MANUAL
Bellow seal globe valve AL 10-248

1. Safety information

The safe operation of these units can only be guaranteed if their installation and commissioning are properly performed and their maintenance is carried out by a qualified person in accordance with the operating instructions. The general installation and safety instructions for the construction of lines and plants must also be complied with and appropriate use must be made of the safety tools and equipment.

2. Product description

The range of PN16 and PN40 stop valves with a bellow with flanges is designed for use in steam, gas, liquid, condensate and water systems.

Bellow sealed globe valves are manufactured at different executions, they are used as stop valves and throttling valves. Stop valves are designed only for shut off and open the flow, throttling valves are designed for flow control. Stem sealing is performed by flexible bellow and additional protecting gland.

Bellow sealed valves are provided with casted marking according to requirements of PN-EN19 standard. The marking facilitates technical identification and contains:

- nominal diameter DN (mm)
- nominal pressure PN (bar)
- body and bonnet material marking
- arrow indicating medium flow direction
- manufacturer marking
- heat number
- CE marking, for valves subjected 2014/68/UE directive

3. Function

Valves with stop disc are designed for shut off medium flow, valves with throttling disc enable to control the flow. The kind of working medium makes some materials to be use or to be prohibited for use. Valves were designed for normal working conditions. In the case that working conditions exceed these requirements (for example for aggressive or abrasive medium) user should ask manufacturer before placing an order. When selecting the valve for specific medium, "List of Chemical Resistance" can be helpful. It can be found at manufacturer website near catalogue cards. Working pressure should be adapted to maximum medium temperature according to the table as below.

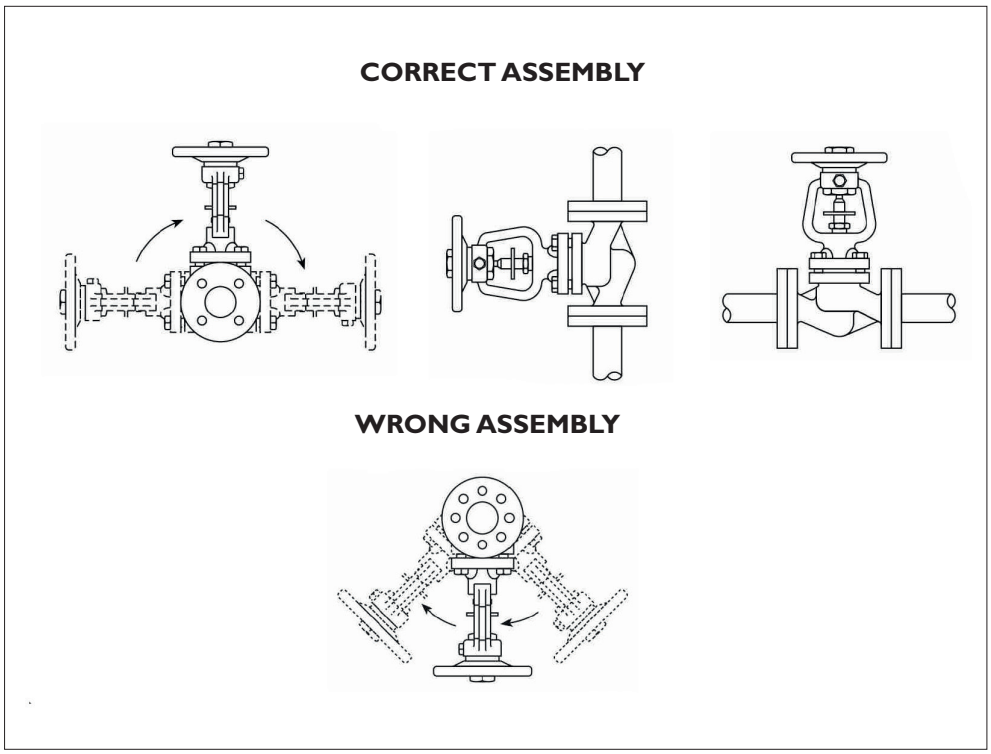
Acc. to EN 1092-2		Temperature °C					
Material	PN	-10 up to 120	150	200	250	300	350
5.3103	16	16 bar	15,5 bar	14,7 bar	13,9 bar	12,8 bar	11,2 bar

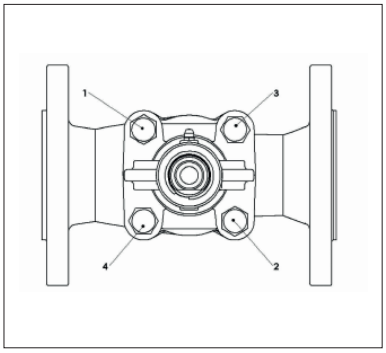
Acc. to EN 1092-2		Temperature °C								
Material	PN	-60 up to -10	-10 up to 120	100	150	200	250	300	350	400
1.0609	40	30 bar	40 bar	37,3 bar	34,7 bar	30,2 bar	28,4 bar	25,8 bar	24 bar	23,1 bar

Important!
Valves made of cast steel 1.0619 working at temperatures above 400°C cannot operate for more than 100,000 hours because of the creep of a material.

- Bellow stop valves play an important role in saving energy by eliminating leaks through the rod.
- The valve is activated manually by means of a handwheel. Make sure that the handwheel moves in the right direction. To fully open the valve, it is advisable to turn the handwheel until the rod reaches the highest point, then turn the handwheel from 1/8 to 1/4 clockwise to prevent it from getting stuck in an open position. You will thus avoid trying to open a valve which is fully open, causing damage to the rod, bellow or other components.
- If you use a wrench to open or close the valve, do not exert excessive force.
- The 248 model valves have a regulation cone to control the flow of the fluid. The flow will depend on the number ofturns of the handwheel.

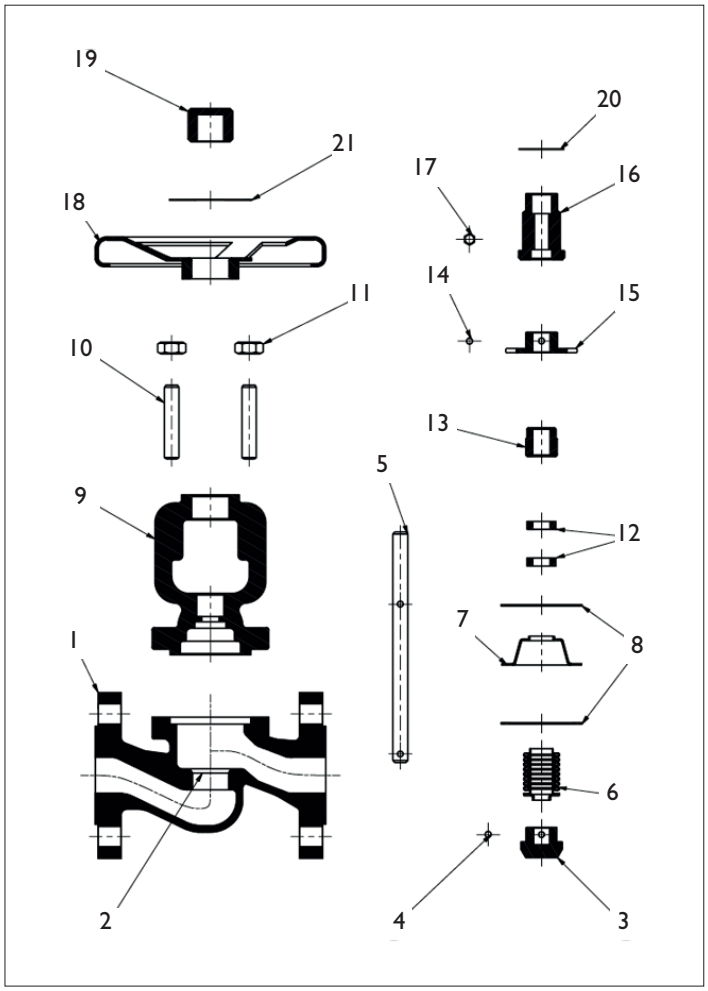
MANUAL
Bellow seal globe valve AL 10-248





Metric	Torque
M8	15-20 Nm
M10	35-40 Nm
M12	65-70 Nm
M16	140-150 Nm

No	Part
1	Body
2	Seat
3	Plug
4	Pin
5	Rod
6	Bellow
7	Bellow disc
8	Gasket body
9	Guide support
10	Bolt / screw
11	Nut
12	Packing
13	Stuffing box
14	Pin
15	Removable lock washer
16	Insert nut
17	Grease fitting
18	Handwheel
19	Cap
20	Shim ring
21	Plate



MANUAL
Bellow seal globe valve AL 10-248

4. Maintance

Alla de inre delarna av en ventilen kan bytas ut. Innan underhållsarbetse utförs på ventilen, isolera inloppet och utloppet och låt trycket jämna ut till atmosfärstryck. Låt svalna. Se till att anslutningsytorna är rena under montering.

Gasket body/guide support

This can be done with the valve assembled on the line. Remove the guide support (9) from the body (1) by unscrewing the bolts or studs (10) / nuts (11) from the guide support (9). The gasket body (8) is exposed and can be changed. The contact surfaces must be clean before assembling the new gasket. To change the second gasket between the guide support (9) and the stainless steel bellow disc (7). Turn the handwheel (18) in a clockwise direction. This will cause the rod (5) to go down, creating a space between the guide support (9) and the bellow disc (7). If the neck of the support is still attached to the guide support (9), move it gently so as not to damage the neck. **The bellow should not be stretched, as this will reduce its useful life.** If the handwheel (18) continues to be turned clockwise, the rod (5) can be unscrewed from the guide (16). Once the rod has been disconnected from the guide, unscrew the stuffing box. Now the rod/bellow set (5,6) can be removed from the guide support (9) and the second gasket (10) can be changed, making sure that the contact surfaces are clean and that the gasket is properly positioned. Before reassembling the rod/bellow set (5,6) on the guide support (9), the packing (12) must be replaced.

Packing

To replace the packing (12), follow the steps in the **Gasket body/guide support** section. Two units are supplied in each kit. Make sure that all the remains of the old packing have been removed from the guide support and that the surfaces are clean. To assemble, proceed in reverse order, remembering to assemble the gasket between the guide support and the neck of the bellow disc. Ensure that the rod pin is aligned with the groove in the head. Place the new packing (12) and the stuffing box on the rod before screwing the end of the rod into the guide. **Make sure that the rod's thread does not damage the packing.** Carefully insert the packing into the cavity. Remember to tighten the stuffing box once the valve has been fully assembled.

Rod and bellow set

After following the steps in the **Gasket body/guide support** section, the new rod/bellow unit (5,6) can be assembled. To assemble proceed in reverse order. Check that the gasket (8) between the guide support (9) and the neck of the bellow disc is properly assembled. Before assembling the new rod/bellow set (5,6), apply a little lubricating grease to the end of the rod pin. Ensure that the rod pin is aligned with the groove in the guide support. Carefully slide the rod
through the guide support. Position a new packing (12) and the stuffing box before screwing the end of the rod (5) into the guide (16). **Ensure that the rod's thread does not damage the packing.** Carefully insert the packing into the cavity. Remember to tighten the stuffing box once the valve has been fully assembled.

Disc

After following the steps in the Gasket body/guide support section, the valve plug can be replaced. To change the plug (3) just remove the spring pin and replace the plug (3). Assemble the new plug (3) with a new spring pin.

Handwheel

The handwheel (18) is not supplied as a spare part. But if you have to remove the handwheel, unscrew the nut holding the handwheel **in a clockwise direction. Note: The thread of the wheel nut is on the left, so it must be unscrewed in a clockwise direction.** Use a suitable wrench on the planes of the guide support nuts (9) and unscrew the handwheel.

Final assembly

Ensure that the neck of the bellow disc (7) and the gaskets (8) are properly aligned with the head before the final assembly to the body (1) of the valve. Sequentially tighten the bolts/studs (10) and nuts (11) to the recommended tightening torque.

MANUAL
Bellow seal globe valve AL 10-248

5. Reasons of operating disturbances and remedy

Fault	Possible reason	Remedy
No flow	Valve closed	Open the valve
	Flange dust caps were not removed	Remove dust caps on the flanges
Poor flow	Valve is not open enough	Open the valve
	Dirty filter	Clean or replace the screen
	Clogged pipeline	Check the pipeline
Control difficulties	Dry stem	Grease the stem
	Gland packing tighten too much	Slightly slacken gland nuts. Put attention to keep stuffing box tightness
Stem leakage	Bellow damage	Tighten the gland until tightness will bereached. Replace upper part of the valve as soon as possible.
Seat leakage	Shut off not correct	Tighten the handwheels without any auxiliary tools
	Seat or disc damage	Replace the valve and contact supplier or manufacturer
	Pressure difference too much	Check if the valve was assembled according to the arrow (marked on the valve) indicating flow direction.
	Medium polluted with solid particles	Clean the valve. Fit strainer before the valve.
Broken connecting flange	Bolts tighten unevenly	Replace the valve with new one

6. Transport and storage

Transport and storage should be carried out at temperature from -20°C to 65°C, and valves should be protected against external forces influence and destruction of painting layer as well. The aim of painting layer is to protect the valves against rust during transport and storage. Valves should be kept at unpolluted rooms and they should be also protected against influence of atmospheric conditions. There should be applied drying agent or heating at damp rooms in order to prevent condensate formation. The valves should be transported in such a way to avoid handwheel and valve stem damage.

7. Assembly

During the assembly of bellow valves following rules should be observed:

- To evaluate before an assembly if the valves were not damaged during the transport or storage and to make sure that applied valves are suitable for working conditions and medium used in the plant.
- To take off dust caps if the valves are provided with them.
- To protect the valves during welding jobs against splinters and used plastics against excessive temperature.
- Steam pipelines should be fitted in such a way to avoid condensate collection; in order to avoid water hammer steam trap should be applied.

AXEL LARSSON

Telephone +46 10 455 97 00 • sales@axel-larsson.se • www.axel-larsson.se

STOCKHOLM | GÖTEBORG | MOTALA | FALUN | UMEÅ

Head Office: Truckvägen 12, P.O. Box 805, SE-194 28 Upplands Väsby (Stockholm), Sweden.