

# Installation, Operation and Maintenance Instructions for 6PLF Series Lead Free Cast Iron Ball Valves

Valve Size	6PLF Lead Free
2"	6PLF-208-01
2-1/2"	6PLF-209-01
3"	6PLF-200-01
4"	6PLF-20A-01
6"	6PLF-20C-01
8"	6PLF-20E-01
10"	6PLF-20G-01

## Introduction

This manual presents guidelines for the Installation, Operation and Maintenance of Apollo International's Lead Free Cast Iron Ball Valve, the 6PLF Series. Review the entire manual before beginning any work.

## Installation

Proper valve selection is the first step in any successful installation. For application guidance or for more detailed assistance, contact your distributor or the factory.

## Pre-Installation Inspection

A leading cause of premature valve failure is poor house-keeping. Inspect the piping system prior to valve installation, whenever possible, to insure that it has been properly flushed and cleared of construction and fabrication debris. The seating surfaces in soft seated valves are particularly susceptible to weld slag and sand blasting grit. Pipe scale, metal chips and other foreign materials should be removed.

Prior to installation, remove the valve from its packaging and remove any end covers. Examine the flow bore for debris. All of Apollo International's ball valves are shipped in the open position to prevent damage to the ball surface. Any foreign matter must be removed. Do not install a damaged valve.

## Flanged End Valve Installation

After determining that the valve is in good condition, attention should be given to the flange face. Dents and heavy scratches should be repaired. Do not install damaged valves.

Apollo International's Cast Iron Ball valves may be installed in any position using standard pipe fitting practices. Special considerations are required when bolting cast iron valves to steel flanges. When Class 125 CI valves are to be bolted to Class 150 steel flanges, the steel flanges shall be flat faced. Due to the brittle nature of cast iron, consideration should also be given to proper piping alignment.

## Actuator Installation

To convert from a handle assembly to an actuator assembly, remove the handle assembly, handle follower plate, gland bolts, square gland plate, and packing follower.

Assemble the oval gland plate and the gland bolts. Tighten the gland bolts according to the table below in "Valve Adjustments."

Assemble the bracket, coupling and the actuator to the valve.

Valve Size	Actuation Kit	Description
2"	78253001	KIT,MTG,6PLF208 TO A0150
2-1/2"	78253101	KIT,MTG,6PLF209 TO A0150
3"	78253201	KIT,MTG,6PLF200 TO A0200
4"	78253301	KIT,MTG,6PLF20A TO A0350/0600
6"	78253401	KIT,MTG,6PLF20C TO A0950
8"&10"	78253501	KIT,MTG,6PLF20E/20G TO A1600/A2500

## Operation

The 6PLF series features a quarter turn operation; full open to full closed. Standard operation is clockwise to close. Valves 2" through 6" are furnished standard with a lever operator.

The 8" and 10" valves have gear operators and handwheels as standard.

## Maintenance

Due to its simplicity, the only preventive maintenance is to periodically inspect the valve for leaks and ease of operation.

**Do not disassemble or remove any part from a valve under pressure.** Before removing a valve from the line, place it in the half-open position to remove any line pressure or pressure trapped in the body cavity.

## Valve Adjustments

The stem packing was adjusted at the factory to provide a leak-tight seal when the valve was new but, compaction can occur within these seals that makes readjustment necessary. Stem leakage should be stopped as soon as it is detected.

Adjust the packing gland bolts per the following table:

Valve Size	Gland Bolt Size	Torque (max.)
2"	1/2"-13UNC X 38mm	20 ft-lbs
2-1/2"	1/2"-13UNC X 38mm	20 ft-lbs
3"	1/2"-13UNC X 38mm	20 ft-lbs
4"	1/2"-13UNC X 38mm	20 ft-lbs
6"	1/2"-13UNC X 50.8mm	45 ft-lbs
8"	1/2"-13UNC X 50.8mm	45 ft-lbs
10"	1/2"-13UNC X 50.8mm	93 ft-lbs

Do not over tighten. Over-tightening will result in excessive operating torque. If stem leakage continues, or operating torque becomes excessive, de-pressurize the valve and replace the stem seals. Obtain repair kits from the factory.

Valves with high operating torque not resulting from stem seal over tightening or valves which have leakage past the seats may have damaged seats or ball surfaces. These valves should be de-pressurized, removed from the piping system, disassembled and inspected for damage.

**Valve Overhaul**

The first step is to contact your distributor to acquire an appropriate rebuild kit. These kits contain a complete set of seats, seals and gaskets.

Disassembly Process

1. Assure appropriately sized wrenches and lifting devices are available.
2. Place the valve in the half-open position, assuring no pressure is trapped in the valve body.
3. Handle: Remove handle assembly, indicator follower, locking plate, gland fasteners, gland plate and gland ring.
4. Gear Operator: Remove gear operator, bracket, packing gland fasteners, and gland plate.
5. Remove the body bolts and remove the tail piece from the valve body.
6. Using an appropriate lifting device, remove the ball from the body cavity.
7. Remove the stem from the valve body. Due to presence of corrosion products it may be necessary to drive the stem from the valve body using a soft face hammer, being careful not to damage the stem.

Inspection

*Note: If replacement of the body or ball is required, we recommend replacement of the entire valve.*

1. Thoroughly clean all the components in preparation for inspection.
2. Examine the sealing surfaces within the body. If these surfaces are pitted or deeply scratched the valve must be replaced. A scratch is anything you can feel with your fingernail. Machining marks may be present and will not interfere with sealing. Scratches that can be seen but not felt may be polished out using #120 grit emery cloth or finer.
3. Examine the stuffing box. Polish these surfaces with #120 (or finer) grit emery cloth and inspect for pits and scratches. Deep scratches running down the side of the stuffing box will necessitate the replacement of the valve.
4. Examine the stem. Machine marks may be present extending around the part. These will not interfere with effective sealing. If longitudinal scratches or pitting is present, the stem must be replaced.
5. If the ball has pits or scratches as described above, it should be replaced.
6. Inspect the spare parts provided to assure they are correct, in good condition and have not suffered damage in storage or shipment.

Valve Size	Soft Goods Repair Kit	Description
2"	6PLF-028-01	KIT,SERVICE,IBVLF-125-2"
2-1/2"	6PLF-029-01	KIT,SERVICE,IBVLF-125-2-1/2"
3"	6PLF-020-01	KIT,SERVICE,IBVLF-125-3"
4"	6PLF-02A-01	KIT,SERVICE,IBVLF-125-4"
6"	6PLF-02C-01	KIT,SERVICE,IBVLF-125-6"
8"	6PLF-02E-01	KIT,SERVICE,IBVLF-125-8"
10"	6PLF-02G-01	KIT,SERVICE,IBVLF-125-10"

Re-assembly

1. Use a lubricant which is recommended for the intended service. Only small amounts of assembly lubricants are necessary.
2. Lubricate/grease the new seats and install them in the body and tail piece.
3. Lubricate/grease the stem. Install the thrust washer on the stem and install the stem in the body.
4. Lubricate/grease the new stem packing rings and place them one at a time over the stem and push them to the bottom of the stuffing box.
5. Lubricate/grease the gland ring/gland plate and install with the original gland bolts provided they are in good condition. Tighten only finger tight at this time. Rotate the stem to the closed position.
6. Place the body with the cavity facing upward. Lower the ball into the body cavity making sure the stem slot in the ball aligns with the tang on the stem. The ball should come to rest on the body seat.
7. Set the new body gasket in place.
8. Set the tail piece onto the body. On larger tail pieces use appropriate lifting equipment to set the tailpiece. Lift the tail piece by opposite pipeline flange bolt holes and lower it onto the body.
9. Align the pipeline flange bolt patterns (two-hole).
10. Install the body fasteners hand tight. Torque to the value indicated in the table below in three equal steps using a criss-cross pattern.
11. Torque the packing gland fasteners to the level indicated in the section >Valve Adjustments<.
12. Install the operating mechanism, lever or gear, in its original orientation. Cycle the valve three to five times to assure smooth operation.
13. Complete the re-assembly with a check of the body bolt torque by going around the bolt pattern clockwise at the specified level. Check the packing gland fasteners torque again at this time.
14. The valve is now ready for testing and use.

Valve Size	Body Bolt Size	Torque (max.)
2"	M14 X 50mm	45 ft-lbs
2-1/2"	M14 X 53mm	45 ft-lbs
3"	M14 X 53mm	45 ft-lbs
4"	M16 X 60mm	45 ft-lbs
6"	M20 X 70mm	57 ft-lbs
8"	M20 X 75mm	93 ft-lbs
10"	M20 X 75mm	93 ft-lbs

Final Adjustments

Occasionally after testing or initial start-up, a minor stem or packing leak may occur. Adjust the packing plate bolts in accordance with the section entitled "Valve Adjustments".