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1. ERIKS operating companies

ECON 3-pc body design, "Quick-Weld" Series ball valves are being delivered by several ERIKS operating companies on a worldwide basis. In this manual these will be referred to as 'ERIKS', the individual terms of delivery of the ERIKS operating company having executed the order are applicable.

2. Product description

The ECON Quick-Weld ball valves are designed according the information in our latest catalogue or see our website www.eriks.com and should be used in accordance with the applicable pressure-temperature rating as stated on this website. The Quick-Weld ball valves are provided with marking, according to EN 19. The marking makes the identification of the valve easier and contains:

- size (inch)
- pressure rating class
- body material marking
- ECON logo
- heat numbers

3. Requirements for maintenance staff

The staff assigned to assembly, operating and maintenance tasks should be qualified to carry out such jobs and in any circumstance, ensure personal safety

4. Transport and storage

During transport and storage the valves should be protected against external forces, influence and destruction of the painting layer as well. The purpose of the painting layer is to protect the valve against rust, during transport and storage. The valves should be stored in an unpolluted space and should also be protected against all atmospheric circumstances. There should be taken care of the temperature and humidity in the room, in order to prevent condensate formation.

5. Function

ECON Quick-Weld ball valves are designed to stop the flow of a medium. The valve is closed by turning the lever counter clockwise; please don't use tools to increase the torque on the lever.

6. Application

The ECON Quick-Weld ball valves are used for industrial systems gasses and liquids. The valves are designed for standard operating conditions. For the use of extreme conditions e.g. aggressive or abrasive media, it is recommended to mention this at the ordering stage, to verify whether the valve is suitable. The installation designer is responsible for the valve selection, suitable for the working conditions. The valves are unsuitable, without written permission of an ERIKS company, to apply for hazardous media as referred into Regulation (EC) No 1272/2008.

For low temperature application until -40°C, we recommend the use of an ECON stem extension and ball with upstream relief hole.

7. Installation

- a. Remove the protective plastic cap on BW ends, and clean or flush the valves.
- b. Prior to mounting, flush and/or clean the pipeline to remove all accumulated extraneous matters, which may damage the seats and ball surface. Check if the valve has a preferred flow direction and take this direction into account during installation.
- c. Installation of BW end valves
 - The unique Quick-Weld construction makes it possible to align the valve after welding the endcaps in the pipe.
 - Tack-weld the valve on the pipe on four points on both caps, with the ball valve in open position. Extended butt-weld end ball valves allow direct welding. For short butt-weld end connections process the next steps.
 - Removed all body bolts except one and after losing the remaining one, the valve body can be swung out. Secure seats from falling with tape.
 - Finish welding both end caps on the pipe.
 - When cooled down, clean both end caps and body surface.
- d. Swing the body back to the original position and replace the bolts (if necessary). Align the body in the required position and put the valve in the open position. Tighten all nuts slightly. This operation is very important to keep body and end caps perfectly parallel, thus, preventing distortion of the end caps.
- e. Tighten body bolts evenly and crosswise. Make sure that maximum tightening torque is observed per bolting torque data. See table B
- f. Check proper operation of the valve.
- g. The pipeline shall be free of tension after installation.
- h. For any further information please contact the ERIKS company that has supplied the valves. Contact information can be found on www.eriks.com
- i. Make sure the pipeline will be flushed clean prior to operation.
- j. The operation of the valve consist of turning the stem (by manual or automated means) ¼ turn (90°) clockwise to close, and ¼ turn counter-clockwise to open.
- k. When the handle (if used) and/or stem flats or groove are in line with the pipeline, the valve is open.
- l. Besides operating by handle, Fig. 7611, 7641 and 7654 can also be operated with an actuator, mounted on the ISO 5211 "Direct Mount" top-flange. (Please see our catalogue to check top-flanges sizes)
- m. Fig.7645 is bracket mount and standard with 2e relief-hole upstream in the ball. With the spindle extension filled with grease suitable for low temperature it can be used for Cryogenic fluids and also operated with an actuator on top of the spindle extension ISO 5211 Direct mount top flange.
- n. Operating torque requirements will vary depending on the length of time between cycle, media in the system line pressure and type of valve seat.

8. Maintenance

The lifetime of valves highly depends on working conditions like pressure, temperature, type of media and the amount of operating cycles. By below mentioned maintenance activities the lifetime can be extended.

Warning:

- Ball valves can trap pressurized fluid in the ball cavity when in closed position.
- Prior to maintenance, relieve the line pressure.

a. Re-tighten Packing

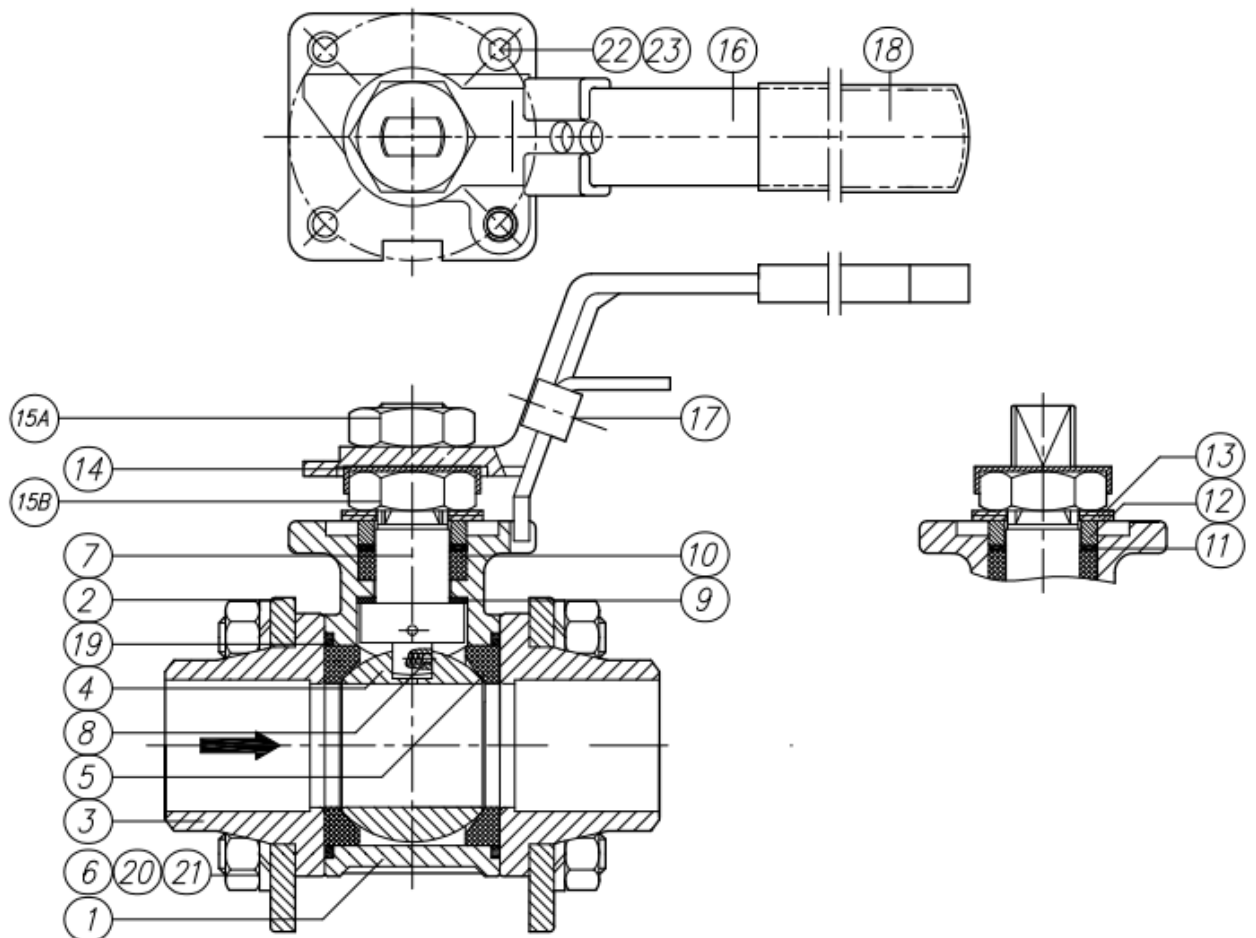
For maximum stem packing life, proper packing adjustment procedure must be followed:

- Should a leakage occur at the gland packing, retighten the stem nut (15B)
- Take care that the stem nut (15B) is not tighten too much. Normally the leakage can be stopped by simply turning the stem nut (15B) by 30° to 60°.

b. Replacement of seats and seals

- 1) Disassembly of parts is easy, even if the valve is installed in the pipeline:
 - Before disassembly, make sure to discharge any hazardous media from the valve inside body cavity.
 - Remove all body bolts except one and after losing the remaining one, the valve body can be swung out, and place valve in close position.
 - Put the valve in the closed position and be careful not to let the ball fall out of the body. Remove the Body gasket and Ball seat (5), and Ball (4). Inspect the ball closely for scratches, if any, the ball should be replaced.
 - In case the stem seal needs to be replaced, remove all upper parts in following order: Handle nut (15A), Handle (16), Stop-lock-cap (14), Stem nut (15B), Belleville washer (13), Gland (12), Bushing (11).
 - Push the Stem (7) down into the body cavity and remove it from the valve Body (1). Then remove the Stem bearing seal (9) and the V-shaped stem packing (10) from the Body (1).

Caution: Use care to avoid scratching the surfaces of the stem and packing chambers.



ECON Fig.7645

2) Reassembly:

- Clean and inspect all parts. Reassemble the valve in reverse sequence of the disassembly.
- Reassemble the Ball Valve by using new Seats, Gaskets and Packing Seals.
- Swing the body back between both end-caps to the original position. Put the ball in the open position wings the Body back to original position. Put the ball in open position and tighten the body bolts evenly and crosswise with the torque as mentioned in Table B.
- Tighten the stem nut (15B), using Table A stipulated torque figure.
- If possible, test the valve, then operate the valve several times before resuming services.

Table A: Stem nut tightening torque

Table B: Body bolt tightening torque

Valve Size		Stem Nut tightening torque	
NPS	DN	In-lb	Nm
1/4	8	80~106	9~12
3/8	10	80~106	9~12
1/2	15	80~106	9~12
3/4	20	80~106	9~12
1	25	106~142	12~16
1.1/4	32	106~142	12~16
1.1/2	40	151~195	17~22
2	50	151~195	17~22
2.1/2	65	221~283	25~32
3	80	221~283	25~32
4	100	373~443	42~50

Body bolt tightening torque			
Bolt Size		In-lb	Nm
M6x1.0	1/4-20UNC-2A	62~89	7~10
M6x1.0	1/4-20UNC-2A	62~89	7~10
M6x1.0	1/4-20UNC-2A	62~89	7~10
M8x1.25	5/16-18UNC-2A	142~186	16~21
M8x1.25	5/16-18UNC-2A	142~186	16~21
M10x1.5	3/8-16UNC-2A	248~310	28~35
M10x1.5	3/8-16UNC-2A	248~310	28~35
M10x1.5	3/8-16UNC-2A	248~310	28~35
M14x2	9/16-12UNC-2A	443~665	50~75
M14x2	9/16-12UNC-2A	443~665	50~75
M16x2	8/8-11UNC-2A	709~1019	80~115

9. **Service and repair**

All service and repair jobs should be carried out by authorized staff, using suitable tools and genuine spare parts.

- Welding repair and drilling of the valve is forbidden.
- It is forbidden to replace seats or seals when the valve is under pressure.
- Before seats or seals are going to be replaced, all contact surfaces of these parts need to be cleaned.
- After replacement of seats or seals it is necessary to check the valve operation and tightness of all connections. Tightness test should be carried out.
- After installation, the valve should be checked and maintained periodically at least every 3 months, depending on the medium.

10. Troubleshooting

It is essential that the safety regulations are observed when identifying the fault.

Problem	Possible cause	Corrective measures
No flow	The ball valve is closed	Open the ball valve
	Dust caps were not removed	Remove dust caps
Little flow	Valve not completely open	Open valve completely
	Piping system clogged	Check piping system
Valve difficult to open	Stuffing box seal too tight	Slacken stem nut
	Wrong direction of rotation	Turn counter clockwise to open
	Ball seat damaged by foreign particles.	Replace the ball valve
	Expanded medium behind the ball	Cool down the ball valve.
Leakage across the stem	Stuffing box gland slack	Tighten stuffing box gland, if necessary replace the ball valve
Leakage across valve seat	Valve not properly closed	Pull lever tight without tools
	Seat damaged by foreign particles	Replace the ball valve
	Medium contaminated	Clean valve and install dirt screen
Operating failure	Packing too tight	Loosen stem nut

11. Removal

Dismantled and rejected valves cannot be disposed with household waste. The valves are made of materials which can be re-used and should be delivered to designated recycling centers.

General warning:

General note for products which may be used for seawater:

Although our products can be used in seawater systems it should always be noted that, in case of installation in a piping system made of materials which are frequently used because of their excellent seawater resistance (e.g. Cunifer), large potential differences may occur possibly causing corrosion which could permanently damage the proper functioning and integrity of our product.

A combination of different materials should always be mentioned prior to the purchase of our products in order for us to give the best possible advise on a safe functioning.