

Agilent TwisTorr 304 FS



The new generation Turbo Pump with Agilent Floating Suspension

The Agilent TwisTorr 304 FS turbomolecular high-vacuum pump combines TwisTorr drag stage technology and Agilent Floating Suspension to provide high performance, reliability, and economy.

TwisTorr drag stages create high compression ratios for light gases such as hydrogen and helium to deliver high throughput and high tolerance of foreline pressure, thereby permitting the use of smaller and more economical backing pumps. This technology results in a compact rotor design that is energy-efficient and maintains a low operating temperature.

The Agilent Floating Suspension system reduces noise and vibration, and ensures optimal bearing operating conditions to extend operating life, minimize system downtime, and assure stability over time.

The unique bearing and dry lubrication in the TwisTorr 304 FS eliminate oil and maintenance, and permit operation of the pump in any orientation. Available with onboard or rack controllers.

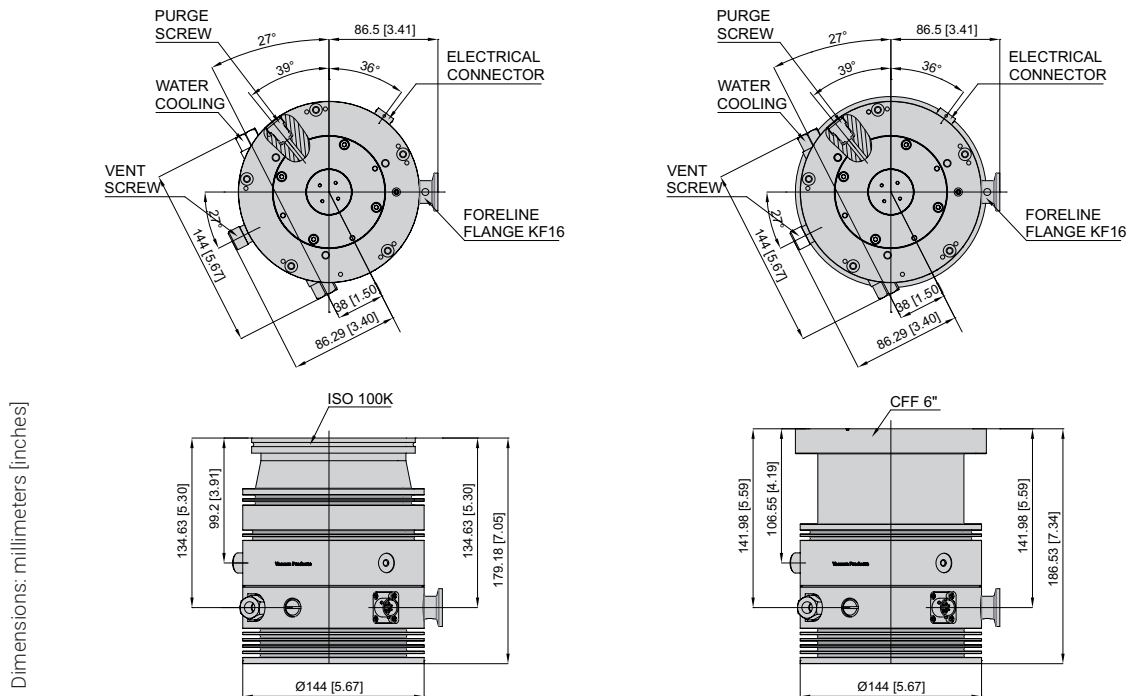
Technical Specification

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Pumping speed	ISO 100 / CF 6"	ISO 160 / CF 8"
N ₂	250 L/s	250 L/s
He	255 L/s	255 L/s
H ₂	220 L/s	220 L/s
Ar	250 L/s	250 L/s
Max Gas Throughput (*)	Air Cooling (25°C ambient temperature)	Water Cooling (15°C water temp. / 25°C ambient temp.)
N ₂	170 SCCM	170 SCCM
Ar	110 SCCM	110 SCCM
(*) Backing pump 11.6 m ³ /h		
Compression ratio and foreline tolerance (**)		
N ₂	> 1 x 10 ¹¹	>10 mbar
He	> 1 x 10 ⁸	>10 mbar
H ₂	1.5 x 10 ⁶	>4 mbar
Ar	> 1 x 10 ¹¹	>10 mbar
(**) Foreline Tolerance defined as the pressure at which the turbopump still produce a compression of 100 and estimated in water cooling mode		
Base pressure with recomm. forepump	< 1 x 10 ⁻¹⁰ mbar (< 1 x 10 ⁻¹⁰ Torr)	
Inlet flange	ISO 100, CFF 6", ISO 160, CFF 8"	
Foreline flange	KF16 NW (KF25 - optional)	
Rotational speed	60000 rpm (1010 Hz driving frequency)	
Start-up time	< 3 minutes	

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Recommended forepump	Agilent DS102 Rotary Vane Pump Agilent IDP-7 Dry Scroll Pump	
Operating position	Any	
Oper. ambient temperature	+5 °C to +35 °C	
Rel. humidity of air	0 to 90 % (not condensing)	
Bakeout temp.	80 °C at inlet flange max (ISO flange) 120 °C at inlet flange max (CFF flange)	
Lubricant	Permanent lubrication	
Cooling requirements		
Air cooling	Air temperature from +5°C to 35°C	
Water cooling	Water temperature from +15°C to +25°C Water flow min. 50 L/h	
Noise Pressure Level (at 1m at full speed)	< 50 dB(A)	
Storage temp.	-40°C to +70°C	
Max altitude	3000 m	
Weight kg (lbs)	ISO 100 CFF 6"	5.5 kg (12.3) 7.5 kg (16.5)
	ISO 160 CFF 8"	5.7 kg (12.6) 9.7 kg (20.9)

Conformity to norms	
EMC (Control Units) Safety (CE/CSA) ROHS	61326-1 DIR 2006/42/CE DIR 2011/65/EU

Outline Drawing

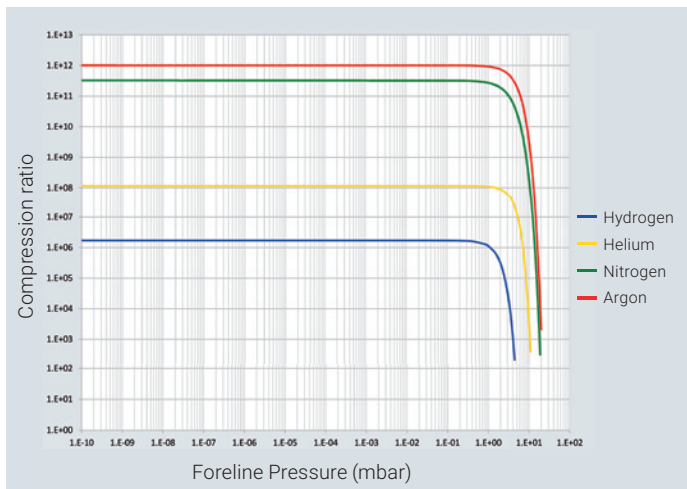


Ordering Information

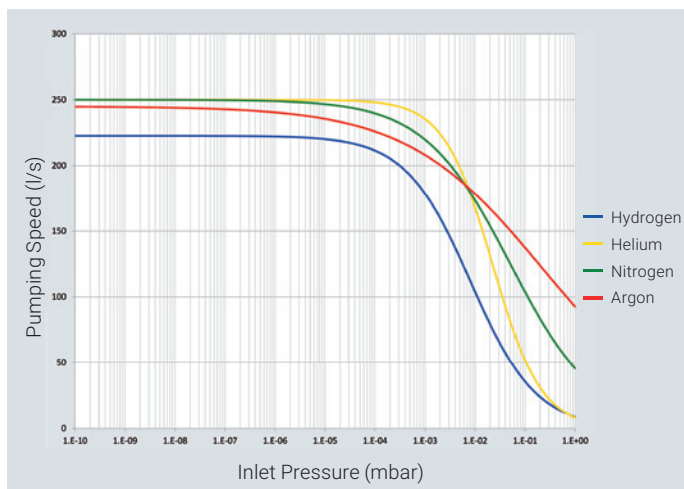
Pumps	Configuration Options
TwisTorr 304 FS ISO 100 water cooling	X3500-64000
TwisTorr 304 FS CFF 6" water cooling	X3500-64001
TwisTorr 304 FS ISO 160 water cooling	X3500-64002
TwisTorr 304 FS CFF 8" water cooling	X3500-64003
TwisTorr 304 FS ISO100 air cooling	X3500-64004
TwisTorr 304 FS CFF 6" air cooling	X3500-64005
TwisTorr 304 FS ISO 160 air cooling	X3500-64006
TwisTorr 304 FS CFF 8" air cooling	X3500-64007
TwisTorr 304 FS ISO 100 SF water cooling	X3500-64010
Controllers	Part Numbers
TwisTorr 304 FS AG rack controller with RS232/485	X3506-64002
TwisTorr 304 FS AG rack controller with Profibus	X3506-64003
TwisTorr 304 FS onboard controller 24 Vdc	X3507-64002
TwisTorr 304 FS onboard controller 100-240 Vac	X3507-64003
Cables	Part Numbers
Mains cable NEMA plug, 3 m long	9699958
Mains cable European plug, 3 m long	9699957
Serial cable and A-plus Software	9699883
Serial Cable & T-plus Software	9699883
Extension cable	9699948M007 (5 m) 9699948M006 (10 m) 9699948M005 (15 m) 9699948M004 (20 m)
Inlet Screen	Part Numbers
Inlet Screen ISO 100	X3500-68000
Inlet Screen CFF 6"	9699302
Inlet Screen ISO 160	X3500-68001
Inlet Screen CFF 8"	9699304
Cooling	Part Numbers
Water cooling kit	9699337
Plastic water cooling kit	9699347

Air cooling kit for onboard controller	X3500-68010
Fan extension cable for onboard controller	9699949
Air cooling kit for rack AG controller	X3500-68011
Fan extension cable for rack AG controller	9699940
Vibration isolator	Part Numbers
Vibration isolator ISO 100	9699344
Vibration isolator CF 6"	9699334
Vibration isolator ISO 160	9699345
Vibration isolator CF 8"	9699335
Vibration isolator ISO 100 IDX	9699396
Vent flange, NW 10 KF / M8	9699108
Venting	Part Numbers
Delay vent valve 1.2 mm orifice	X3505-68000
Delay vent valve 0.5 mm orifice	X3505-68001
Vent valve N.O. for rack AG controller (0.5 mm)	9699844
Vent valve for onboard controller (1.2 mm)	9699834
Vent valve for onboard controller (0.5 mm)	9699834M006
Purge	Part Numbers
Purge valve 10 SCCM NW16KF - M12	9699239
Purge valve 10 SCCM ¼ Swagelok - M12	9699240
Purge valve 20 SCCM NW16KF - M12	9699241
Purge valve 20 SCCM ¼ Swagelok - M12	9699242
Purge valve 10 SCCM ¼ Swagelok - ¼ Swagelok	9699232
Purge valve 20 SCCM ¼ Swagelok - ¼ Swagelok	9699236
Mounting	Part Numbers
Bracket for onboard controller side mounting	X3500-68012
Foreline flange KF25	X3500-68002
Active Gauges	Part Numbers
FRG 700 Full Range Gauge	Ask Agilent for details
PVG 500 Pirani Vacuum Gauge	Ask Agilent for details
PCG 750 Pirani Capacitance Gauge	Ask Agilent for details
CDG-500 Capacitance Diaphragm Gauge	Ask Agilent for details

Compression Ratio



Pumping Speed



www.agilent.com/chem/twistorrfsfamily

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