



Time to change to the
**Waterworks
Butterfly
Valve Series**

*Designed and Manufactured to
high quality European Standards.*

Waterworks Butterfly Valve Series

Factory Standard

- Suitable for both gaseous and liquid service
- Phenolic Backed Seat for superior sealing and long term use
- Single-piece stem design assures even torque distribution
- Positive shutoff bi-directionally
- Direct mount automation

Design

Concentric butterfly valve with an elastomer liner, available in Wafer or Lug style. Engineered and manufactured for long-lasting use in highly demanding environments up to 16 bar.

The Waterworks Butterfly Valve has a standard ductile iron (JS1030) body. The resistant body, the multiple disc combinations and the robust liner available in many different materials, makes these valves a multi-purpose, modular and state-of-the-art valve with outstanding durability and resistance.

Cartridge Seat Design

The cartridge-style seat is created by compression moulding a layer of elastomer onto a rigid phenolic backing ring, which supports the elastomer in multiple directions. This compression moulding process is much more consistent than the injection moulding process used to create moulded-style seats. It provides constant pressure to form the seat shape and maintains tighter control of the seat dimensions. Because of the tighter tolerances, cartridge seats offer the best torque consistency and highest wear resistance. This type of seat also improves upon the moulded style by making the seat replaceable. In highly abrasive applications where valves need to be replaced on a regular basis, the cartridge seat could simply be replaced rather than the entire valve. Liner materials: EPDM, NBR, VITON, Silicone

Disc Materials

Stainless Steel 316 – CF8M

Approved for drinking water according to DVGW, WRAS. Grease-free, LABS-free and ATEX versions available. Seals and O-rings are in correspondence with the liner material and shaft bushings PAP Stainless steel with PTFE.

Dimensions DN 50 – DN 400

Applications

Our valves are for open-close and regulation. Waterworks Butterfly Valves are suitable for most industrial applications, heating and cooling, air condition systems, water and sewage systems, air, swimming pools.

Pressure Rating

DN 50-300 Wafer : PN16
DN 400 Wafer : PN10
DN 50-300 LUG : PN16
DN 400 LUG : PN10
Flange standard according
EN 1092 PN6/10/16 - ANSI150 – JIS5/JIS10K
AS2129 (Table E)

Design Standard EN593, BS5155

Test Standard EN 12266-1

Face to Face EN 558-1-row 20

Approvals

CE/PED 97/23/EC category III module H
WRAS
DVGW
Marine body Casting Type Approvals
DNV/GL and LRS

Temperature Range

NBR 0°C / + 80°C
EPDM -23°C / +120°C
VITON -20°C / +180°C
Silicone -50 °C / +250°C

Coating

The valve body, handle and gearbox handwheels are powder coated with a 2-component Epoxy corrosion protection system with a minimum layer thickness of 200 Mu. The Gearbox has a two component wet coating system with a min. Layer thickness of 80-100 Mu and on special request a painting class C3 corrosion protection. Valve Body Colour = Blue RAL 5015. Gearbox / Handle and Gearbox Handwheel Colour = Black RAL 9005.

Tag Plate

The TAG plate is showing a serial number, PN, materials and manufacturer in accordance with EN19.

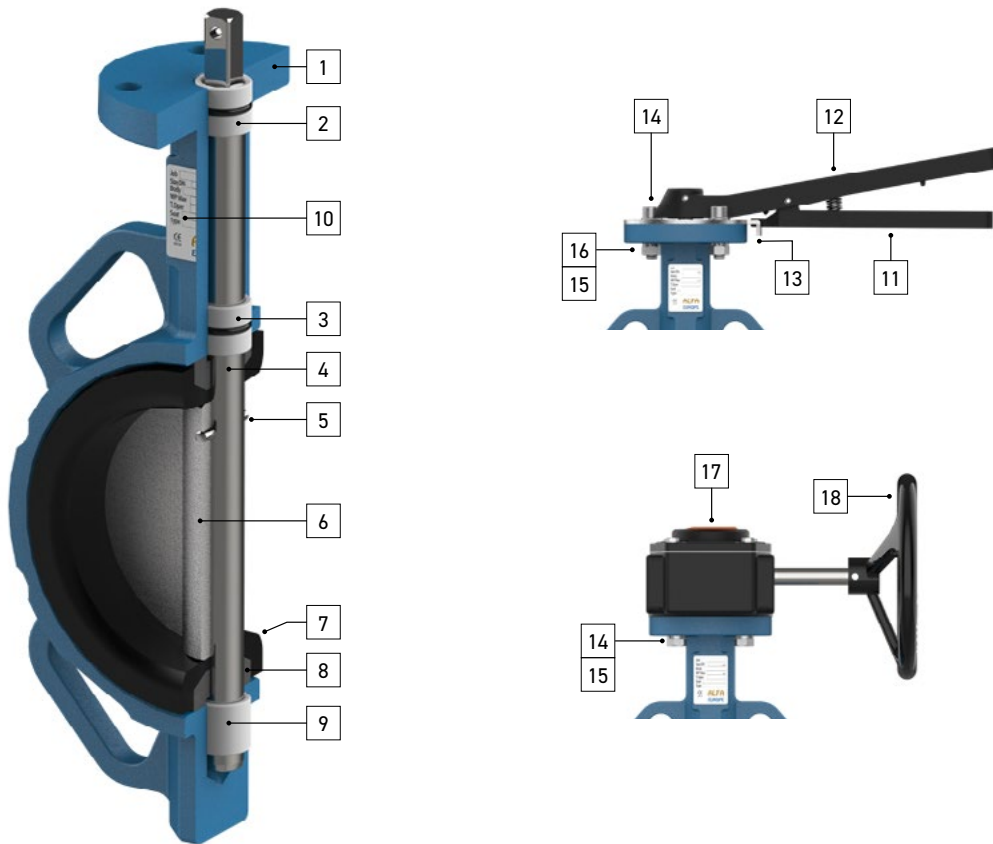
Installation

The valves can be fitted horizontally or vertically, it is preferable to have the shaft in a horizontal position. The Lugged style can be used as an end of line valve and for permanent use a counter flange must be used at all times. Before installing our valves, read our information in our installation instructions at the end of this manual.



Material Specifications

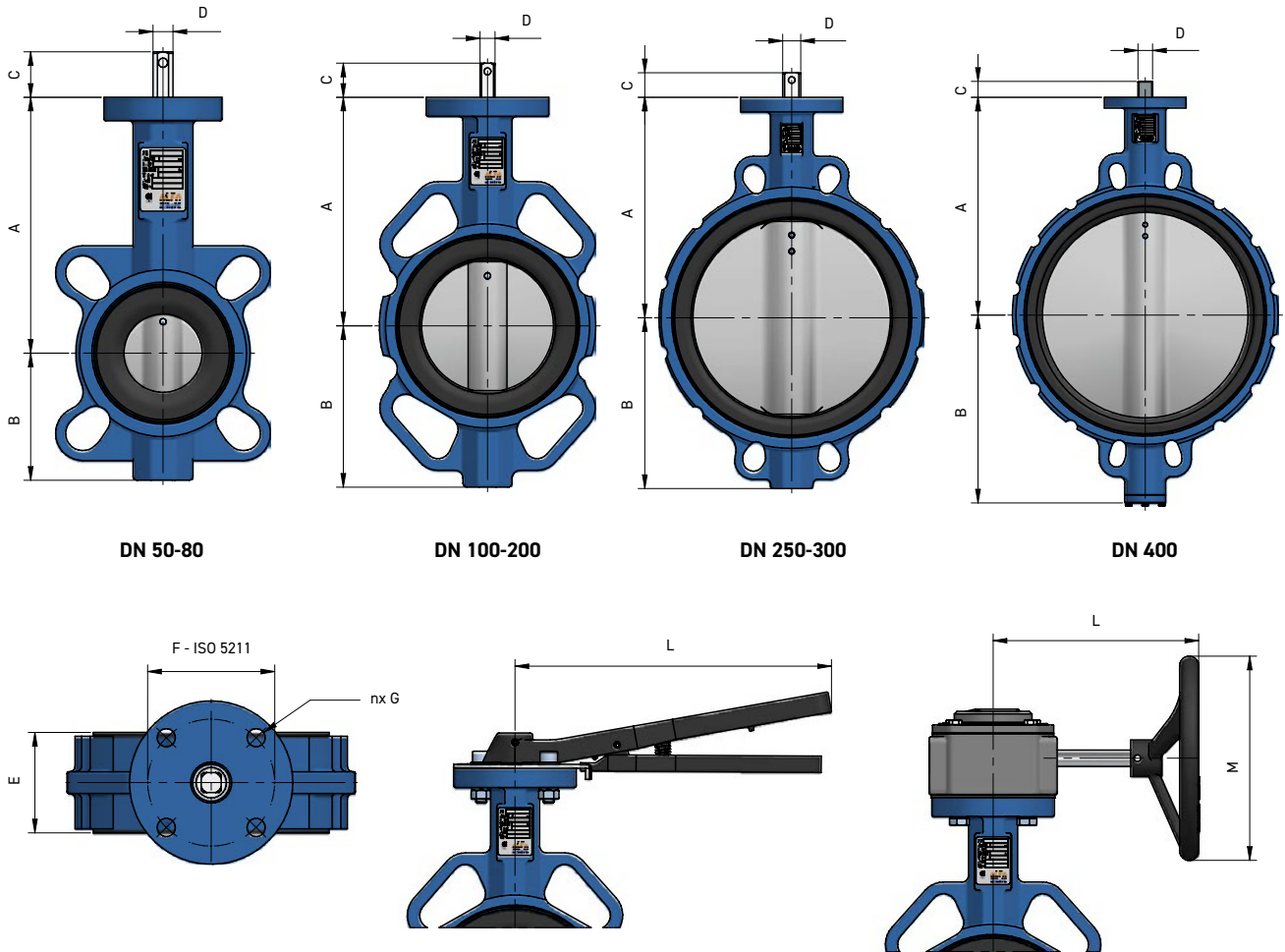
Wafer / Lug DN50 - DN400



No.	Description	Material
1	Body	Ductile Iron JS1030
2	Bushing	PTFE
3	O-Ring	EPDM
4	Shaft	SS 416
5	Taper Pin	SS 316 / C63000
6	Disc	CF8M
7	Liner	EPDM
8	Backup Ring	Phenolic
9	Lower Bush	PTFE
10	Nameplate	Stainless Steel
11	Handlever	JS 1030
12	Spring	SS 316
13	Notch	SS 316
14	Bolt	SS 316
15	Washer	SS 316
16	Nut	SS 316
17	Gearbox	Grey Cast Iron
18	Handwheel	Steel pressed

Dimensions Wafer Type

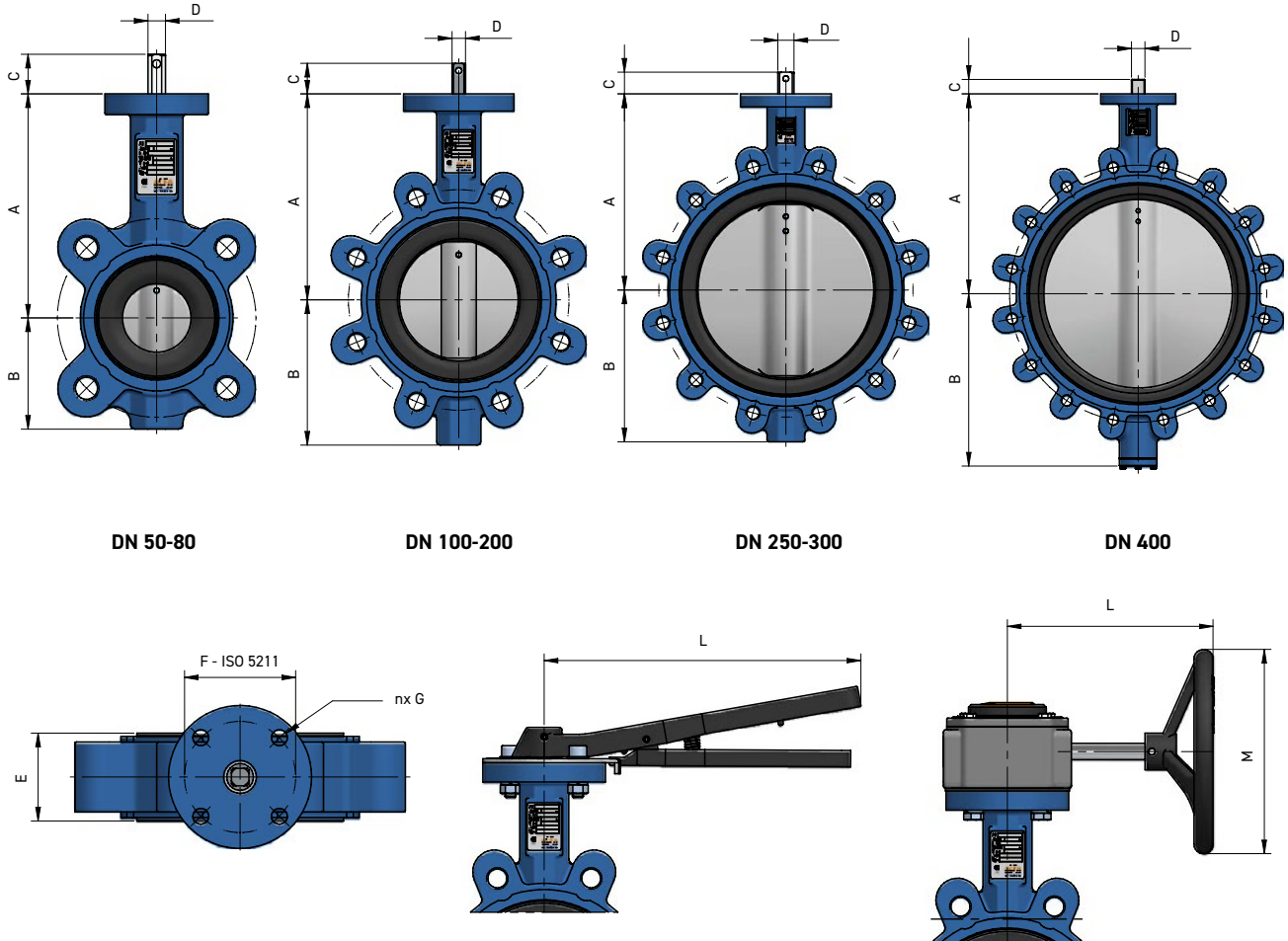
DN50 - DN400



DN	A	B	C	D	E	F	G	Valve Weight in Kg	L Handle	L Gear	M	Gearbox Type
50	141.2	68.6	43	11	42	F05	4x Ø7	2.3	200	115	Ø100	S25
65	150.4	76	46	11	44.5	F05	4x Ø7	3.8	200	115	Ø100	S25
80	156.4	95	46	11	44.5	F05	4x Ø7	4.2	200	115	Ø100	S25
100	167.9	110	52	11	51	F07	4x Ø10	4.7	232	150	Ø125	S25
125	186.5	129.4	56	14	54.5	F07	4x Ø10	6.4	325	150	Ø125	S25
150	205.7	142	56	14	54.5	F07	4x Ø10	8.0	325	150	Ø125	S25
200	230.6	176	60	17	59.6	F07	4x Ø10	11.5	325	146	Ø150	S25
250	269.9	212	68	22	67	F10	4x Ø12	18.2	400	192	Ø250	S55
300	327.8	248.5	78	22	75.5	F10	4x Ø12	27.7	400	192	Ø250	S55
400	400	333	102	27	102	F12	4x Ø14	52.2	-	272	Ø300	S100

Dimensions Lug Type

DN50 - DN400



DN 50-80

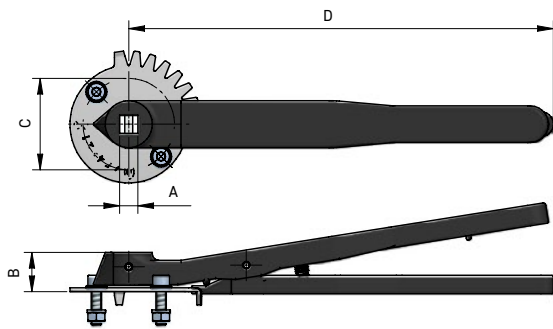
DN 100-200

DN 250-300

DN 400

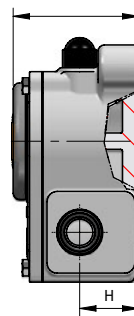
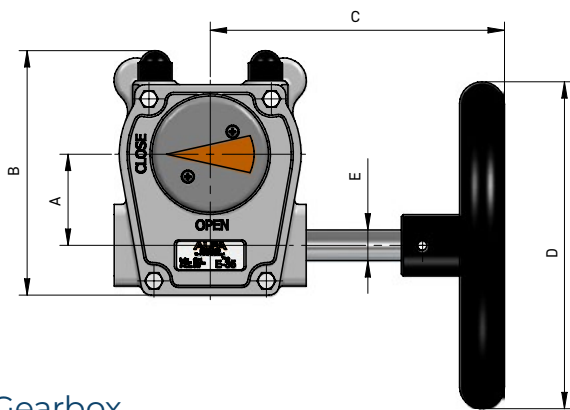
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50	141.2	68.6	43	11	42	F05	4x Ø7	2.7	200	115	Ø100	S25
65	150.4	76	46	11	44.5	F05	4x Ø7	3.0	200	115	Ø100	S25
80	156.4	95	46	11	44.5	F05	4x Ø7	4.2	200	115	Ø100	S25
100	167.9	110	52	11	51	F07	4x Ø10	5.4	232	150	Ø125	S25
125	186.5	129.4	56	14	54.5	F07	4x Ø10	7.9	325	150	Ø125	S25
150	205.7	142	56	14	54.5	F07	4x Ø10	8.8	325	150	Ø125	S25
200	230.6	176	60	17	59.6	F07	4x Ø10	16.4	325	146	Ø150	S25
250	269.9	212	68	22	67	F10	4x Ø12	29.9	400	192	Ø250	S55
300	327.8	248.5	78	22	75.5	F10	4x Ø12	35.0	400	192	Ø250	S55
400	400	333	102	27	102	F12	4x Ø14	79.6	-	272	Ø300	S100

Actuation + Torque + Kv Values



Lever

Type	A	B	C ISO 5211	D	Weight in Kg
1-11	11	25	Ø50 - F05	200	0.7
2-11	11	25	Ø70 - F07	232	0.8
2-14	14	28	Ø70 - F07	325	1.3
2.17	17	28	Ø70 - F07	325	1.3
2.22	22	30	Ø102 - F10	400	2.0



Gearbox

Type	Torque	Ratio	A	B	C	D	E	G	H	Square	ISO 5211	Weight in Kg
E25	250 Nm	1 : 42	45	120	124	Ø150	Ø12	64	29	17	F05-F07	2.5
E55	550 Nm	1 : 40	55	152	157	Ø250	Ø15	73	36	22	F07-F10-F12	5.0
E100	1.000 Nm	1 : 34	71	205	201	Ø300	Ø20	95	48	27	F10-F12-F14-F16	11.0
E200	2.000 Nm	1 : 38	86	230	229	Ø500	Ø20	103	51	36	F10-F12-F14-F16	17.0
E350	3.500 Nm	1 : 55	105	263	230	Ø500	Ø20	106	55	46	F10-F12-F14-F16	19.5

Torque Value Nm

DN	6 bar	10 bar	16 bar
50	13	13.9	15.1
65	13.8	15.4	17.2
80	21	21.7	23.1
100	34.9	37.1	39.8
125	53.8	57.39	61.9
150	84.5	93.9	102
200	154	173	192
250	249	286	323
300	371	429	490
400	632	755	846

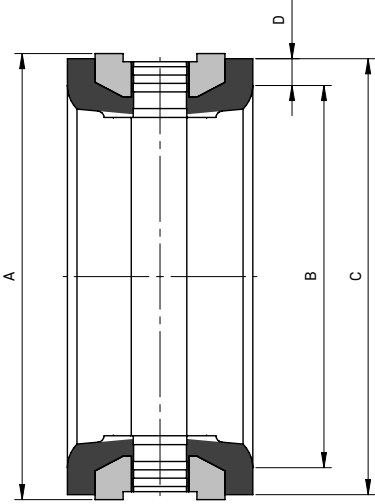
Kv Values m³/h

DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	0.4	0.9	3.4	14	35	57	88	126	172
65	0.6	1.4	5.1	21	53	86	132	189	258
80	1	1.9	7.8	31	78	128	197	283	388
100	1.7	3.5	14	55	138	228	352	504	690
125	2.7	5.3	22	86	216	355	549	786	1078
150	3.9	7.8	31	124	310	512	791	1133	1552
200	6.9	14	55	221	552	918	1407	2014	2759
250	10	22	86	345	862	1422	2198	3147	4310
300	15	31	124	497	1241	2048	3166	4531	6207
400	27	55	200	883	2004	3307	5110	7316	10022

- Incl. 25% safety factor.
- The above torque values (Nm) have included necessary safety factor from its normal application.
- In case of severe application, it's expected to contact Waterworks technical dept. for more details.
- The above torque values are based on wet-wet conditions with pressure.
- For Viton liner, please take next higher Δ P.

- Flow m³/h at 1 bar pressure drop across the valve Opening angle*

Seat Dimensions



DN	A	B	C	D
50	76.3	58.9	73.5	7.27
65	89	71	86.2	7.61
80	103.9	85.5	101.1	7.79
100	135	111.5	132.2	9.27
125	159	130.9	156.2	12.66
150	188.4	163.6	185.6	10.99
200	238.2	212.6	235.4	10.23
250	292.4	260.3	289.6	13.36
300	344.2	307.8	341.4	15.59
400	439.2	395.6	436.4	20.39

Installation and Operation

Bonded liner lug, wafer and double flanged type

General Information

This manual shall serve as an instruction and operation of Waterworks Butterfly Valve series.

It is the responsibility of the installer to ensure that approved materials are used and that the installation and maintenance work meets applicable rules, regulations and requirements. In case of problems which cannot be solved from information in this manual, Waterworks shall be contacted for support.

Note that most of the information in this manual concerns safety, so please read carefully before installation of the valve.

Storage and Handling Instruction

Storage

Store the valves indoors in a clean and dry place. Corrosion that occurs during storage will significantly reduce the life span of the valve.

High temperature and direct sunlight will shorten the service life of the rubber liner. Optimal storage condition is in covered pallets with ambient temperature of 5-20°C. Butterfly valves shall be stored with the disc slightly opened to prevent permanent disc setting deformation.

Lifting and Handling

Be careful when lifting the valve. Never lift by the valve handle, gear operator, hand wheel or actuator. Securely place the rope or hoist around the valve body while handling - see page 10. Consider centre of gravity and prevent tilting and rotational forces.

Please consider the following advice in order to prevent damage to the valve:

Scratch to disc edge: The edge of the butterfly valve is hand polished and very easily scratched. If carelessly handled, the valve will leak at the position of the scratch.

Scratches to the rubber liner: Sharp object might scratch the sealing surface inside the valve or on the flanges. If carelessly handled, the valve will leak at the position of the scratch.

Force applied to top of stem: Mounting a lever, gearbox or actuator onto the butterfly valve is easily made, in case any force is needed be careful not to hit the stem. Great force applied to the top of the stem might cause a permanent imprint in the rubber. Bumping the valve into a hard object might cause the same damage.

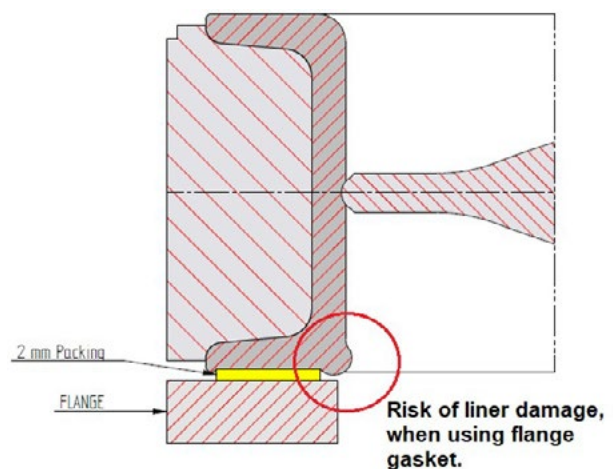
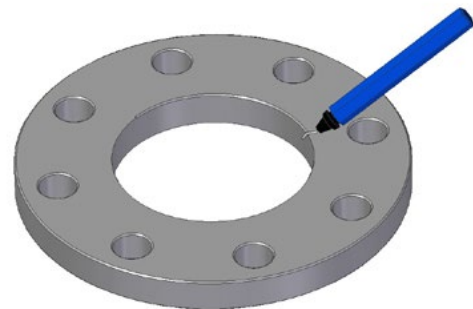
Installation

The valves shall never be installed where service conditions could exceed the valve ratings concerning pressure, temperature or operating media. Failure to comply with this warning may result in personal injury or property damage.

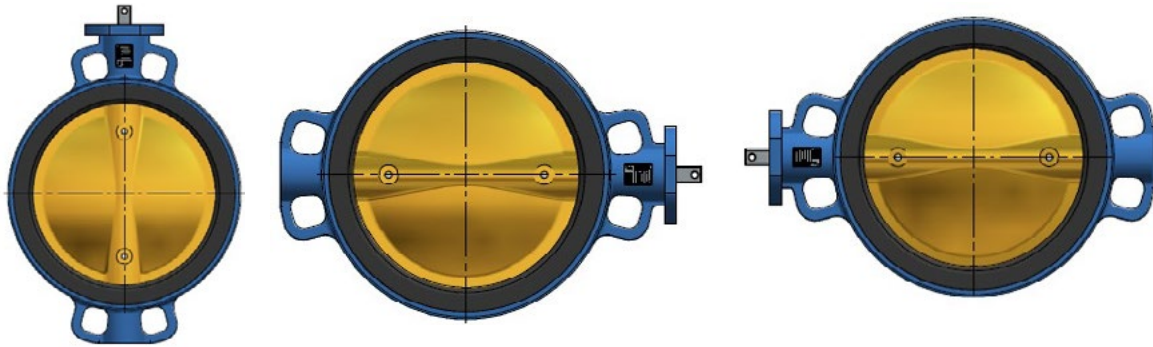
Never use additional flange gaskets. The valve seat will ensure proper sealing!

Installation Procedure

1. Check the valve identification tag to make sure the pressure and valve materials are correct for the application.
2. The counter flanges sealing surface, must be free of burrs, radial grooves, welding spots, dirt/oil, sharp edges. Any sharp edges may occur in liner damage!

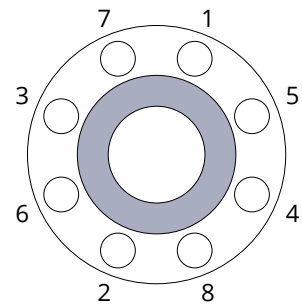


3. Make sure the pipe line has sufficient support in order to prevent vibrations and load weight from damaging the valve.
4. Make sure pipes are aligned:
When the valve is installed between two pipeline flanges, these must be completely aligned. If not aligned, it may result in impermissibly high loads stressing the valve body during operation which may eventually lead to fracture. When the valve is installed in a pipeline, make sure it is as tension-free as possible. The pipeline forces transmitted to the valve must not exceed the values specified in EN 1074-2.
5. Make sure the pipe flanges and valve sealing faces are clean from any debris.
6. Spread the flanges enough to allow the butterfly valve to fit with partly opened disc (5-10 degrees).
7. The valves can be mounted in any orientation, with horizontal and/ or vertical pipeline. In general, Waterworks recommends the rubber seated valve be installed with the stem in the Horizontal position. Please note for larger size butterfly valves the actuator must be supported.



Preferred Installation

8. Fix the valve (without any gaskets) with the bolts - without tightening them - open the disc to a fully open position and make sure it will not be in contact with the pipe.
9. Tighten each bolt crosswise according to figure on the right.
10. After the valve has been installed and if not in operation, please keep the valve disc in slightly open position.



Bolt tightening sequence

Crosswise bolt tightening to ensure a fixed installation, other bolt tightening may affect the installation. Bolt torque is given below.

Maintenance and Repair

Waterworks butterfly valves are designed to be maintenance free, but to guarantee the function it is important for the valve to be in regular use to avoid the disc to stick in the seating. Recommended frequency of use is at least once a week. If a valve for any reason is removed from the pipe, you need to inspect it before re-installation. If the lining or disc is damaged due to wear and tear or for other reasons, a replacement is necessary.

Removing the valve

Prior to any replacement, the valves must be dismantled from the pipe system as follows:

1. Drain and depressurize the pipe on each side of the valve.
2. Ensure that the disc is partially opened (5-10 degrees) before removing the valve.
3. Before removing an automatic actuator ensure that the operating system is not pressurized. Before re-installation of the valve please look through the installation instructions.

Bolt Dimensions

Valve/ Flange Size	Flange Specification														
	EN 1092 PN6		EN 1092 PN10		EN 1092 PN16		ANSI150		JIS5		JIS10K		AS2129 (Table E)		
	Bolt size	Qty	Bolt size	Qty	Bolt size	Qty	Bolt size	Qty	Bolt size	Qty	Bolt size	Qty	Bolt size	Qty	
DN50	M12	4	M16	4	M16	4	5/8"	4	M12	4	M16	4	M16	4	
DN65	M12	4	M16	4	M16	4	5/8"	4	M12	4	M16	4	M16	4	
DN80	M16	4	M16	8	M20	8	5/8"	4	M16	4	M16	8	M16	4	
DN100	M16	4	M16	8	M16	8	5/8"	8	M16	18	M16	8	M16	8	
DN125	M16	8	M16	8	M16	8	3/4"	8	M16	8	M20	8	M16	8	
DN150	M16	8	M20	8	M20	8	3/4"	8	M16	8	M20	8	M20	8	
DN200	M16	8	M20	8	M20	12	3/4"	8	M20	8	M20	12	M20	8	
DN250	M16	12	M20	12	M24	12	7/8"	12	M20	12	M22	12	M20	12	
DN300	M20	12	M20	12	M24	12	7/8"	12	M20	12	M22	16	M24	12	
DN400	M20	16	M24	16	M27	16	1"	16	M22	16	M24	16	M24	12	

*All Lugged valves are EN 1092 (Table E).









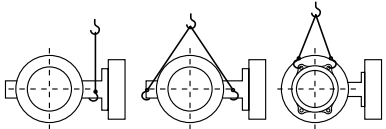
Bolt Torque N.m.

Tightening bolts with below maximum torque figures :

Bolt Size	M12	M16	M20	M24	M27
Maximum Bolting Torque	17Nm	32Nm	75Nm	125Nm	180Nm

*Please contact the Waterworks Technical Department for Bolt Torque ratings not specified.

Instructions for transport, storage, inspection, installation, operation, maintenance and disposal for Rubber-seated Waterworks Butterfly Valves.

TRANSPORT					
	Packaging	Use original packaging			Top Fragile
	Environment	 Max 40°C	 30% - 80% H.R.	 Shade	Clean
	When Lifting	Use the correct equipment		DN 50-350	DN 400-1000 >DN 1000

STORAGE

	Environment	 Max 40°C	 30% - 80% H.R.	 Shade	Clean
	Disc Position				

INSTALLATION

	Valve open/closed				
	If the fluid is dangerous	Avoid contact.			
	In case of external fire	Tightness not guaranteed.			
	In case of explosive atmosphere	Body earthen. Periodical conductivity check required.			
	Direction of Flow	Bi-directional allowed.			
	Shaft Position	Valve shaft should be horizontal.			
	Flange Gaskets	Separate gaskets should not be used unless specifically recommended by Waterworks.			
	Centring	Installation in the centre of the pipe.			
	Tightening of Bolts	Criss-cross fashion.			
	Tightening Torque	Until leakage stops (metal/metal contact not required).			



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Enquire now for your pricing 0800 387 677



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