

SPECIFICATIONS

ROOTS *Universal* RAI-J™ WHISPAIR® ROTARY POSITIVE BLOWERS

FRAMES 33J THRU 56J



BASIC BLOWER DESCRIPTION

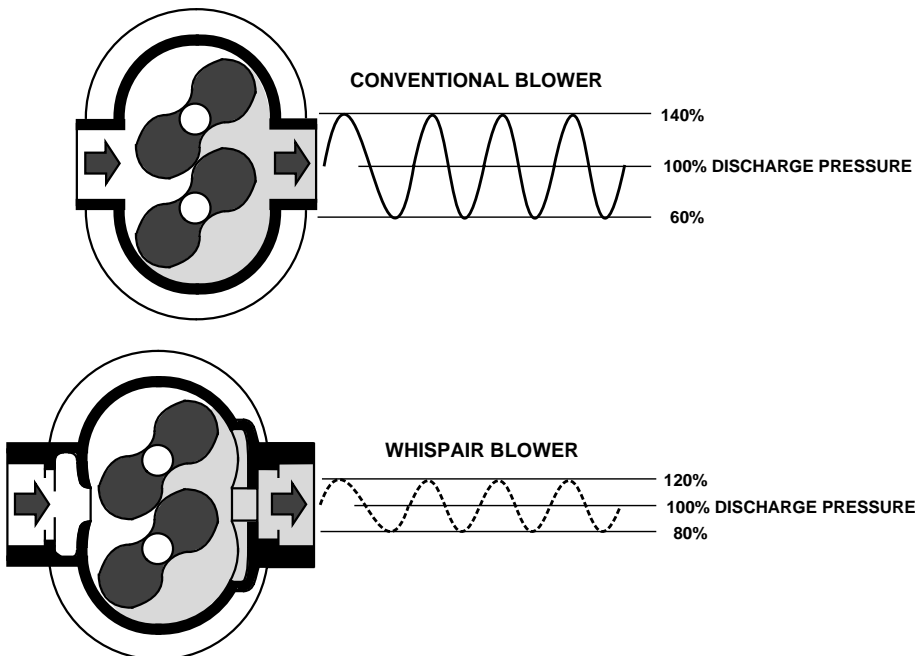
Patented Universal RAI-J Whispair blowers are heavy duty rotary units in a compact, sturdy design engineered for continuous service when operated within speed and vacuum/pressure ratings.

The basic model features a cast iron casing with a computer-designed cast relief for noise and shock suppression, carburized and ground alloy steel spur timing gears secured to steel shafts with a taper mounting and locknut, and cast iron in-

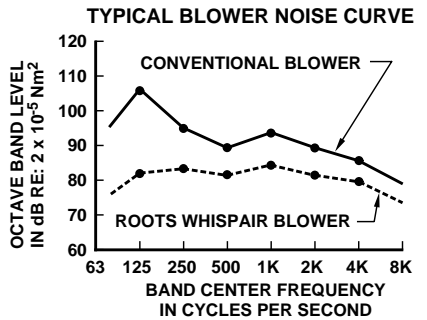
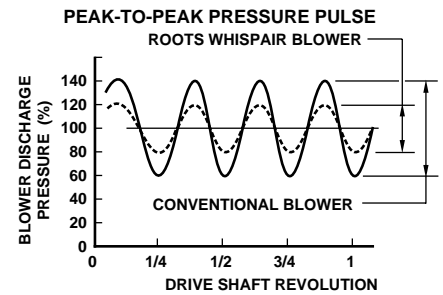
terlocking impellers. Oversized anti-friction bearings are used, with a cylindrical roller bearing at the drive shaft to withstand V-belt pull. Detachable rugged steel mounting feet permit easy in-field adaptability to either vertical or horizontal installation requirements.

The Universal RAI-J incorporates thrust control, and has grease lube on the drive end and splash oil lube on the gear end. Roots exclusive "Figure 8" gearbox design improves oil distribution and lengthens bearing and gear life.

PRESSURE PULSES



USER BENEFITS



LOWER AIR PULSATION

Patented Whispair blowers operate with up to 50% less pressure pulsation than conventional blowers due to the pressure equalizing effect of the Whispair 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 blower case. The resulting shock wave strikes the advancing surface of the impeller at sonic velocity. Four pressure pulses occur each revolution, transmitting shock loads to the gears and bearings.

LONGER BEARING LIFE

The pre-pressurization of the low pressure pocket through the Whispair cavity smooths 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

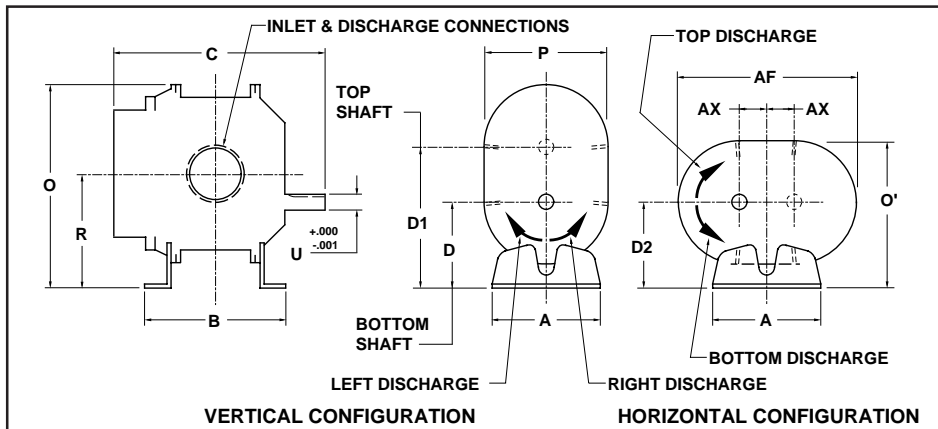
The pressure pulses, inherent in the rotary-lobe design, are also the major source of blower noise. The rapid backflow of air into the blower from the discharge line, four times per revolution, results in high noise levels in the conventional blower. The Whispair design controls the backflow of air into the blower, reducing noise by approximately 5 dB vacuum, 3 dB pressure.

PERFORMANCE TABLE

FRAME SIZE	SPEED RPM	4" Hg VACUUM		6" Hg VACUUM		8" Hg VACUUM		10" Hg VACUUM		12" Hg VACUUM		14" Hg VACUUM		15" Hg VACUUM		MAX. PRESSURE		
		CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	PSI	CFM	BHP
33J	1160	47	0.8	40	1.1	33	1.4	27	1.7							7	28	2.4
	2800	148	2.0	141	2.7	134	3.4	128	4.1	121	4.9	113	5.6			12	116	9.5
	3600	197	2.7	190	3.6	184	4.6	177	5.3	170	6.3	163	7.2	159	7.6	12	165	12.4
36J	1160	83	1.2	74	1.7	65	2.2	55	2.7							7	57	3.8
	2800	251	3.2	241	4.4	232	5.7	223	6.6	213	7.9	202	9.1			7	224	9.5
	3600	332	4.4	323	6.0	313	7.6	304	8.7	294	10.3	284	11.9	278	12.7	7	306	12.5
45J	860	66	1.1	56	1.5	46	1.9									7	37	3.4
	1760	175	2.2	164	3.1	154	4.0	144	4.9	134	5.8					10	133	9.6
	3600	398	5.2	387	7.1	377	8.9	367	10.3	356	12.2	345	14.1	339	15.0	10	356	20.5
47J	860	89	1.3	76	1.9	63	2.5	51	3.0							7	53	4.4
	1760	233	2.9	220	4.1	207	5.3	194	6.3	181	7.5					7	196	9.0
	3600	526	6.9	513	9.3	500	11.8	488	13.6	474	16.1	460	18.5	452	19.8	7	490	19.5
56J	700	108	1.5	95	2.2	82	2.9	70	3.5							7	72	4.9
	1760	342	4.3	329	5.9	316	7.6	304	9.0	291	10.6	276	12.3			10	290	17.9
	2850	583	7.9	570	10.6	557	13.2	545	15.2	532	17.9	517	20.6	510	21.9	10	531	30.0

- Notes:**
- Vacuum ratings based on inlet air at standard temperature of 68°F, discharge pressure of 30" Hg and specific gravity of 1.0.
 - Pressure ratings based on inlet air at standard pressure of 14.7 psia, standard temperature of 68°F, and specific gravity of 1.0.

OUTLINE DRAWING & DIMENSIONAL TABLE



Roots is the leader in blower warranties – the first to introduce an *uncontested* warranty that guarantees repair or replacement of any Universal RAI-J™ that malfunctions *for any reason*. We'll protect you or your customer for a full 18 months from date of original start-up or 24 months from date of shipment, whichever occurs first.

Frame Size	A	B	C	Drive shaft location			O	O'	P	R	U	Keyway	Inlet & Disch. Dia.	AF	AX	Approx. Net Wt. (Lbs.)
				D Bottom Shaft	D1 Top Shaft	D2 Horiz. Shaft										
33J	7.25	7.63	12.13	5.00	8.50	5.00	12.81	10.00	10.00	6.75	.750	.188 x .094	2.0 NPT	12.13	1.75	84
36J	7.25	10.00	14.63	5.00	8.50	5.00	12.81	10.50	11.00	6.75	.750	.188 x .094	2.5 NPT	12.13	1.75	112
45J	8.00	10.00	15.50	6.25	10.25	6.25	15.06	12.25	12.00	8.25	.875	.188 x .094	2.5 NPT	13.63	2.00	119
47J	8.00	11.75	17.63	6.25	10.25	6.25	15.06	12.25	12.00	8.25	.875	.188 x .094	3.0 NPT	13.63	2.00	138
56J	10.50	11.00	18.00	6.25	11.25	6.75	17.38	14.00	14.50	8.75	1.125	.250 x .125	4.0 NPT	17.25	2.50	180

All dimensions in inches



DESIGN & CONSTRUCTION FEATURES

- Detachable steel mounting feet
- Rigid one-piece cast iron casing
- Anti-friction bearings
- Thrust control
- Splash-lubricated spur timing gears
- Connections in standard pipe sizes
- Straight, precision machined two-lobe impellers
- Ground steel shafts



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The original **ROOTS** blower™

S-33A93 (Was S-5333)

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All specifications subject to change without notice
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