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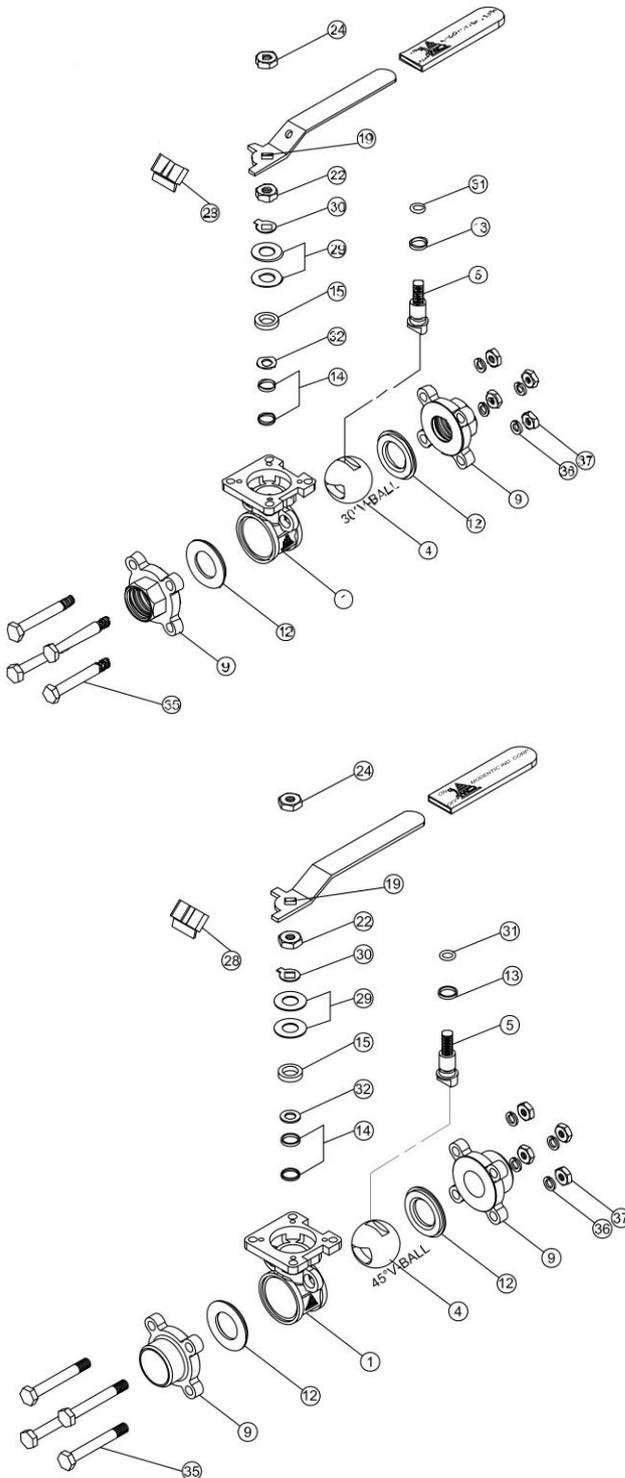
Maintenance of 3-pc stainless steel ball valves Inox Flow Control (Valve Type VF-158)

1. Maintenance frequency

The maintenance frequency is determined upon the application of the valve. User shall consider the time interval, depending on the kind of fluid, flow velocity, operation frequency, pressure- and temperature effects.

2. Disassembly

- a. The user should look for a correct spare part kit first, available from TRI-MATIC as the supplier of the valve in the local market.
- b. To dismantle the valve please follow the procedure as mentioned below.
- c. It does not matter where the valve is mounted, usually it contains fluid. So, the operator must be careful when he removes the valve from the pipe. Just open the ball a little bit and let the fluid come out slowly.
- d. To dismantle the valve, first release the end caps.
- e. Then remove handle nut, handle, and gland nut.
- f. The ball must be turned in the closed position. Note that the ball cannot be taken out from the valve body if the ball is in the open or any semi-open position.
- g. Remove the seals (ball and body) carefully.
- h. Dismantle the ball slowly and avoid any ball damage by metal contact. To protect the surface of the ball store it with the open side to the ground (to avoid rolling away).
- i. Then push stem downwards (make sure not to damage the stem packing) and take it out carefully through the valve body.



MATERIALS LIST

| NO. | PART NAME | MATERIAL |
|-----|-------------------|-------------------|
| 1 | BODY | 1.4408/ EN1503-1 |
| 4 | BALL | ASTM A351 Gr.CF8M |
| 5 | STEM | SS316 |
| 9 | END CAP | 1.4408/ EN1503-1 |
| 12 | SEAT | 50%SS+50%PTFE. |
| 13 | THRUST WASHER | RTFE. |
| 14 | STEM PACKING | RTFE. |
| 15 | GLAND BUSH | SS304 |
| 19 | HANDLE | SS304 |
| 21 | HANDLE COVER | PLASTIC |
| 22 | STEM NUT | SS304 |
| 24 | HANDLE NUT | SS304 |
| 28 | LOCKING PAD | SS304 |
| 29 | BELLEVILLE WASHER | SS304-CSP |
| 30 | TAB WASHER | SS304 |
| 31 | O-RING | VITON |
| 32 | PACKING FOLLWER | PTFE.+25%GF |
| 35 | BODY BOLT | SS304 |
| 36 | BOLT WASHER | SS304 |
| 37 | BOLT NUT | SS304 |



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3. Parts inspection, maintenance and replacement

- a. Check if the surface of the ball is scraped. If there is any damage on the surface, then find out the reason such as dirty fluids, etc. The damaging factors must be avoided.
- b. The ball surface must be absolutely reworked if there is any damage between ball and seat. If it cannot be repaired the ball has to be changed.
- c. If the scraped area is not between ball and seat, the damages must be reworked as well. Otherwise the ball will damage the seats during next open/close operations.
- d. Check the surfaces of all seats. Are there any scrape marks, abrasions? Usually, the scrape marks and damages (from dust, for example) will show up at the same time as the ball is damaged. It is the reason for leakages. Damaged seats show problems in process and must be changed.
- e. Eventually it must be reconsidered if the correct valve is used in this application.
- f. The stem packing may be replaced by the new parts after dismantling the valve. TRI-MATIC as the supplier of the valve in the local market can supply all necessary parts.
- g. Making the final inspection of the valve, it must be operated 5 times open/close to make sure all parts are assembled correctly. Check if the operating torque has more or less the same value during the open/close operation. If not, there are perhaps parts which are not in the correct position. Then valve must be disassembled and checked again.

4. Assembly

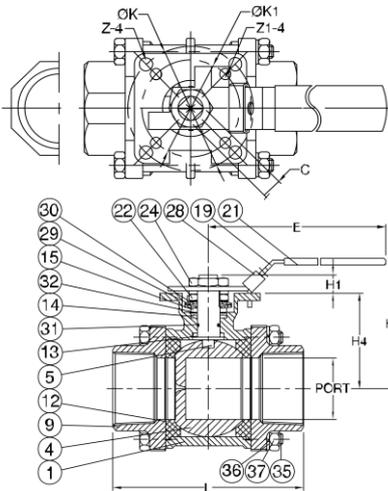
For assembly process, take the opposite way of the dismantle process. The valve must be in the close position during assembling ball and end caps. The stopper of the handle must be located at the right place. Otherwise the open/close operation will be in the opposite way. When tightening the end cap bolts, it is important to tight them in cross serial way to prevent an unbalanced fitting.

Please use following torques:

| Tighten Torque Body Bolts | |
|---------------------------|-------------------|
| Valve size | Tighten Torque Nm |
| 1/4" | 10 |
| 3/8" | 10 |
| 1/2" | 10 |
| 3/4" | 12 |
| 1" | 12 |
| 1 1/4" | 15 |
| 1 1/2" | 17 |
| 2" | 31 |

| Max. Tighten Torque Stem Nut | |
|------------------------------|-------------------|
| Valve size | Tighten Torque Nm |
| 1/4" | 5 |
| 3/8" | 5 |
| 1/2" | 6.3 |
| 3/4" | 6.3 |
| 1" | 10 |
| 1 1/4" | 10 |
| 1 1/2" | 12 |
| 2" | 12 |

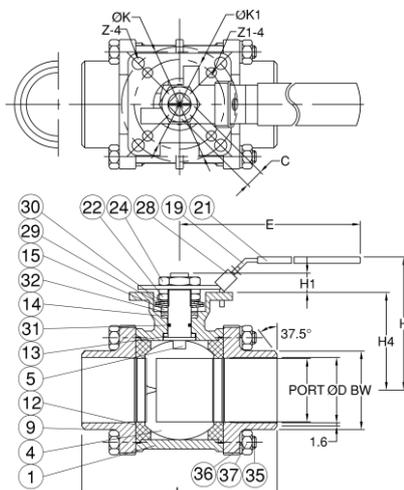
5. Dimensions



DIMENSION

Unit : mm

| SIZE | PORT | L | E | H | H1 | H4 | C | OK | OK1 | Z-4 | Z1-4 | |
|-------|--------|-------|-------|-------|-------|------|-------|------|-------|------|------|-----|
| DN15 | 1/2" | 15.0 | 63.5 | 112.0 | 73.0 | 8.5 | 37.0 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 |
| DN20 | 3/4" | 20.0 | 72.5 | 112.0 | 80.8 | 8.5 | 45.0 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 |
| DN25 | 1" | 25.0 | 81.0 | 136.0 | 90.5 | 11.4 | 53.5 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 |
| DN32 | 1-1/4" | 32.0 | 94.5 | 185.0 | 98.7 | 11.4 | 59.0 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 |
| DN40 | 1-1/2" | 38.0 | 108.0 | 197.9 | 115.3 | 14.0 | 74.8 | 14.0 | 70.0 | 50.0 | 9.0 | 7.0 |
| DN50 | 2" | 50.0 | 121.5 | 197.9 | 124.0 | 13.7 | 83.5 | 14.0 | 70.0 | 50.0 | 9.0 | 7.0 |
| DN65 | 2-1/2" | 65.0 | 157.5 | 267.0 | 155.0 | 18.0 | 108.8 | 17.0 | 102.0 | 70.0 | 11.0 | 9.0 |
| DN80 | 3" | 80.0 | 190.0 | 267.0 | 208.5 | 18.0 | 118.3 | 17.0 | 102.0 | 70.0 | 11.0 | 9.0 |
| DN100 | 4" | 100.0 | 225.0 | 322.0 | 216.7 | 18.0 | 153.8 | 17.0 | 102.0 | 70.0 | 11.0 | 9.0 |



DIMENSION

Unit : mm

| SIZE | PORT | ØD | L | E | H | H1 | H4 | C | OK | OK1 | Z-4 | Z1-4 | BW |
|-------|--------|-------|-------|-------|-------|------|-------|------|-------|------|------|------|-------|
| DN15 | 1/2" | 15.0 | 63.5 | 112.0 | 73.0 | 8.5 | 37.0 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 | 21.3 |
| DN20 | 3/4" | 20.0 | 72.5 | 112.0 | 80.8 | 8.5 | 45.0 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 | 26.7 |
| DN25 | 1" | 25.0 | 81.0 | 136.0 | 90.5 | 11.4 | 53.5 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 | 33.4 |
| DN32 | 1-1/4" | 32.0 | 94.5 | 185.0 | 98.7 | 11.4 | 59.0 | 9.0 | 50.0 | 36.0 | 7.0 | 6.0 | 42.2 |
| DN40 | 1-1/2" | 38.1 | 108.0 | 197.9 | 115.3 | 14.0 | 74.8 | 14.0 | 70.0 | 50.0 | 9.0 | 7.0 | 48.3 |
| DN50 | 2" | 50.0 | 121.5 | 197.9 | 124.0 | 13.7 | 83.5 | 14.0 | 70.0 | 50.0 | 9.0 | 7.0 | 60.3 |
| DN65 | 2-1/2" | 62.7 | 157.5 | 267.0 | 155.0 | 18.0 | 108.8 | 17.0 | 102.0 | 70.0 | 11.0 | 9.0 | 73.0 |
| DN80 | 3" | 77.9 | 190.0 | 267.0 | 208.5 | 18.0 | 118.3 | 17.0 | 102.0 | 70.0 | 11.0 | 9.0 | 88.9 |
| DN100 | 4" | 102.3 | 225.0 | 322.0 | 216.7 | 18.0 | 153.8 | 17.0 | 102.0 | 70.0 | 11.0 | 9.0 | 114.3 |