

## Agilent TwisTorr 704 FS



### The new generation Turbo Pump with Agilent Floating Suspension

The Agilent TwisTorr 704 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.

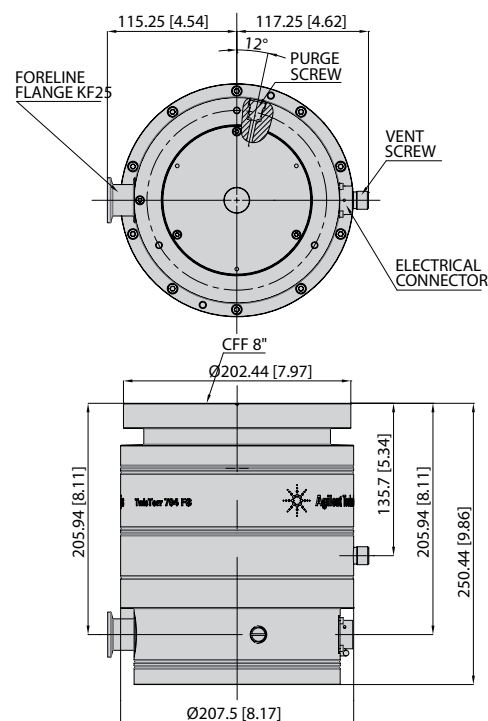
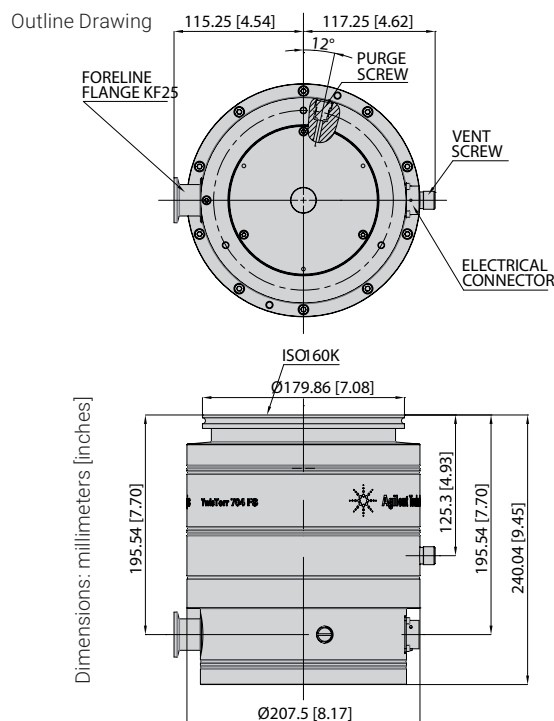
The unique bearing and dry lubrication in the TwisTorr 704 FS eliminate oil and maintenance, and permit operation of the pump in any orientation. Available with onboard or rack controllers.

## Technical Specification

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<b>Pumping speed</b>	ISO 160 / CF 8"	
N <sub>2</sub>	660 L/s	
He	640 L/s	
H <sub>2</sub>	480 L/s	
Ar	625 L/s	
<b>Gas throughput at full rotational speed (with recomm. forepump)*</b>	Ambient Temp. (25 °C)	Water Temperature. (25 °C, 50 L/h)
He	7.9 mbarL/s 467 SCCM	10.4 mbarL/s 615 SCCM
N <sub>2</sub>	4.3 mbarL/s 255 SCCM	6.2 mbarL/s 367 SCCM
Ar	1.5 mbarL/s 89 SCCM	3.3 mbarL/s 195 SCCM
(*) Backing pump 11.6 m3/hr		
<b>Compression ratio and foreline tolerance*</b>		
N <sub>2</sub>	>1E+11	10 mbar
He	2E+08	10 mbar
H <sub>2</sub>	3E+06	>4 mbar
Ar	>1E+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		
<b>Base pressure with recomm. forepump</b>	< 1 x 10 <sup>-10</sup> mbar (< 1 x 10 <sup>-10</sup> Torr)	
<b>Inlet flange</b>	ISO 160K, ISO 160F, CFF 8"	
<b>Foreline flange</b>	NW25 (NW40 as optional accessory)	
<b>Rotational speed</b>	Auto setting from 40'800 RPM to 49'500 RPM	
<b>Start-up time</b>	< 5 minutes	

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<b>Recommended forepump</b>	DS302 IDP10 IDP15	
<b>Operating position</b>	Any	
<b>Oper. ambient temperature</b>	+5 °C to +35 °C	
<b>Rel. humidity of air</b>	0 - 90 % (not condensing)	
<b>Bakeout temp.</b>	ISO pump: 80 °C at inlet flange CFF pump: 120 °C at inlet flange	
<b>Lubricant</b>	Permanent grease lubrication	
<b>Cooling requirements</b>		
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	
<b>Noise Pressure Level (at 1m at full speed)</b>	43dB(A)	
<b>Storage temperature</b>	-40°C to +70°C	
<b>Max altitude</b>	3000 m	
<b>Weight kg (lbs)</b>	ISO160K ISO160F CFF 8"	20.6 Kg / 45.3 lbs. 22.6 Kg / 49.7 lbs. 22 Kg / 48.4 lbs.

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



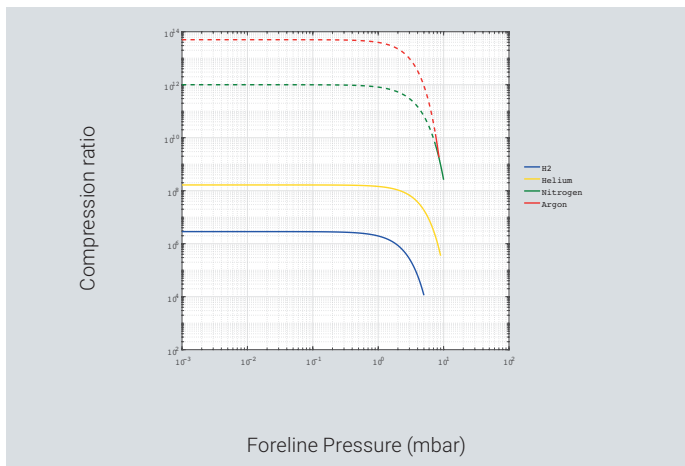
3D Drawings available for download

## Ordering Information

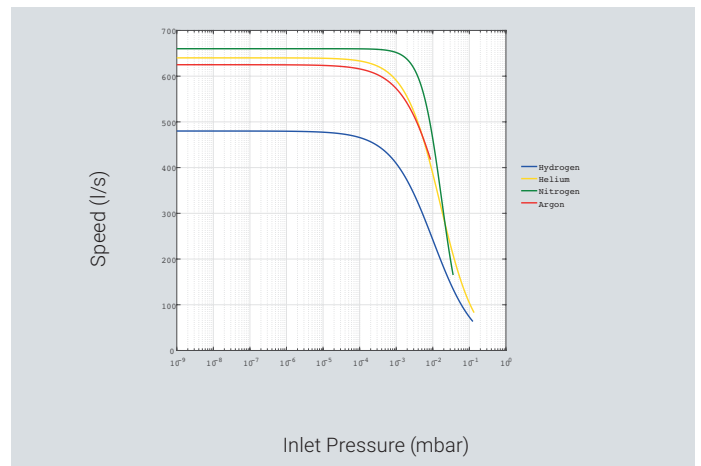
Pumps	Configuration Options
TwisTorr 704 FS ISO160K KF25 air cooling	X3511-64000
TwisTorr 704 FS ISO160F KF25 air cooling	X3511-64001
TwisTorr 704 FS CFF8" KF25 air cooling	X3511-64002
TwisTorr 704 FS CFF8" Long-Neck KF25 air cooling	X3511-64003
TwisTorr 704 FS ISO160K KF25 water cooling	X3511-64015
TwisTorr 704 FS ISO160F KF25 water cooling	X3511-64016
TwisTorr 704 FS CFF8" KF25 water cooling	X3511-64017
TwisTorr 704 FS CFF8" Long-Neck KF25 water cooling	X3511-64018
Controllers	Part Numbers
TwisTorr Medium-TMP rack controller	X3501-64016
TwisTorr Medium-TMP onboard 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 and A-plus	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 ISO160/CFF8	9699304
Mounting	Part Numbers
Medium-TMP onboard ctr. side-mounting bracket	X3511-68003
Medium-TMP KF25 foreline flange	X3511-68001
Medium-TMP KF40 foreline flange	X3511-68002

Cooling	Part Numbers
Medium-TMP Air Cooling Kit for rack controller	X3501-68001
Medium-TMP Air Cooling Kit for onboard controller	9699297
Plastic water cooling kit	9699347
Metal Water cooling Kit	9699337
Air Cooling Kit Extension Cable	X3501-68101 (5 m) X3501-68051 (10 m) X3501-68061 (15 m) X3501-68021 (20 m) X3501-68011 (30 m) X3501-68071 (50 m) X3501-68081 (75 m) X3501-68091 (100 m)
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 M12-1/4Swagelok	9699240
Purge 20SCCM M12-NW16KF	9699241
Purge 20SCCM M12-1/4Swagelok	9699242
Spare Purge Screw	X3502-68004

Compression Ratio



Pumping Speed



[www.agilent.com/chem/vacuum](http://www.agilent.com/chem/vacuum)

**United States**

Agilent Technologies  
121 Hartwell Avenue, Lexington MA 02421, USA  
Tel: +1 781 861 7200  
Toll free: +1 800 882 7426  
vpl-customer@agilent.com

**Europe and other countries**

Agilent Technologies Italia SpA  
via F.lli Varian 54, 10040 Leini, (Torino), Italy  
Tel: +39 011 9979 111  
Toll free: 00 800 234 234 00  
vpt-customer@agilent.com

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