

# ROOTS

Blowers Compressors Exhausters

## ROOTS™ Universal RAI® DSL Dual Splash Lubricated Rotary Positive Displacement Blowers

Frames 32 thru 615

### BASIC BLOWER DESCRIPTION

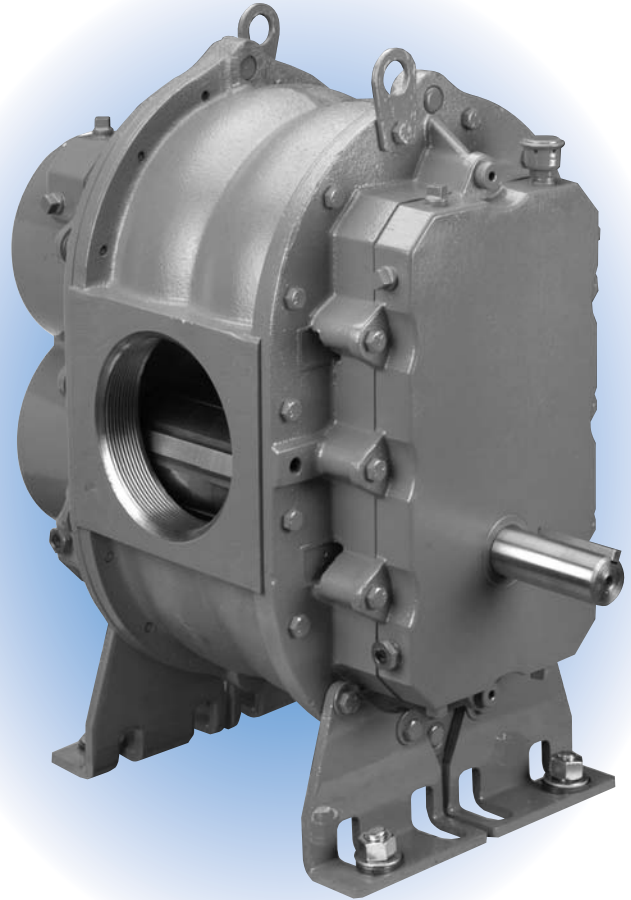
Universal RAI® DSL (Dual Splash Lubricated) blowers are heavy-duty rotary blowers designed with detachable, rugged steel mounting feet that permit easy in-field adaptability to vertical or horizontal installation requirements. Because of the detachable mounting feet, these units can be easily adapted to any of four drive shaft positions: right, left, bottom, or top. The compact, sturdy design is engineered for continuous service when operated in accordance with speed and pressure ratings.

This 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 DSL (URAI DSL) blower features splash oil lubrication on both the gear end AND drive end. The drive end has two shaft-mounted oil slingers and the gear end has ROOTS' exclusive "figure-eight" gearbox design that improves oil distribution to maximize gear and bearing life. Sight glasses (3/8") are provided for accurate oil level confirmation. After testing, the unit is sprayed with a protective paint, and boxed or skid mounted for delivery. Available accessories include driver, relief valve, inlet and discharge silencers, inlet filter, check valve, extended base, v-belt or flexible coupling and drive guards.

### STRONGEST WARRANTY IN THE INDUSTRY

ROOTS™ URAI DSL blowers are warranted for two years plus an additional 6 months for shipping and construction where required. ROOTS synthetic oil assures top performance and warranty acceptance for lubricants.

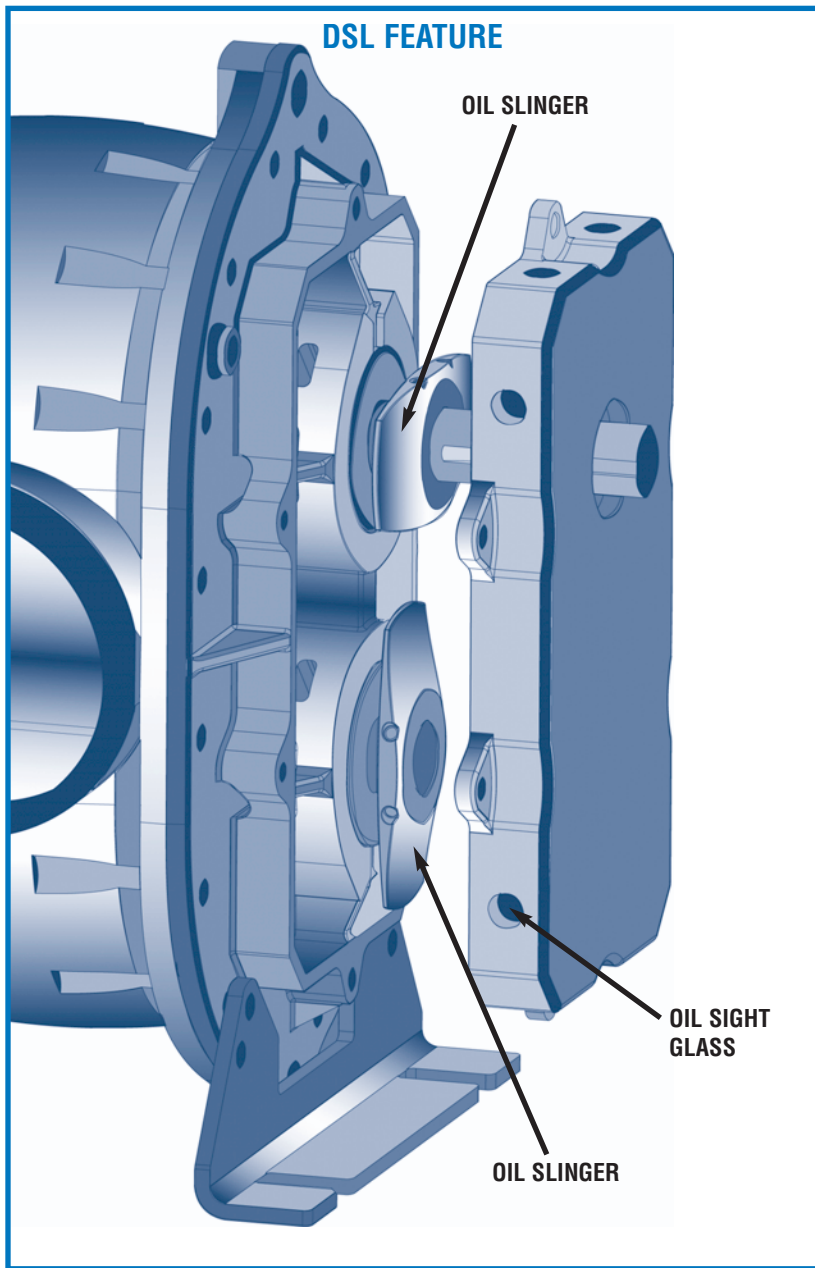


### DESIGN AND CONSTRUCTION FEATURES

- Steel detachable mounting feet
- Rigid one-piece cast iron casing
- Anti-friction bearings
- Splash oil lubricated spur timing gears
- Splash oil lubricated drive end bearings
- Connections in standard pipe sizes
- Balanced, precision machined bi-lobe impellers
- Ground steel shafts



Roots



Steel detachable mounting feet allow for adaptation to any of four drive positions: right, left, bottom or top.



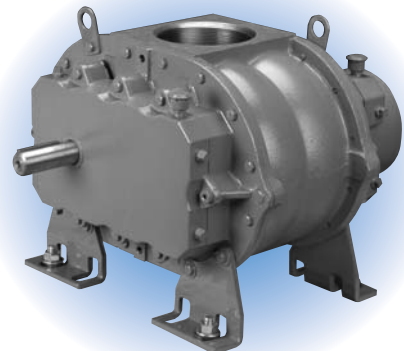
**Vertical, Drive End**



**Vertical, Gear End**

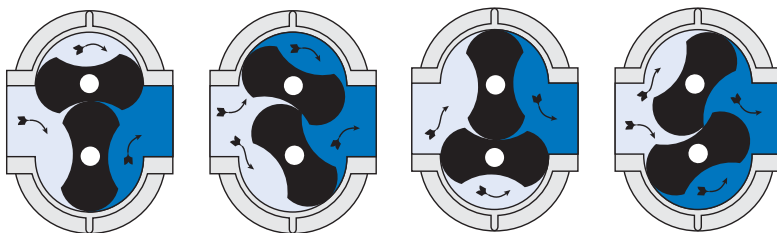


**Horizontal, Gear End**



**Horizontal, Drive End**

**BI-LOBE 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 finite 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 finite clearances. This allows operation without lubrication being required inside the lobe cavity.

## UNIVERSAL RAI® DSL BLOWER PERFORMANCE

Frame Size	Speed RPM	1 PSI		6 PSI		7 PSI		10 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	"HG	CFM	BHP
32	1160	40	0.2	21	1.4	19	1.6											10	18	1.1
	2800	113	0.6	95	3.4	93	3.9	86	5.6	82	6.7	81	7.2	79	7.8	77	8.3	15	78	4.1
	3600	149	0.9	131	4.4	129	5.2	122	7.3	118	8.7	117	9.4	115	10.1	113	10.8	16	110	5.3
33	1160	55	0.3	31	1.9	28	2.2											10	27	1.5
	2800	156	0.9	132	4.6	129	5.4	120	7.7	116	9.2							14	113	5.2
	3600	205	1.2	181	6.1	178	7.0	170	9.9	165	11.9							15	159	7.3
36	1160	95	0.5	61	3.1	57	3.6											10	55	2.5
	2800	262	1.5	229	7.7	224	8.9											12	213	7.5
	3600	344	2.1	310	10.1	306	11.7											15	278	12.1
42	860	38	0.2	18	1.4	15	1.6											8	19	0.9
	1760	92	0.5	72	2.8	69	3.3	62	4.7	58	5.6							14	56	3.2
	3600	204	1.4	183	6.1	181	7.1	173	9.9	169	11.8	167	12.8	165	13.7	163	14.7	16	160	7.7
45	860	79	0.5	42	2.7	37	3.2											8	46	1.8
	1760	188	1.0	151	5.7	146	6.6	133	9.4									12	134	5.5
	3600	410	2.7	374	12.2	369	14.1	356	19.8									16	332	15.4
47	860	105	0.6	59	3.6	53	4.2											8	63	2.4
	1760	249	1.3	203	7.5	196	8.7											12	181	7.3
	3600	542	3.5	496	16.1	490	18.6											15	452	19.1
53	700	72	0.4	42	2.4	38	2.8											10	36	2.0
	1760	211	1.2	181	6.3	177	7.3	167	10.3	160	12.3	157	13.3	155	14.4			14	158	7.1
	2850	355	2.5	325	10.7	321	12.3	310	17.2	304	20.5	301	22.1	298	23.8	295	25.4	16	291	13.4
56	700	123	0.7	78	4.1	72	4.7											10	70	3.3
	1760	358	2.0	312	10.5	306	12.2	290	17.3	280	20.6	276	22.3					14	276	11.8
	2850	598	4.0	553	17.7	547	20.5	531	28.7	521	34.2	517.0	37.0					16	501	22.4
59	700	187	1.0	130	5.9													8	135	3.9
	1760	529	2.9	472	15.3	464	17.8											12	445	14.9
	2850	881	5.9	824	26.0	816	30.0											15	770	30.8
65	700	140	0.8	93	4.5	86	5.3	70	7.5									12	71	4.4
	1760	400	2.4	353	11.9	347	13.8	330	19.4	320	23.2	316	25.1	311	27.0	307	28.9	16	300	15.2
	2350	546	3.8	499	16.4	492	19.0	475	26.5	466	31.6	461	34.1	457	36.6	452	39.1	16	445	20.6
68	700	224	1.2	149	7.3	139	8.5											10	135	5.9
	1760	643	3.7	567	18.9	557	21.9	530	31.0	515	37.0	507	40.1	500	43.1			15	495	22.7
	2350	876	5.6	801	25.9	790	29.9	763	42.1	748	50.2	740	54.2	733	58.3			16	715	32.8
615	700	420	2.3	279	13.6	260	15.9											8	292	8.9
	1760	1205	6.6	1063	34.9	1044	40.6											12	997	33.9
	2350	1641	9.7	1500	47.6	1481	55.2											14	1389	53.4

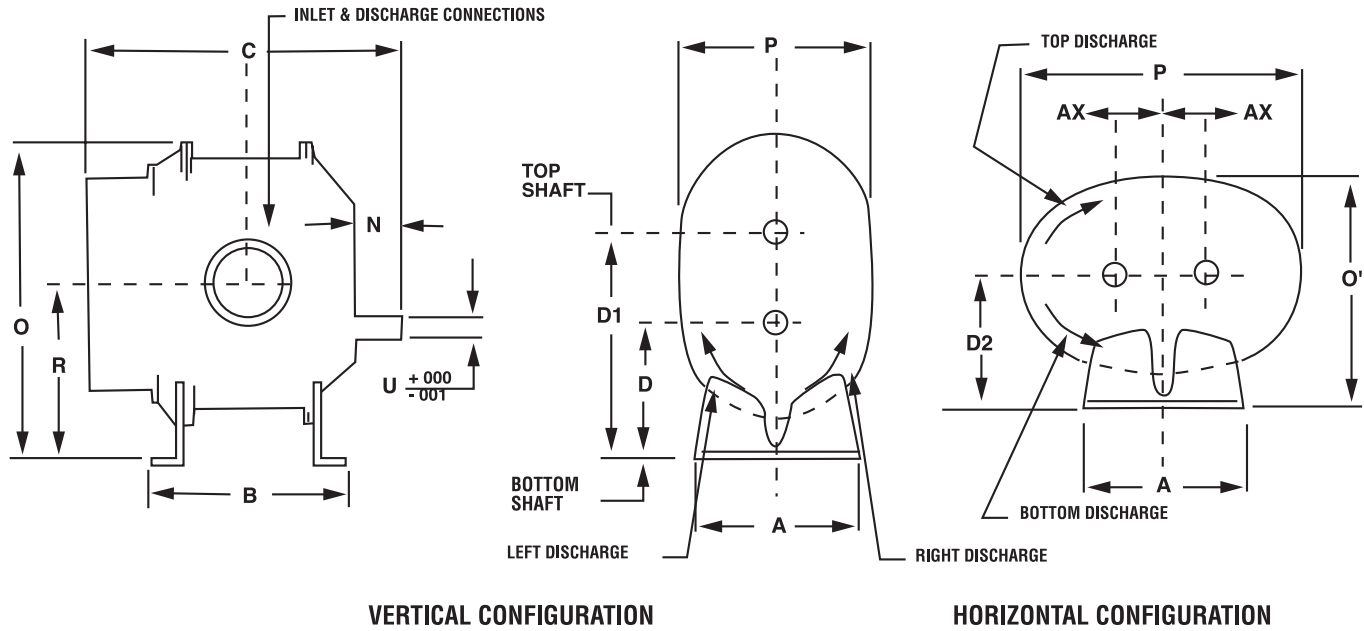
Notes: 1. Performance based on inlet air at standard pressure of 14.7 psia, standard temperature of 68° F, and specific gravity of 1.0.  
 2. Vacuum ratings based on inlet air at standard temperature of 68°F, discharge pressure of 30" Hg and specific gravity of 1.0.

**Versatile mounting** - You can mount the URAI DSL in multiple positions to accommodate your specific needs. With your choice of 12 frame sizes, there's a URAI DSL that fits right into your OEM or replacement application.

**DRIVE SHAFT ANY LOCATION**

Horizontal Vertical

# OUTLINE DRAWING & DIMENSIONS



Universal RAI® DSL Blower Dimensions

Frame Size	A	B	C	Drive Shaft Location			N	O	O'	P	P'	R	U	Keyway	Inlet & Disch. Dia.	AX	Approx. Net Wt. (lbs.)
				D	D1	D2											
32	7.25	6.75	11.25	5.00	8.50	5.00	2.44	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	2.44	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	2.56	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	3.18	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	2.94	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	3.31	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	3.68	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	3.38	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	3.88	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	3.56	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	3.69	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	3.69	21.63	16.25	15.00	19.75	11.75	1.375	.312 x .156	6.0 FLG	3.00	425

\*17.00 in horizontal configuration  
 \*\*21.00 in horizontal configuration



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