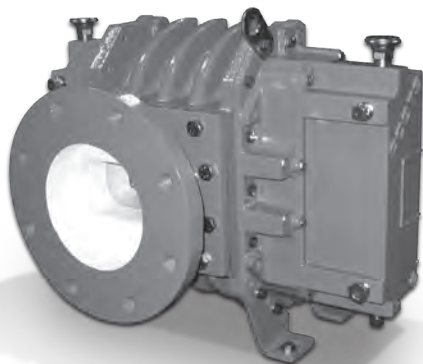


# ROOTS® Tri-RAM™ Positive Displacement Blowers

Models 409, 413, 416, 617, 621, 722, 728, 826, 832



The ROOTS® Tri-RAM™ tri-lobe positive displacement blower has been designed to incorporate the latest technology for reduced noise and vibration and minimal downstream pulse.

This series is based upon the field operation success of ROOTS® RAM™ blower series and features engineering based on ROOTS tri-lobe principles originally designed in 1914.

## Basic blower description

Tri-RAM™ tri-lobe rotary blowers are heavy-duty units with high strength integral-shaft ductile iron impellers designed for maximum efficiency. The blowers feature ROOTS WHISPAIR™ discharge design which, when combined with tri-lobe impellers, delivers quieter operation than conventional tri-lobe blowers.

The headplates and rigid, one-piece cylinders are cast iron, and the drive-end and gear covers are aluminum (cast iron for models 722–832). Carburized and ground alloy steel spur timing gears are taper mounted on the shafts and are secured with a locknut (bolt for models 826 and 832). Cylindrical roller bearings are used to accept side loads from v-belt drives.

Piston rings reduce air leakage through the shaft openings in the headplates and hydrodynamic oil seals prevent lubricant from entering the air chamber. Tri-RAM blowers incorporate thrust control, with splash oil lubrication at both ends of the blower.

All model sizes are designed with detachable rugged steel mounting feet which permit in-field adaptability to either vertical or horizontal installation requirements.

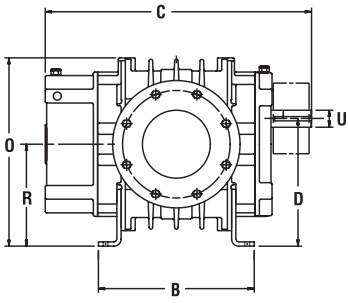
The top shaft is adaptable for drive on side outlet blowers, and either shaft can be extended for drive on top or bottom outlet blowers.

## Warranty period

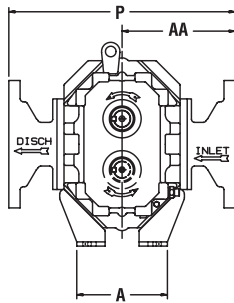
Twenty-four (24) months from date of original unit start-up or 30 months from date of original shipment, whichever occurs first.

## Design and construction features

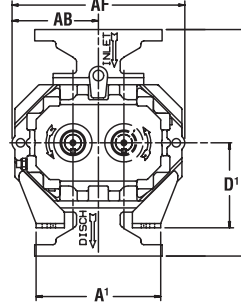
- Tri-lobe impellers for less vibration and minimal downstream pulse
- WHISPAIR discharge design combined with tri-lobe impellers for quieter operation than conventional tri-lobe blowers
- Carburized and ground alloy steel timing gears for long life and consistent performance
- Cylindrical roller bearings for longer bearing life
- Piston ring seals for less air leakage
- Splash lubrication from oil sumps with sight glasses on each end for easy maintenance
- Detachable feet and drive shaft extension to adapt to horizontal or vertical configuration



**Vertical configuration**  
(Horizontal air flow)



**Horizontal configuration**  
(Vertical air flow)



Outline drawing of ROOTS RAM Rotary Positive Blower

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**Dimensional table**

Model	A	A1	B	C	D	D1	O	P	R	U	Keyway	Inlet/Disc Conn	AA	AB	AF	Approx. Wt.
409	8	11	13.77	23.5	11.25	7.5	16.63	20	9	35	10.0 x 5.0	6"	10	7.63	15.25	345
413	8	11	17.78	27.5	11.25	7.5	16.63	21.25	9	35	10.0 x 5.0	6"	10.63	7.63	15.25	412
416	8	11	21.03	30.75	11.25	7.5	16.63	21.5	9	35	10.0 x 5.0	8"	10.75	7.63	15.25	500
617	9	15	22.11	33.56	15	9	22	26.75	12	50	14.0 x 5.5	8"	13.38	10	20	836
621	9	15	27.73	37.73	15	9	22	26.88	12	50	14.0 x 5.5	10"	13.44	10	20	996
722	19	26	28.79	41.17	17	10	25.13	29.75	13.5	60	18.0 x 7.0	10"	14.87	11.63	23.26	1485
728	19	26	34.54	46.92	17	10	25.13	31.88	13.5	60	18.0 x 7.0	12"	15.94	11.63	23.26	1805
826	21.74	29.73	32.54	46.98	19.36	11.37	29.23	35.89	15.37	70	20.0 x 8.0	12"	17.94	13.86	27.72	2300
832	21.74	29.73	38.55	52.98	19.36	11.37	29.23	36.38	15.37	70	20.0 x 8.0	12"	18.19	13.86	27.72	2870

**Notes:**

1. Dimensions are in inches (except U and Keyway are mm), weight is in pounds.

**Performance table**

Model	Speed RPM	4 PSI		6 PSI		8 PSI		10 PSI		12 PSI		15 PSI		Maximum Vacuum		
		CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	in HgV	CFM	BHP
409	2000	317	7.2	301	10.6	288	13.9	276	17.3	266	20.7	251	25.7	15	253	12.6
	3560	618	14.8	602	20.8	589	26.8	577	32.8	567	38.8	553	47.8	16	545	24.7
	4750	847	22.8	832	30.8	818	38.8	807	46.7	796	54.7	782	66.7	16	774	34.4
413	2000	459	10.3	436	15.2	417	20.1	400	25	385	29.8	364	37.2	15	366	18.2
	3560	895	20.9	872	29.5	853	38.2	836	46.9	821	55.6	800	68.6	16	789	35.6
	4750	1227	31.5	1205	43.1	1186	54.7	1169	66.3	1154	77.9	1133	95.2	16	1122	49.2
416	2000	573	13.01	545	19.1	521	25.2	500	31.3	481	37.4	-	-	15	458	22.7
	3560	1118	26.3	1090	37.1	1066	48	1045	58.8	1026	69.7	-	-	16	986	44.6
	4400	1412	33.3	1383	46.7	1360	60.1	1339	73.5	1320	86.9	-	-	16	1280	55.5
617	1500	801	18.2	758	26.8	721	35.5	689	44.2	660	52.8	-	-	14	648	30.1
	2500	1463	33	1420	47.04	1383	61.8	1351	76.3	1322	90.7	1283	112	16	1261	58.3
	3560	2165	53.1	2122	73.6	2085	94.2	2053	114.72	2024	135.3	1985	166.1	16	1963	85.9
621	1500	995	23	941	33.8	896	44.5	856	55.3	820	66	-	-	14	805	37.6
	2500	1817	43.1	1763	61	1718	78.9	1678	96.8	1642	114.8	-	-	16	1566	73.4
	3560	2688	72.1	2634	97.6	2589	123.1	2549	148.6	2513	174.1	-	-	16	2437	109.6
722	1400	1360	31.3	1294	45.7	1238	60.1	1189	74.6	1144	89	-	-	14	1127	50.7
	2200	2307	54.8	2240	77.4	2184	100.1	2135	122.8	2090	145.5	2030	179.6	16	1998	93.1
	3050	3312	88	3246	119.4	3190	150.9	3141	182.3	3096	213.8	3035	261	16	3003	134.8
728	1400	1705	39.1	1622	57.2	1552	75.3	1490	93.4	1434	111.5	-	-	14	1413	63.5
	2200	2892	68.1	2809	96.6	2738	125	2676	153.5	2620	181.9	-	-	16	2504	116.5
	3050	4152	108.9	4069	148.4	3999	187.8	3937	227.3	3881	266.7	-	-	16	3765	168.3
826	1300	1898	43.3	1808	63.3	1732	83.3	1666	103.4	1605	123.4	-	-	14	1582	70.3
	1900	2958	68.6	2868	97.9	2793	127.2	2726	156.5	2666	185.7	2584	229.6	16	2541	119.2
	2670	4319	110.3	4229	151.5	4153	192.6	4086	233.7	4026	274.9	3945	336.6	16	3901	174
832	1300	2372	54	2260	79	2166	104.1	2082	129.1	2007	154.1	-	-	14	1978	87.8
	1900	3698	85.4	3586	122	3491	158.6	3408	195.2	3332	231.8	-	-	16	3176	148.9
	2670	5399	136.9	5287	188.3	5192	239.8	5109	291.2	5033	342.6	-	-	16	4877	217.1