

ROOTS

Blowers Compressors Exhausters

ROOTS Universal RAI® Rotary Positive Blowers

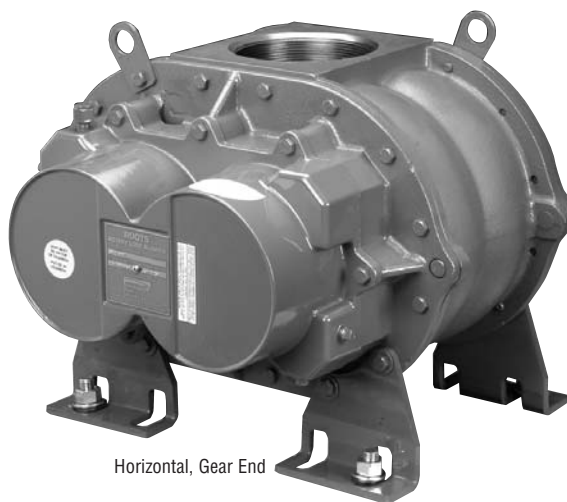
Frames 22 thru 718

BASIC BLOWER DESCRIPTION

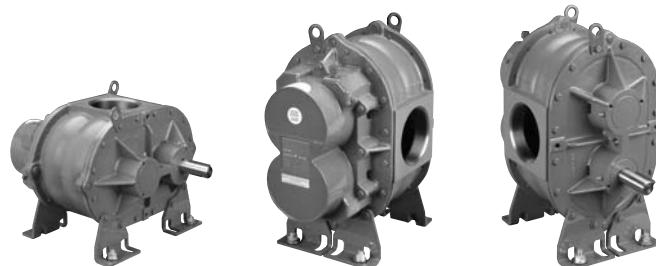
Universal RAI blowers are heavy duty rotary blowers designed with detachable rugged steel mounting feet, which permit easy in-field adaptability to either vertical or horizontal installation requirements.

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

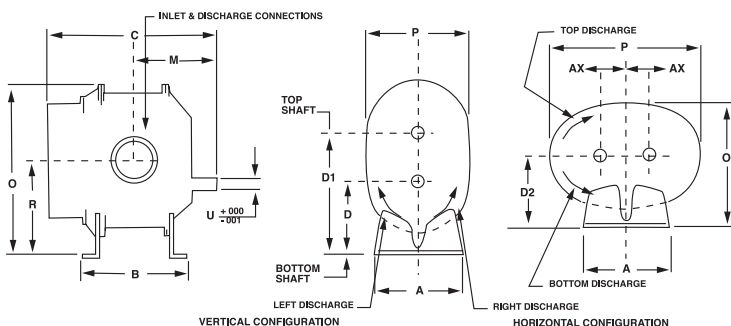
boxed or placed on skids.

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	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



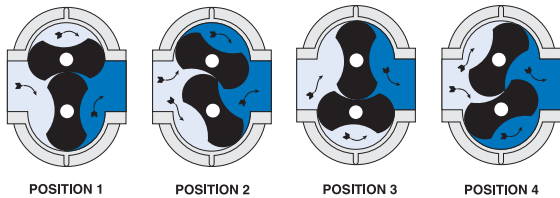
Roots



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	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	1.6	38	1.8	36	2.1	32	2.8	31	3.1	29	3.3						14	
	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	
24	1160	24	0.3	19	0.4	15	0.6	11	0.8	8	0.9																6	
	3600	102	0.8	97	1.3	93	1.8	89	2.3	86	2.8	83	3.3	81	3.8	78	4.5	76	4.8	74	5.2						14	
	5275	156	1.2	150	1.9	146	2.7	143	3.4	140	4.2	137	4.9	135	5.6	131	6.5	128	7.1	125	7.7						15	
32	1160	40	0.4	34	0.6	30	0.9	27	1.1	24	1.3	21	1.6	19	1.8												6	
	3600	163	1.0	156	1.6	150	2.1	144	2.7	138	3.3	132	3.9	126	4.5	120	5.2	114	5.8	108	6.4						14	
	5275	243	1.5	234	2.0	227	2.7	220	3.4	213	4.1	206	4.8	199	5.5	192	6.2	185	6.9	178	7.6						15	
33	1160	55	0.5	48	0.8	43	1.1	39	1.4	35	1.7	31	2.1	28	2.4												10	
	3600	205	1.6	199	2.5	193	3.5	189	4.5	185	5.4	181	6.4	178	7.4	170	8.0	167	8.7	164	9.5						14	
	5275	300	2.2	293	3.3	287	4.4	281	5.5	274	6.6	268	7.7	261	8.8	254	9.9	247	10.3	240	11.2						15	
36	1160	95	0.7	85	1.2	78	1.7	72	2.3	66	2.8	61	3.3	57	3.8												10	
	3600	344	2.9	334	4.5	327	6.1	321	7.7	315	9.3	310	10.9	306	12.5												15	
42	1760	38	0.4	32	0.6	28	0.9	24	1.1	21	1.3	18	1.5	15	1.8												8	
	3600	204	1.7	198	2.6	194	3.6	190	4.5	186	5.5	183	6.4	181	7.4	173	8.0	171	8.8	169	9.5						14	
	5275	298	2.4	292	3.3	287	4.2	282	5.1	277	6.0	272	6.9	267	7.8	262	8.7	257	9.6	252	10.5						15	
45	1760	79	0.6	68	1.1	60	1.5	53	2.0	48	2.4	42	2.9	37	3.4												8	
	3600	400	3.4	400	5.3	392	7.2	385	9.1	379	11.0	374	12.9	369	14.8												15	
47	1760	105	0.8	92	1.4	82	2.0	73	2.6	66	3.2	59	3.8	53	4.4												8	
	3600	542	4.5	529	7.0	519	9.5	510	12.0	503	14.3	496	17.0	490	19.5												15	
53	1760	72	0.6	63	1.0	56	1.4	51	1.8	46	2.2	42	2.6	38	3.0												10	
	3600	353	3.3	346	5.0	340	6.6	334	8.2	329	9.9	325	11.5	321	13.2												15	
56	1760	140	1.0	126	1.8	116	2.6	107	3.3	100	4.1	93	4.8	86	5.5												10	
	3600	688	5.2	675	8.0	667	10.7	661	13.5	656	16.2	653	19.0	647	21.7												16	
59	1760	127	1.2	110	2.2	100	3.2	92	4.2	85	5.1	79	6.0	74	7.0												8	
	3600	643	4.9	621	7.9	605	10.9	591	14.0	579	17.0	567	20.0	557	23.1												15	
66	1760	140	1.0	126	1.8	116	2.6	107	3.3	100	4.1	93	4.8	86	5.5												10	
	3600	724	5.2	712	8.0	701	10.7	691	13.5	682	16.2	674	19.0	667	21.7												16	
68	1760	140	1.0	126	1.8	116	2.6	107	3.3	100	4.1	93	4.8	86	5.5												10	
	3600	724	5.2	712	8.0	701	10.7	691	13.5	682	16.2	674	19.0	667	21.7												16	
615	1760	1206	8.1	1164	13.9	1133	19.5	1107	25.2	1084	30.8	1063	36.5	1044	42.2												12	
	3600	6431	31.9	6306	47.8	6201	64.7	6107	86.6	6024	108.5	5951	130.4	5888	152.3												16	
76	1760	195	1.3	179	2.3	168	3.3	158	4.3	150	5.4	142	6.4	134	7.4												12	
	3600	970	6.5	944	11.0	925	15.5	908	20.0	893	24.5	880	29.0	867	33.5												16	
711	1760	362	2.2	336	4.0	316	5.9	299	7.7	284	9.6	271	11.4	258	13.3												12	
	3600	1450	10.9	1424	17.5	1404	24.1	1387	30.7	1373	37.3	1359	43.9	1347	50.5												16	
718	1400	1590	9.7	1553	17.0	1524	24.3	1500	31.6	1479	39.0	1460	46.3														12	
	2050	2370	15.7	2333	26.9	2304	37.2	2280	47.9	2259	58.6	2240	69.4														12	

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.



Roots

Dresser Roots Headquarters
16240 Port Northwest Drive
Houston, TX 77041
Toll Free (US): 1-877-363-7668
Ph: 832-590-2305
Toll Free (US) Fax: 1-877-357-7238
Fx: 832-590-2326

Dresser Roots Connersville Operation
900 West Mount Street
Connersville, IN 47331
Ph: 765-827-9200
Fx: 765-827-9266

Dresser Roots Holmes Operation
PO Box B7
Off St. Andrews Rd
Turnbridge, Huddersfield
England HD1 6RB
Ph: +44 (0) 1484 422 222
Fx: +44 (0) 1484 422 668

website: www.rootsblower.com • US email: roots@dresser.com • UK email: dmd_roots@dresser.co.uk