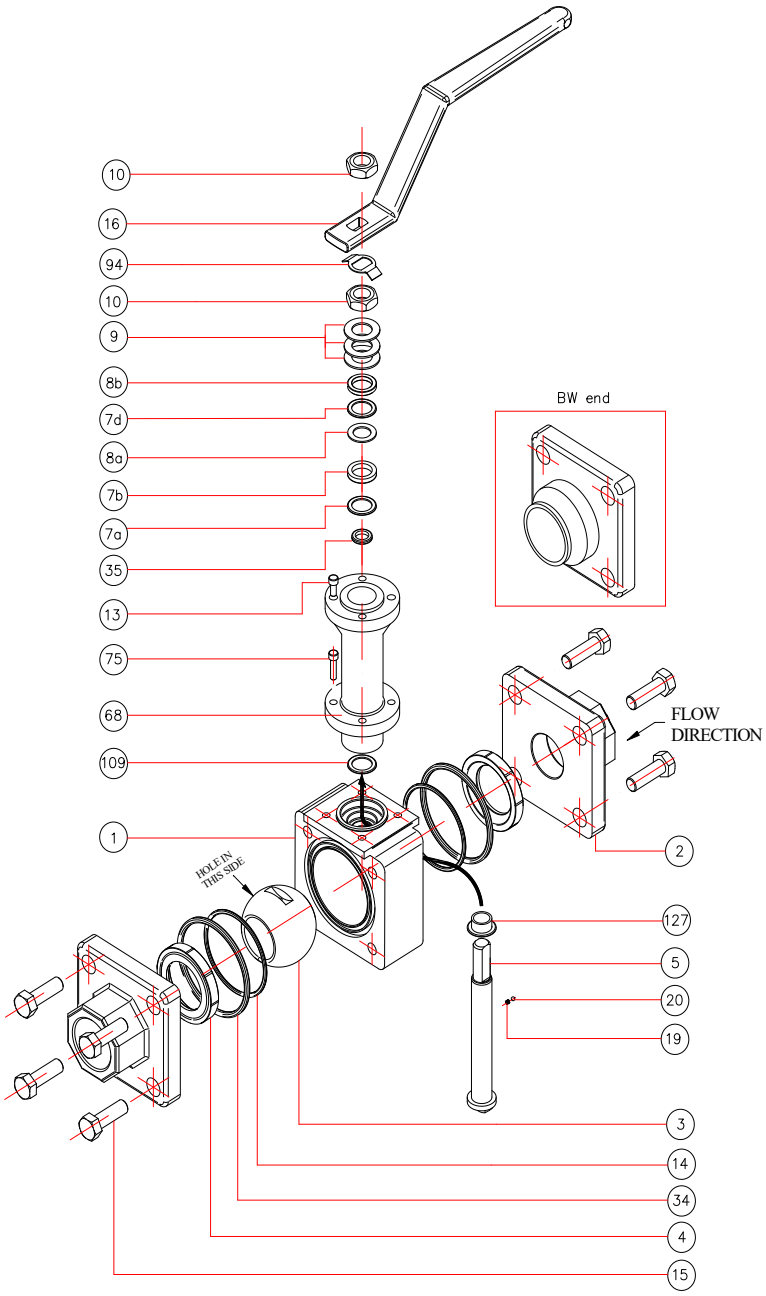

Table 1

Pos.	Quant.	Description
1	1	*Body 1*
2	2	*Body 2*
•• 3	1	*Ball*
• 4	2	*Seat*
•• 5	1	*Stem*
• 7a	1	*Stem packing 1*
• 7b	1	*Stem packing 2*
• 7d	1	*Stem packing 3*
•• 8a	1	*Gland packing 1*
•• 8b	1	*Gland packing 2*
•• 9	-	*Spring washer*
•• 10	2	*Stem nut*
13	1	*Stop bolt*
• 14	2	*Body seal 1*
15	-	*Body bolt*
16	1	*Handle*
•• 19	1	*Spring*
•• 20	1	*Antiestatic ball*
• 34	2	*Body seal 2*
• 35	1	*Stem O-ring*
68	1	*Extension casing*
75	-	*Extension bolt*
94	1	*Stop washer*
• 109	1	*Body cover seal*
• 127	1	*Stem bearing*

- • 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 6 (Maintenance)

Torque screw tightness values for bolts (Nr. 15) can be found attached in document DC-08-07-03 PF "Screw torque".

1. SCOPE

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

2. APPLICABILITY

This manual is applicable to PEKOS floating unidirectional ball valves as per norm ANSI three pieces with full and reduced bore and 2 ways. Nominal sizes and pressures covered by this manual:

- Full bore: Class 800 NPS 1/4"- 1 1/2"
- Reduced bore: Class 800 NPS 1/2" - 2"

This manual is applicable to the following end types: BW, SW, NPT and BSPP.

3. STORAGE

3.1 Supplying conditions

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

3.2 Maintenance during the storage

a. Stainless steel and carbon steel valves should be stored separately, to protect the stainless steel against corrosion.
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 must be protected against ambient dust.

4. INSTALLATION

a. As the valves are degreased, they have to be completely free of dirt. Handle carefully.
b. 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 there are no strange particles.
c. 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.
d. If possible, valve shall be mounted in such way to allow periodic inspections.
e. Valves are unidirectional, so fluid can run in only one direction
f. Valves can be mounted in any position in standard pipes but it is advisable to mount the valves with the stem in vertical position.
g. It is necessary to obtain correct alignment and parallelism to avoid any kind of stress.
h. Once the installation is completed, valve must be operated for at least one opening and closing action to ensure perfect operation.
i. After cleaning, protective filters could be removed.
j. Protective filters should remain installed on dirty applications.

4.1 Threaded connections

Use convencional sealings; ptfe, etc.

4.2 Welded connections

Please notice that the *body (1)* cannot be disassembled from the line for its maintenance. The valve must be extracted as a whole.

a. With the valve in open position, weld in four points in both *end caps (2).*
b. Finish the welding without disassembling the valve.

5. OPERATION

During operation, the valves must finish the open or closed position to assure the long life of the seats. If the valve remains in an intermediate position could be damaging to the soft seats.

5.1 Manual operation

The open and closed operation is carried out by turning the handle a quarter turn (90º). The valve is in open position when the handle is in line with the pipe and the valve. The valve is closed when the handle is perpendicular to the pipe.

5.2 Automatic operation

The valve can be operated automatically by: pneumatic actuator (double or single effect); hydraulic actuator, electric actuator or gear box. If a gear box is used, a stop is not included in the valve because it is part of the gear box.

6. 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.

6.1 Valves revision

PEKOS ball valves do not need lubrication and the packing does not need maintenance.
Seats (4), *stem packing (7a, 7b and 7d)*, *body seals (14 and 34)*, *stem O-ring (35), body cover seal (109*), *ball (3)* and *stem (5)* can be replaced easily using common tools. As replacement pieces is advisable to follow the instructions below table1 in page 1.
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.

6.2 Stem leakage

The packing system of the *stem (5)* of PEKOS ANSI ball valves has been designed for a long life. The *spring washers (9)* compensate any looseness inside the packing. In case of leakage, the stem seals shall be replaces as it is shown:

a. Loosen the first *stem nut (10)* and remove the *handle (16)*.
b. Loosen the *extension bolts* (75) and remove the *extension casing* (68) together with the *stem* (5).
c. Replace the *stem O-ring* (35) and the *body cover seal (109*) if necessary.

d. Remove the *stop washer* (94) and loosen the *stem nut* (10) using a tubular key.
e. Remove the *spring washers (9)*, the *gland packing (8a and 8b)* and the *stem packing (7a, 7b and 7d)* and replace them if necessary.
f. Reassemble the pieces accordingly as it is indicated in point 7.

6.3 Body leakage

These ANSI floating ball valves are constructed in 3 pieces, *body1 (1)* and two *body2 (2).* Body fasteners should be checked for tightness. If leakage occurs and if necessary, *body seals (14 and 34)* should be replaced as it is shown:

a. Make alignment marks on the *body (1)* and *ends (2)* prior to dismantling, to ensure a correct alignment when reassembling. Remove *body bolts (15)* and disassemble *body2 (2).*
b. Substitute the *body seals (14 and 34).*
c. Reassemble the pieces accordingly as it is indicated in point 7.
d. Repeat the same operation with the other *body 2 (2).*

6.4 Seat leakage

Please notice that the *body (1)* cannot be disassembled from the line for its maintenance. The valve must be extracted as a whole.

If leakage occurs, *seats (4)* must be replaced as it is shown:

a. Maintaining the valve in the closed position; loosen and remove body *bolts (15)* and remove *body2* (2) from *body1 (1)* to check the *ball (3)* and the *seats (4).* To remove the *ball (3)*, if necessary, bang it with a soft tool gently.
b. Check the rest of components, and replace them if necessary.
c. Assemble the pieces accordingly as it is indicated in point 7.

7. RE-ASSEMBLY

a. Prior to re-assembly all components and body cavity should be cleaned of any incrustation, dirt, rust etc., especially in the locations of seats & seals.
b. Put the *stem bearing (127)* onto the *stem (5)*. Check the *antistatic devices (pos. 19, 20)*.
c. Assemble the *stem (5)* into the valve as the arrow shows in the principal figure.
d. Assemble the following components in the *stem (5)* in this order: *stem packing (7a and 7b)*,*gland packing (8a), stem packing (7d) ,gland packing (8b), spring washers (9)* and *stem nut (10),* putting the *stem (5)* in closed position.
e. Introduce carefully the *ball (3)* into the *body 1 (1)* aligning the ball groove with the stem.
f. Put the *body seals (14 and 34)* into their housing of the *body (1)*.
g. Put the *seats (4)* into the *body 1 (1)*.
h. Maintaining the valve in its closed position and ensuring that alignment marks are matched, joint the *body 1 (1)* and the *body 2 (2*). Assemble the *body bolts (15*) evenly tighten in diagonal using a torque wrench and the values indicated attached in document DC-08-07-03 PF "Screw torque".
i. Put the *stop washer* (94).
j. Place body cover seal (109) into its cavity in the *body 1* (1).
k. Join the *extension casing (68)* on the *body 1 (1)* by means of *extension bolts (75)*.
l. Put the *handle (16)* into its housing in the *stem (5)*, and tighten the *stem nut (10)*.
m. Introduce the *stop bolt (13)* in the *body 1 (1)* and tighten it.
n. Slowly cycle the valve until completing 1 cycle to ensure coupling between the *seats (4)* and the *ball (3)*.
o. Carefully cycle the valve twice in order to check the correct working. Stem should rotate smoothly offering resistance as indicated by the manufacturers torque figures. Tests should be carried out according to API 598, at the pressure rating that corresponds to the valve, before reinstallation.

If the valves are automatic:

a. Reassembly the actuator. If necessary, check the stops.
b. Firstly. Valve in open position and check if the ball is totally open.
c. Secondly. Valve in closed position and check the closure.
d. Valves with electric actuators must be tested beginning in an intermediate open-closed position. It is done to check that the electric connection and the rotation are right. If it is in a bad position, switch off the electric actuator immediately and change the direction. Torque and limit switch limiters are not effective if the rotation is incorrect.

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.