

Installation, Operation, and Maintenance Manual

M80/M89/M70/M74 Metal Seated Ball Valves

Sizes 1/2" – 4"

Before installation these instructions must be fully read and understood.

GENERAL

The following instructions relate in general to all Sharpe® Metal Seated valves series including Series M80/89 3-piece, Series M70 flanged 2-piece and Series M74 fully flanged 1-piece designs. Although different in the design, they all carry the same metal seats components.

The following instructions refer to Sharpe® Metal Seated valves as described in the current catalogs. When shipped, the valves contain a silicon based lubricant which aids the assembly of the valve; this may be removed with a solvent if found objectionable, alternatively, valves can be ordered free of lubricants.

Certain ferrous valves are phosphate and oil dipped during the course of manufacture, but the processes used are completely non-toxic and the valves are quite safe to use for edible or potable products.

STORAGE

Before storing check the valve for any damage that may have occurred during transport. The valves should be stored with the ball in the open position. The valve ports and flange serration surfaces should be kept sealed with protective flange covers. It is recommended to store the valve indoors and in a dry place. Keep the valves in the original packing box. If the valves have to be stored for a long period, keep them in the original crate or shipping container. The protective covering should be used for protection against dust and rain. Remove the protective covers only when they are ready to be installed.

Valves that have been stored for an extended period of time should be cleaned and inspected prior to installation. Inspect the sealing surface to ensure it is clean and free of any debris or damage. The valves should be cycled several times to make sure they are running smoothly prior to installation. Do not expose the valve to any corrosive environment as this may cause damage to the valve components.

MANUAL OPERATION

Sharpe® valves have ¼ turn operation closing in CW direction and opening in CCW direction. It is possible to see when the valve is open or closed by the position of the wrench handle:

- When the wrench is perpendicular to the pipeline the valve is closed.
- When the wrench is parallel to the pipeline the valve is open.

The type of wrench which is fitted to valve sizes ¼” to 2” is a cast handle with integral stop. The type of wrench which is fitted to valve sizes 2½” to 4” is a cast wrench block with a handle pipe and a stop plate. Valves may come with an extension bonnet to distance away the stem packing and handle from the heat and for insulation of the pipe.

REMOTE OPERATION

Where manual operation is not required, valves may be automated for remote operation, instrument control, etc. A range of Sharpe® valves pneumatic and electric actuators are available.

Operation will be in accordance with Sharpe® valves installation, operation and maintenance instructions for the relevant actuator.

Valves with actuators should be checked for alignment of the actuator to the valve. Angular or parallel misalignment may result in high operational torque and potential damage to the stem seals or stem.

MAINTENANCE

Sharpe® Metal Seat Series provide reasonable shut off when used under normal conditions and in accordance with Sharpe® valves published pressure/temperature chart.

If these valves are used in a partially open (throttled) position, seat life may be reduced.

Any media which might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities unless regular maintenance is provided.

Sharpe® ball valves have been designed and engineered to provide long lasting and trouble-free service when used in accordance with the instructions and specifications herein.

Before installing the valves, the pipes must be flushed clean of dirt, burrs and welding residues, or you will damage the seats and ball surface.

The valves are either **unidirectional** or **bidirectional** according to the internal seat option. Valves with unidirectional trim must be installed for flow in one direction as indicated by the flow arrow marked on the body.

With its self-wipe ball/seats, Sharpe® valves have a long, trouble-free life, and maintenance is seldom required. When necessary, valves may be refurbished using a small number of components, none of which require special tools or machining.

If for some reason the valves require maintenance, the following checks should help to extend valve life or reduce plant problems.

In case these checks fail to resolve the problem please contact Sharpe® valves for further instructions.

It is our recommendation to send the valves back to Sharpe® to do the refurbishing.

TROUBLESHOOTING

STEM LEAKAGE IN VALVES

If there is leakage in the stem, follow these steps:

Examine the disk springs for damage. If in good condition, tighten the packing nut until disk springs are firmly compressed, then back nut off 1/16" of a turn. Check leakage when the valve is pressurized and tighten the stem nut more if needed.

If the springs are damaged, make sure the valve is not pressurized and then dismantle the stem down to the gland. Fit a new set of disk springs, each spring with their outer edges touching the other and tighten to the torque in Table 1. Check leakage when the valve is pressurized and tighten the stem nut more if needed. If the leakage continues after tightening the packing nut, then contact SHARPE® valves for assistance.

Any further maintenance will require contacting Sharpe® valves for instructions.

IN-LINE LEAKAGE

If there is leakage in the pipe first check that the valve is fully closed. Expect some in-line leakage; metal seat series valves are factory tested to ANSI/FCI 70-2 and meet standard leak rate V.

If possible, try to open and close the valve a few times to flush away any debris in the valve. If leakage still continues then it will be due to damaged seat or ball sealing surfaces. Rotate the ball 180° and check the leakage. If nothing brings leakage to acceptable levels, then contact Sharpe® valves for further instructions.

BODY SEAL LEAKAGE

In the event of a body seal leak, with valve in the closed position, re-torque the body bolts to the recommended body bolt tightening torques in **table 2**, utilizing an alternating torqueing pattern. If the leakage continues, contact the Sharpe for further instructions.

VALVE TESTING

Pressure testing should be carried out using equipment conforming to the correct pressure class. The test is according to the applicable standard ANSI/FCI 70-2 meeting standard leak rate V.

TABLE 1
STEM NUT TIGHTENING TORQUE (80/89, 70, 74 series)

VALVE SIZE	Series M89 VALVE SIZE	THREAD	TORQUE (Nm)	TORQUE (in.lbs)
1/4", 1/2", 3/4"	1/4", 3/8", 1/2"	M10	9	80
1", 1 1/4"	3/4", 1"	M12	13	115
1 1/2", 2"	1 1/4", 1 1/2"	M18	30	265
2 1/2" (80 series)	2"	1" - 14	60	530
2 1/2" (70 series)		1 1/8" - 12	80	700
3", 4"	2 1/2", 3"	1 1/8" - 12	80	700

TABLE 2
70 SERIES BODY BOLTS TIGHTENING TORQUE (Grade 1)

CLASS 150

VALVE SIZE	THREAD	TORQUE (NM)	TORQUE (in.lbs)
1/2"	5/16"-18	7	65
3/4"	5/16"-18	7	65
1"	3/8"-16	14	125
1 1/2"	1/2"-13	28	250
2"-4"	1/2"-13	28	250

CLASS 300

VALVE SIZE	THREAD	TORQUE (NM)	TORQUE (in.lbs)
1/2"	5/16"-18	7	65
3/4"	5/16"-18	7	65
1"	3/8"-16	14	125
1 1/2"	1/2"-13	28	250
2"-4"	5/8"-11	55	355

M80/M89 SERIES BODY BOLTS TIGHTENING TORQUE

M80 VALVE SIZE	M89 VALVE SIZE	THREAD	TORQUE (NM)	TORQUE (in.lbs)
1/2"	1/4", 3/8"	1/4" - 20	9	80
3/4", 1"	1/2", 3/4"	M8	19	165
1 1/4"	1"	M10	39	345
1 1/2"	1 1/4"	M12	65	575
2"	1 1/2"	M14	110	970
2 1/2"	2"	M20	300	2,655
3"	2 1/2"	7/16" - 14	39	345
4"	3"	1/2" - 13	65	575

