The TWISTORR 304 FS is the new generation 300 l/s Turbo Pump with Agilent Floating Suspension
- Agilent Floating Suspension, the breakthrough bearing technology that reduces acoustical noise and vibration
- Proven best performance on the market, with new TwisTorr stages optimized for H₂ Compression Ratio
- Ideal for demanding instrumentation, academic and research applications

Agilent TwisTorr 304 FS
Agilent Quality Assured

Data-Sheet

Technical Specifications

Pumping speed

<table>
<thead>
<tr>
<th>Gas</th>
<th>ISO 100 / CF 6&quot;</th>
<th>ISO 160 / CF 8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₂</td>
<td>250 l/s</td>
<td>250 l/s</td>
</tr>
<tr>
<td>He</td>
<td>255 l/s</td>
<td>255 l/s</td>
</tr>
<tr>
<td>H₂</td>
<td>220 l/s</td>
<td>220 l/s</td>
</tr>
<tr>
<td>Ar</td>
<td>250 l/s</td>
<td>250 l/s</td>
</tr>
</tbody>
</table>

Gas throughput at full rotational speed (with recommended forepump)

<table>
<thead>
<tr>
<th>Gas</th>
<th>Ambient Temp. (25°C)</th>
<th>Water Temp. (25°C, 50 l/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₂</td>
<td>170 sccm</td>
<td>170 sccm</td>
</tr>
<tr>
<td>He</td>
<td>110 sccm</td>
<td>110 sccm</td>
</tr>
<tr>
<td>H₂</td>
<td>&gt; 1 x 10⁻¹¹ mbar</td>
<td>&gt; 10 mbar</td>
</tr>
<tr>
<td>Ar</td>
<td>&gt; 1 x 10⁻¹¹ mbar</td>
<td>&gt; 10 mbar</td>
</tr>
</tbody>
</table>

Compression ratio & Foreline Tolerance

<table>
<thead>
<tr>
<th>Gas</th>
<th>&gt; 1 x 10⁻¹¹ mbar</th>
<th>&gt; 10 mbar</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>He</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H₂</td>
<td>&gt; 1 x 10⁻⁸ mbar</td>
<td>&gt; 4 mbar</td>
</tr>
<tr>
<td>Ar</td>
<td>&gt; 1 x 10⁻¹¹ mbar</td>
<td>&gt; 10 mbar</td>
</tr>
</tbody>
</table>

Base pressure with recommended forepump (5 m³/h)

<table>
<thead>
<tr>
<th>Condition</th>
<th>&lt; 1 x 10⁻¹⁰ mbar</th>
<th>&lt; 1 x 10⁻¹⁰ Torr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet flange</td>
<td>CFF 8&quot; O.D. ISO 160</td>
<td>CFF 6&quot; O.D. ISO 100</td>
</tr>
<tr>
<td>Foreline flange</td>
<td>KF16 NW (KF25 - optional)</td>
<td></td>
</tr>
</tbody>
</table>

Rotational speed

60000 rpm (1010 Hz driving frequency)

Start-up time

< 3 minutes

Recommended forepump

- Mechanical: Agilent DS 102
- Dry pump: Agilent SH 110

Operating position

Any

Operating ambient temperature

+5 °C to +35 °C

Relative humidity of air

0 - 90 % (not condensing)

Bakeout temperature

80 °C at inlet flange max (ISO flange)
120 °C at inlet flange max (CFF flange)

Lubricant

Permanent lubrication

Cooling requirements

- Forced air (5-35 °C ambient temperature)
- Water (mandatory if ambient temperature > 35 °C)

Coolant water

- Minimum flow: 50 l/h (0.89 GPM)
- Temperature: +15 °C to +30 °C
- Pressure: 3 to 5 bar (45 to 75 psi)

Noise Pressure level

< 50 dB(A) at 1 meter

Storage temperature

-40 °C to +70 °C

Max altitude

3000 m

Weight kg (lbs)

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 100</td>
<td>5.5</td>
<td>12.3</td>
</tr>
<tr>
<td>CFF 6&quot;</td>
<td>7.5</td>
<td>16.5</td>
</tr>
<tr>
<td>ISO 160</td>
<td>5.7</td>
<td>12.6</td>
</tr>
<tr>
<td>CFF 8&quot;</td>
<td>9.7</td>
<td>20.9</td>
</tr>
</tbody>
</table>
Agilent TwisTorr 304 FS
Data sheet

### Pumping Speed

![Graph showing Pumping Speed](image)

### Compression Ratio

![Graph showing Compression Ratio](image)

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**Ordering Information**

**Pumps**
- TwisTorr 304 FS ISO100 water cooling X3500-64000
- TwisTorr 304 FS ISO6 water cooling X3500-64001
- TwisTorr 304 FS ISO160 water cooling X3500-64002
- TwisTorr 304 FS ISO8 water cooling X3500-64003
- TwisTorr 304 FS ISO100 air cooling X3500-64004
- TwisTorr 304 FS ISO160 air cooling X3500-64005
- TwisTorr 304 FS ISO8 air cooling X3500-64006
- TwisTorr 304 FS ISO100 SF water cooling X3500-64007
- TwisTorr 304 FS ISO160 SF water cooling X3500-64010

**Controllers**
- TwisTorr 304 FS AG rack controller with RS232/485 X3506-64002
- TwisTorr 304 FS AG rack controller with Profibus X3506-64003
- TwisTorr 304 FS on board controller 24 Vdc X3507-64002
- TwisTorr 304 FS on board controller 100-240 Vac X3507-64003

**Accessories**

**Cables**
- Mains cable NEMA plug, 3 m long 9699958
- Mains cable European plug, 3 m long 9699957
- Serial cable and T-plus Software 969983
- Extension cable 5 m 969-9942M007
- Extension cable 10 m 969-9942M008
- Extension cable 20 m 969-9942M009

**Inlet Screen**
- Inlet Screen ISO100 X3500-68000
- Inlet Screen CFF 6” X3500-68001
- Inlet Screen CFF 8” X3500-68002

**Cooling**
- Water cooling kit 9699337
- Plastic water cooling kit 9699347
- Air cooling kit for On board controller X3500-68010
- Fan extension cable for On board controller 9699949
- Air cooling kit for rack AG controller X3500-68011
- Fan extension cable for rack AG controller 9699940

**Vibration isolator**
- 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**
- 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 on-board controller (1.2 mm) 9699834
- Vent valve for on-board controller (0.5 mm) 9699834M006

**Purge**
- Purge valve 10 SCMD NW10KF - M12 9699239
- Purge valve 10 SCMD ¼ Swagelok - M12 9699240
- Purge valve 20 SCMD NW10KF - M12 9699241
- Purge valve 20 SCMD ¼ Swagelok - ¼ Swagelok 9699222
- Purge valve 20 SCMD ¼ Swagelok - ½ Swagelok 9699236

**Mounting**
- Bracket for On board controller side mounting X3500-68012
- Foreline flange FX25 X3500-68002

**Active Gauges**
- FRG 700 Full Range Gauge Ask Agilent for details
- PVD 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

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*This information is subject to change without notice.*

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