



Roots

721 RCS-DVJ

Part Number – call 816-741-0282



RAM DVJ WHISPAIR Dry Exhausters have an exclusive discharge jet plenum design which allows cool, atmospheric air to flow into the cylinder. This unique design permits continuous operation at vacuum levels to blank-off with a single stage unit.

The RAM vacuum exhauster's integral cooling design eliminates the problems caused by high discharge temperatures at vacuum levels beyond 16" Hg. Standard dry vacuum exhausters are limited to approximately 16" Hg vacuum because operation at higher vacuum levels can cause extreme discharge temperatures resulting in casing and impeller distortion and possible failure.

- Can operate in two and three stage systems to achieve vacuum levels down to 1 Torr.
- Heavy-duty unit with integral-shaft ductile iron impellers with an involute profile
- Rigid one-piece casing, headplates, drive end cover and end cover 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.
- Splash oil lubricated gears on drive and gear ends
- Detachable steel mounting feet
- Horizontal and vertical configurations available



816-741-0282

Quick Specs

Flow Range	to 3658 CFM
Max ΔVacuum	27" Hg
Maximum RPM	2600
Minimum RPM	1180
Max ΔT	260°F
Jet Inlet Connection Size	12" Flange
Discharge Connection Size	12" Flange
Atmospheric Air Inlet Size	12" Flange
Shaft Dia.	2.375"
Min Sheave Dia.	11.8"
Drive End Lubrication	Oil
Gear End Lubrication	Oil
Oil Sump Horiz Config	~225 oz
Oil Sump Vert Config	~120 oz
Bare Unit Weight	1750 lbs
Container	Wood Skid
Skid Size (L x W x H)	54" x 32" x 48"
Shipping Weight on Skid	~1800 lbs
Recommended to Ship Via	Truck



700 Series DVJ Parts



Item Number	Part Name	Quantity
01	Headplate	2
3	Gearbox	1
4	Gear, Assembly	1
5	Drive End Cover	1
7	Gasket	2
9	Lubrication Label	2
10	Shim Set	1
11	Cylinder	1
12	Impeller & Shaft - Drive	1
13	Impeller & Shaft - Driven	1
14	Bearing Roller	4
16	Dowel Pin	4
17	Drive-Lok Pin	2
19	Key	1
20	Drive Screw	3
21	Plug - Vent	2
22	Drain - filler Plug	8
23	Cap Screw	36 (700)
27	Seal-Lip, Headplate	4
28	Seal-Ring	4
29	Washer, Wavy Spring	2
31	Locknuts	2
32	Capscrew	16
33	Seal, Lip	1
34	Clamp Plate - Drive End	2
35	Lock Washer	16
37	Oil Level Gauge	2
38	Sleeve - Piston Ring	4
40	Slinger - D.E (Top Drive)	1
40	Slinger - D.E. (Bottom Drive)	2
45	Pipe Plug	2
46	Slinger - G.E.	1
54	Clamp Plate - Gear End	2
55	Capscrew-butt. Hd	2
56	Washer	2
58	Pit Dvr 12" Flg	1
59	Scr, Cap Hex H	12
60	Capscrew	1
63	Lifting Lug	2
64	Pin, Spr (Top Drive)	1
65	Coupling	2
66	Nipple-pipe (700)	2
71	Scr, Set Soch CP (Bottom Drive)	1
73	Foot - R.H.	2
74	Foot - L.H.	2
78	Capscrew - Hex Hd.	2

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 710813RK) P/N 710812RK Kit for 700 RCS-J/DVJ/VJ

Item	Qty	Kit Description	P/N
7	2	Gasket Gearbox/Cover	70869021
10	1	Shim Set	74534020
14	4	Bearing, Roller	10222050
27	4	Seal, Lip (Viton)	10005182
28	4	Piston, Ring Seal	12283009
29	2	Washer, Spring, Wavy	10135027
31	2	Nut, Hex ESNA 1-1/4"-12	10319025
33	1	Seal, Lip	10005181
37	2	Sight, Plug Oil Level, 3/4"	12066001
38	4	Sleeve, DE & GE	71059020
40	1	Slinger, DE 7" RCS J	71152022
46	1	Slinger, DE 7" RCS J	71151022
55	2	Screw Cap, 3/8-16	10219003
56	2	Washer, Plain Flat	10181013
60	1	Screw Cap, 5/8-11	12800002
64	1	Pin, Spring 3/16x1	10068054

Table 2 - 700 Series RCS-J/RCS-DVJ Approximate Oil Sump Capacities

Model No./ Drive Shaft Location	Gear Box		Drive End	
	Fl. Oz.	Liters	Fl. Oz.	Liters
700 RCS-J/ RCS-DVJ (left or right)	155	4.59	70	2.07
700 RCS-J/ RCS-DVJ (top or bottom)	80	2.37	40	1.18

These capacities are provided to assist stocking the correct amount of oil. Exact sump capacity may differ slightly. Review the proper filling instructions as detailed above.

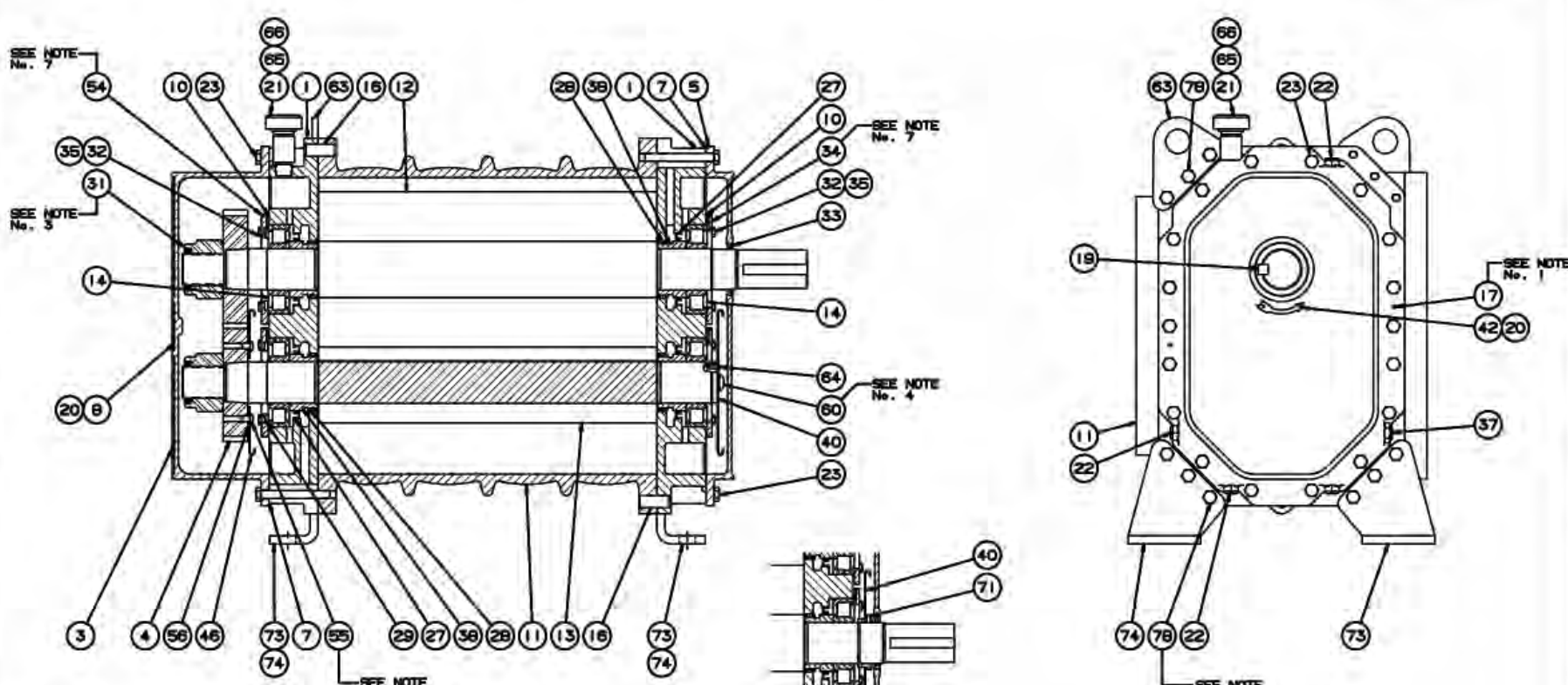
Table 2 - Recommended Oil Grades

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 blower and drive are located.

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

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

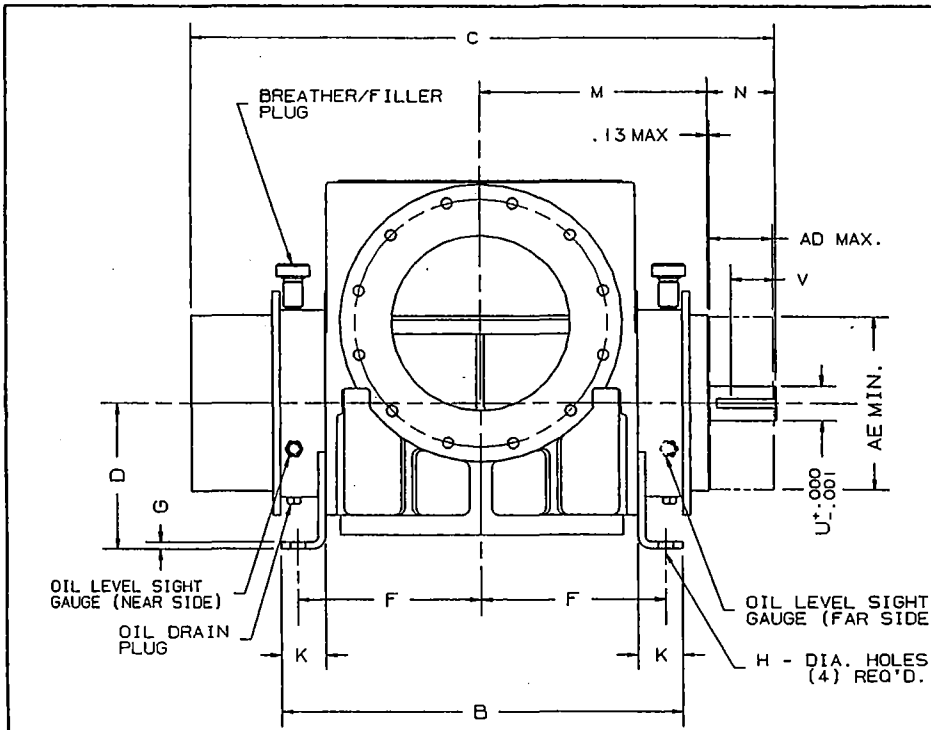


- NOTES:**
1. DRIVE END COVER TO BE PINNED TO HEADPLATE AFTER ALIGNING SEAL BORE TO SHAFT WITHIN .001"
 2. USE JOHN CRANE PLASTIC LEAD No. 2 ON ALL PIPE THREADS
 3. APPLY OIL TO NUT THREADS & NUT FACE AND TORQUE TO 1250 FT-LBS. (IF MOLYKOTE GN PASTE IS USED TORQUE TO 1000 FT-LBS.)
 4. APPLY LOCKTITE TO SCREW THREADS & TORQUE TO 140 FT-LBS.
 5. APPLY LOCKTITE TO SCREW THREADS & TORQUE TO 25 FT-LBS.
 6. APPLY OIL TO SCREW THREADS & TORQUE TO 85 FT-LBS.
 7. ITEMS 34 & 54 MUST BE INSTALLED WITH OIL GROOVE AT TOP.

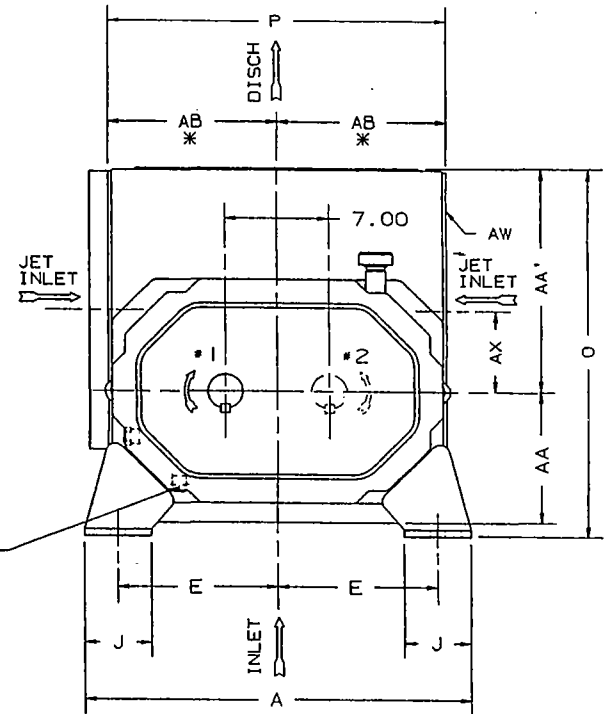
OPTIONAL BOTTOM DRIVE

<p>CONFIDENTIAL</p> <p>THIS DOCUMENT CONTAINS CONFIDENTIAL INFORMATION OF DRESSER DIVISION, DRESSER INDUSTRIES, INC. IT SHALL BE HELD IN STRICTLY CONFIDENTIAL AND BE LOANED ONLY IN CONNECTION WITH DRESSER DIVISION BUSINESS.</p>		<p>SECTIONAL ASSEMBLY</p> <p>700 (REV. 1)</p>	
<p>REV. 01 (A/B)</p> <p>REV. 02 (C/D)</p> <p>REV. 03 (E/F)</p>	<p>REV. 04 (G/H)</p> <p>REV. 05 (I/J)</p> <p>REV. 06 (K/L)</p>	<p>REV. 07 (M/N)</p> <p>REV. 08 (O/P)</p> <p>REV. 09 (Q/R)</p>	<p>REV. 10 (S/T)</p> <p>REV. 11 (U/V)</p> <p>REV. 12 (W/X)</p>
<p>DRESSER</p> <p>Roots</p>		<p>72015023</p>	

Sectional Assembly 700 DVJ



* TO FACE OF JET INLET FLANGE
 JET INLET OPENING LOCATED ON
 BOTH SIDES OF BLOWER. ONLY
 ONE SIDE TO BE USED AS JET
 INLET. OTHER OPENING TO BE
 CLOSED WITH STEEL COVER PLATE,
 SUPPLIED BY ROOTS.



POSITION #1 FURNISHED
 UNLESS SPECIFIED OTHERWISE
 ALTERNATE POSITION #2
 ALSO AVAILABLE

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

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

	12"FLG
OPENING	12.00
BOLT CIRCLE	17.00
FLANGE O.D.	19.00
NO TAPPED HOLES	12
SIZE HOLES	7/8-9
TAP DEPTH	1.31

W - INLET & DISCHARGE
 AD - SHEAVE WIDTH
 AE - SHEAVE DIAMETER
 AW - JET INLET

700 DVJ-H DRY VACUUM WHISPAIR BLOWER

ALL DIMENSIONS IN INCHES

FRAME SIZE	A	B	C	D	E	F	G	H	J	K	M	N	O	P	U	V	KEYWAY	W	AA	AA'	AB	AD	AE	AW	AX	APPROX. WEIGHT
721	26.00	27.00	39.38	10.00	10.75	12.38	.50	1.00	4.50	3.00	15.25	4.56	25.25	22.75	2.375	3.00	.625 x .313	12"FLG	9.00	15.25	11.38	4.43	11.80	12"FLG	5.50	1750

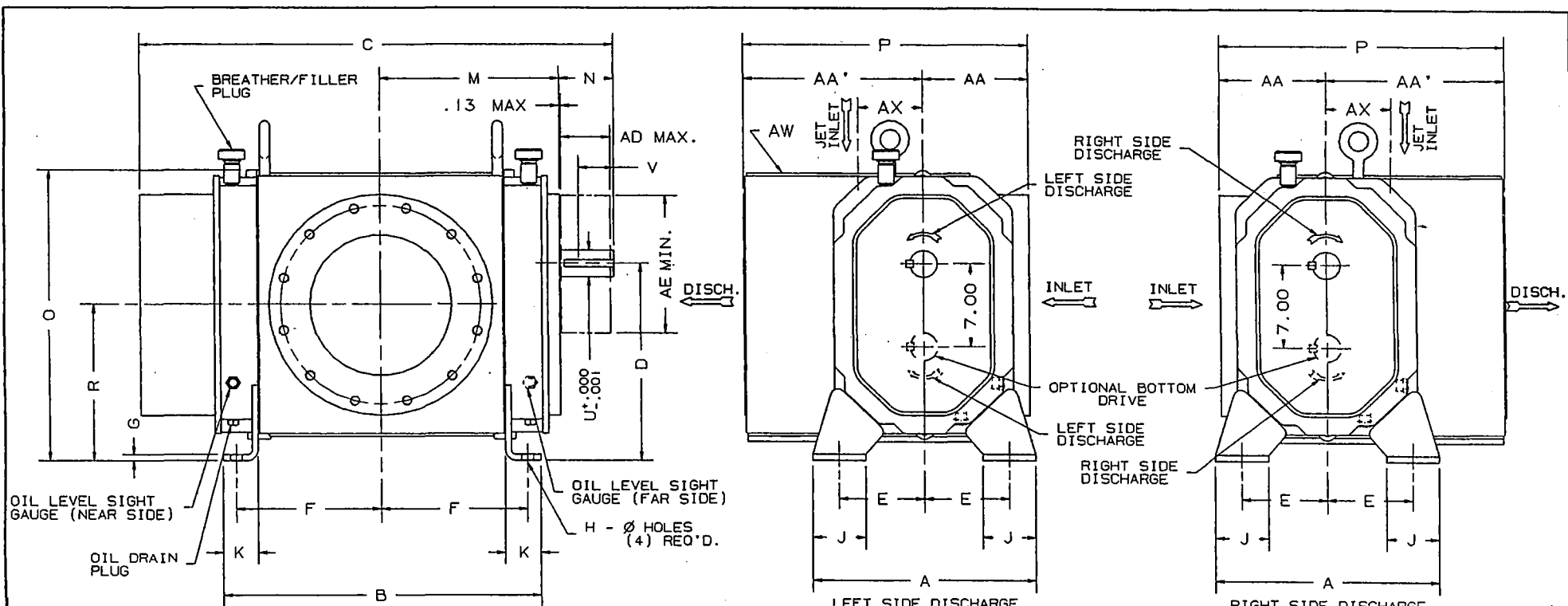
CERTIFIED CORRECT FOR
 CUSTOMER ORDER No. _____
 ROOTS ORDER No. _____
 DATE _____

V-BELT DRIVE DATA	
BELTS	
DRIVE SHEAVE	
DRIVEN SHEAVE	
CENTER DISTANCE	
A-REVISED APPROX. WEIGHT	JHB 11-9-93
REVISIONS	



DRESSER INDUSTRIES, INC
 ROOTS DIVISION
 900 WEST MOUNT STREET
 CONNERSVILLE, INDIANA 47331

RE DR 2/10/93 CHKD DB APP RDA 873-983-021



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

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

	12"FLG
OPENING	12.00
BOLT CIRCLE	17.00
FLANGE O.D.	19.00
No TAPPED HOLES	12
SIZE HOLES	7/8-9
TAP DEPTH	1.31

W - INLET & DISCHARGE
 AD - SHEAVE WIDTH
 AE - SHEAVE DIAMETER
 AW - JET INLET

700 DVJ DRY VACUUM WHISPAIR BLOWER

ALL DIMENSIONS IN INCHES

FRAME SIZE	A	B	C	D	E	F	G	H	J	K	M	N	O	P	R	U	V	KEYWAY	W	AA	AA'	AD	AE	AW	AX	APPROX. WEIGHT
721	19.00	27.00	39.38	17.00	7.25	12.38	.50	1.00	4.50	3.00	15.25	4.56	24.88	24.25	13.50	2.375	3.00	.625 x .313	12"FLG	9.00	15.25	4.43	11.80	12"FLG	5.50	1750

CERTIFIED CORRECT FOR
 CUSTOMER ORDER No. _____
 ROOTS ORDER No. _____
 DATE _____

V-BELT DRIVE DATA	
BELTS	C-CHGD LIFTING LUGS NEP 10/19/95 1/4 399V
DRIVE SHEAVE	B-REVISED APPROX. WEIGHT JHB 10-21-93
DRIVEN SHEAVE	A-CORRECTED BREATHER RVE 2/24/93
CENTER DISTANCE	REVISIONS

ROOTS DRESSER		DRESSER INDUSTRIES, INC ROOTS DIVISION 900 WEST MOUNT STREET CONNERSVILLE, INDIANA 47331	
JHB DR 10-21-92	CHKO DB	DLB APP 1/9/93	873-962-021

ROOTS™ DVJ WHISPAIR™ Dry Vacuum Exhausters

Frame 721J

BASIC DRY VACUUM PUMP DESCRIPTION

ROOTS™ DVJ WHISPAIR™ dry exhausters have an exclusive discharge jet plenum design which allows cool, atmospheric air to flow into the cylinder. This unique design permits continuous operation at vacuum levels to blank-off with a single stage unit.

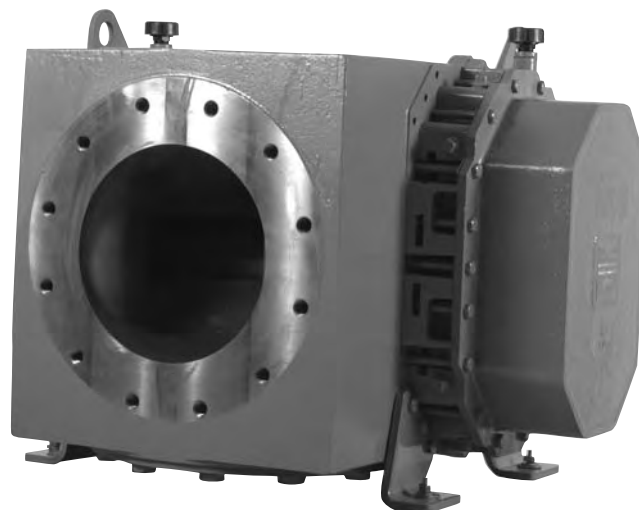
Standard dry exhausters are limited to approximately 16" Hg vacuum because operation at higher vacuum levels can cause extreme discharge temperatures resulting in casing & impeller distortion and possible seizure. The DVJ vacuum exhauster's integral cooling design eliminates the problems associated with high temperatures at vacuum levels beyond 16" Hg.

DVJ WHISPAIR™ exhausters are heavy-duty units with integral-shaft ductile iron impellers. The casing, headplates, gear cover and drive end cover 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 splash lubricated at both the gear end and drive end. Piston rings reduce air leakage through the headplate bores and lip-type oil seals prevent lubricants from entering the air chamber. Rugged steel mounting feet permit infield adaptability to either vertical or horizontal installation requirements.

ROOTS™ DVJ WHISPAIR™ exhausters can be arranged to operate in two and three stage systems to achieve vacuum levels down to 1 Torr.

WARRANTY PERIOD

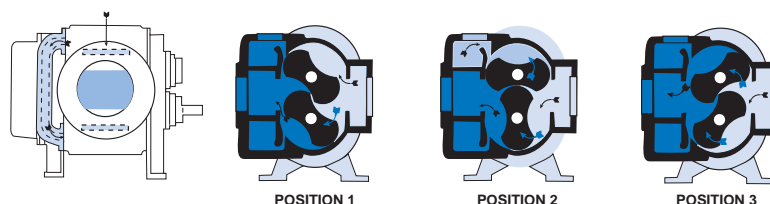
Twelve (12) months from date of original unit start-up or 18 months from date of original shipment, whichever occurs first.



DESIGN AND CONSTRUCTION FEATURES

1. Rigid cast iron cylinder and headplates
2. Anti-friction cylindrical roller bearings
3. Splash lubricated spur timing gears
4. Inlet and discharge connections in standard pipe sizes
5. Involute profile ductile iron impellers

OPERATING PRINCIPLE



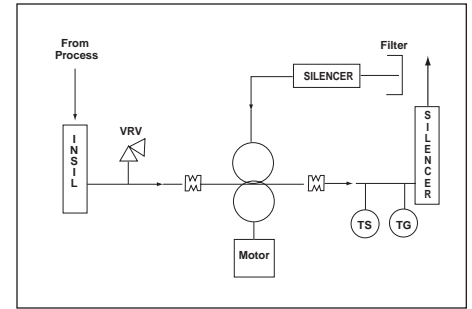
Position 1: Incoming air (right) is trapped between the impellers and the case, producing a vacuum in the application system. Simultaneously, air is discharged (left) from the exhauster. **Position 2:** As the upper impeller passes the jet plenum, atmospheric air flows into the space between the impeller and the case. This cools the trapped air, aids impeller movement, and reduces discharge shock and power loss. **Position 3:** The trapped air is moved into the discharge flange (left). Backflow is reduced resulting in lower discharge noise relative to conventional rotary exhausters.

PERFORMANCE TABLE

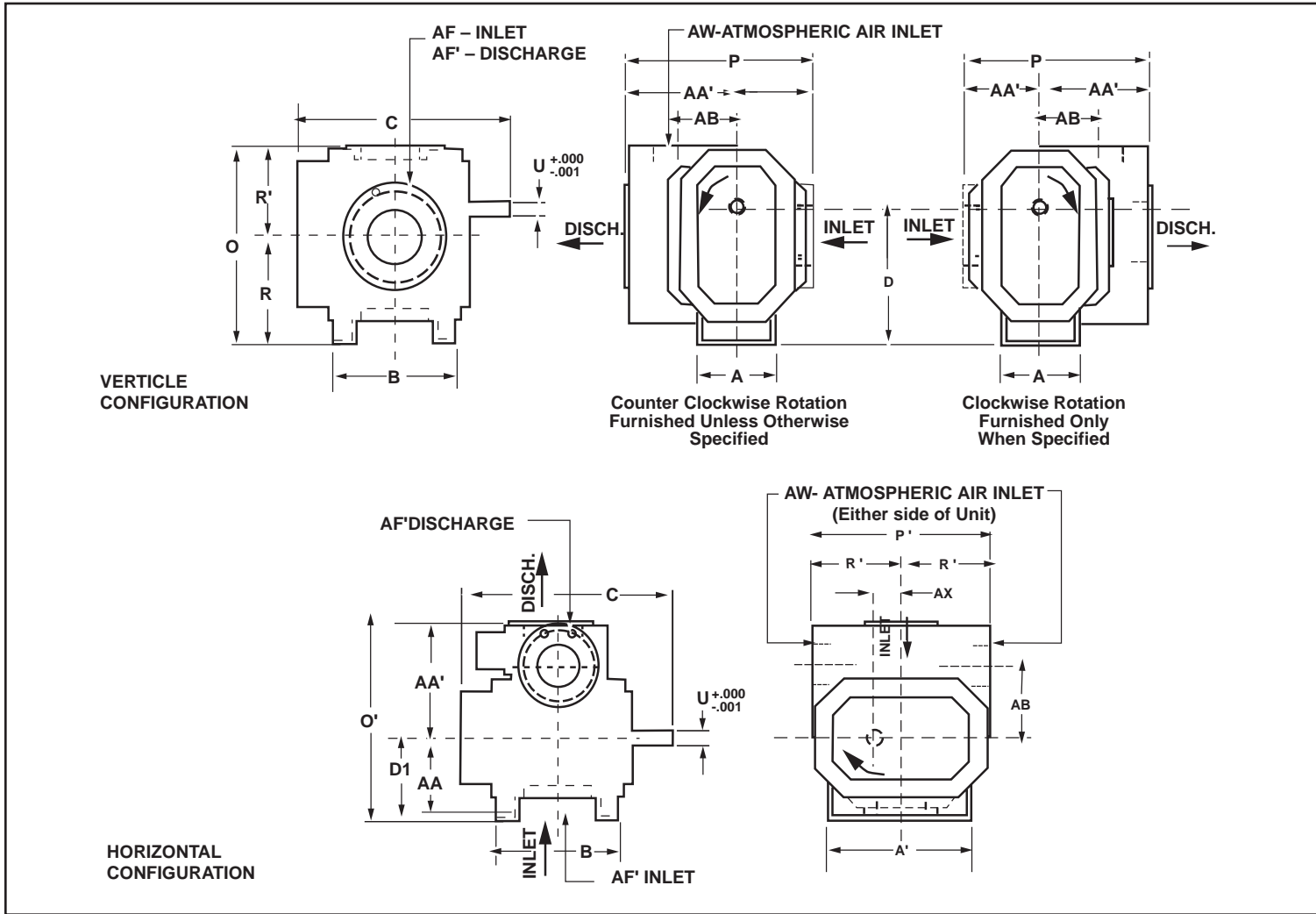
FRAME SIZE	SPEED RPM	Maximum Free Air CFM	16" HgV		20" HgV		24" HgV		27" HgV	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
721J	1180		973	57	751	71	322	85	*	96
	1770		1803	87	1581	108	1152	128	85	144
	2200		2408	110	2186	135	1757	160	690	179
	2600	3658	2971	131	2749	161	2320	190	1252	212

* Denotes blank-off.

Ratings based on inlet and jet air at standard temperature of 68°F, discharge and jet pressure of 30" Hg and specific gravity of 1.0. Refer to factory for performance guarantee above 24" Hg.



OUTLINE DRAWING & DIMENSIONAL TABLE



FRAME SIZE	A	A'	B	C	Drive Shaft Location		O	O'	P	P'	R	U	Keyway	AA	AA'	AB	AF	AF'	AW	AX	WGT.
					D	D1															
721J	19.00	26.00	27.00	39.38	17.00	10.00	24.88	25.25	24.25	22.75	13.50	2.375	.625 x .313	9.00	15.25	5.50	12 FLG	12 FLG	12 FLG	3.50	1750

NOTES:

1. All dimensions are in inches. 2. Weights are in pounds, and are approximate. 3. Do not use for construction.

Dresser, Inc.



Roots

Dresser ROOTS
2135 Hwy 6 South
Houston, TX 77077
PH: 281-966-4700
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
PO Box B7
Off St. Andrews Rd
Turnbridge, Huddersfield
England HD1 6RB
PH: +44-1484-422222
FX: +44-1484-422668

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website: www.rootsblower.com • email: ROOTS@dresser.com

DRESSER INDUSTRIES, INC.
ROOTS DIVISION
 900 WEST MOUNT STREET
 CONNERSVILLE, INDIANA 47331
 PRINTED IN U.S.A.

PERFORMANCE BASED ON
 INLET & JET AIR = 68°F
 DISCHARGE PRESSURE = 30" HG. ABS.
 JET PRESSURE = 30" HG. ABS.
 JANUARY, 1994

VACUUM PERFORMANCE
FRAME 721 DVJ BLOWER
 MAXIMUM VACUUM=27 IN. HG.
 MAXIMUM SPEED=2600 RPM

