6GB SERIES
MODELS 711F & 721F

IRON GLOBE VALVE

INSTALLATION
OPERATION
MAINTENANCE
GUIDE

DOCUMENT NO.: ES-1494
REVISION LEVEL: A
ISSUED BY: Bill Hooks DATE: 09/25/13

APPROVED BY: _____ DATE: _____

INTRODUCTION

The APOLLO® Iron Globe Valves covered in these guidelines are bolted bonnet and outside screw and yoke – rising stem valve types. They are used to start, stop or throttle the flow of fluid in a piping system. The valve is operated from a handwheel. Flow through the valve is stopped by forcing a disc down onto the disc seal ring. Throttling of flow is accomplished by turning handwheel to some location between fully open or fully closed.

In OS&Y rising stem valves, the stem is held on to disc by swivel nut. Disc is fastened securely to the end of the stem in such a manner as to allow these parts to swivel freely. The disc is raised and lowered in the waterway by rotating the handwheel. The handwheel fits onto the hex end of the yoke bushing and is held on by the handwheel nut which is threaded onto the top of the yoke bushing. The inside diameter of the yoke has threads that mate to the upper stem threads. The yoke bushing is held in the top of the bonnet by the bonnet cap against the rim on the bottom of the yoke bushing. As the yoke bushing is rotated, the stem and wedge move up and down. The stuffing box is formed by the circular space between the stem and bonnet and is filled with non-asbestos packing. The packing is compressed in the stuffing box by the packing gland bushing and packing gland follower, which are drawn down against the packing by two gland bolts and nuts.

Table 1. APOLLO® Series & Model Numbers

SERIES	MODEL	DESCRIPTION
6GB-10x	**711F**	**Class 125 Flanged OS&Y, Bronze Mount**
6GB-20x	**721F**	**Class 250 Flanged OS&Y, Bronze Mount**

x – indicates pipe size. (Reference Table 2 below)

Table 2. APOLLO® Pipe Size (x) Designations

Pipe Size	Apollo code		Pipe Size	Apollo code		Pipe Size	Apollo code		Pipe Size	Apollo code
2”	**8**		**5”**	**B**		**12”**	**H**		**20”**	**N**
2-1/2”	**9**		**6”**	**C**		**14”**	**J**		**24”**	**P**
3”	**0**		**8”**	**E**		**16”**	**K**			
4”	**A**		**10”**	**G**		**18”**	**M**			

Example: 6GB-10x-01

Size Code

Table 3. APOLLO® Globe Valve Material Designation

PART	MATERIAL
BODY	**CAST IRON (ASTM A126 CL B)**
GUIDE SPINDLE	**BRASS (ASTM B16)**
SEAT RING	**CAST BRONZE (ASTM B62)**
DISC SEAL RING	**CAST BRONZE (ASTM B62)**
DISC	**CAST IRON (ASTM A126 CL B)**
SWIVEL NUT	**CAST BRASS (ASTM B584)**
STEM	**BRASS (ASTM B16)**
BOLTS	**CARBON STEEL (ASTM A307 B)**
GLAND FOLLOWER BOLTS	**CARBON STEEL (ASTM A307 B)**
BODY GASKET	**GRAPHITE**
BONNET	**CAST IRON (ASTM A126 CL B)**
PACKING	**GRAPHITE**
PACKING GLAND	**CAST BRASS (ASTM B584)**
GLAND FOLLOWER	**DUCTILE IRON (ASTM A536 65-45-12)**
GLAND FOLLOWER NUT	**CARBON STEEL (ASTM A307 B)**
YOKE BUSHING	**CAST BRONZE (ASTM B62)**
SCREW	**CARBON STEEL (ASTM A307 B)**
HANDWHEEL	**CAST IRON (ASTM A126 CL B)**
IDENTIFICATION PLATE	**ALUMINUM**
WASHER	**CARBON STEEL (ASTM A307 B)**
HANDWHEEL NUT	**DUCTILE IRON (ASTM A536 65-45-12)**

Pressure/Temperature Ratings

Class 125
Saturated Steam: 125 psi (8.6 Bar) to 353°F(178°C) (2”-12”)
100 psi (6.9 Bar) to 338°F(170°C) (14”-24”)
Cold Working Pressure: 200 psi (13.8 Bar) at 100°F (2”-12”)
150 psi (10.3 Bar) at 100°F (14”-24”)

CLASS 250
Saturated Steam: 250 psi (17.2 Bar) to 406°F(207°C)
Cold Working Pressure: 500 psi (34.5 Bar) at 100°F

Note: Also see Table 6 in Operation section

Product Marking

All APOLLO® Globe Valves are equipped with a nameplate attached under handwheel nut (Figure 1). This plate provides the model number, part number, size, max pressure rating, and date of manufacture.

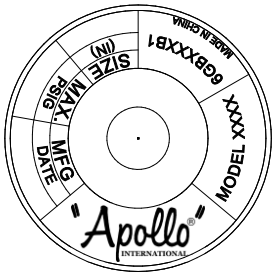

FIGURE 1. APOLLO® IRON GLOBE VALVE NAMEPLATE

INSTALLATION

APOLLO® Globe Valves are designed for use between the faces of ANSI 125 and 250 pound flat flanges. Raised faced flanges are not recommended.
Globe valves are normally installed in horizontal pipe with vertical stem.
They can also be installed other than vertical, but this may require special construction depending on valve size, service condition and medium. For a correct operation, Conbraco recommends that the valve shall be oriented inclined above horizontal, with vertical being the preferred orientation. Different positions may cause poor valve operation, and/or a quick deterioration of the valve

Installation Instructions

Step 1. Check to make sure that the pipe flange and valve sealing faces are clean and free from any debris (pipe scale, welding slag, etc.).

Step 2. Check the valve nameplate to ensure that the pressure and valve materials are correct for the application.

WARNING! – APOLLO® Globe Valves should never be installed where service conditions could exceed the valve ratings. Failure to heed warning may result in personal injury or property damage.

Step 3. Place the valve between the two flanges of the pipe and put the seal gasket between the valve flange and the pipe flange; make sure that it is correctly positioned.

Step 4. Assemble the valve to the pipe using properly sized bolts for application. See Tables 4 and 5 below. Progressively tighten to the torque value recommended by the seal gasket provider. See Figure 2 for recommended method.

After the valve installation on the line and before the line pressurization, the following activities must be performed:
- the packing bolts must be verified for tightness, DO NOT OVERTIGHTEN.
- the torque of the body-bonnet bolts must be verified for tightness
- the valve must be fully stroke operated

Table 4. Stud/Bolt Iron Flange – Class 125

Valve Size		Diameter	Length	Qty
(in)	(mm)			
2	50	5/8”	3-1/2”	4
2.5	65	5/8”	3-3/4”	4
3	80	5/8”	3-3/4”	4
4	100	5/8”	3-3/4”	8
5	125	3/4”	4”	8
6	150	3/4”	4-1/4”	8
8	200	3/4”	4-1/2”	8
10	250	7/8”	4-3/4”	12
12	300	7/8”	5”	12
14	350	1”	5-1/2”	12
16	400	1”	5-1/2”	16
18	450	1-1/8”		16
20	500	1-1/8”		20
24	600	1-1/4”		20

Table 5. Stud/Bolt Iron Flange – Class 250

Valve Size		Diameter	Length	Qty
(in)	(mm)			
2	50	5/8”	3-3/4”	8
2.5	65	5/8”	4-1/4”	8
3	80	5/8”	4-1/2”	8
4	100	5/8”	4-3/4”	8
5	125	5/8”	5”	8
6	150	5/8”	5”	12
8	200	7/8”	5-3/4”	12
10	250	1”	6-1/2”	16
12	300	1-1/8”	7”	16
14	350	1-1/8”	7-1/4”	20
16	400	1-1/4”	7-3/4”	20
18	450	1-1/4”	8”	24
20	500			
24	600			

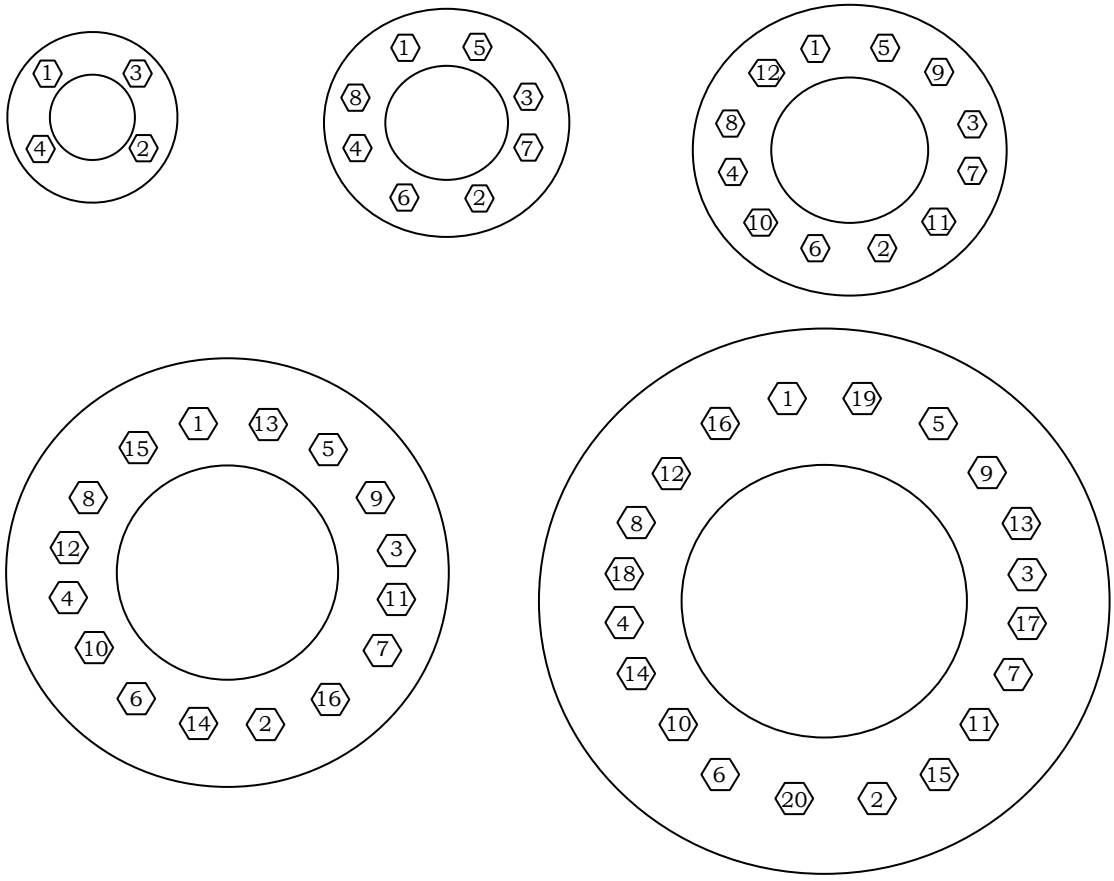

FIGURE 2. Bolt Tightening Sequence

OPERATION

APOLLO® Globe valves are intended to provide years of reliable service for throttling applications. Globe valves have high flow restriction and not recommended where pressure drop is critical. Care should be taken when operating in either closed or open position for extended periods of time. Line contamination may cause difficulty in opening or closing. A routine cycling should be implemented depending on fluid condition and usage.

Table 6. Pressure-temperature ratings

Temperature (°F)	Pressure (PSIG)			
	Class 125 Iron		Class 250 Iron	
	Sizes	Sizes	Sizes	Sizes
	2-12	14-24	2-12	14-24
-20 to 100	200	150	500	300
150	200	150	500	300
200	190	135	460	280
250	175	125	415	260
300	165	110	375	240
350	150	100	335	220
400	140		290	200
450	125		250	

MAINTENANCE

The APOLLO® Iron Globe Valves are designed for extended service with minimal wear and servicing. Replacement parts are not available. The pipeline on either side of the valve must be depressurized and drained prior to repair.

Valve Seat

Leakage through the valve is generally caused by foreign matter lodged in the seat seal. This leakage can be overcome by cycling the valve or flushing. If leakage persists, disassemble the valve and examine the seat surface on the disc and the seat ring. Minor scratches can be corrected by polishing the sealing surfaces with 400 grit sandpaper.

Bonnet Joint

Leakage through the bonnet joint may be corrected by tightening bonnet bolts. Reference Table 7 below for recommended torque values depending on bolt size. See Figure 2 for recommended tightening sequence. If tightening does not correct leakage, replacement of graphite gasket will be required.

Table 7. Bonnet Bolt Torque

Bolt size	5/8”	3/4”	7/8”	1”	1-1/8”	1-1/4”	1-3/8”
Torque (Ft. Lbs.)	90	150	200	300	475	660	885

Stem Packing

Leakage through the hand wheel stem may be corrected by tightening the packing nuts. Excessive tightening may cause difficult operation of the valve. Tightness should be just enough to stop the leak. If the packing gland screw has run out of travel, repacking graphite gasket will be required.

Repacking of valves under pressure is **NOT** recommended. Even if valve is back seated foreign matter may interfere with full closure and injury could occur.

AMENDMENT REGISTER

DATE	REV	SECTION	PAGE	DESCRIPTION
09/25/13	A	All	All	Released new engineering standard