New TwisTorr 305 Q Turbo Pump

Innovation expands: the TwisTorr 305 FSQ and 305-ICQ represent the latest addition to the Agilent’s 300 L/s turbomolecular pump family.

The letter "Q" is used to indicate the characteristic feature of this pump, that is the very high throughput.

“Throughput” is the flow rate of pumped gas through the turbomolecular pump, and is a measure of the quantity of gas the pump can remove from its inlet. In fact, the 305 Q can withstand high levels of gas flow, and is the pump of choice for all those applications in which process gases are used.

The standalone pump 305 FSQ is compatible with remote and onboard controllers, while the 305-ICQ pump features an integrated controller.

The 305 product family shines as the new way for Agilent to manufacture turbomolecular pumps: these pumps are built with unsurpassed dedication and must pass several rigorous tests before being approved for customer shipment. All TwisTorr models can be operated and monitored using a smartphone, through the Vacuum Link App.

The reliable technology of the 305 family, coupled with smart innovations useful for a broad range of applications, creates a product line capable of satisfying the vast majority of user needs in vacuum.

The various models of 305 pumps offer different characteristics for different applications: the common denominator is wireless connectivity across all products; depending on model, Bluetooth or NFC are available to facilitate data exchange and to quickly check the pump status.
Technical Specifications TwisTorr 305 FSQ, 305-ICQ

<table>
<thead>
<tr>
<th>Technical Specifications</th>
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<tbody>
<tr>
<td>Pumping speed</td>
<td>ISO 100 K</td>
</tr>
<tr>
<td>N₂</td>
<td>250 l/s</td>
</tr>
<tr>
<td>He</td>
<td>255 l/s</td>
</tr>
<tr>
<td>H₂</td>
<td>220 l/s</td>
</tr>
</tbody>
</table>

Max gas flow rate:

<table>
<thead>
<tr>
<th></th>
<th>TwisTorr 305 FSQ</th>
<th>TwisTorr 305-ICQ</th>
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</thead>
<tbody>
<tr>
<td>N₂</td>
<td>450 sccm</td>
<td>380 sccm</td>
</tr>
<tr>
<td>He</td>
<td>500 sccm</td>
<td>500 sccm</td>
</tr>
<tr>
<td>H₂</td>
<td>500 sccm</td>
<td>500 sccm</td>
</tr>
</tbody>
</table>

Note: value refer to water-cooling pump version with:
• water temperature between 15°C and 20°C (non condensing)
• backing pump with pumping speed equal or above 5 m³/h

Max gas flow rate:

<table>
<thead>
<tr>
<th></th>
<th>TwisTorr 305 FSQ</th>
<th>TwisTorr 305-ICQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₂</td>
<td>2 x 10⁹</td>
<td>1 x 10¹⁰</td>
</tr>
<tr>
<td>He</td>
<td>1 x 10¹⁰</td>
<td></td>
</tr>
<tr>
<td>H₂</td>
<td>2 x 10¹⁰</td>
<td></td>
</tr>
</tbody>
</table>

Max foreline pressure tolerance N₂: 16 mbar

Note: foreline tolerance defined as the pressure at which the turbopump still produces a compression of 100. For continuous operation, water cooling recommended (water temperature between 15°C and 20°C)

Base pressure with recommended forepump:

< 1 x 10⁻¹⁰ mbar

(According to standard DIN 28 428, the base pressure is measured in a leak-free test dome, 48 hours after the completion of test dome bake-out, with a Turbopump fitted with a ConFlat flange and using the recommended pre-vacuum pump)

Inlet flange: ISO 100 K, CFF 6"; ISO 160 K, CFF 8"

Foreline flange: KF16 NW (KF25 – optional)

Max Rotation Speed: 60600 rpm (1010 Hz driving frequency)

Start-up time: < 3 minutes

Recommended forepump: Mechanical pump: Agilent DS 102, DS 302
Dry Pump: Agilent IDP-3 (no gas flow), IDP-7, IDP-10

Operating position: Any

Operating ambient temperature: +5°C to +35°C

Relative humidity of air: From graph in Figure 1 (non condensing)

Bakeout temperature: ISO flange: 75°C at inlet flange max
CFF flange: 100°C at inlet flange max
Note: Measure a point close to the sealing element.

Lubricant: Permanent lubrication

Air cooling requirements: Natural convection (only with no gas load)
Forced air (5-35°C ambient temperature)

Coolant water:

Minimum flow: 50 L/h (0.22 GPM)
Maximum flow: 150 L/h (0.66 GPM)
Temperature: +15 °C to +30°C
Max pressure: 5 bar (75 psi)

Noise Pressure level at 1 m, at full speed: 41 dB(A)

Note: mean values based on a significative sample (Ar and N₂ compression ratio estimated), standard deviation per test: pumping speed: below ± 7%, noise pressure level ± 10% (only pump)

Fig. 1: Maximum allowed relative humidity as a function of the air temperature for each cooling-water temperature.
Pumping Speed - TwisTorr 305 FSQ, 305-ICQ

Compression Ratio - TwisTorr 305 FSQ, 305-ICQ

Outline Drawings
Agilent TwisTorr 305 FSQ
Agilent TwisTorr 305-ICQ

Dimensions: millimeters [inches]

3D Drawings available for download
### Air cooling kit for TwisTorr 305-IC models
(Kit X3514-68001 is required)
- **X3500-68010**

### Air cooling kit for TwisTorr 305 Remote controller
- **X3500-68011**

### Fan extension cable for Remote Controller
- **9699940**

### 5 m Vent Valve Extension cable
- **9699941**

### Vibration isolators
- **ISO 100 K** 9699344
- **CFF 6"** 9699334
- **ISO 160 K** 9699345
- **CFF 8"** 9699335

### Vent Valve N.O. 1.2 mm for TwisTorr 305-IC models
(Kit X3514-68001 is required)
- **9699834**

### Vent Valve N.O. 0.5 mm for TwisTorr 305-IC models
(Kit X3514-68001 is required)
- **9699834M006**

### DB15 Mating Connector not wired 7.5A
- **X3514-68003**

### TwisTorr 305-IC Fan/Vent Adapter kit
- **X3514-68001**

### Vent Valve N.O. 0.5 mm Orifice
- **9699833**

### Vent Valve N.O. 1.2 mm Orifice
- **9699834**

### Vent Valve N.C. 1.2 mm Orifice
- **9699835**

### Vent Valve N.C. 0.5 mm Orifice
- **9699836**

### Purge valve 10 SCCM NW16KF - M12
- **9699239**

### Purge valve 10 SCCM % Swagelock - M12
- **9699240**

### Purge valve 20 SCCM NW16KF - M12
- **9699241**

### Purge valve 20 SCCM % Swagelock - M12
- **9699242**

### Purge valve 10 SCCM % Swagelock - % Swagelock
- **9699232**

### Purge valve 20 SCCM % Swagelock - % Swagelock
- **9699236**

### Other accessories
- **Serial to Bluetooth adapter (necessary for App)**
- **X3514-68003**

### KF25 Foreline flange
- **X3513-68000**

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**Ordering Information**

<table>
<thead>
<tr>
<th>Pumps</th>
<th>Cooling</th>
<th>Flange</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>TwisTorr 305 FSQ</td>
<td>Air/Water</td>
<td>ISO100K</td>
<td>X3513-64066</td>
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<tr>
<td>TwisTorr 305-ICQ, 48SA</td>
<td>Water</td>
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<td>X3513-64060</td>
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<td>TwisTorr 305-ICQ, 48SA</td>
<td>Air</td>
<td>ISO100K</td>
<td>X3513-64061</td>
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<td>TwisTorr 305-ICQ, 48SA</td>
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<td>X3513-64062</td>
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<td>TwisTorr 305 FS Remote Controller 232-48S</td>
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<td>TwisTorr 305 FS Remote Controller Profibus</td>
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<td>9699958</td>
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<td>9699957</td>
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<td>Metric Water Kit 4 x 6 mm</td>
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