

Grooved fittings

Model 4251

Motorisable ISO grooved butterfly valve Galvanised cast-iron body



Specifications

Dimensions: DN50 to DN200 (2" to 8")

Maximum operating pressure: 16 bar

Temperature range: -34°C to +82°C

Type of groove: StrengThin™ 100

Material: Body - galvanised ductile cast iron

Butterfly - CF8M stainless steel

EPDM gasket

Mounting plate - ISO 5211



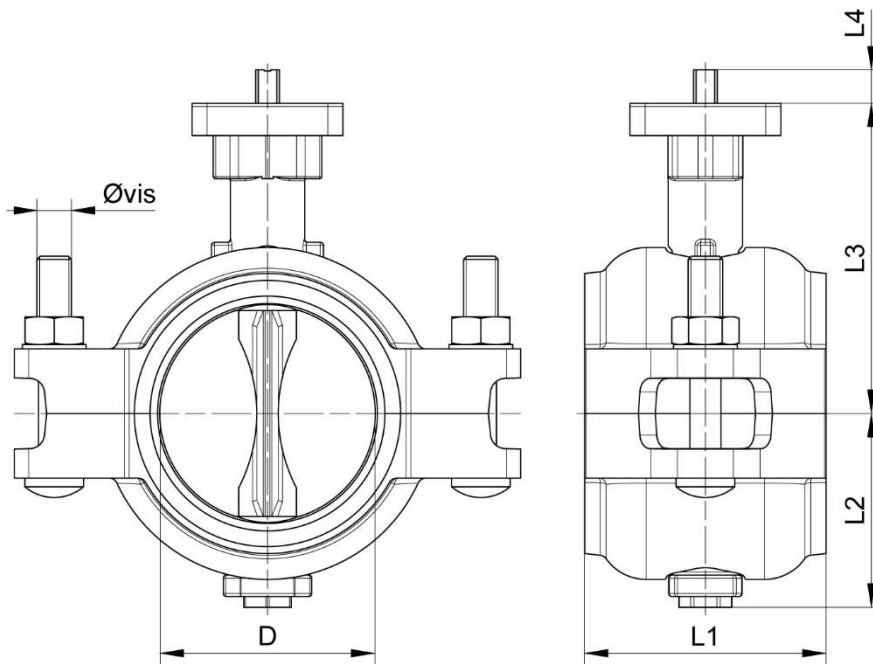
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Béné Inox – 11 chemin de la Pierre Blanche – 69800 SAINT-PRIEST – S.A.S with 240 000 € share capital – SIREN N° 311 810 287
Tel. N°: +33 (0)4 78 90 48 22 – Fax N°: +33 (0)4 78 90 69 59 – www.bene-inox.com – bene@bene-inox.com

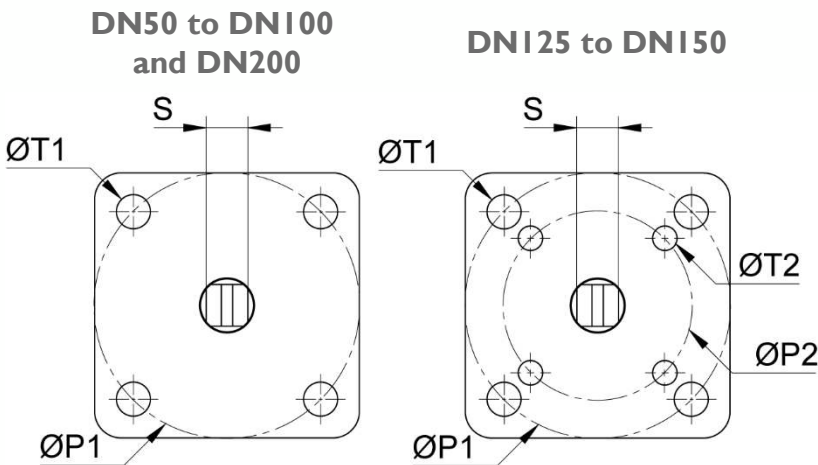
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4251-B VII24



DN (mm)	NB (inches)	D (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	ISO mounting plate	N° bolts	Bolt Ø x length (mm)	Max. gap between pipe ends (mm)	Weight (kg)	Part number
50	2"	60.3	100	60	116	16	F07	2	M12 x 76	49	3.40	442517-50
65	2"1/2	76.1	100	60	122	16	F07	2	M12 x 76	49	4.40	442517-50
80	3"	88.9	111	78	131	16	F07	2	M16 x 83	61	5.90	442517-50
100	4"	114.3	112	90	144	16	F07	2	M16 x 83	61	7.50	442517-50
125	5"	139.7	122	109	162	20	F07/F10	2	M20 x 108	71	12.10	442517-50
150	6"	168.3	123	120	174	20	F07/F10	2	M20 x 127	72	13.90	442517-50
200	8"	219.1	148	158	201	21	F10	2	M22 x 140	86	24.60	442517-50

The dimensions listed in this table are for an assembled valve with all bolts tightened.



DN (mm)	S (mm)	ØT1 (mm)	ØP1 (mm)	ØT2 (mm)	ØP2 (mm)
50	9X9 (square)	9	70	-	-
65	9X9 (square)	9	70	-	-
80	11X11 (square)	9	70	-	-
100	11X11 (square)	9	70	-	-
125	14X14 (square)	11	102	9	70
150	14X14 (square)	11	102	9	70
200	17X17 (square)	11	102	-	-

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Use

This valve is a shut-off valve: it must be either fully open or fully closed.

If you use the valve as a regulation valve (partial opening), check that the operating conditions (e.g. flow rate) do not cause cavitation as this is likely to damage the valve.

The Installation-Ready™ series E125 butterfly valve has Victaulic StrenghThin™ 100 (ST100) groove profiles. This valve is specifically designed for use with EN 10217-7 stainless steel pipes which have the groove profile shown below.

Always check that the valve's groove profiles correspond to the grooves on the fittings or pipes you want to use it with.



Fluids

This valve is suitable for non-coagulable fluids, as long as the fluids are chemically compatible with the valve parts that they can come into contact with.

You should limit fluid flow rate to 4m/s.

This type of valve is commonly used in commercial and industrial applications involving water transport:

- HVAC applications (hot and cold water)
- Process water
- Drinking water (this valve is currently undergoing French ACS certification for drinking-water piping sanitary compliance)

When checking the valve's process compatibility, please consult the part diagram for model **4250** for more information about the materials that its parts are made from.

DO NOT INSTALL AN INSTALLATION-READY™ BUTTERFLY VALVE ON A DEAD-END PIPE AT THE END OF A PROCESS.

Flow coefficient and pressure loss

The flow coefficient Kv defines water flow rate through a device (e.g. valve, check valve etc.) for a pressure loss (ΔP) of 1 bar. Kv is expressed mathematically as:

$$\Delta P = \frac{Q^2}{Kv^2} \quad \text{so:} \quad Kv = \frac{Q}{\sqrt{\Delta P}}$$

Q Flow rate in m³/h
 ΔP Pressure drop bar

The table below shows Kv flow rate values for water at +16°C when the butterfly disk is in different positions.

Flow coefficient table:
Kv in m³/h

DN	Opening angle					
	30°	40°	50°	60°	70°	90°
50	10	21	36	64	98	128
65	19	37	65	118	186	235
80	20	32	55	97	158	256
100	28	59	116	204	329	562
125	45	101	186	314	503	738
150	95	202	350	567	965	1434
200	231	444	734	1160	1726	2318

If you use the butterfly valve for flow regulation you should make sure that the butterfly disk's opening angle is between 30° and 70°. If you use the valve at an opening angle that is less than 30° this could cause noise, vibration, cavitation, erosion and/or control loss problems.

Assembly and maintenance instructions

Installation

You can install the butterfly valve in any position. Check that there is enough space to tighten the valve's bolts during its assembly and to move the valve's handle during use where you are planning to install it.

Check that the installation is clean and free from foreign bodies that could damage the valve. The end of the grooved piping must be cut straight, be free from defects and be correctly deburred.

Check that all piping is perfectly aligned and that the piping support structure is dimensioned so that the valve is not subject to any external stresses. The piping support structure must only support the pipes, not the valve.

Install the valve at a distance of at least 5 times the pipe's diameter downstream from turbulence zones linked to equipment such as pumps, elbows and control valves.

How to install a butterfly valve:

Before assembly, use a paintbrush to apply a thin layer of lubricant (model **4280**) over all of the inside of the body gasket.

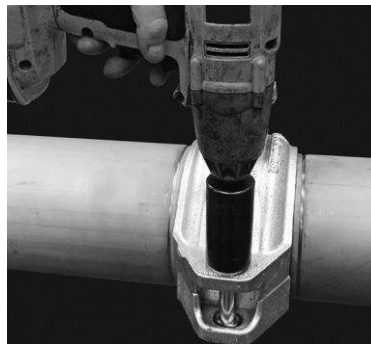
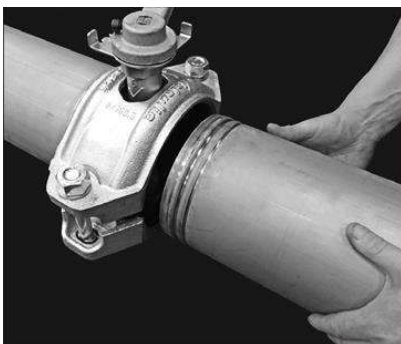
You do not need to disassemble the valve. The valve is supplied 'ready to use' so you can directly insert grooved pipe ends into it. Insert the pipes until they come into contact with the valve gasket's central pipe stop.

Carry out a visual inspection to check that the half shell valve housing collar is correctly placed on the pipe's groove. The half shell collar will be able to turn freely around the pipe.

Tighten the bolts on both sides of the collar, alternating between each side to ensure they are tightened evenly. Tighten the bolts until the half shell housings come into contact with each other.

You do not have to apply a specific torque but you must make sure that you do not exceed the maximum allowed tightening torque given in the table below.

DN	Nut size	Socket size (mm)	Max. tightening torque (Nm)
50	M12	22	183
65	M12	22	183
80	M16	27	319
100	M16	27	319
125	M20	32	576
150	M20	32	576
200	M22	36	915



Check the valve is operating correctly.

Pressure test the installation according to the relevant standards (e.g. EN 12266-1), but do not exceed the valve's specifications.

Motorisation

You can motorise the valve through direct mounting using its ISO mounting plate (ISO 5211 standard), see the corresponding product data sheets.

- Model **50800**: spring return or double-acting type aluminium pneumatic actuator
- Model **50802**: spring return or double-acting type stainless steel pneumatic actuator
- Model **50835**: IP65 electric servo motor
- Models **50840 - 50841 - 50842**: IP66 electric servo motor
- Models **50844 - 50845 - 50846**: IP68 electric servo motor
- Model **50849 - 50850 - 50851**: IP68 ATEX electric servo motor (aluminium housing and class C4 coating)

Required operating torque for valve motorisation (in Nm)

DN	Differential pressure (bar)				
	3	7	10	14	16
50	6	7	8	10	11
65	10	11	13	14	15
80	15	19	23	26	27
100	21	26	30	35	38
125	46	62	77	92	102
150	61	75	88	102	111
200	97	111	125	138	148

Torque required for water at ambient temperature.

It is recommended to use a minimum safety factor of +30% for motorisation with a pneumatic actuator and +50% for motorisation with an electric actuator.

You can find this information on the product data sheet for each actuator.

Maintenance

The butterfly valve does not require any specific maintenance if it is used in normal operating conditions. You may need to change the valve due to unusual wear and tear, or if a fluid has damaged the valve and caused a leak or malfunction.

If there is a problem it is not recommended to disassemble the valve.

If the butterfly valve is never opened or closed during normal operation then you should regularly open and close the valve to check that it is still working correctly. We recommend that you do this at least once every three months.

Valve removal



Warning: Before you work on the valve, check that the installation has been stopped and that the piping is empty and is not pressurised.

Warning: If the butterfly valve is used with fluids that have a temperature above 60°C then people could burn themselves if they touch it.

Warning: Beware of hazardous materials - follow the instructions provided by the suppliers.

You should support all piping elements during valve removal.

Remove the valve's actuator or handle.

Check that you can slide the pipes in their support structure so that you can carry out the steps described below. (N.B. If your valve is assembled onto fixed pipes then you must remove it in a different way. However, there is a high risk that the gasket and butterfly valve will be damaged during this process and will need to be replaced.)

Position the butterfly **2** at approximately 20° from its closed position.

Unscrew the nuts **11** slightly so that you can remove the pipes from the valve's body **1** without disassembling the half shell housings **4**.

Before reusing the valve, check that none of its parts are damaged.