



## Roots 826 RCS-VJ

Part Number – call 816-741-0282



Patented WHISPAIR™ Water Sealed Vacuum Exhausters have an inlet spray nozzle and seal water flow meter for water injection. It is designed to handle a limited quantity of liquid without damage. This permits introduction of sealing water at the blower inlet to improve operating efficiency and reduce internal temperature rise.

WHISPAIR blowers reduce noise and power loss by utilizing an exclusive wrap-around plenum and proprietary WHISPAIR jet to control pressure equalization-feeding backflow in the direction of impeller movement, thereby aiding rotation. This design results in longer bearing life, lower vibration, and reduces noise up to 5 dBA pressure or vacuum.

- Heavy-duty unit with integral-shaft ductile iron impellers with an involute profile
- Rigid one-piece casing, headplates, and end covers are grey iron
- Carburized and ground alloy steel spur timing gears
- Cylindrical roller bearings
- Piston rings reduce air leakage
- Lip type oil seals prevent lubrication from entering the air chamber.
- Hydrodynamic seal on the drive shaft prevent oil leaks
- Splash oil lubricated gears on drive and gear ends
- Horizontal and vertical configurations available



816-741-0282

### Quick Specs

|                                                                                                                   |                 |
|-------------------------------------------------------------------------------------------------------------------|-----------------|
| Maximum Recommended Sealing Water Flow Rate – Includes injected and process water (single or two stage operation) | 8 Gallons/Min   |
| Flow Range                                                                                                        | to 3400 CFM     |
| Max ΔVacuum                                                                                                       | 20" Hg          |
| Maximum RPM                                                                                                       | 1800            |
| Minimum RPM                                                                                                       | 850             |
| Max ΔT                                                                                                            | 160°F           |
| Inlet Connection Size                                                                                             | 12" Flange      |
| Discharge Connection Size                                                                                         | 12" Flange      |
| Shaft Dia.                                                                                                        | 2.75"           |
| Min Sheave Dia.                                                                                                   | 13.2"           |
| Drive End Lubrication                                                                                             | Oil             |
| Gear End Lubrication                                                                                              | Oil             |
| Oil Sump Horiz Config                                                                                             | ~3 Gallons      |
| Oil Sump Vert Config                                                                                              | ~40 oz          |
| Bare Unit Weight                                                                                                  | 2075 lbs        |
| Container                                                                                                         | Wood Skid       |
| Skid Size (L x W x H)                                                                                             | 54" x 32" x 36" |
| Shipping Weight on Skid                                                                                           | ~2125 lbs       |
| Recommended to Ship Via                                                                                           | Truck           |





816-741-0282

| Item # | Part Name                                             | Qty. |
|--------|-------------------------------------------------------|------|
| 1      | Headplate                                             | 2    |
| 3      | Gearbox                                               | 1    |
| 4      | Gear                                                  | 2    |
| 5      | Drive End Cover                                       | 1    |
| 7      | Gasket                                                | 2    |
| 8      | Nameplate                                             | 1    |
| 9      | Lubrication Label                                     | 2    |
| 10     | Shim                                                  | 4    |
| 11     | Cylinder                                              | 1    |
| 12     | Impeller & Shaft Drive                                | 1    |
| 13     | Impeller & Shaft Driven                               | 1    |
| 14     | Bearing                                               | 4    |
| 16     | Pin, Dowel                                            | 4    |
| 17     | Spring Pin                                            | 2    |
| 19     | Key                                                   | 1    |
| 20     | Drive Screw                                           | 10   |
| 21     | Breather-Filler Plug                                  | 2    |
| 22     | Drain Plug                                            | 4    |
| 23     | Capscrew                                              | 44   |
| 27     | Seal-Lip, Headplate                                   | 4    |
| 28     | Seal Ring                                             | 4    |
| 29     | Washer, Wavy Spring                                   | 2    |
| 30     | Washer-Gear Mounting                                  | 2    |
| 31     | Capscrew                                              | 2    |
| 32     | Capscrew                                              | 16   |
| 33     | Seal, Lip D. E. Cover                                 | 1    |
| 34     | Clamp Plate, Drive End                                | 2    |
| 36     | Lockwasher                                            | 1    |
| 37     | Oil Level Gauge                                       | 2    |
| 38     | Sleeve                                                | 4    |
| 40     | Slinger - D.E.                                        | 1    |
| 42     | Rotation Arrow                                        | 1    |
| 44     | Label, Whispair                                       | 2    |
| 45     | Pipe Plug                                             | 2    |
| 46     | Slinger - G.E.                                        | 1    |
| 48     | Washer                                                | 2    |
| 49     | Capscrew-Butt. Hd.                                    | 2    |
| 54     | Clamp Plate, Gear End                                 | 2    |
| 56     | Oil Leader, G.E. & D.E.<br>Left Side Driven Impeller  | 2    |
| 57     | Oil Leader, G.E. & D.E.<br>Right Side Driven Impeller | 2    |
| 58     | Oil Leader, G.E. & D.E.<br>Right Side Drive Impeller  | 2    |
| 59     | Oil Leader, G.E. & D.E.<br>Left Side Drive Impeller   | 2    |
| 62     | Capscrew                                              | 1    |
| 63     | Eyebolt                                               | 2    |
| 64     | Pipe Plug                                             | 4    |
| 69     | Washer                                                | 6    |
| 74     | Spring Pin                                            | 1    |

## Repair Kits

Repair kits are bundled with the parts you need to complete a standard repair. It is more cost effective to buy a repair kit than to purchase individual parts. However, if you need parts not listed in the kit, it is recommended that you call Pathfinder Systems for parts pricing.

**Top, Left, or Right Drive Shaft (Bottom Shaft order P/N 571793RK)**

**P/N 571792RK Kit for 800 RCS-J/VJ**

| Item | Qty | Kit Description                      | P/N      |
|------|-----|--------------------------------------|----------|
| 7    | 2   | Gasket Headplate                     | 57178021 |
| 10   | 1   | Shim Set                             | 64095010 |
| 14   | 4   | Bearing, Roller                      | 10222041 |
| 27   | 2   | Hydrodynamic Seal, (PTFE) CW         | 13309023 |
| 27A  | 2   | Hydrodynamic Seal, (PTFE) CCW        | 13309024 |
| 28   | 4   | Piston, Ring Seal                    | 12283005 |
| 29   | 2   | Washer, Spring, Wavy                 | 10135019 |
| 31   | 2   | Hex Cap Screw 7/8                    | 12467017 |
| 33   | 1   | Hydrodynamic Seal, (PTFE)            | 13440004 |
| 37   | 1   | Sight Plug Oil Level ¾               | 12066001 |
| 38   | 4   | Sleeve, GE & OGE 800 RCS-J           | 57161020 |
| 40   | 1   | Slinger DE                           | 67884012 |
| 46   | 1   | Slinger GE                           | 66996012 |
| 48   | 2   | Washer, Plain Flat                   | 10181013 |
| 49   | 2   | Screw Cap 3/8-16                     | 10219003 |
| 62   | 1   | Screw Cap Hex Head 7/8-9             | 10342001 |
| 69   | 2   | Washer, HDN                          | 12750003 |
| 74   | 1   | Pin, Spring 3/16x1                   | 10068054 |
| 83   | 2   | Sleeve Seal Install 8" Inboard       | 13365023 |
| 84   | 1   | Sleeve Seal Install 8" DSft Outboard | 13365012 |



816-741-0282

**Table 2 - Recommended Oil Grades**

| Ambient*<br>Temperature °F (°C) | ISO<br>Viscosity No. |
|---------------------------------|----------------------|
| Above 90° (32°)                 | 320                  |
| 32° to 90° (0° to 32°)          | 220                  |
| 0° to 32° (-18° to 0°)          | 150                  |
| Below 0° (-18°)                 | 100                  |

\*Ambient temperature is defined as the temperature of the space in which the blower and drive are located.

Use a good grade of **industrial type** non-detergent, rust inhibiting, anti-foaming oil and of correct viscosity per Table 2. Roots synthetic oil (Roots P/N 813-106-) is **specified and recommended**. Roots does not recommend automotive type lubricants, as they are not formulated with the properties mentioned above.

**Due to sludge build-up and seal leakage problems, Roots recommendation is DO NOT USE Mobil SHC synthetic oils in ROOTS blowers.**

**Table 4 - Approximate Oil Fill Amounts**

| Frame Series | Gearbox |          | Drive End |          |
|--------------|---------|----------|-----------|----------|
|              | Pints   | (Liters) | Pints     | (Liters) |
| 800 JH       | 16.0    | 7.6      | 7.5       | 3.5      |
| 800 JV       | 2.0     | 0.95     | 0.5       | 0.24     |

These capacities are provided to assist stocking the correct amount of oil. Exact sump capacity may differ slightly. See "Lubrication" section for proper filling instructions.

| ROOTS® Synthetic Oil: ISO-VG-320 Grade |             |
|----------------------------------------|-------------|
|                                        | Part Number |
| Quart                                  | 13106004    |
| Gallon                                 | 13106005    |
| Case (12 qts)                          | 13106007    |
| ROOTS® Synthetic Oil: ISO-VG-220 Grade |             |
|                                        | Part Number |
| Quart                                  | 13106001    |
| Gallon                                 | 13106002    |
| Case (12 qts)                          | 13106008    |
| ROOTS® Synthetic Oil: ISO-VG-150 Grade |             |
|                                        | Part Number |
| Quart                                  | 13106020    |
| Gallon                                 | 13106021    |
| Case (12 qts)                          | 13106023    |
| 5 Gallon Pail                          | 13106022    |
| 55 Gallon Drum                         | 13106025    |
| ROOTS® Synthetic Oil: ISO-VG-100 Grade |             |
|                                        | Part Number |
| Quart                                  | 13106011    |
| Gallon                                 | 13106012    |
| Case (12 qts)                          | 13106014    |
| 5 Gallon Pail                          | 13106013    |
| 55 Gallon Drum                         | 13106016    |

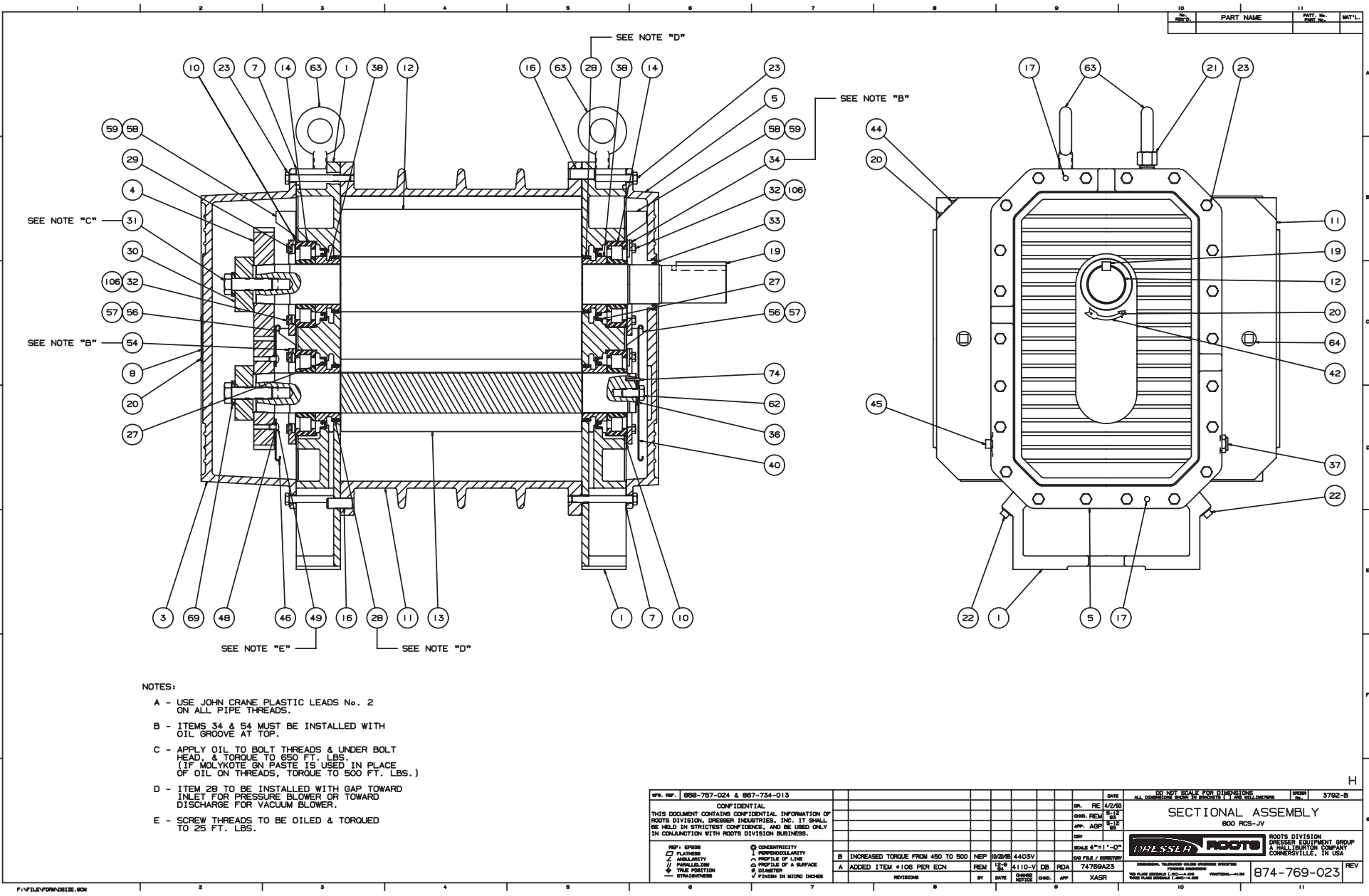


Figure 6 - Assembly of RCS-J WHISPAIR Vertical Style Blowers

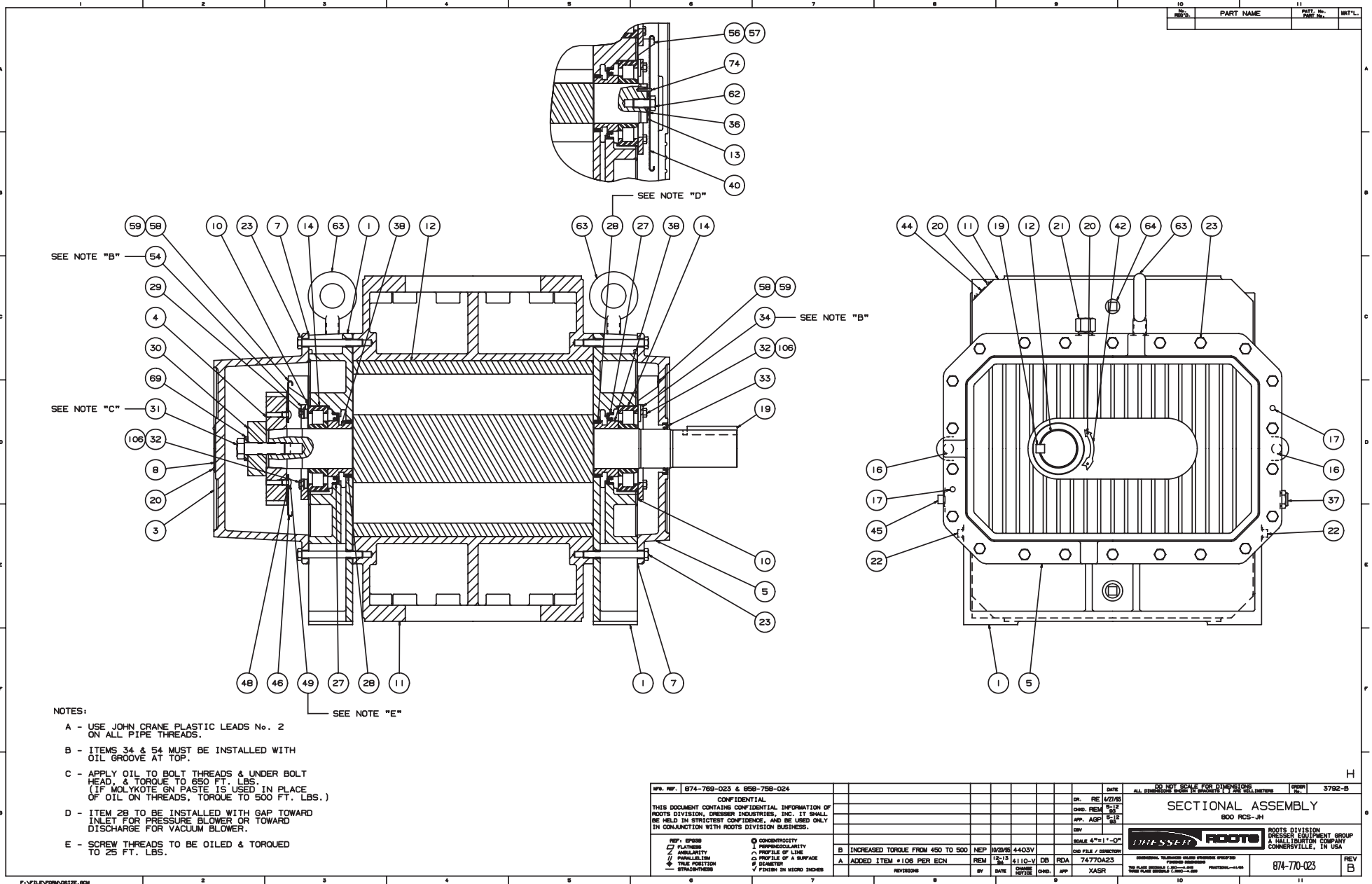
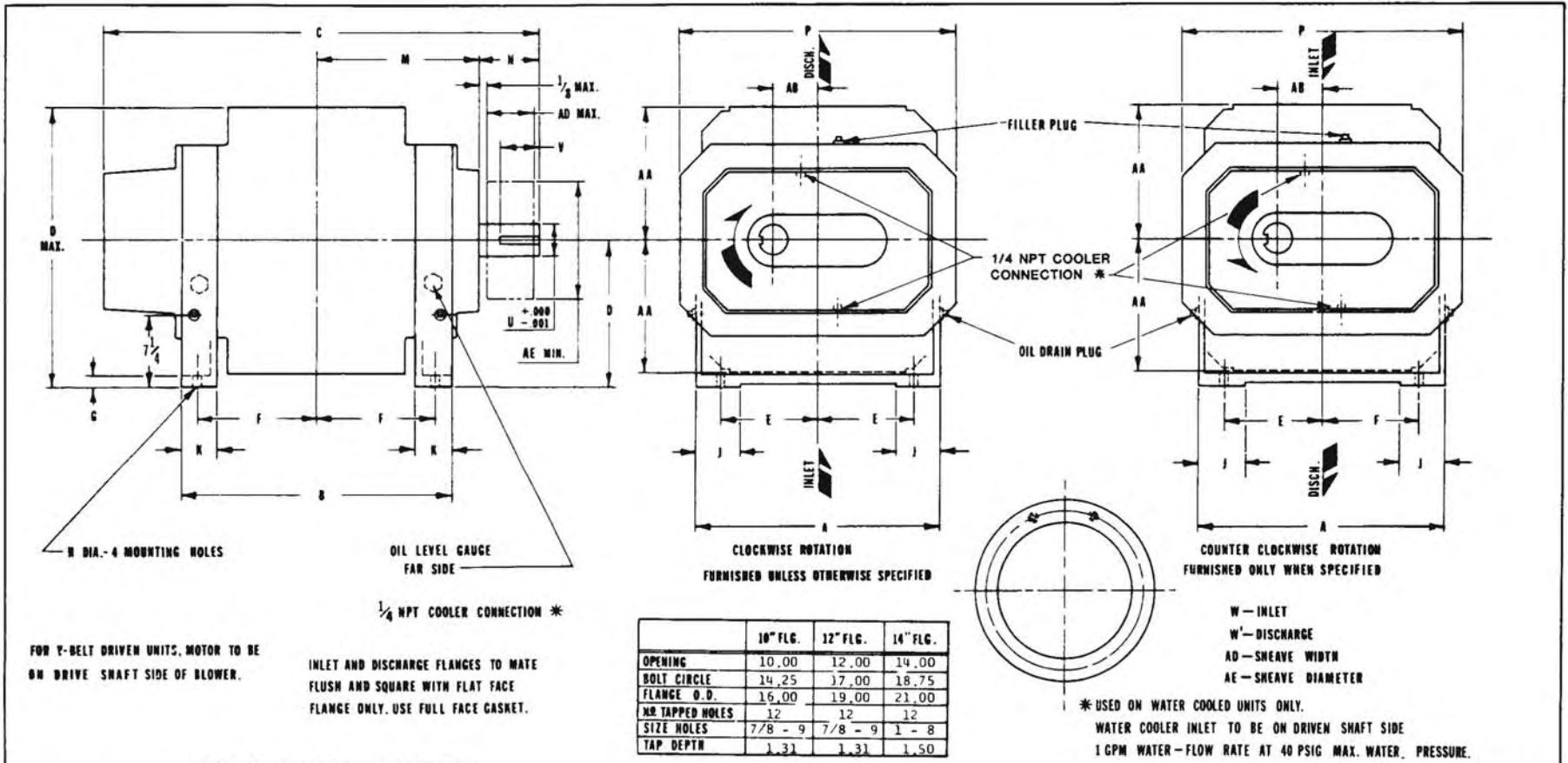


Figure 7 - Assembly of RCS-J WHISPAIR Horizontal Style Blowers



**RCS-J WHISPAIR BLOWER**

| FRAME SIZE | A     | B     | C     | D     | E    | F     | G    | H    | J    | K    | M     | N    | O     | P     | U    | V    | KEYWAY      | W       | W'      | AA    | AB   | AD   | AE   | OIL CAPACITY |           | APPROX. WEIGHT |
|------------|-------|-------|-------|-------|------|-------|------|------|------|------|-------|------|-------|-------|------|------|-------------|---------|---------|-------|------|------|------|--------------|-----------|----------------|
|            |       |       |       |       |      |       |      |      |      |      |       |      |       |       |      |      |             |         |         |       |      |      |      | G.E.         | D.E.      |                |
| 817JW      | 22.00 | 24.25 | 38.63 | 13.00 | 8.75 | 10.75 | 1.00 | 1.00 | 4.00 | 3.25 | 14.50 | 5.00 | 25.75 | 25.00 | 2.75 | 4.00 | .625 x .313 | 10" FLG | 10" FLG | 12.75 | 4.00 | 7.19 | 13.2 | 256FL.OZ.    | 120FL.OZ. | 1620 LBS.      |
| 821JW      | "     | 27.88 | 42.25 | "     | "    | 12.56 | "    | "    | "    | "    | 16.31 | "    | "     | "     | "    | "    | "           | 12" FLG | 10" FLG | "     | "    | "    | "    | "            | "         | 1800 LBS.      |
| 826JW      | "     | 33.13 | 47.50 | "     | "    | 15.19 | "    | "    | "    | "    | 18.94 | "    | "     | "     | "    | "    | "           | 12" FLG | 12" FLG | "     | "    | "    | "    | "            | "         | 2075 LBS.      |
| 832JW      | "     | 38.50 | 52.88 | "     | "    | 17.88 | "    | "    | "    | "    | 21.63 | "    | "     | "     | "    | "    | "           | 14" FLG | 12" FLG | "     | "    | "    | "    | "            | "         | 2325 LBS.      |

**CERTIFIED CORRECT FOR**

CUSTOMER ORDER NO. \_\_\_\_\_

ROOTS ORD:R NO. \_\_\_\_\_

DATE \_\_\_\_\_

**V-BELT DRIVE DATA**

BELTS \_\_\_\_\_

DRIVE SHEAVE \_\_\_\_\_

DRIVEN SHEAVE \_\_\_\_\_

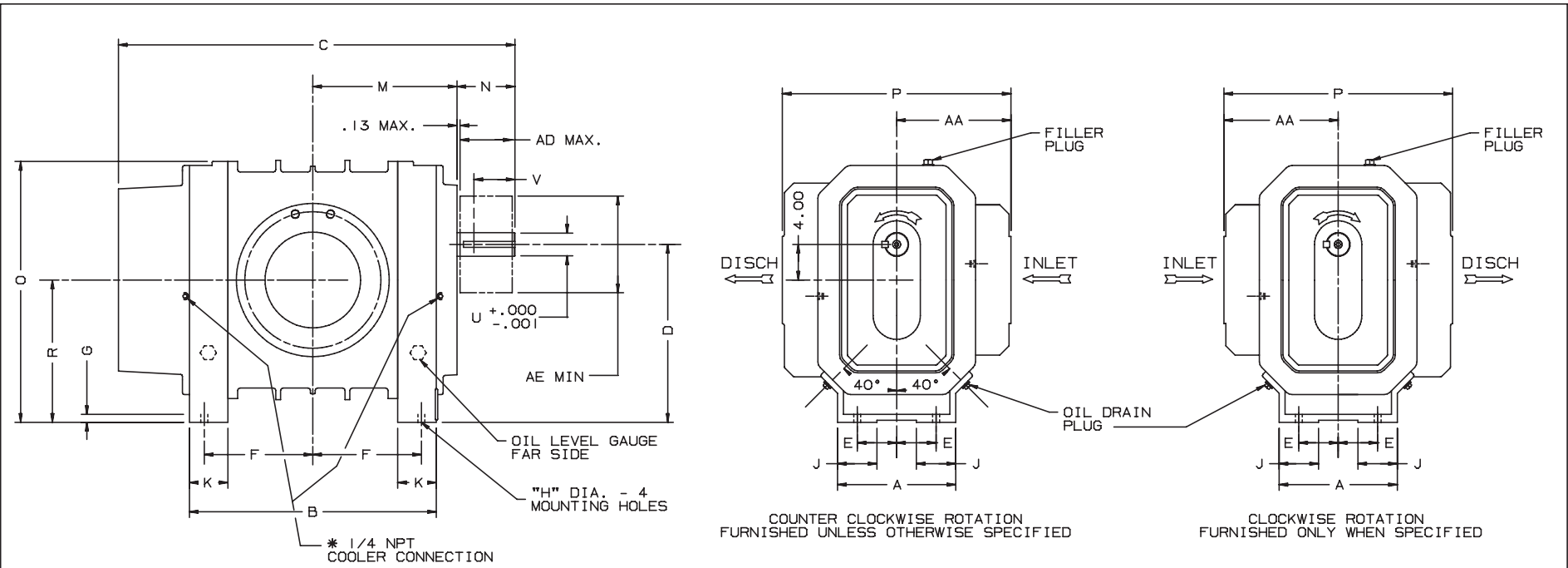
CENTER DISTANCE \_\_\_\_\_



DRESSER INDUSTRIES, INC.  
 ROOTS OPERATIONS  
 900 WEST MOUNT STREET, CONNERSVILLE, INDIANA 47331  
 TELEPHONE: 317/825-2181

**858-791-021**

COOLER CON., REV. 100 8021V 10 9 74 \* COOLER CONNECTIONS ADDED 8/12/82 REM REV. PER ECN 2820V 4/22/82 NS



FOR V-BELT DRIVEN UNITS  
MOTOR TO BE LOCATED ON  
INLET SIDE OF BLOWER



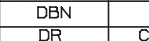
INLET AND DISCHARGE FLANGES TO MATE  
FLUSH AND SQUARE WITH FLAT FACE  
FLANGES ONLY. USE FULL FACE GASKETS

\* USED ON OIL COOLED UNITS ONLY.  
WATER COOLER INLET TO BE ON DISCHARGE SIDE OF HEADPLATE.  
1 GPM WATER-FLOW RATE AT 40 PSIG MAX. WATER PRESSURE.

W - INLET  
W' - DISCHARGE  
AD - SHEAVE WIDTH  
AE - SHEAVE DIAMETER  
ALL DIMENSIONS IN INCHES

|                 | 10"FLG | 12"FLG | 14"FLG |
|-----------------|--------|--------|--------|
| OPENING         | 10.00  | 12.00  | 14.00  |
| BOLT CIRCLE     | 14.25  | 17.00  | 18.75  |
| FLANGE O.D.     | 16.00  | 19.00  | 21.00  |
| No TAPPED HOLES | 12     | 12     | 12     |
| SIZE HOLES      | 7/8-9  | 7/8-9  | 1 - 8  |
| TAP DEPTH       | 1.31   | 1.13   | 1.50   |

| FRAME SIZE | A     | B     | C     | D     | E    | F     | G    | H    | J    | K    | M     | N    | O     | P     | R    | U    | V    | KEYWAY      | W      | W'     | AA    | AD   | AE   | OIL CAPACITY |      | APPROX WEIGHT |
|------------|-------|-------|-------|-------|------|-------|------|------|------|------|-------|------|-------|-------|------|------|------|-------------|--------|--------|-------|------|------|--------------|------|---------------|
|            |       |       |       |       |      |       |      |      |      |      |       |      |       |       |      |      |      |             |        |        |       |      |      | G.E.         | D.E. |               |
| 817        | 13.75 | 24.25 | 38.63 | 21.00 | 4.63 | 10.75 | 1.00 | 1.00 | 3.50 | 3.25 | 14.50 | 5.00 | 30.00 | 25.50 | 7.00 | 2.75 | 4.00 | .625 X .313 | 10"FLG | 10"FLG | 12.75 | 7.19 | 13.2 | 144          | 80   | 1620          |
| 821        | "     | 27.88 | 42.25 | "     | "    | 12.56 | "    | "    | "    | "    | 16.31 | "    | "     | "     | "    | "    | "    | "           | 12"FLG | 10"FLG | "     | "    | "    | "            | "    | 1800          |
| 826        | "     | 33.13 | 47.50 | "     | "    | 15.19 | "    | "    | "    | "    | 18.94 | "    | "     | "     | "    | "    | "    | "           | 12"FLG | 12"FLG | "     | "    | "    | "            | "    | 2075          |
| 832        | "     | 38.50 | 52.00 | "     | "    | 17.88 | "    | "    | "    | "    | 21.63 | "    | "     | "     | "    | "    | "    | "           | 14"FLG | 12"FLG | "     | "    | "    | "            | "    | 2325          |

|                          |  |                      |  |                   |  |                                                                                                                                                                                                                                                                                |  |                                                                                                            |  |                        |  |                 |  |               |  |               |  |  |  |  |  |  |  |  |  |
|--------------------------|--|----------------------|--|-------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------|--|------------------------|--|-----------------|--|---------------|--|---------------|--|--|--|--|--|--|--|--|--|
| CERTIFIED CORRECT FOR    |  |                      |  | V-BELT DRIVE DATA |  | <p>RCS-J<br/>WHISP AIR<br/>BLOWER</p>   <p>Dresser ROOTS, Dresser, Inc.<br/>Connersville, IN USA</p> |  |  <p>DBN</p> <p>DR</p> |  | <p>CHKD</p> <p>APP</p> |  | <p>58792021</p> |  | <p>REV. B</p> |  |               |  |  |  |  |  |  |  |  |  |
| CUSTOMER ORDER No. _____ |  |                      |  | BELTS             |  |                                                                                                                                                                                                                                                                                |  |                                                                                                            |  |                        |  |                 |  |               |  |               |  |  |  |  |  |  |  |  |  |
| ROOTS ORDER No. _____    |  | B REV DIM (F) ON 832 |  | RDR 7323V         |  |                                                                                                                                                                                                                                                                                |  |                                                                                                            |  |                        |  |                 |  |               |  | DRIVE SHEAVE  |  |  |  |  |  |  |  |  |  |
| DATE _____               |  | A REVISED PER ECN    |  | MS 2820V          |  |                                                                                                                                                                                                                                                                                |  |                                                                                                            |  |                        |  |                 |  |               |  | DRIVEN SHEAVE |  |  |  |  |  |  |  |  |  |
|                          |  | REVISIONS            |  | BY                |  | DATE                                                                                                                                                                                                                                                                           |  | CHKD.                                                                                                      |  | APP.                   |  | CENTER DISTANCE |  |               |  |               |  |  |  |  |  |  |  |  |  |

**ROOTS™ VJ WHISPAIR™**  
**Water-sealed Vacuum Exhauster**

Frames 817J, thru 832J

**BASIC BLOWER DESCRIPTION**

ROOTS™ WHISPAIR™ water-sealed vacuum exhausters are heavy-duty units designed with integral-shaft ductile iron impellers. WHISPAIR vacuum exhausters reduce noise and power loss by utilizing an exclusive wrap-around plenum and proprietary WHISPAIR™ jet to control pressure equalization – feeding backflow in the direction of impeller movement, thereby aiding rotation.

The headplates, one-piece casing and end covers 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.

Piston rings reduce air leakage through the shaft openings in the headplates, and lip-type oil seals prevent lubricant from entering the air chamber. WHISPAIR™ vacuum exhausters incorporate splash oil lubrication at both ends of the units. A hydrodynamic seal on the drive shaft prevents shaft seal oil leaks.

The top shaft is extended for drive on side outlet vacuum exhausters, and the left or right shaft can be extended for drive on bottom outlet vacuum exhausters. An inlet spray nozzle and seal water flow meter are supplied for water injection.

**WARRANTY PERIOD**

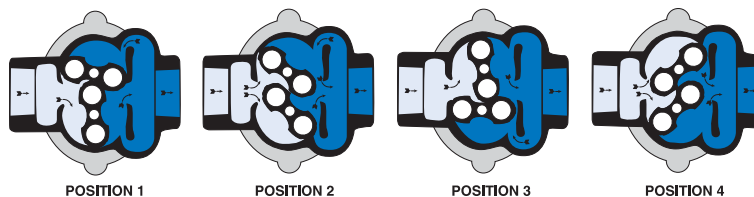
Twelve (12) months from date of original unit start-up or 18 months from date of original shipment, whichever occurs first.



**DESIGN AND CONSTRUCTION FEATURES**

1. Low noise level, less operating power required
2. Improved volumetric efficiency & reduced operating temperatures
3. Alloy steel timing gears
4. Cylindrical roller bearings
5. Piston ring air seals
6. Lip-type oil seals, hydrodynamic drive shaft seal
7. Splash oil lubrication
8. Horizontal and vertical configurations available

**OPERATING PRINCIPLE**



Incoming air is trapped by the impellers. Simultaneously, pressurized air (right) is being discharged. As the lower impeller passes wrap-around flange, Whispair jet equalizes pressure between trapped air and discharge area, aiding impeller movement and reducing power. Impellers move air into the discharge area (right). Backflow is controlled, resulting in reduction of noise relative to conventional blowers.





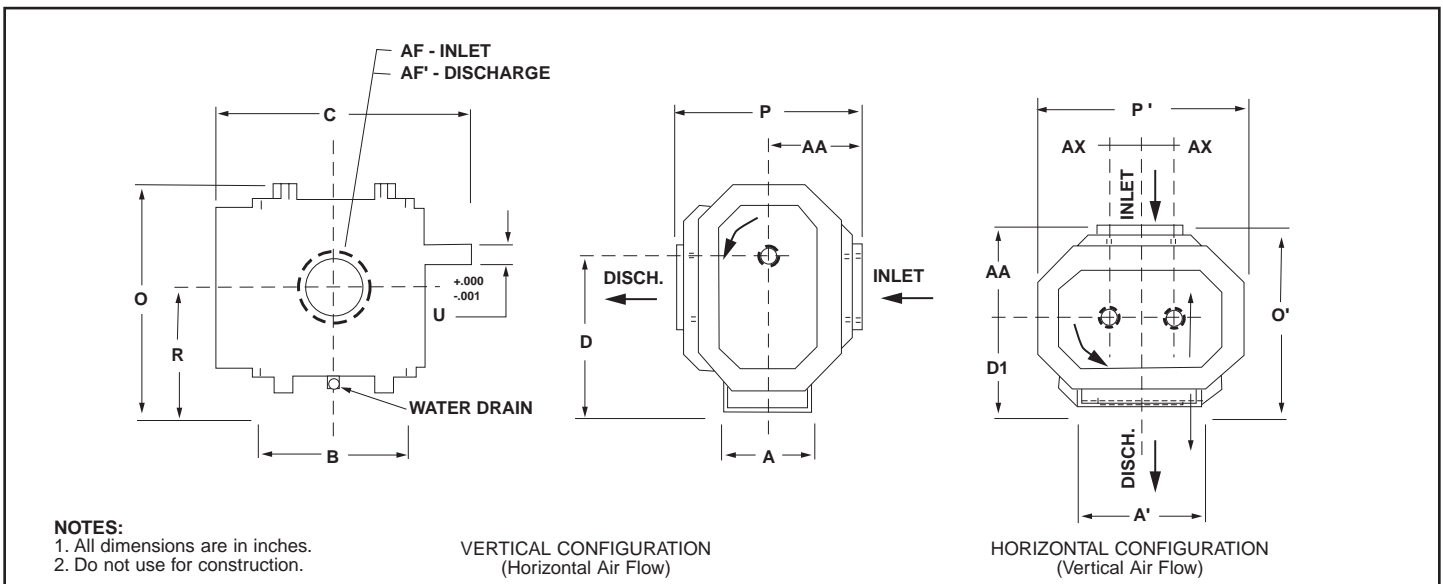
## PERFORMANCE TABLE

| FRAME SIZE | SPEED RPM | 16" Hg VAC |       | 20" Hg VAC |       | 22" Hg VAC |       | 24" Hg VAC |       |
|------------|-----------|------------|-------|------------|-------|------------|-------|------------|-------|
|            |           | CFM        | BHP   | CFM        | BHP   | CFM        | BHP   | CFM        | BHP   |
| 817J       | 850       | 948        | 47.8  | 840        | 59    | 737        | 64.5  | 564        | 70.0  |
|            | 1170      | 1385       | 66.9  | 1258       | 82    | 1138       | 89.5  | 937        | 97.1  |
|            | 1800      | 2265       | 105.9 | 2110       | 128   | 1962       | 139.2 | 1715       | 150.3 |
| 821J       | 850       | 1138       | 56.8  | 1008       | 70.2  | 885        | 76.8  | 677        | 83.5  |
|            | 1170      | 1662       | 79.3  | 1510       | 97.5  | 1366       | 106.5 | 1124       | 115.6 |
|            | 1800      | 2719       | 125.2 | 2532       | 151.9 | 2355       | 165.3 | 2058       | 178.6 |
| 826J       | 850       | 1423       | 70.4  | 1260       | 87.1  |            |       |            |       |
|            | 1170      | 2078       | 98.2  | 1888       | 120.8 |            |       |            |       |
|            | 1800      | 3400       | 154.2 | 3166       | 187.6 |            |       |            |       |
| 832J       | 850       | 1707       | 84.0  |            |       |            |       |            |       |
|            | 1170      | 2493       | 116.8 |            |       |            |       |            |       |
|            | 1800      | 4079       | 182.9 |            |       |            |       |            |       |

**NOTES:**

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

## OUTLINE DRAWING & DIMENSIONAL TABLE



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

| FRAME SIZE | A     | A'    | B     | C     | Drive Shaft Location |       | O     | O'    | P     | P'    | R     | U     | Keyway      | AF Inlet Diameter | AF' Discharge Diameter | AA    | AX   | Approx. Net Wt (lbs) |
|------------|-------|-------|-------|-------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------------|-------------------|------------------------|-------|------|----------------------|
|            |       |       |       |       | D                    | D1    |       |       |       |       |       |       |             |                   |                        |       |      |                      |
| 817J       | 13.75 | 22.00 | 24.25 | 38.63 | 21.00                | 13.00 | 30.00 | 25.75 | 25.50 | 25.00 | 17.00 | 2.750 | .625 x .313 | 10.0 FLG          | 10.0 FLG               | 12.75 | 4.00 | 1620                 |
| 821J       | 13.75 | 22.00 | 27.88 | 42.25 | 21.00                | 13.00 | 30.00 | 25.75 | 25.50 | 25.00 | 17.00 | 2.750 | .625 x .313 | 12.0 FLG          | 10.0 FLG               | 12.75 | 4.00 | 1800                 |
| 826J       | 13.75 | 22.00 | 33.13 | 47.50 | 21.00                | 13.00 | 30.00 | 25.75 | 25.50 | 25.00 | 17.00 | 2.750 | .625 x .313 | 12.0 FLG          | 12.0 FLG               | 12.75 | 4.00 | 2075                 |
| 832J       | 13.75 | 22.00 | 38.50 | 52.88 | 21.00                | 13.00 | 30.00 | 15.75 | 25.50 | 25.00 | 17.00 | 2.750 | .625 x .313 | 14.0 FLG          | 12.0 FLG               | 12.75 | 4.00 | 2325                 |

**Dresser, Inc.**



**Roots**

Dresser ROOTS  
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 Connersville, IN 47331  
 PH: 765-827-9200  
 FX: 765-827-9266

Dresser ROOTS - Holmes Operation  
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S-5597  
 December 2002

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