

ROOTS™ DVJ Whispair™ DRY EXHAUSTERS

Frames 1016J, 1021J, 1220J, 1428J, 1431J,
1833J & 1838J

BASIC BLOWER DESCRIPTION

ROOTS model DVJ Whispair™ Dry Exhausters have an exclusive Whispair™ 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, without water injection.

Standard dry 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 seizure. The DVJ's cooling design eliminates the problems caused by high discharge temperatures at vacuum levels beyond 16" Hg.

DVJ Whispair™ exhausters are heavy-duty units with forged steel stub shafts bolted to ductile iron impellers. The casing, headplates, gear cover and drive end covers are grey iron.



Carburized and ground alloy steel spur timing gears are mounted on the shafts of 1000 frame size units by a taper fit, while large sizes use a double taper ring locking assembly. Double-row spherical roller bearings are splash lubricated at both the gear end and drive end. Piston ring shaft seals and lip-type seals are used to restrict oil leakage into the air stream. The DVJ can be equipped with mechanical seals for gas applications.

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

VACUUM PERFORMANCE TABLE

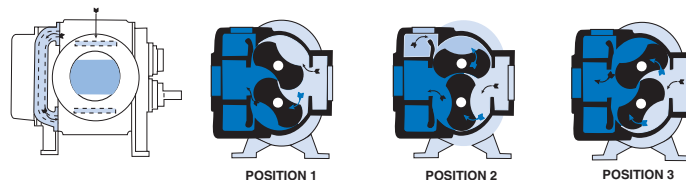
Frame	Speed	Max. Free Air	16" HgV		20" HgV		24" HgV		27" HgV	
Size	RPM	CFM	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
1016J	980		1557	77	1345	95	933	114	*	128
	1450		2619	115	2407	142	1996	169	970	189
	1800	4068	3410	144	3198	177	2787	211	1761	235
1021J	980		1984	97	1714	121	1189	145	*	163
	1450		3338	145	3067	180	2543	215	1236	241
	1800	5184	4346	183	4075	225	3551	268	2244	300
1220J	880		2627	120	2356	149	1831	178	523	200
	1170		3770	161	3500	199	2974	237	1664	266
	1500	5910	5070	208	4800	257	4274	305	2964	342
1222J	880		2886	131	2588	163	2011	196	Max. vacuum limited to 24" Hg	
	1170		4142	176	3843	218	3267	261		
	1500	6645	5571	228	5272	282	4696	335		
1428J	880		5207	230	4748	285	Maximum vacuum limited to 22.5" Hg			
	1170		7390	310	6932	382				
	1300	9789	8369	347	7911	427				
1431J	880		5857	258	5341	321	Maximum vacuum limited to 22" Hg			
	1170		8313	348	7797	429				
	1300	11011	9414	389	8898	479				
1833J	705		8472	365	7832	453	6554	540	Max. vacuum limited to 24" Hg	
	880		11074	461	10425	569	9167	676		
	1000	14870	12859	529	12209	650	10951	770		
1838J	705		9612	414	8875	513	Maximum vacuum limited to 21.5" Hg			
	880		12564	522	11827	644				
	1000	16870	14588	588	13851	736				

Notes: Ratings based on inlet and jet air 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.
Refer to the Factory for units and performances not listed.

DESIGN & CONSTRUCTION FEATURES

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

OPERATING PRINCIPLE



Shaded blue areas indicate air pressure variations from intake to atmospheric discharge.

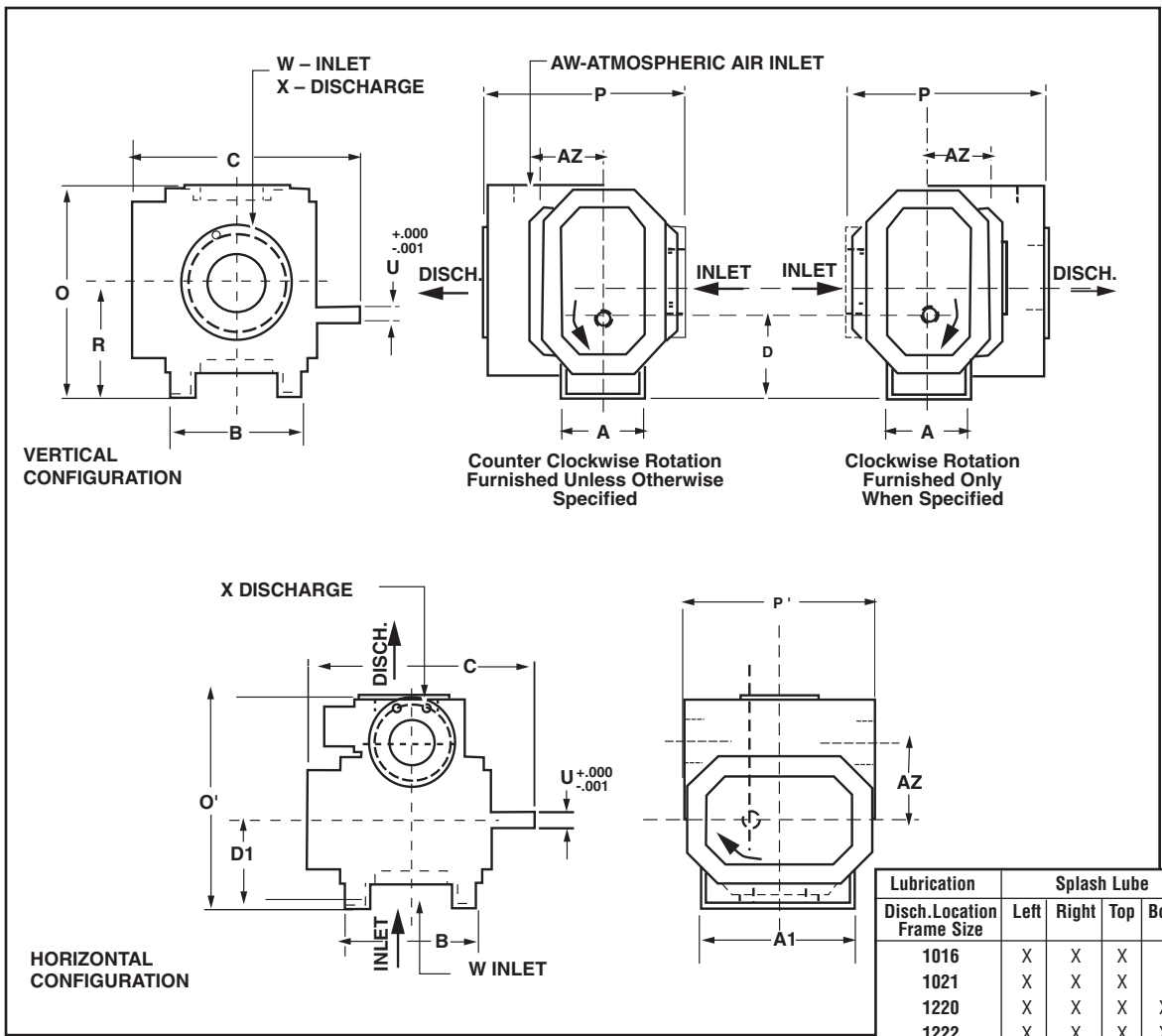
Position 1 - Incoming air is trapped between the impellers and the case, producing a vacuum in the application system. Simultaneously, air is discharged (right) from the exhauster.

Position 2 - As the impeller passes the Whispair™ jet plenum, atmospheric air flows into the space between the impeller and the case. This cools the trapped air, aids impeller movement and reduces shock and power loss.

Position 3 - The trapped air is then moved to the discharge flange (right). Backflow is reduced, resulting in lower discharge noise relative to conventional rotary exhausters.



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Consult Factory: 1. Manifold spacer required.
 2. Special headplates required.
 3. Modifications to cylinder required.

Lubrication Disch. Location Frame Size	Splash Lube				Pressure Lube			
	Left	Right	Top	Bottom	Left	Right	Top	Bottom
1016	X	X	X		X	X	X	
1021	X	X	X				X	
1220	X	X	X	X(2)	X	X	X	X
1222	X	X	X	X(2)	X	X	X	X(1)(2)
1428	X	X	X		X	X(3)	X	
1431	X	X	X		X	X(3)	X	
1833	X	X	X		X	X	X	
1836	X	X	X		X	X	X	

FRAME SIZE	A	A'	B	C	D	D'	O	O'	P	P'	R	U	Keyway	AZ	W	X	AW	WGT.
1016J	27.00	27.00	23.25	49.88	14.500	14.500	34.88	31.88	31.63	30.75	19.50	2.250	.500 x .250	8.50	12 FLG	12 FLG	10 FLG	2400
1021J	27.00	27.75	27.75	45.50	14.500	14.500	38.00	28.75	31.25	36.00	19.50	2.250	.500 x .250	7.50	14 FLG	14 FLG	12 FLG	2525
1220J	30.50	30.50	27.50	52.38	16.625	16.625	40.63	35.88	35.75	36.00	22.63	2.625	.625x .313	8.50	16 FLG	14 FLG	12 FLG	3650
1222J	30.50	30.50	30.00	54.88	16.625	16.625	40.63	35.88	35.75	36.00	22.63	2.625	.625x .313	8.50	16 FLG	14 FLG	12 FLG	4000
1428J	34.00	34.00	36.25	57.88	18.750	18.750	47.56	46.60	46.75	42.19	25.75	3.000	.750 x .375	14.75	20 FLG	18 FLG	16 FLG	5900
1431J	34.00	34.99	39.25	61.38	18.750	18.750	47.56	46.60	46.75	42.19	25.75	3.000	.750 x .375	14.75	20 FLG	18 FLG	16 FLG	6100
1833J	41.00	41.00	43.50	69.81	23.250	23.250	59.25	56.60	56.75	52.80	32.25	4.188	1.000 x .500	15.00	24 FLG	24 FLG	20 FLG	10500
1838J	41.00	41.00	48.00	74.31	23.250	23.250	59.25	56.60	56.75	52.80	32.25	4.188	1.000 x .500	15.00	24 FLG	24 FLG	20 FLG	10800

NOTES:
 • All dimensions are in inches. • Weights are in pounds, and are approximate. • Do not use for construction.

Dresser, Inc.



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