



Installation, Operating and Maintenance Instructions:

ETG M-(3/3BW/3SW)

**3-Pce Full Bore Ball Valve lever operated
(Screwed/Butt Weld/Socket Weld)**

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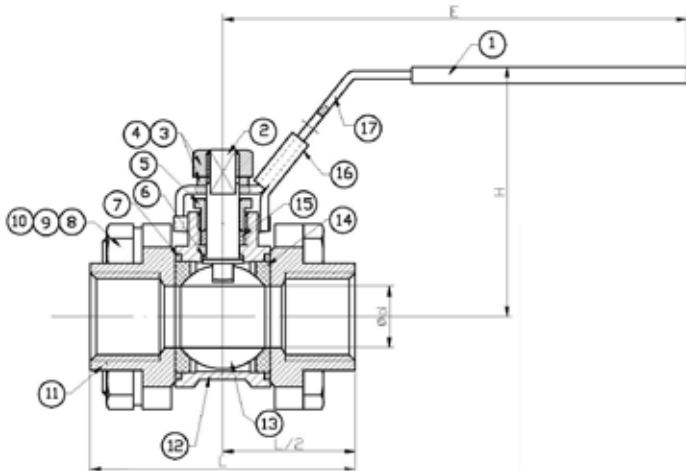
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Hygiene and Safety

Valve Information

ETG M-3

**3-Pce Screwed Full Bore Ball Valve
lever operated**



Item	Part	Material	Qty.
1	Handle Cover	PLASTIC	1
2	Stem	316	1
3	Hand Washer	304	1
4	Hand Nut	304	1
5	Gland	304	1
6	Thrust Washer	PTFE	1
7	End Seal	PTFE	2
8	Bolt	304	4
9	Bolt Nut	304	4
10	Bolt Washer	304	4
11	End Cap	CF8M	2
12	Body	CF8M	1
13	Ball	CF8M	1
14	Ball Seat	PTFE	2
15	Stem Packing	PTFE	1
16	Locking Device	304	1
17	Handle	304	1

- ASTM A351 CF8M 316 Stainless Steel construction, 316 Trim.
- PTFE Seats and Seals. Adjustable gland. Slide type Locking Lever.
- 1000 psi/g Pressure rated (1/4" - 2") 600 psi/g Pressure rated (2.5" - 4").
- -20 / + 180 Deg C Temperature rated.
- BSP and NPT End Connections. Pressure balance hole in Ball Slot.
- CE marked (sizes 1.1/4" upward) in accordance with the PED 2014/68/EU

A good quality, general purpose ball valve suitable for most Liquid and Gaseous duties. Ball can be drilled for upstream vent applications such as bleach and peroxide duties.

15% Glass R-PTFE Seal Kits available for elevated temperature duties.

EN10204 3.1 material Test Certificates available

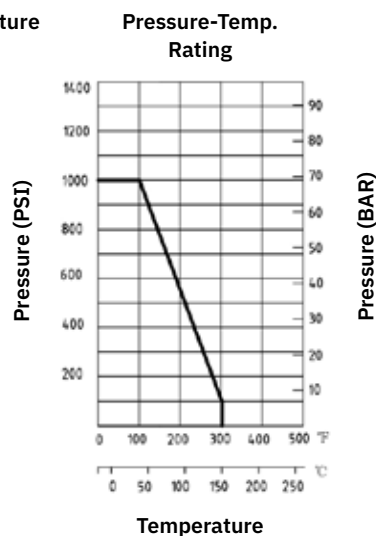
Test standard – API 598

BSP Ends - ISO 7-1

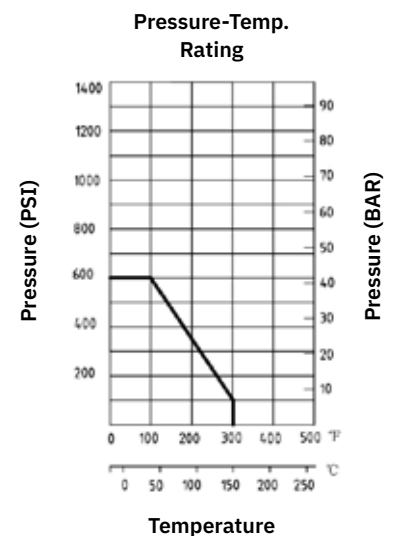
NPT Ends - ASME B1.20.1

Available size range: 1/4" - 4"

SIZE	d	L	H	E
1/4"	9.2	59	52	108
3/8"	12.8	60	52	108
1/2"	15	65.5	63	113
3/4"	20	76.5	68	113
1"	25	86.2	79	135
1-1/4"	32	103.1	88	135
1-1/2"	38	118	97	160
2"	50	131.5	108	160
2-1/2"	65	164.6	128	230
3"	80	182.7	140	230
4"	100	217.7	172	335



1/4" - 2"

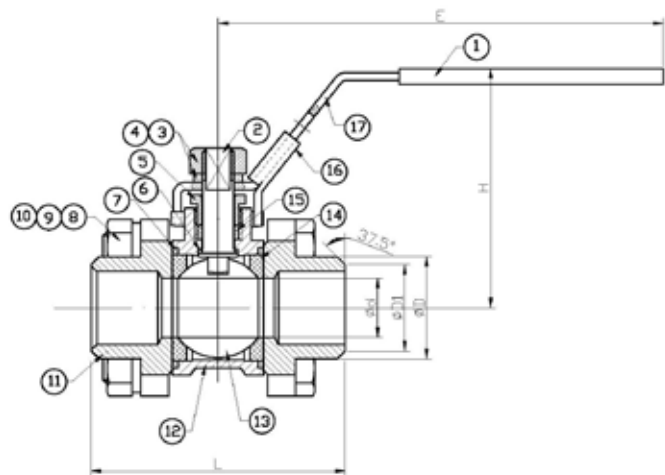


2 1/2" - 4"

Valve Information

ETG M-3BW

3-Pce Butt Weld Full Bore Ball Valve
lever operated



- ASTM A351 CF8M 316 Stainless Steel construction, 316 Trim.
- PTFE Seats and Seals. Adjustable gland. Slide type Locking Lever.
- 1000 psi/g Pressure rated (1/4" - 2") 600 psi/g Pressure rated (2.5" - 4")
- -20 / + 180 Deg C Temperature rated.
- Pressure balance hole in Ball Slot.
- CE marked (sizes 1 1/4" upward) in accordance with the PED 2014/68/EU

A good quality, general purpose ball valve suitable for most Liquid and Gaseous duties. Ball can be drilled for upstream vent applications such as bleach and peroxide duties.

15% Glass R-PTFE Seal Kits available for elevated temperature duties.

Valves can be adapted to Socket Weld End for Metric Piping Systems

EN10204 3.1 material Test Certificates available

Test standard – API 598

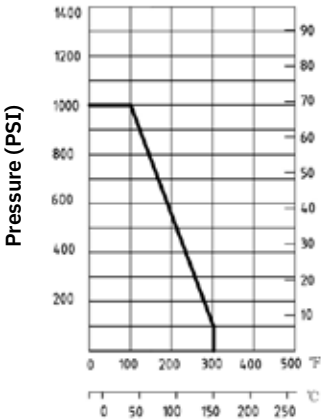
Butt Weld Ends - ASME B16.25 (Sch 40).
Can be machined to Sch 10.

Available size range: 1/4" - 4"

Item	Part	Material	Qty.
1	Plastic Sleeve	PLASTIC	1
2	Stem	316	1
3	Hand Washer	304	1
4	Hand Nut	304	1
5	Gland	304	1
6	Thrust Washer	PTFE	1
7	End Seal	PTFE	2
8	Bolts	304	4
9	Bolt Nuts	304	4
10	Bolt Washers	304	4
11	End Cap	316	2
12	Body	316	1
13	Ball	316	1
14	Ball Seats	RTFE	2
15	Stem Packing	PTFE	1
16	Locking Device	304	1
17	Handle	304	1

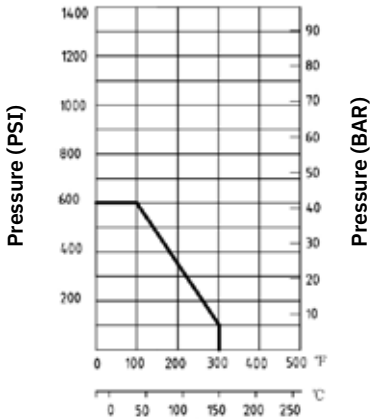
SIZE	d	L	H	E	D	D1
1/4"	9.2	59	52	108	14	12
3/8"	12.8	60	52	108	17.5	14.5
1/2"	15	65.5	63	113	22	17
3/4"	20	76.5	68	113	27.5	22.5
1"	25	86.2	79	135	34	28.6
1-1/4"	32	103.1	88	135	43	36
1-1/2"	38	118	97	160	49	43
2"	50	131.5	108	160	61	54
2-1/2"	65	162.6	128	230	76.5	68
3"	80	180.7	140	230	90	84
4"	100	221.7	172	335	115	104

Pressure-Temp.
Rating



1/4" - 2"

Pressure-Temp.
Rating

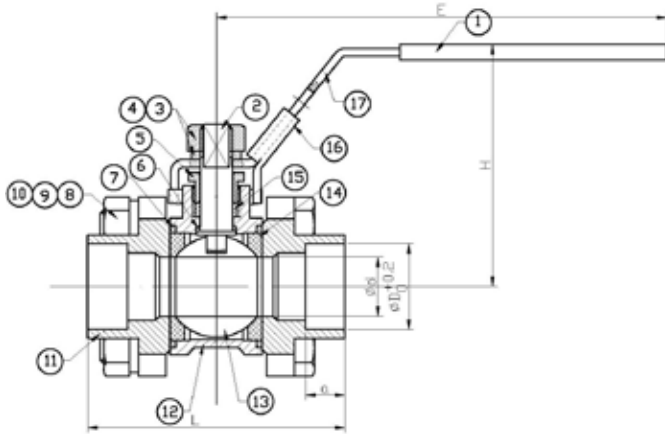


2 1/2" - 4"

Valve Information

ETG M-3SW

3-Pce Socket Weld Full Bore Ball Valve lever operated



Item	Part	Material	Qty.
1	Plastic Sleeve	PLASTIC	1
2	Stem	316	1
3	Hand Washer	304	1
4	Hand Nut	304	1
5	Gland	304	1
6	Thrust Washer	PTFE	1
7	End Seal	PTFE	2
8	Bolts	304	4
9	Bolt Nuts	304	4
10	Bolt Washers	304	4
11	End Cap	316	2
12	Body	316	1
13	Ball	316	1
14	Ball Seats	RTFE	2
15	Stem Packing	PTFE	1
16	Locking Device	304	1
17	Handle	304	1

- ASTM A351 CF8M 316 Stainless Steel construction, 316 Trim.
- PTFE Seats and Seals. Adjustable gland. Slide type Locking Lever.
- 1000 psi/g Pressure rated (1/4" - 2") 600 psi/g Pressure rated (2.5" - 4")
- -20 / + 180 Deg C Temperature rated.
- Pressure balance hole in Ball Slot.
- CE marked (sizes 1.1/4" upward) in accordance with the PED 2014/68/EU

A good quality, general purpose ball valve suitable for most Liquid and Gaseous duties. Ball can be drilled for upstream vent applications such as bleach and peroxide duties.

15% Glass R-PTFE Seal Kits available for elevated temperature duties.

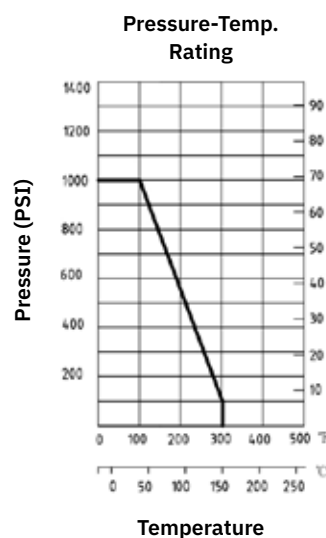
EN10204 3.1 material Test Certificates available

Test standard – API 598

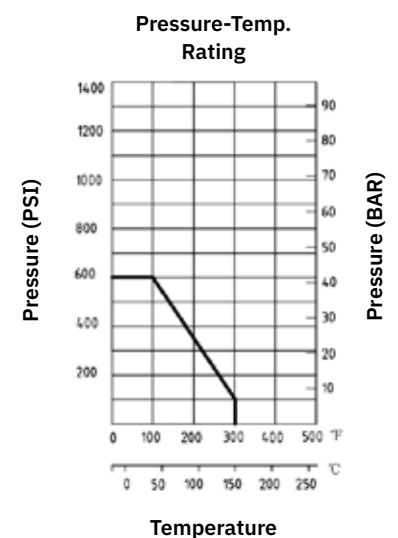
Socket Weld Ends - ASME B16.11

Available size range: 1/4" - 4"

SIZE	d	L	H	E	D	a
1/4"	9.2	59	52	108	14.1	10
3/8"	12.8	60	52	108	17.6	10
1/2"	15	65.5	63	113	21.9	10
3/4"	20	76.5	68	113	27.4	13
1"	25	86.2	79	135	34.2	13
1-1/4"	32	103.1	88	135	42.8	13
1-1/2"	38	118	97	160	48.8	13
2"	50	131.5	108	160	61.1	16
2-1/2"	65	162.6	128	230	77	16
3"	80	180.7	140	230	89.9	16
4"	100	221.7	172	335	115.4	19



1/4" - 2"

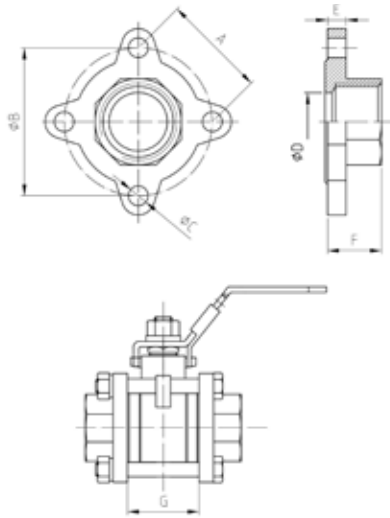


2 1/2" - 4"

End Cap Dimensions

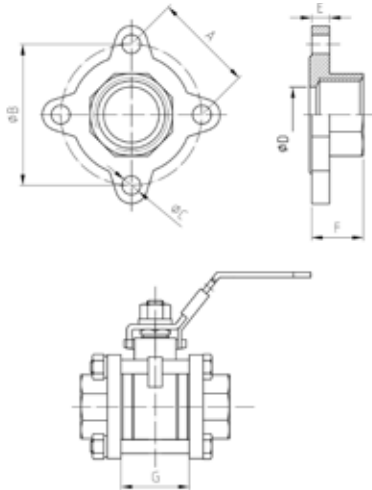
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ETG M-3



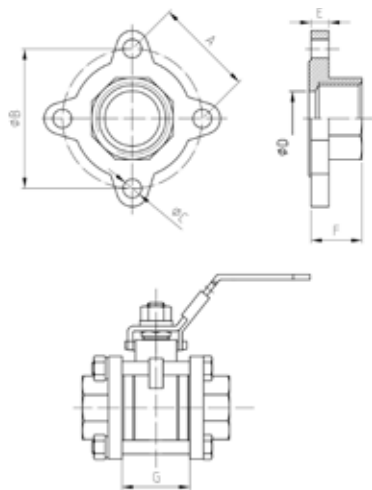
SIZE	A	ø B	ø C	ø D	E	F	G
1/4"	24.8	35	7	9.2	6	18.5	20
3/8"	27.2	38.5	6.5	12.8	6	18	22
1/2"	31.8	45	8.5	15	7	20.1	23.3
3/4"	40	56.7	8.5	20	7	21.85	30.8
1"	45	63.5	8.5	25	8	23.2	37.8
1-1/4"	53	75	8.5	32	9.5	27.5	47
1-1/2"	63.3	89.5	12.5	38	10.5	29.5	57
2"	78.9	111.5	12.5	50	11.5	30.8	68
2-1/2"	98.3	139	15	65	12	37.8	88.1
3"	116.7	165	17	80	14	40.8	100.2
4"	100.3	200.5	19	100	18	48.8	119.1

ETG M-3BW



SIZE	A	ø B	ø C	ø D	E	F	G
1/4"	24.8	35	7	9.2	6	18.5	20
3/8"	27.2	38.5	6.5	12.8	6	18	22
1/2"	31.8	45	8.5	15	7	20.1	23.3
3/4"	40	56.7	8.5	20	7	21.85	30.8
1"	45	63.5	8.5	25	8	23.2	37.8
1-1/4"	53	75	8.5	32	9.5	27.5	47
1-1/2"	63.3	89.5	12.5	38	10.5	29.5	57
2"	78.9	111.5	12.5	50	11.5	30.8	68
2-1/2"	98.3	139	15	65	12	37.8	88.1
3"	116.7	165	17	80	14	40.8	100.2
4"	100.3	200.5	19	100	18	48.8	119.1

ETG M-3SW



SIZE	A	ø B	ø C	ø D	E	F	G
1/4"	24.8	35	7	9.2	6	18.5	20
3/8"	27.2	38.5	6.5	12.8	6	18	22
1/2"	31.8	45	8.5	15	7	20.1	23.3
3/4"	40	56.7	8.5	20	7	21.85	30.8
1"	45	63.5	8.5	25	8	23.2	37.8
1-1/4"	53	75	8.5	32	9.5	27.5	47
1-1/2"	63.3	89.5	12.5	38	10.5	29.5	57
2"	78.9	111.5	12.5	50	11.5	30.8	68
2-1/2"	98.3	139	15	65	12	37.8	88.1
3"	116.7	165	17	80	14	40.8	100.2
4"	100.3	200.5	19	100	18	48.8	119.1

Introduction

G.C. Supplies offers a wide range of ball valves (90° turn), designed and assembled to handle and drive fluids in industrial procedures.

The compatibility of materials used to build the valves (see technical specifications) and the application of valves to the different industrial processes is at the user's risk. Valves will have an optimal behaviour when working conditions do not exceed the recommended pressure and temperature limits for which they have been designed.

Transport and Storage Conditions

Visual Inspection

It is important to conduct a visual inspection to check for any damage on the product that could have occurred during transport, unloading or placement. If you notice any kind of anomaly upon receiving the goods, please contact GC Supplies in order to resolve the issue.

Storage

During storage it is recommended to keep valves in a dry and clean environment within the included protective wrapping to avoid damage or dirt accumulation. The valves should be kept in the same state as they were packaged by G.C. Supplies - the protective wrap should not be removed until the valve is ready to be installed.

Before installing and/or manipulating these elements, read these instructions carefully. If you fail to understand any of their content, please contact G.C. Supplies.

Installation Instructions

Preparation

Remove the valve's wrapping. Make sure the pipe is clean and dry before installing it. Plan enough space for future maintenance operations before installing the valve. Control correct operation of the valve by turning the handle clockwise and making sure the ball closes. If this is not the case, check if there are foreign particles inside the valve and repeat the whole operation.

Assembling

Valve with Threaded Caps

Do not disassemble the valves for their installation.

Make sure the valve's pipe and threaded ends are clean and are compatible one with another. Apply an appropriate sealing compound onto the threaded ends and thread the valve on, being careful not to excessively overtighten. Do not use valve's handle as a lever to thread the valve into the pipe. To tighten the valve, it is recommended to use a spanner or monkey wrench only on the hexagonal area of the valves edges; the force applied being less than 30 Nm.

Valve with Welding Caps

a) With the valve in an open position, remove the screws, washers, nuts and the caps.

b) Turn the ball to the half-open position and remove the seats and

joints from the body carefully. Complete the turn until closing the valve and extract the ball. All components must be stored in a dry and clean environment.

c) Reassemble the valve caps back into the body, keeping them as aligned as you can, using only 2 screws diagonally opposed. Create at least 4 welding points (cross-shaped).

d) Remove the body from the valve caps (to avoid welding temperature to damage rod washers) and complete the welding process by making sure the caps are protected against welding metal spatters.

When cold, clean the caps' locking surfaces. Place the ball, seats and joints on the valve's body and turn the ball into the open position. Place the valve's body between the 2 caps being careful not to scratch the contact surfaces; then, place the screws by screwing them diagonally opposed to each other and respecting the specified torque.

Valve with Butt Welding Caps

a) With the valve in an open position, remove the screws, washers, nuts and the caps.

b) Turn the ball to the half-open position and remove the seats and joints from the body carefully. Complete the turn until closing the valve and extract the ball. All components must be stored in a dry and clean environment.

c) Reassemble the valve caps back into the body, keeping them as aligned as you can, using only 2 screws diagonally opposed. Create at least 4 welding points (cross-shaped).

d) Remove the body from the valve caps (to avoid welding temperature to damage rod washers) and complete the welding process by making sure the caps are protected against welding metal spatters.

When cold, clean the caps' locking surfaces. Place the ball, seats and joints on the valve's body and turn the ball into the open position. Place the valve's body between the 2 caps being careful not to scratch the contact surfaces; then, place the screws by screwing them diagonally opposed to each other and respecting the specified torque.

Design of this kind of floating ball valves allows us to install them in any position as they are bidirectional. If possible, it is recommended to install the valve in a horizontal position with the stem (handle) upwards. Once installed, it is recommended to open and close the ball valve a couple of times to verify there's no obstruction in the ball that prevents it from closing. It is also recommended to use filters in the pipe to extend lifecycle of the valve.

Operating Instructions

Usage

Ball valves provide a leakproof seal when adjusted to the pressure and temperature values for which they have been designed.

Avoid leaving the valve in a partially open position if you are not aware of the pressure drop and flow rate of that position, as the service life of the ball seats can be reduced and/or damaged, due to the ball valve bore.

Any fluid that can be solidified, crystallised or polymerised should not be allowed to remain in the ball cavity as it is harmful for performance, service life of the valve and it can even render it unusable.

All components of the valve have to be fully compatible with the fluid

When operating the valve, you must avoid excessive lateral efforts with the handle. To close it, you must turn the handle 90 degrees clockwise. When the handle is inline with the pipe, the valve is open.

Maintenance Instructions

Frequency, place and process of maintenance will be determined by the user by taking into account usage of the product. However, checks explained below will be useful to extend the service life of the valve and reduce installation problems. Valves must not remain in open or closed position for a long period of time. It is recommended, if the process allows for it, to operate it for control purposes every six months.

6.1) Stem leaks

Remove the handle and tighten the gland nut of the stem packing. If the leak persists, valve should be disassembled to replace the stem washers. See reparation instructions.

6.2) Body/Caps joints leak

Check if the body screws are tightened. If they were loose, adjust them up until the recommended torques (IMPORTANT: adjustment of such screws will have to be done at room temperature). If leak continues, it is probably due to damage in the body's joint or the locking surface, it will be necessary to disassemble the valve to repair it. See reparation instructions.

6.3) Line leaks (through seats)

Check if the valve is in a completely closed position. If this is the case, leak is due to a seat or locking surface being damaged and it will be necessary to disassemble the valve to repair it. See reparation instructions.

Reparation Instructions

Disassembling

When it come to repairing the valve, it is not necessary to remove the it from where it has been installed as the 3-piece design of the valve allows us to remove the central part (body with all internal components) without having to disassemble the terminals.

- a) Place the valve in the open position to avoid the ball from standing out of the body and interfering with the caps when the body is removed.
The stem has two flat parts when:
 - parallel to pipe ---> open valve,
 - perpendicular to pipe ---> closed valve
- b) Loosen and remove the 4 / 6 nuts of the screws / studs that bring together the three different parts of the valve. Remove the screws. Be careful not to damage the caps surfaces.
- c) Remove the central group separating it from the stoppers.
- d) Once the body is out, place the ball in a half-open position and remove the seats. Complete the turn of the ball until it's in the closed position and then it can be removed. This operation has to be performed carefully, otherwise the ball can scratch against the body.
- e) After this, remove the body joints. They should be removed being careful not to scratch or damage the mechanized surfaces over which they are hermetically sealed.
- f) To disassemble the stem, loosen and remove the nut, remove the washer and the handle. Loosen and remove the gland nut and push the stem towards the inside part of the body and remove it. Later, remove the packaging located inside the body. Place a new friction washer.

- g) Once the valve is disassembled you must check the condition of each single piece that composes it. All pieces that are to be reused have to be cleaned completely and be kept in a safe and clean environment. All locking surfaces in the ball, seats, joints and sides have to be checked for corrosion, erosion, metallic inlays in the seats and marks. If they were damaged or if you are unsure about their condition, they will need to be replaced.
- h) Cleaning the valve's pieces must be done using an adequate degreasing agent. You must be careful with the locking surfaces, for example, of the ball, locking sides of the caps and joints, because if they were damaged this could cause a bad impact in the valve's performance.

Reassembling

Before proceeding to reassemble the valve, make sure that reparation kit and/or pieces to be used are appropriate and original from the factory. When it is assembled again, cleaning is essential for providing it with a long life.

- a) Place a new friction washer on the stem in its stem corresponding location, lubricate the stem with a thin layer of grease or silicon and insert it in the valve's body into the internal cavity by pushing a bit to secure it.
- b) Place a new packaging into its location in the upper cavity of the body. Place the gland nut and tighten it. Make the stem turn a couple of times and readjust the nut, respecting the torque specified value. If necessary, fasten with a wrench. Note that if the nut is too tight, the rod torque will increase and service life of the valve could be reduced.
- c) Place the stem in closed position and insert the ball inside the body cavity matching the ball slot with stem milling. Open the valve so that the ball does not fall.
- d) New seats and body joints can be placed now on both sides of the body, taking into account that the flat part of the seat needs to be facing outwards.
- e) Terminals or caps need to have locking parts cleaned before proceeding to final assembly. Place the central core of the valve between the terminals and place the corresponding screws to bring together the three different parts of the valve. Now it is important that pieces as the caps, the ball and the seats are completely aligned inside.
- f) Then, proceed to place the washers and nuts adjusting slowly and alternating diagonal and evenly until obtaining the recommended tightening torque.

Torques to activate the valves:

SIZE	Activating torque (Nm)
1/4"	4 - 5
3/8"	4 - 5
1/2"	4 - 5
3/4"	7 - 8
1"	9 - 10
1-1/4"	12 - 14
1-1/2"	18 - 20
2"	28 - 30
2-1/2"	34 - 36
3"	58 - 60
4"	90 - 95

Tightening torque for stem nut:

Following numerical data is provided as reference only.
The torques mentioned are the ones used to activate the assembled stem before ball and seats are assembled.

SIZE	Activating torque (Nm)
1/4" - 3/8" - 1/2"	6 - 9
3/4" - 1"	8 - 12
1 1/4" - 1 1/2" - 2"	13 - 18
2 1/2" - 3" - 4"	19 - 24.5

Tightening torque for screws/nuts that join the valve's three different parts:

It is required for all body screws to make contact metal with metal between the body and the cover.

SIZE	Screw/Nut	Activating torque (Nm)
1/4" - 3/8" - 1/2"	M6	8- 11
3/4" - 1"	M8	13.5 - 16
1 1/4" - 1 1/2" - 2"	M10	22 - 25
2 1/2" - 3" - 4"	M12	74.5 - 81

Hygiene and Safety

The fluids that go through the valve can be corrosive, toxic, flammable or pollutant. When operating valves, you must follow the operation instructions.

It is recommended that you:

- Protect your eyes.
- Wear gloves and appropriate working clothes.
- Wear safety footwear.
- Wear a helmet.
- Have running water to hand.
- Have an extinguisher to hand when work with flammable fluids.

Before removing a valve from a pipe, check always if the line is completely cold, drained and depressurised.

Operate the valve in open position to make sure there is no pressure in the internal cavity.

Any type of repair or maintenance to the valve should be performed in a well-ventilated area.