

TILTING CHECK VALVE - HYDRAULIC BRAKE

FAF 2280D



Features

- The sealing that can be made of EPDM, NBR and VITON materials can be dismantled and replaced easily on field conditions.
- Inner and outer surfaces of the valve is coated with 300 microns thickness of fusion bonded epoxy. Higher thicknesses are available upon request.
- Hydraulic braked swing check valves prevent the occurrence of hard brakes due to the effect of the braking system and virtually eliminate the noise, ram impact and damage.
- Ensures 100% sealing with the "T" section ring fixed to the outer diameter of the disc fully facing the seat surface inside the body perimeter made of stainless steel welding.
- Low moments are obtained by decreasing the friction through self lubricating bushings.
- Can bear high stretching stresses on the pipeline through the ductile iron body and disc.
- High impact resistance.
- Reduces the pressure loss through the disc designed in accordance with the direction of flow.
- Pressure loss is at minimum level by double shaft design.
- Countervalve allows installation of both horizontal and vertical pipes on the right and left sides of the mill, counterweight, and lever on both sides of the check valve.
- The clapper opens depending on the flow rate and moves freely depending on the flow.
- The position adjusts to the working conditions thanks to the adjustable weight.
- Lifting lugs and feet ease the balance during transport and installation.
- Hydraulic braked swing check valves prevent the occurrence of hard brakes due to the effect of the braking system and virtually eliminate the noise, ram impact and damage.
- The closing speed can also be adjusted in accordance with the operating conditions in the swing check valves with hydraulic brake.
- With the o-rings on the bearing bushings, disc pin holes are protected against corrosion (Dry shaft).
- Retaining ring is assembled to the disc with imbus bolts, the disc is protected against corrosion by placing o-rings under the bolts.
- Inner and outer surface of the valve is coated with minimum 300 micron thickness FBE coating.

Temperature

- +130 °C (EPDM)
- +100 °C (NBR)

PRODUCTION STANDARDS

DN200 → DN1600
PN 10-16-25

Design	EN 12334
Connection	EN 1092-2 / ISO 7005-2 - Flanged
End Connection	EN 558 SERIAL 14 / DIN 3202 F4
Marking	EN 19
Tests	EN 12266-1
Corrosion Protection	Electrostatic Powder Epoxy WRAS Approved (Optional)

Product Description

FAF2280D Series Tilting Check Valve The tilting check valve consists a circular disc with conical rim, hinged about a fixed pivot above its center-line and offset from the plane of the seat, sealing against a body seat clamped between the two sections of the valve body. FAF 2280D hydraulic brake system can be assembled to disc closing unit if it is required at project. The rate of closure can be controlled due to tilting check valve with hydraulic brake system and the system passes to static position slightly. The installation equipment protected from impact strength.

Versions

- Standard version with various pressure standards.
- Custom production for specific orders.
- Sealing gaskets can be made of EPDM, NBR or VITON.

General Information

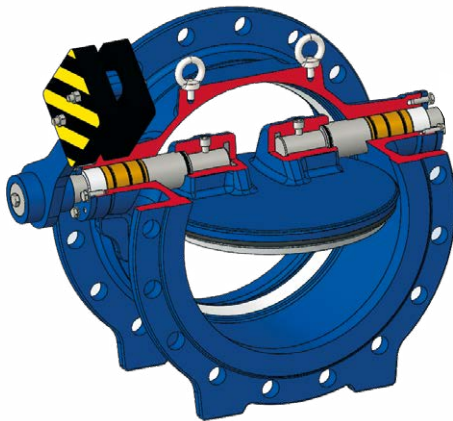
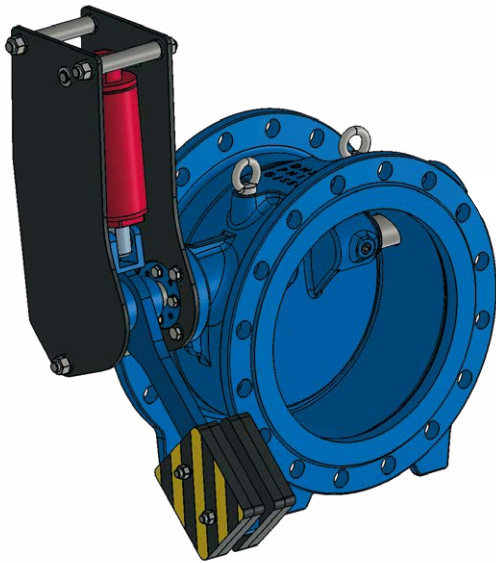
Valve is designed to be leakproof and with anti blow out shaft system when driving component (lever or hydraulic piston) are removed.

Scope of Application

- Pipelines
- Water Treatment Plants
- Pumping stations
- Tanks
- Seawater applications
- Power plants (cooling water pipelines)
- Industry

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MATERIAL SELECTION

Body EN-GJS-500 Ductile Iron / GGG50

Disc EN-GJS-500 Ductile Iron / GGG50

Shaft
 1.4021 - AISI 304 Stainless Steel
 1.4301 - AISI 420 Stainless Steel
 1.4401 - AISI 316 Stainless Steel
 1.4462 - Duplex Stainless Steel

Sealing EPDM, NBR, VITON

PRODUCTS MODEL CODES

FAF 2280D	PN16 WITH HYDRAULIC BRAKE SYSTEM
FAF 2281D	PN10 WITH HYDRAULIC BRAKE SYSTEM
FAF 2282D	PN25 WITH HYDRAULIC BRAKE SYSTEM

VALVE TEST PRESSURE (Bar)

MAX. OPERATING PRESSURE	BODY / SHELL TEST	SEAT TEST
10	15	11
16	24	17,6
25	37,5	27,5

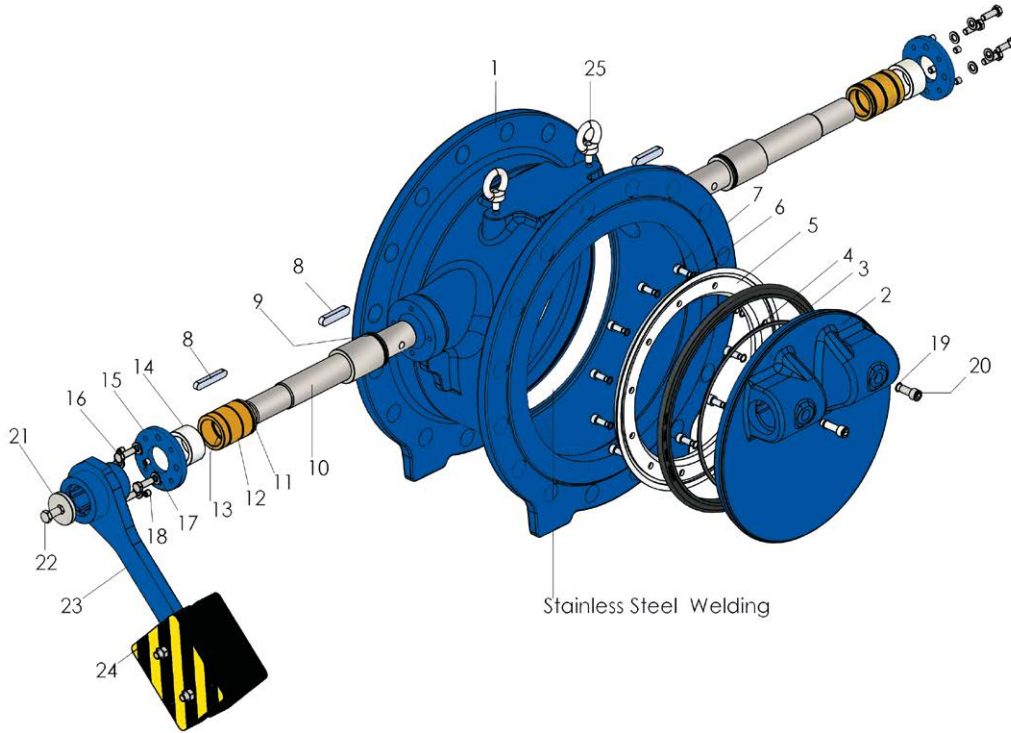
100% of the valves are subjected to hydrostatic tests at FAF facilities.

Note

- For proper use and safety precautions please follow the installation and operating instructions.



Material List

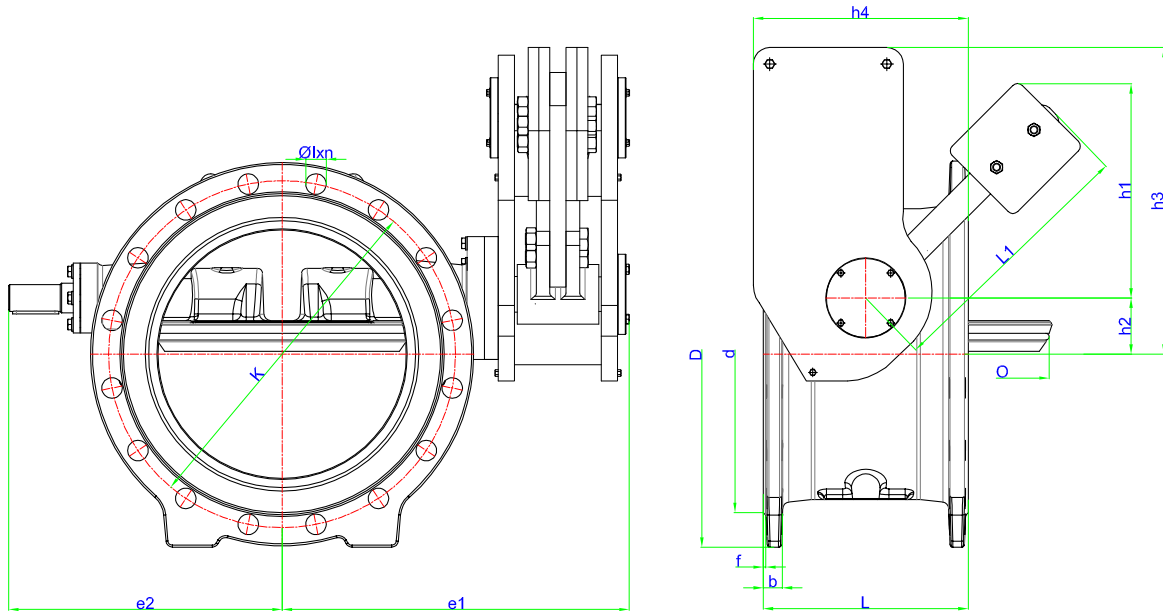


NO	ITEM	MATERIALS
1	BODY	EN GJS 500
2	DISC	EN GJS 500
3	SEALING RING	EPDM
4	O-RING	NBR / EPDM
5	RETAINING RING	STEEL 1.0254 OR STAINLESS STEEL 1.4301 / 1.4401
6	O RING	NBR / EPDM
7	IMBUS BOLT	STAINLESS STEEL A2
8	KEY	STEEL
9	O-RING	NBR / EPDM
10	SHAFT	STAINLESS STEEL 1.4021
11	O-RING	NBR / EPDM
12	BUSHING	BRONZE

NO	ITEM	MATERIALS
13	O RING	NBR / EPDM
14	SHAFT BEARING	DELTRIN
15	COVER	STEEL 1.0254
16	HEXAGON BOLTS	STAINLESS STEEL 1.4021
17	WASHER	STAINLESS STEEL 1.4021
18	SETSCREW	STAINLESS STEEL A2
19	O RING	NBR / EPDM
20	IMBUS BOLT	STAINLESS STEEL A2
21	WASHER	STAINLESS STEEL 1.4021
22	HEXAGON BOLTS	STAINLESS STEEL 1.4021
23	LEVER	STEEL 1.0254
24	WEIGHT	STEEL 1.0254
25	LIFTING LUGS	STEEL



Technical Details & Drawing, Dimensions

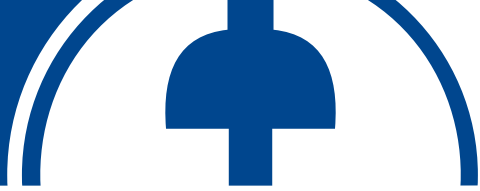


DIMENSIONS - PN10																
DN (mm)	D	K	d	Ølxn	f	b	L	O	L1	e1	e2	h1	h2	h3	h4	Weight (kg)
100	220		156	19x8	3	19	190	101	202	210	171	170	22	260	270	25
150	285	240	211	23x8	3	19	210	148	202	231	196	187	36	283	264	36
200	340	295	266	23x8	4	20	230	200	250	320	272	215	40	460	255	54
250	400	350	319	23x12	4	22	250	248	250	368	310	215	50	470	265	78
300	455	400	370	23x12	4	24,5	270	282	300	397	341	263	60	480	277	105
350	505	460	429	23x16	4	24,5	290	39	400	440	374	328	75	562	328	163
400	565	515	480	28x16	4	24,5	310	385	400	490	430	335	85	572	341	200
450	615	565	530	28x20	1804	25,5	330	432	500	530	480	410	95	590	350	258
500	670	620	582	28x20	4	26,5	350	481	500	560	510	430	105	600	360	303
600	780	725	682	31x20	5	30	390	576	600	655	633	468	125	722	545	410
700	895	840	794	31x24	5	32,5	430	675	700	710	695	580	155	1080	775	629
800	1015	950	901	34x24	5	35	470	780	800	795	780	645	175	1100	835	860
900	1115	1050	1001	34x28	5	37,5	510	872	900	845	915	775	200	1280	860	1045
1000	1230	1160	1112	37x28	5	40	550	970	1000	945	917	805	210	1290	880	1390

DIMENSIONS - PN16																
DN (mm)	D	K	d	Ølxn	f	b	L	O	L1	e1	e2	h1	h2	h3	h4	Weight (kg)
100	220	180	156	19x8	3	19	190	101	202	210	171	170	22	260	270	25
150	285	240	211	23x8	3	19	210	148	202	231	196	187	36	283	264	36
200	340	295	266	23x12	4	20	230	200	250	320	272	215	40	460	255	54
250	400	355	319	28x12	4	22	250	248	250	368	310	215	50	470	265	78
300	455	410	370	28x12	4	24,5	270	282	300	397	341	263	60	480	277	110
350	520	470	429	28x16	4	26,5	290	39	400	440	374	328	75	562	328	170
400	580	525	480	31x16	4	28	310	385	400	490	430	335	85	572	341	215
450	640	585	548	31x20	4	30	330	432	500	530	480	410	95	590	350	270
500	715	650	609	34x20	4	31,5	350	481	500	560	510	430	105	600	360	345
600	840	770	720	37x20	5	36	390	576	600	655	633	468	125	722	545	480
700	910	840	794	37x24	5	39,5	430	675	700	710	695	580	155	1080	775	650
800	1025	950	901	41x24	5	43	470	780	800	795	780	645	175	1100	835	910
900	1125	1050	1001	41x28	5	46,5	510	872	900	845	915	775	200	1280	860	1080
1000	1255	1170	1112	44x28	5	50	550	970	1000	945	917	805	210	1290	880	1450

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General

- Swing check valve are designed to close in emergency conditions by means of preventing the backflow of the fluid on the pipeline without the need of manual operation or additional source of energy. These check valves are used for the purpose of isolating the pipeline in emergency conditions.
- Swing check valves open with the flow and close with the stop of flow by the help of counter weight.
- The closing characteristics of the Swing check valve can be arranged by changing the position of the weight attached on the counter lever.

Transportation and Storage

- Check valves should be protected during transportation and storage with a proper cover.
- Check valves should be stored in a such a way to ensure proper usage after prolonged storage periods. This includes below point.
- Precautions needs to be taken for dirt, freezing or corrosion.
- Temperature range should be kept between + 5 ° C to +50 ° C.
- Sealing parts (resilient parts) should not be directly exposed to sunlight and/or UV lights.
- Should be stored in a dry and ventilated place. Shouldnot be in direct contact with sand and other wastes.

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Instructions for Maintenance, Inspection and Installation

In order to maintain safe and trouble-free usage of check valves, this manual should be reviewed carefully and the information given should be applied continuously.

Non-compliance with safety instructions would cause below results.

- Personal injuries
- Threats for both environment and the valve
- Malfunction of basic functions of valve / facility.
- Failure of foreseen maintenance and repair applications
- Threats to human due to electrical, mechanical and chemical effects.
- Damage of hazardous leakage to the environment

No revision on change on the valve can be made for the products supplied by "FAF VALVE". In case of non-compliance of the information supplied in this guide or for any revision made on the valve, "FAF VALVE" cannot be kept responsible for any damage or loss that may occur.

The installation, operation and maintenance processes of check valves should be done with authorized personnel. Even all "FAF VALVE" products are manufactured according to international directives and standards, with non-appropriate or out of scope usage, valves are equipment's that carry a potential danger.

Any personnel responsible from the storage, installation, operation, maintenance and disassembly of the check valve should carefully read this document and well understand. Before starting any work on valves or pipeline, all international and local safety regulations should be reviewed and understood, all necessary precautions should be taken.

If any repair will be done, there should not be pressure on the pipeline, if needed all fluid needs to be discharged and warning signboards needs to be placed around working area. If the valve to be repaired is a discharge valve, precautions needs to be taken to avoid the area to be flooded with water. Using original spare parts will maintain operational safety of the products. Manufacturer cannot be kept liable for any damage that may occur due to usage of non-original spare parts.

If a valve needs to be disassembled from the line, pipeline should be discharged. Since, after disassembly of the valve, the remaining fluid on the pipeline will flow freely, necessary precautions needs to be taken.

Sudden movements should be avoided during lifting, moving and unloading the valve. Sudden movements may damage the valve and/or the lifting equipment. Lifting the valve should only be done through the lifting lugs located on the valve body.

During lifting process, valve may move to one side involuntarily. The lifting operation done by crane should be done by experienced personnel and during lifting operation noone should enter working area except the crane operator.



Installation Manual & Commissioning Instructions

- Make sure that the installer is qualified and well informed.
- Use appropriate lifting devices by checking the weight capacity and dimensions.
- The valves and pipes operated with high ($> 60^{\circ}\text{C}$) or low ($< 0^{\circ}\text{C}$) temperatures should be isolated or a warning sign stating "Donot touch" should be placed.
- At potable water pipelines, with greasing, cleaning and coating operations make sure that approved materials are used.
- On the pipeline, make sure the counter flanges installed are according to international standard norms as per EN 1092-1 / ISO 7005-1
- Prior to installation check the flange gasket surfaces, clean if needed. Make ready the sealing gaskets by selecting according to temperature, pressure and fluid type.
- Make ready the dimensions and quantities of connection elements (bolts, nuts, washers).
- Electrical cables should be installed by qualified personnel.
- Electrical equipment regulations (e.g. national / international standards) applicable to hazardous locations must be studied. Should be installed in dry places. The voltage and frequency must match those specified on the identification plate.
- Before installing the valve, remove any such residue from the line by air or steam, as corrosion, welding burrs, dirt and residue on your pipeline may cause deformation and leakage on the valve.
- The pipe alignment to which the valve is connected must be the same axis, the opposite flanges perpendicular to the pipe axis, and the flange bolt holes must be on the same axis. Otherwise, there may be leakage in the valve due to axial misalignment causing tension on the valve!
- If the construction process is to continue, the valve must be protected from external factors by being placed under suitable protective material. Due to excavation, paint application, concrete pouring, etc. valve should not be damaged after the process.
- Care must be taken that the flanges connected to the pipeline are not pulled towards the valve when the bolts are tightened. Despite the tensile stresses that may occur, we recommend the use of dismantling joints together with the check valve.
- Allow sufficient space for easy use, maintenance, disassembly and cleaning of the valve in the environment where the valve is located.
- Connect the fittings between the flanges of the valve with the specified connection equipment and without first permitting one side of the valve and then the other side not to allow tensile stress to occur. Take the clearances of bolts and nuts and tighten each other at the specified torque.
- Donot close the check valve before cleaning the residue inside the pipeline.
- Taking into account the nominal pressure marked on the valve; Leak check should be done with 1.1 times of this pressure valve in closed position.

Replacing Disc Sealing

- Make sure that there is no pressure when the disc seal is replaced. Attention should be paid to safety regulations.
- The gasket can be replaced without removing the disc or removing the valve from the pipeline. However, at least, the valve should be accessible by separating it from one side of the pipeline.
- The disc must be in the fully open position.
- The bolts must be loosened reciprocally and the bolts and the retaining ring must be removed.
- The sealing ring and O-rings must be removed.
- The new sealing ring and O-rings must be gently lubricated with approved lubricant.
- Bolts must be tightened reciprocally using torque values specified on the table.
- Torque values for the disc sealing bolts (Nm)

DN100 DN150	DN200-DN250 DN300	DN350 and DN1000 included
8.7	21.2	42

Shaft Area O-Ring Replacement

Make sure that there is no pressure on the line. Attention should be paid to safety regulations.

The valve should be accessible by separating it from one of the pipeline.

Remove the top cover by its bolts.

Remove the o-rings by removing the bolts on the disc.

With the pulling means, the main shaft should be pulled out, the upper adjustment bushing, the upper bushing and the control shaft must be removed out of the body and the key on the control shaft should not be dropped.

O-rings should be replaced with new ones, lightly lubricated with approved lubricant and installed on its place.

Make sure the setscrew allen area and upper cover fully faces each other and apply reverse operations of the disassembly process.

The same operations must be performed on the opposite side.

After maintenance, if the closed position leakage occurs, the bolts in the lower cover and upper cover area needs to be loosened and adjustment can be done by the help of setscrews.

Bolts must be tightened reciprocally by using torque values specified in the table.

M6	M8	M10	M12	M16	M20	M24	M30
8.7	21.2	42	73	180	370	603	1300



Troubleshooting

All repair and service works must be carried out by qualified personnel using suitable tools and original spare parts.

Problem	Cause	Remedial Action
Valve cannot be operated	Foreign material jammed inside the valve	Fully open the valve and take out the dirt inside the valve
Leaks in the body seat	Valve not completely closed	Fully close the valve by checking the weight
	Valve sealing ring worn or damaged	Replace sealing ring
Leak in valve pipe installation and body	Gaskets damaged	Replace gaskets
	Bolts/nuts are loose	Tighten according to mentioned torque values
Valve makes noise	Valve operating beyond its limits	Check the working conditions and design features. Change valve installation location or change the valve type suitable for the area of usage
	Wrong installation position. (Valve is too close to a reducer, elbow, control valve, etc.)	Change installation position
Torque value very high	Deposit (lime, sand, etc.) accumulation may happened on the body seat	Fully open the valve and clean the deposit
	Pipeline is dry, sealing ring is dry	Apply approved lubricant or silicone on body seat and sealing ring