



# ÖZKAN

lead water to the next level

## SLANTED SEAT CHECK VALVE

\* 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



## GENERAL INFORMATION

### 1.1 Tips for Long Term operation

## 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

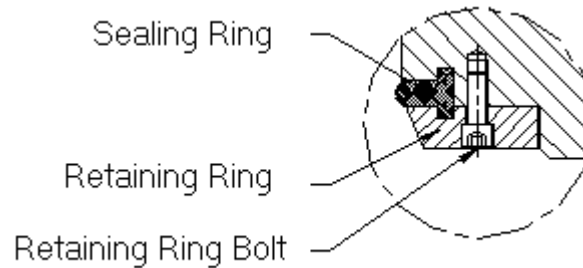


- ÖZ-KAN slanted seat check valves are designed for preventing back flow and water hammer effect in emergency situations without performing manual operation or using energy. These valves are used for isolating the water main in power failures without causing water hammer effect and preventing back-flow in pump stations.
- Slanted seat check valves can be delivered in three different formats.
  - Type 1 : Slanted Seat Check Valves without Dampers
  - Type 2 : Slanted Seat Check Valves Ready for Future Damper Assembly
  - Type 3 : Slanted Seat Check Valves c/w External End Stage Dampers
- Slanted Seat Check Valve opens with the flow. Check valve closes;
  - with the help of back flow and free swinging disc in Type 1. There is no need for a lever & counter weight in this type. It is not possible to install a damper to this type at later stage.
  - with the help of back flow and free swinging disc in Type 2. This type is equipped with a protruding shaft for later assembly.
  - with the help of back flow, lever & counter weight and end stage damper in Type 3. End stage damper is designed for dampening the closing at the final 10-15° of the closing stroke.
- Closing characteristics of slanted seat check valves with external end stage dampers can be adjusted by the help of the needle valve located on the end stage damper. Adjustment can be made in a single stage.

\* 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 slanted seat check valves. Metal seated option is also available.
- 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 any major work. 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, AISI 309 or AISI 316 stainless steel welding is used in order to prevent corrosion and mechanical damages, especially cavitation.

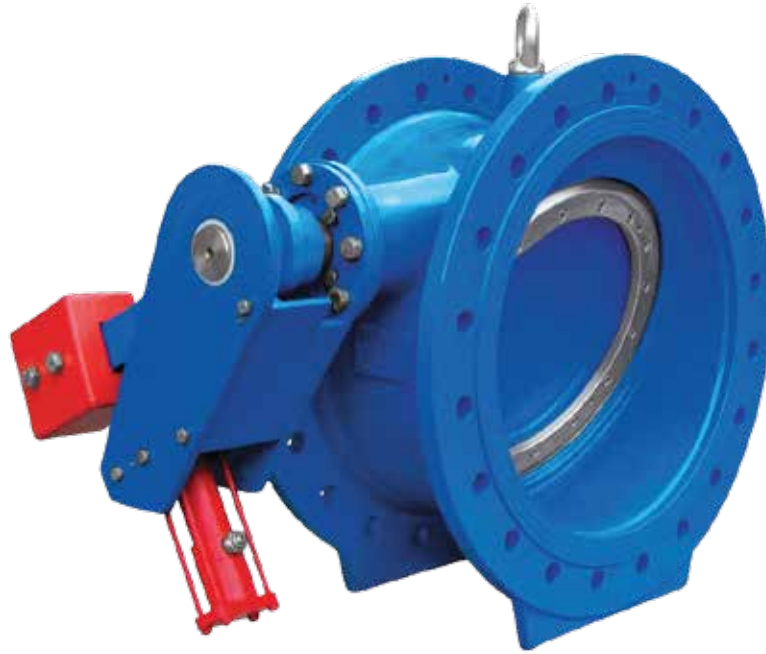
## 2. ASSEMBLY GUIDE & START-UP INSTRUCTIONS

- 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 easy lifting. These lifting eyes and flange holes should be used for lifting valves.

Lifting Eye

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





**WARNING :** Never lift a slanted seat check valve with end stage 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.
- There musn't be any obstacles around the valve that may prevent the free motion of the lever and counter weight. Also there musn'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 slanted seat check valve 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 if the check valve is equipped with a lever and counter weight.

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



## 2. OPERATION PRICIPLES FOR SLANTED SEAT CHECK VALVES

- 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 lerger than what is needed. Use of dismantling joints is stongly recomended .
- Slanted seat check valves do not require an operator. These valves work with flow. Check valve opens with flow and stays open until flow ceases.
- Check valve closes with the help of back flow when flow ceases. In slanted seat check valves that are equipped with end stage dampers, lever and counter weight provides a controlled closing motion and end stage damper prevents water hammer effect.
- Closing characteristic of slanted seat check valves with end stage dampers can be adjusted by the help of the needle valve that is located on the hydraulic damper. Adjustment can be made in a single stage.
- Hydraulic damper system is equipped with a needle valve to control and adjust the closing speed of the disc.

Needle valve should be turned clockwise for decreasing the closing speed and turned to counter clockwise for increasing the closing speed.

Since check valve closing speed depends on flow conditions and pipeline characteristics, manufacturer must be informed about special closing time requirements, because speed adjustment is limited in check valves.



- Slanted seat check valves with end stage dampers work completely according to flow conditions. Lever and counter weight mechanism can move suddenly due to an electrical failure. Therefore all necessary precautions should be taken around the area surrounding the check valve.

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



## **WARNING ! MORTAL DANGER**

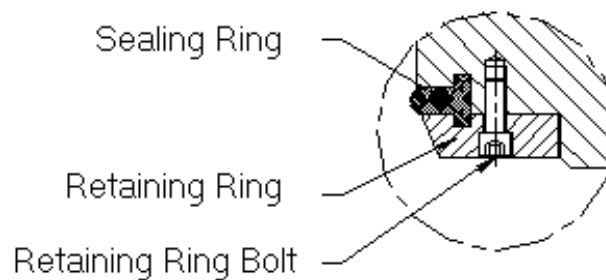
All necessary precautions must be taken to prevent workers to enter the operation zone of slanted seat check valve with end stage dampers. Otherwise there may be serious injury or death because the check valve operates automatically without warning in power failure. All necessary warning labels must be located to mark the perimeter of the lever & counter weight and no worker must enter this area while the valve is in operation.

### 4. MAINTENANCE & REPAIR

- Slanted seat check valves 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 : Pipeline must not be entered, 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 locking setscrews must be loosened and 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.



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.

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



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. Locking setscrews must be tightened after all bolts are tightened crosswise.

- 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 in 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 RAL5005. (or the color that was used for your project.) Damaged area must be cleaned from dust, rust and oil. After cleaning the damaged area, touch up 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.
- Slanted seat check valve that is going to be replaced must be closed completely.
- Check valve 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 slanted seat check valve with end stage 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

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

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](http://www.oz-kan.com) E-mail : [info@oz-kan.com](mailto: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	Slanted Seat Check Valve Sealing Ring	2 pcs.

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

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](http://www.oz-kan.com) E-mail : [info@oz-kan.com](mailto: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	Slanted Seat Check Valve 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](http://www.oz-kan.com) E-mail : [info@oz-kan.com](mailto: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.

