



## Agilent TwisTorr 84 FS



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

The Agilent TwisTorr 84 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.

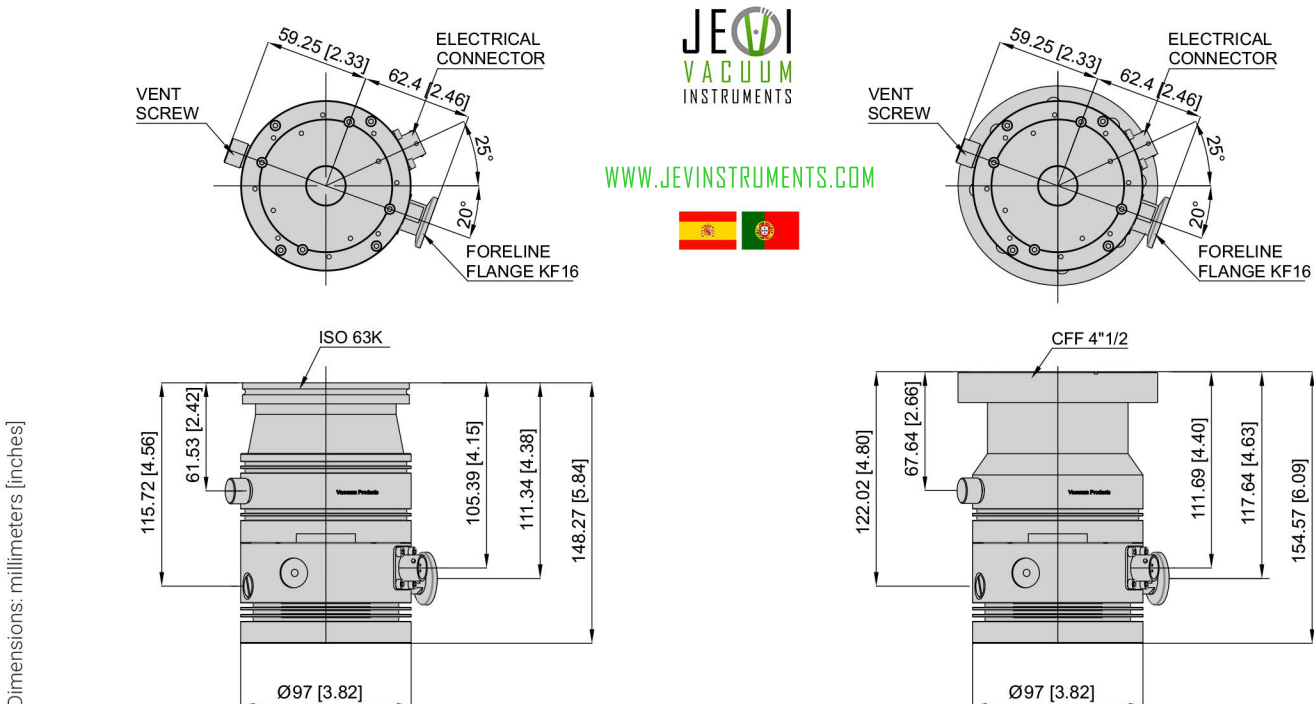
The unique bearing and dry lubrication in the TwisTorr 84 FS eliminate oil and maintenance, and permit operation of the pump in any orientation. Available with onboard or rack controllers.

## Technical Specifications

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<b>Pumping speed</b>	KF40	CFF 2.75"	ISO 63	CFF 4.5"
N <sub>2</sub>	49 L/s	56 L/s	67 L/s	67 L/s
He	38 L/s	46 L/s	63 L/s	63 L/s
H <sub>2</sub>	36 L/s	40 L/s	53 L/s	53 L/s
Ar	44 L/s	57 L/s	66 L/s	66 L/s
<b>Max Gas Throughput (*)</b>	Air Cooling (25°C ambient temperature)		Water Cooling (15°C water temp. / 25°C ambient temp.)	
N <sub>2</sub>	100 SCCM		100 SCCM	
Ar	70 SCCM		70 SCCM	
(*) Backing pump 11.6 m <sup>3</sup> /h				
<b>Compression ratio and foreline tolerance (**)</b>				
N <sub>2</sub>	≥ 1.0 x 10 <sup>11</sup>		>14 mbar	
He	2.0 x 10 <sup>6</sup>		>12 mbar	
H <sub>2</sub>	5.0 x 10 <sup>4</sup>		>4 mbar	
Ar	> 1.0 x 10 <sup>11</sup>		>14 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>	< 5 x 10 <sup>-10</sup> mbar (< 3.75 x 10 <sup>-10</sup> Torr)			
<b>Inlet flange</b>	KF 40, ISO 63, CFF 4.5", CFF 2.75"			
<b>Foreline flange</b>	KF16 NW			
<b>Rotational speed</b>	81000 rpm (1350 Hz driving frequency)			
<b>Start-up time</b>	< 2 minutes			

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<b>Recommended forepump</b>	Agilent DS 40M / DS 102 Rotary Vane Pumps Agilent IDP-3/IDP-7 Dry Scroll Pumps	
<b>Operating position</b>	Any	
<b>Oper. ambient temp.</b>	+5 °C to +35 °C	
<b>Rel. humidity of air</b>	0 - 90 % (not condensing)	
<b>Bakeout temperature</b>	max 80 °C for ISO (120 °C for CFF) at inlet flange	
<b>Lubricant</b>	Permanent lubrication	
<b>Cooling requirements</b>		
<b>Air cooling</b>	Forced air (5- 35°C ambient temp.) Air flow temperature +5°C to +35°C	
<b>Water cooling</b>	Water temperature from +15°C to +25°C Water flow min. 65m L/h	
<b>Noise Pressure level (at 1 mt at full speed)</b>	40 dB(A)	
<b>Storage temp.</b>	-40 °C to +70 °C	
<b>Max altitude</b>	3000 m	
<b>Weight kg (lbs)</b>	ISO 63	2.05 kg (4.50)
	CFF 4.5"	3.50 kg (7.70)
	CFF 2.75"	3.34 kg (7.35)
	KF 40	2.37 kg (5.22)
<b>Conformity to norms</b>		
CE, C-CSA-US, RoHS compliant as per 2011/65/UE		

## Outline Drawings



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3D Drawings available for download on Agilent.com

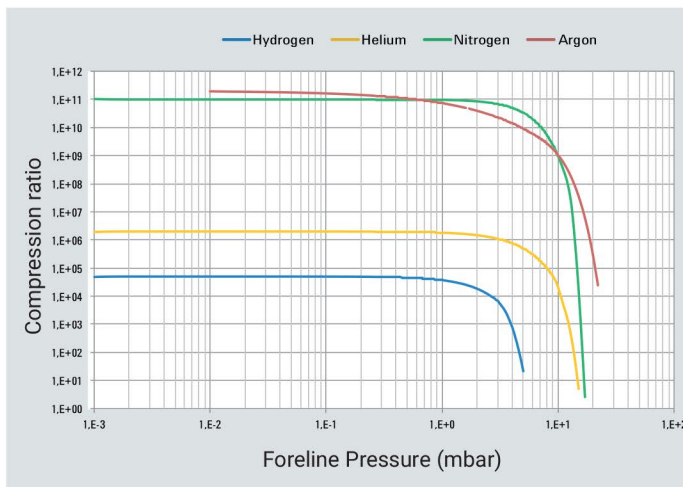


## Ordering Information

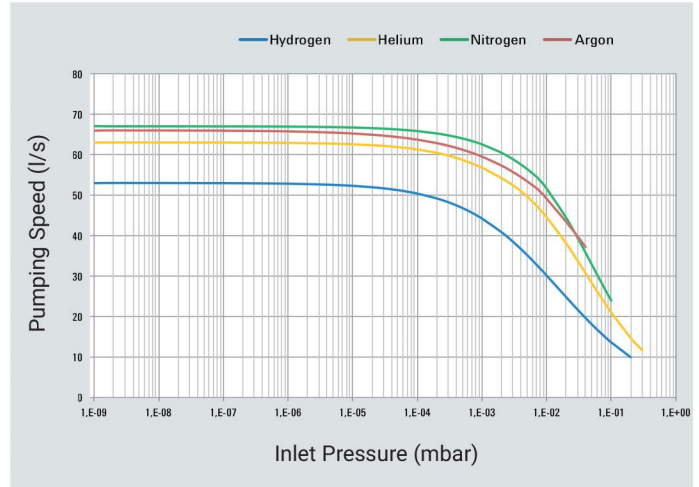
Pumps	Part Numbers
TwisTorr 84 FS ISO 63	X3502-64000
TwisTorr 84 FS KF 40	X3502-64001
TwisTorr 84 FS CFF 4.5"	X3502-64002
TwisTorr 84 FS CFF 2.75"	X3502-64003
Controllers	
TwisTorr 84 FS AG rack controller RS232/485	X3508-64001
TwisTorr 84 FS AG rack controller Profibus	X3508-64002
TwisTorr 84 FS onboard controller 110/220V	X3509-64000
TwisTorr 84 FS onboard controller 24V	X3509-64001
TwisTorr 84 FS PCB controller	X3510-64000
Cables	
Mains cable NEMA plug 3 m long	9699958
Mains cable EU plug 3 m long	9699957
Serial cable and T-plus software	9699883
PCB cable	9699869
Pump extension cables	9699942 (3 m) 9699942M007 (5 m) 9699942M006 (10 m) 9699942M005 (15 m) 9699942M004 (20 m)
Inlet Screen	
Inlet screen ISO 63	X3502-68001
Inlet screen CFF 4.5"	X3502-68000
Inlet screen, KF 40	9699309
Inlet screen CFF 2.75"	9699328
Cooling	
Metal water cooling kit	X3502-68002
Plastic water cooling kit	X3502-68003
Air cooling kit (0,5 m cable)	9699290
Air cooling kit extension cable (5 m)	9699940

Vibration isolator	
Vibration isolator ISO 63	9699375
Vibration isolator CFF 4.5"	9699376
Venting	
Vent Valve N.O. 0.5 mm orifice (0.5 m cable)	9699844
Vent Valve extension cables	9699941 (5 m) 9699941M003 (10 m) 9699941M001 (15 m) 9699941M005 (20 m)
Vent Screw M5	X3502-68005
Vent Adapter kit M5-M8	X1699-64039
Purge	
Purge Screw	X3502-68004
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	
Onboard controller side mounting bracket	X3502-68006
CFF4.5 Mounting kit	X3502-68007
Metric screws kit	X3502-68008
American screws kit	X3502-68009
Active Gauges	
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](http://www.agilent.com/chem/twistorrfsfamily)

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