

SPECIFICATIONS

ROOTS

Blowers Compressors Exhausters

ROOTS Universal RAI® Rotary Positive Blowers

Frames 22 thru 718

BASIC BLOWER DESCRIPTION

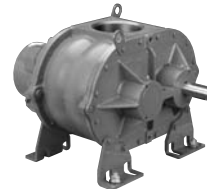
Universal RAI blowers are heavy duty rotary blowers designed with detachable rugged steel mounting feet, which permit easy in-field adaptability to either vertical or horizontal installation requirements.

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

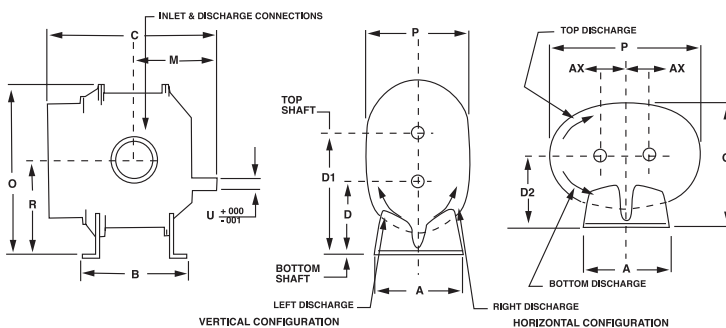
boxed or placed on skids.

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	3.00	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	2.50	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

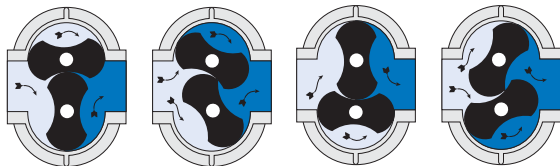


Roots

PERFORMANCE TABLE

Frame Size	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	CFM	BHP	Hg	CFM	BHP		
22	1160	10	0.2	7	0.3	4	0.3	2	0.4																					4	6	0.3	
	3600	49	0.6	46	0.8	43	1.1	41	1.3	39	1.6	38	1.8	36	2.1	32	2.8	31	3.1	29	3.3								14	28	2.0		
	5275	76	0.8	73	1.2	70	1.6	68	1.9	66	2.3	64	2.7	63	3.1	59	4.2	57	4.5	56	4.9								15	53	3.1		
24	1160	24	0.3	19	0.4	15	0.6	11	0.8	8	0.9																			6	12	0.6	
	3600	102	0.8	97	1.3	93	1.8	89	2.3	86	2.8	83	3.3	81	3.8	83	6.0	84	6.5	82	7.1	81	7.6	79	8.2	77	8.7	15	78	4.5			
	5275	156	1.2	150	1.9	146	2.7	143	3.4	140	4.2	137	4.9	135	5.6	122	7.7	120	8.4	118	9.1	117	9.8	115	10.5	113	11.2	16	110	5.9			
32	1160	40	0.4	34	0.6	30	0.9	27	1.1	24	1.3	21	1.6	19	1.8																10	18	1.3
	2800	113	1.0	108	1.6	104	2.1	101	2.7	98	3.2	95	3.8	93	4.3	86	6.0	84	6.5	82	7.1	81	7.6	79	8.2	77	8.7	15	78	4.5			
	3600	149	1.3	144	2.0	140	2.7	137	3.4	134	4.1	131	4.8	129	5.5	122	7.7	120	8.4	118	9.1	117	9.8	115	10.5	113	11.2	16	110	5.9			
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
	2800	156	1.2	149	2.0	144	2.7	140	3.5	136	4.2	132	5.0	129	5.7	120	8.0	118	8.7	116	9.5								14	113	5.6		
	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								15	159	7.6		
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
	2800	262	2.0	253	3.3	245	4.5	239	5.8	234	7.0	229	8.3	224	9.5															12	213	7.9	
	3600	344	2.9	334	4.5	327	6.1	321	7.7	315	9.3	310	10.9	306	12.5														15	278	12.7		
42	860	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
	1760	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								14	56	3.5		
	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	163	15.0	15	160	8.0			
45	860	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
	1760	188	1.3	177	2.2	169	3.1	162	4.1	156	5.0	151	5.9	146	6.9	133	9.6													12	134	5.8	
	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												15	332	15.9		
47	860	105	0.8	92	1.4	82	2.0	73	2.6	66	3.2	59	3.8	53	4.4																8	63	2.5
	1760	249	1.6	236	2.8	225	4.0	217	5.3	209	6.5	203	7.7	196	8.9															12	181	7.5	
	3600	542	4.5	529	7.0	519	9.5	510	12.0	503	14.3	496	17.0	490	19.5														15	452	19.8		
53	700	72	0.6	63	1.0	56	1.4	51	1.8	46	2.2	42	2.6	38	3.0																10	36	2.2
	1760	211	1.7	203	2.7	196	3.7	191	4.7	186	5.7	181	6.7	177	7.7	167	10.8	163	11.8	160	12.8	157	14.2	155	15.2	145	15.8	14	158	7.5			
	2850	355	3.3	346	5.0	340	6.6	334	8.2	329	9.9	325	11.5	321	13.2	310	18.1	307	19.7	304	21.3	301	23.0	298	24.6	295	26.2	16	391	14.0			
56	700	123	0.9	110	1.6	100	2.2	92	2.9	85	3.6	78	4.3	72	4.9																10	70	3.5
	1760	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	23.0							14	276	12.3		
	2850	598	5.2	585	8.0	575	10.7	567	13.5	560	16.2	553	19.0	547	21.7	531	30.0	526	32.7	521	51.7	38.2							16	501	23.2		
59	700	187	1.2	170	2.2	158	3.2	147	4.2	138	5.1	130	6.1																		8	135	4.1
	1760	529	3.9	513	6.4	500	8.9	490	11.4	480	13.8	472	16.3	464	18.8															12	445	15.6	
	2850	881	7.8	865	11.8	852	15.8	842	19.9	832	23.9	824	27.9	816	31.9															15	770	32.1	
66	700	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
	1760	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			
	2350	546	5.2	523	7.7	522	10.3	513	12.8	506	15.3	499	17.8	492	20.3	475	27.4	470	30.4	466	32.9	461	35.5	457	38.0	452	40.5	16	445	21.6			
68	700	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
	1760	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		
	2350	876	7.3	855	11.4	838	15.4	824	19.5	812	23.5	801	27.6	790	31.6	763	43.8	43.8	47.8	47.8	51.9	74.0	55.9	73.3	60.0				16	715	34.0		
615	700	420	2.6	380	4.8	351	7.1	323	9.3	301	11.6	279	13.8	260	16.2																8	292	9.1
	1760	1205	8.1	1164	13.9	1133	19.5	1107	25.2	1084	30.8	1063	36.5	1044	42.2															12	997	35.0	
	2350	1641	11.9	1601	19.3	1570	27.0	1544	34.6	1521	42.2	1500	49.8	1481	57.4															14	1389	54.9	
76	575	195	1.3	179	2.3	168	3.3	158	4.3	150	5.4	142	6.4	134	7.4	115	10.4														12	117	6.2
	1400	528	4.0	511	6.4	500	9.0	490	11.5	481	13.9	473	16.4	466	18.8	447	26.3	441	28.7	436	31.2	421	33.7	415	36.1	421	38.6	16	413	20.4			
	2050	768	6.9	722	10.5	761	14.2	751	17.8	742	21.4	734	25.0	727	28.6	708	39.5	703	43.1	697	46.7	684	50.4	679	54.0	682	57.6	16	674	30.6			
711	575	362	2.2	336	4.0	316	5.9	299	7.7	284	9.6	271	11.4	258	13.3	226	18.8														12	228	11.2
	1400	970	6.5	944	11.0	925	15.5	908	20.0	893	24.5	880	29.0	867	33.5	835	47.1													15	793	34.4	
	2050	1450	10.9	1424	17.5	1404	24.1	1387	30.7	1373	37.3	1359	43.9	1347	50.5	1315	70.3													16	1256	54.6	
718	575	600	3.3	563	6.3	534	9.3	510	12.3	489	15.4	470	18.4																		10	446	15.0
	1400	1590	9.7	1553	17.0	1524	24.3	1500	31.6	1479	39.0	1460	46.3																	12	1398	44.7	
	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 temperature of 68° F, discharge pressure of 30" Hg and specific gravity of 1.0.



POSITION 1

POSITION 2