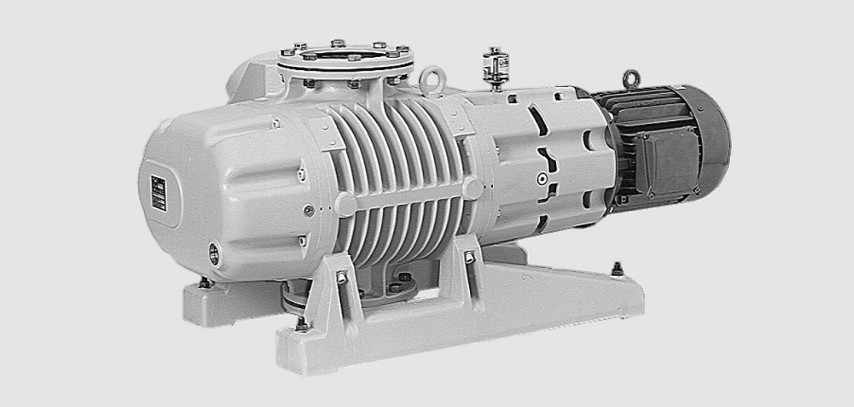
Products

RUVAC WA/WAU Roots Vacuum Pumps with Air-Cooled Flange-Mounted Motors



RUVAC WAU 2001 single-stage Roots vacuum pump shown with ISO-K 160 collar flanges

Advantages to the User

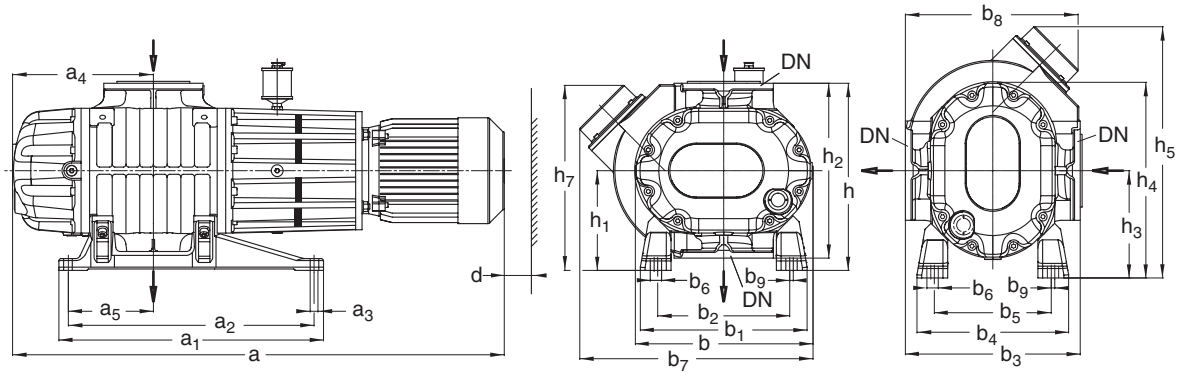
- Two air-cooled series, each with four models
- Reliable and trouble-free
- Sealing rings with their housing can be readily replaced
- Shaft seals and elastomer seals made of FPM/Viton
- Air-cooled standard motors in accordance with IEC dimensions eg. NEMA dimensions
- Easy to exchange with custom motors
- Integrated pressure equalization line for protection against overloading at high pressures on WAU models
- Pumping direction may be changed as required
- ATEX versions compliant to 94/9/EC possible

Typical Applications

- For oil-free compression of gases and vapors in combination with a backing pump
- Short cycle pumping processes also in the presence of large quantities of gas and vapor

Supplied Equipment

- RUVAC WA/WAU are supplied as standard for a vertical pumping action, horizontal pumping action upon request
- Mineral oil N 62 is used as standard
- Gasket in the intake flange with dirt sieve
- The required oil filling is included in separate bottles



Type		DN/DN$_1$	a [1]	a [2]	a_1	a_2	a_3	a_4	a_5	a_6
WA/WAU 251	mm	63 ISO-K	732	790	405	365	14	209	120	194
	in.			28.82	31.10	15.94	14.37	0.55	8.23	4.72
7.64										
WA/WAU 501	mm	63 ISO-K	830	918	486	450	14	237	155	218
	in.			32.68	36.14	19.13	17.72	0.55	9.33	6.10
8.58										
WA/WAU 501H	mm	63 ISO-K	830	918	486	450	14	237	155	218
	in.			32.88	36.14	19.13	17.72	0.55	9.33	6.10
8.58										
WA/WAU 1001	mm	100 ISO-K	1054	1085	560	520	16.5	298	180	262
	in.			41.50	42.72	22.05	20.47	0.65	11.73	6.10
10.31										
WA/WAU 1001H	mm	100 ISO-K	1054	1085	560	520	16,5	298	180	262
	in.			41.50	42.72	22.05	20.47	0.65	11.73	6.10

		b	b_1	b_2	b_3	b_4	b_5	b_6	b_7 [3]	b_8	b_9
WA/WAU 251	mm	250	270	210	280	230	170	24	305	285	7.5
	in.	9.84	10.63	8.27	11.02	9.06	6.69	0.94	12.01	11.22	0.30
WA/WAU 501	mm	310	299	229	320	271	201	24	390	313	7.5
	in.	12.20	11 77	9.02	12.60	10.67	7.91	0.94	15.35	12 32	0.30
WA/WAU 501H	mm	310	299	229	320	271	201	24	414	330	7.5
	in.	12.20	11 77	9.02	12.60	10.67	7.91	0.94	16.30	12 99	0.30
WA/WAU 1001	mm	376	352	278	370	320	246	24	494	366	7.5
	in.	14.80	13 86	10.94	14.57	12.60	7.91	0.94	19.45	14.41	0.30
WA/WAU 1001H	mm	376	352	278	370	320	246	24	524	398	7.5
	in.	14.80	13.86	10.94	14.57	12.60	7.91	0.94	20.63	15.67	0.30
WA/WAU 2001	mm	463	518	388	460	422	292	24	638	456	7.5
	in.	18.23	20.39	15.28	18.11	16.61	11.50	0.94	25.12	17.95	0.30
WA/WAU 2001H	mm	463	518	388	460	422	292	24	642	460	7.5
	in.	18.23	20.39	15.28	18.11	16.61	11.50	0.94	25.28	18.11	0.30

		d	h	h_1	h_2	h_3	h_4	h_5 [2]	h_6	h_7
WA/WAU 251	mm	50	300	160	280	180	306	360	330	307
	in.	2.00	11.81	6.30	11.02	7.09	12.05	14.17	12.99	12.09
WA/WAU 501	mm	50	340	180	320	194	348	430	370	332
	in.	2.00	13.39	7.09	12.60	7.48	13.70	16.93	14.57	13.07
WA/WAU 501H	mm	50	340	180	320	194	348	450	370	350
	in.	2.00	13.39	7.09	12.60	7.48	13.70	17.72	14.57	13.78
WA/WAU 1001	mm	50	396	211	370	227	414	532	425	392
	in.	2.00	15.59	8.31	14.57	8.94	16.30	20.94	425	15.43
WA/WAU 1001H	mm	50	396	211	370	227	414	564	425	424
	in.	2.00	15.59	8.31	14.57	8.94	16.30	22.20	425	16.69
WA/WAU 2001	mm	50	530	300	460	351	578	753	541	523
	in.	2.00	20.87	11.81	18.11	13.82	22.76	29.65	21.3	20.59
WA/WAU 2001H	mm	50	530	300	460	351	578	760	541	530
	in.	2.00	20.87	11.81	18.11	13.82	22.76	29.92	21.3	20.87

[1] This dimension “a” relates to pumps with the IEC motor used as standard by Oerlikon Leybold Vacuum

[2] This dimension “a” relates to pumps with the NEMA motor used as standard by Oerlikon Leybold Vacuum

[3] For RUVAC WAU only

DN = ND 6 pump flange in accordance with DIN 2501

DN_1 = Collar flange with gasket for connecting ISO-K standard components

Outside dimensions +/- 3 mm (0.12 in.)

Dimensional drawing for the RUVAC WA/WAU pumps

Technical Data

		WA/WAU 251		WA/WAU(H) 501	
		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed [1]	$m^3 \times h^{-1}$ (cfm)	253.0 (149.0)	304.0 (179.0)	505.0 (297.4)	606.0 (357.0)
Max. pumping speed with backing pump	$m^3 \times h^{-1}$ (cfm)	210.0 (123.7)	251.0 (148.0)	410.0 (241.0)	530.0 (312.0)
	TRIVAC	D 65 B	D 65 B	–	–
	SOGEVAC	–	–	SV 200	SV 200
Ultimate partial pressure [2]	mbar (Torr)	$< 2 \times 10^{-5}$ ($< 1.5 \times 10^{-5}$)	$< 2 \times 10^{-5}$ ($< 1.5 \times 10^{-5}$)	$< 8 \times 10^{-3}$ ($< 6 \times 10^{-3}$)	$< 8 \times 10^{-3}$ ($< 6 \times 10^{-3}$)
Ultimate total pressure [2]	mbar (Torr)	$< 8 \times 10^{-4}$ ($< 6 \times 10^{-4}$)	$< 8 \times 10^{-4}$ ($< 6 \times 10^{-4}$)	$< 4 \times 10^{-2}$ ($< 3 \times 10^{-2}$)	$< 4 \times 10^{-2}$ ($< 3 \times 10^{-2}$)
Permissible cut-in pressure [2] RUVAC WA	mbar (Torr)	90.0 (67.5)	60.0 (45.0)	100.0 (75.0)	80.0 (60.0)
Max. permissible pressure difference during continuous operation [3]	mbar (Torr)	80.0 (60.0)	80.0 (60.0)	80.0 (60.0)	80.0 (60.0)
Main supply					
IEC motor (ATB) [4]	Δ / Y V	220-240 / 380-420	220-277 / 380-480	220-240 / 380-420	220-277 / 380-480
NEMA motor (US version) [4]	Δ / Y V	230 / 400	200-230 / 460	230 / 400	200-230 / 460
Thermal class		F	F	F	F
Motor power	kW (hp)	1.1 (1.5)	1.1 (1.5)	2.2 (3.0)	2.2 (3.0)
Nominal speed, approx. (50/60 Hz)	rpm	3000/3600	3000/3600	3000/3600	3000/3600
Max. permissible speed	rpm	3600	3600	3600	3600
Type of protection	IP	55	55	55	55
Oil filling for the bearing chamber [5]		1. Filling [6] / 2. Filling	1. Filling [6] / 2. Filling	1. Filling [6] / 2. Filling	1. Filling [6] / 2. Filling
vertical pumping action, approx.	l (qt)	0.65 (0.69) / 0.6 (0.63)	0.65 (0.69) / 0.6 (0.63)	0.9 (0.95) / 0.8 (0.85)	0.9 (0.95) / 0.8 (0.85)
horizontal pumping action, approx.	l (qt)	0.5 (0.53) / 0.45 (0.48)	0.5 (0.53) / 0.45 (0.48)	0.75 (0.79) / 0.7 (0.74)	0.75 (0.79) / 0.7 (0.74)
Oil filling of the shaft sealing ring housing	l (qt)	0.6 (0.63)	0.6 (0.63)	1.0 (1.06)	1.0 (1.06)
Connection flanges [7]	DN	63 ISO-K	63 ISO-K	63 ISO-K	63 ISO-K
	DN	3" ANSI	3" ANSI	3" ANSI	3" ANSI
Weight WA/WAU	kg	85.0/89.0	85.0/89.0	128.0/133.0	128.0/133.0
	(lbs)	(187.4/196.2)	(187.4/196.2)	(282.2/293.3)	(282.2/293.3)
Noise level [8]	dB(A)	< 64	< 64	< 67	< 67

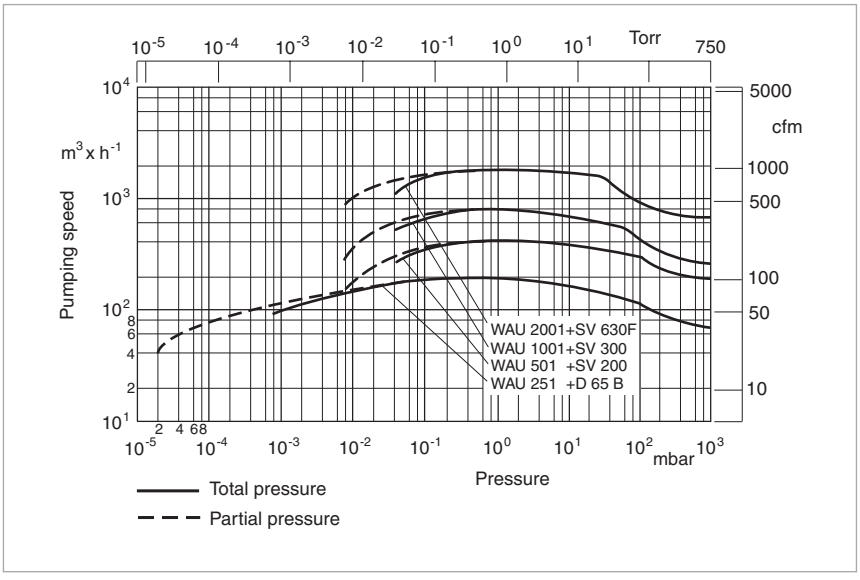
1) To DIN 28 400 and subsequent numbers
2) With double-stage rotary vane vacuum pump TRIVAC, resp. single-stage rotary vane vacuum pump SOGEVAC (Type of backing pump look at max. pumping speed).
When using 2-stage backing pumps the ultimate pressures will be correspondingly lower
3) Applicable for ratio up to 1 : 10 between backing pump and Roots vacuum pump at 3000 rpm
4) Motor voltage and current may deviate depending on the type of motor.
Please always note the information on the nameplate
5) Authoriative, however, is the oil level at the oil-level glass
6) After a complete disassembly
7) US models ANSI flanges
8) At an operating pressure below $< 10^{-1}$ mbar ($< 0.75 \times 10^{-1}$ Torr)

Technical Data		WA/WAU (H) 1001		WA/WAU(H) 2001	
		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed [1]	$m^3 \times h^{-1}$ (cfm)	1000 (589)	1200 (707)	2050 (1207.5)	2460 (1449)
Max. pumping speed	$m^3 \times h^{-1}$ (cfm)	800 (470)	1000 (588)	1850 (1089)	2100 (1236)
with backing pump	SOGEVAC	SV 300	SV 300	SV 630 F	SV 630 F
Ultimate partial pressure [2]	mbar (Torr)	$< 8 \times 10^{-3}$ ($< 6 \times 10^{-3}$)	$< 8 \times 10^{-3}$ ($< 6 \times 10^{-3}$)	$< 8 \times 10^{-3}$ ($< 6 \times 10^{-3}$)	$< 8 \times 10^{-3}$ ($< 6 \times 10^{-3}$)
Ultimate total pressure [2]	mbar (Torr)	$< 4 \times 10^{-2}$ ($< 3 \times 10^{-2}$)	$< 4 \times 10^{-2}$ ($< 3 \times 10^{-2}$)	$< 4 \times 10^{-2}$ ($< 3 \times 10^{-2}$)	$< 4 \times 10^{-2}$ ($< 3 \times 10^{-2}$)
Permissible cut-in pressure [2] RUVAC WA	mbar (Torr)	60.0 (45.0)	45.0 (33.5)	30.0 (22.5)	25.0 (18.5)
Max. permissible pressure difference during continuous operation [3]	mbar (Torr)	80.0 (60.0)	80.0 (60.0)	50.0 (37.5)	50.0 (37.5)
Main supply					
IEC motor (ATB) [4]	Δ / Y V	220-240 / 380-420	220-277 / 380-480	– / 380-420	– / 380-480
NEMA motor (US version) [4]	Δ / Y V	230 / 400	200-230 / 460	400 / –	460 / –
Thermal class		F	F	F	F
Motor power	kW (hp)	4.0 (5.4)	4.0 (5.4)	7.5 (10.0)	7.5 (10.0)
Nominal speed, approx. (50/60 Hz)	rpm	3000/3600	3000/3600	3000/3600	3000/3600
Max. permissible speed	rpm	3600	3600	3600	3600
Type of protection	IP	55	55	55	55
Oil filling for the bearing chamber [5]		1. Filling [6] / 2. Filling	1. Filling [6] / 2. Filling	1. Filling [6] / 2. Filling	1. Filling [6] / 2. Filling
vertical pumping action, approx.	l (qt)	2.0 (2.11) / 1.8 (1.90)	2.0 (2.11) / 1.8 (1.90)	3.85 (4.07) / 3.6 (3.81)	3.85 (4.07) / 3.6 (3.81)
horizontal pumping action, approx.	l (qt)	1.2 (1.27) / 1.1 (1.16)	1.2 (1.27) / 1.1 (1.16)	2.65 (2.75) / 2.4 (2.54)	2.65 (2.75) / 2.4 (2.54)
Oil filling of the shaft sealing ring housing	l (qt)	1.3 (1.37)	1.3 (1.37)	1.6 (1.69)	1.6 (1.69)
Connection flanges [7]	DN	100 ISO-K	100 ISO-K	160 ISO-K	160 ISO-K
	DN	4" ANSI	4" ANSI	6" ANSI	6" ANSI
Weight WA/WAU	kg	220.0/225.0)	220.0/225.0	400.0/406.0	400.0/406.0
	(lbs)	(485.1/496.1)	(485.1/496.1)	(882/895.2)	(882/895.2)
Noise level [8]	dB(A)	< 75	< 75	< 80	< 80

1) To DIN 28 400 and subsequent numbers
2) With single-stage rotary vane vacuum pump SOGEVAC (Type of backing pump look at max. pumping speed). When using 2-stage backing pumps the ultimate pressures will be correspondingly lower
3) Applicable for ratio up to 1 : 10 between backing pump and Roots vacuum pump at 3000 rpm
4) Motor voltage and current may deviate depending on the type of motor. Please always note the information on the nameplate
5) Authoriative, however, is the oil level at the oil-level glass
6) After a complete disassembly
7) US models ANSI flanges
8) At an operating pressure below $< 10^{-1}$ mbar ($< 0.75 \times 10^{-1}$ Torr)

Ordering Information	WA/WAU 251	WA/WAU(H) 501	WA/WAU(H) 1001	WA/WAU(H) 2001
Roots vacuum pump				
RUVAC WA (IEC motor)	Part No. 117 20	Part No. 117 30	Part No. 117 40	Part No. 117 50
RUVAC WA (NEMA motor, US version)	Part No. 917 20	Part No. 917 30	Part No. 917 40	Part No. 917 50
RUVAC WAU (IEC motor)	Part No. 117 21	Part No. 117 31	Part No. 117 41	Part No. 117 51
RUVAC WAU (NEMA motor, US version)	Part No. 917 21	Part No. 917 31	Part No. 917 41	Part No. 917 51
RUVAC WA, without motor	Part No. 117 24	Part No. 117 34	Part No. 117 44	Part No. 112 54
RUVAC WAU, without motor	–	Part No. 155 008	Part No. 112 17	Part No. 113 22
RUVAC WAU(H) (IEC motor), with special ACE vibration absorber	–	Part No. 118 31	Part No. 118 41	Part No. 118 51
RUVAC WS/WSU(H) seal kit	Part No. 194 60	Part No. 194 64	Part No. 194 68	Part No. 194 72
Flange adapter set, consisting of				
Flange adapter with screws, bolts, washers and nuts for ANSI flange	(3" ANSI)	(3" ANSI)	(4" ANSI)	(6" ANSI)
WA/WS pump	Part No. 200 03 179	Part No. 200 03 179	Part No. 200 03 180	Part No. 200 03 181
WAU/WSU pump	Part No. 200 03 179	Part No. 200 03 179	Part No. 200 03 180	Part No. 200 03 182
Frequency inverter RUVATRONIC (see description in Section “General”, paragraph “Accessories”)	RT 5/251 Part No. 500 001 381	RT 5/501 Part No. 500 001 382	RT 5/1001 Part No. 500 001 383	RT 5/2001 Part No. 500 001 384

[1] Certified in accordance with ATEX Directive 94/9/EG, Category 3 (inside)



Pumping speed of the RUVAC WA/WAU, 50 Hz

Ordering Information

	RUVAC WA/WAU (ATEX-Pumps for 50 Hz-Operation) 251	501	1001	2001
Roots vacuum pump				
RUVAC WAU				
ATEX Category 3 (inside) T3/T4	**Part No. 155 021**	**Part No. 155 031**	**Part No. 155 041**	**Part No. 155 051**
RUVAC WAU				
ATEX Category 3 (inside) T3/T4				
and (outside) T3	**Part No. 155 027**	**Part No. 155 037**	**Part No. 155 047**	**Part No. 155 057**
RUVAC WAU				
ATEX Category				
RUVAC WA	**Part No. 155 029**	**Part No. 155 039**	**Part No. 155 049**	**Part No. 155 059**
ATEX Category 3 (inside) T3/T4				
and (outside) T3	**Part No. 155 026**	**Part No. 155 036**	**Part No. 155 046**	**Part No. 155 056**
RUVAC WA				
ATEX Category 3 (inside) T4				
and (outside) T4	**Part No. 155 028**	**Part No. 155 038**	**Part No. 155 048**	**Part No. 155 058**
Further ATEX pumps, Category 2, for example	**upon request**	**upon request**	**upon request**	**upon request**

Note: EEx de IIC T4 and EEx e T3 compliant motors