



ÖZKAN

lead water to the next level

CHECK VALVES WITH HYDRAULIC DAMPERS

* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.

ÖZKAN .LEAD WATER TO THE NEXT LEVEL



INDEX

1. GENERAL INFORMATION

- 1.1 Tips for Long Term operation
- 1.2 Instruction for Shipment & Warehousing

2. ASSEMBLY GUIDE & START –UP INSTRUCTIONS

- 2.1 Assembly Location
- 2.2 Installation Conditions
- 2.3 Items Located Around the valve
- 2.4 Installation Positions
- 2.5 Assembly

3. OPERATION

4. MAINTENANCE & REPAIRS

5. SHUT DOWN & DISASSEMBLY

6. SPARE PARTS

7. SERVICE STOPS

* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.



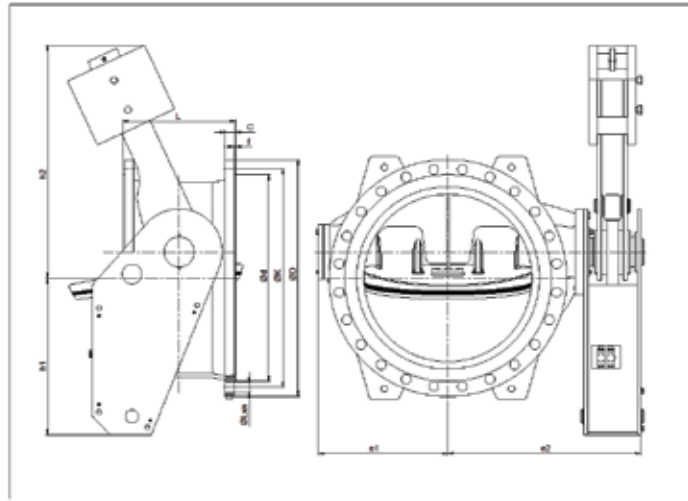
1. INTRODUCTION



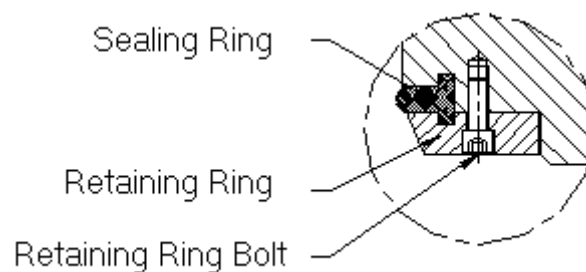
- ÖZ-KAN check valves with hydraulic dampers are designed for preventing back flow and water hammer effect in emergency situations without performing manual operation or using energy. These valves are used for isolating the water main in power failures without causing water hammer effect and preventing back-flow in pump stations.
- Check valves with hydraulic dampers are equipped with hydraulic dampers. Valve opens with the flow. Check valve closes with the help of counter weight when flow ceases. Hydraulic damper attached to the lever that holds the counter weight provides a controlled closing motion and prevents water hammer effect.
- Closing characteristics of the check valves with hydraulic dampers can be adjusted by the help of the needle valves that are located on the hydraulic damper. Adjustment can be made in two independent stages. One needle valve controls the closing speed for the 70% of disc movement. 30% of the disc movement can be controlled by means of the second needle valve.

* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.





- A resilient sealing ring on the periphery of the disc and an integral stainless steel seat on body provide sealing in check valves with hydraulic dampers. Resilient sealing ring is attached to the disc by means of a retaining ring. In closed position, this resilient sealing ring is pressed on the cone shaped integral body seat therefore providing drop-tight sealing.
- Resilient sealing ring can be replaced easily without uninstalling the damper chassis and the lever of the check valve with hydraulic damper. If the pipeline is big enough to enable a technician to work inside the pipeline, resilient sealing ring can be replaced without uninstalling the valve from pipeline.



- Check valve body has a stainless steel welded and microfinished body seat. Ni or AISI 316 stainless steel welding is used in order to prevent corrosion and mechanical damages, especially cavitation. Check valves with hydraulic dampers which are specially manufactured for sea-water service are equipped with integral ductile iron body seats covered with hard rubber lining.

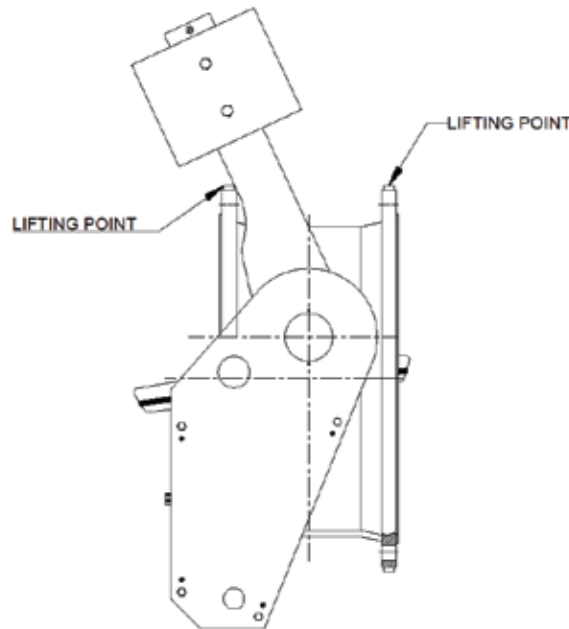
* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.



2. ASSEMBLY GUIDE & START-UP INSTRUCTIONS

- Valves should be thoroughly checked for possible damages before assembly. Although every single valve manufactured in our company is tested and inspected separately, some damages may occur due to rough handling and faulty transport. Resilient sealing ring on valve disc should be carefully checked before assembly. Especially in hot climates and dry storage conditions, EPDM sealing ring gets harder in time and does not perform its duty. If the sealing ring is damaged or has cracks on it, it must be replaced with a new one otherwise it may not perform its sealing duty under pressure. Changing method of the sealing ring is described in MAINTENANCE & REPAIRS section.
- Some lubrication material such as soft soap should be applied on resilient sealing ring and the body seat in order to provide easy operation on a dry pipeline before installation.
- Valves are equipped with lifting eyes for point lifting. These lifting eyes and flange holes should be used for lifting valves.

LIFTING POINT



WARNING : Never lift a check valve with hydraulic damper from lever or damper chassis. This is extremely dangerous for the workers and may damage the valve beyond repair. Always check the weight of the valve and the crane capacity before lifting a valve. Never lift a valve that's weight is over the crane capacity.

- The arrow on body indicating flow direction must be taken into consideration during installation. Otherwise check valve will not perform its duty.
- Only recommended size bolts and nuts should be used for the assembly of valves. Otherwise there may be leakage from flange connections.

* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.



- Space left between flanges must be large enough to install the valve without damaging coating on raised faces. However flanges of pipeline must not be pulled towards the valve due an installation gap larger than what is needed. Use of dismantling joints is strongly recommended .
- There mustn't be any obstacles around the valve that may prevent the free motion of the lever and counter weight. Also there mustn't be any obstacles on the upstream and downstream sides of the valve that may prevent the valve disc from reaching full open position.

WARNING : Pipes both on downstream and upstream sides of the check valve with hydraulic damper must be cleaned from all foreign particles before operating the pipeline. Otherwise these foreign particles will damage the resilient sealing ring of the valve.

All necessary precautions must be taken to prevent workers to access the lever and counter weight operation area.

3. OPERATION PRICIPLES FOR CHECK VALVES WITH HYDRAULIC DAMPERS

- Check valves with hydraulic dampers do not require an operator. These valves work with flow. Check valve opens with flow and stay open during flow conditions.
- Check valve closes with the help of counter weight when flow ceases. Hydraulic damper attached to the lever that holds the counter weight provides a controlled closing motion and prevents water hammer effect.
- Closing characteristic of the check valves with hydraulic dampers can be adjusted by the help of the needle valves that are located on the hydraulic damper. Adjustment can be made in two independent stages.
- Hydraulic damper system is equipped with two needle valves to control and adjust the closing speed of the disc.
Valve number 1 controls second stage (30 % of stroke/ slow closing stage) of closing.
Valve number 2 controls first stage (70 % of stroke / fast closing stage) of closing.
Needle valves should be turned clockwise for slow closing speed and turned to counter clockwise for fast closing speed. Two closing stages can be adjusted free from each other according to the characteristics of the system.
- Check valves with hydraulic dampers work completely according to flow conditions. Lever and counter weight mechanism can move very suddenly due to an electrical failure. Therefore all necessary precautions should be taken around the area surrounding the check valve.

WARNING ! MORTAL DANGER

All necessary precautions must be taken to prevent workers to enter the operation zone of the check valve with hydraulic dampers. Otherwise

* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.



there may be serious casualties because the check valve with hydraulic damper operates automatically without warning in power failure. All necessary warning labels must be located to mark the perimeter of the check valve with hydraulic damper and no worker must enter this perimeter while the valve is in operation.

- Check valves specially manufactured for sea water service are equipped with hard rubber lining in order to protect the valve body from the corrosive effects of sea water. Hard rubber lining is applied by means of vulcanizing and it is non-replaceable.

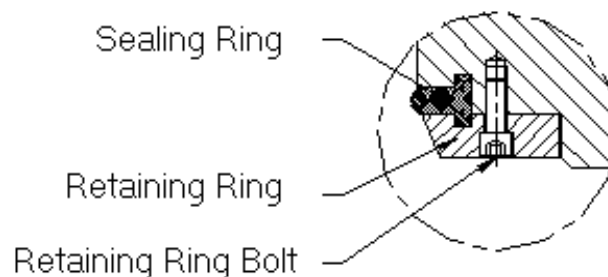
WARNING : Hard rubber lined check valves are not suitable for operation with mediums containing solid particles. These solid particles may damage the rubber lining beyond repair, especially if they get stuck between the sealing ring and seat surface.

4. MAINTENANCE & REPAIR

- Check valves with hydraulic dampers are specially designed for minimum maintenance requirements.
- If the flow does not cease even after the check valve disc reaches full closed position, then the sealing ring may be damaged and should be replaced. If the pipeline and the valve are large enough to enable a worker to work inside, then the resilient sealing ring can be replaced without uninstalling the valve from pipeline. If the valve is not large enough, then it must be uninstalled from the pipeline to change the resilient sealing ring.

WARNING : Nobody must enter the pipeline, unless all pumps are stopped and at least two isolating valves on pressure side are closed. Pipeline must be completely discharged where the repairs will take place and must be well ventilated if the workers are going to enter the pipeline. There musn't be pressure on both sides of the valve that is going to be repaired.

Check valve disc must be in slightly open position in order to replace the sealing ring. All retaining ring bolts must be removed. Retaining ring can be removed easily after removing all retaining ring bolts. After removing the retaining ring, damaged sealing ring can be easily removed from its T shaped channel on the disc.



* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.



After removing the damaged sealing ring, sealing ring grooves both on valve disc and retaining ring must be cleaned. Any remaining parts from the damaged sealing ring must be removed from the ring channels on the disc and the retaining ring.

New sealing ring can be installed after cleaning the sealing ring grooves on disc and retaining ring. Retaining ring can be reinstalled after the sealing ring is installed. Special care should be given to make sure that the sealing ring is properly fit to the channels both on disc and retaining ring.

Retaining ring bolts must be tightened cross wise after placing the retaining ring in its place.

- Hydraulic damper should be controlled if hydraulic fluid losses are spotted. All connections must be checked and repaired if necessary.
- Valves that are not working, or are installed in “dead” mains and which are likely to remain closed for long periods, should be operated at least partially once a month. Through inspection should be carried out at least every six months.
- Please contact ÖZ-KAN Maintenance & Repair Service for your problems
Contact Telephone : + 90 232 3280600 (Pbx)
- Damaged coating can be mended by epoxy touch-up paint RAL5015. Damaged area must be cleaned from dust, rust and oil. After cleaning the damaged area, touch paint can be applied.

5. SHUT DOWN & DISASSEMBLY INSTRUCTIONS

- Pumps must be stopped and at least two isolating valves on pressure side must be closed. Pipeline on both sides of the valve that is going to be disassembled must be discharged.
- Check valve with hydraulic damper that is going to be replaced must be closed completely.
- Check valve with hydraulic damper must be connected to a crane from the lifting eye located on top of the valve. All flange bolts and nuts should be removed.

WARNING : Never lift a check valve with hydraulic damper from lever or hydraulic damper chassis. This is extremely dangerous for the workers and may damage the valve beyond repair. Always check the weight of the valve and the crane capacity before lifting a valve. Never lift a valve that’s weight is over the crane capacity.

- Lift and separate the valve from pipeline with the help of the crane. Special attention should be given not to hit the valve to the pipeline.
- Valve should be left slightly open, if it is going to be kept in stock for while. Otherwise the resilient sealing ring will loose its profile under dry storage conditions and will not provide sealing when valve is reinstalled to the pipeline. Valve disc shouldn’t be left in full open positions, because this will leave the valve disc vulnerable to mechanical damages.

* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.



- If the valve is going to be stocked lying on its flanges, valve should be kept on a wooden pallet and should not touch the soil. Flange surfaces should be protected from mechanical damages.
- Valve should be protected from direct sun light.

6. SPARE PARTS & SERVICE POINTS

- Resilient sealing rings can be supplied from ÖZ-KAN Head Office if needed.

ÖZ-KAN MAK NA ELEMANLARI SAN. ve T C. LTD. A. ..
10008 Sok. No.15 Atatürk Organize Sanayi Bölgesi Çi li – ZM R
Tel. + 90 232 3280600 (Pbx) Fax. + 90 232 3280609
Web Site : www.oz-kan.com E-mail : info@oz-kan.com

- Please use the format given below, to order sealing rings.

This order example is prepared for DN 500 PN25 sealing ring.

DN	PN	Material	Qty.
500	25	Check Valve with Hydraulic Damper Sealing Ring	2 pcs.

- Repair kits for hydraulic dampers can be supplied from ÖZ-KAN Head Office if needed.

ÖZ-KAN MAK NA ELEMANLARI SAN. ve T C. LTD. A. ..
10008 Sok. No.15 Atatürk Organize Sanayi Bölgesi Çi li – ZM R
Tel. + 90 232 3280600 (Pbx) Fax. + 90 232 3280609
Web Site : www.oz-kan.com E-mail : info@oz-kan.com

- Please use the format given below, to order repair kits for hydraulic dampers.

This order example is prepared for DN 700 PN10 .

DN	PN	Material	Qty.
700	10	Check Valve Hydraulic Damper Repair Kit	1 set

7. SERVICE POINTS

- Please contact ÖZ-KAN Maintenance and Repair Department, if service personnel are required. Our friends will answer you in shortest occasion.

ÖZ-KAN MAKİNA ELEMANLARI SAN. ve TİC. LTD. A.Ş.
10008 Sok. No.15 Atatürk Organize Sanayi Bölgesi Çiğli – İZMİR
Tel. + 90 232 3280600 (Pbx) Fax. + 90 232 328060
Web Site : www.oz-kan.com E-mail : info@oz-kan.com

* All rights reserved at Özkan Makine.
If copied in whole or in part, to take a legal action will be applied.

