that hazards caused by electrical energy are excluded.

 DANGER!	The owner/user is responsible for setting up the plant in compliance with the Directive 99/92/EC (ATEX 137), taking the respective standards for the particular application into account.
	Non-observance of these regulations can lead to ignition of an atmosphere containing combustible gases, vapours, mists or dust, causing an explosion. This could result in serious injuries to persons and damage to assets.
	The valve and/or plant may only be commissioned after it has been ensured that it can be safely operated according to the classified zone of use.

2.3 Safety information for assembly/installation, inspection, maintenance and repair work

 Danger!	Incorrect assembly/installation, operation, inspection, maintenance and repair work will lead to valve failure and idleness of the construction.
	In the event of failure of the pump chemical, toxic, cold or hot fluids may leak and cause injuries or even death!
	Prior to commencing work ask the user/owner of the valve to provide you with information about the potential danger emanating from the fluid and/or the plant/system.

 DANGER!	Never place your fingers or hands in the opening of the valve.
	Unintentional operation of the valve lever may crush your fingers or hands!

- Only perform work on the valve when the plant is at a standstill.
- Wear protective clothes/personal protection equipment suitable for the respective fluid.
- Prior to starting any work, ensure that the valve is at ambient temperature, and has been depressurized and emptied.
- Valves which shut off hazardous liquids must be decontaminated before starting work!

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3. Intended use

The valve is used to shut-off of pipelines. The valve and sealing material is depending on the media, temperature and pressure properties of the system.

Therefore the valve may only be installed when following points are carried out or considered

3.1 Resistance test

In case of planned use with aggressive medium please request for resistance with exact data of operation i.e. name of medium, pressure, temperature.

Install only if the resistance of all components has been tested!

Is one of the wetted valve parts according to the resistance check not resistant, the valve may not be installed!

3.2 Pressure/temperature test, »fig. 05«

Operating pressure and operating temperature must correspond to the admissible pressure/temperature limits of the valve material.

Observe material pressure/temperature diagram.

Is the operating point (pressure / temperature) outside of the material-dependent pressure /temperature diagram, the valve cannot be installed!

legend to »fig. 05«
P= operating pressure
T= operating temperature

3.3 Identification plate

The information on the type plate must coincide with the order/design data.

If the data does not match, the valve may not be installed!

3.4 Use in potentially explosive atmospheres

3.4.1 Manual valves can be used for this purpose. Only wipe or clean the valve with a damp cloth in order to avoid static charges.

3.4.2 The use of electrically or pneumatically actuated valves must be evaluated separately in accordance with Directive 99/92/EC (ATEX 137). The owner/user of the system/plant is solely responsible for this.

4. Transport and storage

4.1 Transport

Ensure careful transport of the valve in original packaging.

Avoid knocks and vibrations.

4.2 Storage

Store valve in a dry place!

Always store the valve in open position.

Storage temperature: +10°C up to +60°C!

Avoid exposure of the valve to UV radiation and direct sunlight!

5. Actuation

5.1 Opening angle

»OPEN/CLOSED« operation 90°.

5.2 Ball position

The ball position is indicated by the hand lever.

5.3 Manual actuated

hand lever is positioned longitudinal to the pipeline:
valve is in open position.

hand lever at right angle to the pipeline:
valve is in closed position.

5.3.1 Operating pressure at H20, 20°C

PVC-U:	max. 16 bar at 20°C
PP:	max. 10 bar at 20°C
PVDF:	max. 16 bar at 20°C

The operating pressure is pressure-temperature dependent; note »fig. 05«

5.4 Valve with limit switches or limit switch units

Limit switches/limit switch units are required to ensure the »OPEN/CLOSED» remote monitoring of valves.

Please note »fig. 01« and »fig. 02«.

Where these limit switches/limit switch units are customer supplied, please note the attendant manuals.

5.5 Valve with electrical actuator »Fig. 03«

There is a danger to life due to electric current. Only trained and authorised qualified electricians are permitted to carry out work on the electrical installation.

Read the attendant operating and maintenance manual of the actuators prior to electrical connection of the actuator to the power supply.

If no manual is provided with the product, request it from ASV Stübbe prior to installation.

After electrical connection, check the rotational direction of the ball valve by briefly switching on the motor.

The switch position is indicated by the visual position indicator on the actuator.

Valve closed: The indicator points in a transverse direction to the pipe

Valve open: The indicator points in the longitudinal direction of the pipe

5.6 Valve with pneumatic actuator »Fig. 04«

Risk of injury due to incorrect handling of compressed air.Work on pneumatic installations requires special knowledge and experience in the handling of pneumatic equipment.

Read the attendant operating and maintenance manual of the actuators and solenoid pilot valves prior to pneumatic connection of the actuator to the compressed air supply and electric power supply.

If no manual is provided with the product, request it from ASV Stübbe prior to installation.

Ensure that the compressed air connections are correctly connected in accordance with the diagram in »Fig. 06«.

Check the rotational direction of the ball valve by briefly switching on the actuator.

The switch position is indicated by the visual position indicator on the actuator.
Valve closed: The indicator points in a transverse direction to the pipe
Valve open: The indicator points in the longitudinal direction of the pipe

Key for »Fig. 06« compressed air connection

Single acting actuators
Compressed air to connection »B« (opens (NC) or closes (NO))

Double acting actuators
Compressed air to connection »A« (closes)
Compressed air to connection »B« (opens)

Control
3/2 way solenoid valves for single acting actuators (NC/ NO)
5/2 way solenoid valves for double acting actuators (DA)

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5.6.1 Solenoid pilot valve

There is a danger to life due to electric current. Only trained and authorised qualified electricians are permitted to carry out work on the electrical installation.

Risk of injury due to incorrect handling of compressed air. Work on pneumatic installations requires special knowledge and experience in the handling of pneumatic equipment

Read the attendant operating and maintenance manual of the solenoid pilot valves prior to performing the connections to the compressed air supply and electric power supply.

Check the rotational direction of the ball valve by briefly switching on the actuator.

The switch position is indicated by the visual position indicator on the actuator.
Valve closed: The indicator points in a transverse direction to the pipe
Valve open: The indicator points in the longitudinal direction of the pipe

6. Installation

6.1 Installation notes

In addition observe the DIN, DIN/ISO, DVS*, national and international standards, the regulations for gluing (PVC-U, PVC-C) or welding (PP, PVDF) of thermoplastic valves.

*DVS = German Association for Welding Technology

Fit the ball valve with its integrated fastening as a fixed point. This ensures that the actuating forces act directly on the valve and not on the pipe.

The ball valve must always be installed with fully open ball position in the system!

Tensile strengths or thrust forces and/or bending moments acting on the valve are not permissible!

Pipe forces, resulting from thermal extention, need to be compensated in the installation by means of e.g. pipe compensators or expention bends!

6.2 Dimensions

see data sheet: print 330654

6.3 Flow direction

The direction of mounting is variable.

6.4 Mounting

The direction of mounting is variable.

6.5 Connection

6.5.1 Valve with unions

Housings and union nuts with buttress threads.
Union ends with type-specific collar and integrated socket end or spigot end according to DIN ISO.
Sealing by O-rings.

The use of components - other than intended for use with the C200 - can result in damage to the tube system.

6.6 Installation

6.6.1 Preparation

Before installation check the ball valves for transport damage and do a function test (move handle from open to close position at least once). Only intact and functional armatures may be installed.

Correctly cut the pipeline ends to the proper length and prepare same for the individual connection variant.

The ball valve must always be installed with fully open ball position in the system!Intermediate positions would prevent leakage in the pipe!

6.6.2 Valve with union insert

Loosen union nuts and pull them over the pipeline ends. Properly connect the socket or spigot ends with the pipeline ends. Insert the valve radially between the pipeline ends and connect using the union nuts.

O-Rings have to be positioned in the grooves correctly.
Not adhering to these instructions might result in leakage.

Tighten union nuts only hand-screwed. Excessive torque strip the screw threads.

the pipeline ends and connect using the union nuts.

O-Rings have to be positioned in the grooves correctly.
Not adhering to these instructions might result in leakage.

Tighten union nuts only hand-screwed. Excessive torque strip the screw threads.

7. Pressure test

Only use a neutral medium, e.g. water, to carry out the leakage test.

Ensure that the test pressure does not exceed the maximum pressure of 1.5 × PN, maximum PN +5 bar.

Also observe the permissible pressure of other system components.

8. Commissioning/start-up

Once the valve has been mounted, the valve is ready for operation.

9. Maintenance/cleaning

We recommend preventive maintenance/cleaning depending on external operating conditions.

It is the responsibility of the owner/user to define adequate maintenance and cleaning intervals.

Only clean with a damp cloth.
Ensure that the cleaning agents do not chemically corrode the housing or seal.

10. Inspection

The owner/user must carry out visual and function inspections of the valve at regular intervals.

The valve should be subjected to a quarterly performance check.

It is the responsibility of the owner/user to define adequate inspection intervals.

11. Repair

DANGER	Prior to commencing work ask the user/owner of the valve to provide you with information about the potential danger emanating from the fluid and/or the plant/system.
	Non-observance depending on medium will lead to serious injuries or even death!
	Wear protective clothes/personal protection equipment suitable for the respective fluid.

Prior to starting any work, ensure that the valve is at ambient temperature, and has been depressurized and emptied.

DANGER: there may still be fluid inside the valve!

Valves which shut off hazardous liquids must be decontaminated before starting work!

collect and dispose of fluid residue according to the regulations.

12. Troubleshooting/malfunction remedy

Prior to starting any work ensure that the pipe and the valve are at ambient temperature and have been depressurised and emptied.

Malfunction	Possible cause	Malfunction remedy
Valve is leaking at the fitting.	tightening torque of the o-rings too low.	see chapter 12.1.
Valve is leaking at the stem.	o-rings damaged.	see chapter 12.2.
Leakage in the pipe.	Ball seals or ball damaged.	see chapter 12.3.

Maintenance personnel have to follow the safety instructions!

12.1 Valve is leaking at the fitting

Pipeline pressure decrease.
Tighten the nut by hand.

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12.1 Valve is leaking at the fitting

Pipeline pressure decrease.
Tighten the nut by hand.

12.2 Fluid leakage along the actuation shaft

For releasing the threaded end bush (item 4) a face wretch is required.

1. Release the union nuts (item 7)
2. Withdraw the armature from the pipeline sidewards.
3. Unscrew the threaded end bush (item 4) counter-clockwise.
4. Turn the ball into closed position.
5. Push the ball (item 2) out the housing.
6. Push the handle (item 5) from the shaft (item 3).
7. Push the shaft inwards into the housing and remove it from there.
8. Replace the O-rings (item 9).
9. Reassemble of the armature in reverse order.

A too high closing torque at the bushing (item 4) results in a higher required actuation torque on the handle!

12.3 Leakage in the pipe

Leaks in the port can possibly be remedied by tightening the screw-in part clockwise (Pos. 4) according to »Fig. 06/07«. Observe Chapter 12.2.

Upon further leakage repalce the ball seals (item 8, 12) and possibly the ball (item 2) acc. »fig. 2«.

explanation to »2«

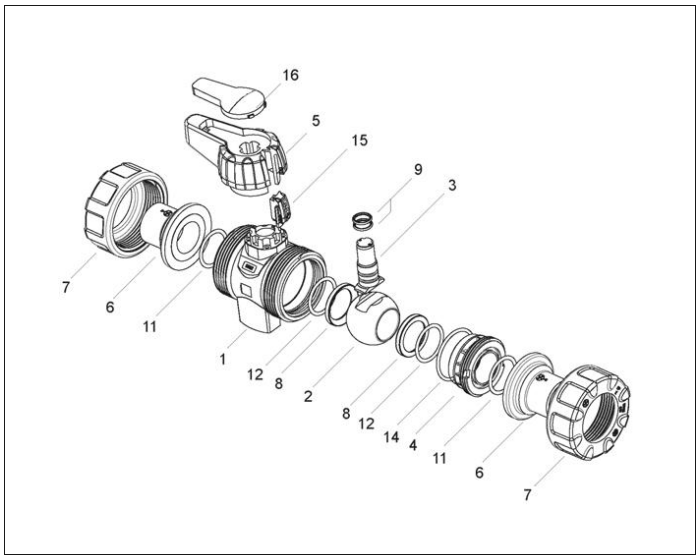
item	qty.	designation
1	1	housing/body
2	1	ball
3	1	stem
4	1	union threaded neck
5	1	hand lever
6	2	union end
7	2	union nut
8	2	ball seat
9	2	o-ring
11	2	o-ring
12	2	o-ring
14	1	o-ring
15	1	slinding catch
16	1	inlay for hand lever

Note section 12.2!

13. Return shipments / Repair orders

Please contact the Sales before shipping any products back. You then will receive a reference number, which will allow quick and more effective handling.

Fill in the "Security Clearance" and place it with the goods. You will find this at www.asv-stuebbe.de, under Downloads.



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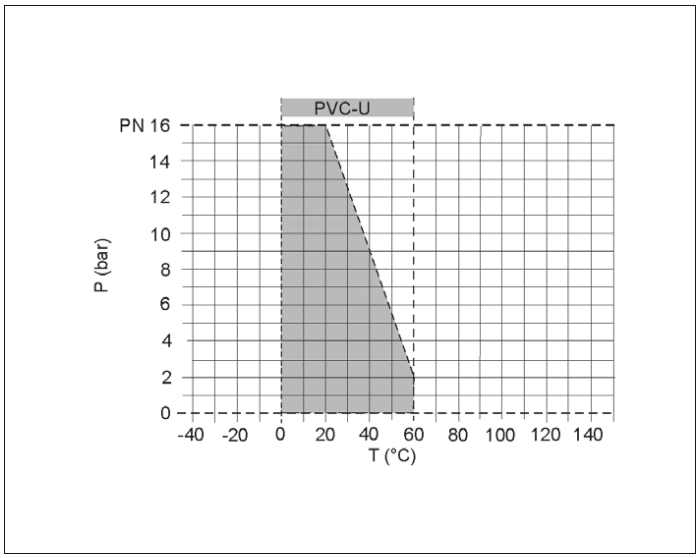

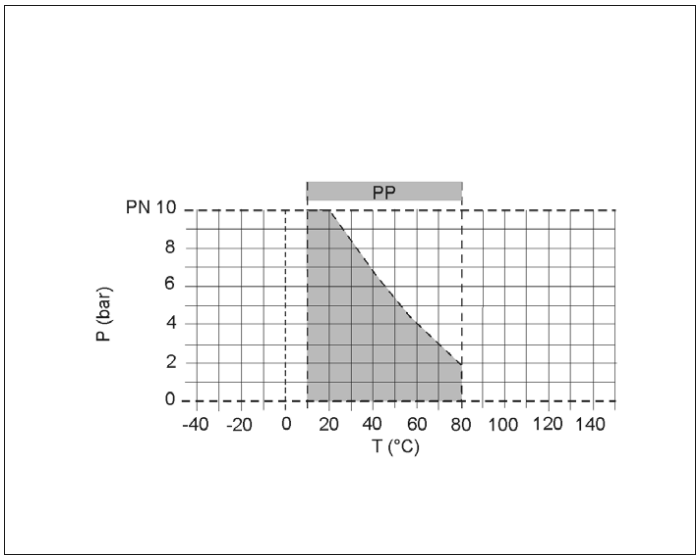

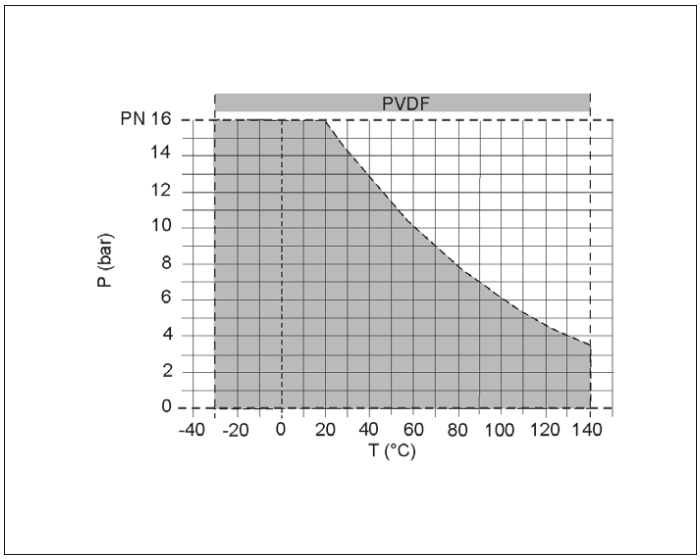

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