

# 4" 9RET/REL FULL-PORT BOTTOM- OUTLET VALVES (AAR NO. E079011)

## DESCRIPTION

The new 4" 9RET and 9REL flanged ball valves are reduced weight bottom-outlet valves and are available in a wide variety of materials to satisfy most tank car applications.

Specifically designed for tank car applications, the valve ensures fast handling of almost all materials including abrasive slurries and viscous fluids.

This ball valve offers the advantages of quick quarter-turn operation, long service life, and easy cycling.

It is much faster to operate than multi-turn types of valves. In addition, it is easy to cycle even after being set in one position for an extended period.

The valve is optionally available with a full-steam jacket.

## UNIQUE SEALING

The superior performance of Jamesbury® bottom outlet valves is achieved by the unique design of the seat. The flexible-lip PTFE seats exert continuous sealing pressure on the ball. The seat automatically compensates for wear and for changes in temperature and pressure.

In addition, this valve is designed to withstand the demanding service requirements of the railroad industry.

## MATERIALS

The 9RET and 9REL valves are available in carbon steel with 316 stainless steel trim and all 316 stainless steel. Other materials are available for special applications.

## FIRE-TITE® DESIGN

All Jamesbury tank car ball valves have the Fire-Tite design tested to API-607. In the event of a fire resulting in partial or complete destruction of the PTFE seats, a secondary metal sealing surface provides continuous effective shutoff. API 608 compliance to serve refineries and related chemical and petrochemical industries except face to face dimension. Flange connection per AAR specifications.



## FLOW DATA

The 4" 9RET and 4" 9REL have an installed Cv value of 2200. Cv is defined as the flow of water through the valve in U.S. gallons per minute at a pressure drop of 1 psi. This Cv value is an estimate of the installed flow capacity and considers typical inlet losses.

## RATINGS

9RET and 9REL valves are rated for pressures and temperatures well in excess of those that are normally encountered in tank car service. Carbon steel valves are rated from -20°F to +400°F (-29°C to +204°C). 316 stainless steel valves are rated from -60°F to +400°F (-51°C to +204°C). The pressure rating is 285 psi (15.2 bar) at ambient temperature.

## SERVICE

Representative stocks of 9RET and 9REL valves are maintained by Metso's network of authorized stocking distributors located in key industrial areas of the United States and Canada. They will be happy to assist in the selection of the most cost-effective valve for your application. For more information visit our website at [www.metso.com/automation](http://www.metso.com/automation).



**DESCRIPTION – 9REL**

The new *Jamesbury* 9REL low-profile flanged ball valve has been designed specifically for tank car applications. The valve has the same internals as the 9RET, but has a lower profile with a face-to-face dimension of only 4-3/4".

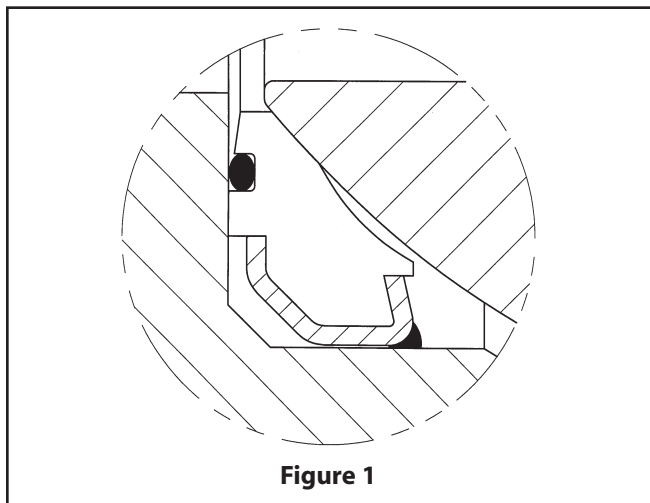
**DESCRIPTION – 9RETS/9RELS**

4" 9RETS and 9RELS valve has been specially engineered to overcome the major problem encountered in handling molten sulfur and similar materials – "freezing" caused by solidification within the valve. The valve is designed to resist the penetration of media into the normal clearances of the valve where it can solidify.

**UNIQUE SEALING**

The 9RETS and 9RELS ball valves for sulphur service are equipped with a special Barrier™ seat, consisting of a filled PTFE seat that is mechanically contained in an outer casing of 316 stainless steel. The drawing below illustrates the Barrier seat. **(Figure 1)** shows the seat contained in the outer casing and the ring seal. This combination of tackweld seat geometry and the ring seal produces a seat with a sealing zone on the back surface that prevents media from entering behind the seat, yet preserves the flexure of the seat.

The 9RETS valve is standard with a full steam jacket.

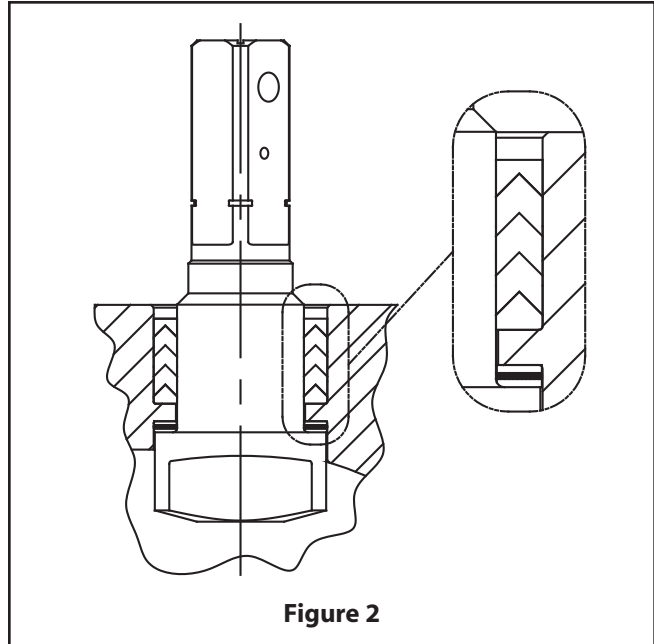


**Figure 1**

**MATERIALS**

9RETS and 9RELS valves are available in carbon steel with 316 stainless steel trim and all 316 stainless steel. Both standard with full steam jacket.

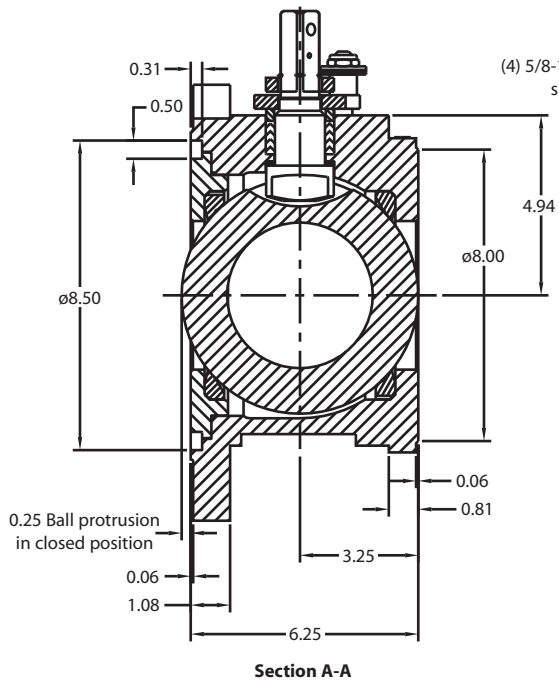
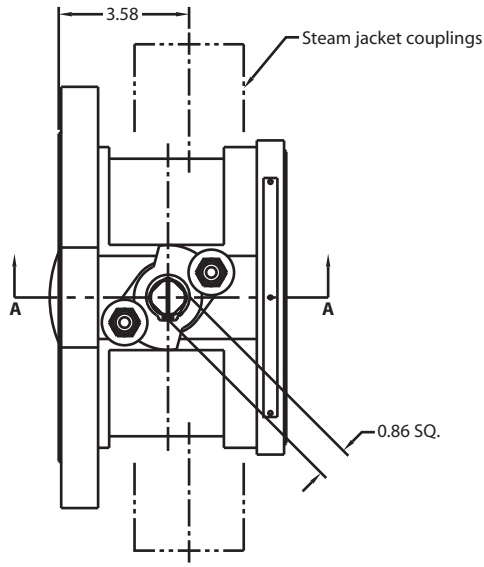
The new stem seal system consists of live-loaded v-ring packing, standard on all *Jamesbury* 9RET and 9REL Bov's.



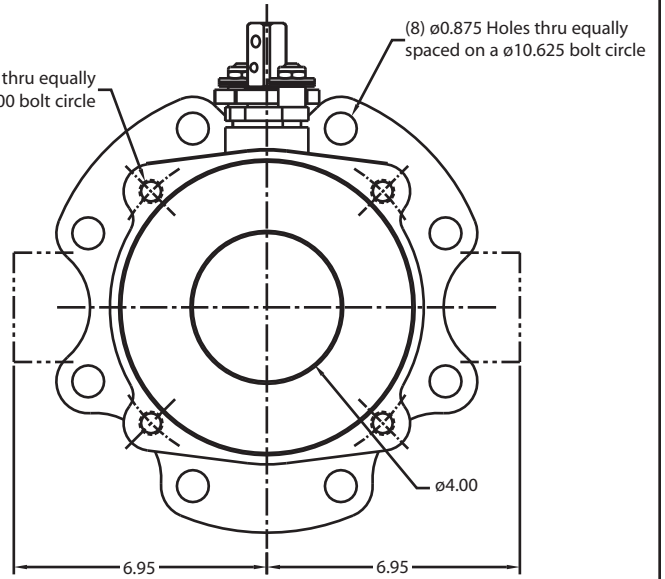
**Figure 2**

### DIMENSIONS

#### 4" 9RET Bottom-Unloading Standard Port Ball Valves - inches

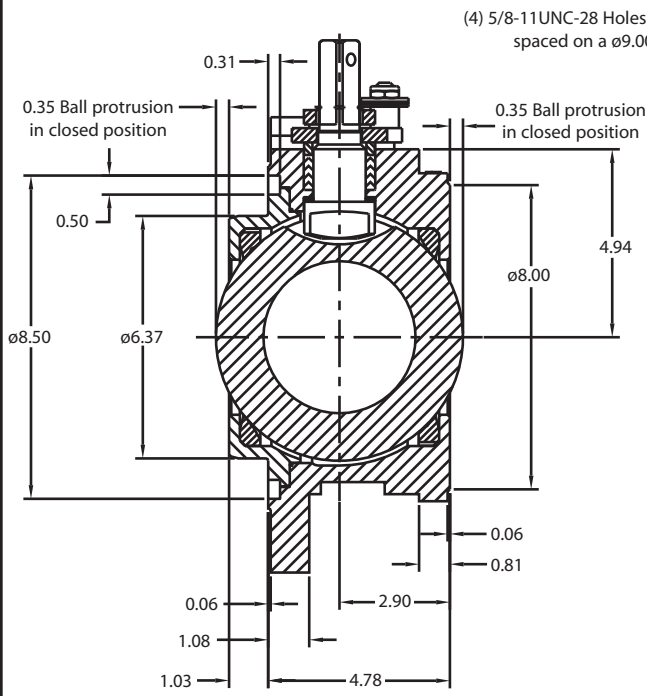
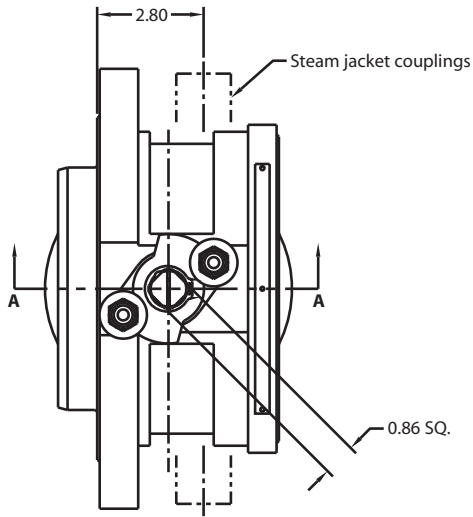


(4) 5/8-11UNC-28 Holes thru equally spaced on a  $\phi 9.000$  bolt circle



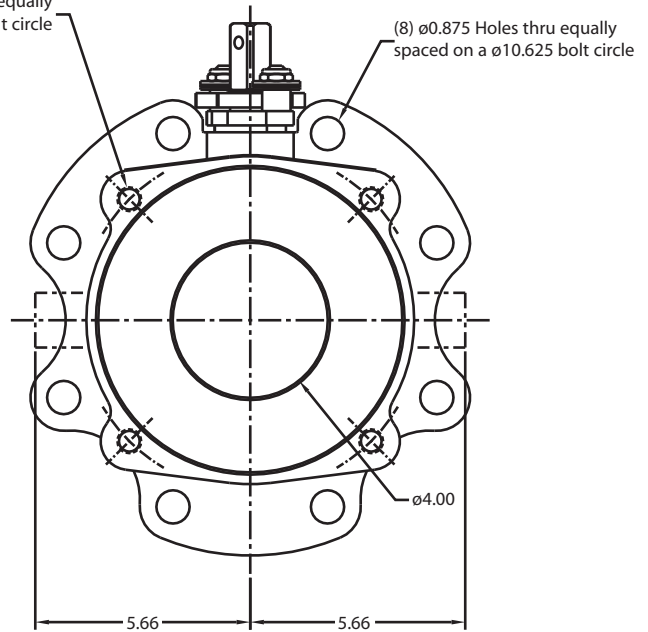
**DIMENSIONS**

**4" 9REL Low-Profile Bottom-Unloading Valves – inches**



**Section A-A**

(4) 5/8-11UNC-28 Holes thru equally spaced on a ø9.000 bolt circle



| <b>BILL OF MATERIALS AND PARTS LIST</b> |                       |  |   |
|---|-----------------------|--|---|
| <b>Part No.</b>                         | <b>Part Name</b>      | <b>Body Material</b>                                       |   |
|   |                       | <b>Carbon Steel with 316 Stainless Steel Trim (22HB)</b>   | <b>316 Stainless Steel (36HB)</b>       |
| 1                                       | Body                  | Carbon steel ASTM A216 Type WCB                            | 316 Stainless steel ASTM A351 Type CF8M |
| 2                                       | Body Insert           | Carbon steel   | 316 Stainless steel                     |
| 3                                       | Ball                  | 316 Stainless steel  |   |
| 4                                       | Stem                  | 17-4 PH Stainless steel                                    |   |
| 5                                       | Seat                  | PTFE or Xtreme® (Metal wrapped filled teflon) <sup>1</sup> |   |
| 6                                       | Body Seal             | PTFE   |   |
| 7                                       | Stem Seals            | PTFE   |   |
| 9                                       | Bonnet Plate          | Stainless steel  |   |
| 10 <sup>2</sup>                         | Locking Nut           | Stainless steel  |   |
| 11                                      | Stem Bearing          | PTFE   |   |
| 12                                      | Indicator Stop        | Carbon steel   | Stainless steel                         |
| 13                                      | Secondary Stem Seal   | Graphite   |   |
| 14                                      | Stop Sleeve           | Stainless Steel  |   |
| 15*                                     | Handle                | Carbon Steel   |   |
| 18                                      | Compression Ring      | Stainless steel  |   |
| 20 <sup>3</sup>                         | Socket Head Cap Screw | Stainless steel  |   |
| 21                                      | Pin                   | Stainless Steel  |   |
| 25                                      | O-Ring <sup>1</sup>   | Viton  |   |
| 26                                      | Set Screw             | Stainless steel  |   |
| 28*                                     | Handle Pin            | Stainless Steel  |   |
| 29                                      | Identification Tag    | Stainless steel  |   |
| 31 <sup>4</sup>                         | Pop Rivet             | Stainless steel  |   |
| 32                                      | Retaining Ring        | Stainless steel  |   |

\* Handle and pin supplied on request.  
 \* Optional trim material offered upon request.  
 1 Barrier™ seat design  
 2 Part #10 on REL/RELS valves is an Elastic Stop Nut. Body material remains the same.  
 3 Part #20 on REL/RELS valves is a Body Insert Cap Screw. Body material remains the same.  
 4 Part #31 on REL/RELS valves is a Drive Screw. Body material remains the same.

## HOW TO ORDER 9RET & 9RETS STANDARD PORT AND 9REL & 9RELS LOW-PROFILE VALVES

To specify Style 9RET & 9RETS Full-Port and 9REL & 9RELS Low-Profile, Bottom-Unloading Valves for Tank Car Applications, choose the appropriate code from each of the boxes shown at right.

**EXAMPLE:** The valve specified above is a 4" 9RET valve with standard construction and options, ASTM A216 body, 316 ball and 17-4 PH stem, and *Xtreme* seats and PTFE seals.

| 1    | 2    | 3 | 4  | 5  | 6  | 7 | 8  |
|------|------|---|----|----|----|---|----|
| 0400 | 9RET | 3 | 22 | HB | XT | A | FO |

| 1    | Size |
|------|------|
| 0400 | 4"   |

| 2    | Style   |
|------|---|
| 9RET | Full Bore, AAR Female Tongue / RR Raised Face, Standard Height, Bottom Outlet Valve |
| 9REL | Full Port, AAR Female Tongue / RR Raised Face, Low Profile, Bottom Outlet Valve     |

| 3 | Construction  |
|---|---|
| 3 | Standard Construction   |
| 4 | Steam Jacket Construction   |
| 5 | Sulphur Service - Steam Jacket w/ Barrier Seats (Use MB Seats Only) |

| 4  | Body Materials     |
|----|--------------------|
| 22 | ASTM A216, Gr.WCB  |
| 36 | ASTM A351, Gr.CF8M |

| 5  | Ball / Stem Material |
|----|----------------------|
| HB | 316 SS / 17-4 PH     |

| 6  | Seat / Seal Material      |
|----|---------------------------|
| TT | PTFE / PTFE               |
| XT | <i>Xtreme</i> / PTFE      |
| MB | MTFE - 316 - Viton / PTFE |

| 7 | Model   |
|---|---------|
| A | Model A |

| 8  | Word Modifiers (Optional Code)              |
|----|---|
| FO | Counter-Clockwise to Close, Handle Rotation |
| -  | Standard                                    |

Subject to change without prior notice.

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