

Agilent Turbo-V 750 and Turbo-V 850 TwisTorr

The new molecular-drag Technology





The new molecular-drag technology

What is TwisTorr

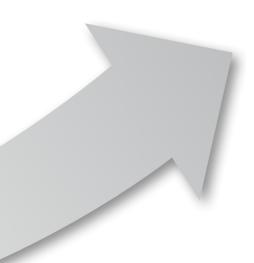


2010 • Agilent Technologies, presents the new TwisTorr molecular drag technology based on its well-known hybrid Turbo Molecular Pump design, introducing a spiral drag section that achieves unmatched performance in both pumping speed and compression ratio in the most compact space available. New state-of-the-art electronics complete this industry leading Turbo

Molecular Pump innovation

- **2003** With the Turbo-V 2K-G Varian, now Agilent, introduces a fully integrated Turbo pumping system
- **1996** Introduction by Varian of microprocessor-based on-board controller units: Navigator line
- **1991** Varian introduces a new hybrid type Turbo Molecular Pump: one monolythic rotor provides both high speed (Turbo stages) and high foreline tolerance (MacroTorr stages)
 - Use of ceramic ball bearings with life-time lubrication using a proprietary dry solid lubricant
- **1986** Varian begins collaboration with Elettrorava for technology and knowhow transfer
- **1980** Introduction of ceramic ball bearing technology
 - Compound Turbo Molecular Pumps appear, combining a Turbo section with a Drag section
- **1970** Snecma design commercialized by Elettrorava, with manufacturing based in Turin, Italy
- **1965** First prototype of axial flow turbo pump (Snecma), with open thin blades
 - This design is the basis for modern TMP technology
- **1960** Theoretical basis for the pumping mechanism of axial flow impeller (Shapiro and Kruger, MIT)
- **1958** First Turbo Molecular pumps developed using experimental design:
 - Double-Ended design (Becker), based on a closed cell design using thick rotor and stator blades (this design was abandoned in the late '70s)
 - Axial flow pumping principle, demonstrated in the high vacuum regime (Hablanian)
- **EARLY** First Molecular Drag pumps
- 1900 • 1912 W.Gaede
 - 1922 F.Holweck
 - 1929 M.Siegbahn





Agilent TwisTorr Technology*

- Pumping effect is created by a spinning rotor disk which transfers momentum to gas molecules.
- Gas molecules are forced to follow spiral groove design on the stator. The specific design of the channel ensures constant local pumping speed and avoids reverse pressure gradients, minimizing power consumption.

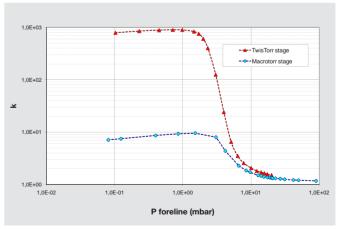
(*) US Patents applications 12/343961 and 12/343980, 24 Dec. 2008.

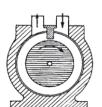
Space Saving Design

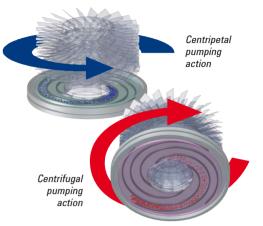
- Our rotor is based on the proven Agilent monolithic rotor design which positions the TwisTorr Stator between two smooth spinning disks and therefore exploits the pumping action by both disk surfaces in series.
- The double-sided spiral groove design on the TwisTorr stators combines centripetal and centrifugal pumping action in series, greatly reducing the size of the drag section.

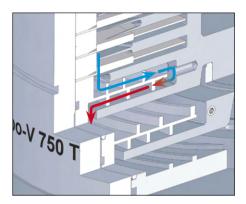
Compression ratio

• Compression ratio for N₂ of a single TwisTorr stage can increase up to a factor of 100 with respect to a MacroTorr stage of the same space and rotor speed, without reducing foreline tolerance and pumping speed.

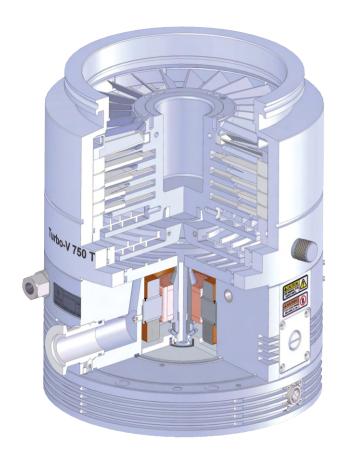








Agilent TwisTorr Key features





- The new Turbo-V 750 and Turbo-V 850 TwisTorr offer the highest pumping speed in their category for all gases.
- The state of the art TwisTorr technology also achieves the highest compression ratios for light gases in a commercially available Turbo Molecular Pump.
- While offering the highest performance, average power consumption by this new drag section design is reduced by at least 20% compared with previous designs.



Powerful, compact solution

- The new high performing ultra-compact TwisTorr drag stages permit a compact Rotor design. This enables us to use rotors that are 40% lower in height and weight compared with competitive rotors (using traditional Holweck drag technology).
- . The compact rotor design in combination with the new integrated drive electronics allow us to offer a unique solution in a package with a smaller footprint than any Turbo Molecular Pump solution available till now (with or without integrated drive electronics).
- Quick and easy pump installation is made possible by the small footprint, integrated electronics and the possibility of guickly adding optional devices such as an air cooling fan or automatic purge/vent kit connected to and fully controlled by the integrated electronics.



Advanced electronics

- We offer two different pump solutions:
- Pumping system with a fully integrated state of the art 48Vdc controller and separate 48Vdc power supply
- Stand-alone pump with a universal voltage rack type display controller unit, also capable of reading up to two active gauges

- Both controller solutions offer the following features:
- Logical I/O and serial (RS232/485) communication interfaces
- Rotational frequency regulation between 350Hz and 825Hz
- Gas type and cooling mode dependent power control
- Optional Purge/Vent device that allows for a controlled pump slow down with a modulated vent procedure, in combination with Stop Speed Reading (SSR) function, and purge to protect bearings against dust and corrosive gases
- T-Plus interface SoftWare for full PC/Laptop control with new Embedded Data Logger Manager function that enables easy data download and graphical display



VACUUM PERFORMANCE

Advanced rotor design in combination with TwisTorr technology has allowed us to reduce the number of pumping stages by 30% compared to conventional designs. The result is a more compact, lighter rotor with improved overall vacuum performance. This compact rotor design also leads to an improved dynamic stability of the rotor and a reduced mechanical load on the suspension.

LOW STRESS ROTOR

Our unique monolithic rotor is fully automatically machined out of one single piece of advanced high strength aluminium alloy according to our proprietary design. This highly precise process reduces material stress and improves assembly tolerances compared with a traditional stacked rotor design, in which single rotor bladed stages are assembled on a shaft. Our new proprietary inverted shaft fitting process ensures tensile stress-free rotor to shaft connection, reducing stress by 60% compared to traditional fitting.

PUMP EFFICIENCY

The new 48Vdc electrical motor driven by a dedicated Field Oriented Control algorithm reduces start-up time and improves pump stability under changing gas load conditions. The improved drive efficiency allows higher vacuum performance while reducing average electrical power consumption by 10%.

 PUMP COOLING AND TEMPERATURE CONTROL State of the art rotor design with improved motor efficiency allows delivery of higher vacuum performance with lower heat dissipation inside the pump. A further improvement to average lower running temperatures comes from improved cooling systems. Our new water cooling solution uses a stainless steel cooling channel fitted inside the pump body using a new mandrel fitting technology. This new solution prevents corrosion and clogging of the water channel. Our new Air-Cooling fan shroud, shaped around the contours of our pump body, optimizes the airflow along to the pump surface.



Clean maintenance-free vacuum

- Modern research and scientific applications require the cleanest vacuum solutions. For these applications we offer our unique UHV-compatible Turbo Molecular Pump design. In our Turbo Molecular Pumps no suspension components are exposed to the UHV side of the system and there are no permanent magnetic bearings that could otherwise negatively disturb the experimental chamber.
- Our high-precision ceramic ball bearings are both installed on the fore vacuum side of the pump and permanently lubricated with our unique proprietary solid lubricant characterized by an extremely low vapor pressure. This solution is completely maintenance free and allows for installation of the pump in any orientation.
- In our family of Turbo Molecular Pumps there is no free oil present for bearing lubrication, eliminating the need for refills and the risk of vacuum chamber contamination

Agilent Turbo-V 750 TwisTorr System



Ordering Information

Pumping Systems*

| 969-8813 | AGILENT Turbo-V 750 ISO 160K On-Board | |
|---|---------------------------------------|--|
| 969-8814 | AGILENT Turbo-V 750 CFF 8" On-Board | |
| 969-8818 | AGILENT Turbo-V 750 ISO 160F On-Board | |
| (*): Pumping Systems include pump with integrated controller 48 Vdc, inlet screen, 9 and 15 pin mating connectors IP-54. | | |

Accessories

| Accessories | |
|--------------|---|
| 969-6521 | Turbo-V 750/850 Twistorr Power Supply (5 m cable) |
| 969-9958 | Mains cable NEMA Plug, 3m long |
| 969-9957 | Mains cable European Plug, 3m long |
| 969-6502 | Turbo-V 750/850 TwisTorr Purge/Vent Device |
| 969-6503 | Turbo-V 750/850 TwisTorr Fan |
| 969-9883 | T-Plus software and serial cable |
| 969-9304 | Inlet screen ISO 160 and CFF 8" |
| 969-9347 | Water cooling kit (plastic model) |
| 969-9337 | Water cooling kit (metallic model) |
| 969-9828 | Water kit, Hose tail 1/8G |
| 969-9345 | Vibration isolator, ISO 160 |
| 969-9335 | Vibration isolator, CF 8" |
| 969-9108 | Vent flange, NW 10 KF / M8 |
| 969-9239 | Purge valve with KF16-M12 10 SCCM |
| 969-9240 | Purge valve with 7/16-M12 10 SCCM |
| 969-9241 | Purge valve KF16-M12 20 SCCM |
| 969-9242 | Purge valve 7/16-M12 20 SCCM |
| 969-9261 | External Profibus TMP gateway |
| 949-9325 | Forepump DS 302, with 1 ph., universal motor |
| PTS03001UNIV | Triscroll Dry Vacuum Pump PTS 300 single phase, universal motor |
| PTS03003UNIV | Triscroll Dry Vacuum Pump PTS 300 3 phase, universal motor |
| | |

Technical Specifications

Input voltage for power supply

Maximum operating power

for power supply

Protection category

Stop speed reading

Interface

Data Logger

Input frequency for power supply

Maximum input power for power supply

Automated Purge/Vent device control Leak Detector Mode function

| Vacuum Performances | |
|---|---|
| Pumping speed for N ₂ (*) | N ₂ = 700 L/s |
| Pumping speed for Ar (*) | Ar = 680 L/s |
| Pumping speed for He (*) | He = 680 L/s |
| Pumping speed for H ₂ (*) | $H_2 = 580 L/s$ |
| Compression ratio for N ₂ | N ₂ = 1 x 10 ¹¹ |
| Compression ratio for Ar | Ar > 1 x 10 ¹¹ |
| Compression ratio for He | He = 2 x 10 ⁸ |
| Compression ratio for H ₂ | $H_2 = 2.5 \times 10^6$ |
| Base pressure* (with minimum recommended forepump) | <1 x 10 ⁻¹⁰ mbar |
| Max foreline pressure for N ₂ | 6 mbar |
| Inlet Flange size | ISO 160K, CFF 8", ISO 160F |
| Foreline flange | KF25 |
| Other | |
| Rotational speed | Selectable from 350 Hz to 825 Hz |
| Start up time (90% of full speed) | < 3 min |
| Recommended forepump | PTS300, DS302 |
| Operational position | Any |
| Cooling options | Forced Air (up to 35 °C ambient temp.) Water (corrosion resistant loop) |
| Max flange temperature during bake-out (no gas flow) | 120°C (CFF), 80°C (ISO) |
| Noise level (pump at full speed, no load) | FAN off < 52 dB(A) at 1 meter FAN on < 55 dB(A) at 1 meter |
| Storage temperature | -20 °C to +70 °C |
| Certifications | CE, CSA, RHOS |
| Purge and Vent | Standard Purge & Vent ports Automated Purge/Vent device (accessory) |
| Weight (with integrated controller) | ISO 160 K = 15.9 Kg CF 8" = 22.5 Kg |
| (*): According to Pneurop 5608 III, TS 300 PRIMARY F | PUMP, NO INLET SCREEN |
| Controller Specifications | |
| Controller type | Fully integrated electronics |
| Motor control mode | Field Oriented Control (FOC) |
| Input voltage | 48 Vdc (± 10%) |
| Maximum input power | 450 W |
| Maximum output power | 400 W (pump ramp-up) 300 W (water cooling) 200 W (forced air cooling) |
| | 400 04014 44404 |

100-240 Vac (± 10%)

Navigator standard remote I/O RS 232, RS 485 serial Can accept Profibus external device

50 – 60 Hz

550 VA

450 W

IP 54

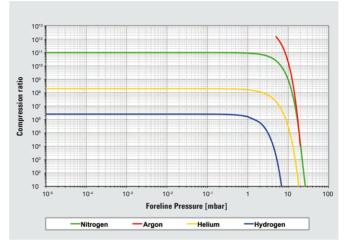
Standard

Standard

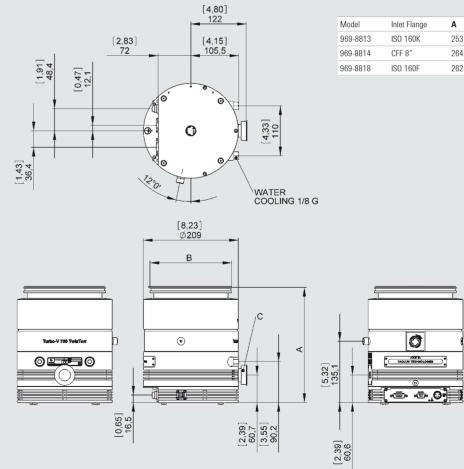
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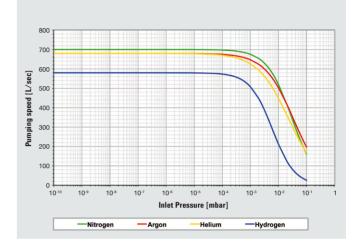
Standard

Compression Ratio Vs Foreline Pressure



Outline Drawing





Pumping Speed

| Model | Inlet Flange | Α | В | C |
|----------|--------------|---------------|---------------|-------|
| 969-8813 | ISO 160K | 253,8 [9,99] | Ø179,9 [7,08] | KF 25 |
| 969-8814 | CFF 8" | 264,2 [10,4] | Ø202,4 [7,97] | KF 25 |
| 969-8818 | ISO 160F | 262,7 [10,34] | Ø225 [8,86] | KF 25 |

Agilent Turbo-V 850 TwisTorr System



Ordering Information

| Pumping Syste | |
|---------------|---|
| 969-8815 | AGILENT Turbo-V 850 ISO 200K On-Board |
| 969-8816 | AGILENT Turbo-V 850 CFF10" On-Board |
| 969-8819 | AGILENT Turbo-V 850 ISO 200F On-Board |
| | s include pump with integrated controller 48 Vdc, inlet screen, ting connectors IP-54. |
| Accessories | |
| 969-6521 | Turbo-V 750/850 Twistorr Power Supply (5 m cable) |
| 969-9958 | Mains cable NEMA Plug, 3m long |
| 969-9957 | Mains cable European Plug, 3m long |
| 969-6502 | Turbo-V 750/850 TwisTorr Purge/Vent Device |
| 969-6503 | Turbo-V 750/850 TwisTorr Fan |
| 969-9883 | T-Plus software and serial cable |
| 969-9316 | Inlet screen ISO 200 and CFF 10" |
| 969-9347 | Water cooling kit (plastic model) |
| 969-9337 | Water cooling kit (metallic model) |
| 969-9828 | Water kit, Hose tail 1/8G |
| 969-9346 | Vibration isolator, ISO 200 |
| 969-9336 | Vibration isolator, CF 10" |
| 969-9108 | Vent flange, NW 10 KF / M8 |
| 969-9239 | Purge valve with KF16-M12 10 SCCM |
| 969-9240 | Purge valve with 7/16-M12 10 SCCM |
| 969-9241 | Purge valve KF16-M12 20 SCCM |
| 969-9242 | Purge valve 7/16-M12 20 SCCM |
| 969-9261 | External Profibus TMP gateway |
| 949-9325 | Forepump DS 302, with 1 ph., universal motor |
| PTS03001UNIV | Triscroll Dry Vacuum Pump PTS 300 single phase, universal motor |
| PTS03003UNIV | Triscroll Dry Vacuum Pump PTS 300 3 phase, universal motor |

Technical Specifications

| - Vacuum Performances | |
|---|---|
| Pumping speed for N ₂ (*) | N ₂ = 750 L/s |
| Pumping speed for Ar (*) | Ar = 700 L/s |
| Pumping speed for He (*) | He = 690 L/s |
| Pumping speed for H ₂ (*) | H ₂ = 590 L/s |
| Compression ratio for N2 | N ₂ = 1 x 10 ¹¹ |
| Compression ratio for Ar | Ar > 1 x 10 ¹¹ |
| Compression ratio for He | He = 2 x 10 ⁸ |
| Compression ratio for H ₂ | $H_2 = 2.5 \times 10^6$ |
| Base pressure* | <1 x 10 ⁻¹⁰ mbar |
| (with minimum recommended forepump) | |
| Max foreline pressure for N ₂ | 6 mbar |
| Inlet Flange size | ISO 200K, CFF 10", ISO 200F |
| Foreline flange | KF25 (ISO 200K, CFF 10") KF40 (ISO 200F) |
| Other | |
| Rotational speed | Selectable from 350 Hz to 825 Hz |
| Start up time (90% of full speed) | < 3 min |
| Recommended forepump | PTS300, DS302 |
| Operational position | Any |
| Cooling options | Forced Air (up to 35 °C ambient temp.) Water (corrosion resistant loop) |
| Max flange temperature during bake-out (no gas flow) | 120°C (CFF), 80°C (ISO) |
| Noise level (pump at full speed, no load) | FAN off < 52 dB(A) at 1 meter FAN on < 55 dB(A) at 1 meter |
| Storage temperature | -20 °C to +70 °C |
| Certifications | CE, CSA, RHOS |
| Purge and Vent | Standard Purge & Vent ports Automated Purge/Vent device (accessory) |
| Weight (with integrated controller) | ISO 200 K = 16.1 Kg CF 10" = 22.6 Kg |
| (*): According to Pneurop 5608 III, TS 300 PRIMARY PUI | MP, NO INLET SCREEN |
| Controller Specifications | |
| Controller type | Fully integrated electronics |
| Motor control mode | Field Oriented Control (FOC) |
| Input voltage | 48 Vdc (± 10%) |
| Maximum input power | 450 W |
| Maximum output power | 400 W (pump ramp-up) 300 W (water cooling) 200 W (forced air cooling) |
| Input voltage for power supply | 100-240 Vac (± 10%) |
| Input frequency for power supply | 50 – 60 Hz |
| Maximum input power for power supply | 550 VA |
| Maximum operating power for power supply | 450 W |
| Interface | Navigator standard remote I/O RS 232, RS 485 serial Can accept Profibus external device |
| Protection category | IP 54 |
| Data Logger | Standard |
| a | |

Standard

Standard

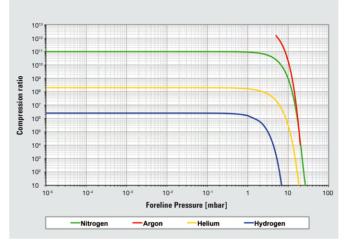
Standard

Stop speed reading

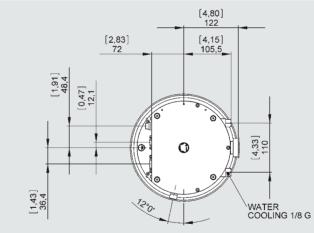
Automated Purge/Vent device control

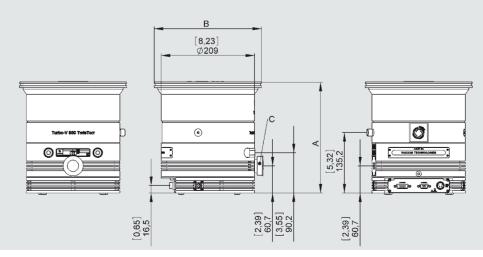
Leak Detector Mode function

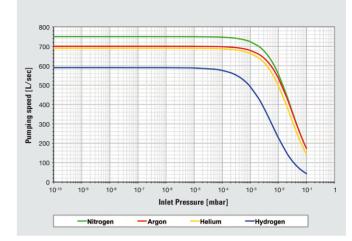
Compression Ratio Vs Foreline Pressure



Outline Drawing







Pumping Speed

| Model | Inlet Flange | A | В | C |
|----------|--------------|--------------|-----------------|-------|
| 969-8815 | ISO 200K | 247,7 [9,75] | Ø240 [9,45] | KF 25 |
| 969-8816 | CFF10" | 247,7 [9,75] | Ø253,2 [9,97] | KF 25 |
| 969-8819 | ISO 200F | 248,1 [9,77] | Ø284,86 [11,21] | KF 40 |

Agilent Turbo-V 750 TwisTorr Rack



Ordering Information

| 969-6013 | AGILENT Turbo-V 750 ISO 160K Rack | |
|----------|-----------------------------------|--|
| 969-6014 | AGILENT Turbo-V 750 CFF8" Rack | |
| 969-6017 | AGILENT Turbo-V 750 CFF6" Rack | |
| 969-6018 | AGILENT Turbo-V 750 ISO 160F Rack | |

Controllers

| 969-9525 | AGILENT Turbo-V 750/850-AG Rack CNT, 5 m pump cable incl. |
|----------|--|
| 969-9526 | AGILENT Turbo-V 750/850-AG Rack CNT Profibus, 5 m pump cable incl. |

Accessories

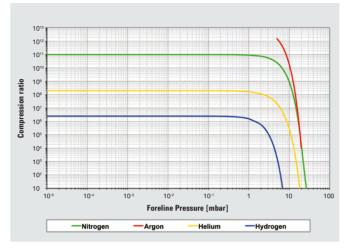
| 969-9958 | Mains cable NEMA Plug, 3m long |
|--------------|---|
| 969-9957 | Mains cable European Plug, 3m long |
| 969-6502 | Turbo-V 750/850 TwisTorr Purge/Vent Device |
| 969-6503 | Turbo-V 750/850 TwisTorr Fan |
| 969-6504 | Turbo-V 750/850 TwisTorr Purge/Vent 5 M Extension Cable |
| 969-6505 | Turbo-V 750/850 TwisTorr Purge/Vent 15 M Extension Cable |
| 969-6506 | Turbo-V 750/850 TwisTorr Purge/Vent 25 M Extension Cable |
| 969-6514 | Turbo-V 750/850 TwisTorr Fan 5 M Extension Cable |
| 969-6515 | Turbo-V 750/850 TwisTorr Fan 15 M Extension Cable |
| 969-6516 | Turbo-V 750/850 TwisTorr Fan 25 M Extension Cable |
| 969-6518 | Turbo-V 750/850 TwisTorr 10 M Pump Extension Cable |
| 969-6519 | Turbo-V 750/850 TwisTorr 20 M Pump Extension Cable |
| 969-9883 | T-Plus software and serial cable |
| 969-9304 | Inlet screen ISO 160 and CFF 8" |
| 969-9302 | Inlet screen CFF 6" |
| 969-9347 | Water cooling kit (plastic model) |
| 969-9337 | Water cooling kit (metallic model) |
| 969-9828 | Water kit, Hose tail 1/8G |
| 969-9345 | Vibration isolator, ISO 160 |
| 969-9334 | Vibration isolator, CF 6" |
| 969-9335 | Vibration isolator, CF 8" |
| 969-9108 | Vent flange, NW 10 KF / M8 |
| 969-9239 | Purge valve with KF16-M12 10 SCCM |
| 969-9240 | Purge valve with 7/16-M12 10 SCCM |
| 969-9241 | Purge valve KF16-M12 20 SCCM |
| 969-9242 | Purge valve 7/16-M12 20 SCCM |
| 949-9325 | Forepump DS 302, with 1 ph., universal motor |
| PTS03001UNIV | Triscroll Dry Vacuum Pump PTS 300 single phase, universal motor |
| PTS03003UNIV | Triscroll Dry Vacuum Pump PTS 300 3 phase, universal motor |
| | |

Technical Specifications

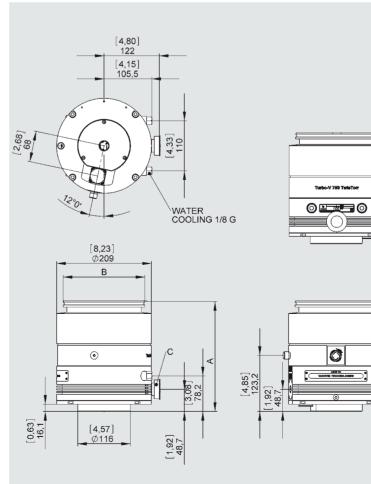
| Vacuum Performances | ISO160/CFF8" | CFF 6" | |
|--|---------------------------------------|--|--|
| Pumping speed for N ₂ (*) | N ₂ = 700 L/s | N ₂ = 370 L/s | |
| Pumping speed for Ar (*) | Ar = 680 L/s | Ar = 340 L/s | |
| Pumping speed for He (*) | He = 680 L/s | He = 500 L/s | |
| Pumping speed for H ₂ (*) | H ₂ = 580 L/s | H ₂ = 470 L/s | |
| Compression ratio for N ₂ | N ₂ = 1 x 10 ¹¹ | | |
| Compression ratio for Ar | Ar > 1 x 10 ¹¹ | | |
| Compression ratio for He | He = 2 x 10 ⁸ | | |
| Compression ratio for H ₂ | $H_2 = 2.5 \times 10^{-10}$ | 6 | |
| Base pressure* (with minimum recommended forepu | <1 x 10 ⁻¹⁰ mb mp) | par | |
| Max foreline pressure for N ₂ | 6 mbar | | |
| Inlet Flange size | ISO 160K, CF | F 8", CFF 6", ISO 160F | |
| Foreline flange | KF25 | KF25 | |
| Other | | | |
| Rotational speed | Selectable fro | m 350 Hz to 825 Hz | |
| Start up time (90% of full speed) | < 6 min (with | 5 m pump cable length) | |
| Recommended forepump | PTS300, DS3 | 02 | |
| Operational position | Any | | |
| Cooling options | | o to 35 °C ambient temp.) ion resistant loop) | |
| Max flange temp. during bake-out (no gas flow) | 120°C (CFF), | 80°C (ISO) | |
| Noise level (pump at full speed, no lo | | dB(A) at 1 meter dB(A) at 1 meter | |
| Storage temperature | -20 °C to +7 | 0° (| |
| Certifications | CE, CSA, RHO | IS | |
| Purge and Vent | | ge & Vent ports urge/Vent device (accessory) | |
| Weight | ISO 160 K = CF 8" = 22.3 | | |
| (*): According to Pneurop 5608 III, TS 300 PR | | • | |
| Controller Specifications | | | |
| Motor control mode | Field Oriented | Control (FOC) | |

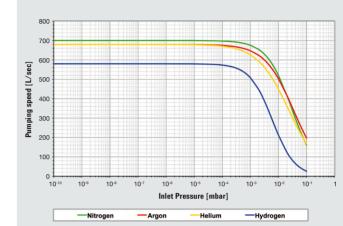
| Motor control mode | Field Oriented Control (FOC) |
|-------------------------------------|---|
| Input voltage | 100 - 240 Vac (± 10%) |
| Input frequency | 50 - 60 Hz |
| Maximum input power | 450 VA |
| Maximum output power | 320 W (pump ramp-up) 300 W (water cooling) 200 W (forced air cooling) (Specification with standard cable length 5mt) |
| Interface | Navigator standard remote I/O RS 232, RS 485 serial Can accept internal Profibus board |
| Protection category | IP 20 |
| Data Logger | Standard |
| Stop speed reading | Standard |
| Active stop | Standard |
| Automated Purge/Vent device control | Standard |
| External gauge readout | 2 ports compatible with Agilent gauges |
| Primary pump control | Pilot 2 external configurable relays (48 Vdc (± 10%) - 250 mA MAX) |
| | |

Compression Ratio Vs Foreline Pressure



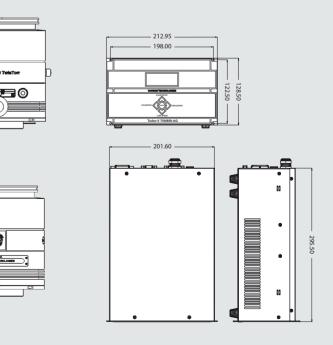
Outline Drawing





Pumping Speed

| Model | Inlet Flange | Α | В | C |
|----------|--------------|---------------|---------------|-------|
| 969-6013 | ISO 160K | 241,8 [9,52] | Ø179,9 [7,08] | KF 25 |
| 969-6014 | CFF8" | 252,2 [9,93] | Ø202,4 [7,97] | KF 25 |
| 969-6017 | CFF6" | 258,7 [10,19] | Ø151,6 [5,97] | KF 25 |
| 969-6018 | ISO 160F | 252,7 [9,95] | Ø225 [8,86] | KF 25 |



Agilent Turbo-V 850 TwisTorr Rack



Ordering Information

Pumps

| • | | |
|----------|-----------------------------------|--|
| 969-6015 | AGILENT Turbo-V 850 ISO 200K Rack | |
| 969-6016 | AGILENT Turbo-V 850 CFF10" Rack | |
| 969-6019 | AGILENT Turbo-V 850 ISO 200F Rack | |
| | | |

Controllers

| 969-9525 | AGILENT Turbo-V 750/850-AG Rack CNT, 5 m pump cable incl. |
|----------|--|
| 969-9526 | AGILENT Turbo-V 750/850-AG Rack CNT Profibus, 5 m pump cable incl. |

Accessories

| 10000001100 | |
|--------------|---|
| 969-9958 | Mains cable NEMA Plug, 3m long |
| 969-9957 | Mains cable European Plug, 3m long |
| 969-6502 | Turbo-V 750/850 TwisTorr Purge/Vent Device |
| 969-6503 | Turbo-V 750/850 TwisTorr Fan |
| 969-6504 | Turbo-V 750/850 TwisTorr Purge/Vent 5 M Extension Cable |
| 969-6505 | Turbo-V 750/850 TwisTorr Purge/Vent 15 M Extension Cable |
| 969-6506 | Turbo-V 750/850 TwisTorr Purge/Vent 25 M Extension Cable |
| 969-6514 | Turbo-V 750/850 TwisTorr Fan 5 M Extension Cable |
| 969-6515 | Turbo-V 750/850 TwisTorr Fan 15 M Extension Cable |
| 969-6516 | Turbo-V 750/850 TwisTorr Fan 25 M Extension Cable |
| 969-6518 | Turbo-V 750/850 TwisTorr 10 M Pump Extension Cable |
| 969-6519 | Turbo-V 750/850 TwisTorr 20 M Pump Extension Cable |
| 969-9883 | T-Plus software and serial cable |
| 969-9316 | Inlet screen ISO 200 and CFF 10" |
| 969-9347 | Water cooling kit (plastic model) |
| 969-9337 | Water cooling kit (metallic model) |
| 969-9828 | Water kit, Hose tail 1/8G |
| 969-9346 | Vibration isolator, ISO 200 |
| 969-9336 | Vibration isolator, CF 10" |
| 969-9108 | Vent flange, NW 10 KF / M8 |
| 969-9239 | Purge valve with KF16-M12 10 SCCM |
| 969-9240 | Purge valve with 7/16-M12 10 SCCM |
| 969-9241 | Purge valve KF16-M12 20 SCCM |
| 969-9242 | Purge valve 7/16-M12 20 SCCM |
| 949-9325 | Forepump DS 302, with 1 ph., universal motor |
| PTS03001UNIV | Triscroll Dry Vacuum Pump PTS 300 single phase, universal motor |
| PTS03003UNIV | Triscroll Dry Vacuum Pump PTS 300 3 phase, universal motor |
| | |

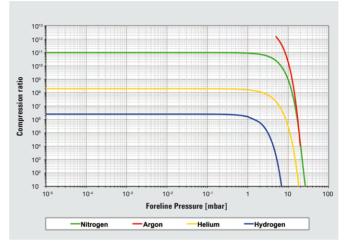
Technical Specifications

Vacuum Performances

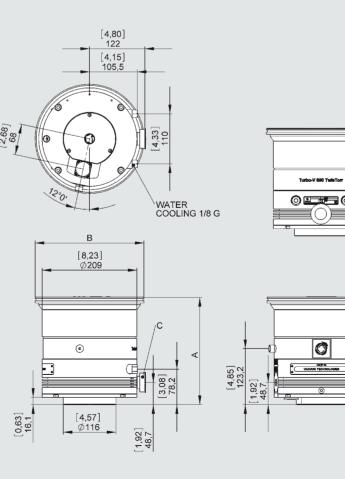
| Pumping speed for N ₂ (*) | N ₂ = 750 L/s | |
|--|---|--|
| Pumping speed for Ar (*) | Ar = 700 L/s | |
| Pumping speed for He (*) | He = 690 L/s | |
| Pumping speed for H ₂ (*) | $H_2 = 590 \text{ L/s}$ | |
| Compression ratio for N ₂ | $N_2 = 1 \times 10^{11}$ | |
| Compression ratio for Ar | Ar > 1 x 10 ¹¹ | |
| Compression ratio for He | $He = 2 \times 10^8$ | |
| Compression ratio for H ₂ | $H_2 = 2.5 \times 10^6$ | |
| Base pressure* | <1 x 10 ⁻¹⁰ mbar | |
| (with minimum recommended forepump) | | |
| Max foreline pressure for N ₂ | 6 mbar | |
| Inlet Flange size | ISO 200K, CFF 10", ISO 200F | |
| Foreline flange | KF25 (ISO 200K, CFF 10") KF40 (ISO 200F) | |
| Other | | |
| Rotational speed | Selectable from 350 Hz to 825 Hz | |
| Start up time (90% of full speed) | < 6 min (with 5 m pump cable length) | |
| Recommended forepump | PTS300, DS302 | |
| Operational position | Any | |
| Cooling options | Forced Air (up to 35 °C ambient temp.) Water (corrosion resistant loop) | |
| Max flange temp. during bake-out (no gas flow) | 120°C (CFF), 80°C (ISO) | |
| Noise level (pump at full speed, no load) | FAN off < 52 dB(A) at 1 meter FAN on < 55 dB(A) at 1 meter | |
| Storage temperature | -20 °C to +70 °C | |
| Certifications | CE, CSA, RHOS | |
| Purge and Vent | Standard Purge & Vent ports Automated Purge/Vent device (accessory) | |
| Weight | ISO 200 K = 15.8 Kg CF 10" = 22.4 Kg | |
| (*): According to Pneurop 5608 III, TS 300 PRIMARY P | UMP, NO INLET SCREEN | |
| Controller Specifications | | |
| Motor control mode | Field Oriented Control (FOC) | |
| Input voltage | 100 - 240 Vac (± 10%) | |
| Input frequency | 50 - 60 Hz | |
| Maximum input power | 450 VA | |
| Maximum output power | 320 W (pump ramp-up) 300 W (water cooling) 200 W (forced air cooling) (Specification with standard cable length 5mt) | |
| Interface | Navigator standard remote I/O RS 232, RS 485 serial Can accept internal Profibus board | |
| Protection category | IP 20 | |
| Data Loggor | Standard | |

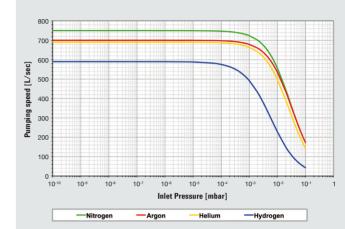
| Protection category | IP 20 |
|-------------------------------------|---|
| Data Logger | Standard |
| Stop speed reading | Standard |
| Active stop | Standard |
| Automated Purge/Vent device control | Standard |
| External gauge readout | 2 ports compatible with Agilent gauges |
| Primary pump control | Pilot 2 external configurable relays (48 Vdc (± 10%) - 250 mA MAX) |

Compression Ratio Vs Foreline Pressure



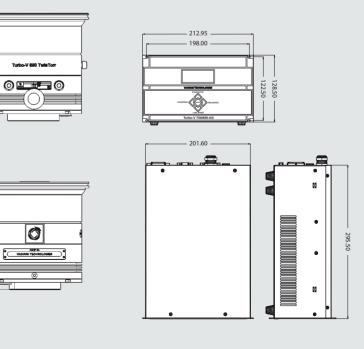
Outline Drawing





Pumping Speed

| Model | Inlet Flange | A | В | C |
|----------|--------------|--------------|-----------------|-------|
| 969-6015 | ISO 200K | 235,7 [9,28] | Ø240 [9,45] | KF 25 |
| 969-6016 | CFF10" | 235,7 [9,28] | Ø253,2 [9,97] | KF 25 |
| 969-6019 | ISO 200F | 236,2 [9,30] | Ø284,86 [11,21] | KF 40 |



Agilent Turbo-V 750 and Turbo-V 850 TwisTorr

Service & Support



ADVANCE EXCHANGE

To maximize uptime, and for those occasions where you cannot afford stopping your process, Agilent offers exchange units for advanced shipment, with pumps which are rebuilt to as-new specs and latest revision level. As soon as requested, your order can be processed within 24 hours.

REPAIR

Agilent products offer unmatched reliability, performance and cleanliness. Production requirements, however, inevitably create, over time, the need for maintenance and repair. Timely repair at Agilent will keep your products performing at an outstanding level all the time.

UPGRADE

Designed for customers who want replace a unit with a newest technology product. We rebuild these products to asnew specifications, with a full 12-month warranty.level all the time.

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