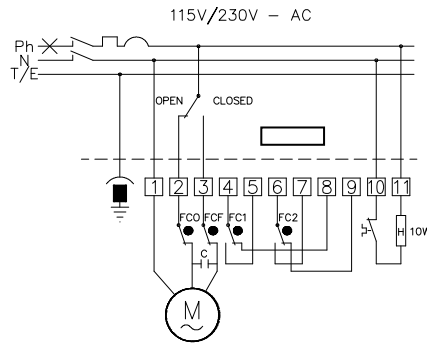


INSTALLATION INSTRUCTIONS FOR BALL VALVE WITH ELECTRIC ACTUATOR



Wiring example for ball valve DN 25 to 50



Wiring

- Connection 1 Common motor
- Connection 2 Pilot switch : open
- Connection 3 Pilot switch : close

OPENED LIMIT SWITCH

- Connection 4 Common
- Connection 5 Normal closed
- Connection 8 Normal opened

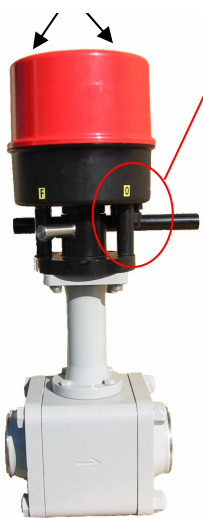
CLOSED LIMIT SWITCH

- Connection 6 Common
- Connection 7 Normal closed
- Connection 9 Normal opened

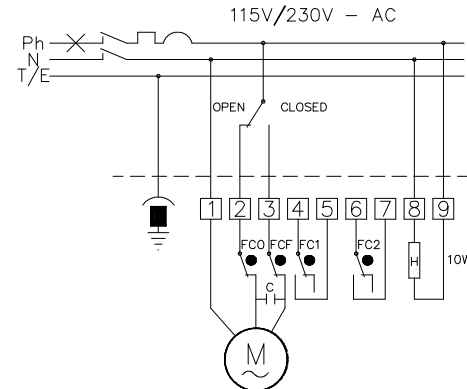
- FCO Open limit switch
- FCF Closed limit switch
- FC1 Auxiliary 1 limit switch
- FC2 Auxiliary 2 limit switch

- C Capacitor
- M Motor
- H Heating resistor

Screw



Wiring example for ball valve DN 65 and 80



Remove the two black screw cover and unscrew to open the box

Wiring

- Connection 1 Common motor
- Connection 2 Pilot switch : open
- Connection 3 Pilot switch : close

OPENED LIMIT SWITCH

- Connection 4
- Connection 5

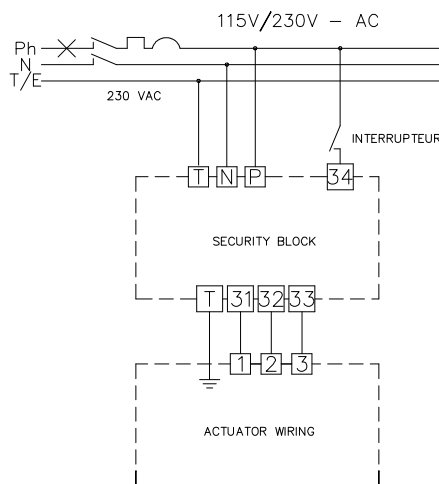
CLOSED LIMIT SWITCH

- Connection 6
- Connection 7

- FCO Open limit switch
- FCF Closed limit switch
- FC1 Auxiliary 1 limit switch
- FC2 Auxiliary 2 limit switch

- C Capacitor
- M Motor
- H Heating resistor

Wiring example for security block (external)

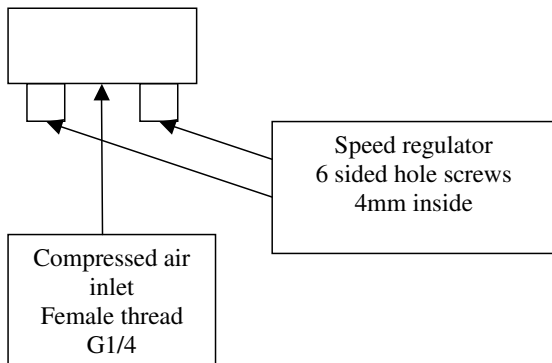


INSTALLATION INSTRUCTIONS FOR BALL VALVE WITH PNEUMATIC ACTUATOR

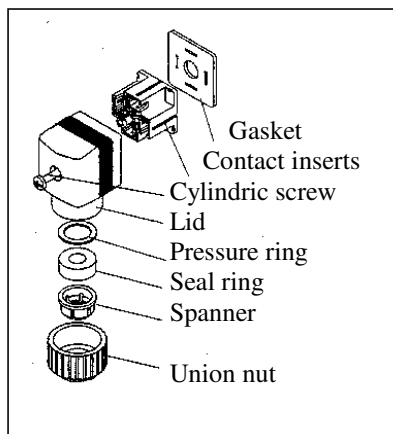
WIRING INSTRUCTIONS

- 1 Connect the compressed air inlet
- 2 Wire the pilot.
- 3 Wire if necessary the limit switch used

1 – SPEED REGULATOR CONTROL



2 – PILOT SOLENOID VALVE



PILOT WIRING

Connection 1: Phase
Connection 2: Neutral
⊥ : Earth

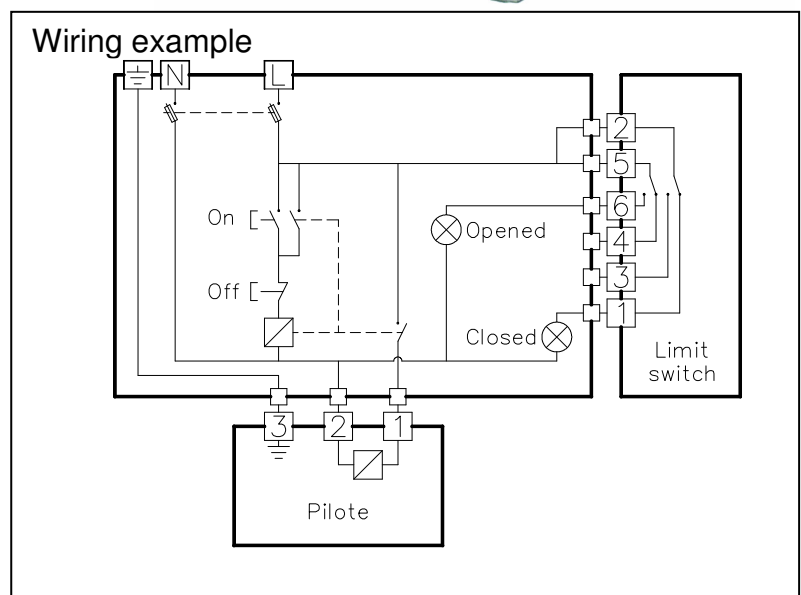
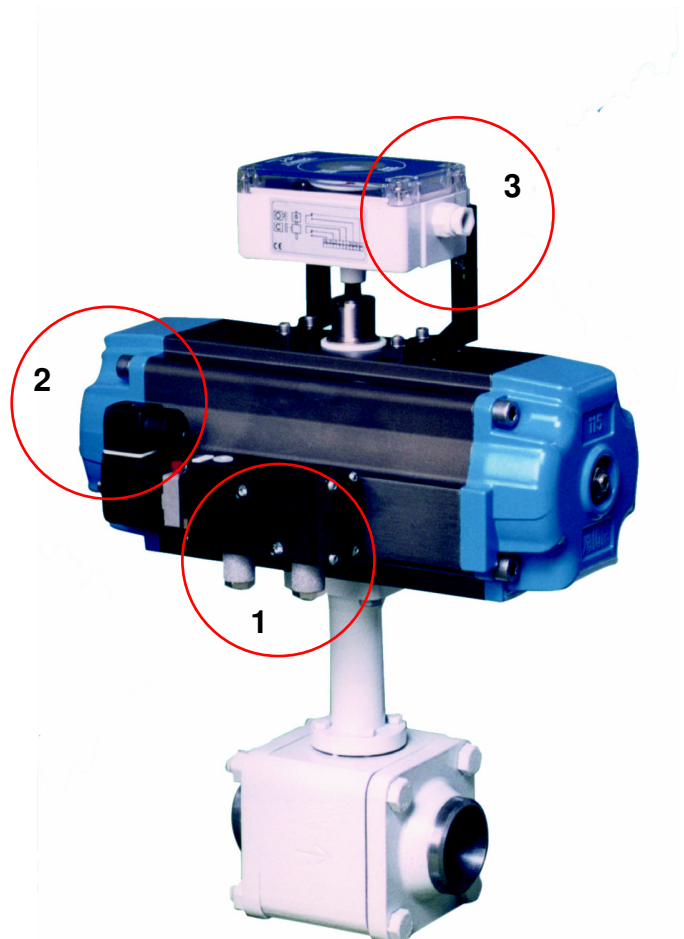
3 – LIMIT SWITCH WIRING

Valve open :

Connection 1 : normal closed
Connection 2 : common
Connection 3 : normal open

Valve closed :

Connection 4 : normal closed
Connection 5 : common
Connection 6 : normal open



INSTRUCTIONS FOR INSTALLING BALL VALVES



The ball valve must be installed in pipework which can be moved apart slightly to allow for the installation and removal of the valve ball assembly.

This axial movement should be no less than 1mm.

The ball valve flanges are sealed by two contained 'O' ring gaskets. To avoid heat damage during the welding of the flanges to the pipework the following procedure should be carried out.

<p>1</p>	<p>2</p>
<p>3</p>	<p>4</p>
<ol style="list-style-type: none"> 1. With the complete ball valve in position the pipe work should be correctly lined up and the two flanges fixed by tack welds. 2. For valve DN 25, 32 and 40 the four bolts should be unscrewed and removed from each flange. The ball valve assembly should be lifted out taking care not to damage the 'O' ring gaskets. 3. The welding of the flanges should then be completed. 4. Any dirt, welding slag and splatter should be removed from inside the pipe work and the flange seating face. <ul style="list-style-type: none"> • The seating faces of the flanges should be lightly oiled and the 'O' ring gaskets replaced for valves DN 25, 32 and 40. • The arrow direction should then be checked with the flow. • The valve body should be reassembled by springing open the flanges taking care not to damage the faces or sealing 'O' rings. • Check the ball : the vent hole is to be situated on the upstream side of the ball. • For DN 50, 65 and 80, there are only 3 O-ring gaskets. 	

MAINTENANCE

GENERAL INSTRUCTIONS :

To ensure the safe operation and effectiveness of RFF valves and fittings during their operational life the valves should be regularly checked and serviced.

Particular attention should be paid to the valves:

- When constructing new installations,
- When recommissioning installations after modification or new plant extensions.
- When restarting plant after long periods of shut-down.

The following maintenance instructions are the minimum manufacturers recommendations.

 **SAFETY WARNING** "Valves under pressure"!

During checking or dismantling operations, care must be taken as parts of the valves may still contain refrigerant gas under pressure.

MAINTENANCE PLAN:

1/ Annual inspection:

a) Test opening and closing operation :

Check that the valves operate freely by opening and closing the valves by hand.

Should it be difficult to turn the spindle, the valve head should be dismantled, removed, and cleaned, and the spindle lubricated with grease. It may be necessary to change the o-rings and replace the body gasket.

When reassembling the valves, the body fixing screws should be lubricated with grease.

Special care should be taken to ensure the correct orientation of the ball valve during re-assembly, the vent hole drilled in the ball must be installed on the upstream side (pressure side) of the valve.

b) Gas leakage check:

From the top of the gland nut:

With cap valves, leaks may be detected when unscrewing the cap : if there is any pressure inside the cap there will be a noise when the gas is relieved.

Should there be any trace of leakage the o-rings must be replaced.

From body gasket:

The flat body gasket should be replaced if necessary. When reassembling the body fixing screws should be lubricated with grease.

2/ Dismantling every four years :

Every four years, the following additional procedures are recommended:

a) Valve seat check:

If the Teflon seal face is damaged, the PTFE or the ball should be replaced.

b) Fixing screw check:

Any screws which are corroded or damaged should be replaced (screw class 8/8).

c) External surface check:

Where necessary, all external surfaces, which are corroded, should be cleaned and repainted.

Re-assembly notes:

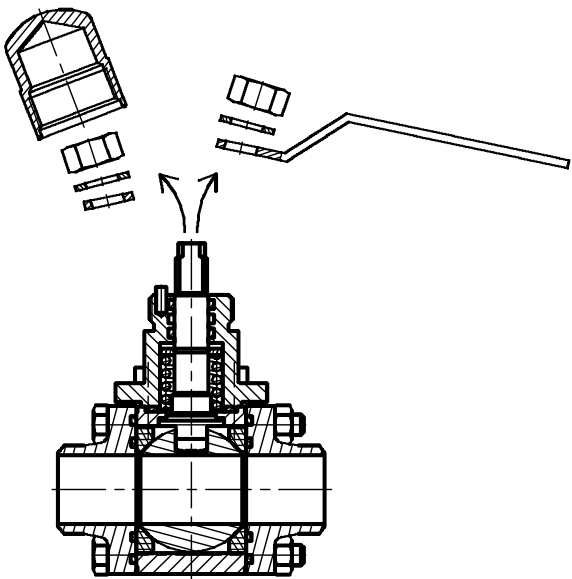
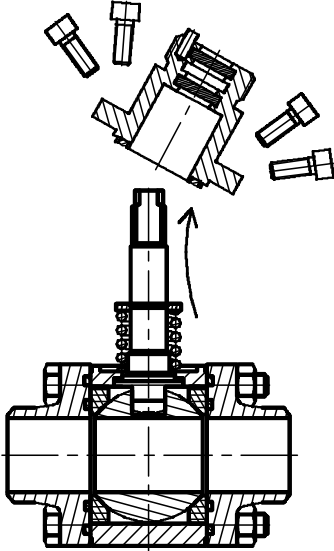
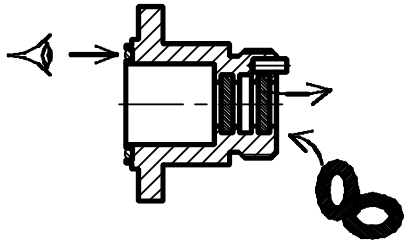
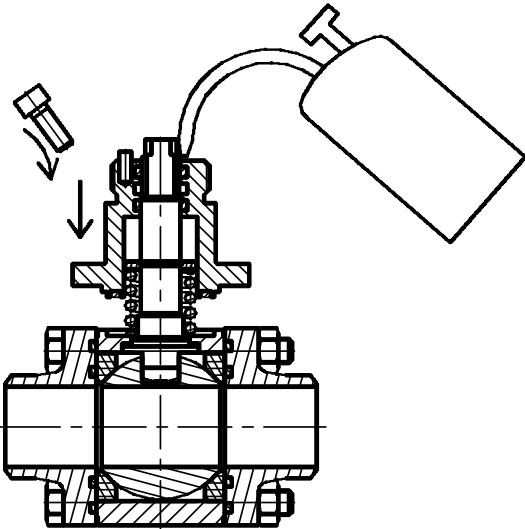
When re-assembling valves and appliances, the body fixing screws should be lubricated with grease, and all moving parts in the valve head should be cleaned and slightly lubricated with low-temperature oil. Any oil excess should be removed prior to assembly.

As a preventive measure, all O-rings and body gaskets should be also replaced.

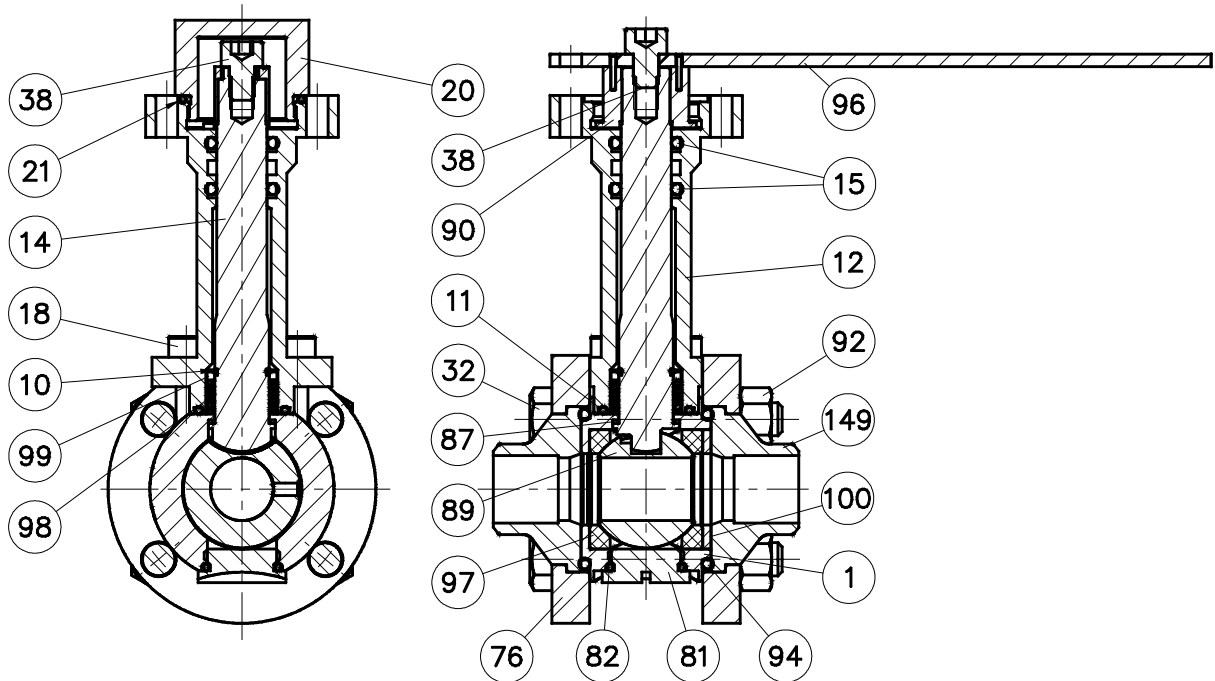
TORQUE REQUIRED FOR TIGHTENING FLANGE BOLTS

DN Full bore flow mm	Ø Bolts mm	Torque mini N.m	Torque max N.m
10	8	3	12
15	8	3	12
20	10	5	24
25	8	3	12
32	10	5	24
40	10	8	24
50	12	20	42
65	14	37	65
80	16	57	100

INSTRUCTIONS TO CHANGE GLAND NUT "O" RINGS

<p>1</p> 	<p>2</p> 
<p>3</p> 	<p>1. Remove the Hand lever or the cap (Note : Position and orientation of the top thrust washer and lift off)</p> <p>2. Note the correct position of the valve head before removing. The valve head is located by a pin with 2 possible positions at 180°.</p> <p>3. Change the two "O" rings (1st and 3rd grooves). Replace the body gasket, if necessary.</p> <p>4. Fill the gland oil reservoir with non-freezing, low temperature, compressor oil. Refit the valve head in the correct position previously identified.</p> <p>Refit the Lever or the cap with the thrust washer.</p>
<p>4</p> 	

SPARE PARTS for BALL VALVE DN 10-15-20

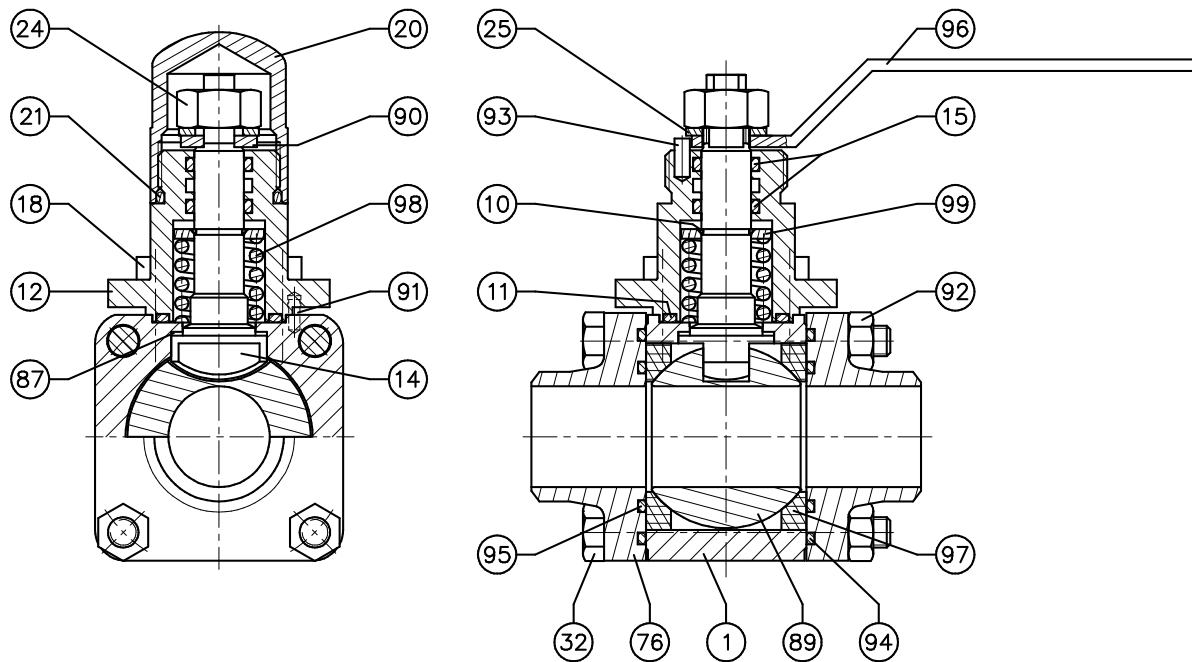


Ref	Description	Ref	Description
1	Body	82	Blank nut o'ring
10	Circlip	87	Back seat gasket
11	Body gasket	89	Ball
12	Valve head	90	Thrust washer
14	Spindle	92	nut
15	Packing gland O-ring	94	Flange O-ring
18	Screw	96	Lever
20	Cap	97	Seat
21	Cap O-ring	98	Spring
32	Screw	99	Stoppage washer
38	Screw for Thrust washer or lever	100	Seat thrust washer
76	Pipe Flange	149	Pipe connection piece
81	Blank nut		

TO ORDER			
DESIGNATION	With parts number	DESIGNATION	With parts number
Body gasket	11	Pipe flange with O-ring	76+94
Packing gland O-ring	15	Complete lever	38+96
Cap O-ring	21	Ball	89
Complete cap	20+21	Seat	97
Spindle	14+10+99+87	Gaskets for lever ball valve	94+11+15
Valve head	11+12+15	Gaskets for cap ball valve	94+11+15+21
Screw	18	Flange O-ring + seat O-ring	94
Prevailing torque nut	92+32	Valve head with lever	11+12+18+15+96+38
Spring	98	Valve head with cap	11+12+15+18+20+21+90+38
Complete thrust washer	38+90	Body	1+10+14+87+98+99+81+82

SPARE PARTS for BALL VALVE

DN 25 - 32 - 40 with cap or with lever

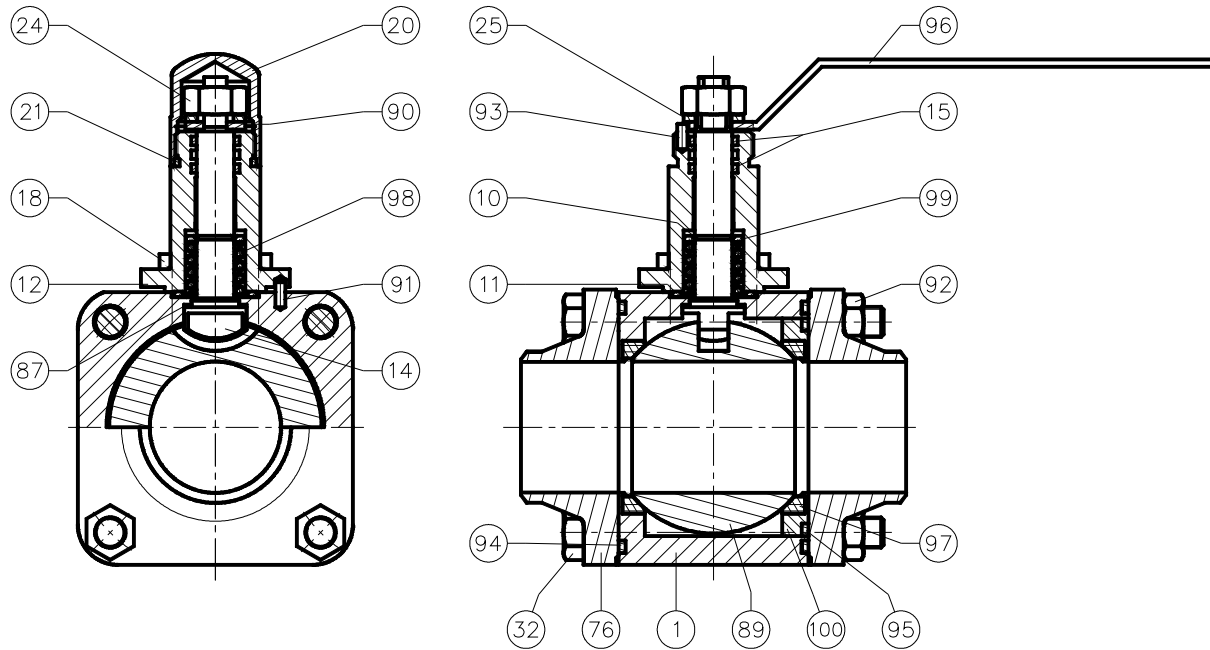


Ref.	Description	Ref.	Description
1	Body	87	Back Seat gasket
10	Circlip	89	Ball
11	Body gasket	90	Thrust washer
12	Valve head	91	Grooved pin
14	Spindle	92	Prevailing torque nut
15	Packing gland O-ring	93	Thrust grooved pin
18	Screw	94	Flange O-ring
20	Cap	95	Seat O-ring
21	Cap O-ring	96	Lever
24	Nut	97	Seat
25	Lever top washer	98	Spring
32	Screw	99	Stoppage washer
76	Pipe flange		

TO ORDER

DESCRIPTION	With parts number	DESCRIPTION	With parts number
Body gasket	11	Pipe flange with O-ring	76+94+95
Packing gland O-ring	15	Complete lever	96+25+24
Cap O-ring	21	Ball	89
Complete cap	20+21	Seat	97
Spindle	14+10+99+87	Gaskets for lever ball valve	94+95+11+15
Valve head	11+12+15+93	Gaskets for cap ball valve	94+95+11+15+21
Screw	18	Flange O-ring + seat O-ring	94+95
Prevailing torque nut	92+32	Valve head with lever	11+12+18+15+24+25+96
Spring	98	Valve head with cap	11+12+15+18+20+21+24+25+90
Complete thrust washer	24+25+90	Body	1+10+14+87+91+98+99

SPARE PARTS for BALL VALVE DN 50 - 65 - 80 with cap or with lever



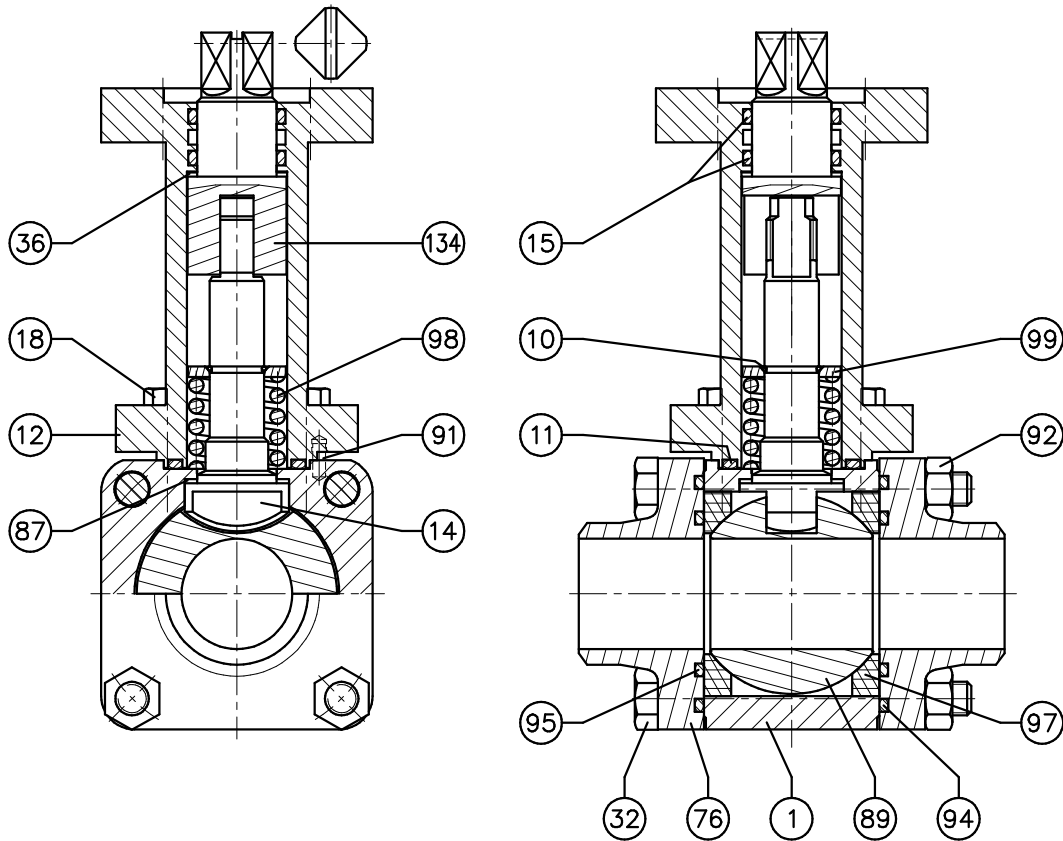
Ref.	Description	Ref.	Description
1	Body	87	Back Seat gasket
10	Circlip	89	Ball
11	Body gasket	90	Thrust washer
12	Valve head	91	Grooved pin
14	Spindle	92	Prevailing torque nut
15	Packing gland O-ring	93	Thrust grooved pin
18	Screw	94	Flange O-ring
20	Cap	95	Seat O-ring
21	Cap O-ring	96	Lever
24	Nut	97	Seat
25	Lever top washer	98	Spring
32	Screw	99	Stoppage washer
76	Pipe flange	100	Seat thrust washer

TO ORDER

DESCRIPTION	With parts number	DESCRIPTION	With parts number
Body gasket	11	Pipe flange	76
Packing gland O-ring	15	Complete lever	96+25+24
Cap O-ring	21	Ball	89
Complete cap	20+21	Seat	97
Spindle	14+10+99+87	Gaskets for lever ball valve	94+95+11+15
Valve head	11+12+15+93	Gaskets for cap ball valve	94+95+11+15+21
Screw	18	Flange O-ring+seat O-ring	94+95
Prevailing torque nut	92+32	Valve head with lever	11+12+18+15+24+25+96
Seat thrust washer	100	Valve head with cap	11+12+15+18+20+21+24+25+90
Spring	98	Body	1+10+14+87+91+98+99
Complete thrust washer	24+25+90		

SPARE PARTS for BALL VALVE

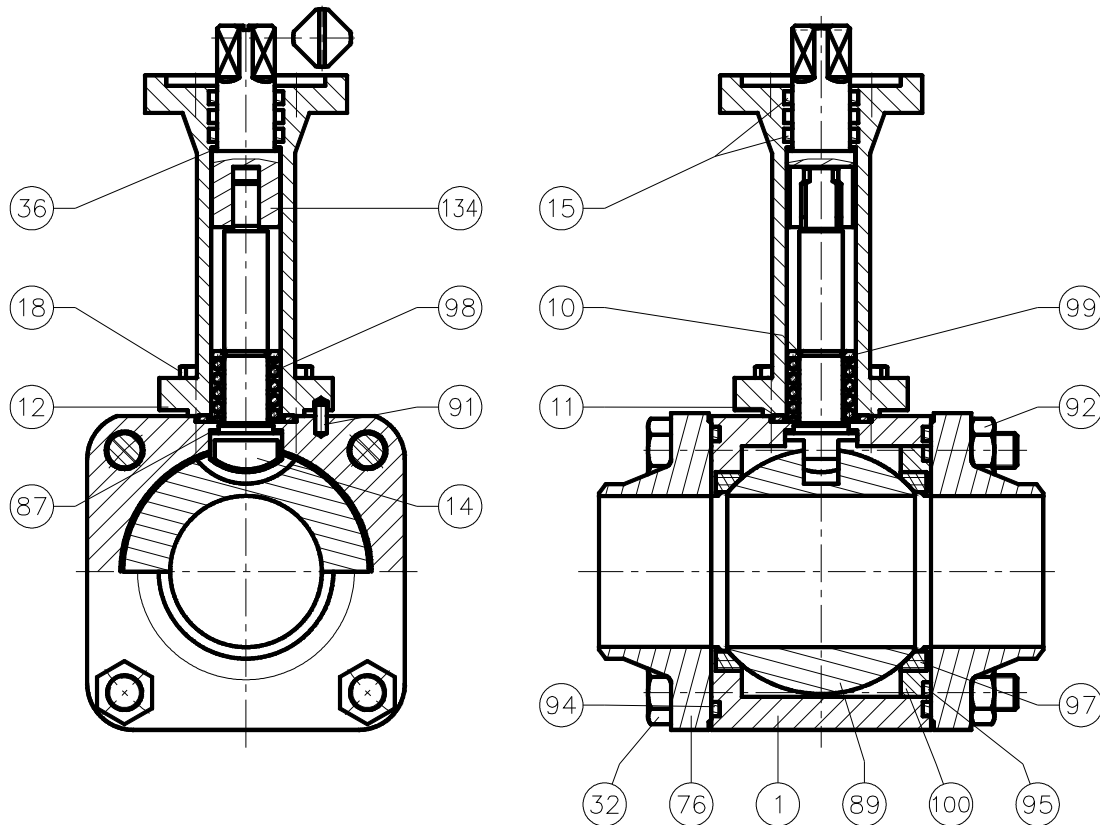
DN 25 - 32 - 40 with ISO Flange for actuators



Ref.	Description	Ref.	Description
1	Body	87	Back Seat gasket
10	Circlip	89	Ball
11	Body gasket	91	Grooved pin
12	Valve head	92	Prevailing torque nut
14	Spindle	94	Flange O-ring
15	Packing gland O-ring	95	Seat O-ring
18	Screw	97	Seat
32	Screw	98	Spring
36	Sliding ring	99	Stoppage washer
76	Pipe flange	134	Coupling spindle

TO ORDER			
DESCRIPTION	With parts number	DESCRIPTION	With parts number
Body gasket	11	Ball	89
Packing gland O-ring	15	Seat	97
Spindle	14+10+99+87	Set of gaskets	94+95+11+15
Valve head	11+12+15	Flange O-ring+seat O-ring	94+95
Screw	18	Coupling spindle	36+134
Prevailing torque nut	92+32	Valve head with ISO flange	11+12+15+18+36+134
Spring	98	Body	1+10+14+87+91+98+99
Pipe flange with O-ring	76+94+95		

SPARE PARTS for BALL VALVE DN 50 - 65 - 80 with ISO Flange for actuators



Ref.	Description	Ref.	Description
1	Body	89	Ball
10	Circlip	91	Grooved pin
11	Body gasket	92	Prevailing torque nut
12	Valve head	94	Flange O-ring
14	Spindle	95	Seat O-ring
15	Packing gland O-ring	97	Seat
18	Screw	98	Spring
32	Screw	99	Stoppage washer
36	Sliding ring	100	Seat thrust washer
76	Pipe flange	134	Coupling spindle
87	Back Seat gasket		

TO ORDER

DESCRIPTION	With parts number	DESCRIPTION	With parts number
Body gasket	11	Pipe flange	76
Packing gland O-ring	15	Ball	89
Spindle	14+10+99+87	Seat	97
Valve head	11+12+15	Body	1+10+14+87+91+98+99
Screw	18	Set of gaskets	94+95+11+15
Prevailing torque nut	92+32	Flange O-ring+seat O-ring	94+95
Spring	98	Coupling spindle	36+134
Seat thrust washer	100	Valve head with ISO flange	11+12+15+18+36+134

WEIGHT (kg)

BALL VALVE									
DN	With cap XCDS XCDB XCDM	With lever XVDS XVDB XVDM	With ISO flange XNDS XNDB XNDM	Actuator					
				pneumatic			electric		
				Act.	Pilot valve	Limit switch	Act.	lever	Security block external
10	1.004	1.010	1.000	1.200	0.520	0.400	1.000	0.200	3.500
15	1.004	1.010	1.000	1.200	0.520	0.400	1.000	0.200	3.500
20	2.104	2.110	2.100	1.200	0.520	0.400	1.000	0.200	3.500
25	2.280	2.200	2.480	4.700	0.520	0.400	1.500	0.200	3.500
32	3.440	3.360	3.640	4.700	0.520	0.400	1.500	0.200	3.500
40	4.800	4.820	5.100	11.200	0.520	0.400	3.000	0.700	3.500
50	8.240	8.260	8.540	11.200	0.520	0.400	3.000	0.700	3.500
65	14.600	14.300	15.000	30.400	0.520	0.400	7.300	Included with the actuator	3.500
80	21.620	21.920	22.020	30.400	0.52	0.400	7.300		3.500

Example :

Ball valve DN 25 with pneumatic actuator, pilot valve and limit switch

Ref : **XPDSBF**

Weight = 2.480 + 4.700 + 0.520 + 0.400 = 8.100 kg

Ball valve DN 25 with electric actuator

Ref : **XLDS**

Weight = 2.480 + 1.500 = 3.980 kg

GENERAL TERMS OF SALE

GENERAL

Our sales are subject to these general terms, which shall prevail over all terms of purchase, unless formally and expressly waived by us.

Every purchaser acknowledges that they are aware of the conditions governing the assembly and use of the equipment and its accessories. It is their responsibility to determine all precautions necessary for the correct operation of the equipment, in such a way as to prevent any accident of any kind for which our company shall not assume any responsibility; this also applies to suggestions, advice or plans which we may have submitted for the installation and use of the equipment, such information being given for guidance purposes only. It is the installer's and user's responsibility to operate the plant in an appropriate manner so as to obviate any risk of loss of product and operations, using any means necessary such as a maintenance contract, personalised insurance etc.. It is their responsibility to inform the company of any anomalies which may have led to a deterioration in the product.

1 - FORMATION OF THE SALE CONTRACT

The customer's order constitutes the particular conditions. The associated general terms of purchase do not form a part of the contract, unless expressly agreed by the company. In cases where the particular conditions cannot be accepted in full, an acknowledgement of receipt of the order including the terms proposed by us shall be sent, and then becomes a contract. It is this acknowledgement which shall then constitute the particular conditions.

The vendor shall not bear any responsibility for the end use and / or specific conditions of use for the goods when such information has not been specifically expressed in writing in the order.

2- DELIVERY, TRANSPORT AND RETURN

Delivery times are given for guidance only and with no guarantee on the part of the vendor. They shall be adhered to as far as possible. Delays may not under any circumstances be used as justification for cancelling the order, nor give rise to any penalty payment on the part of the vendor. Cases of *force majeure* shall discharge the vendor from their delivery obligations (e.g.: war, riot, fire, industrial action, accident etc., inability to receive supplies).

Delivery shall be to the purchaser's registered address or head office or to any other location expressly stated by them. Shipping is taken to mean ex-works.

The goods shall be shipped by us, at the purchaser's risk and expense, and it is the purchaser's responsibility to voice any relevant concerns to the carrier upon reception.

The arrangements for any product returns shall be contained in a formal agreement between the vendor and the purchaser. Any product returned without such an agreement shall be considered to remain at the purchaser's disposal and shall not result in the drafting of a credit note. The risk and expense of returning goods shall remain the purchaser's responsibility.

3- OWNERSHIP CLAUSE

The vendor retains ownership of the goods being sold until total effective payment of the principal sum and accessory costs. Failure to pay the purchase price or to meet any payment deadline may result in a demand for the goods to be returned. These provisions do not form an impediment to the risks of loss and deterioration to the sale goods being transferred to the purchaser upon the goods leaving the factory, or to damages for which the purchaser may be liable.

4- CONFIDENTIALITY

Studies, plans, drawings and any other documents, particularly those handed over or sent by the company, shall remain our property. They may not form the basis of any communication between the purchaser and a third party for any reason.

5- PRICE, PAYMENT TERMS, PENALTIES, DISCOUNTS

Prices are given exclusive of tax.

Their fixed nature and total shall be stipulated in the particular terms of sale. Unless otherwise specified, payment terms shall be "payment before delivery".

In the case of payment in instalments, if any one of the payment deadlines is missed, the remaining payments shall become payable with immediate effect, even if they have given rise to a bill of exchange.

In the case of late payment, by way of a penalty clause and in application of current legislation, the purchaser shall be liable for payment of a late payment sum calculated by applying to the total amount of the sums due (inclusive of tax) a rate of interest equal to 1.5 times the legal rate of interest set by the Banque de France, combined with the rate applied by the Central European Bank in its most recent refinancing operation, increased by 7 points.

No discount will be awarded for early payment, except in application of contractual payment conditions.

6- QUALITY AND GUARANTEE

No guarantee may be applied for apparent defects of which the purchaser was aware at the time of receiving the merchandise, once unconditional acceptance has been expressed.

The standard guarantee period is 1 year after delivery unless specifically stated otherwise. This covers the provision of replacement equipment, excluding any other costs and any contribution to the direct or indirect damages which may have been occasioned. It does not cover normal wear and tear or damage arising from the failure to adhere to normal conditions of use.

7- JURISDICTION CLAUSE AND APPLICABLE LAW

In the case of a dispute of any kind, only the law courts in Chambéry shall have jurisdiction.

This clause shall apply even in the case of a preliminary ruling, an incidental claim, where there is more than one defendant, and irrespective of the manner and method of payment.

All contractual relations shall be governed in accordance with French law.