IM-PQR_i-SS-OR-STD-H95-05-EN

Maintenance and Installation Instructions

FLOATING BALL VALVE
TYPE: PQR-i
SERVICE: STANDARD

Rev.	Comments	Carried out by	Checked by	Approved by	Date
01	NEW INSTRUCTION	L. Ribas	J. Font	T.Paradinas	09-05-2014
02	ADDED POINT 3.3	J. Marchante	J. Font	T. Paradinas	24-11-2015
03	NEW INSTRUCTION 5.5	Q.Cruañas	J.Font	T.Paradinas	01-09-2017
04	NEW INSTRUCTION 10. BELLEVILLE SPRING SETUP	A.Dumsa	J.Font	T.Paradinas	25-09-2017
05	Section 5.6 to 5.10 created	M.Bel	C.Curval	T.Paradinas	23-11-2022
5.1	New logo, brand review	A.Suresh	E. Guillaumes	T.Paradinas	29-04-2025

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1 DECLARATION

The "BAC" **PQR-i** ball valve has been designed and manufactured for the handling and control of fluids during industrial processes appropriate to valve performance, in accordance with applicable regulations.

It is thus very important to follow the instructions set out below. Failure to follow these instructions may result in the loss of the manufacturer's warranty.

2 APPLICATIONS

2.1 The user is responsible for ensuring the suitability of materials and valve type design according to its working conditions.

2.2 Special attention should be paid with corrosive products, in which case the material should be checked to see if it is suitable and if so, inspections should be provided for, according to the possible corrosion.

2.3 For unstable products and with behaviors which undergo quick changes or processes that are likely to produce overpressure in the cavity of the valve ball, such as H2 O2, cryogenic fluids, etc., as well as with certain processes involving temperature changes, it is important to ensure that the valve design includes a relief system for the aforementioned overpressure, such as: unidirectional valve with a hole in the ball, floating seats, purge valve, etc.

2.4 For valves that are used at points or applications that may suffer erosion due to the product they are transporting, a necessary inspection plan must be carried out and applied to ensure the valve capacity for the process conditions at all times.

2.5 The valves are identified with a name plate which indicates the maximum pressure-temperature performance of use in terms of their component materials and design rating. The valve must never be installed in processes that while perhaps compatible, may exceed some of the specified limitations.

3 STORAGE

3.1 All the valves are supplied wrapped in a special plastic and / or flange covers to protect the gasket surfaces and their interior. The valves should remain protected for as long as possible prior to being assembled.

3.2 The valves should be stored in a dry environment, protected from extreme temperatures and from any possibility of being damaged. Special attention should be paid to the gasket surfaces as any deterioration may cause leaks after installation.

3.3 The valves should always be stored with the ball fully open and the flange covers placed on the ends for as long as possible prior to being assembled.

4 INSTALLATION, HANDLING AND TRANSPORTATION

4.1 The handling and transportation of the valves should be undertaken with caution, using the necessary means depending on their size and weight to avoid risks to people handling them. Never use the operating lever or knob to hold the valve while handling or transporting it.

4.2 Check the condition of the valve for any damage caused during transportation and / or handling. Inspect both inside the valve and the adjacent pipe. It is important to check that there are no foreign particles that may damage the valve seat.

4.3 When it is likely that the valve is to be located at a waste collecting point, such as those for welding slag, rust and scale, filters or screens should be temporarily installed.

4.4 Place the valve in a fully open position in order that foreign bodies do not damage the seats and ball.

4.5 The valve should be positioned so that it is accessible for periodic maintenance and inspection.

4.6 These valves don't have any preference in terms of the flow direction, as they are bi-directional. In any case, you should check that there is no mark on the body such as an arrow or a plaque indicating a preferential direction, or a unidirectional valve.

4.7 The axis can be assembled in any position, but preferably vertically, facing upwards.

4.8 The valves must not withstand stress from the piping. Assembly should be carried out with proper alignment and parallelism to avoid such stress.

4.9 Ensure that the flange gasket is correctly installed and assembled following the manufacturer's instructions.

4.10 A final check of the valve should be carried out once it has been installed, performing an opening and a closing to ensure that it works properly. If necessary, readjust the packing by tightening the screws (92). The valves are supplied with the operating rod as a separate part (90), and the installer is responsible for ensuring that it is properly secured, and well as of carrying out an assessment of potential risks that this may pose to the installation, and to take the necessary measures to deal with them.

4.11 Ensure that the fluid and the cleaning operations of the installation are compatible with the valve. Following these operations, the filters can be removed. If the installation process normally involves rust and scale, the use of permanent filters should be considered.

4.12 The use of straps is recommended when handling painted vaults.

4.13 Special attention is recommended during operations and movements of both the valve and the paint.

4.14 Valve handling straps should be positioned symmetrically on each side of the valve, ensuring that the center of mass is balanced and that the straps cannot shift during transportation (e.g. by using the space between the body and the flanges). For safety reasons, it is very important that the straps are located as far as possible from the center of the valve. All movements must be performed at low speed, ensuring that there is no possibility of accident or damage to persons or to the valve.

5 MAINTENANCE

5.1 The maintenance operations consist of an inspection to ensure that the valve works properly.

5.2 Valves should be routinely actuated at least every 6 months, and depending on the flow and valve application, checks and actuation plans should be set up in the shortest timeframe possible; they should never be left open or closed for an extended period of time.

5.3 A very high torque increase may be due to the entry of foreign particles in the seats. Therefore, inspection of the seats and a possible replacement should be carried out, in order to prevent damage to the ball, without forcing the valve actuation.

5.4 Replace the gaskets and seats whenever a thorough review of the installation is carried out or for repair.

5.5 The valves are produced and assembled to be operative throughout its useful lifetime, at the end of it, the different materials that compose it, most of them metallic, must be environmentally managed correctly, completing its life cycle.

5.6 Use only genuine BAC Valves spare parts for maintenance and replacements to ensure proper functioning of the valve. Bac Valves cannot accept responsibility for any damages that occur from using spare parts from other manufacturers.

5.7 The recommended spare parts (gaskets, O-rings, friction rings, etc) are clearly marked with ✓ in the assembly drawing of the valve (General Arrangement Drawing).

5.8 Spare parts can be ordered to BAC Valves providing the serial number of the valve or specific purchasing order for the original valve.

5.9 If BAC Valves products have been stored for long periods check for deterioration before using these products. Do not re-use parts or components which appear to be in good condition after they have been checked or replaced by qualified personnel and declared unsuitable for use.

5.10 At the end of design life, the spare parts can be scrapped and can be recycled if sorted according to material. Separate the parts of the valve according to their nature (ex. metallic, plastic materials, etc.) and send them to differentiated waste collection sites, see Table 1. Check local authority regulation before disposal.

SUBJECT	HAZARDOUS	RECYCLABLE	DISPOSAL
Metals	No	Yes	Use licensed recyclers
Plastics	No	Yes	Use specialist recyclers
Seals	Yes	No	May require special treatment before disposal, use specialist waste disposal companies

Table 1. Recycling and disposal.

6 PRECAUTIONS PRIOR TO DISMANTLING

6.1 Ensure that the line has been closed and depressurized. Activate the valve several times to depressurize and drain its dead cavity.

6.2 Appropriate protective clothing should be worn for the flow.

6.3 Remove the line valve, in the closed position, and clean off any remaining fluid from it.

7 DISASSEMBLY

7.1 NPS ½", ¾", 1", 1½", 2"

7.1.1 Unscrew wrench bolt (91B), remove the washer (96C) and the handle (95). Unscrew bolts (91C) and remove indicator (51).

7.1.2 Unscrew the nut handle (55A), remove the lock washer (53) and the spring-washer (94). Remove the compression ring (57) with the O-ring (80).

7.1.3 Using a special tool, unscrew the cover (42) being careful not no damage the notches. Remove gaskets /76 and 72) and the seat (60) from the cover (42).

7.1.4 With the valve in closed position, remove the ball (20) from the inside being careful not to damage it.

7.1.5 Remove the stem (30) by pressing it into the valve body. It may be necessary to tap it with a piece of soft material. Remove the friction washer (86) and the O-ring (81).

7.1.6 Remove the other seat (60) and the stem seal (85F), being careful not to scratch any sealing surfaces in the valve body.

7.1.7 Clean and check all parts, looking after to not damage the secondary metallic seat of the cover (40) and body (10). New seats and seals should be replaced, specially the spare graphite seals (76) and (85), for valves with "FIRE-SAFE" certification.

7.2 NPS 3", 4", 6", 8", 10", 12"

7.2.1 Unscrew the bolt (91D) to remove the wrench (90). Unscrew the handle bolt (91B), to remove washers (96 and 96C) and wrench support (93).

7.2.2 Unscrew bolts (91C) to remove the stop indicator (51), the cir-clip (82), the friction ring (86). Unscrew the gland-packing bolts (92) and remove the gland (55). Following, remove the graphite gaskets (70) and (85F), the gland ring (56) and its three O-rings (80 and 80A).

7.2.3 Using a special tool, unscrew the cover (42) being careful not no damage the notches. Remove gaskets /76 and 72) and the seat (60) from the cover (42).

7.2.4 With the valve in closed position, remove the ball (20) from the inside being careful not to damage it.

7.2.5 Remove the stem (30) by pressing it into the valve body. It may be necessary to tap it with a piece of soft material.

7.2.6 Then remove spring washers (94), the ring (59) and the friction washer (86).

7.2.7 Remove the other seat (60) and the stem seal (85), being careful not to scratch any sealing surfaces in the valve body.

7.2.8 Clean and check all parts, looking after to not damage the secondary metallic seat of the cover (40) and body (10). New seats and seals should be replaced, specially the spare graphite seals (70, 76 and 85F), for valves with "FIRE-SAFE" certification. The PTFE parts of the position (85), will be replaced too.

8 ASSEMBLY

8.1.1 Insert one seat (60) into the body (12) so that the lip seal surface will be bearing the ball (20). Make sure that it is well settled. If necessary, tap it faintly without damaging it.

8.2 NPS ½", ¾", 1", 1½", 2"

8.2.1 Insert the ring (86) into the stem (30). After checking the anti-static device and placed the O-ring (81), insert the stem from the inside of the valve.

8.2.2 The following parts must be mounted on the stem (30): the stem seal (85F), the gland (57) with its inner O-ring (80). Following, place the two spring washers (94) and the security washer (53). Screw down the nut (55A) until the mounting line is perfectly aligned with the platform of the body (12). Fold the flap of the security washer to avoid the loosen of the nut.

8.2.3 Insert carefully the ball (20) with the stem (30) in closed position, if necessary, turn the stem blade to align with the ball slot.

8.2.4 Place the second seat (60) and the gaskets (72 and 76) on the cover (42).

8.2.5 With the valve in closed position, screw the cover (42) using a special tool until the cover touch the body (12). If possible, use a lubricant compatible with the fluid.

8.2.6 Place the indicator (51) and screw the bolts (91C) to fix it. Place the lever (95). Next, place the washer (96C) and the washer bolt (91B).

8.2.7 Cycle the valve slowly with a gentle back and forth motion until the full operation. Doing so the seats (60) will assure a perfect seal shape against the ball (20) avoiding any damage to the seat soft material.

8.3 NPS 3", 4", 6", 8", 10", 12"

8.3.1 Insert the friction ring (86) into the stem (30). After checking the anti-static device, insert the stem from the inside of the valve.

8.3.2 The following parts must be mounted on the stem (30): the stem seal (85), the ring (59), the spring washers (94) according point 10, the compression ring (56) with its internal O-rings (80), the graphite gasket (70) and the external O-ring (80A). Following, place the graphite gasket (85F) inside the gland (55). Before screwing down the bolts (92) of the gland (55) against the body, to place correctly the stem (30), if necessary, tap it faintly without damaging it. Finally, place the friction washer (86) and the circlip (82).

8.3.3 Insert carefully the ball (20) with the stem (30) in closed position, if necessary, turn the stem blade to align with the ball slot.

8.3.4 Place the second seat (60) and the gaskets (72 and 76) on the cover (42).

8.3.5 With the valve in closed position, screw the cover (42) using a special tool until the cover touch the body (12). If possible, use a lubricant compatible with the fluid.

8.3.6 Insert on the body (12), the stop indicator (51) with its bolts (91C) and fix the handle (93) by means of the washers (96 and 96C) and the bolt (91B). Fix the wrench (90) with the bolt (91D).

8.3.7 Cycle the valve slowly with a gentle back and forth motion until the full operation. Doing so the seats (60) will assure a perfect seal shape against the ball (20) avoiding any damage to the seat soft material.

9 FINAL INSPECTION

9.1 A test should be carried out to check the tightness of the valve. Once this has been completed, it should be drained and cleaned.

9.2 If the valve has to be stored following repair, the carbon steel parts must be protected with an anti-corrosion agent.

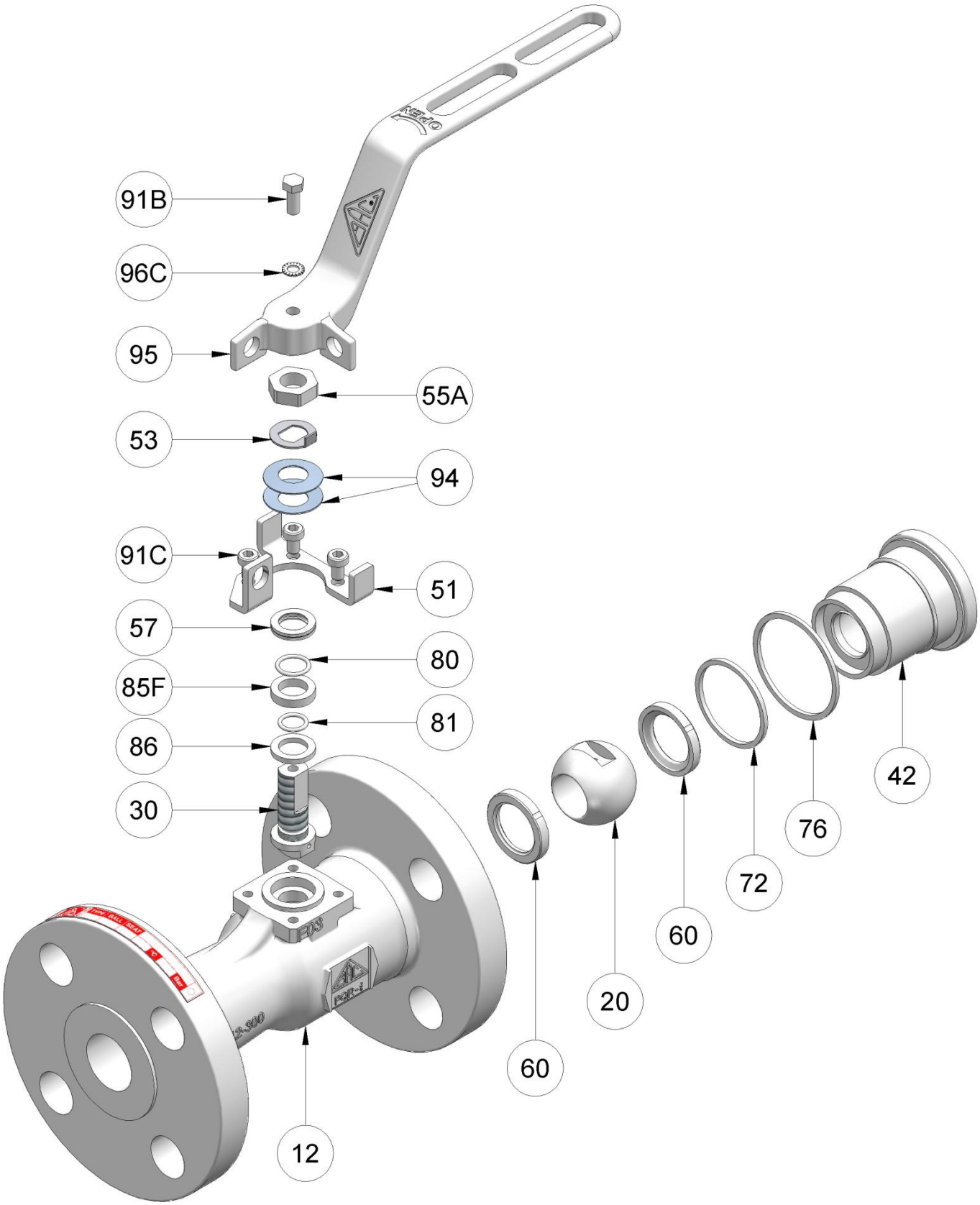
9.3 If the valve has to be operated by an actuator, the correct axis alignment and parallelism must be considered when installing it, in order to ensure that no stress bending occurs.

9.4 Refer to corresponding installation and maintenance instructions for actuator.

10 BELLEVILLE SPRING SETUP

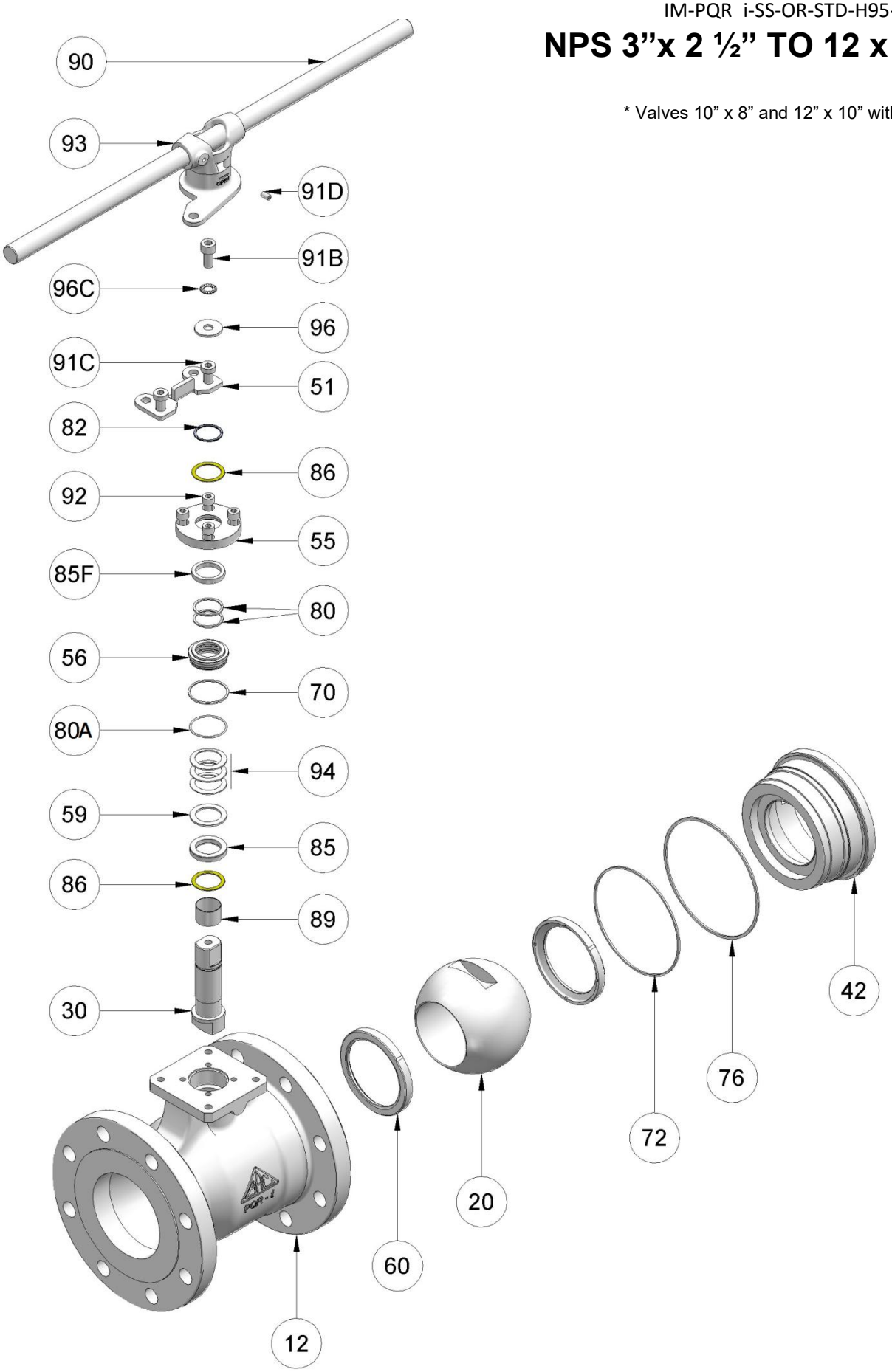
Belleville Springs	F07	F10	F12	F14
STD 316	3 x PARALLEL 	3 x PARALLEL 	4 x PARALLEL 	6 x PARALLEL 
INC 718	2 x SERIAL 	2 x PARALLEL +1 x SERIAL 	2 PACKS SERIAL: 2 PARAL + 2 PARAL 	2 PACKS SERIAL: 3 PARAL + 2 PARAL 

NPS ½” x 3/8” TO 2” x 1 ½”



NPS 3”x 2 ½” TO 12 x 10” *

* Valves 10” x 8” and 12” x 10” with gearbox.



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