

## ROOTS<sup>TM</sup> RAS-J Whispair<sup>TM</sup> ROTARY POSITIVE BLOWERS PRESSURE & SPLASH LUBRICATED

Frames 1000J thru 2000J

### BASIC BLOWER DESCRIPTION

RAS-J series Whispair blowers are heavy duty units for continuous service featuring a proprietary design that reduces noise, pulsation, and horsepower levels over conventional blowers. An exclusive wrap-around plenum and Whispair™ jet eliminate rapid backflow of air into the blower from the discharge area - a major problem with conventional blowers.

### DESIGN FEATURES

**CASING** - The blower casing is of one piece close-grained cast iron construction with separate headplates. The casing is suitably ribbed to prevent distortion under the most severe operating conditions and incorporates the ROOTS Whispair™ feature for reduced pulsation, noise and horsepower levels.

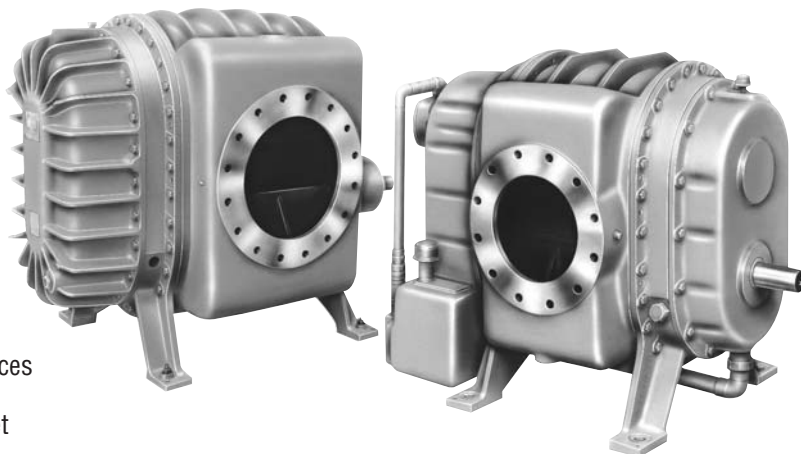
**IMPELLERS** - The impellers are made from ductile iron with a tensile strength of 60,000 PSI. They are statically and dynamically balanced by removing metal from the impeller body, and operate without liquid seals or lubrication.

**SHAFTS** - The blower shafts are alloy steel forgings flange connected to the impeller body with high-tensile socket head capscrews. Labyrinth seals are machined into the shafts to minimize air leakage.

**TIMING GEARS** - The impellers are timed by a pair of accurately machined forged steel gears that operate in an oil bath. The wide-faced spur gears are manufactured to AGMA standards, and are carburized and ground with a hardness of 58-60 Rc. On 1000J frame size units, the gears are secured to the shafts by a taper fit. Larger sizes use a taper locking device providing an easily adjustable and releasable mechanical shrink fit. No shaft-weakening keyways or locking pins are required.

**BEARINGS** - The impeller/shaft assemblies are supported at each end by double row spherical roller bearings designed for long life. The thrust end bearings are fixed to control the axial location of the impeller assembly in the unit. An inboard bearing is used on 1000J thru 1400J frame size V-belt driven blowers to minimize drive shaft stresses.

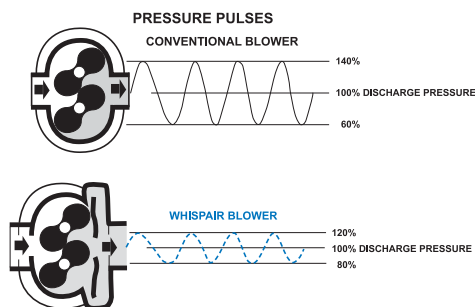
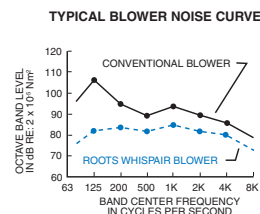
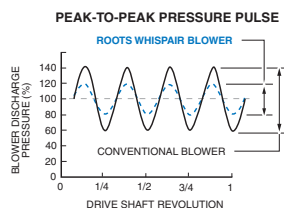
**PRESSURE LUBRICATION** - The bearings and gears are lubricated by a positive pressure lubrication system completely mounted and piped on the blower unit. The lube system consists of an integral direct-driven oil pump, distribution piping, oil sump in the bottom of the gear housing, suction strainer, relief valve, oil pressure gauge, low oil pressure safety switch and oil cooler. Bearing life is extended by up to 50% through the use of cooled, pressurized lubrication.



**SPLASH LUBRICATION** - The bearings and gears are splash oil lubricated. Gear end oil is metered through an orifice into a secondary sump under the gear, and is fed into the bearings through specially designed leaders. On the thrust end, bearings are splash lubricated with an oil slinger inside a single splash-lube cover. All oil reservoirs have visible oil level gauges.

**TESTING** - Each ROOTS rotary blower is given a complete mechanical run and one-point flow test at full speed and pressure to ensure mechanical integrity and verify performance. The units are operated at elevated pressure rise for a minimum of one hour after temperatures have stabilized. Flow, pressure and temperature readings are logged during the test, and each air blower must meet suitable vibration levels in three different planes before being certified as acceptable.

### PRESSURE PULSES



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# PERFORMANCE TABLES

FRAME SIZE	SPEED	4 PSI		6 PSI		8 PSI		10 PSI		12 PSI		15 PSI		18 PSI		MAX. PRES Hg	MAX. VAC BHP
		CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP		
1006J	1800	1320	34	1285	46	1256	59	1230	71	1206	83	1174	102	1093	120	20.0	16
1009J	1800	2007	47	1961	66	1922	84	1887	103	1856	121	1814	149	1687	177	20.0	16
1012J	1800	2676	62	2615	86	2562	111	2516	136	2475	160	2418	197	2249	234	18.0	16
1016J	1800	3752	82	3680	116	3621	150	3568	184	3543	201					13.3	16
1018J	1800	4266	93	4185	131	4117	170	4057	208	3519	218					11.7	16
1021J	1800	4781	104	4690	147	4614	190	4546	234							10.4	16
1024J	1800	5461	118	5358	167	5271	216									9.2	16
1030J	1800	6822	143	6692	205											7.3	15
1212J	1500	3238	76	3174	106	3120	135	3072	165	3028	194	2970	238	2796	283	20.0	16
1216J	1500	4354	100	4268	139	4195	179	4130	218	4072	258	3993	317			16.5	16
1220J	1500	5508	121	5418	170	5342	220	5275	269	5214	319					13.2	16
1222J	1500	6193	134	6092	190	6006	245	5931	301							11.7	16
1225J	1500	6892	147	6779	209	6684	270	6600	332							10.5	16
1228J	1500	7857	165	7728	236	7619	306									9.2	16
1236J	1500	9912	203	9749	292											7.3	15
1414J	1300	4680	113	4592	155	4518	197	4453	240	4394	262	4315	346	4243	411	20.0	16
1418J	1300	5976	141	5864	195	5770	249	5687	304	5611	358	5510	439			16.6	16
1422J	1300	7357	165	7243	230	7146	296	7061	362	6985	427					13.7	16
1425J	1300	8184	180	8057	253	7950	326	7855	400	7770	472					12.2	16
1428J	1300	9156	199	9014	280	8894	362	8789	444							11.0	16
1431J	1300	10300	220	10140	312	10005	404									9.8	16
1435J	1300	11455	244	11277	346	11127	450									8.8	16
1442J	1300	13741	292	13527	414											7.3	15
1616J	1130	5879	144	5772	197	5683	250	5604	303	5533	356	5436	436	5349	515	20.0	16
1620J	1130	7343	178	7210	244	7099	310	7000	377	6911	422	6791	542			17.6	16
1625J	1130	9184	210	9018	293	8878	376	8755	461	8644	542					14.0	16
1627J	1130	10049	224	9900	314	9774	403	9663	493	9563	582					13.0	16
1630J	1130	11162	245	10996	344	10856	444	10733	543							11.7	16
1633J	1130	12275	266	12093	375	11939	485	11804	594							10.6	16
1639J	1130	14511	310	14296	439	14114	568									9.0	16
1643J	1130	15995	339	15758	482	15558	624									8.2	16
1648J	1130	17861	378	17596	538											7.3	15
1821J	1000	8658	206	8507	284	8380	362	8268	440	8166	518	8029	635	7905	752	18.8	16
1824J	1000	9902	233	9729	322	9584	411	9455	500	9339	589	9182	723			16.5	16
1827J	1000	11127	260	10933	360	10769	460	10625	560	10495	661					14.6	16
1830J	1000	12521	286	12341	397	12190	509	12056	620	11936	731					13.2	16
1833J	1000	13978	313	13777	437	13608	562	13455	686							11.7	16
1838J	1000	15858	347	15630	488	15439	630	15270	771							10.4	16
1841J	1000	17108	370	16863	522	16656	674									9.5	16
1845J	1000	18781	400	18512	567	18285	734									8.8	16
1849J	1000	20454	433	20161	615	19914	797									8.0	16
1854J	1000	22541	474	22218	675											7.3	15
2022J	900	10357	244	10191	337	10051	429	9927	522	9816	615	9664	754	9528	893	19.6	16
2026J	900	12197	283	12001	392	11836	501	11691	611	11559	720	11381	884			16.6	16
2033J	900	15606	342	15400	480	15226	618	15073	756	14934	894					13.0	16
2037J	900	17468	376	17237	530	17042	685	16870	839							11.7	16
2040J	900	18632	397	18386	562	18178	727	17995	892							11.0	16
2044J	900	20494	431	20223	613	19994	794	19793	975							10.0	16
2047J	900	21894	456	21604	650	21360	844	19793	975							9.4	16
2050J	900	23290	482	22982	688	22723	894									8.8	16
2055J	900	25619	529	25280	756											7.9	16
2057J	900	26552	548	26200	783											7.7	15
2060J	900	27948	574	27579	822											7.3	15
2062J	900	28880	593	28498	849											7.0	14
2064J	900	29807	612	29412	876											6.9	14

Ratings based on inlet air at standard temperature of 68° F, ambient pressure of 14.7 psia and specific gravity of 1.0

Vertical or horizontal flow models are available. On horizontal flow units, the bottom shaft is extended for driving, and either right or left side discharge may be ordered. Vertical flow units have the right shaft extended for driving, and either top or bottom discharge may be ordered.

Available accessories include a baseplate for the blower and driver, V-belt or coupling drive with guard, bypass regulator, bypass cooler, inlet and discharge silencers, check valve, lube oil heater, auxiliary lube oil pump and expansion joints.

# PRODUCT FEATURES

## LOWER PULSATION

Whispair™ blowers operate with up to 40% less pressure pulsation than conventional blowers due to the pressure equalizing effect of the Whispair jet design.

In conventional blowers, as the impeller opens up to the outlet port, the higher pressure air in the discharge line rapidly expands into the lower pressure pocket formed by the impeller and the case. The resulting shock wave strikes the advancing surface of the impeller at sonic velocity. Four pressure pulses occur during each revolution transmitting shock loads to the gear and bearings.

## LONGER BEARING LIFE

The pre-pressurization of the low pressure pocket through the Whispair™ jet smoothes the pulsations and results in less shock being transmitted through the impellers to the bearings, resulting in approximately 20% longer bearing life.

## LOWER VIBRATION

The reduction in the magnitude of the pressure pulsation results in smoother operation.

## LOWER NOISE

The pressure pulses inherent in the rotary-lobe design are also the major source of blower noise. The rapid backflow of air into the blower from the discharge line, four times per revolution, results in high noise levels in the conventional blower. The Whispair™ jet controls the backflow of air into the blower reducing noise by approximately 5 dBA.

## HORSEPOWER

As the impeller passes the Whispair™ jet port, pressurized air channeled in the direction of rotation strikes the backside of the impeller. The air jet imparts energy to the impeller, aiding rotation and reducing the power required to drive the blower.

**Dresser, Inc.**



**Roots**

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