

ROOTS

Blowers Compressors Exhausters

ROOTS Universal RAI® Rotary Positive Blowers

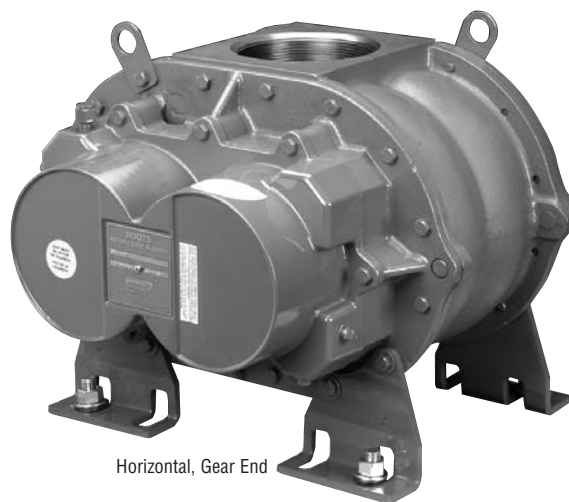
Frames 22 thru 718

BASIC BLOWER DESCRIPTION

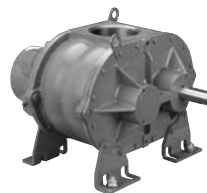
Universal RAI blowers are heavy duty rotary blowers designed with detachable rugged steel mounting feet, which permit easy in-field adaptability to either vertical or horizontal installation requirements.

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

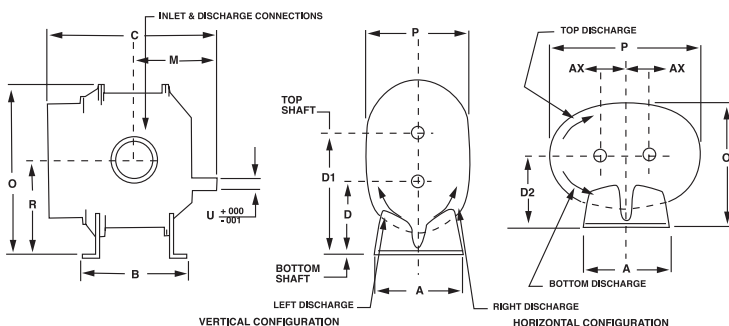
After standard tests, the unit is sprayed with a protective paint and boxed or placed on skids.

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

DESIGN AND CONSTRUCTION FEATURES

- Detachable steel mounting feet
- Rigid one-piece cast iron casing
- Anti-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

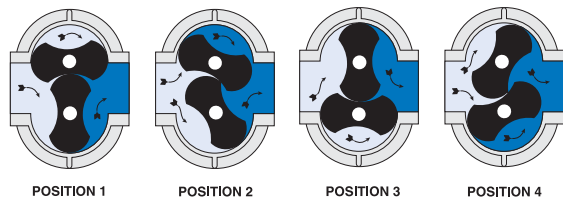


Frame Size	A	B	C	Drive Shaft Location			O	O'	P	P'	R	U	Keyway	Inlet & Disch. Dia	AX	Approx Net Wt (lbs.)
				D	D1	D2										
22	5.13	5.00	9.75	3.75	6.25	3.75	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	1.0 NPT	1.25	32
24	5.13	7.00	11.75	3.75	6.25	3.75	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	2.0 NPT	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	15 PSI	MAX. VACUUM
		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						4
	3600	49	0.6	46	0.8	43	1.1	41	1.3	39					14
	5275	76	0.8	73	1.2	70	1.6	68	1.9	66	2.3				15
24	1160	24	0.3	19	0.4	15	0.6	11	0.8	8					6
	3600	102	0.8	97	1.3	93	1.8	89	2.3	86					14
	5275	156	1.2	150	1.9	146	2.7	143	3.4	140	4.2				15
32	1160	40	0.4	34	0.6	30	0.9	27	1.1	24					6
	3600	113	1.0	108	1.6	104	2.1	101	2.7	98					14
	5275	149	1.3	144	2.0	140	2.7	137	3.4	134	4.1				15
33	1160	55	0.5	48	0.8	43	1.1	39	1.4	35					10
	3600	205	1.6	199	2.5	193	3.5	189	4.5	185					14
	5275	280	2.2	273	3.3	267	4.5	263	5.8	259	6.7				15
36	1160	95	0.7	85	1.2	78	1.7	72	2.3	66					10
	3600	344	2.9	334	4.5	327	6.1	321	7.7	315					12
	5275	480	4.0	468	6.0	456	8.0	444	10.0	432	11.2				15
42	1160	138	0.8	124	1.3	110	1.8	100	2.5	90					8
	3600	504	3.0	492	4.5	480	6.0	468	7.5	456					14
	5275	700	4.0	688	6.0	676	8.0	664	10.0	652	11.2				15
45	1160	188	1.3	177	2.2	169	3.1	162	4.1	156					10
	3600	700	4.0	688	6.0	676	8.0	664	10.0	652					12
	5275	980	5.0	968	7.0	956	9.0	944	11.0	932	12.2				15
47	1160	211	1.7	203	2.7	196	3.7	191	4.7	186					8
	3600	811	5.8	793	8.8	775	11.8	757	14.8	739					14
	5275	1120	8.0	1092	12.0	1064	16.0	1036	20.0	1008	22.0				15
53	1160	272	2.3	256	3.3	240	4.3	224	5.3	208					10
	3600	1000	7.0	980	10.0	960	13.0	940	16.0	920					14
	5275	1360	9.0	1336	13.0	1312	17.0	1288	21.0	1264	23.0				15
56	1160	358	3.0	342	4.0	326	5.0	310	6.0	294					10
	3600	1350	9.0	1320	12.0	1290	15.0	1260	18.0	1230					14
	5275	1880	12.0	1848	17.0	1816	22.0	1784	27.0	1752	29.0				16
59	1160	412	3.6	396	4.8	380	6.0	364	7.2	348					8
	3600	1550	10.0	1520	13.0	1490	16.0	1460	19.0	1430					12
	5275	2160	13.0	2124	18.0	2088	23.0	2052	28.0	2016	30.0				15
66	1160	528	4.5	512	6.0	496	7.5	480	9.0	464					12
	3600	1950	13.0	1920	17.0	1890	21.0	1860	25.0	1830					16
	5275	2720	17.0	2680	23.0	2640	29.0	2600	35.0	2560	37.0				18
68	1160	576	5.0	560	6.6	544	8.2	528	9.8	512					10
	3600	2160	14.0	2124	18.0	2088	22.0	2052	26.0	2016					14
	5275	3000	19.0	2964	25.0	2928	31.0	2892	37.0	2856	39.0				16
615	1160	1205	8.1	1164	10.8	1123	13.5	1082	16.2	1041					12
	3600	4400	24.0	4320	31.0	4240	39.0	4160	47.0	4080					16
	5275	6000	33.0	5880	44.0	5760	55.0	5640	66.0	5520	77.0				18
76	1160	1595	13.0	1554	17.0	1513	21.0	1472	25.0	1431					12
	3600	5760	36.0	5616	47.0	5472	58.0	5328	69.0	5184					16
	5275	8000	49.0	7856	64.0	7712	80.0	7568	95.0	7424	110.0				18
711	1160	2050	18.0	1992	24.0	1934	30.0	1876	36.0	1818					12
	3600	7200	48.0	7056	62.0	6912	78.0	6768	94.0	6624					16
	5275	10000	64.0	9856	84.0	9712	106.0	9568	128.0	9424	150.0				18
718	1160	2370	21.0	2304	28.0	2238	35.0	2172	42.0	2106					12
	3600	8400	54.0	8256	71.0	8112	89.0	7968	107.0	7824					16
	5275	11600	74.0	11376	98.0	11192	124.0	11008	150.0	10824	176.0				18

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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