

Ball valves

Model 58471

3-part ATEX ball valve for socket welding (SW) with ISO mounting plate - API 607 316 stainless steel

1500 lbs/PN100 - Full bore - Lockable handle



Specifications

Dimensions: DN8 to DN50 (1/4" to 2")

Connection: to be welded (socket welding)

Pressure: 1/4" to 1" - PN130 (2000 lbs)
1 1/4" to 2" - PN100 (1500 lbs)

Temperature: -29°C to +200°C

Material: 316 or CF8M stainless steel
(for the stainless steel parts that can come into contact with the transported fluid)

TFM 4215 seats

PTFE + Graphite + FKM gaskets

ISO 5211 mounting plate for pneumatic or electric actuator

ATEX II 2 GD

For high temperature applications

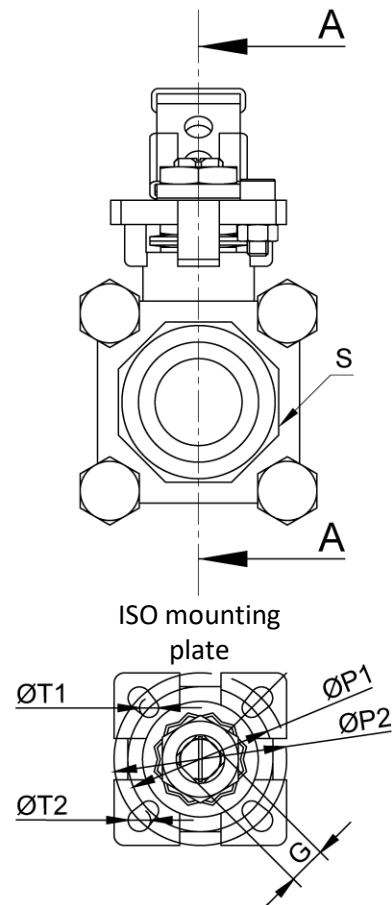
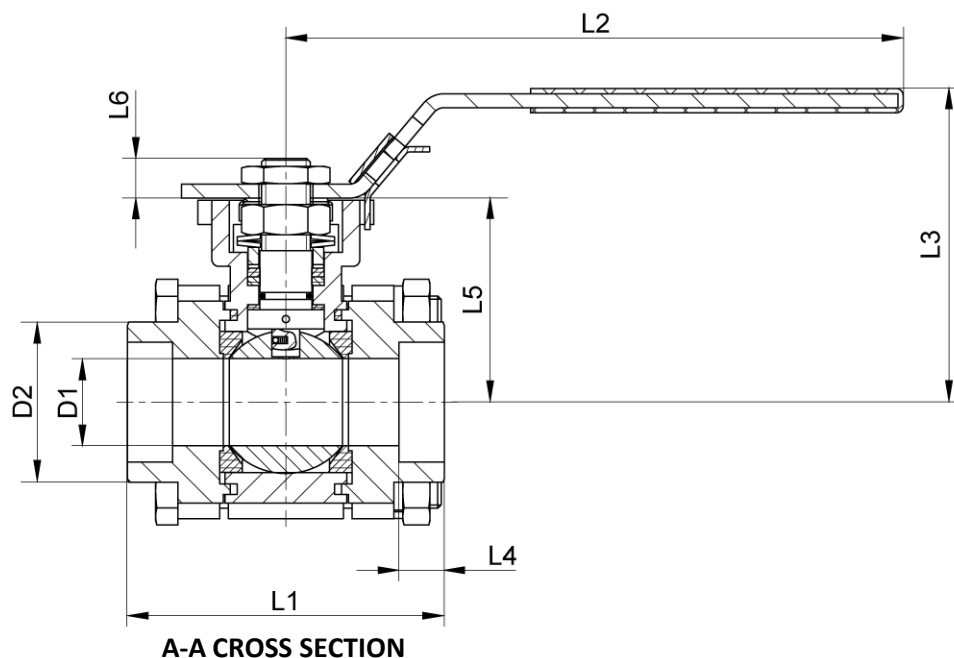
Complies with fire safety regulations (API 607)



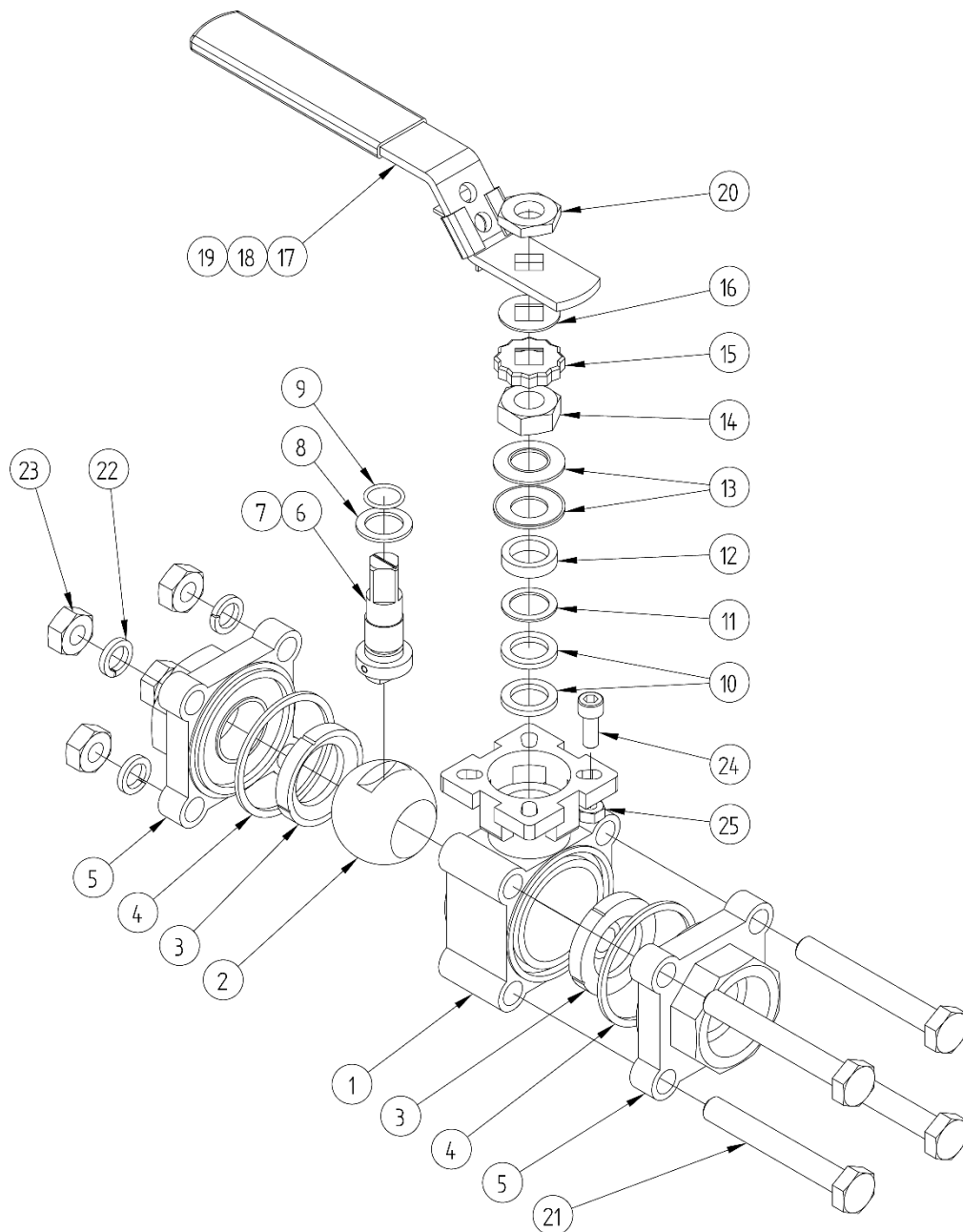
Béné Inox – 11 chemin de la Pierre Blanche – 69800 SAINT-PRIEST – S.A.S with 240 000 € share capital – SIREN N° 311 810 287
Tel. N°: +33 (0)4 78 90 48 22 – Fax N°: +33 (0)4 78 90 69 59 – www.bene-inox.com – bene@bene-inox.com

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58471-G V0726



DN (mm)	NB (inches)	D1 (mm)	D2 (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	G (mm)	ØP1 (mm)	ØP2 (mm)	ØT1 (mm)	ØT2 (mm)	ISO mounting plate	Weight (kg)	Part number
8	1/4"	10.6	14.2	70	147	73	10	43	9	9	36	42	6	6	F03-F04	1.07	458471-8
10	3/8"	12.7	17.8	70	147	73	10	43	9	9	36	42	6	6	F03-F04	1.04	458471-10
15	1/2"	15	21.8	75	147	73	10	43	9	9	36	42	6	6	F03-F04	1.01	458471-15
20	3/4"	20	27.3	80	147	81	13	51	9	9	36	50	6	7	F03-F05	1.52	458471-20
25	1"	25	34.0	90	177	88	13	58	11	11	42	50	6	7	F04-F05	2.07	458471-25
32	1 1/4"	32	42.8	110	177	93	16	63	11	11	42	70	6	9	F04-F07	3.01	458471-32
40	1 1/2"	38	48.9	120	197	107	16	75	14	14	50	70	7	9	F05-F07	4.49	458471-40
50	2"	50	61.4	140	197	118	17	86	14	14	50	70	7	9	F05-F07	7.06	458471-50



N°	Part Name	Material
1	BODY	ASTM CF8M
2	BALL	AISI 316
3	SEALING RING	TFM 4215
4	BODY GASKET	GRAPHITE
5	FLANGE (END TO BE WELDED)	ASTM CF3M
6	ANTI-STATIC SHAFT	AISI 316
7	SPRING + BALL (ANTI-STATIC)	AISI 316
8	SHAFT RING	PTFE
9	O-RING	FKM
10	SHAFT PACKING	GRAPHITE
11	SUPPORT RING	AISI 304
12	SPACER	AISI 316
13	BELLEVILLE WASHER	AISI 301

N°	Part Name	Material
14	SHAFT NUT (GLAND)	A194-8
15	STOP NUT	AISI 304
16	FLAT WASHER	AISI 304
17	HANDLE	AISI 304
18	LOCKING DEVICE	AISI 304
19	HANDLE COVERING	PVC
20	HANDLE NUT	A194-8
21	BOLT (TIE ROD)	A193-B8
22	LOCK WASHER (TIE ROD)	AISI 304
23	NUT (TIE ROD)	A194-8
24	BOLT (HANDLE STOP)	A2-70
25	NUT (HANDLE STOP)	A2-70

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Use

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

Do not leave the valve partially open: an opening default, or leaving the ball valve partially open to decrease flow, could lead to cavitation which is likely to damage the valve.

You must lift the locking device **18** to be able to turn the valve's handle **17**. You must always turn the handle by a complete 1/4 turn, until it cannot be turned any further.

Turn the valve's handle 1/4 turn (90°) clockwise to close the valve or 1/4 turn (90°) anti-clockwise to open it.

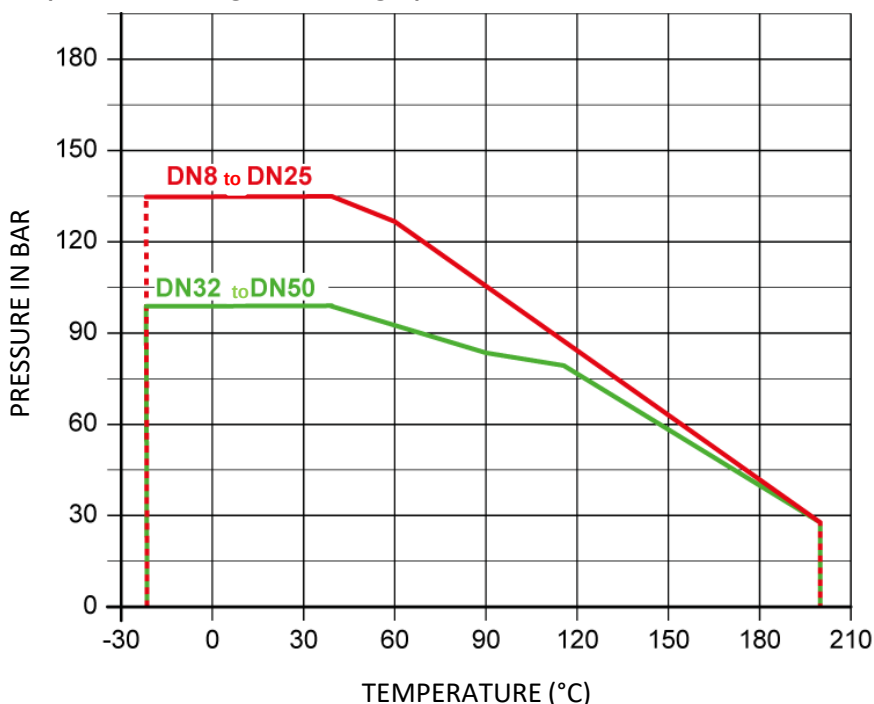
The valve is open if the handle is in line with the piping.

You can lock the handle with a padlock, in the open or closed position.

Pressure and temperature

The data plate indicates the valve's maximum operating pressure and the minimum and maximum operating temperatures (but this information does not cover any associated actuator or servo motor, so if you use one of these with the valve please also check their respective data plates to find this information). The operating temperature is between -29°C and +200°C for TFM 4215 seats.

For pressure/temperature ratings, see the graph below.



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

Flow coefficient and pressure loss

Dimensions	DN8	DN10	DN15	DN20	DN25	DN32	DN40	DN50
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Kv (m³/h)	14	20	26	48	83	147	234	407

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

$$\Delta P = \frac{Q^2}{K_v^2} \quad \text{so:} \quad K_v = \frac{Q}{\sqrt{\Delta P}} \quad \begin{array}{l} Q \text{ in m}^3/\text{h} \\ \Delta P \text{ in bar} \end{array} \quad \begin{array}{l} K_v \text{ in m}^3/\text{h} \\ C_v \text{ in GPM (Gallons} \\ \text{per minute - US)} \end{array} \quad C_v = 1.16 \times K_v$$

Fluids

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

Motorisation

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

- Model **50141**: valve with spring return or double-acting type aluminium pneumatic actuator
- Model **50144**: valve with spring return or double-acting type stainless steel pneumatic actuator
- Model **50147**: valve with IP65 electric servo motor
- Model **50156 - 50159 - 50162**: valve with IP68 electric servo motor
- Model **50168 - 50171 - 50174**: valve with IP68 electric servo motor
- Model **50180 - 50183 - 50186**: valve with ATEX IP68 electric servo motor

Required operating torque for valve motorisation

Dimensions	-	DN8	DN10	DN15	DN20	DN25	DN32	DN40	DN50
Operating torque for water at 10 bar	Nm	7	7	7	8	13	17	25	33
Operating torque for water at 20 bar	Nm	7	7	7	8	15	20	29	42
Operating torque for water at 50 bar	Nm	7	7	7	8	15	22	31	46
Operating torque for water at 63 bar	Nm	7	7	7	8	15	25	34	49
Operating torque for water at 100 bar	Nm	7	7	7	8	15	26	37	55
Operating torque for water at 140 bar	Nm	7	8	8	9	16	-	-	-
Coupling characteristics	Mounting plate	F03 F04	F03 F04	F03 F04	F03 F05	F04 F05	F04 F07	F05 F07	F05 F07
	Square	9x9	9x9	9x9	9x9	11x11	11x11	14x14	14x14

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.

For temperatures above 180°C you should include an additional safety factor of +20%.

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

Use in ATEX zones

Manual valves (model **58471**) and pneumatic valves (models **50141** and **50144**) can be used in ATEX II 2 GD zones.

The valve's anti-static shaft ensures electrical continuity between the valve's ball, shaft and body.

If you add any other element (e.g. position detection, solenoid valves etc.), you must check that this addition can be used in ATEX zones.

You **cannot use** models **50147**, **50156** and **50168** etc. (valves with electric servo motors) in **ATEX zones**.

You can only use models **50180**, **50183** and **50186** with electric servo motors in ATEX II 2 GD zones.

Assembly and maintenance instructions

Installation

You can install the valve in any position. However, check that there is enough space to move the valve's handle where you are planning to install the valve.

Check that the installation is clean and free from foreign bodies that could damage the valve.

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.

How to install a valve with ends requiring welding:

Welding must be carried out by qualified personnel.

The valve must be disassembled to avoid damaging the valve during welding. Tack weld the fitted valve, or use a jig, to ensure the correct alignment of the flanges.

Disassemble the valve (remove the central part) to weld its 2 flanges to the piping, and then reassemble the valve after welding.

You must disassemble and reassemble the valve with the ball in the open position. You must tighten and loosen the tie rods in a criss-cross pattern. You must adhere to the tightening torques in table **B** (see page 9) when you reassemble the valve.

Clean the installation leaving the valve open so that there are no foreign bodies between the ball and the body. 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.

Maintenance

The valve does not require any specific maintenance if it is used in normal operating conditions.

If the 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.

If any leaks appear around the shaft **6**, during operation or during the valve installation testing phase, tighten the shaft nut (gland) **14**. You can usually stop leaks by tightening the nut by 30 to 60°.

But you must not over tighten the nut, as this could reduce the system's service life. You must adhere to the tightening torques in table **A** (see page 9).

If there is a leak between the valve's body and the flanges, check that the tie rods are correctly tightened (bolt **21** + washer **22** + nut **23**), adhering to the tightening torques in table **B** (see page 9).

You may need to change some of the valve's parts due to unusual wear and tear, or if a fluid has damaged the valve and caused a leak or malfunction.

If this is the case see the 'Assembly / Disassembly' and 'Spare Parts' sections below.

Assembly / Disassembly

The maintenance and removal/installation of the valve must be carried out by personnel who are qualified and trained for this type of intervention.



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 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.

Remove the tie rods (bolts **21** + washer **22** + nut **23**). You should work with the valve in the open position.

Remove the central part of the valve; you can keep the flanges **5** attached to the piping.

Remove the 2 seat rings **3** and the 2 body gaskets **4**.

Close the valve to remove the ball **2**. Check the condition of the ball's surface. You must replace it at the same time as the two seat rings **3** if it is scratched or damaged.

If you need to replace the shaft's sealing, remove the parts from the upper part of the valve in the following order: handle nut **20**, handle **17** and flat washer(s) **16** in the case of a manual valve (otherwise remove the valve's motorisation), then the stop nut **15**, shaft nut **14**, Belleville washers **13** and stainless steel rings (**11** + **12**).

Push the shaft **6** towards the inside of the body **1** in order to remove it, and remove the o-ring **9** and the PTFE sealing ring **8** (be careful you do not scratch the shaft).

Remove the Graphite shaft packing (v-washers) **10** from its housing (be careful you do not scratch the surface of this housing).

Clean and inspect all of the parts of the valve. Replace any worn parts. You are strongly advised to replace all the shaft's sealing parts (gaskets and Graphite packing) if it has been disassembled, as well as the ball's TFM 4215 seat rings.

Follow the disassembly steps in reverse to reassemble the valve.

You must adhere to the tightening torques in table **A** (see page 9) when you tighten the shaft packing (shaft + Graphite packing + washers, etc.) with the shaft nut **14**.

You must tighten the tie rods in a criss-cross pattern, with the valve's ball in the open position, and you must adhere to the tightening torques in table **B** (see page 9).

Pressure test the valve and check that it can be opened and closed before you put the installation back into service.

Table A	Dimensions	DN 8	DN 10	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
Tightening torque for shaft nut (gland)	Nm	8.0~9.0	8.0~9.0	8.0~9.0	8.0~9.0	8.0~9.0	9.0~11.3	9.0~11.3	15.8~18.1

Table B	Dimensions	DN 8	DN 10	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
Tightening torque for the tie rods	Nm	11.3	11.3	11.3	31.7	31.7	45.3	45.3	90.5

Spare parts

Gasket kits

A gasket kit contains:

- 2 seat rings **3**
- 2 body gaskets **4**
- 1 shaft ring **8**
- 1 o-ring **9**
- 1 shaft packing **10**
- 1 support ring **11**

(quantity could vary according to the DN)

DN (mm)	NB (inches)	Gasket kit Part no.
8 to 10	1/4" to 3/8"	D5411-810
15	1/2"	D5411-15
20	3/4"	D5411-20
25	1"	D5411-25

DN (mm)	NB (inches)	Gasket kit Part no.
32	1"1/4	D5411-32
40	1"1/2	D5411-40
50	2"	D5411-50

Handle **17; 18; 19**



DN (mm)	NB (inches)	Handle Part no.
8 to 20	1/4" to 3/4"	D5121-820
25 to 32	1" to 1"1/4	D5121-2532
40 to 50	1"1/2 to 2"	D5121-4050

Customisation possibilities

Position raiser with ISO mounting plate



DN (mm)	NB (inches)	Length (mm)	Position raiser with ISO plate Part no.
8 to 20	1/4" to 3/4"	100	458208-1
25 to 32	1" to 1"1/4	100	458208-2
40 to 50	1"1/2 to 2"	100	458208-3

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Oval operating wheel



DN (mm)	NB (inches)	Operating wheel Part no.
15 to 20	1/2" to 3/4"	458136-1
25 to 32	1" to 1"1/4	458136-2
40 to 50	1"1/2 to 2"	458136-3

Spring return (deadman) handle



DN (mm)	NB (inches)	Deadman handle Part no.
15 to 20	1/2" to 3/4"	458136-1
25 to 32	1" to 1"1/4	458136-2
40 to 50	1"1/2 to 2"	458136-3

Standards and compliance

- This valve is designed in accordance with ASME B16.34 and EN 12516-3 standards.
- Connection: to be welded (SW - socket welding) in accordance with the ASME B16.11 standard.
- Leak testing according to EN 12266/API 598.
- This valve complies with European Pressure Equipment Directive (PED) 2014/68/EU
 - from DN8 according to Annex I Paragraph 4.3.
 - from DN32 according to Annex III Module H: Certificate No. DGR 0036-QS-I045-23.
- ATEX Group II Category 2 G D in accordance with Directive 2014/34/EU: Certificate No. EX9A 082326 0003
 - II 2G Ex h IIC T6...T1 Gb (gas and vapour).
 - II 2D Ex h IIIC T85°C...T450°C Db (combustible dust).
- This valve meets fire safety regulations according to API 607 and ISO 10497 standards.