

ROOTS Universal RAI® Rotary Positive Blowers

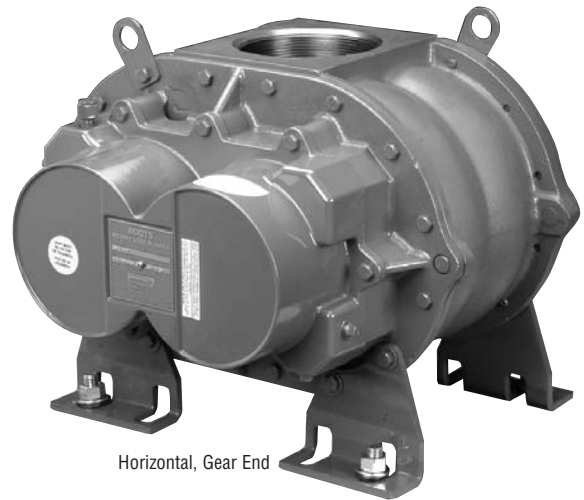
Frames 22 thru 718

BASIC BLOWER DESCRIPTION

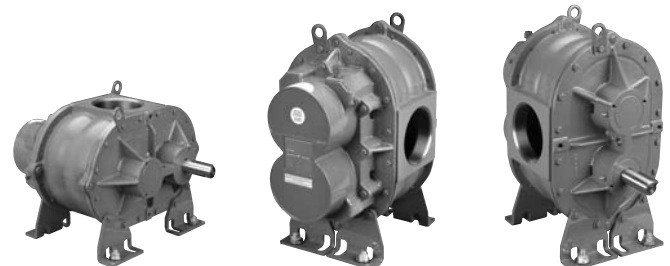
Universal RAI blowers are heavy duty rotary blowers designed with detachable rugged steel mounting feet, which permit easy in-field adaptability to either vertical or horizontal installation requirements.

Because of the detachable mounting feet, these units can be easily adapted to any of four drive shaft positions - right hand, left hand, bottom or top. The compact, sturdy design is engineered for continuous service when operated in accordance with speed and pressure ratings.

The basic model consists of a cast iron casing, carburized and ground alloy steel spur timing gears secured to steel shafts with a taper mounting and lock-nut, and cast iron involute impellers. Oversized antifriction bearings are used, with a cylindrical roller bearing at the drive shaft to withstand V-belt pull. The Universal RAI features thrust control, with splash oil lube on the gear end and grease lube on the drive end. After stan-



Horizontal, Gear End



Horizontal, Drive End

Vertical, Gear End

Vertical, Drive End

...dard tests, the unit is sprayed with a protective paint and

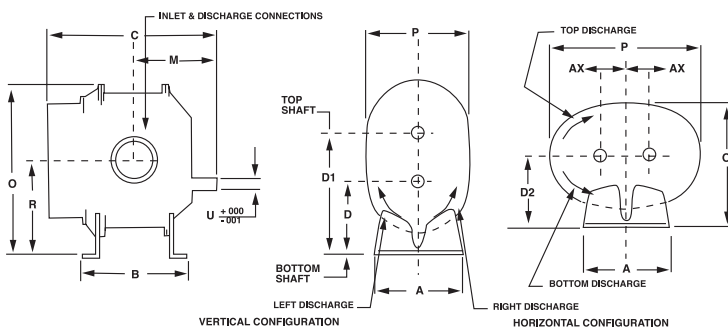
boxed or placed on skids.

Available accessories include driver, relief valve, inlet and discharge silencer, inlet filter, check valve, extended base, V-belt or flexible coupling and drive guards.

DESIGN AND CONSTRUCTION FEATURES

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

OUTLINE DRAWING & DIMENSIONAL TABLE

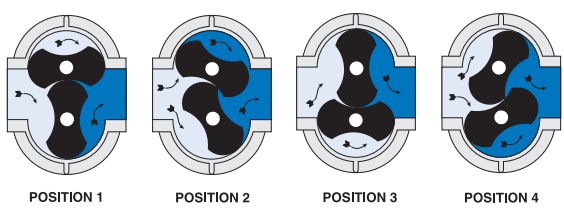


Frame Size	A	B	C	Drive Shaft Location			O	O'	P	P'	R	U	Keyway	Inlet & Disch. Dia	AX	Approx. Net Wt. (lbs.)
				D	D1	D2										
22	5.13	5.00	9.75	3.75	6.25	3.75	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	1.0 NPT	1.25	32
24	5.13	7.00	11.75	3.75	6.25	3.75	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	2.0 NPT	1.25	43
32	7.25	6.75	11.25	5.00	8.50	5.00	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	1.25 NPT	1.75	69
33	7.25	7.63	12.13	5.00	8.50	5.00	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	2.0 NPT	1.75	74
36	7.25	10.00	14.63	5.00	8.50	5.00	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	2.5 NPT	1.75	102
42	8.00	7.25	13.00	6.25	10.25	6.25	15.06	10.63	8.75	13.63	8.25	.875	.188 x .094	1.5 NPT	2.00	88
45	8.00	10.00	15.50	6.25	10.25	6.25	15.06	10.63	8.75	13.63	8.25	.875	.188 x .094	2.5 NPT	2.00	109
47	8.00	11.75	17.63	6.25	10.25	6.25	15.06	10.50	8.50	13.63	8.25	.875	.188 x .094	3.0 NPT	2.00	128
53	10.50	8.38	15.38	6.25	11.25	6.75	17.38	11.88	10.25	17.25	8.75	1.125	.250 x .125	2.5 NPT	2.50	143
56	10.50	11.00	18.00	6.25	11.25	6.75	17.38	12.25	11.00	17.25	8.75	1.125	.250 x .125	4.0 NPT	2.50	170
59	10.50	14.00	21.18	6.25	11.25	6.75	17.38	12.25	11.00	17.25	8.75	1.125	.250 x .125	4.0 NPT	2.50	204
65	11.00*	10.00	18.38	8.75	14.75	8.75	21.63	15.13	12.75	19.75	11.75	1.375	.312 x .156	3.0 NPT	3.00	245
68	11.00*	13.00	21.38	8.75	14.75	8.75	21.63	15.13	12.75	19.75	11.75	1.375	.312 x .156	5.0 NPT	3.00	285
615	11.00**	20.00	28.38	8.75	14.75	8.75	21.63	16.25	15.00	19.75	11.75	1.375	.312 x .156	6.0 FLG	3.00	425
76	14.00**	11.75	19.94	11.00	18.00	11.00	26.13	20.69	19.38	23.25	14.50	1.562	.375 x .188	4.0 NPT	3.50	400
711	14.00**	16.75	25.19	11.00	18.00	11.00	26.13	19.50	17.00	23.25	14.50	1.562	.375 x .188	6.0 FLG	3.50	530
718	14.00**	23.75	32.19	11.00	18.00	11.00	26.13	19.50	17.00	23.25	14.50	1.562	.375 x .188	8.0 FLG	3.50	650

PERFORMANCE TABLE

Frame Size	Speed RPM	1 PSI		2 PSI		3 PSI		4 PSI		5 PSI		6 PSI		7 PSI		10 PSI		11 PSI		12 PSI		13 PSI		14 PSI		
		CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	
22	1160	10	0.2	7	0.3	4	0.3	2	0.4																8	46
	3600	49	0.6	46	1.1	41	1.3	39	1.6	38	1.8	36	2.1	32	2.8	31	3.1	29	3.3						12	134
24	1160	24	0.3	19	0.4	15	0.6	11	0.8	8	0.9	6	1.0	5	1.1	4	1.2	3	1.3	2	1.4	1	1.5	1	8	63
	3600	102	0.8	97	1.3	93	1.8	89	2.3	86	2.8	83	3.3	81	3.8	79	4.2	77	4.5	75	7.6	79	8.2	76	15	332
32	1160	40	0.4	34	0.6	30	0.9	27	1.1	24	1.3	21	1.6	19	1.8	17	2.1	16	2.4						10	36
	3600	165	1.2	156	1.9	146	2.7	143	3.4	140	4.2	137	4.9	135	5.6	132	6.4	130	7.2	128	8.0	118	8.7	116	15	452
33	1160	55	0.5	48	0.8	43	1.1	39	1.4	35	1.7	31	2.1	28	2.4	25	2.8	24	3.1						10	36
	3600	205	1.6	199	2.5	193	3.5	189	4.5	185	5.4	181	6.4	178	7.4	170	10.3	167	11.2	165	12.2				14	158
36	1160	95	0.7	85	1.2	78	1.7	72	2.3	66	2.8	61	3.3	57	3.8	53	3.8	50	4.4						10	36
	3600	344	2.9	334	4.5	327	6.1	321	7.7	315	9.3	310	10.9	306	12.5	302	14.1	298	15.7	294	17.3	290	18.9	286	16	391
42	1160	38	0.4	32	0.6	28	0.9	24	1.1	21	1.3	18	1.5	15	1.8	13	1.8	11	2.1						10	36
	3600	204	1.7	198	2.6	194	3.6	190	4.5	186	5.5	183	6.4	181	7.4	173	10.2	171	11.2	169	12.1	167	13.1	165	14.1	15
45	1160	79	0.6	68	1.1	60	1.5	53	2.0	48	2.4	42	2.9	37	3.4	34	3.8	31	4.4						10	36
	3600	410	3.4	400	5.3	392	7.2	385	9.1	379	11.0	374	12.9	369	14.8	356	20.5	352	22.1	348	23.7	344	25.3	340	26.9	332
47	1160	105	0.8	92	1.4	82	2.0	73	2.6	66	3.2	59	3.8	53	4.4	49	4.9	46	5.4						10	36
	3600	542	4.5	529	7.0	519	9.5	510	12.0	503	14.3	496	17.0	490	19.5	483	22.1	477	24.6	471	27.1	465	29.6	459	32.1	415
53	1160	211	1.7	203	2.7	196	3.7	191	4.7	186	5.7	181	6.7	177	7.7	173	8.7	169	9.7						10	36
	3600	1133	8.2	1107	13.3	1084	18.4	1063	23.5	1044	28.6	1026	33.7	1009	38.8	992	43.9	975	49.0	958	54.1	941	59.2	924	64.3	887
56	1160	358	2.6	345	4.6	335	6.0	326	7.7	319	9.4	312	11.1	306	12.8	299	14.5	293	16.2						10	36
	3600	1885	11.8	1852	18.4	1821	25.0	1791	32.6	1762	40.2	1734	47.8	1707	55.4	1681	62.9	1656	70.5	1632	78.1	1609	85.3	1587	92.5	1547
59	1160	187	1.2	170	2.2	158	3.2	147	4.2	138	5.1	130	6.1	123	7.1	117	8.1	111	9.1						10	36
	3600	1026	5.2	1006	7.7	987	10.2	969	12.7	952	15.2	936	17.7	921	20.2	906	22.7	891	25.2	876	27.7	861	29.2	846	31.7	831
66	1160	400	3.4	387	5.3	377	7.2	368	9.1	360	11.0	353	12.8	347	14.7	340	16.6	333	18.5						10	36
	3600	2150	15.7	2125	23.5	2100	31.3	2075	39.1	2050	46.9	2025	54.7	2000	62.5	1975	70.3	1950	78.1	1925	85.9	1900	93.7	1875	101.3	1850
68	1160	224	1.5	203	2.7	187	3.9	172	5.1	160	6.3	149	7.5	139	8.7	130	9.9	121	11.1						10	36
	3600	1206	6.1	1184	9.3	1163	12.5	1143	15.7	1123	18.9	1103	22.1	1083	25.3	1063	28.5	1043	31.7	1023	34.9	1003	38.1	983	41.3	963
76	1160	528	4.0	511	6.4	500	9.0	490	11.5	481	13.9	473	16.4	466	18.8	459	21.3	452	23.2						10	36
	3600	2868	18.4	2828	27.6	2788	36.8	2748	46.0	2708	55.2	2668	64.4	2628	73.6	2588	82.8	2548	92.0	2508	101.2	2468	110.4	2428	119.6	2388
711	1160	362	2.2	336	4.0	316	5.9	299	7.7	284	9.6	271	11.4	258	13.3	246	15.1	234	16.8						10	36
	3600	2050	10.9	2000	16.4	1950	21.9	1900	27.4	1850	32.9	1800	38.4	1750	43.9	1700	54.4	1650	64.9	1600	75.4	1550	85.9	1500	95.9	1450
718	1160	600	3.3	563	6.3	534	9.3	510	12.3	489	15.4	470	18.4	453	21.5	437	24.6	421	27.7						10	36
	3600	3440	15.7	3340	23.5	3240	31.3	3140	39.1	3040	46.9	2940	54.7	2840	62.5	2740	70.3	2640	78.1	2540	85.9	2440	93.7	2340	101.3	2240

Notes: 1. Performance based on inlet air at standard pressure of 14.7 psia, standard temperature of 68° F, and specific gravity of 1.0.
2. Vacuum ratings based on inlet air at standard temperature of 68° F, discharge pressure of 30" Hg and specific gravity of 1.0.



OPERATING PRINCIPLE

Two figure-eight lobe impellers mounted on parallel shafts rotate in opposite directions. As each impeller passes the blower inlet, it traps a definite volume of air and carries it around the case to the blower outlet, where the air is discharged. With constant speed operation, the displaced volume is essentially the same regardless of pressure, temperature or barometric pressure.
Timing gears control the relative position of the impellers to each other and maintain small but definite clearances. This allows operation without lubrication being required inside the gas casing.



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