RCS Rotary Positive Blowers: Frames 817 thru 827

# Roots™ RCS Rotary Blower


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## Design and construction features

- Center-timed for rotation in either direction
- Alloy steel timing gears
- Cylindrical roller bearings (Cylindrical roller bearings are used on the drive end with ball bearings on the gear end.)
- Piston ring air seals
- Uni-directional hydrodynamic seals are available as an option
- Splash oil lubrication
- High volumetric efficiency
- Horizontal and vertical configurations available

**RCS rotary blowers are heavy-duty units designed with integral-shaft ductile iron impellers having an involute profile. The headplates, gear cover, end cover and rigid, one-piece casing are grey iron. Carburized and ground alloy steel spur timing gears are taper mounted on the shafts, secured with a locknut. Cylindrical roller bearings are used on the drive end with ball bearings on the gear end.**

## Basic blower description

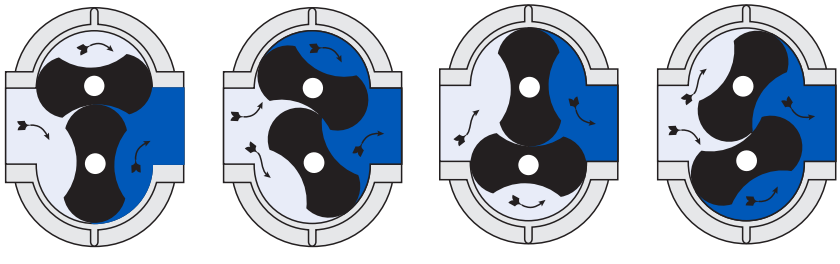
Piston rings reduce air leakage through the shaft openings in the well vented headplates, and lip-type oil seals prevent lubricant from entering the air chamber and providing oil free compression. The RCS incorporates splash oil lubrication at both ends of the blower.

All units are designed with detachable rugged steel mounting feet which permit in-field adaptability to either vertical or horizontal installation requirements.

The top shaft is extended for drive on side outlet blowers, and either shaft can be extended for drive on top or bottom outlet blowers. All frame sizes are center-timed to allow rotation in either direction.

## 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 definite 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 definite clearances. This allows operation without lubrication being required inside the air casing.



POSITION 1 POSITION 2 POSITION 3 POSITION 4

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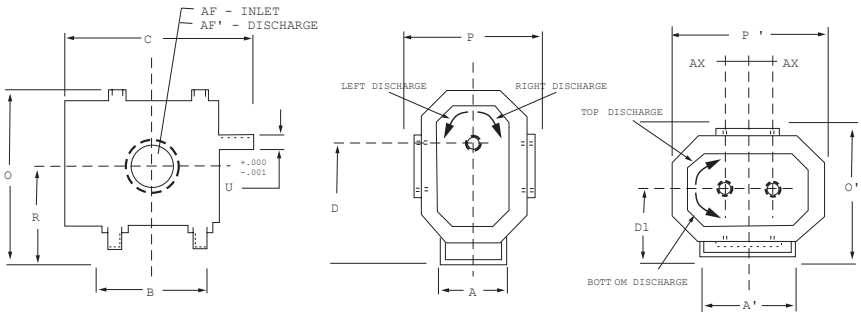


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Outline drawing of Roots™ RCS Blower

## Dimensional table

| Frame Size | A | A' | B | C | Drive shaft location | | O | O' | P | P' | R | U | Keyway | AF inlet diameter | AF discharge diameter | AX | Approx. net Wt (lbs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | D | D' | | | | | | | | | | | |
| **817** | 19.00 | 27.00 | 24.25 | 38.44 | 18.00 | 10.00 | 28.38 | 20.38 | 19.00 | 25.25 | 14.00 | 2.750 | .625 x .313 | 10.0 FLG | 10.0 FLG | 4.00 | 1200 |
| **824** | 19.00 | 27.00 | 30.50 | 44.69 | 18.00 | 10.00 | 28.38 | 20.38 | 19.00 | 25.25 | 14.00 | 2.750 | .625 x .313 | 12.0 FLG | 12.0 FLG | 4.00 | 1330 |
| **827** | 19.00 | 27.00 | 34.00 | 48.19 | 18.00 | 10.00 | 28.38 | 20.38 | 19.00 | 25.25 | 14.00 | 2.750 | .625 x .313 | 14.0 FLG | 14.0 FLG | 4.00 | 1600 |

**Notes:** 1. All dimensions are in inches. 2. Do not use for construction.

## Performance table

| Frame size | Speed RPM | 4 PSI | | 6 PSI | | 8 PSI | | 10 PSI | | 12 PSI | | 15 PSI | | MAX VACUUM | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | "HG | CFM | BHP |
| **817** | 880 | 982 | 24.9 | 895 | 36.8 | 821 | 48.7 | 756 | 60.6 | - | - | - | - | 12 | 761 | 35.7 |
| | 1770 | 2368 | 55.5 | 2281 | 79.5 | 2207 | 103.5 | 2142 | 127.6 | 2083 | 151.6 | 2003 | 151.6 | 16 | 1959 | 101.4 |
| | 2250 | 3116 | 78.7 | 3028 | 109.2 | 2955 | 139.8 | 2890 | 170.4 | 2831 | 200.9 | 2751 | 200.9 | 16 | 2707 | 137.1 |
| **824** | 880 | 1326 | 33.1 | 1207 | 49.2 | 1108 | 65.4 | 10121 | 81.5 | - | - | - | - | 12 | 1028 | 48.2 |
| | 1770 | 3198 | 74.8 | 3080 | 107.2 | 2980 | 139.7 | 2892 | 172.2 | 2813 | 204.7 | 2705 | 204.7 | 16 | 2646 | 136.8 |
| | 2250 | 4208 | 105.6 | 4090 | 147.2 | 3990 | 188.5 | 3902 | 229.8 | 3823 | 271.1 | 3715 | 271.1 | 16 | 3656 | 184.9 |
| **827** | 880 | 1519 | 37.9 | 1383 | 56.4 | 1269 | 74.9 | 1169 | 93.4 | - | - | - | - | 12 | 1178 | 55.2 |
| | 1770 | 3665 | 85.5 | 3529 | 122.7 | 3415 | 159.9 | 3314 | 197.1 | 3223 | 234.3 | - | 234.3 | 16 | 3032 | 157 |
| | 2550 | 4822 | 120.9 | 4687 | 168.2 | 4572 | 215.5 | 4472 | 262.8 | 4281 | 310.1 | - | 310.1 | 16 | 4189 | 212.3 |

**Notes:**

1. Pressure ratings 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.