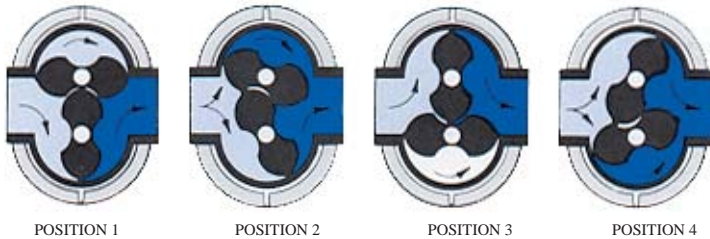


ROOTS™ Universal RAI Rotary Positive Blowers

Frames 22 thru 718



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.

BASIC BLOWER DESCRIPTION

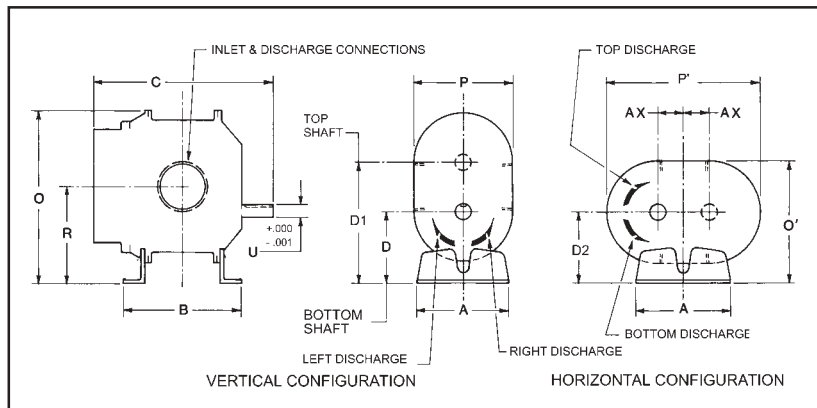
Universal RAI blowers are heavy duty rotary blowers designed with detachable rugged steel mounting feet, which permit easy in-field adaptability to either vertical or horizontal installation requirements.

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 locknut, 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 standard 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.

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
71	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		15 PSI		MAX. VACUUM			
		CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	*Hg	CFM	BHP	
22	1160	40	0.2	7	0.3	4	0.3	2	0.4	1.3	0.4	1.6	3.8	1.8	3.6	2.1	3.2	2.8	3.1	2.9	3.3							4	6	0.3	
	3600	49	0.6	46	0.8	43	1.1	41	1.3	39	1.6	38	1.8	63	2.7	63	3.1	59	4.2	57	4.5	56	4.9					15	28	2.0	
24	1160	24	0.3	19	0.4	15	0.6	11	0.8	8	0.9	8	3.8	8	3.8													6	12	0.6	
	3600	102	0.8	97	1.3	93	1.8	89	2.3	86	2.8	83	3.3	137	4.4	137	4.4	129	5.5	122	7.7	120	8.4	118	9.1	117	9.8	14	69	3.8	
32	1160	55	0.5	48	0.8	43	1.1	39	1.4	35	1.7	31	2.1	28	2.4													10	18	1.3	
	3600	149	1.3	144	2.0	140	2.7	137	3.4	134	4.1	131	4.8	199	5.5	199	5.5	189	7.4	170	10.3	167	11.2	165	12.2	10	113	5.6			
33	1160	55	0.5	48	0.8	43	1.1	39	1.4	35	1.7	31	2.1	28	2.4													10	27	1.7	
	3600	205	1.6	199	2.5	193	3.5	189	4.5	186	5.4	181	6.4	278	7.4	278	7.4	269	12.1	269	12.1	269	12.1	269	12.1	10	113	5.6			
36	1160	95	0.7	85	1.2	78	1.7	72	2.3	66	2.8	61	3.3	57	3.8													10	55	2.7	
	3600	262	2.0	253	3.3	245	4.5	239	5.8	234	7.0	229	8.3	344	12.5	344	12.5	331	17.1	321	17.1	321	17.1	321	17.1	12	213	7.9			
42	1160	38	0.4	32	0.6	28	0.9	24	1.1	21	1.3	18	1.5	15	1.8													8	19	1.1	
	3600	92	0.8	87	1.3	82	1.8	78	2.2	75	2.7	72	3.1	69	3.6	62	5.0	60	5.5	58	5.9	57	6.5	56	7.1	14	56	3.5			
45	1160	79	0.6	68	1.1	60	1.5	53	2.0	48	2.4	42	2.9	37	3.4													8	46	1.9	
	3600	213	1.7	208	2.2	203	3.1	198	4.1	193	5.0	188	5.9	283	14.6	283	14.6	273	20.5	263	20.5	263	20.5	263	20.5	12	134	5.8			
47	1160	105	0.8	92	1.4	82	2.0	75	2.6	66	3.2	59	3.8	53	4.4													8	63	2.5	
	3600	249	1.6	236	2.8	225	4.0	217	5.3	209	6.5	203	7.7	296	19.5	296	19.5	283	26.3	273	26.3	273	26.3	273	26.3	12	181	7.5			
53	1160	123	0.9	110	1.6	100	2.2	92	2.9	85	3.6	78	4.3	72	4.9													10	36	2.2	
	3600	311	1.7	303	2.7	296	3.6	291	4.7	286	5.7	281	6.7	330	20.5	330	20.5	317	27.1	307	27.1	307	27.1	307	27.1	14	158	7.5			
56	1160	358	2.6	345	4.6	335	6.0	326	7.7	319	9.4	312	11.1	306	12.8	290	17.9	285	19.6	280	27.6	276	23.0				14	276	12.3		
	3600	598	5.2	585	8.0	575	10.7	567	13.5	560	16.2	553	19.0	647	40.1	647	40.1	634	50.1	624	50.1	624	50.1	624	50.1	16	501	23.2			
59	1160	187	1.2	170	2.2	158	3.2	147	4.2	138	5.1	130	6.1															8	135	4.1	
	3600	529	3.9	513	6.4	500	8.9	490	11.4	480	13.8	472	16.3	464	18.8	330	30.0	325	32.7	320	37.2	316	43.0				12	445	15.6		
65	1160	140	1.0	126	1.8	116	2.6	107	3.3	100	4.1	93	4.8	86	5.5	70	7.8												12	71	4.7
	3600	400	3.4	387	5.3	377	7.2	368	9.1	360	11.0	353	12.8	347	14.7	330	20.4	325	22.3	320	24.2	316	26.1	311	27.9	307	29.8	16	300	15.8	
68	1160	224	1.5	203	2.7	187	3.9	172	5.1	160	6.3	149	7.5	139	8.7														10	135	6.2
	3600	643	4.9	621	7.9	605	10.9	591	14.0	579	17.0	567	20.0	557	23.1	530	32.2	522	35.2	515	38.2	507	41.3	500	44.3		15	495	23.5		
615	1160	420	2.6	380	4.8	351	7.1	323	9.3	301	11.6	279	13.8	260	16.2														10	135	6.2
	3600	1205	8.1	1164	13.9	1133	19.5	1107	25.2	1084	30.8	1063	36.5	1044	42.2	735	76.3	725	77.8	715	81.3	705	85.8	700	88.8		16	715	34.0		
76	1160	575	1.3	525	2.3	485	3.3	450	4.3	415	5.4	385	6.4	355	7.4														12	117	6.2
	3600	1590	4.0	1545	6.1	1505	9.0	1470	12.1	1440	15.2	1415	18.3	1395	21.4	1375	24.5	1360	27.6	1350	29.7	1345	31.8	1340	34.0		16	413	20.4		
711	1160	362	2.2	336	4.0	316	5.9	299	7.7	284	9.6	271	11.4	258	13.3														12	228	11.2
	3600	970	6.5	944	11.0	925	15.5	908	20.0	893	24.5	880	29.0	867	33.5	835	47.1	835	47.1	835	47.1	835	47.1	835	47.1		15	793	34.4		
718	1160	600	3.3	563	6.3	534	9.3	510	12.3	489	15.4	470	18.4																10	446	15.0
	3600	1590	9.7	1553	17.0	1524	24.3	1500	31.6	1479	39.0	1460	46.3	1440	53.3	1425	60.3	1415	67.8	1410	74.8	1405	81.8	1400	88.8		12	1398	44.66		
2050	2370	15.7	2333	26.9	2304	37.2	2280	47.9	2259	58.6	2240	69.4																12	2178	6.4	

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 pressure of 68° F, discharge pressure of 30" Hg and specific gravity of 1.0.

DESIGN AND CONSTRUCTION FEATURES

- 1. Detachable steel mounting feet
- 2. Right one-piece cast iron casing
- 3. Anti-friction bearings
- 4. Thrust Control
- 5. Splash oil lubricated spur timing gears
- 6. Connections in standard pipe sizes
- 7. Straight, precision machined two-lobe impellers
- 8. Ground steel shafts



Roots

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