



BOSS 203H PN16 Flanged Ball Valves

INSTALLATION, MAINTENANCE AND OPERATING INSTRUCTIONS

BOSS 203H PN16 Flanged Ball Valves

1/2"~2"

Design Features:

1. Lock Device, Stop Pin - for fixing the handle
2. Stem: with a Blow-out proof design
3. Anti-static devices for ball-stem-body
4. ISO 5211 Mounting Pad - available for operating actuator
5. Firesafe Approved



BOSS 203H PN16 Flanged Ball Valves

2 1/2"~6"

Design Features:

1. Lock Device, Stop Pin - for fixing the handle.
2. Stem: with a Blow-out proof design.
3. Anti-static devices for ball-stem-body.
4. ISO 5211 Mounting Pad - available for operating actuator.
5. Firesafe Approved



WARNING

FOR YOUR SAFETY, IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVAL OF THE VALVE FROM THE LINE OR BEFORE ANY DISASSEMBLY.

1. WEAR ANY PROTECTIVE CLOTHING OR EQUIPMENT NORMALLY REQUIRED WHEN WORKING WITH THE FLUID INVOLVED.
2. DEPRESSURIZE THE LINE AND CYCLE THE VALVE AS FOLLOWS :

A. PLACE THE VALVE IN THE OPEN POSITION AND DRAIN THE LINE

B. CYCLE THE VALVE TO RELIEVE RESIDUAL PRESSURE IN THE BODY CAVITY BEFORE REMOVAL FROM THE LINE.

C. AFTER REMOVAL AND BEFORE ANY DISASSEMBLY, CYCLE THE VALVE AGAIN SEVERAL TIMES.

3. THIS VALVE IS NOT USED FOR UNSTABLE GASES, H₂SO₄, HF, HCL AND OTHER DANGEROUS (FLUID) (ANY PROBLEM ABOUT THE FLUID IN USE, PLEASE CONTACT THE MANUFACTURER.)

INSTALLATION

The valve may be installed for flow in either direction. Use standard piping practices when installing valves with flange parts. Adjust packing prior to installation.

OPERATION

1. The valve can be used under the temperature between -10°C and 160°C and shall not be applied under an environment of lower and higher temperature.
2. The valve pressure rating casts on the valve body; user shall make sure the fluid pressure does not exceed valve rated pressure.
3. Any inappropriate operation will cause leakage or other problems; in case of emergency, must release the fluid inside the pipeline and then follow the procedures.
4. Operating torques shall not exceed the data shown on Table 1. Otherwise, it may be over-torque to make the stem bent, and also cause the failure of operational structure.
5. Remote operation will be in accordance with IOM instructions for the relevant actuator.

MAINTENANCE

Periodically observe the valve to be sure of proper performance. More frequent observation is recommended under extreme operating conditions. Routine maintenance consists of tightening the nut 1/4 turn periodically to compensate for the wear caused by the stem's turning against the resilient RTFE seal.

DISASSEMBLY

NOTE : If complete disassembly becomes necessary, replacement of all seats and seals is recommended.

A. Disassembly of 1/2", 3/4", 1"

1. Remove the protection cover (20). See Figure 1.
2. Unscrew the lock nut (28) and remove the lock handle (30), stop plate (32).
3. Unscrew the lock pin (39) and remove it.
4. Unscrew the cap bolt (42) and remove the body cap (3) from the valve body (1). Take out the seat (11), ball (7) and body seal (16).
5. Unscrew the gland (26) and remove the stem packing (15). Then press the stem (8) from the top into the valve body (1) and remove it through the body.
6. Remove the stem seal (12) from stem (8).
7. Take the seat (11) out of the valve body (1).

B. Disassembly of 1 1/2", 2"

1. Remove the protection cover (20). See Figure 2.
2. Unscrew the lock nut (28-2) and remove the stop bolt (43).
3. Unscrew the handle bolt (45). Remove the handle bolt (45), lever handle (30), snap ring (36), and stop plate (32) in order.
4. Unscrew the cap bolt (42). Remove the cap bolt (42) and the body cap (3) from the valve body (1). Take out the seat (11), body seal (16), and ball (7).
5. Unscrew the Lock nut (28-1). Remove the Lock nut (28-1), the bell washer (23), the gland bolt (44), the gland (26), and the stem packing (15). Then press the stem (8) from the top into the valve body (1) and remove it through the body.
6. Remove the stem seal (12) from stem (8).
7. Take the seat (11) out of the valve body (1).

C. Disassembly of 2½", 3", 4", 6"

1. Remove the protection cover (20) and pipe (31) from the knob (30). See Figure 3.
2. Unscrew the lock nut (28-2) and remove the stop bolt (43).
3. Unscrew the handle bolt (45). Remove the handle bolt (45), knob (30), snap ring (36), and stop plate (32) in order.
4. Unscrew the cap bolt (42). Remove the cap bolt (42) and the body cap (3) from the valve body (1).
5. Take out the seat (11), body seal (16), and ball (7)
6. Unscrew the Lock nut (28-1). Remove the Lock nut (28-1), the bell washer (23), the gland bolt (44), the gland (26), and the stem packing (15). Then press the stem (8) from the top into the valve body (1) and remove it through the body.
7. Remove the stem seal (12) from stem (8). Take the seat (11) out of the valve body (1).

ASSEMBLY :

The following instructions are for in-line assembly.
For bench assembly, which may be more convenient.

A. Assembly of ½", ¾", 1"

1. Air-blasting the valve body (1). Install the spring (33) and anti-static devices (either 34 or 35) onto the stem. They are anti-static balls (34) for ½" and ¾" or plungers (35) for 1". See Figure 1.
2. Put a stem seal (12) onto the stem (8).
3. Place a seat (11) in the body (1). Then insert the stem (8) through the stem bore inside out of the valve.
4. Place a wrench through the body on the bottom of the stem blade to hold the stem stationary. Then, place the stem packing (15), gland (26) in order through the stem (8) and tighten the gland (26) until snug.
5. Align the stem blade inside the valve body (1) with the ball (7). Insert the ball (7) and rotate the stem (8) to the fully closed position.
6. Place a body seal (16) into the machined sealing groove of the body (1). Be certain the groove and seal are clean.
7. Place a seat (11) into the body cap (3). Fit the body cap (3) to body (1) with 4 loose cap bolts (42) in the body-cap joint, being careful not to scratch the body seal (16).
8. Press the body and cap close to allow the tightening of cap bolts with a torque wrench.
9. Cycle the valve slowly twice to endure permanent position of the ball between the two seats. Tighten the gland (26) with a torque wrench
10. Install lock pin (39) into the body (1) and place the stop plate (32) and lock handle (30) over the stem (8). Put the lock nut (28) into the stem (8). Tighten the lock nut (28) until snug.
11. Pressure testing after assembly. After assembly, the valve shall be operated several times in

order to ensure all parts are correctly installed. The valve shall then be tested in accordance with API 598.

12. Place protection covers (20) on both ends to avoid any potential damage while it is stored. Remove the protection covers (20) before installation.

B. Assembly of 1½", 2"

1. Air-blasting the valve body (1). Install the spring (33) and plungers (35) onto the stem. See Figure 2.
2. Put a stem seal (12) onto the stem (8).
3. Place a seat (11) in the body (1) then insert the stem (8) through the stem bore inside out of the valve
4. Place a wrench through the body on the bottom of the stem blade to hold the stem stationary. Then, place the stem packing (15), gland (26) in order through the stem (8) and pass the gland bolts (44) through the gland (26).
5. Put bell washer (23) and lock nut (28-1) through each gland bolt (44). Tighten the lock nut (28-1) until snug.
6. Align the stem blade inside the valve body (1) with the ball (7). Insert the ball (7) and rotate the stem (8) to the fully closed position.
7. Place a body seal (16) into the machined sealing groove of the body (1). Be certain the groove and seal are clean.
8. Place a seat (11) into the body cap (3). Fit the body cap (3) to body (1) with 6 loose cap bolts (42) in the body-cap joint, being careful not to scratch the body seal (16).
9. Press the body and cap close to allow the tightening of cap bolts (42) with a torque wrench.
10. Cycle the valve slowly twice to endure permanent position of the ball between the two seats. Tighten the lock nut (28-1) with a wrench.
11. Put the stop plate (32) and snap ring (36) on the top of stem (8).
12. Place the lever handle (30) over the stem and fix it with a handle bolt (45).
13. Install stop bolt (43) into the body (1) and pass the lock nut (28-2) through the stop bolt (43). Tighten the lock nut (28-2) until snug.
14. Pressure testing after assembly. After assembly, the valve shall be operated several times in order to ensure all parts are correctly installed. The valve shall then be tested in accordance with API 598.
15. Place protection covers (20) on both ends to avoid any potential damage while it is stored. Remove the protection covers (20) before installation.

C. Assembly of 2½", 3", 4", 6"

1. Air-blasting the valve body (1). Install the spring (33) and plungers (35) onto the stem. See Figure 3.
2. Put a stem seal (12) onto the stem (8).
3. Place a seat (11) in the body (1). Then insert the stem (8) through the stem bore inside out of the valve.
4. Place a wrench through the body on the bottom of the stem blade to hold the stem stationary. Then, place the stem packing (15), gland (26) in order through the stem (8) and pass the gland bolts (44) through the gland (26).
5. Put bell washer (23) and lock nut (28-1) through each gland bolt (44). Tighten the lock nut (28-1) until snug.
6. Align the stem blade inside the valve body (1) with the ball (7). Insert the ball (7) and rotate the stem (8) to the fully closed position.
7. Place a body seal (16) into the machined sealing groove of the body (1). Be certain the groove and seal are clean.
8. Place a seat (11) into the body cap (3). Fit the body cap (3) to body (1) with 6 loose cap bolts (42) in the body-cap joint, being careful not to scratch the body seal (16).
9. Press the body and cap close to allow the tightening of cap bolts (42) with a torque wrench.
10. Cycle the valve slowly twice to endue permanent position of the ball between the two seats. Tighten the lock nut (28-1) with a wrench.
11. Put the stop plate (32) and snap ring (36) on the top of stem (8).
12. Place the knob (30) with a pipe bolt (45-1) over the stem and fix it with a handle bolt (45).
13. Install stop bolt (43) into the body (1) and pass the lock nut (28-2) through the stop bolt (43). Tighten the lock nut (28-2) until snug.
14. Pressure testing after assembly. After assembly, the valve shall be operated several times in order to ensure all parts are correctly installed. The valve shall then be tested in accordance with API 598.
15. Place protection covers (20) on both ends to avoid any potential damage while it is stored.
16. Remove the protection covers (20) before installation. Place the pipe (31) to the knob (30) after installation.

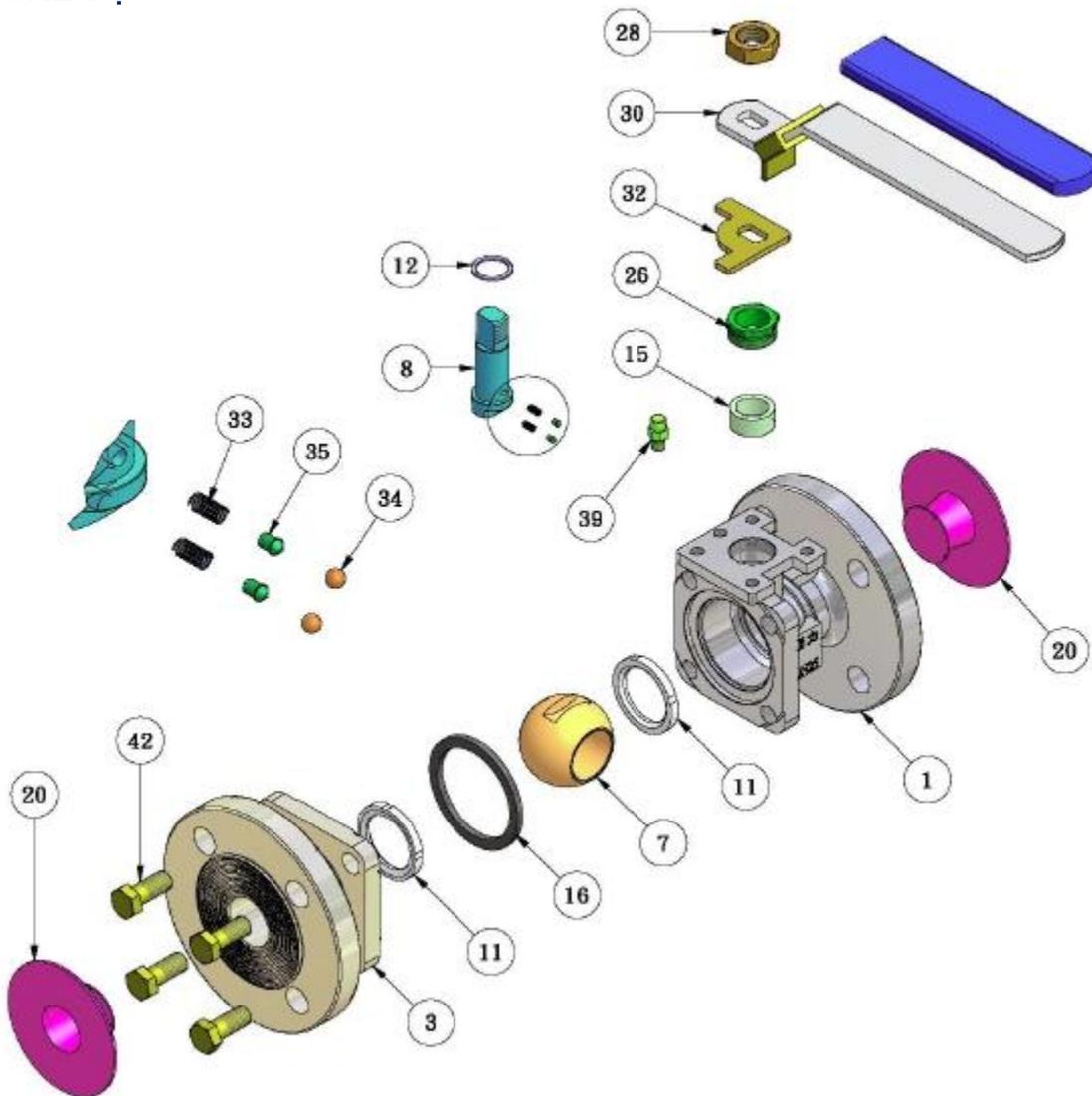
TABLE 1

Valve size	Maximum Operating Torque (in lbf)
1/2"	100
3/4"	150
1"	250
1 1/2"	400
2"	500
2 1/2"	900
3"	1200
4"	1400
6"	1900

ITEM	PART NAME	Q'TY
1	BODY	1
3	BODY CAP	1
7	BALL	1
8	STEM	1
11	SEAT	2
12	STEM SEAL	1
15	STEM PACKING	1
16	BODY SEAL	1
20	PROTECTION COVER	2

ITEM	PART NAME	Q'TY
26	GLAND	1
28	LOCK NUT	1
30	LOCK HANDLE	1
32	STOP PLATE	1
33	SPRING	2
34	ANTI-STATIC BALLS	2
35	PLUNGER	2
39	LOCK PIN	1
42	CAP BOLT	1 SET

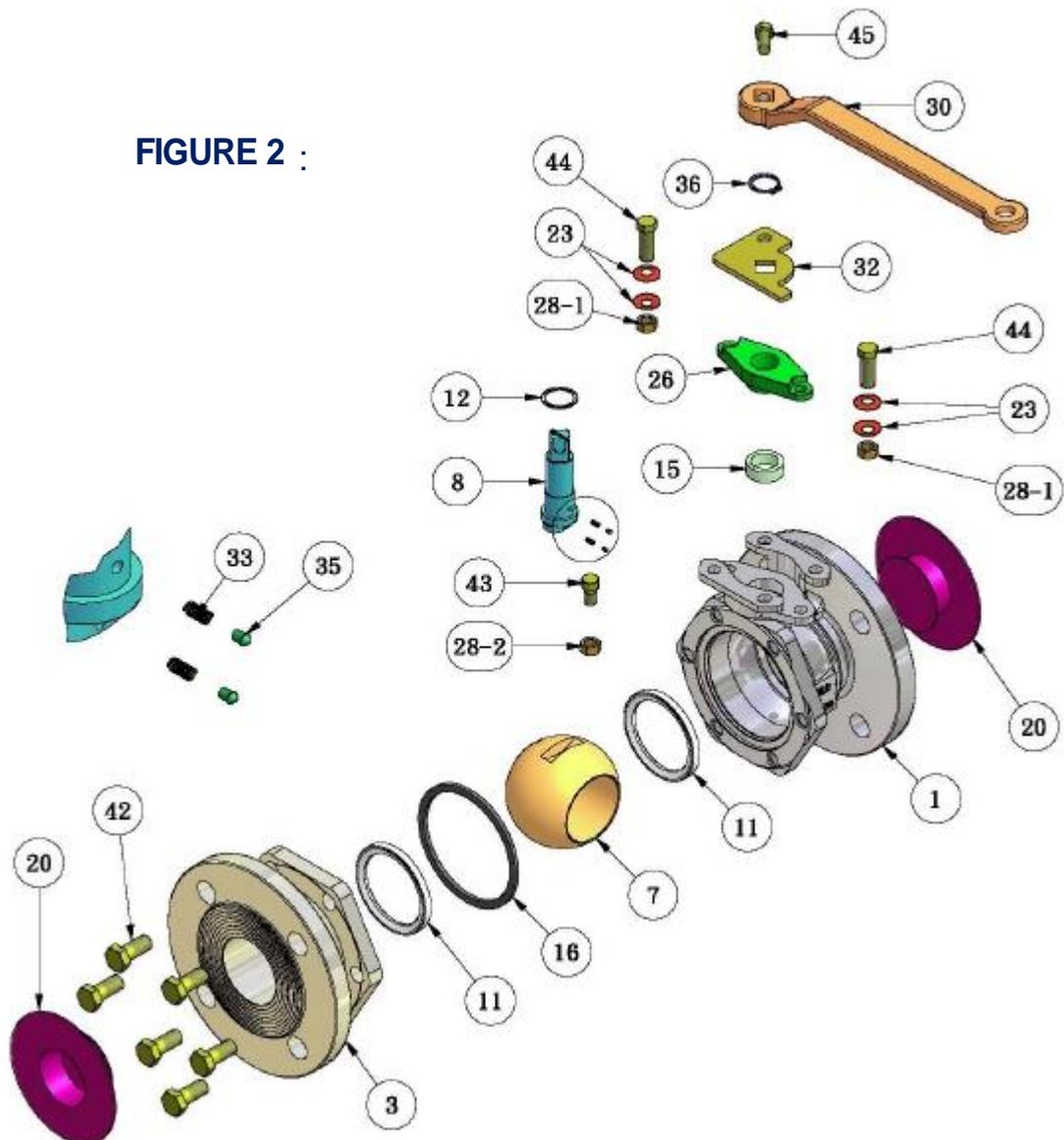
FIGURE 1 :



ITEM	PART NAME	Q'TY
1	BODY	1
3	BODY CAP	1
7	BALL	1
8	STEM	1
11	SEAT	2
12	STEM SEAL	1
15	STEM PACKING	1
16	BODY SEAL	1
20	PROTECTION COVER	2
23	BELLWASHER	4
26	GLAND	1

ITEM	PART NAME	Q'TY
28-1	LOCK NUT	2
28-2	LOCK NUT	1
30	LEVER HANDLE	1
32	STOP PLATE	1
33	SPRING	2
35	PLUNGER	2
36	SNAP RING	1
42	CAP BOLT	1 SET
43	STOP BOLT	1
44	GLAND BOLT	2
45	HANDLE BOLT	1

FIGURE 2 :



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