

Agilent TwisTorr 404 FS



The new generation Turbo Pump with Agilent Floating Suspension

The Agilent TwisTorr 404 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 TwisTorr 404 FS bearing and dry lubrication eliminate oil and maintenance needs, and permit operation of the pump in any orientation.

Technical Specifications

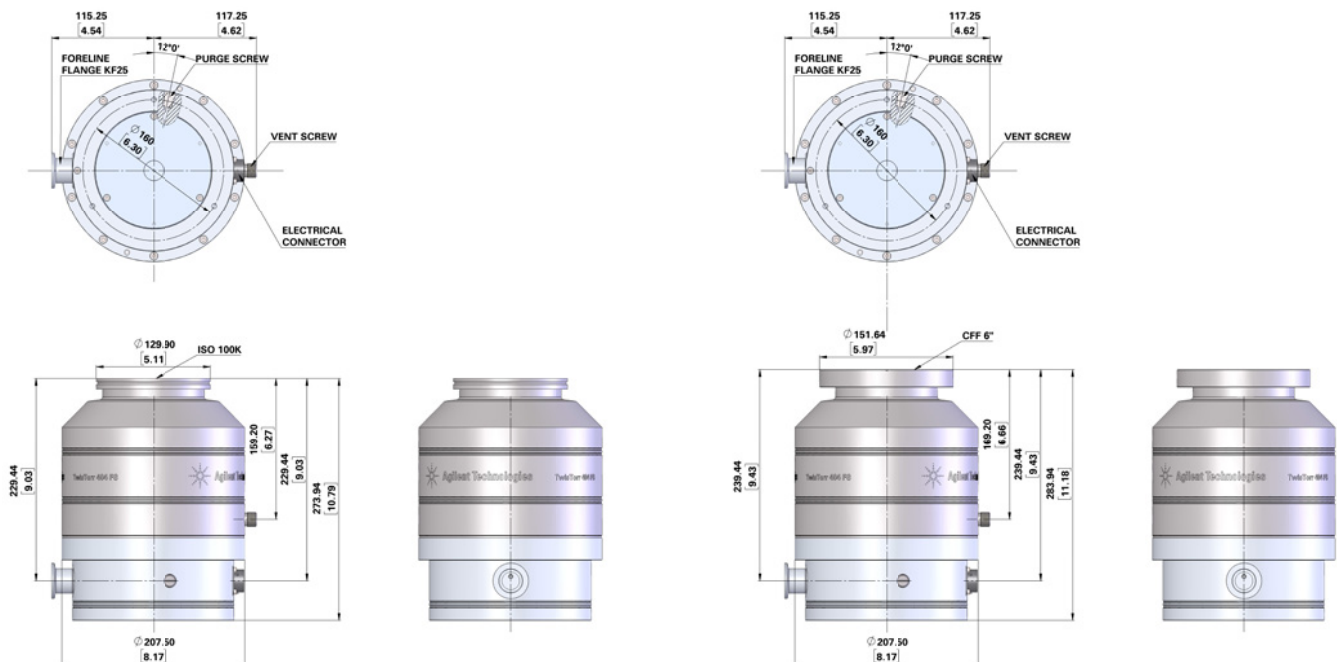
Technical Specifications		
Pumping speed	ISO 100K / ISO 100F / CFF 6"	
N ₂	380 L/s	
He	505 L/s	
H ₂	415 L/s	
Ar	340 L/s	
Max Gas Throughput (*)	Air Cooling (25°C ambient temperature)	Water Cooling (15 °C water temperature / 25 °C ambient temperature)
N ₂	4.3 mbar L/s 255 SCCM	6.2 mbar L/s 367 SCCM
He	7.9 mbar L/s 467 SCCM	10.4 mbar L/s 615 SCCM
Ar	1.5 mbar L/s 89 SCCM	3.3 mbar L/s 195 SCCM
(*) Backing pump 11.6 m ³ /h		
Compression ratio and foreline tolerance (**)		
N ₂	> 1 x 10 ¹¹	10 mbar
He	2 x 10 ⁸	10 mbar
H ₂	3 x 10 ⁶	> 4 mbar
Ar	> 1 x 10 ¹¹	8.5 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 recommended forepump	< 1 x 10 ⁻¹⁰ mbar (< 1 x 10 ⁻¹⁰ Torr)	
Inlet flange	ISO 100K, ISO 100F, CFF 6"	
Foreline flange	NW25 (NW16 as optional accessory)	
Rotational speed	Auto setting from 40800 RPM to 49500 RPM	
Start-up time	< 5 minutes	

Technical Specifications		
Recommended forepump	Agilent DS302 Rotary Vane Pump Agilent IDP-10 Dry Scroll Pump Agilent IDP-15 Dry Scroll Pump	
Operating position	Any	
Oper. ambient temperature	+5 °C to +35 °C	
Relative humidity of air	0 to 90% (not condensing)	
Bakeout temperature	ISO pump: 80°C at inlet flange CFF pump: 120°C at inlet 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. 100L/h	
Noise Pressure Level (at 1m at full speed)	43dB(A)	
Storage temperature	-40 °C to +70 °C	
Max altitude	3000 m	
Weight kg (lbs)	ISO100K	22.6 kg (49.8)
	ISO100F	23.7 kg (52.3)
	CFF 6"	23.5 kg (51.8)

Conformity to norms	
EMC (Control Units)	61326-1
Safety (CE/CSA)	61010-1
Machinery Directive	DIR 2006/42/CE
Low Voltage Directive	DIR 2014/35/EU
EMC Directive (Control Units)	DIR 2014/30/EU
ROHS	DIR 2011/65/EU

Outline Drawings

Dimensions: millimeters [inches]

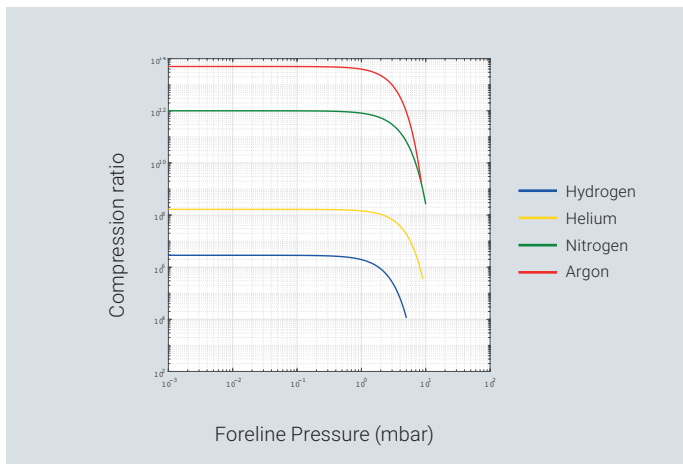


Ordering Information

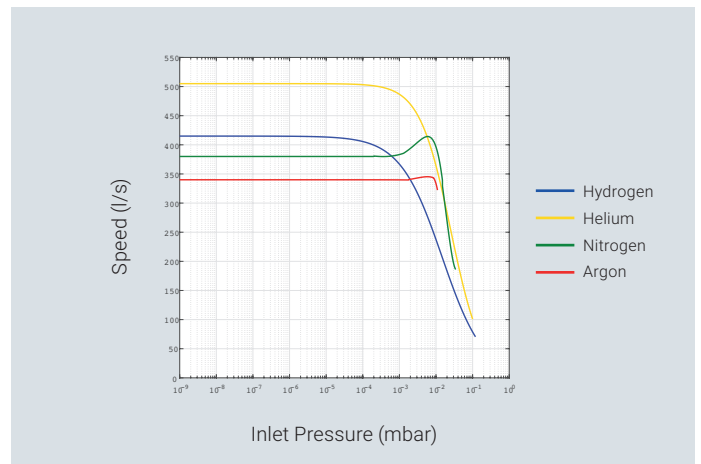
Pumps	Configuration Options
TwisTorr 404 FS ISO100K KF25 air cooling	X3511-64004
TwisTorr 404 FS ISO100F KF25 air cooling	X3511-64005
TwisTorr 404 FS CFF6" KF25 air cooling	X3511-64006
TwisTorr 404 FS ISO100K KF25 water cooling	X3511-64019
TwisTorr 404 FS ISO100F KF25 water cooling	X3511-64020
TwisTorr 404 FS CFF6" KF25 water cooling	X3511-64021
Controllers	Part Numbers
TwisTorr Medium-TMP Rack Controller	X3501-64016
TwisTorr Medium-TMP on board Controller	X3512-64016
Cables	Part Numbers
Mains cable NEMA plug 3 m long	9699958
Mains cable EU plug 3 m long	9699957
Mains cable UK plug 2.5 m long	X3501-68005
Serial Cable & A-PLUS Software	9699883
Medium-TMP Extension Cable	9699948M001 (5 m) 9699948M003 (10 m) 9699948M004 (15 m) 9699948M002 (20 m) 9699948M005 (30 m) 9699948M006 (50 m) 9699948M009 (75 m) 9699948M010 (100 m)
Inlet Screen	Part Numbers
Inlet Screen ISO100/CFF6	9699302
Cooling	Part Numbers
Medium-TMP Air Cooling Kit for Rack Controller	X3501-68001
Medium-TMP Air Cooling Kit for on board Controller	9699297
Plastic Water cooling Kit	9699347
Metal Water cooling Kit	9699337
Air Cooling Kit Extension Cable 5m	X3501-68101
Air Cooling Kit Extension Cable 10m	X3501-68051
Air Cooling Kit Extension Cable 15m	X3501-68061
Air Cooling Kit Extension Cable 20m	X3501-68021

Air Cooling Kit Extension Cable 30m	X3501-68011
Air Cooling Kit Extension Cable 50m	X3501-68071
Air Cooling Kit Extension Cable 75m	X3501-68081
Air Cooling Kit Extension Cable 100m	X3501-68091
Venting	Part Numbers
Vent valve driven by Rack Controller	X3501-68002
Vent valve driven by onboard Controller	9699834
Vent flange, NW 10 KF / M8	9699108
Spare Vent Screw	X3511-68000
Vent valve Rack Extension Cable	X3501-68004 (5 m) X3501-68054 (10 m) X3501-68064 (15 m) X3501-68074 (20 m) X3501-68084 (30 m) X3501-68034 (50 m) X3501-68094 (75 m) X3501-68104 (100 m)
Purge	Part Numbers
Purge 10SCCM M12-NW16KF	9699239
Purge 10SCCM M12-1/4 Swagelok	9699240
Purge 20SCCM M12-NW16KF	9699241
Purge 20SCCM M12-1/4 Swagelok	9699242
Spare Purge Screw	X3502-68004
Mounting	Part Numbers
Medium-TMP onboard Controller side-mounting bracket	X3511-68003
Medium-TMP KF16 foreline flange	X3511-68004
Medium-TMP KF25 foreline flange	X3511-68001
Medium-TMP KF40 foreline flange	X3511-68002
Active Gauges	Part Numbers
FRG 700 Full Range Gauge PVG 500 Pirani Vacuum Gauge PCG 750 Pirani Capacitance Gauge CDG-500 Capacitance Diaphragm Gauge	Ask Agilent for details

Compression Ratio



Pumping Speed



www.agilent.com/chem/twistorrfsfamily

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