

Table 1

Pos.	Quant.	Description
1	1	Body
2	1	End cap
•• 3	1	Ball
• 4	2	Seat
•• 5	1	Stem
• 6	1	Stem seal
• 7	1	Stem packing
• 8	1	Gland packing
• 9	3	Spring washer
•• 10	1	Stem nut
11	1	Cover
12	1	Cover ring
13	-	Cover bolt
• 14	1	Body seal 1
16	1	Handle
17	1	Handle bolt
•• 19	2	Spring
•• 20	2	Ball
• 34	1	Body seal 2

- Start-up: 5% of ordered quantity
- SOFT PARTS KIT
- METALLIC PARTS

Suggested materials to be checked at least every five (5) year service.

See point 5 (Maintenance)

1. SCOPE

This manual is intended as a guide to assist customers or end-users in the correct storage, installation and maintenance of PEKOS ball valves.

2. APPLICABILITY

This manual is applicable to WAFER type PEKOS ball valves as per norm DIN in the following sizes and pressures: PN16-PN40 DN15-DN100.

3. STORAGE

3.1 Supplying conditions


Cast iron and carbon steel ball valves are supplied with a phosphatising treatment to protect them against corrosion. These conditions are standard, but they can be changed on demand.

3.2 Maintenance during storage

- a. Stainless steel valves will be stored separately from the carbon steel and cast iron valves in order to avoid corrosion in the stainless steel ones.
- b. Valves must remain in open position with plastic end covers fitted.
- c. If possible it would be advisable to leave the ball valves in their own packing cases.
- d. Valves to be stored for a long time shall be checked by the quality control personnel every 6 months.
- e. Degreased valves shall only be unpacked before installation.

3.3 Environment conditions

- a. Valves shall be stored in dry conditions. Other corrosive environment conditions must be also avoided.
- b. Valves shall be protected against the dust.

	MANUAL INSTRUCTION FOR STORAGE, INSTALLATION, OPERATION AND MAINTENANCE OF PEKOS BALL VALVES	DIN WAFER PN16 – PN40 DN15 – DN100	Nr. 133 12/06/19 Rev.4
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4. INSTALLATION

- a. Verify that valves have not been damaged during transit. Inspect inside of the valves and the pipeline of the installation to be able to verify that there are no strange particles.
- b. It is advisable to use protective filters during the installation and check-in period while the possibility of dirt or even oxidation of the pipes exists. They have to be used until pipes are absolutely free of particles in suspension.
- c. If possible, valve shall be mounted in such way to allow periodic inspections.
- d. Valves are bidirectional, so fluid can run in both directions.
- e. Valves can be mounted in any position but it is advisable to mount them with the stem in vertical position.
- f. It is necessary to obtain correct alignment and parallelism to avoid any kind of stress.
- g. Once the installation is completed, valve must be operated for at least one opening and closing action to ensure perfect operation.
- h. After cleaning, protective filters can be removed.
- i. Protective filters should remain installed on dirty applications.

5. MAINTENANCE

Pekos recommends inspecting the valves at least every five (5) years. These inspection intervals could be affected by the process service (fluid, temperature, service, and cycles), and environmental condition.

5.1 Valves revision

WAFER type PEKOS ball valves do not require lubrication and the packing does not need maintenance.

Seats (4), stem packing (7), body seal 1 (14), ball (3), body seal 2 (34) and stem (5) can be replaced easily using common tools.

As replacement pieces the ones indicated in the table 1 in page 1 are recommended.

Prior to carrying out work on valves the pipeline must be completely empty, including the ball valve body cavity by half opening valve to allow any pressure build up to escape.

Care must be taken to avoid contact with dangerous or toxic chemical products. The valves must be thoroughly cleaned, in particular the body cavity, before handling and dismantling.

5.2 Steam leakage

The packing system of the *stem (5)* of PEKOS DIN WAFER type ball valves is designed for a long life. The *spring washers (9)* compensate any looseness inside the packing. The leakage cannot be avoided by tightening the *stem nut (10)* because it is fully tightened. If leakage happens, stem seals should be replaced as explained below:

- a. If the valve contains handle, loosen the *handle bolt (17)* and remove the *handle (16)*.
- b. Loosen the *cover bolts (13)* and remove the *cover (11)* from the *stem (5)* with the *cover ring (12)*
- c. Loosen the *stem nut (10)* using a tubular key.
- d. Remove the *spring washers (9)*, the *gland packing (8)* and the *packing ring (7)*, and replace them.
- e. Reassemble the pieces accordingly as it is indicated in point 6.

5.3 Body leakage

WAFER type PEKOS ball valves are built in just one *body (1)* and an *end cap (2)* that is threaded into the *body 1 (1)*. In case of leakage the correct tightening of the *end cap (2)* should be checked and, if necessary, replace the *body seal 1 (14)* and the *body seal 2 (34)*, proceeding as explained next:

- a. Loosen and remove the *end cap (2)* using the correct fork key. If required, it could be supplied by PEKOS.
- b. Replace the *body seal 1 (14)* and the *body seal 2 (34)* that are placed in the *body (1)*.
- c. Reassemble the pieces accordingly as it is indicated in point 6.

5.4 Seat leakage

In case of *seat (4)* leakage, replacing them is required as indicated next:

- a. Being the valve in closed position, separate the *end plug (2)* from the *body (1)* (watch 5.3 section) in order to inspect the *ball (3)* and the *seats (4)* (watch 5.3 section). Remove the *ball (3)*. If required, to remove it, hit it gently with a soft material tool.
- b. Check the damage caused by erosion or other defects in all the components, replacing them if necessary
- c. Reassemble the pieces accordingly as it is indicated in point 6.

6. ASSEMBLY

- a. Make sure that the pieces are perfectly clean, especially in the locations of seats & seals.
- b. Put the *seats (4)* in the housing of the *body (1)* and the *end cap (2)*. Make sure that they are properly settled and, if it is necessary, hit them with a tool made of a soft material.
- c. Put the *stem seal (6)* in the *stem (5)*. Check the correct operation of the antistatic mechanisms (*pos. 19 and 20*).
- d. Assemble the *stem (5)* in the valve from the interior of it as it is showed by the arrow in the main figure.
- e. Assemble the next pieces in the *stem (5)*: *stem packing (7)*, *gland packing (8)*, *spring washers (9)* and stem nut (*10*), fully tighten the stem nut (10) placing the *stem (5)* in closed position.
- f. Carefully introduce the *ball (3)* in the *body (1)* matching the alignment marks of the ball and the stem.
- g. Place the *body seal 1 (14)* in its housing in the *body (1)*.
- h. Place the *body seal 2 (34)* in its housing in the *end cap (2)*.
- i. With the valve in closed position and taking care of its perfect positioning, introduce the *end cap (2)* in the *body (1)* and using the face spanner, do fully tighten.
- j. Assemble the *cover ring (12)* in the *cover (11)* and place both in the *stem (5)*, place the *cover bolts (13)* and tighten them.
- k. If the valve contains handle, place the *handle (16)* in its housing in the *stem (5)*, tighten the *handle bolt (17)*.
- l. Slowly cycle the valve until completing 1 cycle to ensure coupling between the *seats (4)* and the *ball (3)*.
- m. Carefully cycle the valve twice in order to check the correct working. *Stem (5)* should rotate smoothly offering resistance as indicated by the manufacturers torque figures. Tests should be carried out according to EN 12266-1, at the pressure rating that corresponds to the valve, before reinstallation.

The end user is responsible, in case that the fluid is not communicated, checking the compatibility of the service media/ fluid with the valve materials.