Henry Pratt Company

INSTRUCTION MANUAL

RECTANGULAR BUTTERFLY VALVE
3-SIDED SEAT

INTRODUCTION

The Pratt Rectangular Butterfly Valves feature an adjustable rubber seat located in a rigid body structure. The disc or vane rotates ¼ turn to provide full flow or tight shutoff. The construction of your Pratt Butterfly valve is rugged, but a reasonable amount of care in installation and handling is suggested to ensure long service life.

The valve flow direction in some instances is specified on the general arrangement drawings furnished with the order. If flow direction is not specified, it may be helpful to locate the seat adjusting bolts downstream so that the seat can be easily adjusted while the valve is under pressure.

It is important to handle the valve with care to prevent dropping or jarring, which can damage or break parts. Handle the valve using slings around the valve body or bolts through the flange holes. Larger valves may be equipped with lifting eyes for slings or chains.

FIGURE 1

DISCUSSION OF OPERATION

Flow control is achieved by rotating the valve disc 90 degrees from the full open to full closed position. At the fully closed position, the stainless steel disc edge interferes with a rubber seat in the body and is drop tight.

Movement and positioning of the disc is accomplished through the valve actuator. The valve seat and actuator have been set and tested at the factory. However, during shipment, some settings may be disrupted which may require readjustment in the field.

DISCUSSION OF MAINTENANCE

The basic plain stem valve requires no periodic maintenance as the bearings are a permanently lubricated material. Depending on usage, the only components which may require adjustment or replacement is the rubber seat (11).

SEAT ADJUSTMENT

If after a period of usage the valve rubber seat (11) shows signs of leakage, adjustment of the seat bolts (12) can be made which moves the rubber seat (11) toward the disc edge. Turn screws adjacent to leak in ¼ turn increments until leakage stops.

SEAT REPLACEMENT

If for some reason the rubber seat (11) is damaged requiring total replacement, the following steps are required. Prior to removal of seat retainer bars (8) , (9), and (10), match mark all pieces.

Remove all adjusting bolts (12) and seat retainer bars (8), (9), and (10). Remove rubber seat (11). With the valve disc in the open position, lay the new rubber seat (11) in its proper location in the seat clamp segments (5), (6), and (7). From the back side of the seat clamp segments (5), (6), and (7) mark the location of the adjusting screw holes. Remove the new rubber seat (11) and drill or punch cut new 5/8” to 11/16” diameter holes at the marked locations.

Insert the drilled rubber seat (11) in the seat clamp segments (5), (6), and (7). Place the seat retainer bars (8), (9), and (10) against the rubber seat (11) apply RTV (13) to segment adjusting bolts (12) and insert. Position the valve disc (2) to the closed position and turn the segment adjusting bolts (12) until the rubber seat just touches the disc edge. This should be done evenly around the periphery of the seat.

After the rubber seat (11) has been adjusted to touch the disc edge, turn each segment adjusting bolt (12) one full turn. This method of adjustment should provide a drop tight assembly. If any local leakage occurs under pressure, local adjustment of the seat segment bolts can be used to stop and isolate leakage.

THRUST BEARING ADJUSTMENT

If after valve installation or seat replacement a gap is detected at the top or bottom of the valve, a thrust bearing adjustment is needed. Loosen the thrust bearing lock nuts (18) and uniformly adjust the lower nuts (18) to raise or lower the valve disc (2) until uniform seat compression is obtained.

HOW TO ORDER PARTS AND SERVICE

To obtain further information or order parts for your Pratt valve, contact your local representative or the factory.

Henry Pratt Company
401 S. Highland Avenue
Aurora, IL 60506-5593
Phone 630-844-4000
Fax 630-844-4191

To assist in providing prompt assistance, please provide the following items of information (see nameplate or submittal drawings).

Valve Size and Type
Serial No.
Pratt Order No.

SAFETY INSTRUCTIONS

Warning

This valve assembly is a pressure vessel and can release pressure and flow during operation. All personnel and equipment must be removed from flow area before operation.

Warning

Removal of the actuator while the valve is under pressure or flow may cause the valve to rapidly rotate and cause bodily damage.

Caution

The actuator is sized for the operating conditions shown on the valve nameplate. Do not exceed listed conditions or damage may occur.

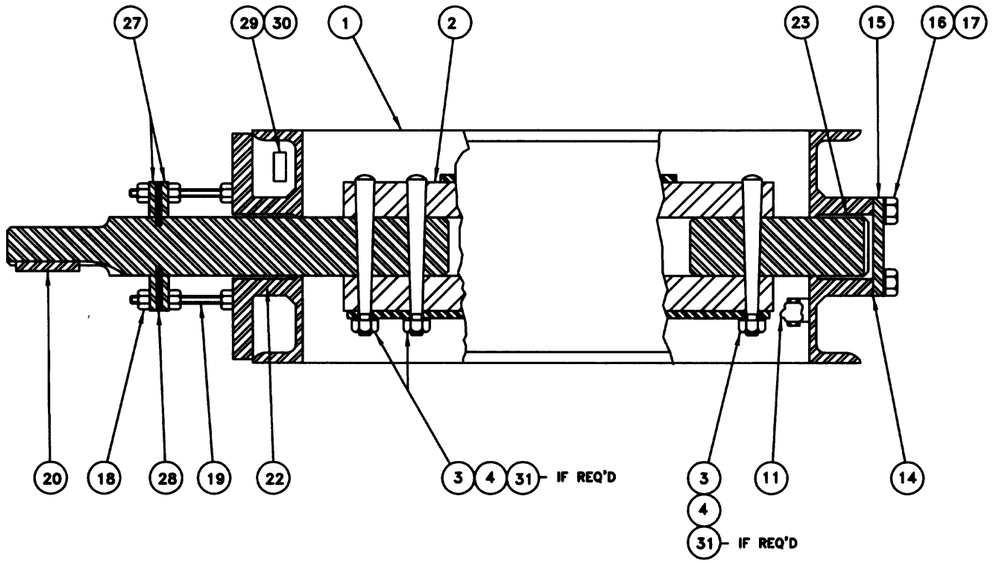
TROUBLESHOOTING GUIDE

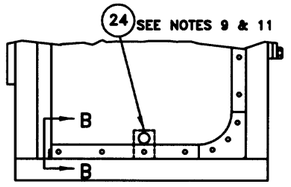
PROBLEM	CAUSES	REMEDIES
Leakage between valve and actuator	Packing leak	Clean packing bore and replace packing
Bottom trunnion leaks	Packing or gasket	Replace bottom shaft packing, o-ring or gasket
Valve leaks when closed	• Disc not fully closed or past fully closed • Disc edge wear or damage • Rubber seat wear or damage • Loose debris in valve	• Adjust actuator closed position stop • Clean and/or repair disc edge • Adjust or replace valve seat • Cycle valve five times to flush out debris
Valve hard to operate	• Foreign material in valve • Corroded operator parts • Loose actuator	• Remove obstructions • Clean and grease actuator

PARTS LIST:

RECTANGULAR BUTTERFLY VALVE DRAWING C-4601

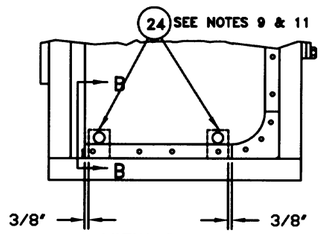
Item	Qty	Description
1	1	Body Frame
2	1	Disc
3	3	Taper Pin
4	3	Hex Nut
5	4	Clamp Segment (corners)
6	2	Clamp Segment (top & bottom)
7	2	Clamp Segment (sides)
8	4	Retainer Bar (corners)
9	2	Retainer Bar (top & bottom)
10	2	Retainer Bar (sides)
11	1	Rubber Seat
12	A/R	Seat Bolt
13	A/R	RTV
14	1	Bottom Cover Gasket
15	1	Bottom Cover
16	4	Hex Head Bolt
17	4	Lockwasher
18	4	Hex Nut
19	4	Stud
20	1	Key
21	2	Seat Retainer
22	1	Top Shaft Bearing
23	1	Bottom Shaft Bearing
24	2	Disc Stop Block
25	2	Stop Bolt
26	2	Hex Nut
27	2	Thrust Bearing Plate
28	1	Thrust Bearing
29	1	Nameplate
30	1	Adhesive
31	A/R	Pipe Compound – Loctite PST





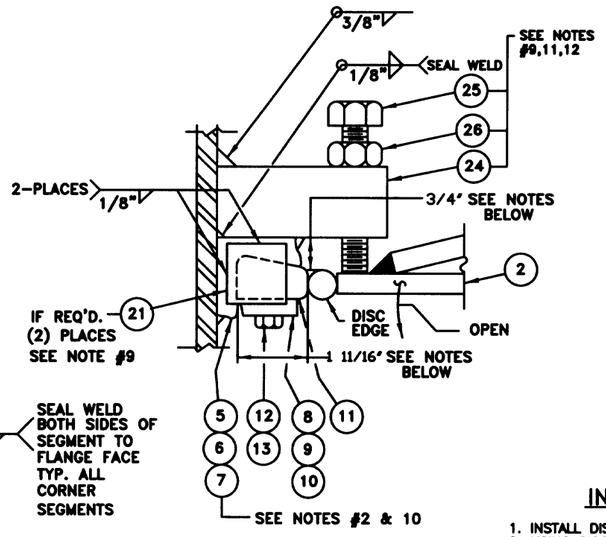
VIEW 1

48" HIGH VALVES AND SMALLER



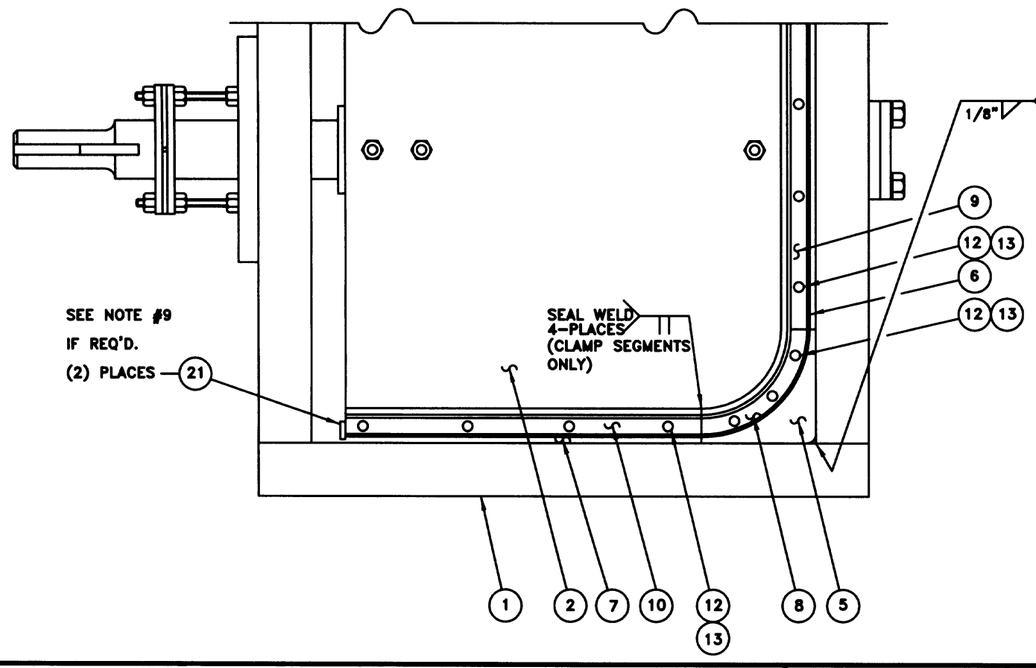
VIEW 2

VALVES OVER 48" HIGH



SECTION B-B

SEAT,SEGMENT & DISC STOP



NOTES:

MACHINE TOLERANCES

UNLESS OTHERWISE SPECIFIED:
FRACTIONAL DIMENSIONS +/- 1/64
DECIMAL DIMENSIONS +/- .005
ALL ANGLES +/- 1°
DIAMETERS ON COMMON CENTERLINE ARE TO BE CONCENTRIC WITHIN .010 T.I.R.
MAX. SURFACE ROUGHNESS 125 R.M.S.
REMOVE ALL BURRS AND BREAK ALL SHARP CORNERS

CASTING TOLERANCES

UNLESS OTHERWISE SPECIFIED:
MAX ALLOWABLE TOL. PER DIMENSIONAL RANGE

0 THRU 6	6 THRU 16	16 THRU 60	ABOVE 60
+/-1/16	+/-1/8	+/-3/16	+/-1/4.

MAX ALLOWABLE DRAFT 2°
MAX ALLOWABLE SHIFT
CASTING TO BE FLAT WITHIN
ALL RADII TO BE ___
REMOVE ALL FINS AND FLASH
PATTERN NO. TO BE SAME AS PART NO.
LATEST REVISION NO. TO BE CAST BELOW PATTERN NO.
PRATT SPECIFICATION C.A.S.T. LATEST REVISION IS PART OF THIS DRAWING.
x INDICATES THIS SURFACE TO BE MACHINED
FRACTIONAL DIMENSIONS LISTED WITH THIS SYMBOL DENOTE THE NOMINAL MATERIAL ALLOWANCE FOR MACHINING. THIS DOES NOT INCLUDE CASTING TOLERANCES.

INSTALLATION PROCEDURE

1. INSTALL DISC IN VALVE AND CENTER WITH THRUST BEARING.
2. USING DISC EDGE AS A REFERENCE POINT, INSTALL CLAMP SEGMENTS (ITEMS 5, 6, & 7) PER SECTION B-B, AND SEAL WELD CORNER CLAMP SEGMENTS TO STRAIGHT CLAMP SEGMENTS (SEE DRAWING). IT IS IMPORTANT THAT THE DISC BE IN IT'S FULLY CLOSED POSITION WHEN INSTALLING CLAMP SEGMENTS. SEE NOTE #9 BEFORE PROCEEDING WITH INSTALLATION OF SEAT (ITEM 11)
3. TAKE SEAT (ITEM 11), PLACE INTO CLAMP SEGMENTS (ITEMS 5, 6, & 7). THEN SCRIBE SEAT, CUT TO LENGTH & SPLICE.
4. MARK BOLT HOLES ON SEAT (ITEM 11) USING TAPPED HOLES IN CLAMP SEGMENTS (ITEMS 5, 6, & 7) AS A TEMPLATE.
5. REMOVE SEAT (ITEM 11) FROM CLAMP SEGMENTS (ITEMS 5, 6, & 7) AND DRILL 5/8" TO 11/16" HOLES AS MARKED IN STEP #4.
6. PLACE SEAT (ITEM 11) BACK INTO CLAMP SEGMENTS (ITEMS 5, 6, & 7) AND ATTACH RETAINER BARS (ITEMS 8, 9, & 10) WITH BOLTS (ITEM 12), APPLYING RTV (ITEM 13) TO EACH BOLT (ITEM 12) BEFORE INSERTING.
7. ADJUST SEAT (ITEM 11) TO INSURE PROPER SEAL AND FIT.
8. COMPLETE ASSEMBLY WITH DISC IN VALVE.
9. IF REQUIRED, INSTALL DISC STOP BLOCK (ITEM 24) & RETAINER (ITEM 21) AS SHOWN IN SECTION B-B UPON DETERMINATION OF DISC ROTATION.
10. BEFORE WELDING SEGMENTS (ITEMS 5, 6, & 7) OBSERVE FLANGES -FOR 'SEGMENT SIDE', ORIENTATION MARKINGS IF APPLICABLE.
11. IF THE VALVE HEIGHT IS 48" OR LESS, WELD (ITEM 1) DISC STOP AT THE VALVE CENTERLINE (MIDWAY BETWEEN THE TOP AND BOTTOM CHANNELS) AS SHOWN IN VIEW 1.
12. IF THE VALVE HEIGHT IS OVER 48", WELD (1) DISC STOP 3/8" BELOW TOP TOP OF DISC AND (1) DISC STOP 3/8" ABOVE TOP OF CORNER SEGMENT AS SHOWN IN VIEW 2.

	Date: 08/30/00 Scale: NONE	Parts and Construction Drawing **PLAIN STEM VALVE ASEMBLY FOR 3-SIDED SEAT ON BODY RECTANGULAR VALVE**	Drawing No. C-4601	PRATT