

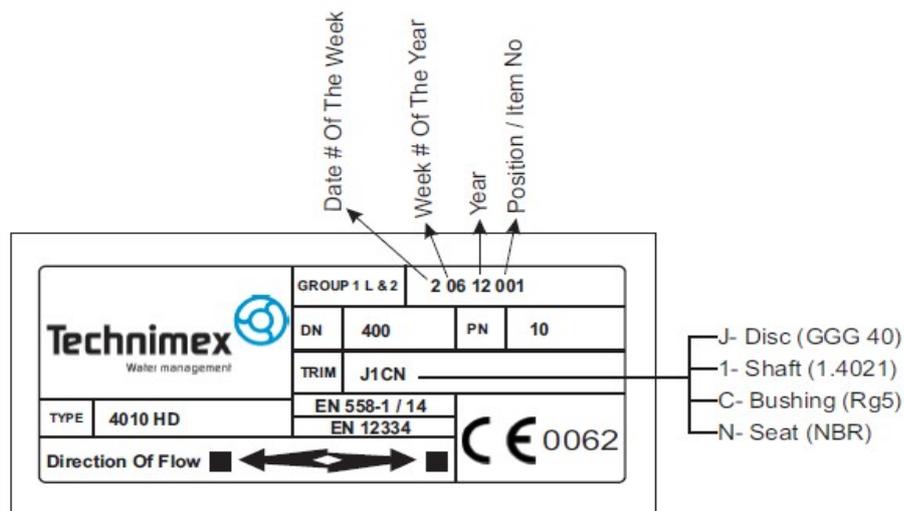
INSTALLATION & MAINTENANCE MANUAL TYPE 4010 HD DOUBLE FLANGED DOUBLE ECCENTRIC CHECK VALVE WITH HYDRAULIC DAMPER

1-Product Description

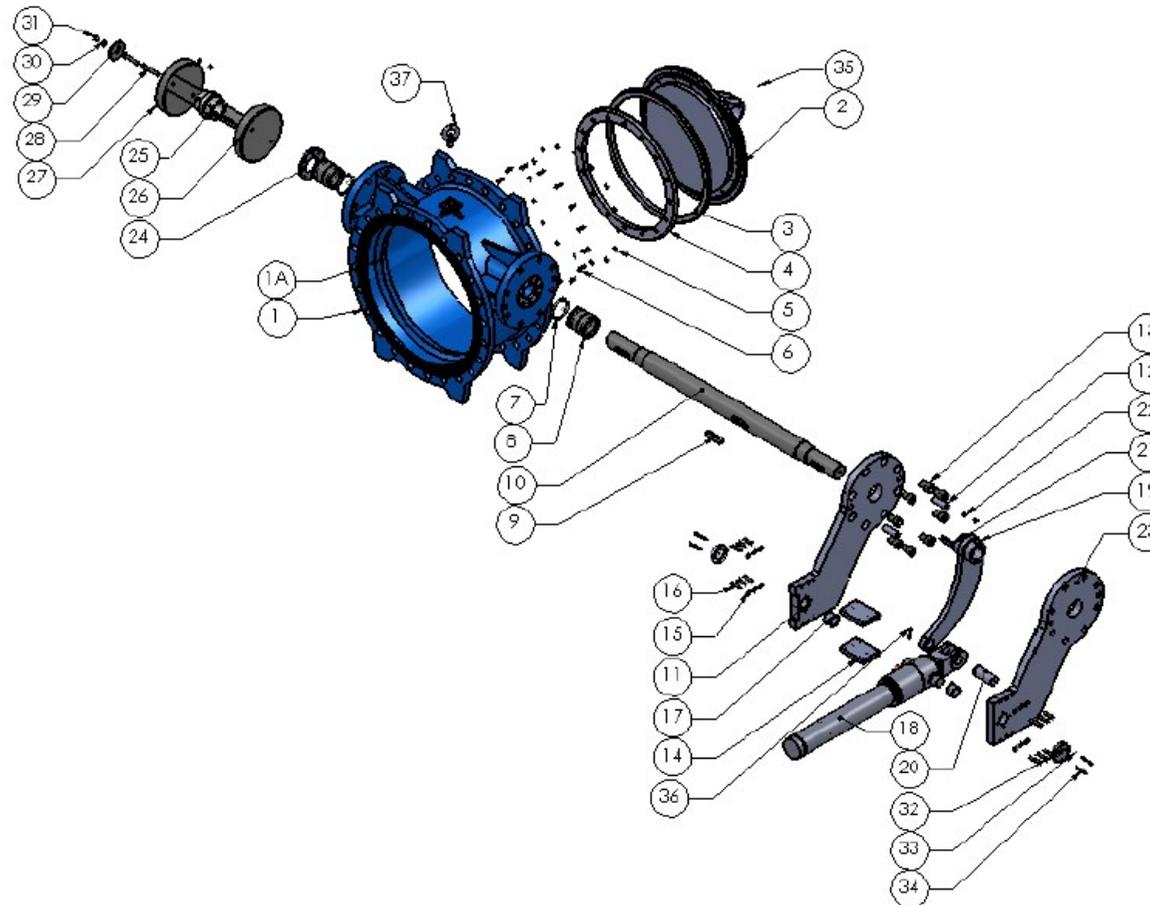
Type 4010 HD is a uni-directional resilient seated check valve with double eccentric design. The valve disc is double offset to a very high degree and is opened by the upstream flow. Closing of the valve happens as a result of the opposite movement caused by the counter weight and the own weight of the disc. To prevent water hammer, the valve disc travels 30% of its stroke slowly before it is in fully closed position. Slow closing of the disc means little backflow. This percentage of stroke length 'slow' and 'fast' can be adjusted manually by means of throttling valves.

2-Identification

Each checkvalve is furnished with a tag plate similar to the one shown below with unique serial numbers.



3- Part List



P.NO	PART NAME
1A	Body seat
1	Body
2	Disc
3	Rubber seat
4	Retaining ring
5	Spring washer
6	Socket head screw
7	O-ring
8	Front - Rear bush
9	Key
10	Shaft
11	Hydraulic console
12	Console pin
13	Socket head screw
14	Console linking profile
15	Washer
16	Bolt
17	Console bush
18	Hydraulic piston
19	Console lever

P.NO	PART NAME
20	Pin
21	Key
22	Setscrew
23	Hydraulic console (inverted)
24	Rear cover
25	Counter weight lever
26	Counter weight 2
27	Counter weight 1
28	Socket head screw
29	Special washer
30	Washer
31	Bolt
32	Hydraulic oil cover
33	Washer
34	AKB bolt
35	Set screw
36	Cotter pin
37	Lifting eye

Seat selection

<i>ELASTOMER TYPE</i>	<i>CODE</i>	<i>APPLICATION AREAS</i>
EPDM	E	Air, water, ethyl alcohol, sugar industry, Ammonium weak acids, Hot water (-30°C +130°C)
HEAT EPDM	E1	Hot water steam (Refer to EPDM) (-30°C +145°C)
NEOPRENE	C	Alkali acids, Acids base (-40°C +95°C)
NBR / BUNA-N®	N	Gasoline, Diesel oil, Vegetable oils, Machine oils, Natural gas Sea Water, Synthetic thinner (-30°C +90°C)
VITON® / FKM	V	Acid, Detergant, Water, Steam, Vegetable oils (-30°C +200°C)
HYPALON	H	Petroleum, Hidroxides, Alcohol, Alkali (-30°C + 135°C)
SILICONE	S	Vegetable oils, Water, Steam (-55°C +175°C)
Natural Rubber / NR	R	Abrasion resistance, cement, sand, lime stone etc. (-25°C +85°C)

Note: These temperatures are displayed only for the valve seat.

Please check also the temperature for other valve parts of the valve plus actuator

4-Safety Instructions

The same safety requirements apply both for the valve and the actuator as well as for the pipeline in which the valve is installed. The instructions in this manual provide safety instructions only for the valves.

The customer must not change or modify the valve or mounting parts / fittings that are supplied with the valve. The manufacturer is not liable for any damage when the valve is not installed according this instruction.

The valves should be used according to general accepted technical rules. No valve should be in operation at temperatures or pressures which differ from the valve's specification. The valve specifications, such as operating temperatures and pressures, are described in the quality documentation or may be written in the order confirmation.

The manufacturer may give approval to using the valve in other conditions after thorough consultation and or testing.

The customer should be aware that all parts of the valve coming in contact with the medium are suitable for that medium. The manufacturer will not be liable for damages resulting from corrosion caused by the medium, see above mentioned 'selection seat table'.

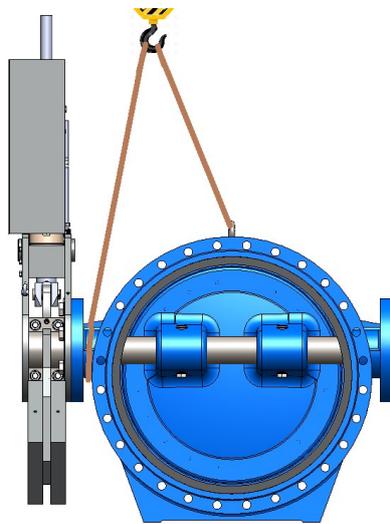
5-Transportation and Storage

Check valves have to be handled, transported, and stored carefully:

- The check valves need to be transported and stored with the disc in closed position.
- The check valve has to be transported and stored in its protective package until the valve is installed.
- The valves should be stored at roofed locations and need to be protected against contaminations, solar radiation or moisture. The valves must also be protected against dirt and damages on the building site. The sealing ring should not be exposed to direct light and the disc seat should also be kept clean from debris. The valve (disc and seat) should be cleaned before installation.
- Valves should not rub together or should not come into contact with metal surfaces during transportation. This should be taken into account when the valves are packed for transport.
- Damages occurred during transportation, loading and unloading of the valves are not covered by the warranty.

6- Installation to the line

- Before the installation, remove all packing material. Please leave enough space for easy installation and maintenance. The customer should protect the valve against the effects of the weather conditions in case of outdoor installation
- Since the center of mass is on the piston side, handle the valve as shown in the picture below. Use textile rope to prevent damage to the coating.



- Supply connection flanges matching to valve pressure ratings.
- For flange gaskets we advise steel reinforced elastomer gaskets, type 8000 from Asteknik.
- Weld the flanges appropriately to the face to face dimensions of the valve but parallel to the pipeline.
- Install the check valve between the two flanges according to the the flow direction
- Please check the flow direction on the valve type shield.
- Put the gasket, with suitable flange connection, between the flanges and tighten them by bolts.
- These check valves should not be installed directly upstream or downstream of pipeline components, such as valves, bends etc while the valve disc extends beyond the body flanges. The disc could hit to these parts or the flow could be disturbed because the disc does not open completely. A dismantling joint is required.
- Before filling the pipeline with water, check the valve for easy operation. Operate the counter weight over the total travel (90°). Do not drop the counter weight.

7- Maintenance

Type 4010 is equipped with maintenance free bearings. Before starting to work on the valve, the valve should be closed and the pipe section should be depressurized.

The elastomer disc seat can be replaced by taking off the retaining ring.

Consider to have the disc seat and some shaft O-rings as spare parts.

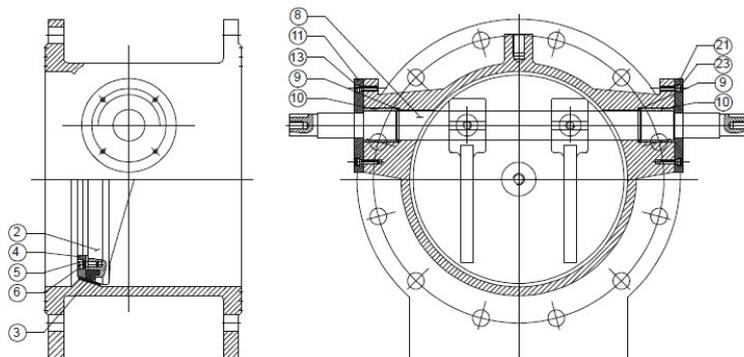
- Check external condition of the valve including the counterweight and the hydraulic system.
- If necessary clean the valve and check tightness at the flanges.
- Check the operation of the valve.
- Close the valve and check seat tightness.
- Check the pressure drop upstream and downstream of the valve.

If you detect leakage from the valve stem after operating some time:

- a) Support the disc (number 2) from bottom or suspend the disc with a lift device.
- b) Loosen the bolts (number 13 and number 23) and take off the back and front covers (number 11 and number 21) by pulling the bolts.
- c) Take off the shaft (number 8), and the bushings (number 10) by pulling the bolts.
- d) Change the O-rings (number 9).
- e) Follow the second and third steps vice versa.

If the valve is not tight at closing position:

- 1) Tighten the corresponding bolts (number 6).
- 2) If the leakage still continues, change the disc seat (number 3) and take the following actions:
 - a) Turn disc (number 2) to semi-closed position.
 - b) Loosen the bolts (number 6) and take off the retaining ring (number 4).
 - c) Replace the disc seat (number 3) with a new one and put on the retaining ring (number 4).
 - d) Place the bolts (number 6) and tighten them.



8- Two Speed Hydraulic Dash Pot

Our Type 4010 HD is designed with a hydraulic damper control which should not make noises or should not function in a jerky way caused by the hitting of the medium during opening and closing of the check valve.

1. The check valve should be installed according to the instructions.
2. Before filling the pipeline, the throttling valve on the hydraulic damper should be in half open position. When the pipeline is filled, the opening/closing of the disc should be set by means of the throttling valves.
3. A two speed hydraulic dashpot is installed according to below diagram and will function as is described.

As the piston is closing, 70% of the stroke closes fast and 30% of the stroke closes slowly. The speeds are adjusted by “throttling valve No 1” (fast closing) and “throttling valve No 2” (slow closing). See diagram on the next page. These valves close in clockwise direction. By closing these valves, the disc of the check valve will close slower. Valve No 1 and No 2 should not be in fully open or fully closed position at the start up. By default they are set in 50% position.

IMPORTANT NOTE: throttling valves must never be in closed position during operation.

The accumulator (No 3) takes care for the hydraulic oil: the load balance and it also regulates excess oil in the piston.

The throttling valves can be set as follows:

1. Close valve No 1 by rotating it clockwise. Then adjust the slow speed area by means of valve 2.
2. Once the slow speed area has been set, the fast speed area need to be adjusted by valve No 1.

Filling the piston with oil:

1. Make sure the 4010HD check valve is in closed position.
2. Remove the union nut on top of the accumulator
3. Fill the damper with hydraulic oil 32 or 36. Maximum oil level must be around 2/3 of the accumulator.
4. Tighten the union nut on top of the accumulator.
5. Open and close the check valve a few times manually. Clean excess oil and remove eventual trapped air.

Two speed hydraulic dash pot

