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Agilent Technologies

vacuum technologies

UPGRADE PROGRAM

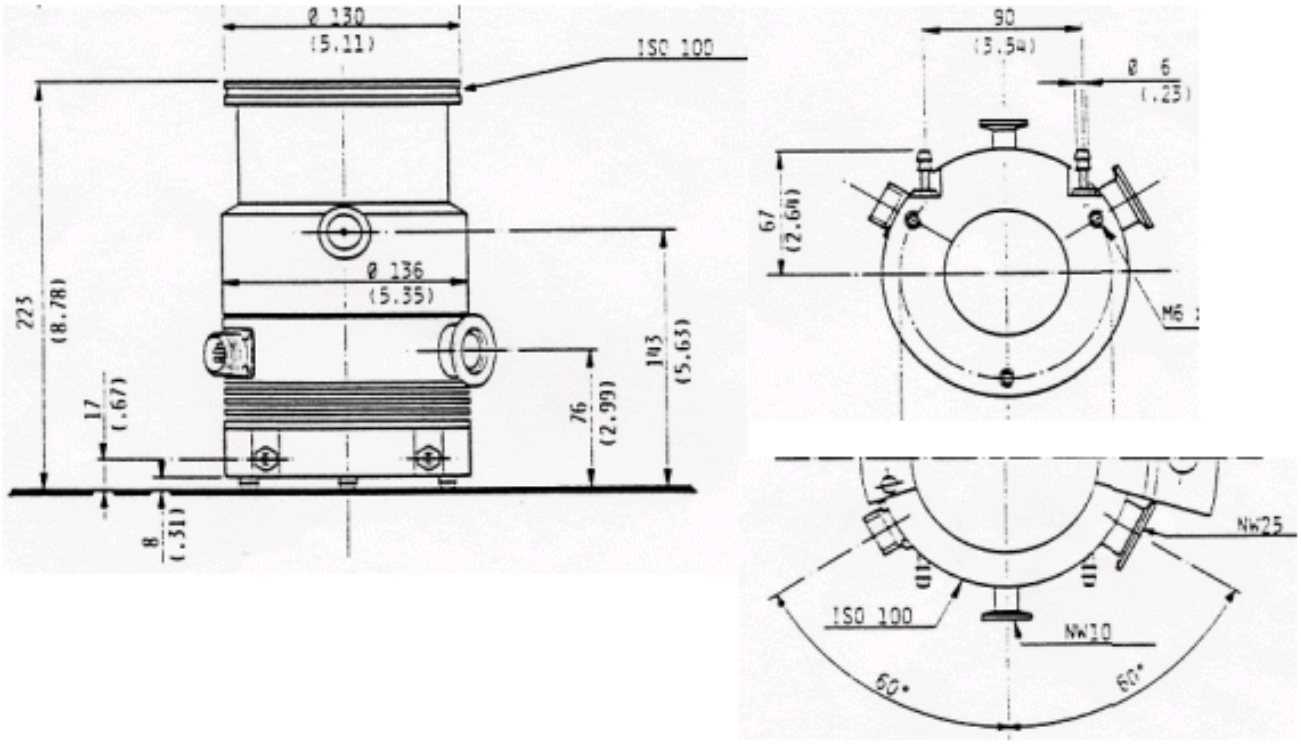
V200A Series Pumps
vs
V301 Series Pumps

Technical Memo

INDEX

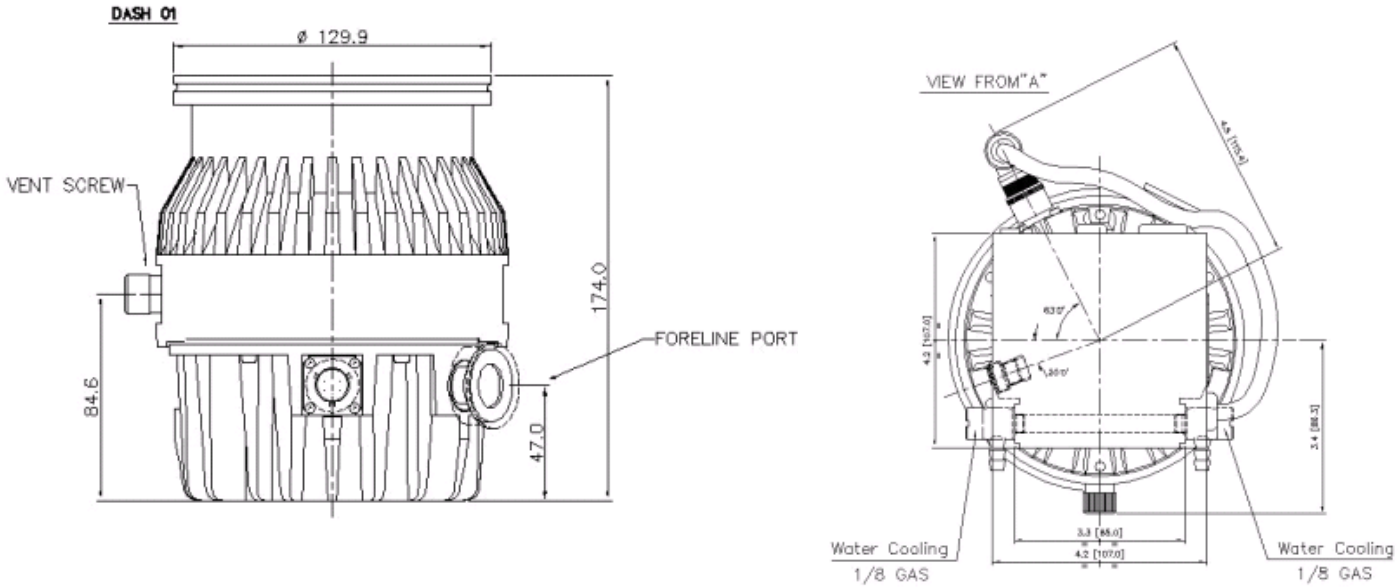
Outline Drawing ISO100

V200A ISO100 EX9699024



Replacement Suggested

V301 ISO100 EX9698918

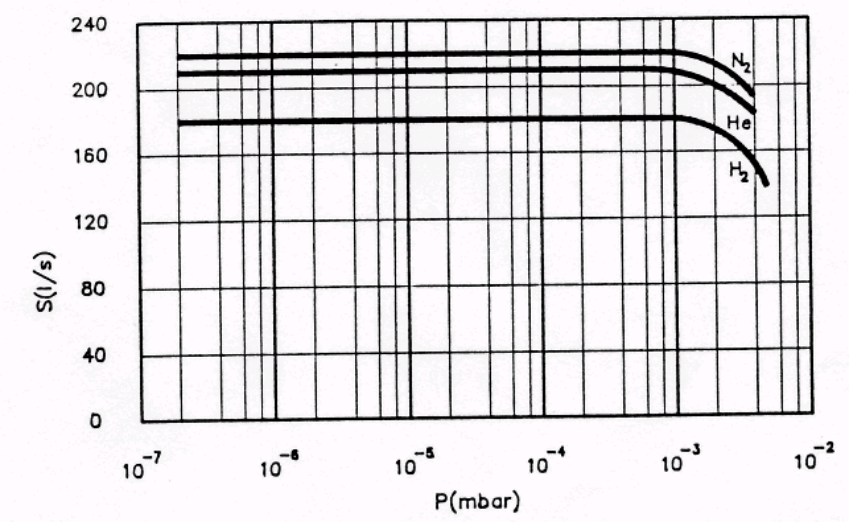


Technical Table

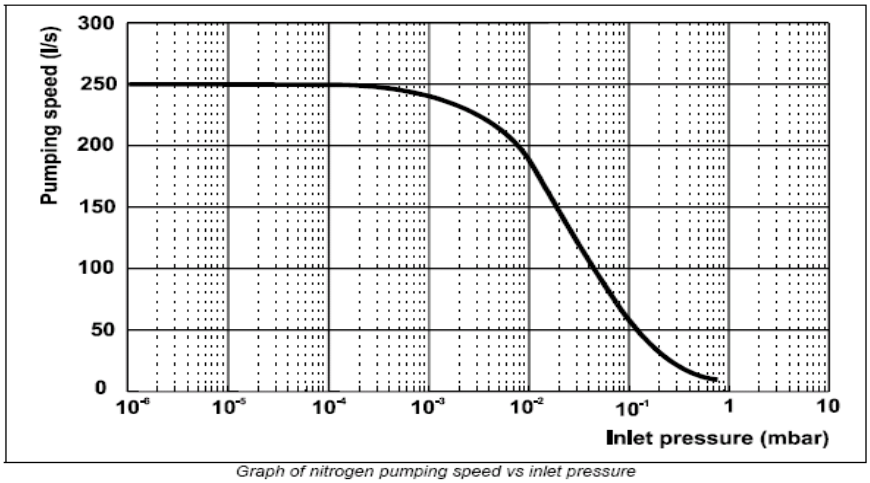
	V200A ISO100	V301 ISO100
Total height	223.00	174.0
Vent port height from bottom	143.00	85.0
Foreline port height fm. bottom	76.00	47.0
Vent thread/port	KF10	M8
Purge thread	N.A.	Std: M12
Water fitting thread	2 riffled nozzles	1/8G
Inlet flange	ISO100	ISO100
Foreline Flange	KF25	KF16 (KF25 optional)*
Vent port position referring to Foreline Flange	60°	On the right 153°
Purge port position referring to Foreline Flange	N.A.	On the left 83°

* the optional NW25 foreline flange pn 9699130 must be offered with

Technical Specification:
Pumping Speed Curve:
V200A ISO100



V301 ISO100



Graph of nitrogen pumping speed vs inlet pressure

Technical Specification

	V200A	V301
Connection nominal diameter Inlet Outlet	 ISO100 NW25KF	 ISO100 NW16KF (KF25 optional)*
Pumping speed l/s N2 He H2	 220 210 180	 250 220 200
Compression ration for N2 He H2	 2x10e+8 4x10e+3 4x10e+2	 7x10e+8 1x10e+5 1x10e+4
Max Forevacuum pressure mbar N2	 N.A.	 18
Gas Throughput mbar.l/s N2 He H2	 No limit No limit No limit	 No limit No limit No limit
Recommended baking pump Diaphragm Rotary Dry	 SD200	 DS402 Triscroll 300
Ultimate pressure mbar With rotary With dry	 1x10e-9	 <5x10e-10 <5x10e-9
Rotational speed	51000	56000
Run up time min.	1	2.5
Cooling	Forced Air Optional Water	Forced Air Optional water
Coolant water	flow: 20 l/h (0.09 GPM) temperature: + 10° C to + 30° C pressure: 2 to 4 bar	flow: 200 l/h (0.89 GPM) temperature: + 10° C to + 30° C pressure: 3 to 5 bar
Power consumption W	170	150
Vibration level (displacement)	<0.02 µm at inlet flange	< 0.01 µm at inlet flange
Noise level	< 52 dB (A) at 1 meter	45 dB (A) at 1 meter
Motor technology	Asynchronus	Asynchronous
input	54 Vac, three phases, 850 Hz	75 Vac, three phase, 963 Hz
Weight Kg	10.7	4.5

*optional foreline flange NW25 has pn 9699130.

Technical Advantages

The major technical advantage of the V301 is the higher and newer technology of the turbo pump, the better vacuum performances, the presence of MacroTorr® stages that allow a higher foreline pressure.

The inlet flange has not changed, ISO100, as the existing V200A pump; the foreline flange of the V301 must be replaced with the optional KF25 (pn 9699130).

The water cooling fittings have changed; two water cooling kit are available (either 9699337 or 9699347).; please contact our Sales Office.

The controller is not compatible and must be exchanged. This is available in 2 versions, Navigator on board or AG Rack controller; in both cases, it's much more easier to see the pump operating parameters as current and power consumption.

Accessories:

1. The fan and the water cooling kits for the V200A are not compatible with the new V301 Pump, they must be replaced (please contact the Tech.Support Office).
2. The vent valve has changed and must be replaced.
3. Vent port has changed from KF10 to M8 thread; anyway an optional vent flange is available, pn 9699108.
4. Inlet screen has not changed (DN100 9699302)
5. Purge port is now available with M12 thread.
6. For controllers, please refer to following section.

Controller Comparison

V200 controllers 9699422-9699522 are not able to operate the V301 pump, it must be exchanged. This is available in 2 versions, either ¼ AG Rack V301 pn 9698991-9698992-9698993 or Navigator on board pn 9698973.

V301 Rack controller

Varian offers also the possibility to have a ¼ Rack AG (Active Gauge) controller that is very innovative from the operational point of view, and with increased control and communication capabilities.

The new rack controller is micro-processor-controlled, solid-state, frequency converter with self-diagnostic and self-protection features.

The most important features are:

- Front/remote/serial operation,
- 24Vdc pump fan cooling drive,
- Vent valve drive (valve delay and opening time are adjustable),
- Pump speed reading after stop command (allows monitoring of pump slow down time after the stop command during the venting phase),
- Regenerative braking (most effective pump deceleration without heat generation at the motor level),
- Pressure reading through Varian EyeSys Mini-IMG Gauge,
- Input voltage auto setting,
- Remote I/O compatible with previous version,
- Navigator default serial compatible with the previous RS232 and RS485 version,
- Profibus interface (optional).

The controller is available in three models: base version (pn 9698991), with RS232-485 option (pn 9698992), with Profibus option (pn 9698993).

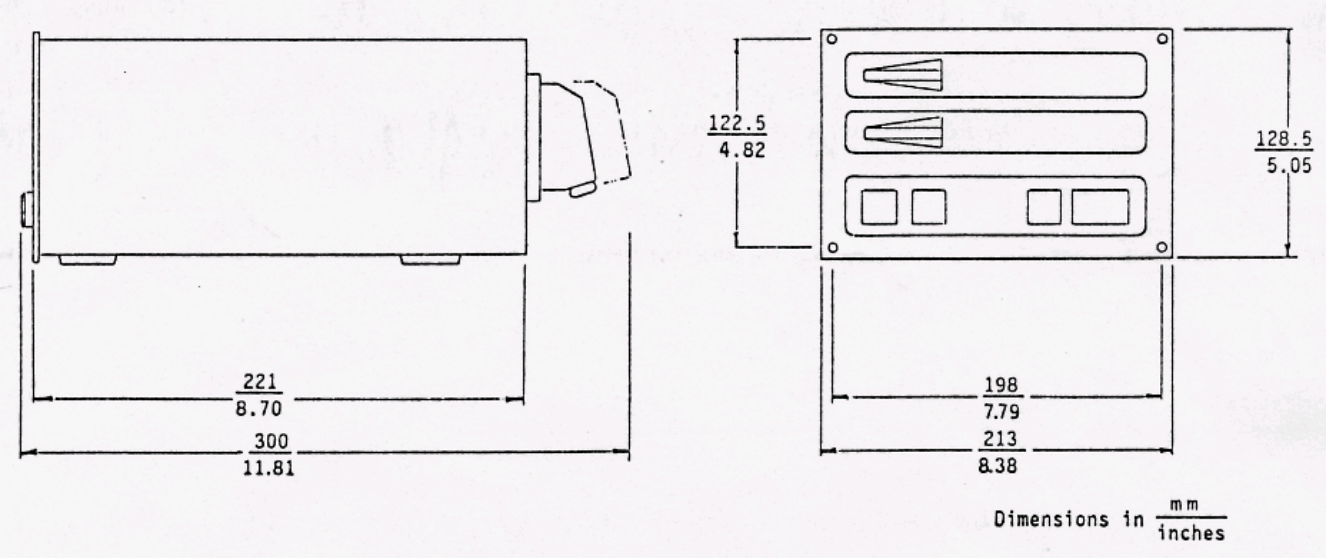
If the customer was using the remote I/O devices on the old V200 controller, this interface can still be used thanks to the adapter box pn 9699859 (Contact Technical Support)

V301 Navigator on board controller

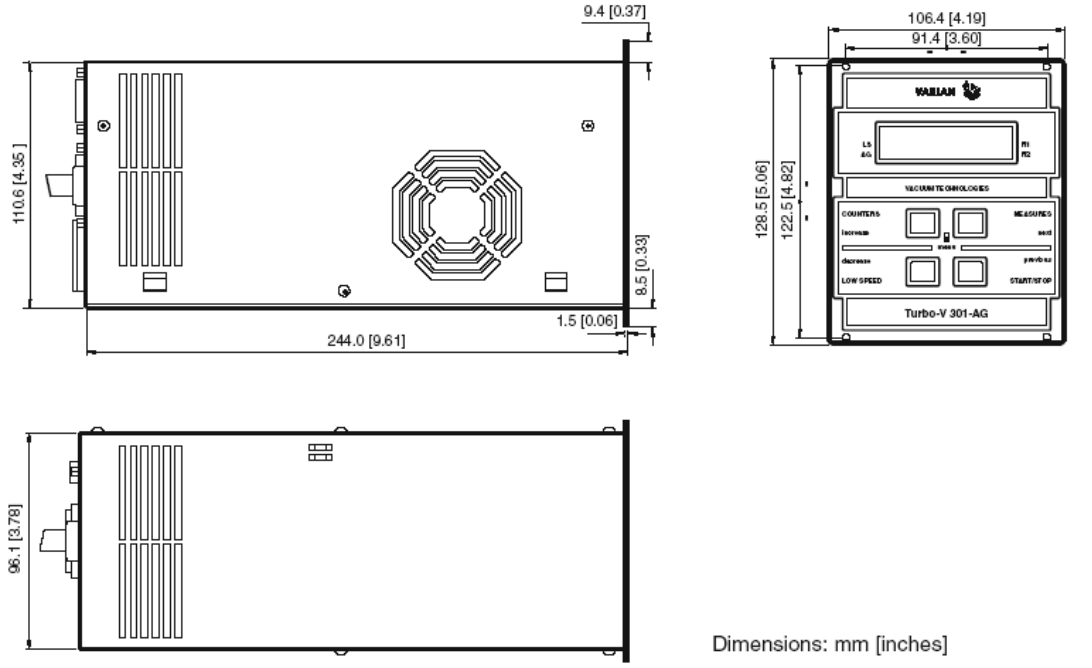
The V301 Navigator on board controller is more compact than any other controller; furthermore, it can be easily installed and disinstalled from the pump; it can be either mounted on the bottom or on the side of the turbo pump using the dedicated bracket.; it offers as std both serial communication options, RS232 and RS485; it offers the communication via Navigator Software (Contact Technical Support), for parameters setting and downloading through a PC.

The V301 Navigator on board controller offers more features in the I/O signals if compared to the previous V200 controller, it's easy to use with the new concept plug-and-pump.

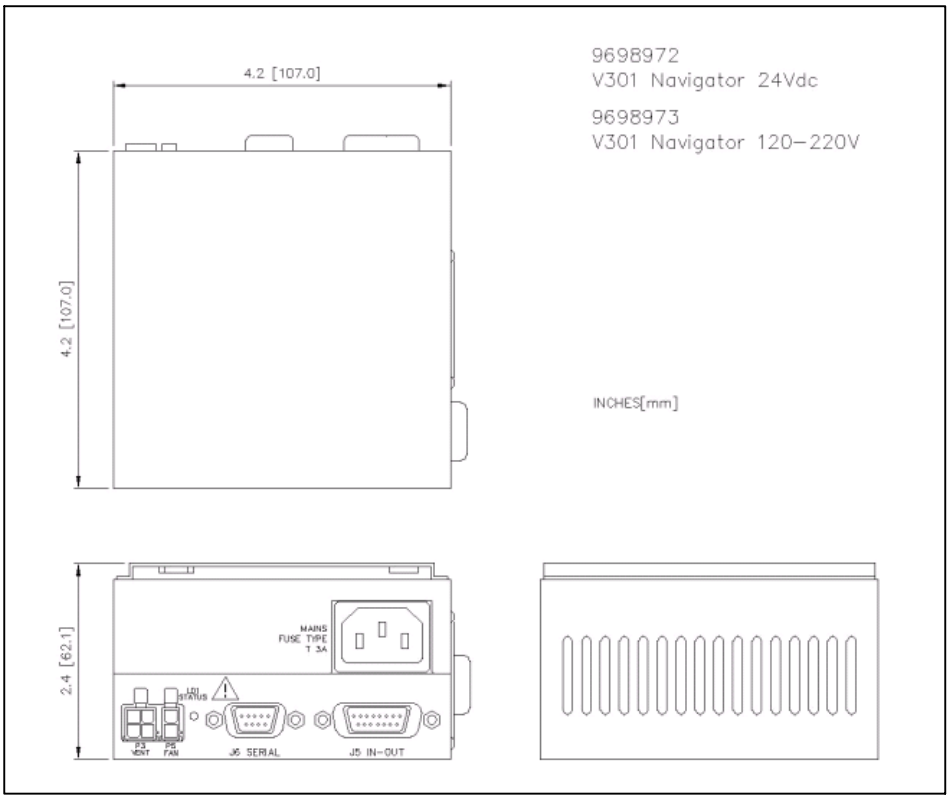
Outline 9699422-9699522:



Outline V301 AG rack:



V301 Navigator on board:



Interconnection schematic:

	V200	V301 AG rack
	On P21	J7 – J6
Accessories and Option interconnections (forepump, vent valve, fan, etc)	1b-3a, 3b-3a, 2b-2a 120 Vac, 0.4 A	J7: 24 Vdc vent J6: 24 Vdc, fan
	On P22	On P1
Remote START	14-5	1-6
Remote LOW SPEED	12-4	2-7
Interlock	13-5	3-8
System override	N.A.	4-9
SOFT START	N.A.	5-9
		On P2
Analog output voltage	15-8 (0.1 Vdc proportional to 4A)	1-2 (1 Vdc proportional to 1A)
R1 signal	N.A.	4-11
LOW SPEED signal	7-6 (5 Vdc)	5-12 (24Vdc)
Remote START signal	1-9 (5 Vdc)	6-13 (24 Vdc)
FAULT signal	2-10 (N.O. contact)	8-15 (24Vdc)
Remote NORMAL SPEED	11-3 (open collector transistor)	1-9 (frequency analog signal)
R1	N.A.	4-11 (24 Vdc)
R2	N.A.	7-14 (24 Vdc)

NOTE:

Was the customer using the remote signals on old V200 controller, these signals must be converted to the Remote I/O signals available on V301 AG rack controller.

On V301 Navigator on board controller all signals are available on the same connector J5:

1	START/STOP (+)	IN
2	START/STOP (-)	IN
3	INTERLOCK (+)	IN
4	INTERLOCK (-)	IN
5	SPEED SETTING (+)	IN
6	SPEED SETTING (-)	IN
7	SOFT START(+)	IN
8	SOFT START(-)	IN
9	+ 24 Vdc	OUT
10	SPARE	OUT
11	PROGRAMMABLE SET POINT	OUT
12	SPARE	OUT
13	FAULT	OUT
14	PROGRAMMABLE ANALOG SIGNAL (+)	OUT
15	• GROUND • PROGRAMMABLE ANALOG SIGNAL (-)	OUT

No adapter box is available from existing I/O devices to the navigator ones.

For signal complete description, please refer to instruction manual.

Main cable must be specified (9699957 EU plug; 9699958 US plug); controller-to-pump cable is supplied.