

# PATENTED MODEL ES ROTARY VALVE

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Now Available

Rotary Valve Calculator App



## STANDARD FEATURES:

- ▶ End seal design available for differential pressures up to 75 PSIG
- ▶ Standard design/operating temperature up to 250 F
- ▶ Seal Ring eliminates Axial gas leakage
- ▶ Seal ring available as packing or polymer material
- ▶ Pneumatic cylinder-controlled pressure regulation to the seal ring
- ▶ Single point compressed air inlet for air cylinder operation
- ▶ Patented End Seal features available for Model HC, Model LH and Model SE Rotary Valves

## ENGINEERED TO INCREASE PRODUCTIVITY. BUILT TO LAST.

Young Industries manufactures the Model LH (Low Headroom), Model HC (High Capacity) and Model SE (Side Entry) Rotary Valves with the available option of providing our Patented End Seal features. The End Seal features are selected for those applications where gas leakage from valve inlet to discharge must be as low as possible due to process conditions.

### ROTARY VALVE DIFFERENTIAL PRESSURE LEAKAGE

The rotor in the rotary valve housing rotates at a pre-determined speed (RPM). The rotor is fit into the housing to have close machined clearances from valve body to rotor tips and ends. As the rotor rotates, volumetric leakage equal to the rotor pocket volume is transmitted from the higher-pressure zone to the lower pressure zone. This is referred to as volumetric gas leakage. The volumetric gas leakage is a low percentage of the overall gas leakage.

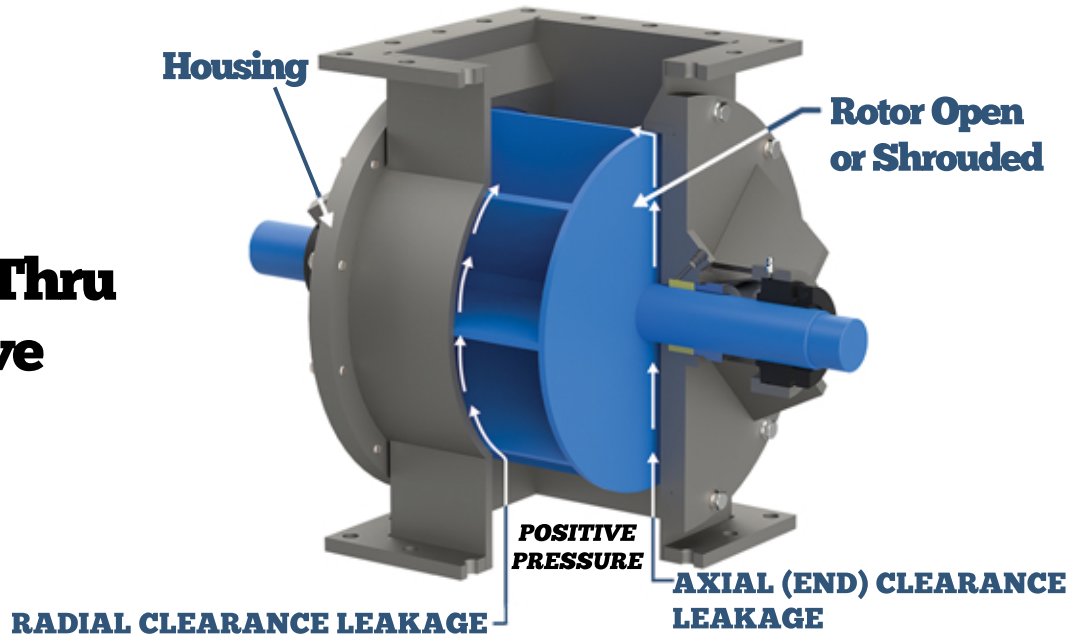
In addition to the volumetric leakage the higher-pressure gas will leak around the radial and axial clearances between the rotor and valve body. This is referred to as clearance leakage. Most of the gas leakage in a Rotary Valve is clearance leakage. Increasing the number of rotor blades and reducing the machined clearances will minimize the differential pressure gas leakage, but will not eliminate it.

**ADVANCED  
TECHNOLOGY  
PROVEN DESIGN**

# MODEL ES ROTARY VALVE

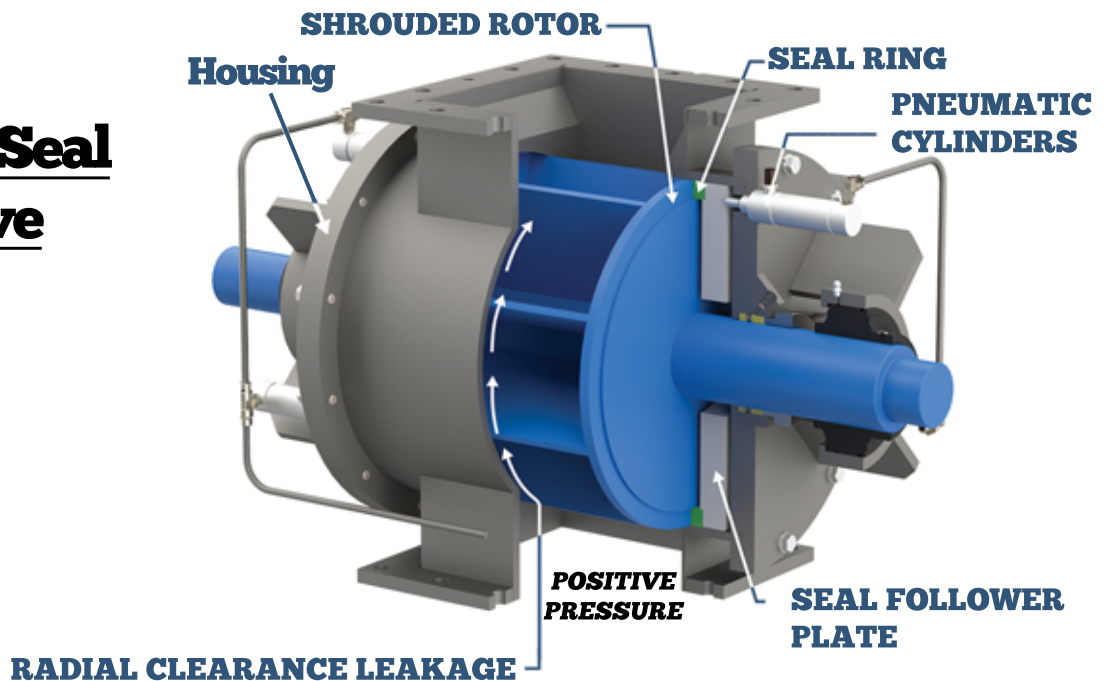
## WHAT IS DIFFERENTIAL PRESSURE LEAKAGE?

### Typical Drop-Thru Rotary Valve



### Patented End Seal Rotary Valve

- ▶ Eliminates Axial Leakage
- ▶ Up To 50% Less Leakage Than a Typical Valve



# MODEL ES ROTARY VALVE

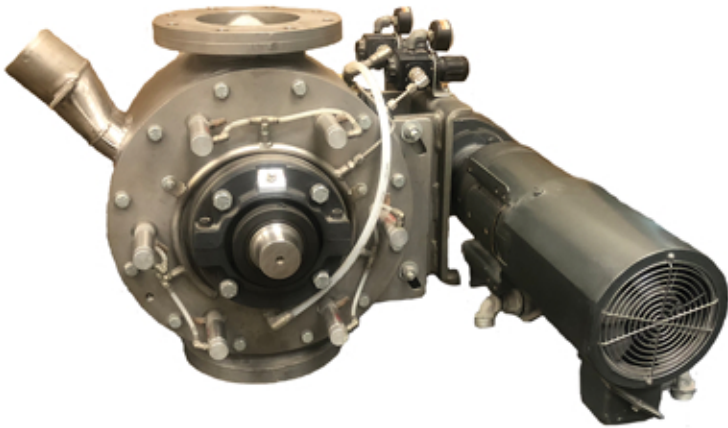
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## END SEAL ROTARY VALVE ADVANTAGE

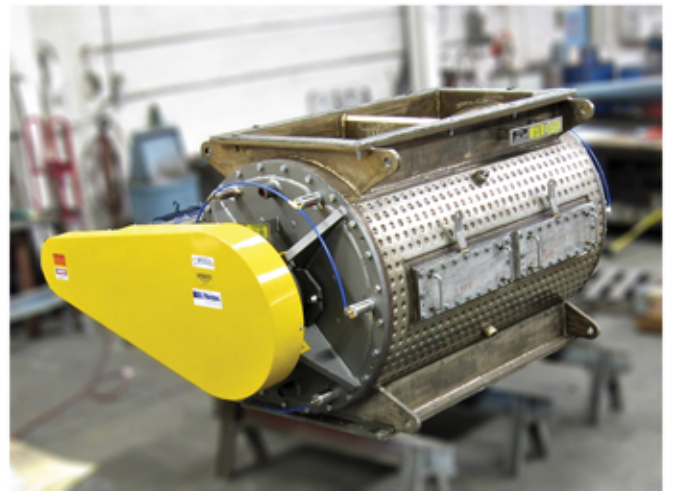
**Young Industries End Seal features eliminate the axial leakage around the ends of the rotor, effectively reducing the leakage from a conventional rotary valve up to 50%.** The End Seal design utilizes a shrouded type rotor. A seal ring is fit tightly to the rotary valve bore and positioned against the rotor shroud. Pneumatic cylinders exert pressure to a seal follower plate that in turn places constant/even pressure against the seal ring. The seal ring closes the clearance gap around the end of the rotor effectively eliminating the axial leakage. Both ends of the valve are fitted with the End Seal features.

The End Seal features are available for Rotary Valves size 4" through 36" and of all types of materials of construction. The type of seal ring is selected based on the application and can be supplied as a packing or polymer ring. The pneumatic cylinders are all pressurized by a common compressed air line that is regulated by a single pressure regulator resulting in uniform constant pressure to the packing seal.

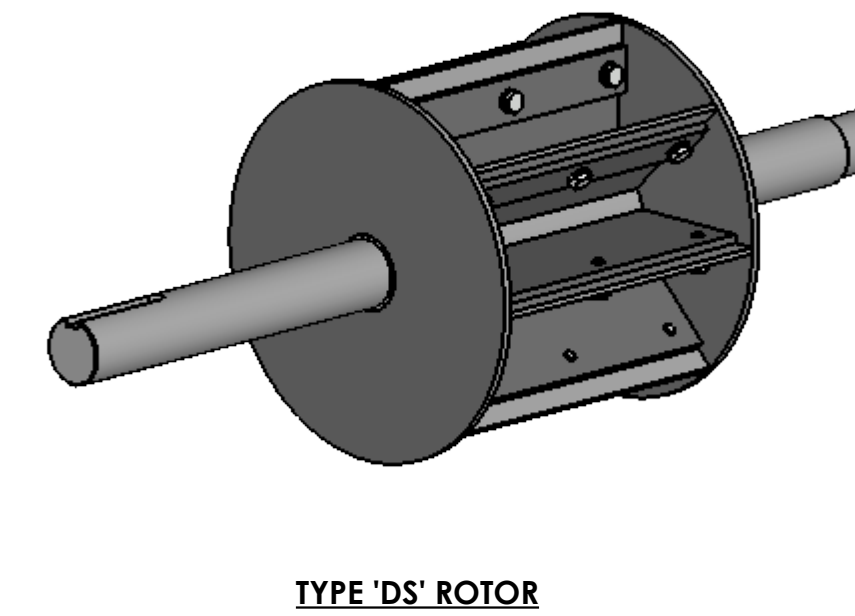
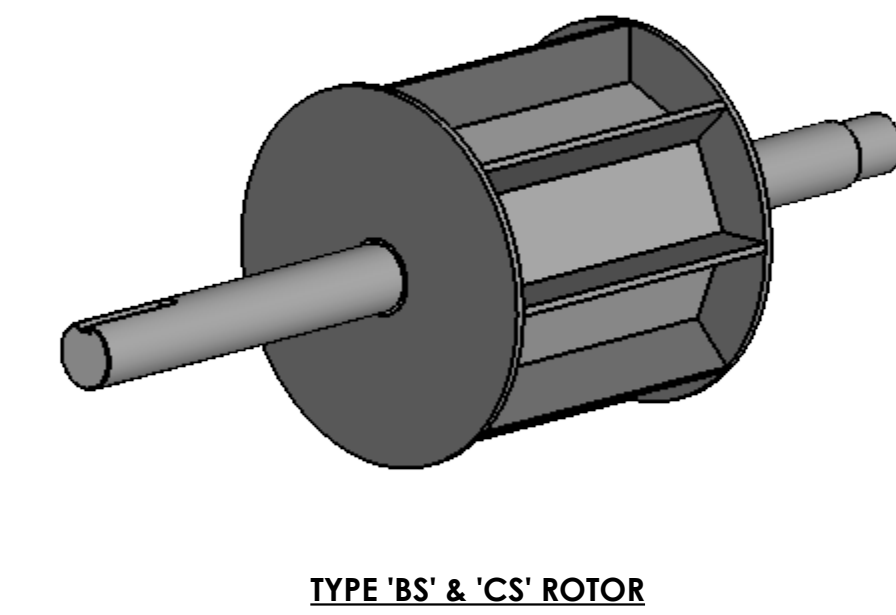
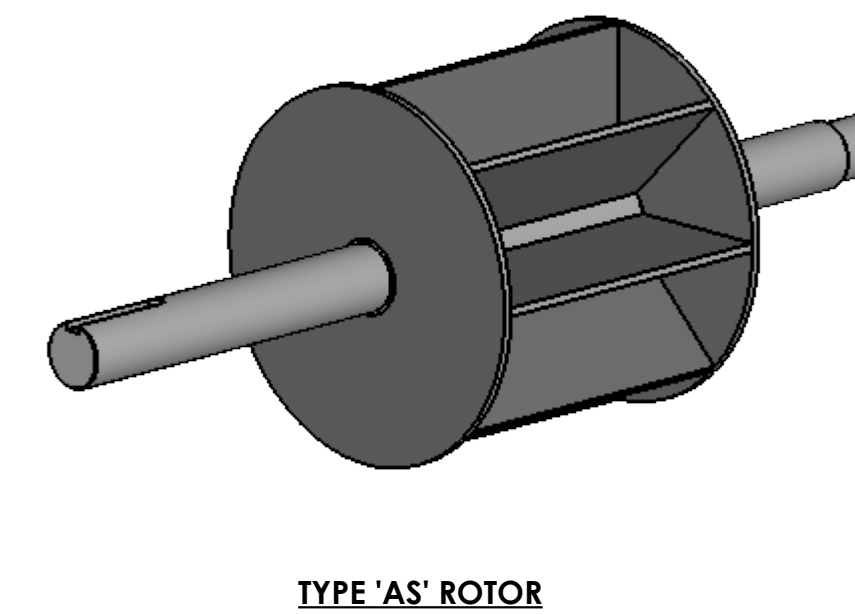
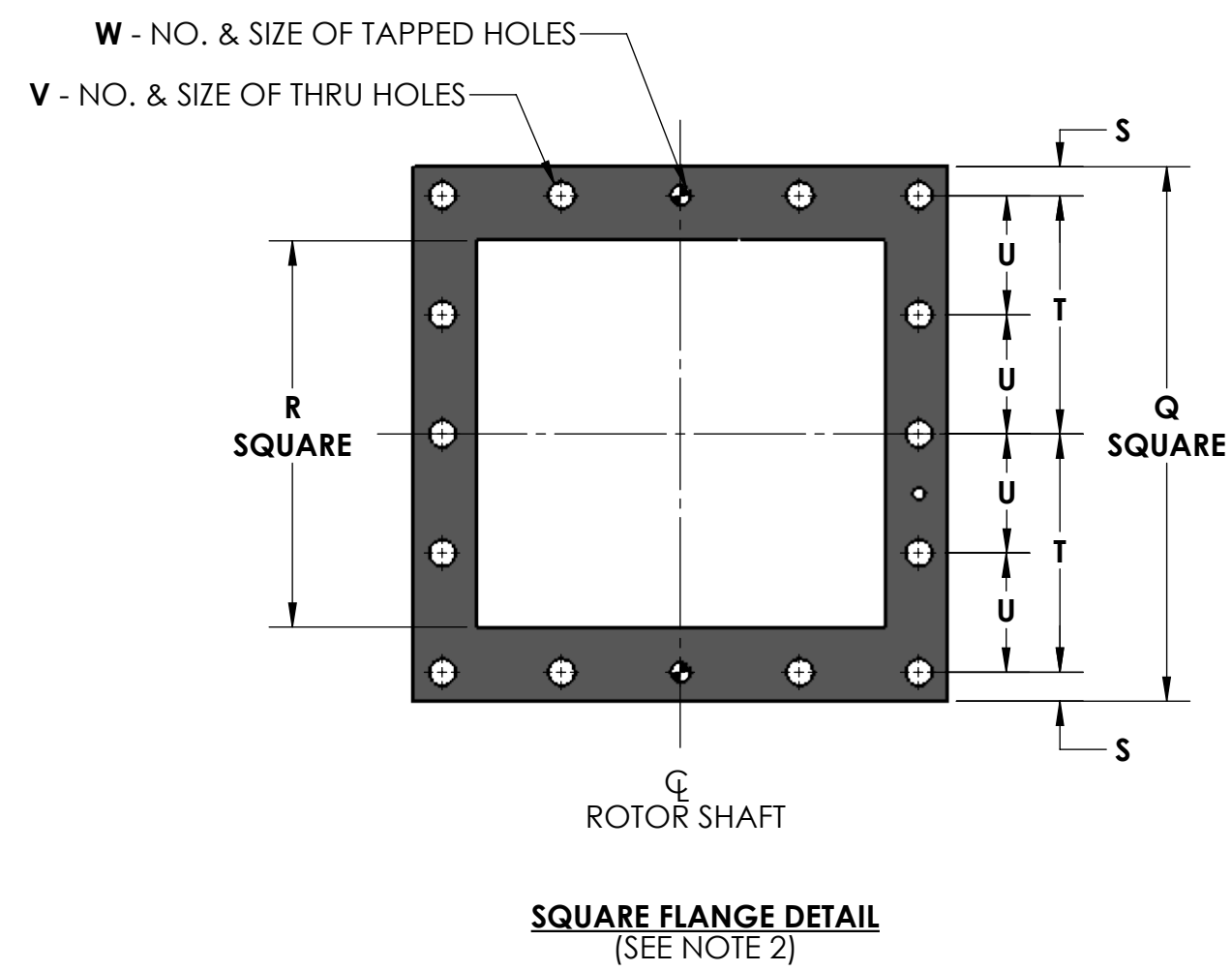
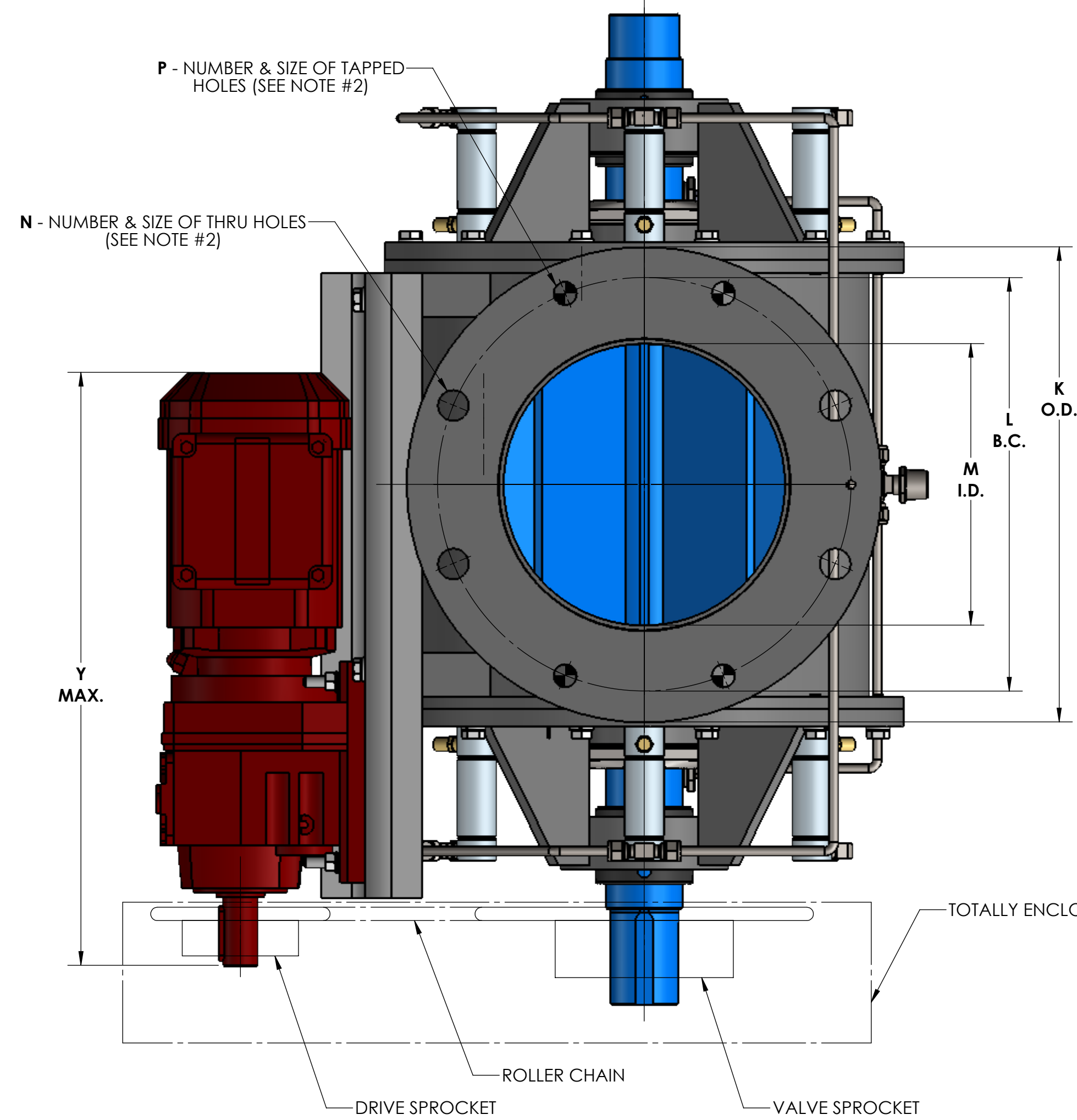
**For applications where the lowest gas leakage is needed,** the Patented End Seal features are available for Young Industries Rotary Valves.



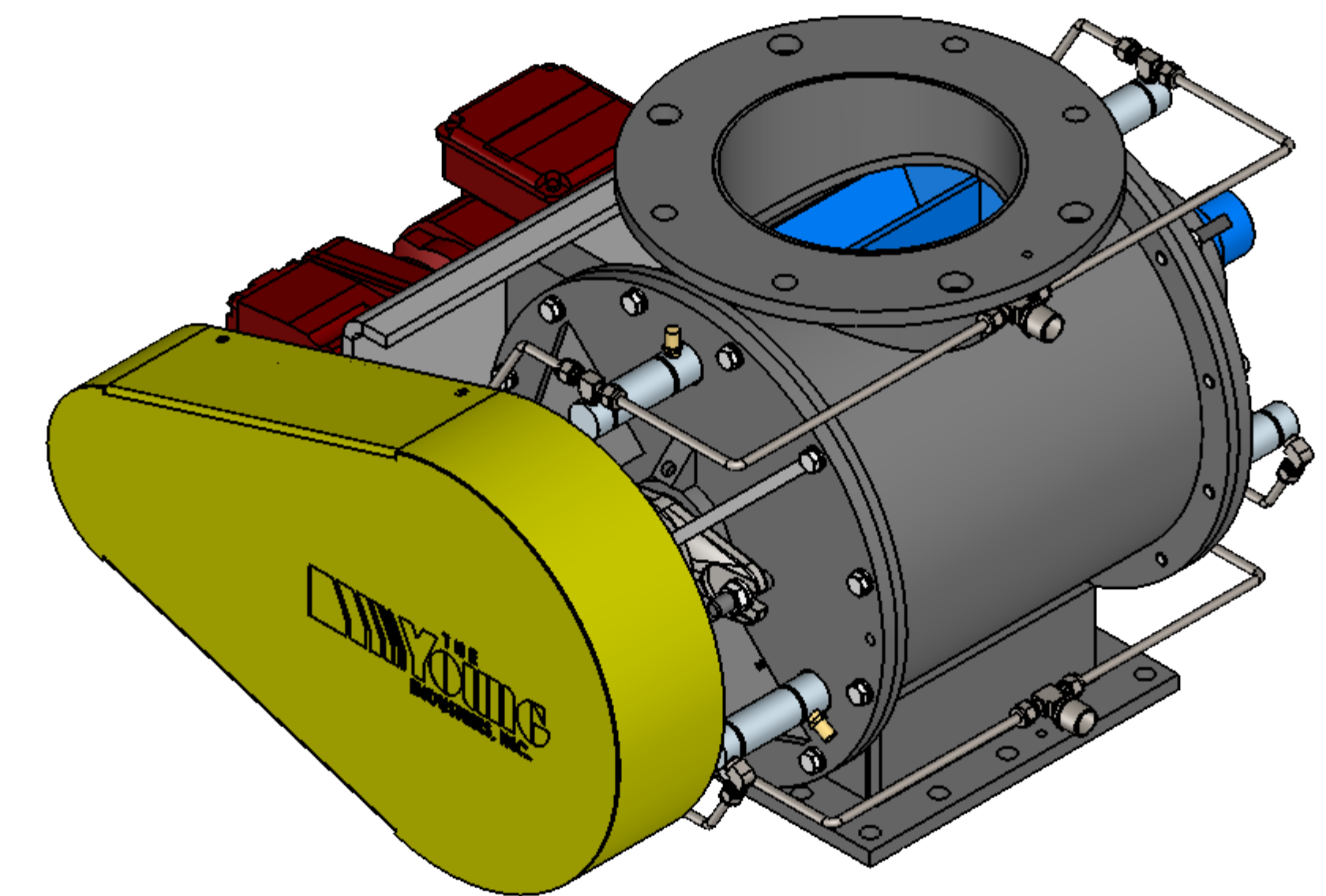
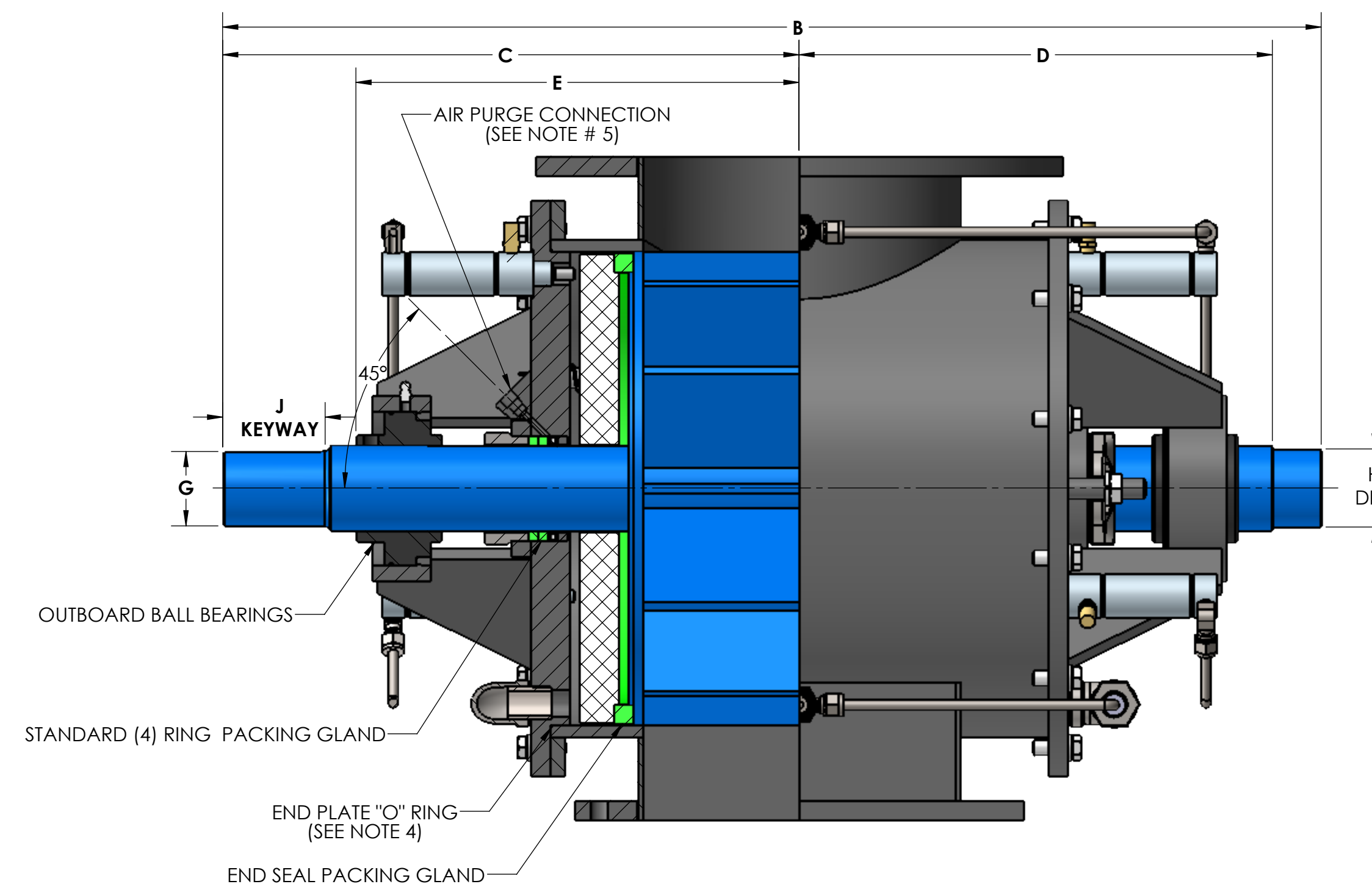
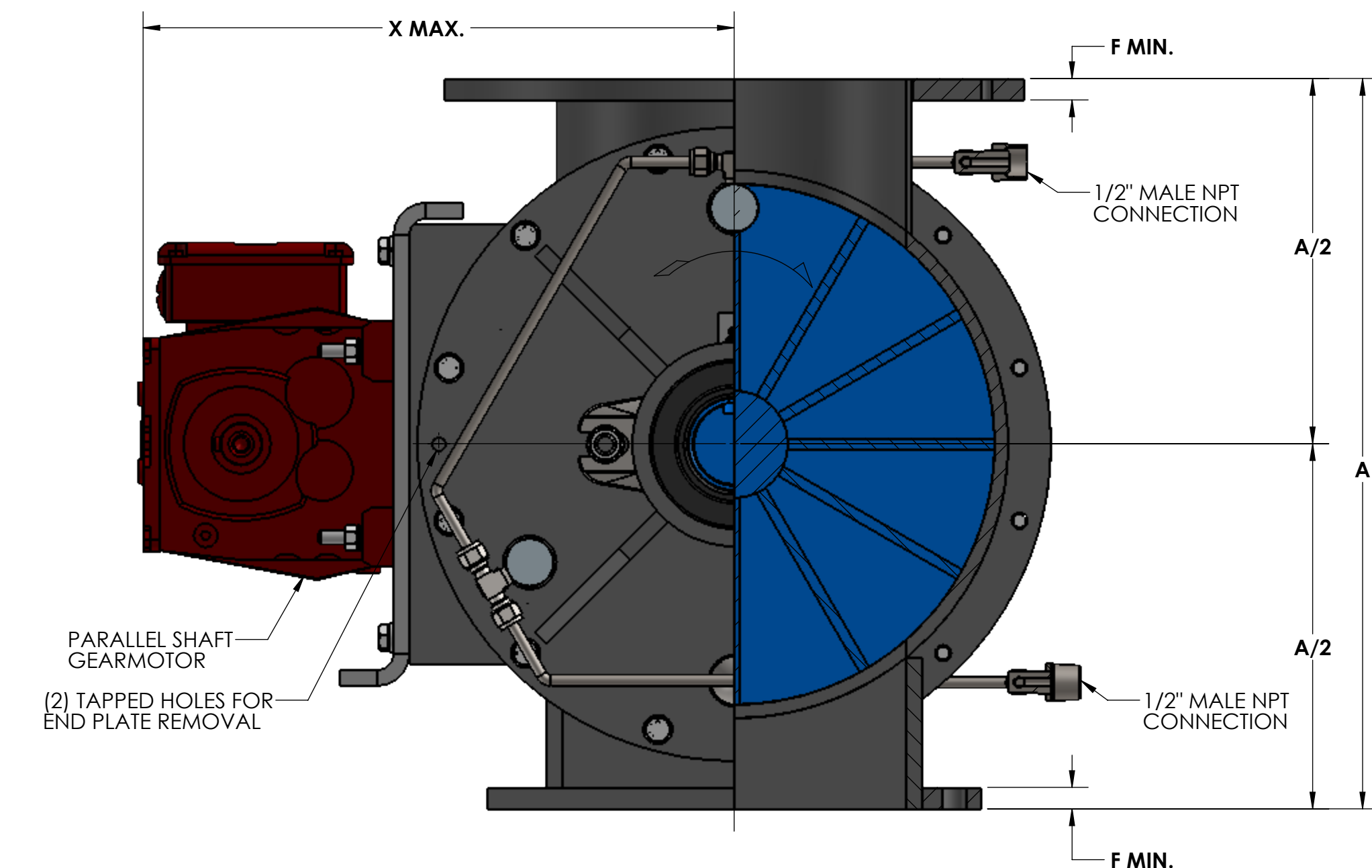
6" - Model HC End Seal Rotary Valve for 60 PSIG differential pressure



30"x60" Model HC Rotary Valve with Steam Jacket and End Seals for 10 PSIG differential pressure



ROTOR SIZES: 4" - 18" 12-VANES

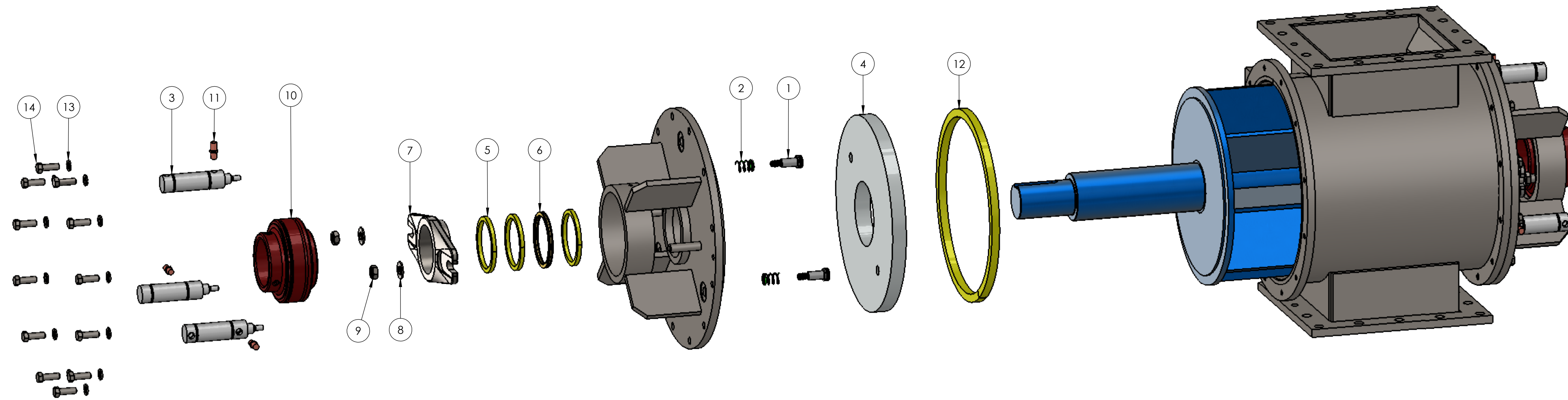


- NOTES:**
- VALVES ARE FABRICATED OF STEEL OR STAINLESS STEEL
  - VALVE HOUSINGS ARE AVAILABLE WITH EITHER A SQUARE OR ROUND INLET AND OUTLET. ROUND FLANGES MATCH 150# ANSI DRILLING
  - STANDARD HOUSINGS ARE DESIGNED FOR 15 PSI (MAX) INTERNAL & DIFFERENTIAL @ 250 DEGREES F.
  - END PLATE "O" RINGS ARE OPTIONAL AND WILL BE FURNISHED ONLY WHEN SPECIFIED
  - AIR PURGE CONNECTIONS WITH BRASS LANTERN RINGS ARE OPTIONAL AND WILL BE FURNISHED ONLY WHEN SPECIFIED

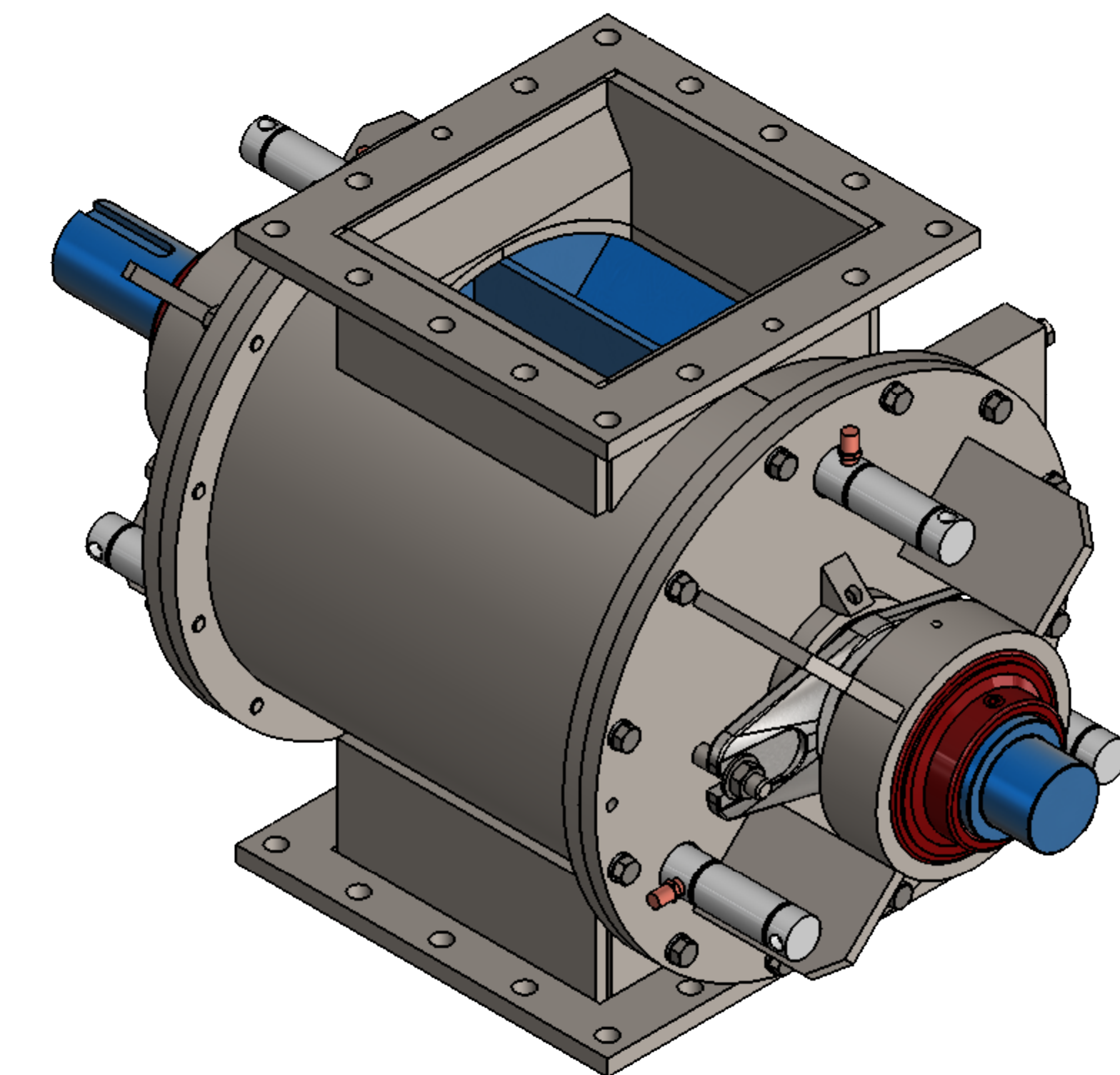
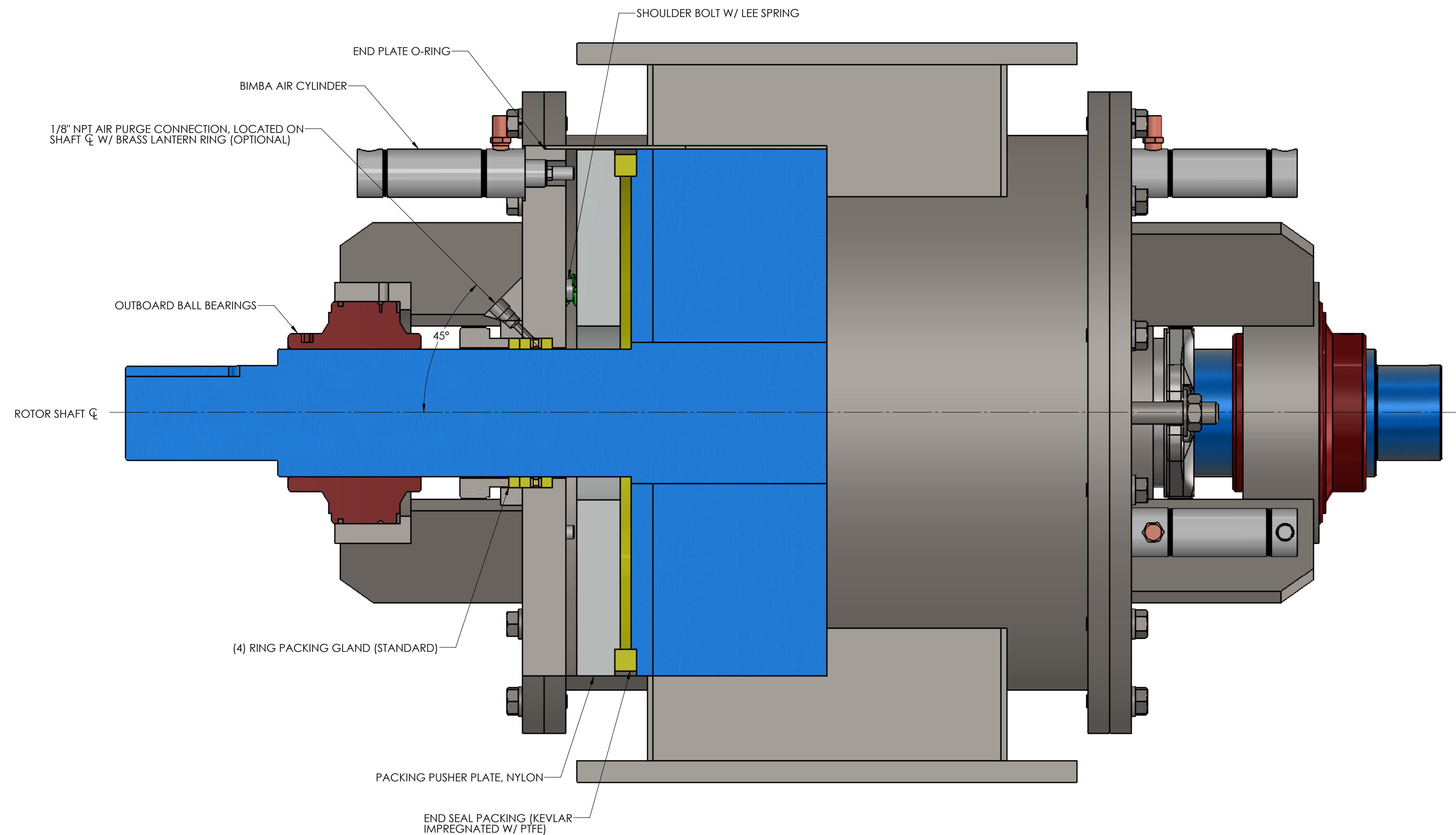
| SIZE | ROTOR CAPACITY CU.FT. PER REV. |       |       |       | STD. RPM | STD. H.P. | A     | B     | C     | D     | E     | F   | G    | H    | J                | K     | L     | M     | N         | P              | Q     | R     | S    | T     | U    | V        | W              | X     | Y     |       | WT.  |
|------|--------------------------------|-------|-------|-------|----------|-----------|-------|-------|-------|-------|-------|-----|------|------|------------------|-------|-------|-------|-----------|----------------|-------|-------|------|-------|------|----------|----------------|-------|-------|-------|------|
|      | AS                             | BS    | CS    | DS    |          |           |       |       |       |       |       |     |      |      |                  |       |       |       |           |                |       |       |      |       |      |          |                |       | STD.  | MAX.  |      |
| 4    | .049                           | .031  | .013  | .040  | 38       | 3/4       | 10.00 | 23.00 | 12.19 | 9.56  | 9.19  | .31 | 1.19 | 1.25 | .25 X .12 X 2.62 | 9.00  | 7.50  | 4.00  | (8) .75   | N/A            | 7.50  | 4.00  | .63  | 3.12  | 3.00 | (8) .56  | N/A            | 12.75 | 19.62 | 24.62 | 240  |
| 5    | .117                           | .071  | .046  | .107  | 38       | 3/4       | 12.00 | 24.75 | 13.06 | 10.44 | 10.06 | .44 | 1.44 | 1.75 | .38 X .19 X 2.62 | 10.00 | 8.50  | 5.00  | (8) .88   | N/A            | 8.50  | 5.00  | .63  | 3.63  | 3.50 | (8) .56  | N/A            | 13.75 | 19.62 | 24.62 | 300  |
| 6    | .232                           | .133  | .080  | .219  | 32       | 3/4       | 14.00 | 26.12 | 13.75 | 11.12 | 10.75 | .44 | 1.94 | 1.75 | .50 X .25 X 2.62 | 11.00 | 9.50  | 6.00  | (8) .88   | N/A            | 9.50  | 6.00  | .63  | 4.12  | 4.13 | (8) .56  | N/A            | 12.88 | 19.62 | 24.62 | 360  |
| 8    | .456                           | .237  | .114  | .439  | 32       | 1         | 17.00 | 28.12 | 14.75 | 12.12 | 11.75 | .44 | 1.94 | 2.00 | .50 X .25 X 2.62 | 13.50 | 11.75 | 8.00  | (8) .88   | N/A            | 11.50 | 8.00  | .63  | 5.12  | 2.56 | (16) .56 | N/A            | 13.88 | 19.62 | 24.62 | 460  |
| 10   | .885                           | .538  | .122  | .863  | 32       | 1         | 20.00 | 30.38 | 15.75 | 13.12 | 12.75 | .44 | 2.19 | 2.25 | .50 X .25 X 2.62 | 16.00 | 14.25 | 10.00 | (8) 1.00  | (4) .88-9 UNC  | 14.75 | 10.00 | 1.00 | 6.38  | 3.19 | (14) .56 | (2) .5-13 UNC  | 15.50 | 21.75 | 27.75 | 615  |
| 12   | 1.393                          | .681  | .206  | 1.369 | 32       | 1         | 22.00 | 33.50 | 17.69 | 14.31 | 13.94 | .56 | 2.44 | 2.25 | .62 X .31 X 3.38 | 19.00 | 17.00 | 12.00 | (8) 1.00  | (4) .88-9 UNC  | 16.75 | 12.00 | 1.00 | 7.38  | 3.69 | (14) .56 | (2) .5-13 UNC  | 16.50 | 21.75 | 27.75 | 685  |
| 14   | 1.904                          | 1.040 | .484  | 1.882 | 32       | 1 1/2     | 24.00 | 37.62 | 19.75 | 16.38 | 16.00 | .56 | 2.44 | 2.75 | .62 X .31 X 3.38 | 21.00 | 18.75 | 13.00 | (8) 1.12  | (4) 1-8 UNC    | 18.00 | 14.00 | 1.00 | 8.00  | 4.00 | (14) .56 | (2) .5-13 UNC  | 17.50 | 22.38 | 28.38 | 810  |
| 16   | 3.122                          | 1.701 | .786  | 3.095 | 30       | 1 1/2     | 28.00 | 40.00 | 21.00 | 17.50 | 17.12 | .62 | 2.94 | 2.75 | .75 X .38 X 3.50 | 23.50 | 21.25 | 15.00 | (12) 1.12 | (4) 1-8 UNC    | 20.00 | 16.00 | 1.00 | 9.00  | 4.50 | (14) .69 | (2) .62-11 UNC | 19.50 | 22.38 | 28.38 | 1130 |
| 18   | 4.228                          | 2.278 | 1.035 | 4.200 | 28       | 2         | 30.00 | 42.00 | 22.00 | 18.50 | 18.12 | .62 | 2.94 | 3.25 | .75 X .38 X 3.50 | 25.00 | 22.75 | 17.00 | (12) 1.25 | (4) 1.12-7 UNC | 22.00 | 18.00 | 1.00 | 10.00 | 5.00 | (14) .69 | (2) .62-11 UNC | 20.62 | 23.25 | 29.25 | 1350 |

| GENERAL TOLERANCES                                   |   |
|--|---|
| UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY |   |
| MACHINING - .XX = .02 XXXX = .005 ANGLE = .50°       | SURFACE ROUGHNESS HEIGHT 63 MICRONS OR LESS |
| FABRICATION - UNDER 6 6 TO 24 24 TO 60 OVER 60       | ± .06 ± .12 ± .19 ± .25                     |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES  |   |

|   |             |                |      |
|---|-------------|----------------|------|
| REV. NO.  | DESCRIPTION | DATE           | BY   |
| REVISIONS   |             |                |      |
| CUSTOMER:   |             |                |      |
| CUSTOMER PO NUMBER:   |             |                |      |
| YOUNG JOB NUMBER:   |             |                |      |
| TITLE   |             |                |      |
| YOUNG INDUSTRIES MODEL 'ES-HC' ROTARY VALVE, SIZE 4" - 24", CLASS 15 WITH PARALLEL SHAFT DRIVE, SHROUDED ROTOR STANDARD DIMENSION SHEET |             |                |      |
|   |             |                |      |
| DRAWN BY: BMF   |             | DATE: 09/12/18 |      |
| CHECKED BY:   |             | SCALE: 1:3     |      |
| DRAWING NUMBER  |             | SHEET          | REV: |
| S-21101-00  |             | 1 OF 1         | 00   |



| ITEM NO. | DESCRIPTION                 | QTY. |
|----------|-----------------------------|------|
| 1        | SHOULDER BOLT, 3/8"         | 4    |
| 2        | SPRING, LEE SPRING          | 4    |
| 3        | AIR CYLINDER                | 6    |
| 4        | PUSHER PLATE                | 2    |
| 5        | RING, PACKING               | 6    |
| 6        | R.V. LANTERN RING           | 2    |
| 7        | PACKING FOLLOWER            | 2    |
| 8        | WASHERS, FLAT, 1/2"         | 4    |
| 9        | NUTS, HEX, JAM, 1/2"-13UNC  | 4    |
| 10       | BEARING                     | 2    |
| 11       | MUFFLER, QUIETAIRE,         | 6    |
| 12       | END SEAL PACKING            | 2    |
| 13       | WASHERS, LOCK, 3/8"         | 25   |
| 14       | BOLTS, HEX HEAD, 3/8"-16UNC | 25   |



UNIT WEIGHT  
**307.32 LBS**

| GENERAL TOLERANCES                                   |  |
|--|--|
| UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY |  |
| MACHINING - .XX= .02 .XXX= .005 ANGLE= .50°          |  |
| SURFACE ROUGHNESS HEIGHT 63 MICRONS OR LESS          |  |
| FABRICATION - UNDER 6 6 TO 24 24 TO 60 OVER 60       |  |
| ± .06 ± .12 ± .19 ± .25                              |  |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES  |  |

| REV. NO.  | DESCRIPTION | DATE                | BY         |
|---|-------------|---------------------|------------|
| REVISIONS   |             |                     |            |
| CUSTOMER: **  |             |                     |            |
| CUSTOMER PO NUMBER: **  |             |                     |            |
| YOUNG JOB NUMBER: **  |             |                     |            |
| TITLE<br>YOUNG INDUSTRIES MODEL 'HC-ES' END SEAL ROTARY VALVE |             |                     |            |
|   |             |                     |            |
| DRAWN BY: BMF   |             | DATE DRAWN: 5/16/18 |            |
| CHECKED BY:   |             | SCALE: 2:3          |            |
| DRAWING NUMBER<br><b>S-2-8248</b>                             |             | SHEET<br>1 OF 1     | REV:<br>00 |