

URAI DSL (Dual Splash Lubricated) Blowers

ROOTS™ UNIVERSAL RAI®

DSL RPD Blowers



The Roots Universal RAI DSL (Dual Splash Lubricated) heavy-duty rotary blowers are designed with detachable, rugged steel mounting feet that permit easy in-field adaptability to vertical or horizontal installation requirements. Because of the detachable mounting feet, these units can be easily adapted to any of four drive shaft positions: right, left, bottom, or top. The compact, sturdy design is engineered for continuous service when operated in accordance with speed and pressure ratings.

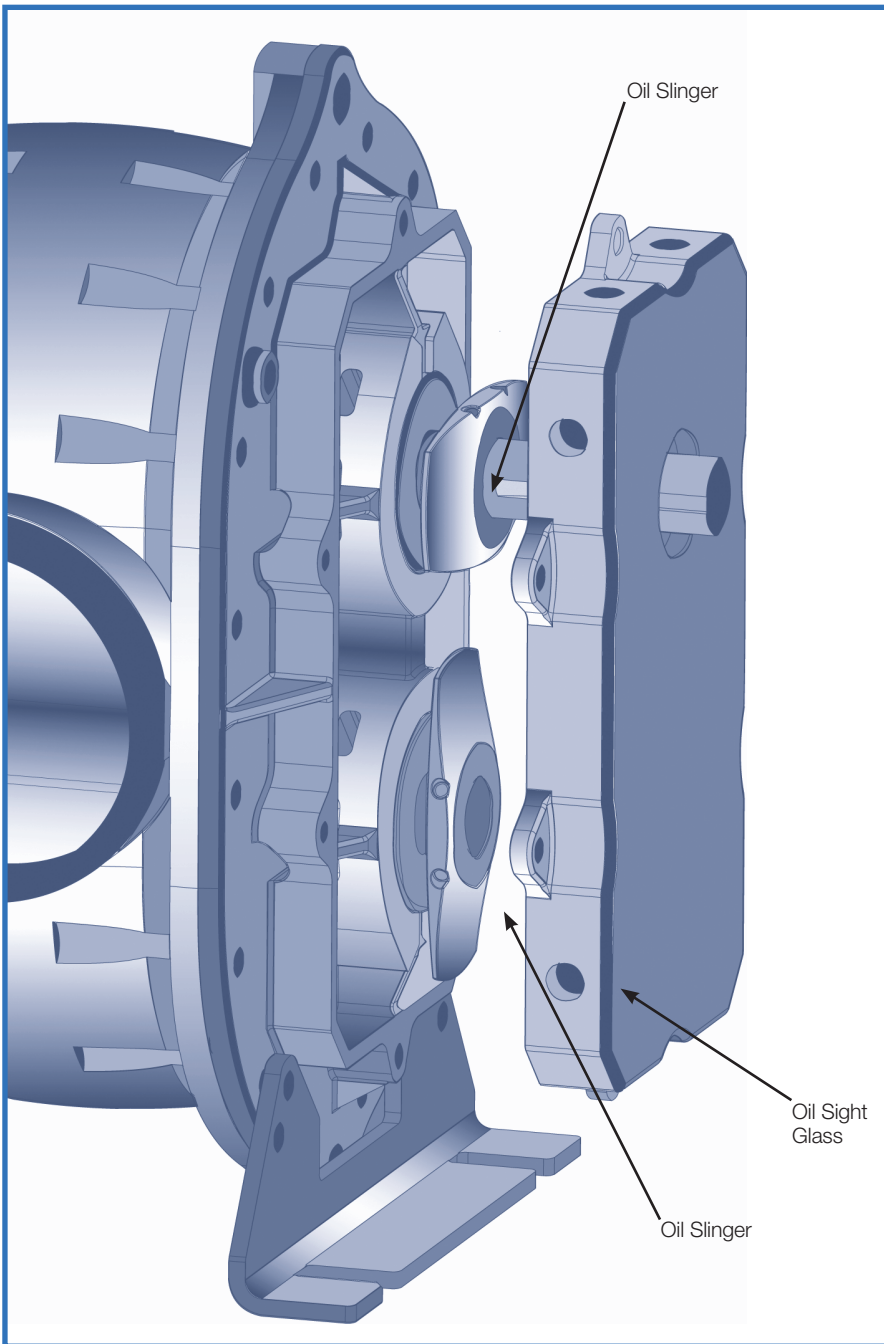
This Universal RAI blower consists of a cast iron casing, carburized and ground alloy steel spur timing gears secured to steel shafts with a taper mounting and locknut, and cast iron involute impellers. Oversized antifriction bearings are used, with a cylindrical roller bearing at the drive shaft to withstand V-belt pull.

The Universal RAI DSL (URAI DSL) blower features splash oil lubrication on both the gear end and drive end. The drive end has two shaft-mounted oil slingers and the gear end has Howden's exclusive "figure-eight" gearbox design that improves oil distribution to enhance gear and bearing life. Sight glasses (3/8") are provided for accurate oil level confirmation. After testing, the unit is sprayed with a protective paint, and boxed or skid mounted for delivery. Available accessories include driver, relief valve, inlet and discharge silencers, inlet filter, check valve, extended base, v-belt or flexible coupling and drive guards.

Roots URAI DSL blowers are warranted for two years plus an additional six months for shipping and construction where required. Roots synthetic oil assures top performance.

Design and Construction Features

- Steel detachable mounting feet
- Rigid one-piece cast iron casing
- Anti-friction bearings
- Splash oil lubricated spur timing gears
- Splash oil lubricated drive end bearings
- Connections in standard pipe sizes
- Balanced, precision machined bi-lobe impellers
- Ground steel shafts



Steel detachable mounting feet allow for adaptation to any of four drive positions: right, left, bottom or top.



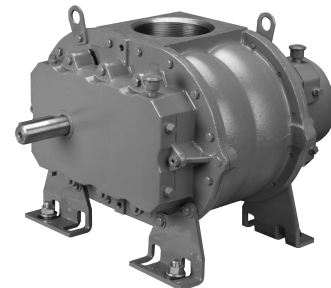
Vertical Drive End



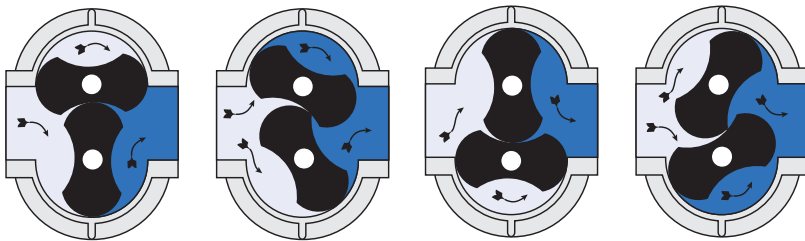
Vertical Gear End



Horizontal Gear End



Horizontal Drive End



Bi-Lobe Operating Principle

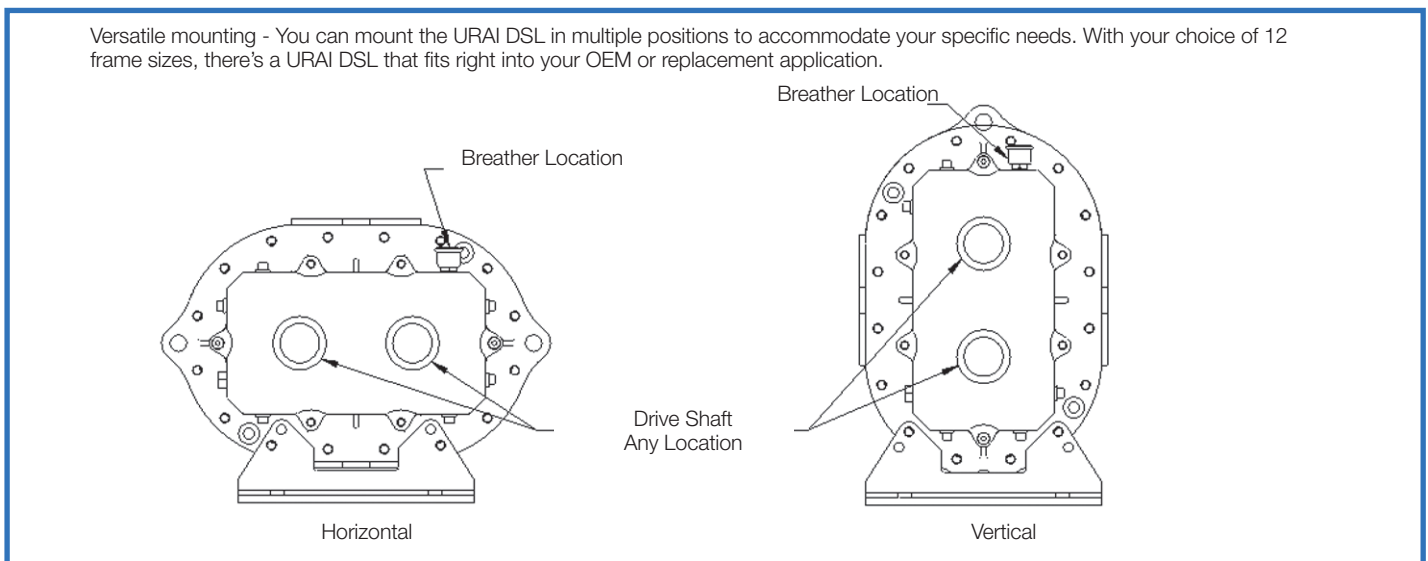
Two figure-eight lobe impellers mounted on parallel shafts rotate in opposite directions. As each impeller passes the blower inlet, it traps a finite volume of air and carries it around the case to the blower outlet, where the air is discharged. With constant speed operation, the displaced volume is essentially the same regardless of pressure, temperature or barometric pressure. Timing gears control the relative position of the impellers to each other and maintain small but finite clearances. This allows operation without lubrication being required inside the lobe cavity.

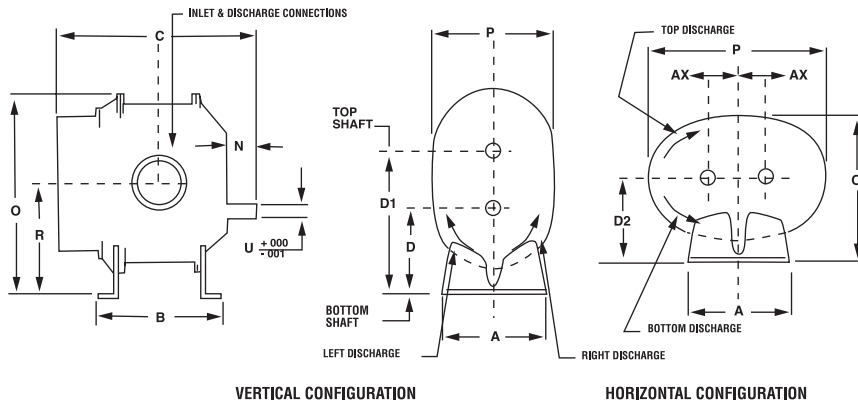
URAI Blower Performance

| Frame Size | Speed RPM | 1 PSI | | 6 PSI | | 7 PSI | | 10 PSI | | 12 PSI | | 13 PSI | | 14 PSI | | 15 PSI | | Max. Vacuum | | |
|------------|-----------|-------|-----|-------|------|-------|------|--------|------|--------|------|--------|------|--------|------|--------|------|-------------|------|------|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | "HG | CFM | BHP |
| 32 | 1160 | 40 | 0.2 | 21 | 1.4 | 19 | 1.6 | | | | | | | | | | | 10 | 27 | 1.5 |
| | 2800 | 113 | 0.6 | 95 | 3.4 | 93 | 3.9 | 86 | 5.6 | 82 | 6.7 | 81 | 7.2 | 79 | 7.8 | 77 | 8.3 | 14 | 113 | 5.2 |
| | 3600 | 149 | 0.9 | 131 | 4.4 | 129 | 5.2 | 122 | 7.3 | 118 | 8.7 | 117 | 9.4 | 115 | 10.1 | 113 | 10.8 | 15 | 159 | 7.3 |
| 33 | 1160 | 55 | 0.3 | 31 | 1.9 | 28 | 2.2 | | | | | | | | | | | 10 | 55 | 2.5 |
| | 2800 | 156 | 0.9 | 132 | 4.6 | 129 | 5.4 | 120 | 7.7 | 116 | 9.2 | | | | | | | 12 | 213 | 7.5 |
| | 3600 | 205 | 1.2 | 181 | 6.1 | 178 | 7 | 170 | 9.9 | 165 | 11.9 | | | | | | | 15 | 278 | 12.1 |
| 36 | 1160 | 95 | 0.5 | 61 | 3.1 | 57 | 3.6 | | | | | | | | | | | 8 | 19 | 0.9 |
| | 2800 | 262 | 1.5 | 229 | 7.7 | 224 | 8.9 | | | | | | | | | | | 14 | 56 | 3.2 |
| | 3600 | 344 | 2.1 | 310 | 10.1 | 306 | 11.7 | | | | | | | | | | | 16 | 160 | 7.7 |
| 42 | 860 | 38 | 0.2 | 18 | 1.4 | 15 | 1.6 | | | | | | | | | | | 8 | 46 | 1.8 |
| | 1760 | 92 | 0.5 | 72 | 2.8 | 69 | 3.3 | 62 | 4.7 | 58 | 5.6 | | | | | | | 12 | 134 | 5.5 |
| | 3600 | 204 | 1.4 | 183 | 6.1 | 181 | 7.1 | 173 | 9.9 | 169 | 11.8 | 167 | 12.8 | 165 | 13.7 | 163 | 14.7 | 16 | 332 | 15.4 |
| 45 | 860 | 79 | 0.5 | 42 | 2.7 | 37 | 3.2 | | | | | | | | | | | 8 | 63 | 2.4 |
| | 1760 | 188 | 1 | 151 | 5.7 | 146 | 6.6 | 133 | 9.4 | | | | | | | | | 12 | 181 | 7.3 |
| | 3600 | 410 | 2.7 | 374 | 12.2 | 369 | 14.1 | 356 | 19.8 | | | | | | | | | 15 | 452 | 19.1 |
| 47 | 860 | 105 | 0.6 | 59 | 3.6 | 53 | 4.2 | | | | | | | | | | | 10 | 36 | 2 |
| | 1760 | 249 | 1.3 | 203 | 7.5 | 196 | 8.7 | | | | | | | | | | | 14 | 158 | 7.1 |
| | 3600 | 542 | 3.5 | 496 | 16.1 | 490 | 18.6 | | | | | | | | | | | 16 | 291 | 13.4 |
| 53 | 700 | 72 | 0.4 | 42 | 2.4 | 38 | 2.8 | | | | | | | | | | | 10 | 70 | 3.3 |
| | 1760 | 211 | 1.2 | 181 | 6.3 | 177 | 7.3 | 167 | 10.3 | 160 | 12.3 | 157 | 13.3 | 155 | 14.4 | | | 14 | 276 | 11.8 |
| | 2850 | 355 | 2.5 | 325 | 10.7 | 321 | 12.3 | 310 | 17.2 | 304 | 20.5 | 301 | 22.1 | 298 | 23.8 | 295 | 25.4 | 16 | 501 | 22.4 |
| 56 | 700 | 123 | 0.7 | 78 | 4.1 | 72 | 4.7 | | | | | | | | | | | 8 | 135 | 3.9 |
| | 1760 | 358 | 2 | 312 | 10.5 | 306 | 12.2 | 290 | 17.3 | 280 | 20.6 | 276 | 22.3 | | | | | 12 | 445 | 14.9 |
| | 2850 | 598 | 4 | 553 | 17.7 | 547 | 20.5 | 531 | 28.7 | 521 | 34.2 | 517 | 37 | | | | | 15 | 770 | 30.8 |
| 59 | 700 | 187 | 1 | 130 | 5.9 | | | | | | | | | | | | | 12 | 71 | 4.4 |
| | 1760 | 529 | 2.9 | 472 | 15.3 | 464 | 17.8 | | | | | | | | | | | 16 | 300 | 15.2 |
| | 2850 | 881 | 5.9 | 824 | 26 | 816 | 30 | | | | | | | | | | | 16 | 445 | 25.6 |
| 65 | 700 | 140 | 0.8 | 93 | 4.5 | 86 | 5.3 | 70 | 7.5 | | | | | | | | | 10 | 135 | 5.9 |
| | 1760 | 400 | 2.4 | 353 | 11.9 | 347 | 13.8 | 330 | 19.4 | 320 | 23.2 | 316 | 25.1 | 311 | 27 | 307 | 28.9 | 15 | 495 | 22.7 |
| | 2350 | 546 | 3.8 | 499 | 16.4 | 492 | 19 | 475 | 26.5 | 466 | 31.6 | 461 | 34.1 | 457 | 36.6 | 452 | 39.1 | 16 | 715 | 32.8 |
| 68 | 700 | 224 | 1.2 | 149 | 7.3 | 139 | 8.5 | | | | | | | | | | | 8 | 292 | 8.9 |
| | 1760 | 643 | 3.7 | 567 | 18.9 | 557 | 21.9 | 530 | 31 | 515 | 37 | 507 | 40.1 | 500 | 43.1 | | | 12 | 997 | 33.9 |
| | 2350 | 876 | 5.6 | 801 | 25.9 | 790 | 29.9 | 763 | 42.1 | 748 | 50.2 | 740 | 54.2 | 733 | 58.3 | | | 14 | 1389 | 53.4 |
| 615 | 700 | 420 | 2.3 | 279 | 13.6 | 260 | 15.9 | | | | | | | | | | | 12 | 117 | 6 |
| | 1760 | 1205 | 6.6 | 1063 | 34.9 | 1044 | 40.6 | | | | | | | | | | | 16 | 413 | 19.7 |
| | 2350 | 1641 | 9.7 | 1500 | 47.6 | 1481 | 55.2 | | | | | | | | | | | 16 | 674 | 29.5 |

Notes:

1. Performance based on inlet air at standard pressure of 14.7 psia, standard temperature of 68° F, and specific gravity of 1.0.
2. Vacuum ratings based on inlet air at standard temperature of 68°F, discharge pressure of 30" Hg and specific gravity of 1.0.





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Universal RAI* blower dimensions

| Frame Size | A | B | C | Drive Shaft Location | | | N | O | O' | P | P' | R | U | Keyway | Inlet and | AX | Approx. Net Wgt. (lbs.) |
|------------|--------|-------|-------|----------------------|-------|------|------|-------|-------|-------|-------|-------|-------|-------------|-----------|------|-------------------------|
| | | | | D | D1 | D2 | | | | | | | | | | | |
| 32 | 7.25 | 6.75 | 11.25 | 5 | 8.5 | 5 | 2.44 | 12.81 | 8.88 | 7.75 | 12.13 | 6.75 | .750 | .188 x .094 | 1.25 NPT | 1.75 | 69 |
| 33 | 7.25 | 7.63 | 12.13 | 5 | 8.5 | 5 | 2.44 | 12.81 | 8.88 | 7.75 | 12.13 | 6.75 | .750 | .188 x .094 | 2.0 NPT | 1.75 | 74 |
| 36 | 7.25 | 10 | 14.63 | 5 | 8.5 | 5 | 2.56 | 12.81 | 8.88 | 7.75 | 12.13 | 6.75 | .750 | .188 x .094 | 2.5 NPT | 1.75 | 102 |
| 42 | 8 | 7.25 | 13 | 6.25 | 10.25 | 6.25 | 3.18 | 15.06 | 10.63 | 8.75 | 13.63 | 8.25 | .875 | .188 x .094 | 1.5 NPT | 2 | 88 |
| 45 | 8 | 10 | 15.5 | 6.25 | 10.25 | 6.25 | 2.94 | 15.06 | 10.63 | 8.75 | 13.63 | 8.25 | .875 | .188 x .094 | 2.5 NPT | 2 | 109 |
| 47 | 8 | 11.75 | 17.63 | 6.25 | 10.25 | 6.25 | 3.31 | 15.06 | 10.5 | 8.5 | 13.63 | 8.25 | .875 | .188 x .094 | 3.0 NPT | 2 | 128 |
| 53 | 10.5 | 8.38 | 15.38 | 6.25 | 11.25 | 6.75 | 3.68 | 17.38 | 11.88 | 10.25 | 17.25 | 8.75 | 1.125 | .250 x .125 | 2.5 NPT | 2.5 | 143 |
| 56 | 10.5 | 11 | 18 | 6.25 | 11.25 | 6.75 | 3.38 | 17.38 | 12.25 | 11 | 17.25 | 8.75 | 1.125 | .250 x .125 | 4.0 NPT | 2.5 | 170 |
| 59 | 10.5 | 14 | 21.18 | 6.25 | 11.25 | 6.75 | 3.88 | 17.38 | 12.25 | 11 | 17.25 | 8.75 | 1.125 | .250 x .125 | 4.0 NPT | 2.5 | 204 |
| 65 | 11.00† | 10 | 18.38 | 8.75 | 14.75 | 8.75 | 3.56 | 21.63 | 15.13 | 12.75 | 19.75 | 11.75 | 1.375 | .312 x .156 | 3.0 NPT | 3 | 245 |
| 68 | 11.00† | 13 | 21.38 | 8.75 | 14.75 | 8.75 | 3.69 | 21.63 | 15.13 | 12.75 | 19.75 | 11.75 | 1.375 | .312 x .156 | 5.0 NPT | 3 | 285 |
| 615 | 11.00† | 20 | 28.38 | 8.75 | 14.75 | 8.75 | 3.69 | 21.63 | 16.25 | 15 | 19.75 | 11.75 | 1.375 | .312 x .156 | 6.0 FLG | 3 | 425 |

*17.00 in horizontal configuration