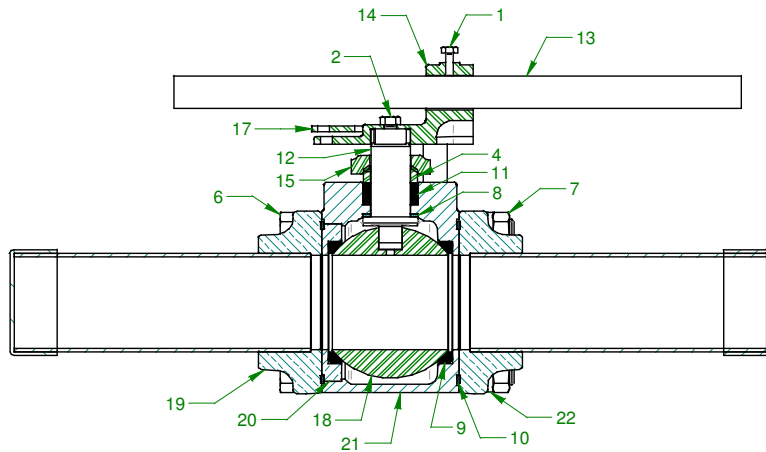


- 10) Complete the fastener torquing sequence with one final check going around the bolt pattern clockwise at the specified torque level.
- 11) Tighten the stem packing adjustment screws to the values shown in Table 2. Do not over-tighten the stem packing adjustment screws.
- 12) Complete the re-assembly by installing the lever, lock plate and stops or actuator as applicable.

Table 2: Torque Requirements

Valve Size	Gland Nut Torque (+ or - 10%) in-lb (ft-lb)	Gland Plate Fastener Torque (+ or - 10%) in-lb (ft-lb)	Body Bolt Torque (+ or - 10%) in-lb (ft-lb)
1/4	96 (8)	N/A	96 (8)
3/8	96 (8)	N/A	96 (8)
1/2	156 (13)	N/A	96 (8)
3/4	156 (13)	N/A	96 (8)
1	516 (43)	N/A	96 (8)
1-1/4	516 (43)	N/A	156 (13)
1-1/2	516 (43)	N/A	156 (13)
2	516 (43)	N/A	276 (23)
2-1/2	996 (83)	N/A	540 (45)
3	N/A	156 (13)	900 (75)
4	N/A	156 (13)	2400 (200)

PARTS ILLUSTRATION

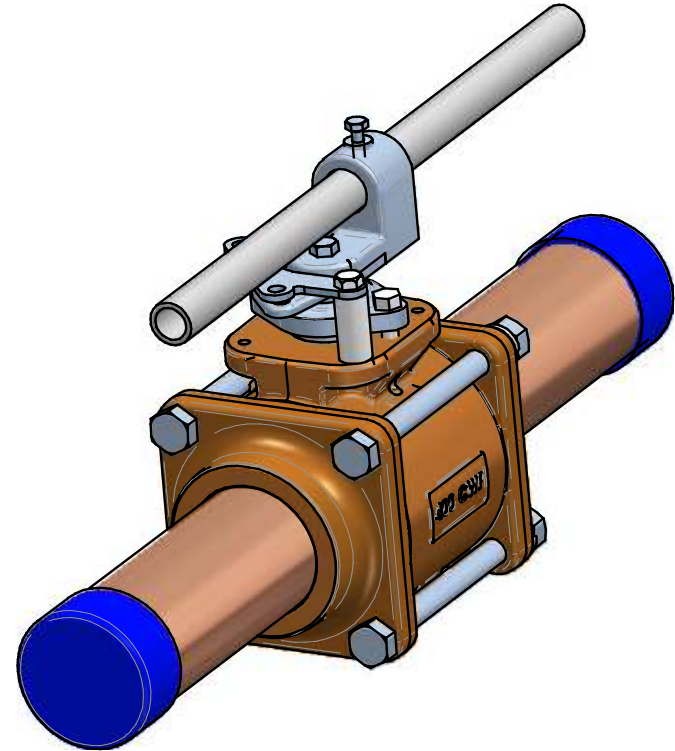


NO.	NAME	NO.	NAME	NO.	NAME
1	HANDLE SCREW	9	SEAT	16	STOP
2	ADPT SCREW	10	BODY SEAL	17	LOCKPLATE
3	STOP SCREW	11	STEM PACKING	18	BALL
4	PACKING GLAND	12	STEM	19	END CAP
5	GLAND SCREW	13	HANDLE	20	SEAT HOLDER
6	BODY BOLT	14	HANDLE ADPT	21	BODY
7	NUT	15	GLAND PLATE	22	LOCK WASHER
8	STEM BEARING				



A Division of Conbraco Industries, Inc. Matthews, NC Pageland, SC Conway, SC

**82/82A SERIES MEDICAL GAS
INSTALLATION, OPERATION
& MAINTENANCE MANUAL**



INSTALLATION

The Apollo 82/82A Series Ball valves are bi-directional. They may be installed in vertical or horizontal pipe runs without regard to flow direction or stem orientation.

Note: Valves must be installed in piping systems that comply with the applicable portions the ASME B31 standards. Special considerations must be taken with respect to pipe line expansions and contractions and the media expansion and contractions within the piping system.

Brazed-In Installation

NFPA 99 governs the installation of this type of product. In compliance with NFPA 99, these valves have been cleaned and prepared for service in accordance with CGA G4.1, latest edition. Every effort must be made to maintain the cleanliness of this product prior to and during the installation process.

In accordance with NFPA 99, the valves must be subject to a continuous nitrogen purge during the brazing process. Valves must be in the fully open position during the brazing process. Note the effort required to operate the valve from open to closed and back to open position.

Per NFPA 99, installers shall be qualified to CGA M-1. Verify the training records of brazers.

Properly clean copper tube ends and any fittings in preparation for brazing. Clean, non-shedding, abrasive pads shall be used. Sand cloth or paper, and steel wool are prohibited.

Wrap both end caps and the valve body center section with wet rags. The wet rags should extend down the tubing as far as possible toward the point where the new joint will be made. Produce only one joint at a time allowing the first joint to cool to the touch before beginning the second joint.

Caution: Apollo strongly advises against the use of heat dissipating gels. These spray gels typically only coat directly visible surfaces and fail to coat the back side of valve assemblies, especially in Zone boxes. Experience has shown a high rate of valve failure due to the overheating of body gaskets, seats and stem packing when gels are employed.

OPERATION

The valve handle is marked showing proper rotation direction for "ON" and "OFF" positions. Rotation is clockwise for "OFF" (closed) and counterclockwise for "ON" (open).

MAINTENANCE

Regular Maintenance

Normal stem packing wear can be compensated for by adjusting the packing gland nut (1/4" thru 2-1/2" valves) or gland plate fasteners (3" & 4" valves). The handle may need to be removed for easy access to the packing gland nut. Wrench part number H371400 is available to ease this operation. Tighten the packing gland nut or gland plate fasteners clockwise in 1/8 turn increments until observed leakage stops. Do not exceed the torque levels shown in Table 2. Reinstall the handle if necessary.

Major Overhaul

Due to the uncomplicated design of the 82/82A series, these valves can easily be rebuilt. Repair kits are available and can be purchased through your local distributor. These kits typically contain a complete set of seats and seals. Complete center sections are also available.

Table 1: Repair Kits

Valve Size	Kit Number (RPTFE)	Valve Size	Kit Number (RPTFE)
1/4" & 3/8"	8200201	1-1/2"	8200701
1/2"	8200301	2"	8200801
3/4"	8200401	2-1/2"	8200901
1"	8200501	3"	82A00001
1-1/4"	8200601	4"	82A00A01

Disassembly

- 1) After de-pressurizing the system, operate the valve fully open to fully closed to assure there are no trapped fluids or pressure in the body cavity. Return the valve to the open position for disassembly.
- 2) Begin disassembly by loosening the body bolts. Complete removal of one bolt is required for center section removal.
- 3) Remove the center section from the piping system. It may be necessary to spread the end caps slightly to overcome compressive loads imparted by the piping system.
- 4) After removing the center section from the piping system, rotate the handle to the closed position for ball and seat removal. Carefully press the spherical surface of the ball by hand for removal of the first seat. Press in the opposite direction to remove the other seat.
- 5) If ball inspection reveals scars or other damage, it is recommended that the complete center section be replaced.
- 6) If no ball damage is found, continue the rebuild process by removing the handle. The packing gland nut or gland plate, packing gland and fasteners should also be removed.
- 7) Press the stem downward into the body to facilitate removal of the stem, stem bearing and stem packing. Do not damage sealing surfaces when removing the stem.
- 8) Finally, remove the stem packing. Do not scratch or scar the packing box.

Re-Assembly

- 1) Begin the re-assembly process by cleaning each of the component parts with a clean towel or cloth.
- 2) Place the new stem bearing on the stem, and insert the stem into the valve body stem bore. Place the flats on top of the stem perpendicular to the centerline of the body.
- 3) Install the stem packing, packing gland nut, or packing gland, gland plate, and fasteners as required. Tighten finger tight only at this time.
- 4) Carefully insert the ball into the body. Rotate the stem to the open position.
- 5) Apply a small amount of service compatible lubricant to the new seats and install them in the valve body. Seats may be installed dry however some assembly lubricant is desirable and acts to hold the seats in place during the assembly process.
- 6) Install the body seal on valves 2-1/2" and larger.
- 7) Slip the body subassembly into the end caps installed in the pipeline. Lubricate and install the body bolts and nuts finger tight at this time.
- 8) Cycle the valve open and closed several times to assure all components are properly aligned.
- 9) Using a criss-cross pattern, in three approximately equal steps, torque the body bolts to the value given in Table 2. Cycle the valve open and closed between each step to assure continued smooth operation.