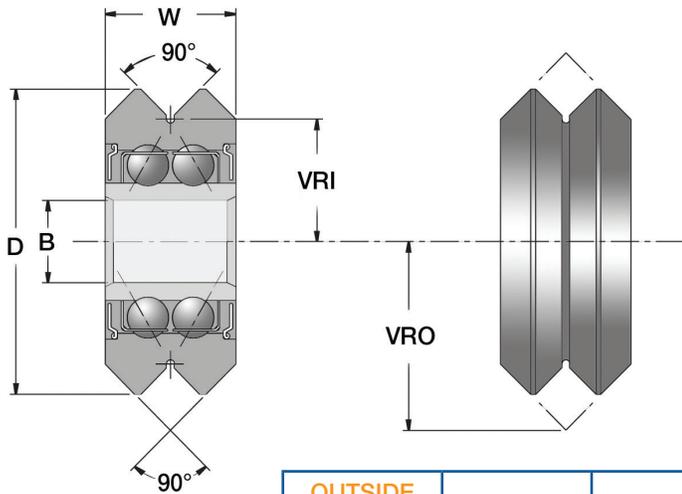


# DUALVEE® Vacuum Wheels

## Linear Guide Wheels for Ultra High Vacuum Environments

DualVee® Vacuum Wheels are linear guide bearings with precision ground 90-degree surfaces for linear and rotary motion applications in vacuum environments, automated processing equipment and testing chambers. Made of vacuum compatible AISI440C and 304 stainless steel and grease, these guide wheels are capable of ultra high vacuum down to 10<sup>-9</sup> mbar. Mount on AISI 303 DualVee® bushings and run on mating 90-degree AISI 420 track in single piece lengths up to 20 feet. Available in two sizes with load capacities up to 1855N radially, and 440N axially, they are ideal for guided motion in challenging environments.



- Double Row Angular Contact Ball Bearings
  - Support dynamic loads radially and axially
- AISI 440C stainless steel, hardened
  - outer race, inner race, ball material
- AISI 304 stainless steel
  - ball cage, shield material
- Continuous operating temperatures up to +150°C
  - Intermittent temperatures of -35°C to +250°C
- ABEC 1 Precision Class
- Surface finish is Ra 0.4um
- Ultratherm 2000 ultra high vacuum grease

| Size | Stock Code | OUTSIDE DIAMETER<br>D | WIDTH<br>W      | BORE DIAMETER<br>B                             | VEE RADIUS INSIDE<br>VRI | VEE RADIUS OUTSIDE<br>VRO | Weight<br>Grams (g) |
|------|------------|-----------------------|-----------------|--|--------------------------|---------------------------|---------------------|
| 1    | W1SSVAC    | Ø.771<br>[Ø19.58]     | .310<br>[7.87]  | Ø.1875 +.0000/- .0003<br>[Ø4.763 +.000/- .008] | .313<br>[7.95]           | .468<br>[11.89]           | 12                  |
| 2    | W2SSVAC    | Ø1.210<br>[Ø30.73]    | .438<br>[11.13] | Ø.3750 +.0000/- .0003<br>[Ø9.525 +.000/- .008] | .500<br>[12.70]          | .719<br>[18.26]           | 39                  |

Dimensions are in inches [millimeters].

## Recommended DualVee® Components

| BUSHINGS |                    |            |              |             |              |             | TRACK |                    |           |                   |
|----------|--------------------|------------|--------------|-------------|--------------|-------------|-------|--------------------|-----------|-------------------|
| Size     | Material           | Style      | Inch         |             | Metric       |             | Size  | Material           | Condition | Stock Code Prefix |
|          |                    |            | Std. Profile | Low Profile | Std. Profile | Low Profile |       |                    |           |                   |
| 1        | AISI 303 Stainless | Concentric | B1SS         | 1PWBC       | MB1SS        | M1PWBC      | 1     | AISI 420 Stainless | Hardened  | T1SS-             |
|          |                    | Eccentric  | BX1SS        | 1PWBX       | MBX1SS       | M1PWBX      |       |                    | Soft      | TS1SS-            |
| 2        |                    | Concentric | B2SS         | 2PWBC       | MB2SS        | M2PWBC      | 2     |                    | Hardened  | T2SS-             |
|          |                    | Eccentric  | BX2SS        | 2PWBX       | MBX2SS       | M2PWBX      |       |                    | Soft      | TS2SS-            |

Concentric Bushing



Eccentric Bushing



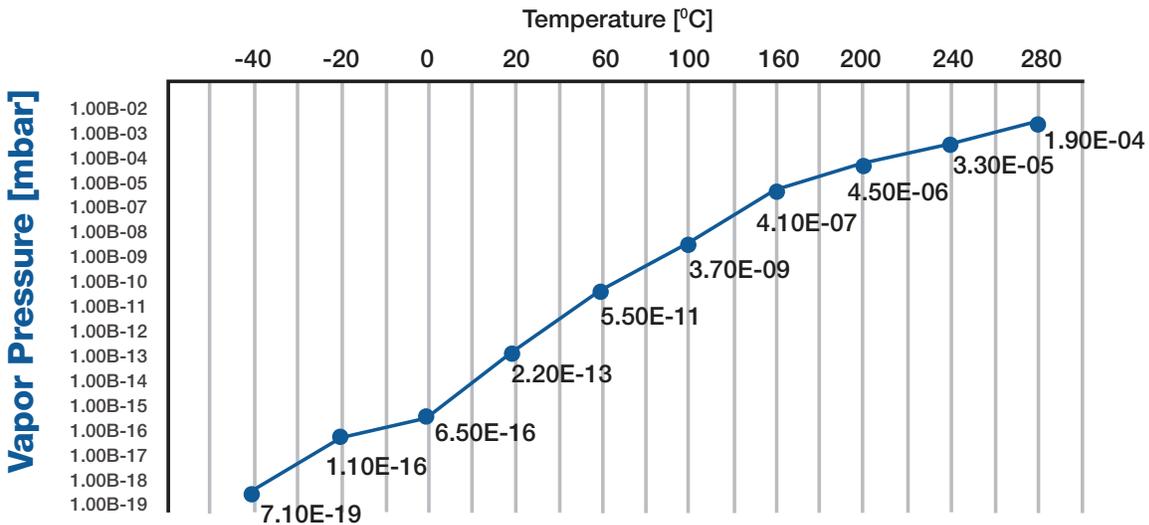
Linear Track



# DualVee® Vacuum Wheel Grease

Lubcon Ultratherm 2000 grease is used to lubricate internal wheel components and is capable of achieving ultra high vacuum pressure levels with extremely low outgassing rates over a wide range of operating temperatures.

## LUBCON Ultratherm 2000 Ultra High Vacuum Grease



| OUTGASSING RATES |   |       |               |
|------------------|---|-------|---------------|
| TML              | Total Mass Loss                         | 0.08% | ASTM E 595-90 |
| CVCM             | Collected Volatile Condensable Material | 0.01% |               |
| RML              | Recovered Mass Loss                     | 0.07% |               |

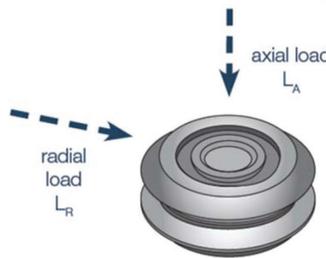
Contact Bishop-Wisecarver for additional grease specifications.

## Load and Life Specifications

### Radial and Axial Loading

$L_R$ : Radial load refers to the load applied in a direction perpendicular to the axis of rotation.

$L_A$ : Axial load refers to the load applied in a direction parallel to the axis of rotation.



See the DualVee® catalog, pages 39-40 for sizing and life estimate calculations.

| Size | Stock Code | Load Ratings |       |             |       | Life Ratings |
|------|------------|--------------|-------|-------------|-------|--------------|
|      |            | Radial $L_R$ |       | Axial $L_A$ |       | Travel       |
|      |            | (N)          | (lbf) | (N)         | (lbf) | (km)         |
| 1    | W1SSVAC    | 854          | 192   | 178         | 40    | 55           |
| 2    | W2SSVAC    | 1855         | 417   | 440         | 99    | 87           |



For more than 60 years, DualVee Motion Technology® from Bishop-Wisecarver Corporation® has provided linear guide components for the most extreme operating conditions and environments from freezer to oven, cleanroom to extreme grime. DualVee® is easy to understand and easy to assemble enabling very smooth guided motion with low noise and low vibration over long linear lengths in critical applications.