

**INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS TYPE BV3-M3**

## 1. Storage & Protection

### 1.1. Storage

The valves are already packed carefully to avoid any possible damage before the delivery. Before installation, please do not open the package, for once the valves are exposed in the air, sand or other substance might go into the valves. Then, unless the user cleans out the valves, there will be problems of using them. Store the valves, pack them carefully so as to prevent any corrosion gas from going into the valves. Meanwhile, be sure not to press the valves heavily or toss them.

### 1.2. Protection

The complete valve is packed with the bag

## 2. Installation

### 2.1. Warning Precautions

Make sure the valve pressure can fulfill the requirement of the pipe equipment. The valves have our marking on them with the details for the size, pressure, our logo with year of manufacture and CE marking for the sizes larger than 1".

Tests and inspections of the open and close valve are necessary to see whether the ball is in the correct position or there is any trouble for the open/close. For carbon steel valves please make sure rust will not affect the connection of the pipe. Besides, deflate the pipe. The fluid inside the pipe when at high temperature will cause inflation of the pipe and therefore stress. Then, the value of the inflation needs to be carefully calculated, otherwise, the stress will exist in the pipe and the valve as well. When the fluid is at low temperature, the whole situation will be different. Please note that the pipe might shorten, use e.g. a compensator to prevent this. Make sure all the changes of the pipe will not affect the function of the valve. The pipes have to be connected with the valve without generating tension.



## 2.2. Installation Procedures

- A) Before installation, clean the valve with compressed air or clean water to de-burr it and brush out the dirt. Also, the pipe needs to be cleaned and depressurized.
- B) Proper space needs to be reserved in the valve for the handle lever, because the length of lever is longer the valve, and it is turning 90°. The valves are designed according to the ANSI B16.34 without the wall thickness corrosion allowance. The user needs to check the wall thickness by himself.
- C) Thread end valve installation.  
 Make sure the valve thread matches the pipe thread.  
 Our BSP thread is standard ISO 228 and should be sealed with a flat seal  
 For threads according to other standards : Wrap tap seal or other sealing material around threads of pipe 2 – 3 circles.  
 The thread is in standard size and tolerance. Remember that the painting, lubrication or the connection sealing grease could only be put on the male thread rather than into the body thread.  
 Otherwise, the grease will go into the seats or other parts. Usually the use of the correct size plane spanner could reduce the damage or slant of the valve; meanwhile, when used, the spanner needs to be near the valve of the pipe, to reduce the possibility of the damage of the valve body. After installation is finished, apply soap bubbles on the joint points to check if the pipeline is properly sealed.
- D) Socket weld end valve installation.  
 Please make sure the central part or seats and seals of the valve do not become overheated. For safety we recommend to remove the central part and seats and seals while welding the ends.  
 Below you find the torques of the bolts to disassemble/assemble the body/end caps.

### Torque of the bolts (Min. tighten torque)

SIZE	TORQUE (KGF-CM)
1/4"	40
3/8"	40
1/2"	60
3/4"	80
1"	100
1-1/4"	120
1-1/2"	140
2"	160

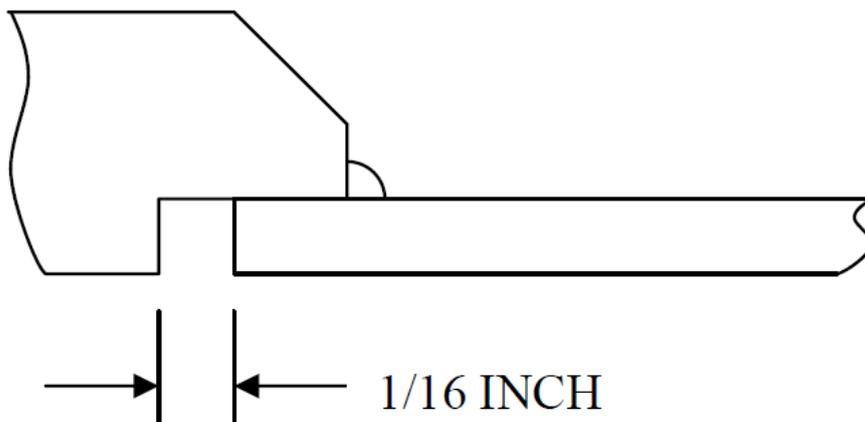
10 kgf-cm = 1 Nm



Cut the pipe end on the right side. The diameter should be round.  
Remove all burrs and dirt.

Get the de-grease medicine to clean the pipe end and the inside of the socket pipe and erase all the oil, grease and other sorts of substance.

Put the pipe into the socket end. The space is indicated in below drawing.  
The pipe end needs to touch the inside, the shoulder of the valve, then pull it to 1/16", or users could use the movable ring to separate it. Then, make the point of weld.



Before heating, make sure to disassemble the body and seats and seals of the cap to avoid damaging of the seats and seals. For heating we just need to put the pipe into the socket end.

The pre-heating welding temperature ranges from 204 degree C to 260 degree C.

When the first welding finished, prior to second line welding, clean and remove the scar. If the scar exists in heating, it will cause changes to the valve or make the valve function abnormally.

Changes of color after welding could be removed by steel wire.

Assemble the center part and seats and seals between the socket weld ends. Use above mentioned torque table to tighten the bolts.

E) Butt weld end valve installation.

Please make sure the central part of the valve or seats and seals do not become overheated. For safety we recommend to remove the central part of the valve and seats and seals while welding the ends.

Below you find the torques of the bolts to disassemble/assemble the body/end caps.

**Torque of the bolts (Min. tighten torque)**

SIZE	TORQUE (KGF-CM)
1/4"	40
3/8"	40
1/2"	60
3/4"	80
1"	100
1-1/4"	120
1-1/2"	140
2"	160

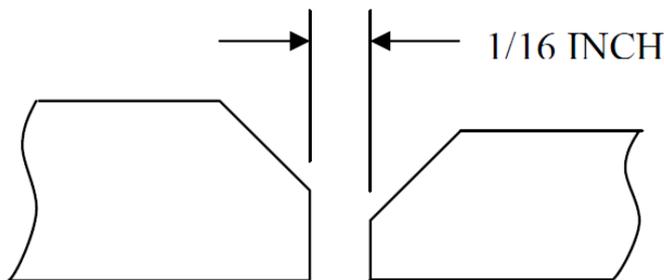
10 kgf-cm = 1 Nm

Machine the pipe end, prepare the welding.

Remove all burrs and dirt.

Get the de-grease medicine to clean the pipe end and the inside of the Valve end and clean all the oil, grease and other sorts of substance.

Separate the connection, as indicated in below drawing, use the fixture, let the center be in one line, and fix the welding position



Belven nv  
 Blokhuisstraat 24  
 Industriepark Noord 1  
 2800 Mechelen | Belgium  
 BTW BE 0420.040.880

tel. +32 (0)15 29 40 70  
 fax +32 (0)15 20 14 13  
 info@belven.com  
 www.belven.com  
 RPR Mechelen

Fortis: BE34 2300 0113 2290  
 BIC: GEBABEBB  
 ING: BE54 3200 3468 9997  
 BIC: BBRUBEBB

KBC: BE13 4197 0305 7139  
 BIC: KREDBEBB  
 PC: 001-1181774-23

Before heating, make sure to disassemble the body of the cap and also remove the seats and seals from the cap to avoid damaging. For heating we just need the pipe end and the end cap of the valve.

The pre-heating welding temperature ranges from 204 degree C to 260 degree C.

When the first welding finished, prior to second line welding, the scar needs to be cleaned and removed. If the scar exists in heating, it will cause changes to the valve or make the valve function abnormally.

Changes of color after welding could be removed by steel wire.

After welding, non-destroy testing should be performed to prove that this welding has been done perfectly

Assemble the seat and seals and the center part between the weld ends. Use above mentioned torque table to tighten the bolts.



Belven nv  
Blokhuistraat 24  
Industriepark Noord 1  
2800 Mechelen | Belgium  
BTW BE 0420.040.880

tel. +32 (0)15 29 40 70  
fax +32 (0)15 20 14 13  
info@belven.com  
www.belven.com  
RPR Mechelen

Fortis: BE34 2300 0113 2290  
BIC: GEBABEBB  
  
ING: BE54 3200 3468 9997  
BIC: BBRUBEBB

KBC: BE13 4197 0305 7139  
BIC: KREDBEBB  
PC: 001-1181774-23

### 3. Operation & Maintenance

#### 3.1. Operation

The max. temperature for our ball valve with the PTFE is 205°C. The minimum temperature is -23°C. but the pressure has to match the pressure and temperature shown in the chart of our datasheet. The principle is that high temperature goes with low pressure. Remember that different temperature goes with different pressure.

The max. pressure is indicated on the body of the valve. Please make sure the pressure meets the requirement of your equipment.

Please make sure that all wetted parts of the valve are suitable for the fluid. The material of all valve parts are indicated on our datasheet and drawing.

Use the valve in completely open or closed position. Avoid half open or half closed position, this will damage the seats and will shorten the life cycle of the valve. Any unsuitable operation action will cause leaking or other problems.

When the valve is used at high temperature or under high pressure, the proper protection equipment, for example anti-heating gloves, is highly suggested. Do not touch the valve directly.

Do not use the extension lever for opening/closing the valve.

Any unsuitable operation action will cause the leaking or other problems. If that happens, the first step is to turn off the pipe fluid and valve. Then, dismantle the valve.



### 3.2. Maintenance

The valve has to be periodically checked to make sure of its proper operation. A higher checking frequency is recommended when the valve is working under extreme conditions.

For a correct function of the valve it is suggested to open/close it at least twice a year.

Clean the valve after using it for a period of time. The user should take it out of the pipe or equipment. If corrosion happens, the valve will change its dimension and the might cause breaking of the PTFE, it is suggested to replace the corroded valve by a new one.

Check the stem gland nut. Be sure the nut has to be tightened, but not too tight, the user must be able to turn the ball. If it is tightens in overhead, the seals and stem packing should be replaced.

#### Torque of the gland nut (Min. tighten torque)

SIZE	TORQUE (KGF-CM)
1/4"	75
3/8"	100
1/2"	120
3/4"	140
1"	150
1-1/4"	170
1-1/2"	180
2"	200

10 kgf-cm = 1 Nm



**REPLACEMENT OF THE SEATS AND BODY SEALS**

Drawing and parts list on next page.

Disassemble the body(item 1) and caps (item 2). Firstly, take off four hex nuts(item 15), washers (item 14) and bolts (item 13),

Remove the old seats (item 4) and body seals (item 5) and replace them with new seats and seals.

Then put on the bolts and nuts and tighten them. Its pressure and leakage should be double-checked.

**Torque of the bolts (Min. tighten torque)**

SIZE	TORQUE (KGF-CM)
1/4"	40
3/8"	40
1/2"	60
3/4"	80
1"	100
1-1/4"	120
1-1/2"	140
2"	160

10 kgf-cm = 1 Nm

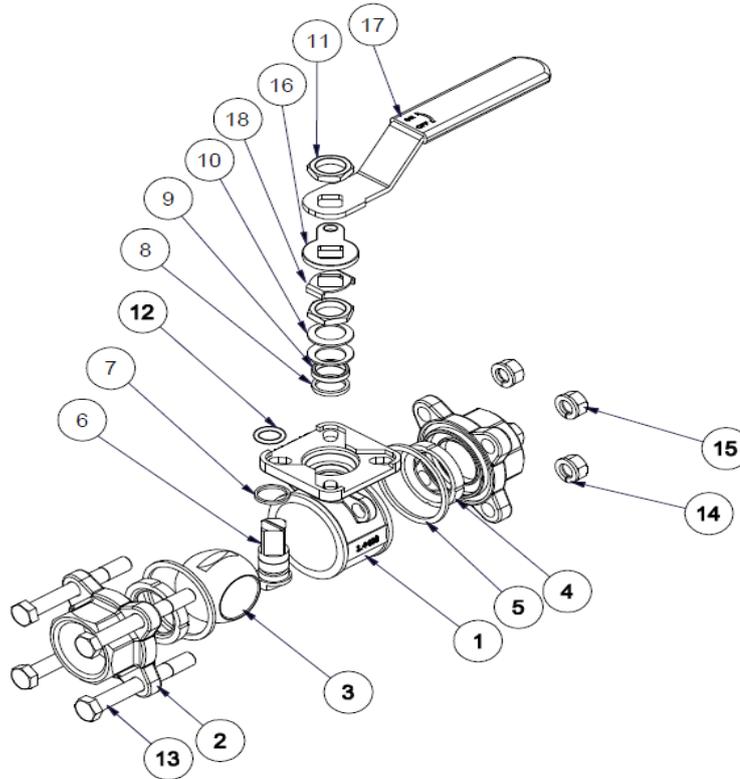
**REPLACEMENT OF THE STEM SEALS**

Dismount the valve from the equipment or pipe and then disassemble the body(item 1) and caps (item 2) by removing the four hex nuts(item 15), washers (item 14) and bolts (item 13), Take off the handle (item 17) and remove the ball (item 3) and stem (item 6). Replace the stem packing and the seals. To assemble use the same procedure in opposite order : put in the stem, ball, seats and seals and then put on the bolts and nuts and tighten them, for tighten torques see above table. Tighten the gland nut, tighten torques of the gland nut in below table, and tighten the handle. Also pressure testing of the assembled valve should be performed.

**Torque of the gland nut (Min. tighten torque)**

SIZE	TORQUE (KGF-CM)
1/4"	75
3/8"	100
1/2"	120
3/4"	140
1"	150
1-1/4"	170
1-1/2"	180
2"	200





ITEM	PARTS	MATERIAL	
		Stainless steel	Carbon steel
1	BODY	ASTM A351 CF8M	ASTM A216 WCB
2	CAP	ASTM A351 CF8M	ASTM A216 WCB
3	BALL	ASTM A351 CF8M	ASTM A351 CF8
4	BALL SEAT	PTFE	PTFE
5	JOINT GASKET	PTFE	PTFE
6	STEM	AISI 316	AISI 316
7	THRUST WASHER	15% RPTFE	15% RPTFE
8	STEM PACKING	15% RPTFE	15% RPTFE
9	HIGH WASHER	AISI 304	AISI 304
10	BELLEVILLE WASHER	AISI 304	AISI 304
11	STEM NUT	AISI 304	AISI 304
12	O-RING	VITON	VITON
13	BOLT	AISI 304	AISI 304
14	SPRING WASHER	AISI 304	AISI 304
15	HEX NUT	AISI 304	AISI 304
16	CIRCLE STOPPER	AISI 304	AISI 304
17	HANDLE	AISI 304/PVC	AISI 304/PVC
18	LOCK WASHER	AISI 304	AISI 304



Belven nv  
 Blokhuisstraat 24  
 Industriepark Noord 1  
 2800 Mechelen | Belgium  
 BTW BE 0420.040.880

tel. +32 (0)15 29 40 70  
 fax +32 (0)15 20 14 13  
 info@belven.com  
 www.belven.com  
 RPR Mechelen

Fortis: BE34 2300 0113 2290  
 BIC: GEBABEBB  
 ING: BE54 3200 3468 9997  
 BIC: BBRUBEBB

KBC: BE13 4197 0305 7139  
 BIC: KREDBEBB  
 PC: 001-1181774-23