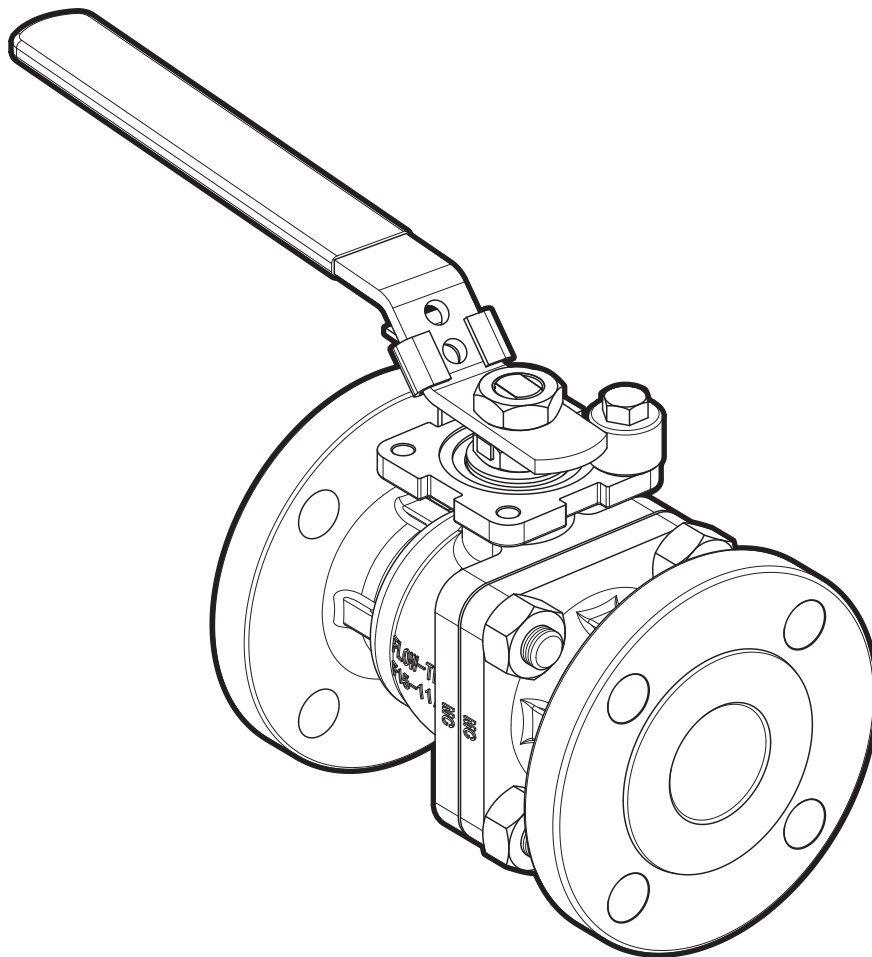

FLOW-TEK SERIES F15/F30

2 PIECE FLANGED FULL PORT BALL VALVES

Installation, Operation, and Maintenance Manual



**FLOW-TEK SERIES F15/F30
2 PIECE FLANGED FULL PORT BALL VALVES**

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CONTENTS

1.0	DEFINITION OF TERMS3
2.0	INTRODUCTION4
3.0	PARTS IDENTIFICATION5
4.0	SECTION VIEWS . . . . .	.6
5.0	GENERAL INFORMATION FOR ON-SITE INSTALLATION . . . . .	.7
6.0	SAFETY TIPS AND WARNINGS. . . . .	.8
7.0	SHORT AND LONG-TERM STORAGE . . . . .	.9
8.0	OPERATION . . . . .	.10
9.0	STEM SEAL ADJUSTMENT . . . . .	.11
10.0	BALL SUPPORT PACKING ADJUSTMENT. . . . .	.13
11.0	DISASSEMBLY AND CLEANING PROCEDURE . . . . .	.14
12.0	DISASSEMBLY FOR STEM AND SEAL REMOVAL . . . . .	.15
13.0	VISUAL INSPECTION . . . . .	.16
14.0	ASSEMBLY . . . . .	.17
15.0	RETURN MERCHANDISE AUTHORIZATION . . . . .	.19

**READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY.
SAVE THIS MANUAL FOR FUTURE USE.**

1.0 DEFINITION OF TERMS

All information within this manual is relevant to the safe operation and proper care of your Bray valve. Please understand the following examples of information used throughout this manual.



DANGER

Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE

Used without the safety alert symbol, indicates a potential situation which, if not avoided, may result in an undesirable result or state, including property damage.

2.0 INTRODUCTION

The design features of this valve include a split body, two piece construction, allowing ease of maintenance without special tools. These valves feature a “free floating” ball. The ball is not fixed, but is free to move with the line pressure.

As a result of this feature, these valves are capable of tight shut-off with flow in either direction or dead-ended, regardless of the position of the valve in the line.

The downstream seat, opposite the pressurized side of a closed valve, must carry the load exerted by the line pressure on the ball, while the upstream seat is subject to little load or wear. For this reason, it is sometimes possible to increase useful seat life by turning the valve end-for-end in the pipeline.

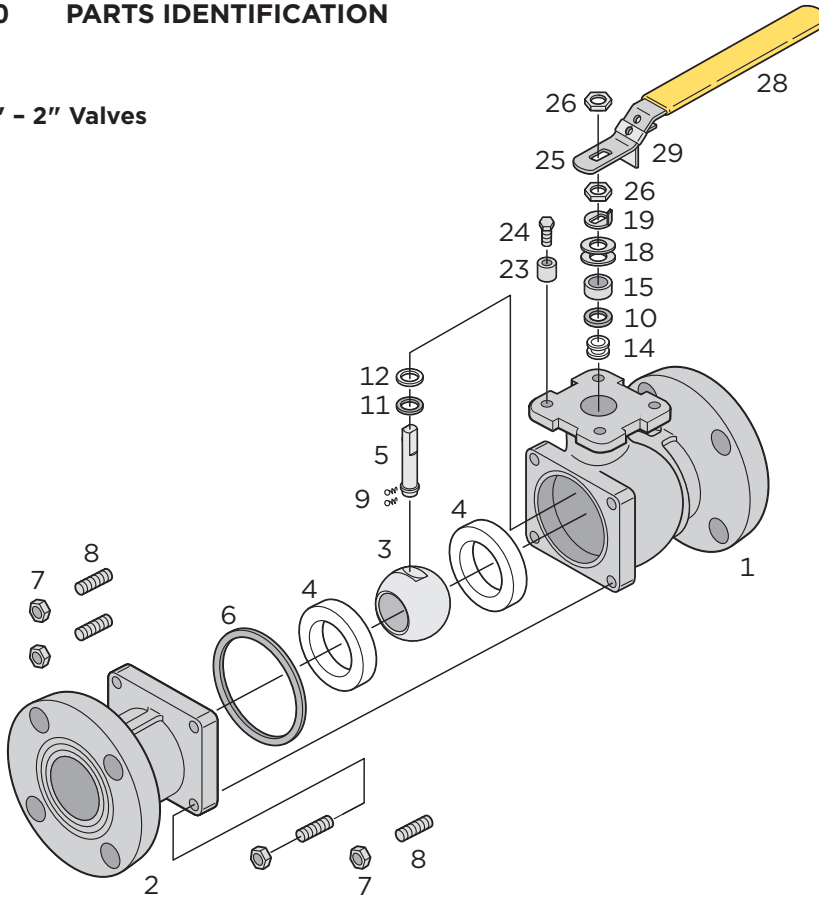
FLOW-TEK SERIES F15/F30 2 PIECE FLANGED FULL PORT BALL VALVES

Installation, Operation, and Maintenance Manual



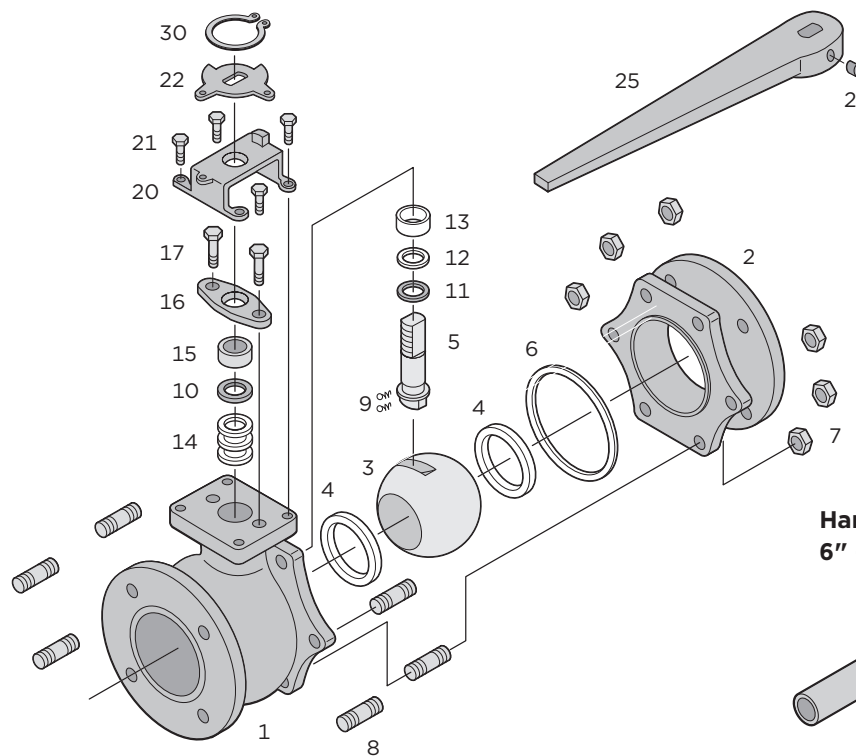
3.0 PARTS IDENTIFICATION

½" - 2" Valves

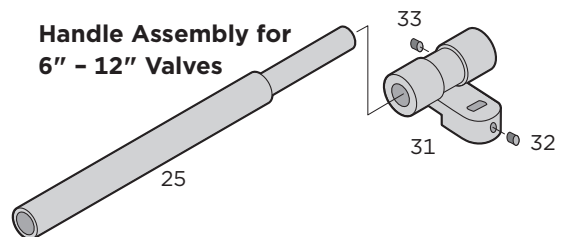


ITEM	NAME
1	Body
2	End Cap
3	Ball
4	Seat
5	Stem
6	Body Seal
7	Body Nut
8	Body Stud
9	Anti-Static Device
10	Packing Protector
11	Thrust Washer Protector
12	Thrust Washer
13	Stem Bearing
14	Stem Packing
15	Packing Gland
16	Packing Follower
17	Gland Bolt
18	Belleville Washer
19	Tab Lock Washer
20	Travel Stop Housing
21	Housing Bolt
22	Travel Stop
23	Travel Stop Sleeve
24	Travel Stop Bolt
25	Handle
26	Lock Nut
27	Handle Set Screw
28	Handle Sleeve
29	Locking Device
30	Snap Ring
31	Pipe Handle Junction
32	Stem bolt
33	Handle bolt

2½" - 12" Valves



SIZE RANGE	HANDLE STYLE
½" - 2"	Bent plate handle
2½" - 4"	Cast style handle
6" - 12"	Pipe style handle

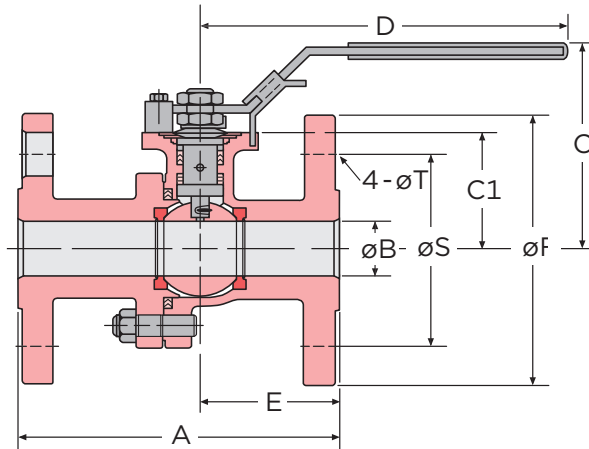


FLOW-TEK SERIES F15/F30 2 PIECE FLANGED FULL PORT BALL VALVES

Installation, Operation, and Maintenance Manual

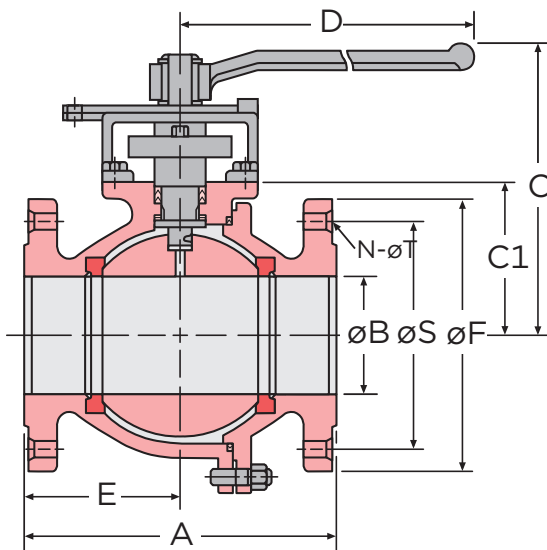


4.0 SECTION VIEWS



SECTION VIEW 1/2" - 2" VALVES

Dimensions may be found in product literature.



SECTION VIEW 2-1/2" - 12" VALVES

5.0 GENERAL INFORMATION FOR ON-SITE INSTALLATION

The valve may be installed in any orientation on the pipeline and should be installed in the full open position

Before installing the valves, the pipes must be flushed clean of dirt, burrs, and welding residues, or the seats and ball surface will be damaged. If for any reason the valve is installed prior to flushing of the piping system, the valve must remain in the full open position until the piping system has been fully flushed clean of debris.

For hydrostatic testing of the piping system, the valves must be placed in the half open position prior to pressurizing the system. If the valve is installed in a dead-end position on the piping, the valve must be placed in the half open position and equipped with a blind flange prior to pressurizing the system.



NOTICE

Hydrostatic system testing with the valve in the closed position may result in damage to the valve seats, affecting their ability to create a proper seal. Failure to implement the installation and testing instructions as outlined, resulting in a valve failure, will void the warranty coverage of the product.

5.1 Use

The valve should be maintained as part of a preventative maintenance program and in accordance with manufacturer's recommended pressure, temperature and corrosion limits to insure a long service life. During shipment, storage, and in operation, the valve should be fully open or fully closed ("open" is preferred for shipping and storage). Do not use in throttling service without investigating flow and pressure conditions.



WARNING

Before installing this equipment, confirm that it is suitable for the intended service.

The identifications tags describe the maximum allowable service conditions for this product.

Be sure that the installation is protected by appropriate pressure control and safety devices to insure that acceptable limits are not exceeded.

6.0 SAFETY TIPS AND WARNINGS

1. Before installation confirm that valve is suitable for the intended service.
2. Make sure that line is depressurized and drains are open/monitored during installation.
3. Before working on valve being in service make sure that service media has been flushed and line is safe. Make sure that all applicable MSDS sheets are available. Follow all safety related procedures.
4. Before disassembly valve shall be cycled several times to assure there is no pressure trapped in body cavity.
5. During assembly make sure that all threaded connections are safe and have proper engagement.
6. During the pressure test of reassembled valve follow all safety precautions to avoid possible injury. (Use of proper test equipment, correct parts assemblies, follow test procedures.)
7. While line is under pressure DO NOT remove packing gland or any other valve parts.

7.0 SHORT AND LONG-TERM STORAGE

7.1 Short-Term Storage

Short-term storage is defined as storage of products and equipment to be used in the construction of a project for periods of one to three months. Short-term storage must be carried out in a controlled manner as follows:

1. Valves must be stored in a closed, clean, and dry environment.
2. Ball valves should be stored in the fully open position to protect the ball and seats.
3. Ball valves should remain in the original shipping container and be placed on pallets of wood or other suitable materials. End protectors should remain on the valve ends to prevent the entrance of dirt, and removed only at time of installation.

7.2 Long-Term Storage

Long-term storage is defined as storage of products and/or equipment for periods longer than 3 months. Long-term storage must be carried out in a controlled manner as follows:

1. Valves must be stored in a closed, clean, and dry environment.
2. Ball valves should be stored in the fully open position to protect the ball and seats.
3. Ball valves should remain in the original shipping container and be placed on pallets of wood or other suitable materials. End protectors should remain on the valve ends to prevent the entrance of dirt, and removed only at time of installation.
4. Periodically, the valves should be checked to ensure the above conditions are maintained.

These are general guidelines for valve storage. Please consult the factory for information regarding specific requirements.

8.0 OPERATION

Operation of the valve is done by turning the handle a 1/4 turn (90 degree turn). clockwise (CW) to close, counter clockwise (CCW) to open.

8.1 Valve Open Position

The handle is parallel with the pipeline.

8.2 Valve in closed Position

The handle is perpendicular to the pipeline.

Valves with actuators should be checked for actuator -valve alignment. Misalignment will result in high operational torque and damage to valve stem and seals.

9.0 STEM SEAL ADJUSTMENT

Stem seal leakage may be corrected without disassembly by tightening the packing nut / gland bolts until such leakage stops. If the leakage continues or valve operating torque becomes excessive, the seals are worn and replacement will be necessary.

For 1/2"- 2", if slight leakage is noted at stem, straighten lock washer tab, tighten packing nut to flatten Belleville Washers, back packing nut off 1/4 turn, secure lock washer tab. For standard valve trims, see Table 1 for recommended assembly torque values. For Fugitive Emissions or API 608 qualified trims, see Table 3 for recommended assembly torque values.

For sizes larger than 2", simply tighten gland bolts evenly until leak stops. Do not over tighten. For standard valve trims, see Table 2 for recommended assembly torque values. For Fugitive Emissions or API 608 qualified trims, see Table 4 for recommended assembly torque values.



WARNING

DO NOT remove packing gland or any other valve parts while line is under pressure!

Table 1 -Packing Nut Assembly Torque

Valve Size NPS	Recommended Torque lbs-in	Valve Size DN	Recommended Torque N m
1/2	53	15	6
3/4	53	20	6
1	53	25	6
1-1/2	132	40	15
2	132	50	15

Table 2 - Gland Bolt Assembly Torque

Valve Size NPS	Recommended Torque lbs-in	Valve Size DN	Recommended Torque N m
2-1/2	89	65	10
3	89	80	10
4	89	100	10
6	106	150	12
8	106	200	12
10	124	250	14
12	124	300	14

FLOW-TEK SERIES F15/F30 2 PIECE FLANGED FULL PORT BALL VALVES

Installation, Operation, and Maintenance Manual



Table 3 - Packing Nut Assembly Torque - Fugitive Emissions & API 608 Trim

Valve Size NPS	Recommended Torque (lbs-in)		Valve Size DN	Recommended Torque (N m)	
	Combination Packing	Standard Packing (Graphite, RPTFE)		Combination Packing	Standard Packing (Graphite, RPTFE)
1/2		53	15		6
3/4		53	20		6
1		80	25		9
1-1/2		160	40		18
2		160	50		18

Table 4 - Gland Bolt Assembly Torque - Fugitive Emissions & API 608 Trim

Valve Size NPS	Recommended Torque (lbs-in)		Valve Size DN	Recommended Torque (N m)	
	Combination Packing	Standard Packing (Graphite, RPTFE)		Combination Packing	Standard Packing (Graphite, RPTFE)
2-1/2	200	175	65	22.5	20
3	200	175	80	22.5	20
4	200	175	100	22.5	20
6		360	150		41
8		360	200		41
10	Consult Engineering		250	Consult Engineering	
12	Consult Engineering		300	Consult Engineering	

FLOW-TEK SERIES F15/F30 2 PIECE FLANGED FULL PORT BALL VALVES

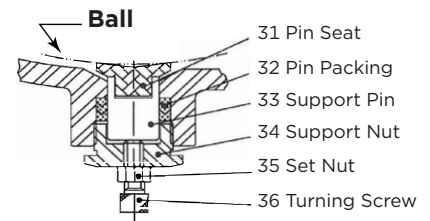
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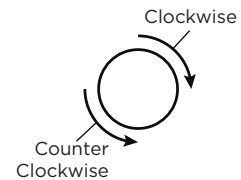
10.0 BALL SUPPORT PACKING ADJUSTMENT

Ball Support packing adjustment may be required in the rare event that the pin packing develops a leak. The below instructions should be followed in the event of a leak to adjust the packing. Note that the position of the ball support comes pre-set from the factory. Adjustment of the pin seat position may only be required if the ball support components have been replaced.

1. Loosen the set nut (35) on the tuning screw (36) by turning the nut counter-clockwise while holding the screw stationary with an open end wrench.
2. With the set nut (35) loose, turn the support nut (34) clockwise to compress pin packing (32) as necessary to stop leakage of line media around support nut threads.
3. Using finger pressure only, rotate the tuning screw (36) in the clockwise direction until resistance is felt from the support pin seat (31) contacting the ball surface. Then, rotate the tuning screw (36) 1/4 turn in the counter-clockwise direction.
4. Lock the tuning screw (36) in position with the set nut (35) by holding the tuning screw (36) head stationary with an open end wrench while firmly tightening the set nut (35) in the clockwise direction.



Ball Support



11.0 DISASSEMBLY AND CLEANING PROCEDURE



CAUTION

Line must be depressurized before disassembly. Valve should be cycled to assure there is no pressure trapped in valve cavity. Ball valves can trap pressurized media when closed. Flush line with valve in the half open position to remove hazardous media.

If the valve has been used to control hazardous media, it must be decontaminated before disassembly.

It is recommended that the following steps be taken for safe removal and assembly.

As shipped from the factory, valves contain silicone based lubricant. This is for break-in and may be removed by disassembly and solvent washing, if it is objectionable for a particular application.

12.0 DISASSEMBLY FOR STEM AND SEAL REMOVAL

Remove flange bolts and nuts and lift valve from line for servicing.

NOTE: Care should be taken to avoid scratching or damaging serrated flange face. These valves are heavy!

They should be adequately supported before removal from the line is begun.

Loosen handle set screw and remove handle and stop plate. Next, remove gland nuts, gland flange and gland.

Remove body end nuts, using proper wrench size. Lift off body end. One seat should come out with body end.

Remove body seal.

To take out the ball, rotate stem so ball is in fully closed position. Lift ball from body, using a strap and lift device, if necessary.

NOTE: Extreme caution should be taken to avoid damage to the ball.

Take out other seat.

Stem must be removed from inside the body - a tap on the top of the stem should loosen it. The thrust washer should come out with the stem. Then remove the stem packing.

13.0 VISUAL INSPECTION

Clean and inspect metal parts. It is not necessary to replace the ball and stem unless the seating surfaces have been damaged by abrasion or corrosion. We strongly recommend replacement of all soft parts whenever the valve is disassembled for reconditioning to protect against subsequent leakage after valve reassembly.

NOTE: The valve may be assembled and operated dry where no lubricants are allowed in the system; however, a light lubrication of mating parts will aid in assembly and reduce initial operating torque. Lubricant used must be compatible with the intended line fluid.

14.0 ASSEMBLY

Install one seat in the body seat cavity with the spherical curvature facing the ball.

Install thrust washer on stem and slide the stem up through the body. Install packing and packing gland with packing gland bolt. Torque the packing gland nut with recommended values from **Table 1-4**, accordingly (page11/12).

Install stop plate, handle and handle retainer nut.

Turn the handle CW to the CLOSED position. Line up the ball slot with the stem tang and slide the ball into position. For V-control valves, insert V-ball with V opening facing assembled seat in point 1. V cut in the ball should be on downstream side (body) seat following flow arrow marked on the body. Turn the handle CCW to the OPEN position to hold the ball in place.

Install the remaining seat into end cap seat pocket.

Put body seal gasket into shoulder counter bore at flange in valve body.

Put end cap back into body and line up end flange. Because the body flange bolt pattern is different from the line flange bolt pattern, it is possible to assemble the valve which the bolt holes in the line flanges don't line up. Be certain to align end flanges bolt holes to straddle valve center lines.

NOTE: Be careful not to damage body seal when assembling end into body.

Install body nuts and tighten in a crossing pattern to the torque specified in **Table 5**.

TABLE 5 - Body Nut Torque

Valve Size	Recommended Torque lb-in		Valve Size	Recommended Torque N m	
	F15	F30		DN	F15	F30
1/2	140	140	15	16	16
3/4	140	140	20	16	16
1	210	210	25	24	24
1-1/2	550	550	40	62	62
2	550	550	50	62	62
2-1/2	550	550	65	62	62
3	550	1000	80	62	113
4	550	1000	100	62	113
6	1000	1000	150	113	113
8	1000	1450	200	113	164
10	1450	2400	250	164	271
12	1450	3600	300	164	407

Assembly - Continued



WARNING

Extreme care must be exercised during adjustment of body stud nuts to make sure that body studs are fully engaged. There should be at least one stud thread exposed beyond the flange on the body side and beyond the nut on the cap side.

Cycle the valve slowly, with a gentle back and forth motion, to build gradually to the full quarter turn. By cycling slowly, the seat lips will assume a permanent seal shape against the ball. A fast turning motion, at this point, may cut the seats before they have a chance to form the proper seal.

Test valve, if possible, prior to placing valve back into line position.



WARNING

If not properly secured, the valve can become separated from the pressure source, resulting in possible injury. Always join the valve to flanges of the same pressure rating and secure with a full set of flange bolts.

TEST AS FOLLOWS

1. Apply test flange to the valve with full set of flange bolts and a suitable gasket. Orient the valve with the bore in the vertical position and the seat being tested facing up
2. Introduce 50 to 100 psig air. Partially cycle the valve, under pressure, and then slowly close to make sure the cavity is pressurized (use hearing protection). Pour water into the upper port to cover the ball and visually check for bubbles. If bubbles appear, pour the water out, cycle the valve several times and recheck. To check for leakage in the other port, reverse the valve and introduce air pressure to the port just checked.
3. Check stem seal at this time by coating the gland area with a soapy water solution. If leakage occurs, tighten stem seal just until leakage stops.

15.0 RETURN MERCHANDISE AUTHORIZATION

All products that are returned require a Return Merchandise Authorization (RMA). Contact a Bray representative for instructions and RMA forms to be completed prior to return of any product.

The following information must be provided when submitting RMA.

- > Serial number
- > Part number
- > Month and year of manufacture
- > Actuator specifics
- > Application
- > Media
- > Operating temperature
- > Operating pressure
- > Total estimated cycles (since last installation or repair)

NOTE: Product information is provided on identification tag attached to device.



NOTICE

Materials must be cleaned and sanitized prior to return. MSDS sheets and Declaration of Decontamination are required.

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

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HEADQUARTERS

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