



**Roots**  
**832 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 4079 CFM
Max ΔVacuum	16" Hg
Maximum RPM	1800
Minimum RPM	850
Max ΔT	160°F
Inlet Connection Size	14" 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	2325 lbs
Container	Wood Skid
Skid Size (L x W x H)	54" x 32" x 36"
Shipping Weight on Skid	~2375 lbs
Recommended to Ship Via	Truck





816-741-0282

## 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.

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. Left Side Driven Impeller	2
57	Oil Leader, G.E. & D.E. Right Side Driven Impeller	2
58	Oil Leader, G.E. & D.E. Right Side Drive Impeller	2
59	Oil Leader, G.E. & D.E. Left Side Drive Impeller	2
62	Capscrew	1
63	Eyebolt	2
64	Pipe Plug	4
69	Washer	6
74	Spring Pin	1

### P/N 571791RK Kit for 8" RCS-J

Item	Qty	Kit Description	P/N
7	2	Gasket Headplate	57178021
10	1	Shim Set	640950SS
14	4	Bearing, Roller	10222041
27	2	Hydrodynamic Seal, (PTFE) CW	13309023
27.1	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	Sight Plug Oil Level ¾	12066001
69	2	Washer, HDN	12750003
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* Temperature °F (°C)	ISO 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.

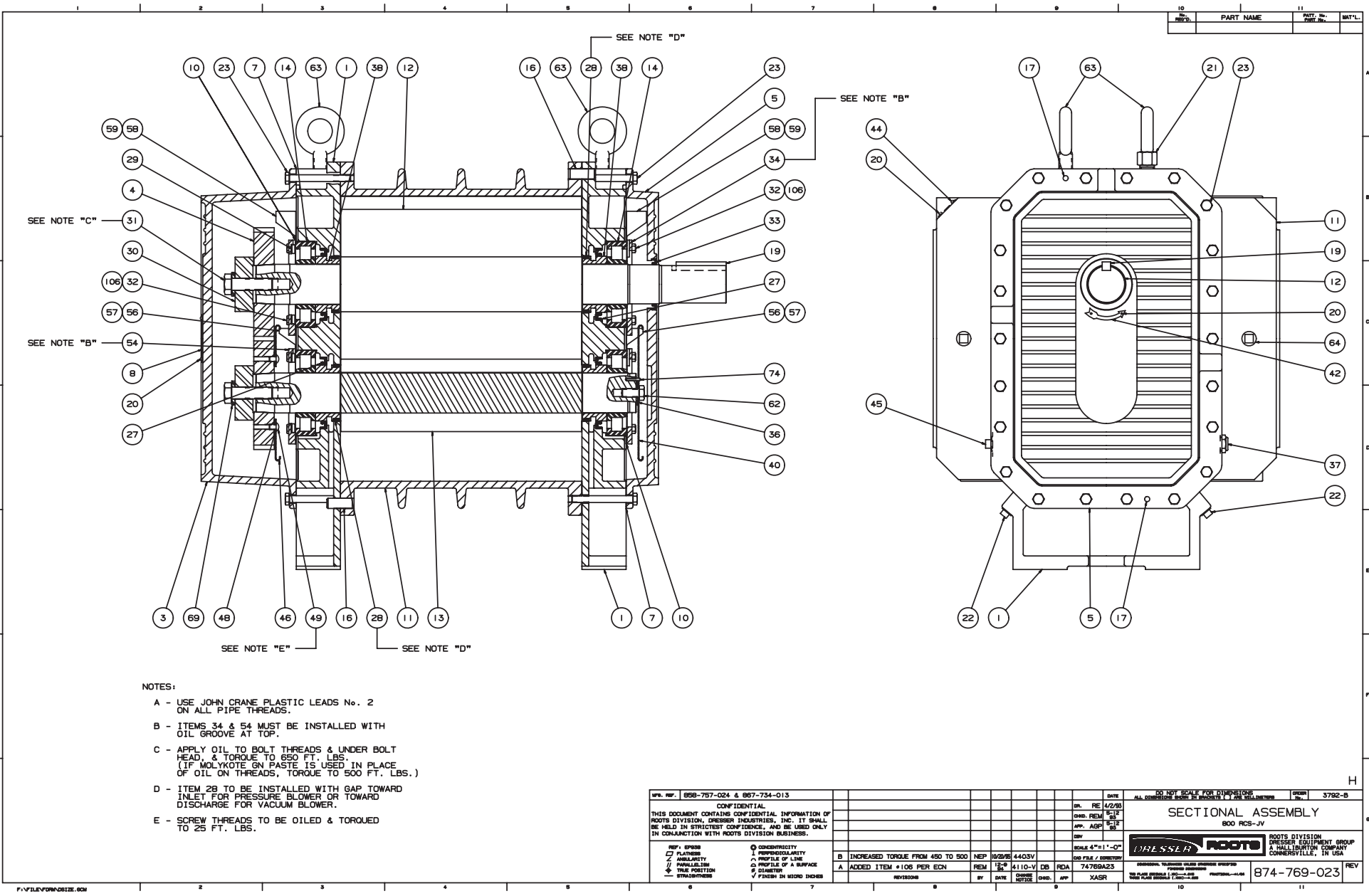
**Due to sludge build-up and seal leakage problems, Roots recommendation is DO NOT USE Mobil SHC synthetic oils in ROOTS blowers.**

**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.

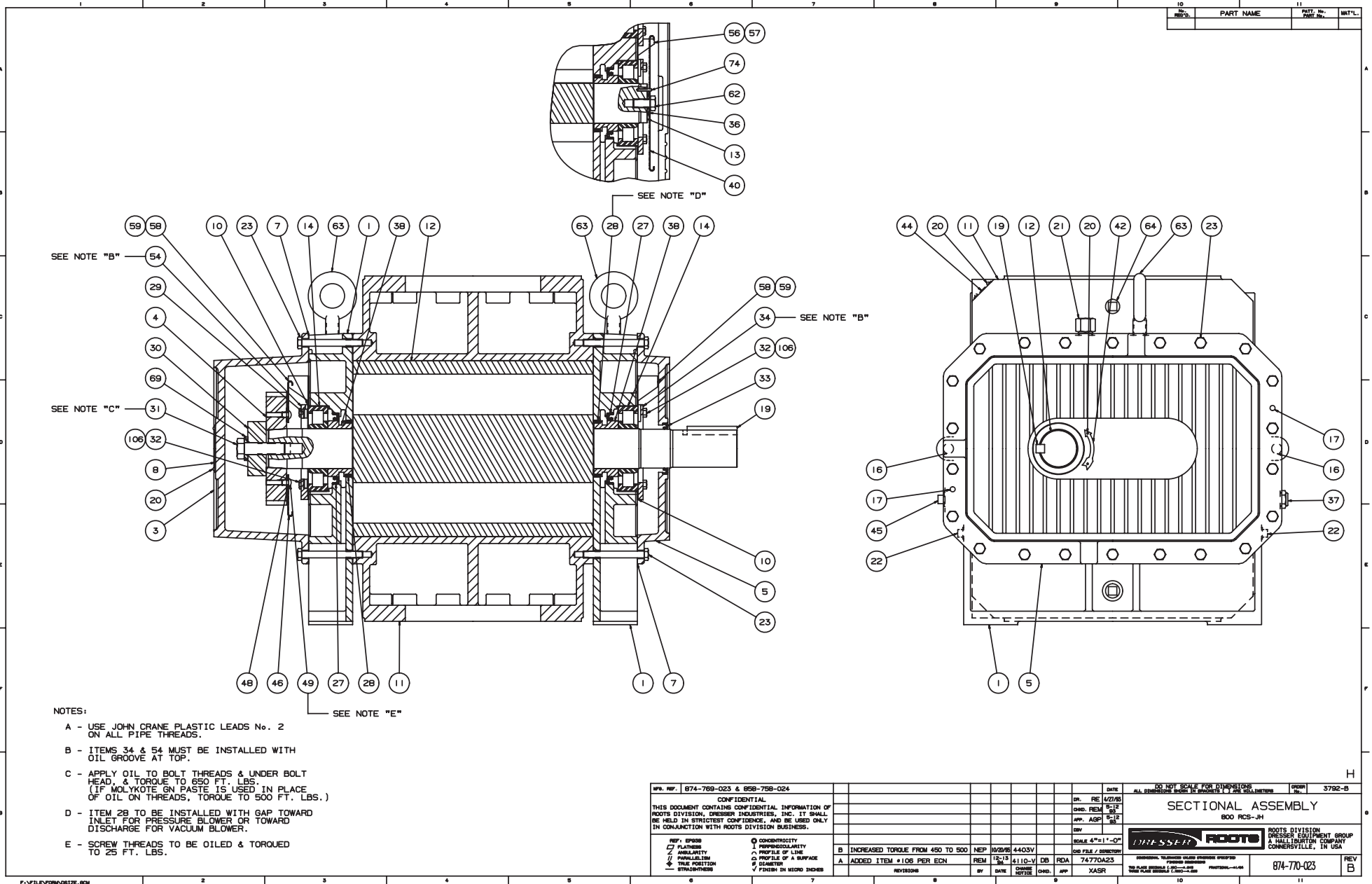
ROOTS® Synthetic Oil: ISO-VG-320 Grade	
	Part Number
Quart	13106004
Gallon	13106005
Case (12 qts)	13106007
ROOTS® Synthetic Oil: ISO-VG-220 Grade	
	Part Number
Quart	13106001
Gallon	13106002
Case (12 qts)	13106008
ROOTS® Synthetic Oil: ISO-VG-150 Grade	
	Part Number
Quart	13106020
Gallon	13106021
Case (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



- NOTES:**
- A - USE JOHN CRANE PLASTIC LEADS No. 2 ON ALL PIPE THREADS.
  - B - ITEMS 34 & 54 MUST BE INSTALLED WITH OIL GROOVE AT TOP.
  - C - APPLY OIL TO BOLT THREADS & UNDER BOLT HEAD, & TORQUE TO 850 FT. LBS. (IF MOLYKOTE GN PASTE IS USED IN PLACE OF OIL ON THREADS, TORQUE TO 500 FT. LBS.)
  - D - ITEM 28 TO BE INSTALLED WITH GAP TOWARD INLET FOR PRESSURE BLOWER OR TOWARD DISCHARGE FOR VACUUM BLOWER.
  - E - SCREW THREADS TO BE OILED & TORQUED TO 25 FT. LBS.

WPN. REF. 858-757-024 & 867-734-013		DATE 4/2/83		DO NOT SCALE FOR DIMENSIONS		DRAWN 3792-B	
CONFIDENTIAL							
THIS DOCUMENT CONTAINS CONFIDENTIAL INFORMATION OF ROOTS DIVISION, DRESSER INDUSTRIES, INC. IT SHALL BE HELD IN STRICTEST CONFIDENCE, AND BE USED ONLY IN CONNECTION WITH ROOTS DIVISION BUSINESS.							
REP. SYMBOL	CONCENTRICITY	DR. RE	10/2/83	4403V	SCALE 4"=1'-0"	FILE / CONTROL	74769A23
FLATNESS	PERPENDICULARITY	CHD. REM	15-2	110-V	DB	RDA	74769A23
ANGULARITY	PROFILE OF A SURFACE	APP. AGF	15-2	110-V	DB	RDA	74769A23
PARALLELISM	PROFILE OF A SURFACE	APP. AGF	15-2	110-V	DB	RDA	74769A23
TRUE POSITION	DIAMETER	APP. AGF	15-2	110-V	DB	RDA	74769A23
STRAIGHTNESS	FINISH IN MICRO INCHES	APP. AGF	15-2	110-V	DB	RDA	74769A23
B INCREASED TORQUE FROM 450 TO 500		REP	10/2/83	4403V	ROOTS DIVISION DRESSER EQUIPMENT GROUP A HALL INVENTION COMPANY CONNERSVILLE, IN USA		
A ADDED ITEM #106 PER ECN		REM	15-2	110-V	DB	RDA	74769A23
REVISED		BY	DATE	CHANGE NOTICE	CHD.	APP	XASR
874-769-023		874-769-023					

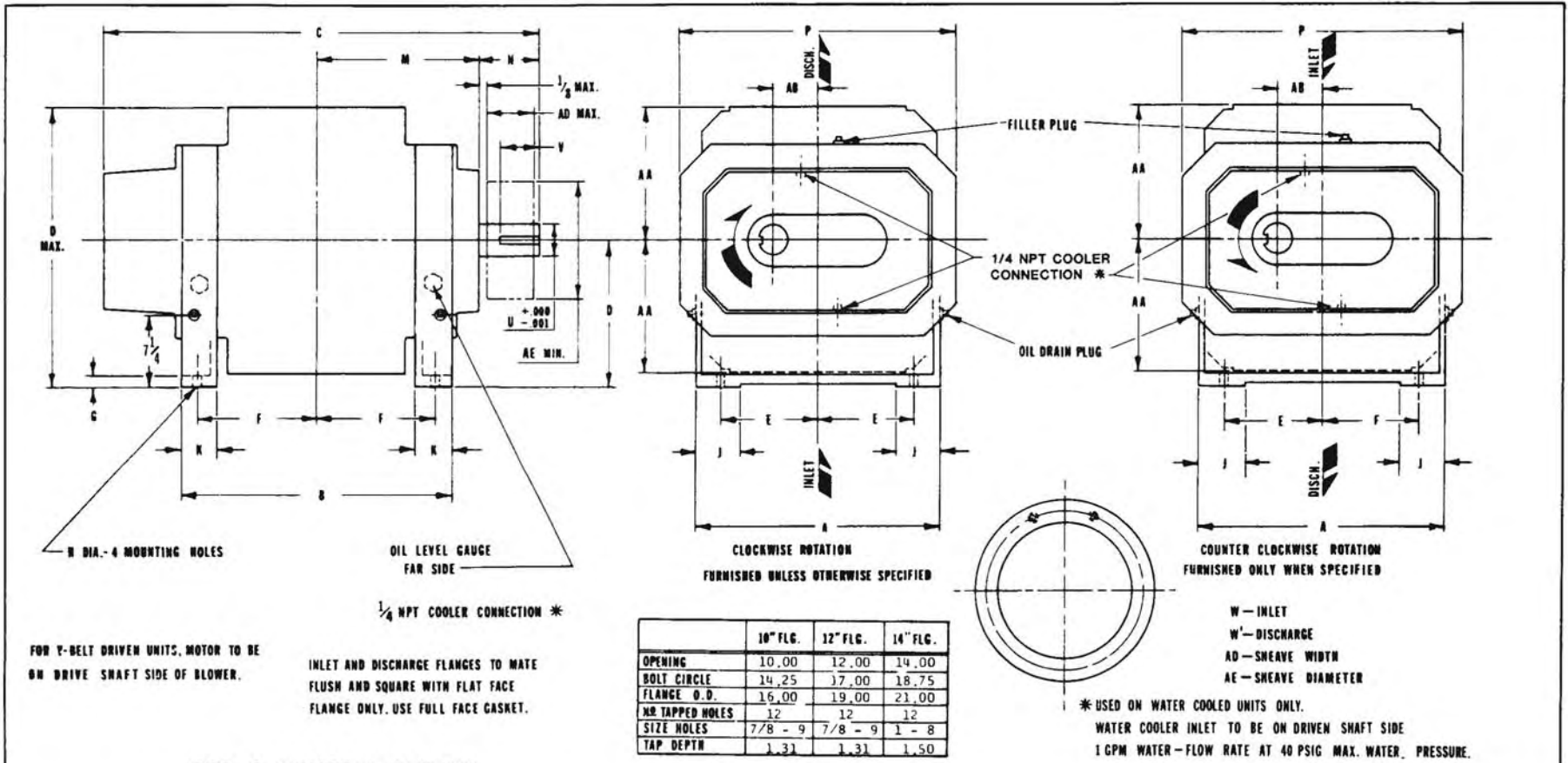
Figure 6 - Assembly of RCS-J WHISPAIR Vertical Style Blowers



- NOTES:
- A - USE JOHN CRANE PLASTIC LEADS No. 2 ON ALL PIPE THREADS.
  - B - ITEMS 34 & 54 MUST BE INSTALLED WITH OIL GROOVE AT TOP.
  - C - APPLY OIL TO BOLT THREADS & UNDER BOLT HEAD, & TORQUE TO 650 FT. LBS. (IF MOLYKOTE GN PASTE IS USED IN PLACE OF OIL ON THREADS, TORQUE TO 500 FT. LBS.)
  - D - ITEM 28 TO BE INSTALLED WITH GAP TOWARD INLET FOR PRESSURE BLOWER OR TOWARD DISCHARGE FOR VACUUM BLOWER.
  - E - SCREW THREADS TO BE OILED & TORQUED TO 25 FT. LBS.

W.P. REF. 874-769-023 & 858-758-024		DATE		DO NOT SCALE FOR DIMENSIONS		OWNER	
CONFIDENTIAL		DR. RE 4/21/85		ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED		3792-B	
THIS DOCUMENT CONTAINS CONFIDENTIAL INFORMATION OF ROOTS DIVISION, DRESSER INDUSTRIES, INC. IT SHALL BE HELD IN STRICTEST CONFIDENCE, AND BE USED ONLY IN CONNECTION WITH ROOTS DIVISION BUSINESS.		DMD. REM. SCL. 1/2"		SECTIONAL ASSEMBLY		ROOTS DIVISION	
		APP. AGR. SCL. 1/2"		800 RCS-JH		DRESSER EQUIPMENT GROUP	
		DIV		SCALE 4"=1'-0"		A HALLIBURTON COMPANY	
		REV. B		DMD FILE / CORR. 74770A23		CONNEYSVILLE, IN USA	
		REV. A		DMD FILE / CORR. 74770A23		874-770-023	
		REV. C		DMD FILE / CORR. 74770A23		REV. B	
		REV. D		DMD FILE / CORR. 74770A23			
		REV. E		DMD FILE / CORR. 74770A23			
		REV. F		DMD FILE / CORR. 74770A23			
		REV. G		DMD FILE / CORR. 74770A23			
		REV. H		DMD FILE / CORR. 74770A23			
		REV. I		DMD FILE / CORR. 74770A23			
		REV. J		DMD FILE / CORR. 74770A23			
		REV. K		DMD FILE / CORR. 74770A23			
		REV. L		DMD FILE / CORR. 74770A23			
		REV. M		DMD FILE / CORR. 74770A23			
		REV. N		DMD FILE / CORR. 74770A23			
		REV. O		DMD FILE / CORR. 74770A23			
		REV. P		DMD FILE / CORR. 74770A23			
		REV. Q		DMD FILE / CORR. 74770A23			
		REV. R		DMD FILE / CORR. 74770A23			
		REV. S		DMD FILE / CORR. 74770A23			
		REV. T		DMD FILE / CORR. 74770A23			
		REV. U		DMD FILE / CORR. 74770A23			
		REV. V		DMD FILE / CORR. 74770A23			
		REV. W		DMD FILE / CORR. 74770A23			
		REV. X		DMD FILE / CORR. 74770A23			
		REV. Y		DMD FILE / CORR. 74770A23			
		REV. Z		DMD FILE / CORR. 74770A23			

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



**RCS-J WHISPAIR BLOWER**

	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
NR TAPPED HOLES	12	12	12
SIZE HOLES	7/8 - 9	7/8 - 9	1 - 8
TAP DEPTH	1.31	1.31	1.50

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.

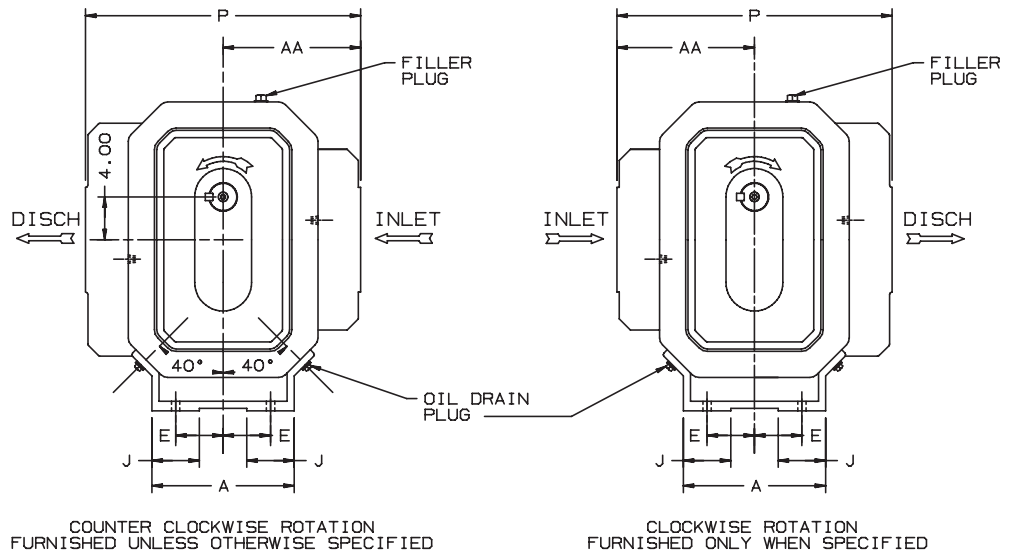
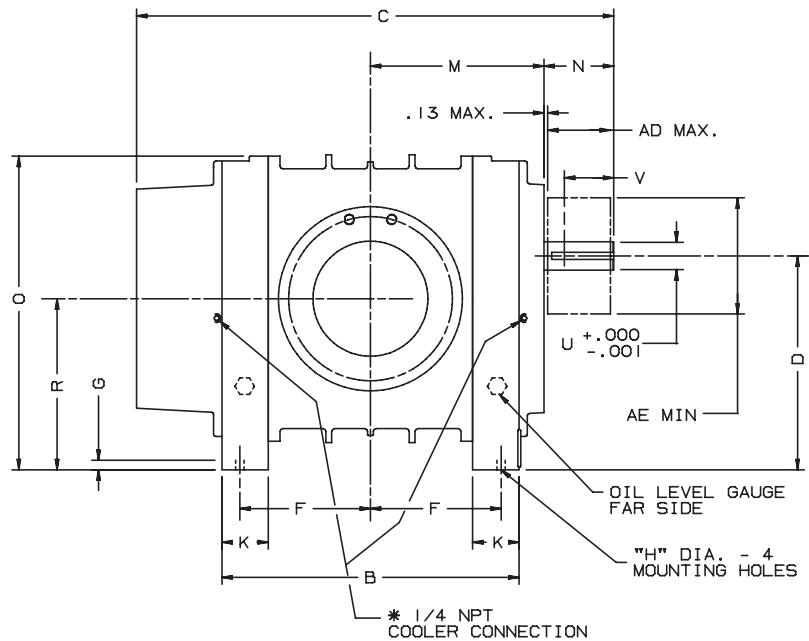
CERTIFIED CORRECT FOR CUSTOMER ORDER NO. _____ ROOTS ORD:R NO. _____ DATE _____	V-BELT DRIVE DATA	
	BELTS	_____
	DRIVE SHEAVE	_____
	DRIVER SHEAVE	_____
	CENTER DISTANCE	_____

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

DOB 5/24/79

**858-791-021**

COOLER CON., REV. E.C. 8/21/82 9/14/82 COOLER CONNECTIONS ADDED 8/12/82 REM REV. PER E.C. 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	144FL.OZ.	80FL.OZ.	1620 LBS
821	"	27.88	42.25	"	"	12.56	"	"	"	"	16.31	"	"	"	"	"	"	"	12"FLG	10"FLG	"	"	"	"	"	1800 LBS
826	"	33.13	47.50	"	"	15.19	"	"	"	"	18.94	"	"	"	"	"	"	"	12"FLG	12"FLG	"	"	"	"	"	2075 LBS
832	"	38.50	52.00	"	"	17.88	"	"	"	"	21.63	"	"	"	"	"	"	"	14"FLG	12"FLG	"	"	"	"	"	2325 LBS

CERTIFIED CORRECT FOR  
CUSTOMER ORDER No. \_\_\_\_\_  
ROOTS ORDER No. \_\_\_\_\_  
DATE \_\_\_\_\_

REVISED DIM (F) ON 832		RDR	7323V	V-BELT DRIVE DATA	
REVISED PER ECN		MS	2820V	BELTS	
REVISIONS		BY	DATE	DRIVE SHEAVE	
		CHKD.	APP.	DRIVEN SHEAVE	
				CENTER DISTANCE	

RCS-J  
WHISPAIR  
BLOWER



Dresser ROOTS, Dresser, Inc.  
Connersville, IN USA

DBN	DR	CHKD	APP	58792021	REV. B
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# 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

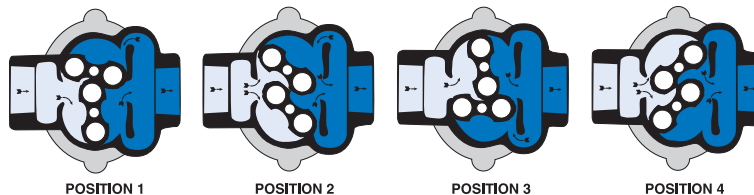
Twelve (12) months from date of original unit start-up or 18 months from date of original shipment, whichever occurs first.



## 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.



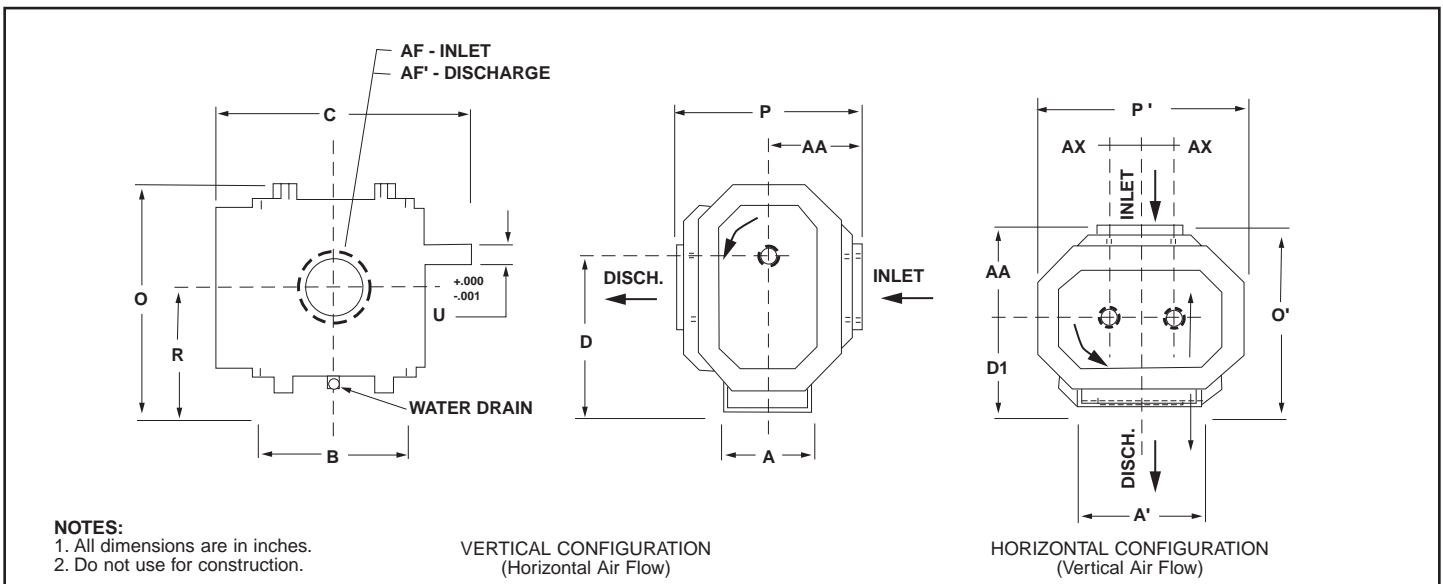
## PERFORMANCE TABLE

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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Houston, TX 77077  
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FX: 281-966-4309  
Toll Free: 1-877-363-ROOT(S)

Dresser ROOTS - Connersville  
900 West Mount Street  
Connersville, IN 47331  
PH: 765-827-9200  
FX: 765-827-9266

Dresser ROOTS - Holmes Operation  
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Off St. Andrews Rd  
Turnbridge, Huddersfield  
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FX: +44-1484-422668

S-5597  
December 2002

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website: [www.rootsblower.com](http://www.rootsblower.com) • email: [ROOTS@dresser.com](mailto:ROOTS@dresser.com)