

# STP Magnetically Levitated Turbomolecular Pumps

In April 2002, Edwards Acquired the Turbomolecular Pump Business of Seiko Instruments, Inc.

- Distributed and supported globally by Edwards for nearly twenty years
- Designed by continuous improvement on existing proven reliable technology
- Advanced materials and designs provide:
  - Class leading performance
  - Low vibration
  - Guaranteed reliability
  - Low cost of ownership
- The broad product range covers all potential turbo pump applications.
- Qualified by all major semiconductor OEM's
- Used in all major semiconductor fabrication plants
- Installed base of over 80000 units, 85% in the semiconductor industry



## Key Features

- Multi-axis magnetic bearing system
- High Throughput versions for high flow processes
- Low vibration characteristics
- Advanced controller technology
- Full interfacing capability

## Features & Benefits

- Improved pumping performance
  - Optimised for semiconductor process pressures
  - Maximised gas throughput for each flange size
  - Applications specific models
- New generation universal controllers
- Compact (1/2 rack) controller
  - Auto tune enabling "mix and match" pumps
  - Integrated TMS control
  - Improved diagnostics
- High power d.c. motor drive
  - Fast ramp-up time
  - Self regeneration upon power failure, eliminating the need for batteries



Edwards is a leader in clean and dry vacuum technology. The first STP pumps were sold in 1983 and there are now over 80000 installations worldwide. 85% are operating on semiconductor process tools where they demonstrate exceptional levels of reliability. STP pumps are the first choice for applications demanding high up-time, hydrocarbon-free pumping, minimal maintenance and low vibration.

- Proven reliability.
- Clean oil-free high vacuum.
- Complete range from 300 to 4500 l s<sup>-1</sup>.
- Application specific models.
- Very low noise and vibration.
- Low cost of ownership.
- Virtually maintenance free.
- Installation in any orientation.
- Full remote control interface.
- Supported globally by Edwards

## Proven Magnetic Bearing Technology

The rotor is entirely suspended by magnetic bearings so all contact between the rotor and the remainder of the pump is eliminated. As well as giving very low vibration, the elimination of contact means no bearing wear and no requirement for consequent pump maintenance.

## STP Range



**UHV Series** The Ultra High Vacuum series of magnetically levitated turbo molecular pumps are the products of choice for the semiconductor, surface science or high energy physics industries. They offer unrivalled reliability, performance, cleanliness and class leading low vibration levels. The pumps are all d.c. powered, eliminating the need for batteries, they use a half rack controller which features auto-tuning and advanced diagnostic features. The range contains pumps with speeds from 300 l s<sup>-1</sup> to 1000 l s<sup>-1</sup> all of which are available in ISO or CF flange variants.

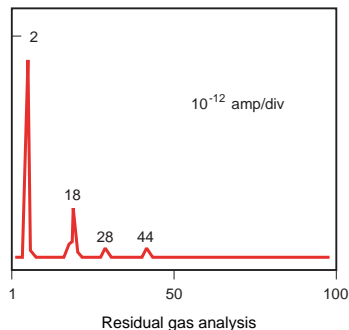


**High Throughput Series** The high throughput series of magnetically levitated turbo pumps generate the high gas flows required by the current generation of semiconductor etch, ion implant and LCD systems. All the pumps feature a five active axis magnetic bearing system and a d.c. drive for increased robustness and stability. They use a Holweck stage to provide advanced throughput performance. They operate via a half rack controller with auto-tuning, advanced diagnostics and an integrated temperature management system. The range operates with throughput speeds from 300 l s<sup>-1</sup> to 1300 l s<sup>-1</sup>.



**Advantage Series** The new Advantage series of magnetically levitated turbo pumps have been designed to provide the highest levels of throughput required by the next generation of semiconductor etch and CVD processes. They have been developed, using continuous improvement techniques, from the ultra reliable, high performance H series of products. Their advanced rotor design combined with selection of the best materials has allowed the creation of the next generation of high throughput turbo pump inside the same footprint as many of the existing models. The range contains pumps with throughput speeds from  $800 \text{ l s}^{-1}$  to  $4500 \text{ l s}^{-1}$ .

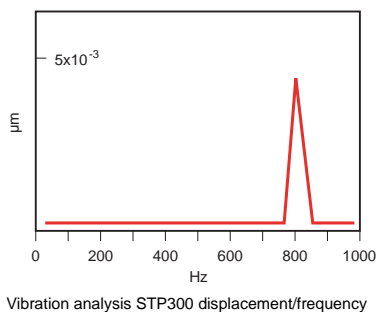
## STP Features



**Oil Free** All STP turbomolecular pumps are oil free. The use of magnetic bearings eliminates all hydrocarbon lubricants ensuring no contamination of the vacuum process from the turbomolecular pump. This feature is vital in the semiconductor industry (where device densities are constantly increasing) and in surface science or high energy physics applications (where even minute degrees of contamination disrupt measurements).

**Maintenance Free** Unlike conventional mechanical bearings, magnetic levitation means there is no frictional contact, eliminating sources of wear and vibration. This feature enables STP turbomolecular pumps to run for years with virtually no maintenance, reducing annual operating costs to a minimum and ensuring maximum up-time is achieved. This maintenance free feature can be particularly beneficial on processes producing chemical or radioactive contamination.

**Vibration Free** Magnetic levitation of the rotor results in an extremely low level of noise and vibration. Peak-to-peak vibration level is less than  $0.02 \mu\text{m}$ . This amplitude remains constant throughout the life of the pump and is free from troublesome sub-harmonics.



**Automatic Balancing System (ABS)** ABS is a unique patented development of 5-axis technology. If any rotor imbalance is introduced (by deposition of process by-products, for example), sensors in the pump detect changes in the rotor motion and compensate the magnetic bearing fields to allow the rotor to spin on its natural inertial axis. This minimizes the vibration transmitted to the inlet flange. ABS works at all pump rotational speeds.

**Safety Backup Bearings** STP pumps have dry lubricated axial and radial mechanical bearings as safety backup bearings. These support the rotor and protect the pump in the event of a total disruption of magnetic suspension or a massive air inrush which overcomes the magnetic bearing stiffness. These high precision ball bearings are dry lubricated and are not in contact with the rotor during normal operation.



**Optimised Rotors** The multistage pure bladed rotors in the UHV pumps provide the high vacuums required for clear beamlines on CD SEM machines, mass spectrometers and ion implanters. They provide optimum pumping performance with excellent light gas compression ratios.



**Compound Rotors** The high throughput pumps incorporate a Holweck drag stage that increases the pumps throughput at low pressure.



**Advanced Series Compound Rotors** The advanced series pumps have a redesigned compound rotor, the materials of manufacture have been improved to reduce the clearances within the pump, the rotors have an advanced 3D design and the Holweck stage has been redesigned to increase the throughput.



**Corrosion Resistant** To ensure a high level of resistance to corrosion, the corrosion resistant (C) and high throughput (H-C) pumps have nickel coated rotors/stators and pump internals suitable for ion implantation and plasma etching. Further enhanced levels of protection are available on request.



**Nitrogen Purging** The corrosion resistant (C) pumps and the high throughput (H-C) pumps have a nitrogen purge facility, a constant flow of nitrogen through the pump dilutes corrosive gases minimising their damage to the pumps motor and sensor coils.



**TMS System** The Edwards Temperature Management System is available on a wide range of turbo pumps. It is designed to optimize the temperature within the pump, dramatically reducing the particle condensation within. This will not only considerably enhance the performance of the pump under harsh process conditions, but also increase its operational life.

## Applications

**Semiconductor Fabrication** STP turbomolecular pumps are the number one choice for the world's leading semiconductor etch and implant manufacturers. The pumps are installed on the harshest applications (for example, metal etch) and demonstrate exceptional levels of reliability.

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminium), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station
- MBE
- Diffusion
- Photo resist stripping
- Crystal/epitaxial growth
- Wafer inspection
- Load lock chambers

**Scientific Applications** STP pumps are used extensively in the world's foremost research and development institutes. The pumps satisfy stringent performance criteria and reliability expectations. They are also used in the following applications:

- Scientific instruments: surface analysis, mass spectrometry, electron microscopy
- High energy physics: beam lines, accelerators
- Radioactive applications: fusion systems, cyclotrons

# STPs and the Environment

## Reducing Energy Usage

Reducing global energy consumption is key in the fight against global warming. In addition to minimising the energy our production facilities and offices consume, our latest generation of Maglev turbo pumps enable our customers to meet their energy reduction targets. Future proofing against carbon taxes and potentially qualifying for 'Green Grants'.

Example:

In the production of coated products, existing vacuum pump energy could account for >50% of the total energy consumed by the process tool.

With an installed base of 95,000 maglev turbo pumps globally in a wide range of applications, Edwards STP Maglevs typically reduce the power consumption of Diffusion by < 90%.

Switching from Diffusion pumps to the latest Maglev turbos from Edwards on an 80 pump glass coating line will dramatically reduce your carbon footprint by over 3,000 tonnes of CO<sub>2</sub>e / year.

## Economising by switching to the new generation of STP Maglev turbo pumps

Benefits of STP Maglev turbo pumps

- Lower utility cost (Power and Water)
- No yearly services or oil changes
- Increased pumping performance
- Very low ambient noise and low vibration
- Reduced space requirements

## Edwards HT10 Diffusion Pump vs Maglev Turbo Pump

	HT10 Diffusion Pump	STP iXA2205	% reduction	CO <sub>2</sub> reduction per year (tonnes)
Power consumption	5.1 kW	0.3 kW*	94%	22.6 pa**
Water consumption	400 l h <sup>-1</sup>	120 l h <sup>-1</sup>	70%	

## Edwards HT16 Diffusion Pump vs Maglev Turbo Pump

	HT16 Diffusion Pump	STP XA3203	% reduction	CO <sub>2</sub> reduction per year (tonnes)
Power consumption	9 kW	0.3 kW*	97%	40.9 pa**
Water consumption	700 l h <sup>-1</sup>	120 l h <sup>-1</sup>	83%	

\* at 300 sccm gas load power = 0.3 kW

\*\* Energy source units vs kW/h

Kg CO<sub>2</sub> = kWh 0.537

Source: Department for Environment, Food, Rural Affairs, UK

## Enabling Environmental Technology



**Solar Cells** A photovoltaic solar cell (PV cell) is a semiconductor device which, in the presence of light, generates electricity. Solar cells provide clean renewable energy, producing zero air pollution, hazardous waste or noise.



**Biofuel Production** The term biofuel applies to any solid, liquid or gaseous fuel produced from organic (once-living) matter. The word biofuel covers a wide range of products, some of which are commercially available today and some of which are still in research and development.



**Glass Coating** Vacuum coated glass is primarily used to control the solar generated thermal energy load on buildings. Multiple layers comprising exotic metal oxides create infrared reflecting properties. Reducing the heat load on buildings reduces the need for electrical power to run air conditioning in hot countries. Conversely in cold countries these same reflective properties are used to retain heat and reduce fuel used for heating. We expect the trend to accelerate as sustainable building principles become part of International building design standards.

Switching from just one 10 inch Diffusion pump to a Maglev turbo reduces the energy consumption by up to 95%, with a CO<sub>2</sub> reduction of 22.6 tonnes per year.



**Steel Degassing** Vacuum degassing (VD) and vacuum oxygen decarburisation (VOD) are used in the production of speciality steel alloys to reduce the levels of hydrogen, carbon and other impurities during the secondary steel making process.

Edwards dry mechanical vacuum pumps offer considerable energy savings compared to the traditional multi-stage steam ejector systems, backed with liquid ring pumps.



**Solid State Lighting** Solid-state lighting sources, such as light emitting diodes (LEDs), offer energy savings and environmental benefits compared to traditional incandescent or fluorescent lamps. In some cases they can offer a 95% energy saving over conventional lighting systems.

## STP Turbo Pump Range

Integrated Controller

- 300 to 3300 l s<sup>-1</sup>
- Compact design including a fully integrated controller
- Innovative, self-sensing magnetic bearing system
- Digital 5-axis control
- Can be configured to run corrosive processes
- Automatic Balancing System (ABS) standard
- Automatic Vibration Reduction (AVR) standard
- Reduces cabling requirement (no separate controller)
- Profibus<sup>®</sup> available
- IP54 rated

Ultra High Vacuum (UHV) Series

- 300 to 1000 l s<sup>-1</sup>, <10<sup>-10</sup> mbar (CF flange)
- Low vibration
- Highest reliability
- Maintenance free
- Harsh process compatible (C version)

UHV Low Vibration Series

- 300 to 500 l s<sup>-1</sup>
- Built-in vibration isolator gives ultra low vibration performance
- Increased pumping performance
- Compact design
- Easy installation - one simple pump component solution
- Low magnetic field variants available

Advanced High Throughput Maglev Pumps

- 300 to 4500 l s<sup>-1</sup>, 6 slm throughput class pump
- Advanced series rotor technology and 3D blade design
- The Holweck drag stage with reversed spiral for high gas throughput
- Digital 5-axis control
- Harsh duty compatible
- Class leading performance on ISO250
- Increased H<sub>2</sub>, N<sub>2</sub> and Ar performances

# STP-iX455 Turbomolecular vacuum pump

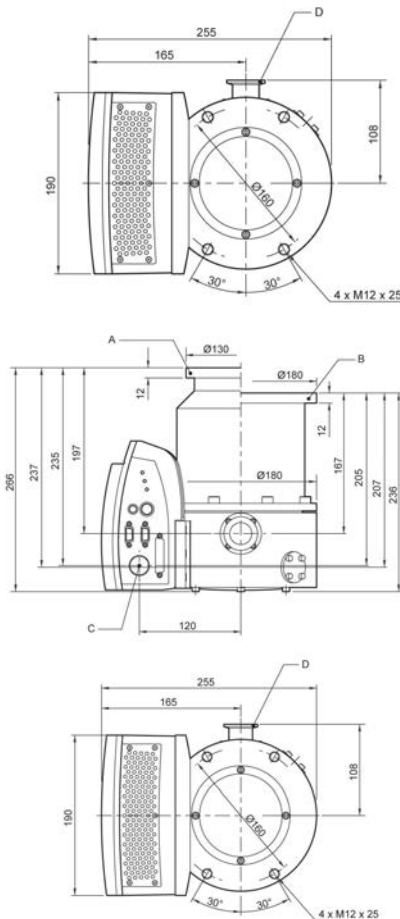


The STP-iX455 turbo-molecular pump features an innovative, magnetic bearing and motor drive system, providing a 50% reduction in vibration compared to previous generation turbo pumps. An integrated controller eliminates the need for a conventional, rack-mounted controller and interconnecting cables, and does not require water cooling. The pump features 450 l/s pumping speed for nitrogen. The STP-iX455 is an excellent fit for electron microscope, metrology, lithography and other vibration sensitive applications.

## Features & Benefits

- Compact Design including a fully integrated controller
- Innovative, Self-Sensing magnetic bearing system
- Digital 5-axis control
- Vibration levels reduced by 50% compared to the existing turbo pumps
- Can be configured to run corrosive processes

## Dimensions

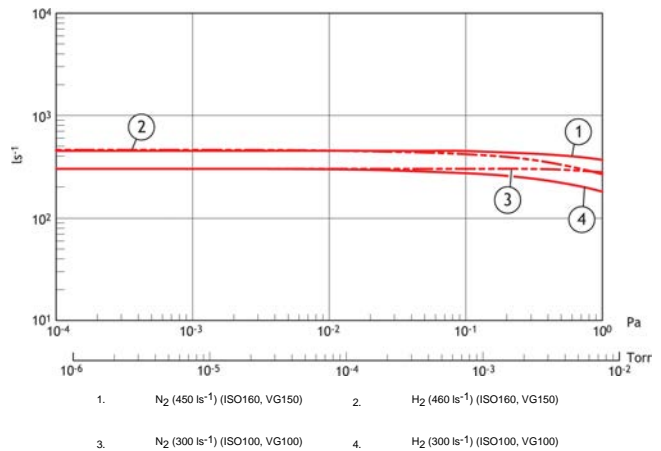


Inlet Flange	A	B
ISO100	130 (5.12)	12 (0.47)
DN100CF	152 (5.98)	21 (0.83)
VG100	182 (7.17)	12 (0.47)
ISO160	180 (7.09)	12 (0.47)
DN160CF	203 (7.99)	22 (0.87)
VG150	235 (9.25)	12 (0.47)

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves





## Technical Data

Inlet flange	ISO100K
Pumping Speed	
N <sub>2</sub>	300 ls <sup>-1</sup>
H <sub>2</sub>	300 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>1 x 10 <sup>4</sup>
Ultimate pressure	6.5 x 10 <sup>-6</sup> order Pa
Max working pressure	1.3 x 10 <sup>-1</sup> Pa
Allowable backing pressure	67 Pa
Rated speed	55000 rpm
Starting time	<6 min
Mounting position	Any orientation
Cooling method	Natural cooling (water cooling or air cooling when baking and gas pumping)
Lubricating oil	Not necessary
Backing pump	240 lmin <sup>-1</sup>
Leakage Magnetic Flux	
Axial direction	<100 m/Gauss
Radial direction	<100 m/Gauss
Ambient temperature range	0 to 40 °C
Storage temperature range	-25 to 55 °C
Weight	15 kg

## Ordering Information

Product Description	Order No.
STP-iX455 Turbomolecular pump ISO100K	PT640Z010
STP-iX455 Turbomolecular pump ISO160K	PT640Z020
STP-iX455 Turbomolecular pump DN100CF	PT640Z050
STP-iX455 Turbomolecular pump DN160CF	PT640Z060
Accessories & Spares	Order No.
iDT-001 Display unit	PT64W1Z00
iPS240 Power supply	PT64W0Z00
STP-iX455-iPS240 interconnection cable 5 m	PT64Y0B20
STP-iX455-iPS240 interconnection cable 10 m	PT64Y0B30
STP-iX455-iPS240 interconnection cable 15 m	PT64Y0B40
STP-iX455-iPS240 interconnection cable 20 m	PT64Y0B50
Power supply cable for iPS240 3m	PT64Y0A10
Power supply cable for iPS240 5m	PT64Y0A20

# STP-iXR1606 Turbomolecular vacuum pump

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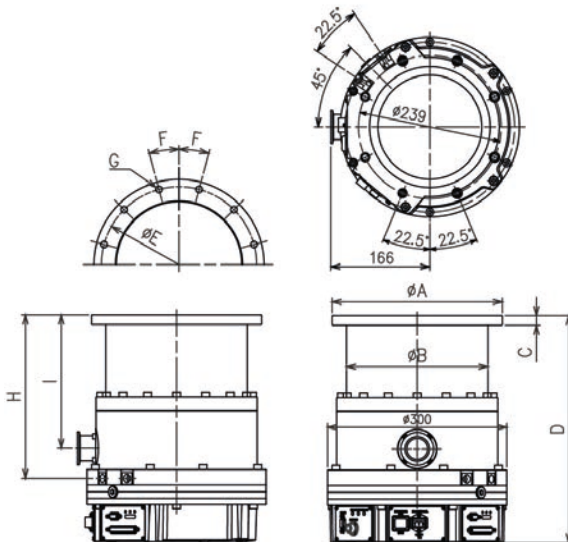


STP-iXR1606 series magnetically levitated turbo-molecular pump provides industry-leading performance and incorporates latest technology small power supply into the onboard control which is the same concept with STP-iXA2206/iXA3306 series. The pumping performance is improved by the newest developed revolutionary rotor design. This fully integrated product offers easy installation and small footprint as an all-in-one solution for all application tools.

## Features & Benefits

- Eliminates connection cable between pump and control unit.
- Eliminates installation space and cost required by conventional rack type control unit.
- Compact design results in easy installation and small foot print.
- Highest pumping speed in the 8" TMP class, along with the STP-A1603.
- 32% reduced power consumption in the high gas flow area.

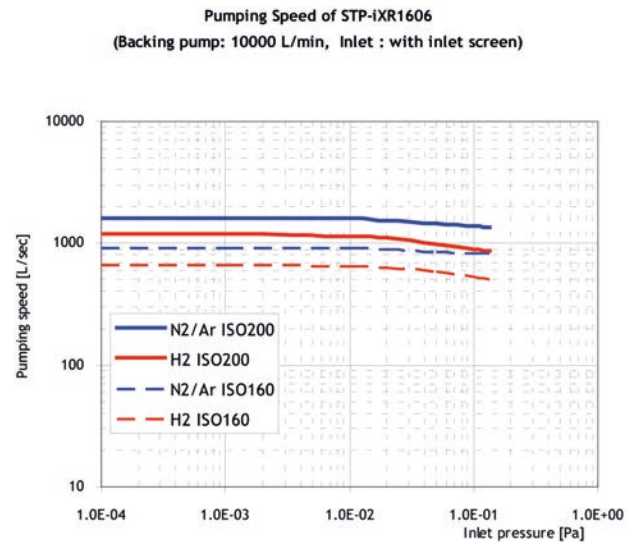
## Dimensions



## Applications

- Glass Coating
- Solar PVD
- Industrial Sputtering

## Performance Curves



## Technical Data

Intel Flange Size	VG200/VG250	VG150
	ISO200F/ISO250F	ISO160F
	ICF253/ICF305	ICF203
Backing port size	KF40	KF40
Pump Speed		
N <sub>2</sub>	1600 ls <sup>-1</sup>	900 ls <sup>-1</sup>
H <sub>2</sub>	1200 ls <sup>-1</sup>	600 ls <sup>-1</sup>
Compression ratio		
N <sub>2</sub>	>10 <sup>8</sup>	>10 <sup>8</sup>
H <sub>2</sub>	1 x 10 <sup>3</sup>	1 x 10 <sup>3</sup>
Ultimate pressure	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Allowable backing pressure	266 Pa (2 Torr)	266 Pa (2 Torr)
Max Gas size N <sub>2</sub> (water cooled only)	4700 sccm	4700 sccm
	(7.94 Pam <sup>3</sup> s <sup>-1</sup> )	(7.94 Pam <sup>3</sup> s <sup>-1</sup> )
Max Gas size Ar (water cooled only)	1800 sccm	1800 sccm
	(3.04 Pam <sup>3</sup> s <sup>-1</sup> )	(3.04 Pam <sup>3</sup> s <sup>-1</sup> )
Rated speed	36,500 rpm	36,500 rpm
Starting time	8 min	8 min
Mounting position	Any orientation	Any orientation
Input voltage	200 to 240 (± 10) V a.c.	200 to 240 (± 10) V a.c.
Maximum input power	750 VA	750 VA
Weight	48 kg	48 kg-

## Ordering Information

Product Description	Order No.
STP-iXR1606 ISO200F	YT790Z010
STP-iXR1606 VG200	YT790Z020
STP-iXR1606 ISO250F	YT790Z040
STP-iXR1606 ISO160F	YT790Z070
STP-iXR1606 VG150	YT790Z080
STP-iXR1606 ISO200F with Profibus	YT790Z100
STP-iXR1606 ISO250F with Profibus	YT790Z110
Accessories & Spares	Order No.
iDT-001 Display Terminal	YT79U1Z00
Power cable 3m	YT79Y0A01
Power cable 5m	YT79Y0A00
Power cable 10m	YT79Y0A03
Power connector only	PTZ003114

# STP-iXA2206C Turbomolecular vacuum pump

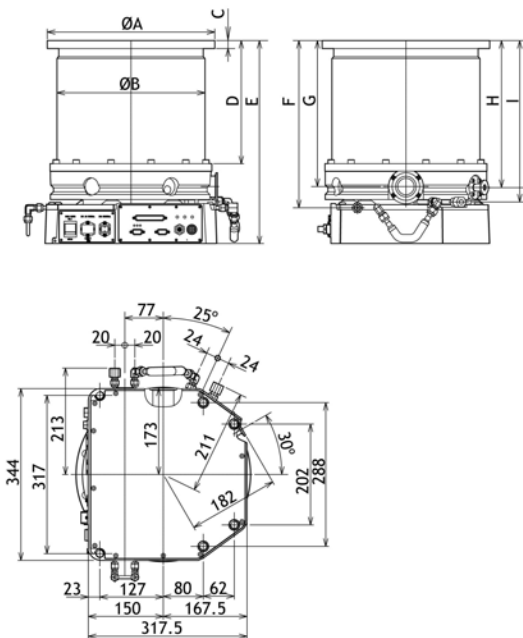


The STP-iXA2206 series magnetically levitated turbomolecular pump provides industry-leading performance and incorporates a small power supply into the onboard control unit – the latest technology of the well-established STP-iXA2205 series. The height of the pump is equal to the STP-A2203C and is also equal to the height of the STP-iXA2205 series without its power supply (iPS-1200). This fully integrated product offers easy installation and a small footprint as an all-in-one solution for all application tools.

## Features & Benefits

- Compact design including a fully integrated controller
- Innovative, self-sensing magnetic bearing system
- Digital 5-axis control
- Vibration levels reduced by 50% compared to the existing turbo pumps
- Can be configured to run corrosive processes

## Dimensions

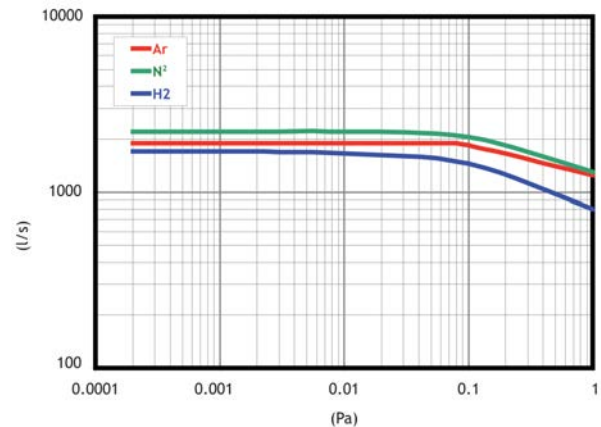


Inlet port/flange	VG250	ISO250F	ICF305
ØA	350	335	305
ØB	296	296	296
C	18	16	28
D	235	245	275
E	395	405	435
F	312	322	352
G	281	291	321
H	283	293	323
I	322	332	322

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminium), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping and station

## Performance Curves





## Technical Data

Inlet flange size	ISO250F/VG250/ICF305
Backing port size	KF40
Pump speed N <sub>2</sub> /Ar	2200/1900 ls <sup>-1</sup>
Compression ratio N <sub>2</sub> /H <sub>2</sub>	$>10^8 / 1 \times 10^4$
Ultimate pressure	$10^{-7}$ Pa ( $10^{-9}$ Torr)
Allowable backing pressure	266 Pa (2 Torr)
Max gas flow N <sub>2</sub> * (water cooled only)	3000 sccm ( $5.07 \text{ Pam}^3 \text{ s}^{-1}$ )
Max gas flow Ar * (water cooled only)	1400 sccm ( $2.36 \text{ Pam}^3 \text{ s}^{-1}$ )
Rated speed	27000 rpm
Run-up time to 90% rated speed	<8 minutes
Mounting position	Any orientation
Input voltage	200-240 V
Max input power (without TMS)	1200 VA
Weight	62 kg

\* The maximum gas flow is applicable under conditions that N<sub>2</sub> or Ar gas is pumped continuously with water cooling temperature between 15-25 °C and the backing pump (10,000 l/min size) is used. It is changed on condition.

## Ordering Information

Product Description	Order No.
STP-iXA2206C ISO250F	YT810Z010
STP-iXA2206C VG250	YT810Z020
STP-iXA2206C DN250CF	YT810Z030
STP-iXA2206C ISO250F with Profibus	YT810Z040
Accessories & Spares	Order No.
iDT-001 Display unit	YT63U1Z30
Power Cable 10M	PT35Y0A00
Power Cable 15m	B75030430
Power Cable 5m	B75030020

# STP-iXA3306C Turbomolecular vacuum pump



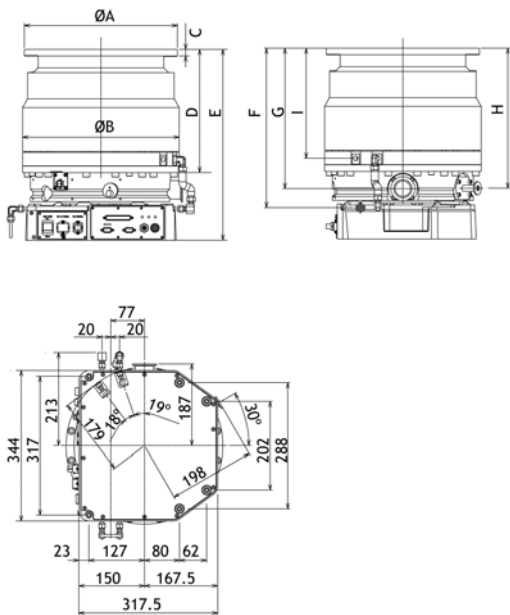
The STP-iXA3306 series magnetically levitated turbomolecular pump provides industry-leading performance and incorporates a small power supply into the onboard control unit – the latest technology of the well-established STPiXA3305 series.

The height of the pump is equal to the STP-XA2703/XA3203 and is also equal to the height of the STP-iXA3305 series without its power supply (iPS-1200). This fully integrated product offers easy installation and a small footprint as an all-in-one solution for all application tools.

## Features & Benefits

- Compact design including a fully integrated controller
- Innovative, self-sensing magnetic bearing system
- Digital 5-axis control
- Vibration levels reduced by 50% compared to the existing turbo pumps
- Can be configured to run corrosive processes

## Dimensions

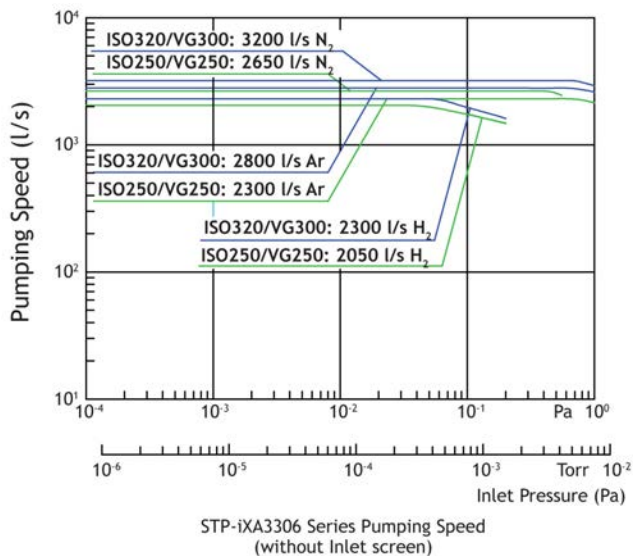


Inlet portflange	VG250	ISO250F	VG300	ISO320F	ICF305	ICF356
ØA	350	335	400	425	305	356
ØB	358	358	358	358	358	358
C	15	15	18	20	28	28.5
D	281	281	242	242	286	281
E	435	435	396	396	440	435
F	363	363	325	325	368	364
G	320	320	282	282	325	321
H	319	319	281	281	324	320
I	251	251	212	212	256	251

## Applications

- Plasma etch (chlorine, fluorine and bromine chemestries) for metal (aluminium), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping and station

## Performance Curves



## Technical Data

Inlet flange size	ISO250F / VG250 / ICF305
Backing port size	KF40
Pumping speed N <sub>2</sub>	2650 ls <sup>-1</sup>
Pumping speed Ar	2300 ls <sup>-1</sup>
Compression ratio N <sub>2</sub> /H <sub>2</sub>	$>10^8 / 2 \times 10^3$
Ultimate pressure	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Allowable backing pressure	266 Pa (2 Torr)
Max gas flow N <sub>2</sub> *(water cooled only)	4000 sccm (6.76 Pam <sup>3</sup> s <sup>-1</sup> )
Max gas flow Ar *(water cooled only)	2100 sccm (3.55 Pam <sup>3</sup> s <sup>-1</sup> )
Rated speed	27700 rpm
Starting time	<10 minutes
Mounting position	Any orientation
Input voltage	200-240 V
Max input power without TMS	1500 VA
Max input power with TMS	1800 VA
Weight	80 kg

\* The maximum gas flow is applicable under conditions that N<sub>2</sub> or Ar gas is pumped continuously with water cooling temperature under 25° C and the backing pump (10,000 l/min size) is used. It is changed on condition.

## Ordering Information

Product Description	Order No.
STP-iXA3306C ISO250F	YT820Z020
STP-iXA3306C VG250	YT820Z030
STP-iXA3306C ISO320F	YT820Z040
STP-iXA3306C VG300	YT820Z050
STP-iXA3306C ISO250F with Profibus	YT820Z060
STP-iXA3306C ISO320F with Profibus	YT820Z070
Accessories & Spares	Order No.
iDT-001 Display unit	YT63U1Z30
Power Cable 5m	B75030020
Power Cable 10M	PT35Y0A00
Power Cable 15m	B75030430

# STP301 Turbomolecular Vacuum Pump



Edwards STP301 is for use in electron microscopes and semiconductor applications. Edwards rotor technology gives class-leading performance for maximum process flexibility. The STP301 has been approved for use by major equipment manufacturers in the scientific instrument, semiconductor and magnetic media industries.

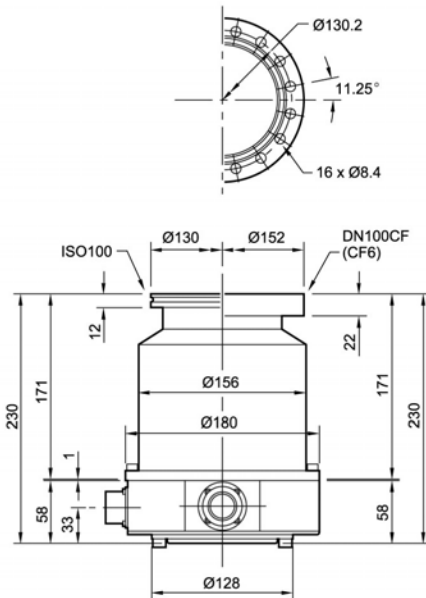
This STP pump is supplied with an inlet screen.

For a complete installation order an STP pump, a controller, a connection cable and power cable.

## Features & Benefits

- Advanced rotor technology
- Maximized process flexibility
- Oil free
- Low vibration
- High reliability

## Dimensions

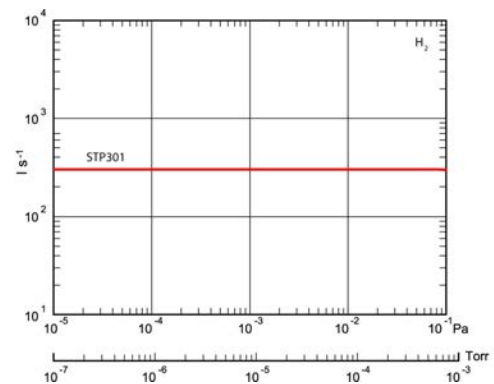
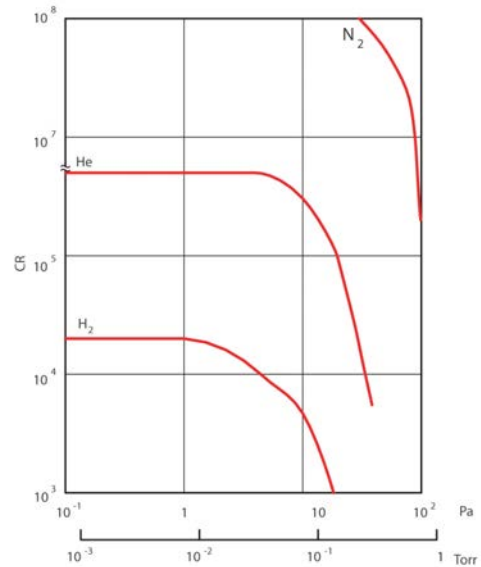


A Electrical connector B Outlet port C Purge port

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	ISO100, CF100
Outlet port	KF25
Pumping Speed	
N <sub>2</sub>	300 ls <sup>-1</sup>
H <sub>2</sub>	300 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>2 x 10 <sup>4</sup>
Ultimate pressure with bake out heating (VG/ISO flange)	6.5 x 10 <sup>-6</sup> Pa (5 x 10 <sup>-8</sup> Torr)
Ultimate pressure with bake out heating (ICF flange)	10 <sup>-8</sup> Pa (10 <sup>-10</sup> Torr)
Maximum allowable inlet pressure (ambient cooled)	0.066 Pa (5 x 10 <sup>-4</sup> Torr)
Max continuous outlet pressure (ambient cooled)	13 Pa (0.1 Torr)
Rated speed	48000 rpm
Starting time	3 min
Maximum inlet flange temperature	120 °C
Input voltage	100 to 120 (± 10%) V a.c. or 200 to 240 (± 10%) V a.c.
Power consumption at start up	0.55 kVA
Pump weight	11 kg
Controller weight	7 kg

## Ordering Information

Product Description	Order No.
STP301 ISO100 Inlet KF25 Outlet	B74830020
STP301 DN100CF Inlet	B74831010
STP301C ISO100 inlet KF25 outlet	B74871000
STP301C ISO100 Inlet	B74871010
STP301C ISO100 inlet KF40 outlet	B74872000
STP301C DN100CF Inlet	B74881010
Accessories & Spares	Order No.
SCU-21 Control unit	PT21Z0Z04
STP301/451 Water Cooling Coil	YT21CA001
STP301/451/603/1003 Air Cooler 100-120 VAC	YT011A003
STP301/451/603/1003 Air Cooler 200-240 VAC	YT011A005
STP straight connection cable, 3m	B70700010
STP straight connection cable, 5m	B70700000
Connection cable, 12m	PT21Y0B08
Type B P/Cab 3M UK Plug	A50505010
Type B P/Cab 3M Europe Plug	A50506010
Type B P/Cab 3M Ring Terminals	B70700090
Type B P/Cab 5M Ring Terminals	B70700040



# STP-L301 Turbomolecular Vacuum Pump



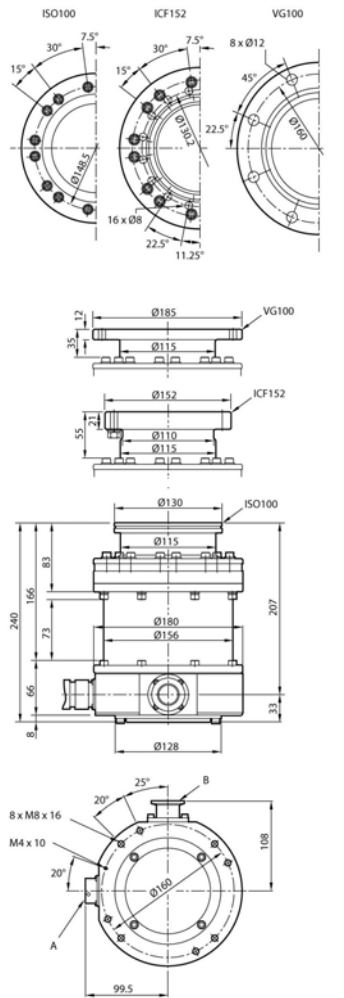
Edwards corrosion resistant STP-L301(C) is for use in electron microscopes and semiconductor applications. Edwards rotor technology gives class-leading performance for maximum process flexibility.

The STP-L301(C) has been approved for use by major equipment manufacturers in the scientific instrument, semiconductor and magnetic media industries.

## Features & Benefits

- Advanced rotor technology
- Maximized process flexibility
- Oil free
- Low vibration
- High reliability

## Dimensions

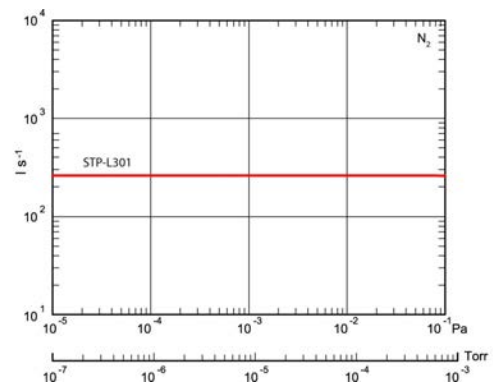
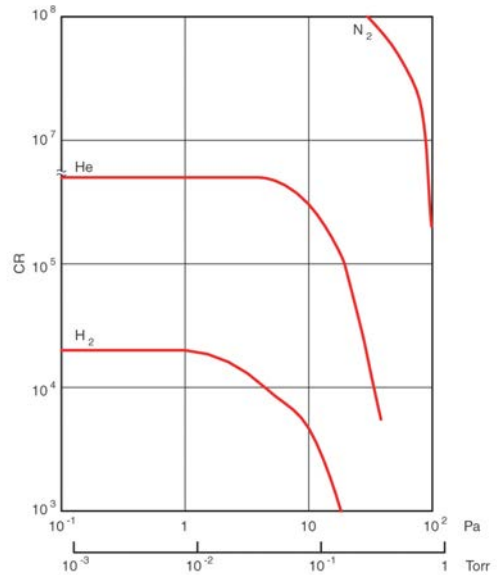


A Connector B Outlet port

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	ISO100, CF100
Outlet port	KF25
Purge port	KF10
Pumping Speed	
N <sub>2</sub>	260 ls <sup>-1</sup>
H <sub>2</sub>	290 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
He	5 x 10 <sup>5</sup>
H <sub>2</sub>	2 x 10 <sup>4</sup>
Ultimate pressure with bake out heating (VG/ISO flange)	6.5 x 10 <sup>-6</sup> Pa (5 x 10 <sup>-8</sup> Torr)
Ultimate Pressure with bake out heating (ICF flange)	10 <sup>-8</sup> Pa (10 <sup>-10</sup> Torr)
Max allowable inlet pressure ambient cooled	6.7 x 10 <sup>-2</sup> Pa (5 x 10 <sup>-4</sup> Torr)
Max continuous outlet pressure ambient cooled	13 Pa (0.1 Torr)
Rated speed	48000 rpm
Starting time	3 min
Maximum inlet flange temperature	120 °C
Input voltage	100 to 120 (± 10) V a.c. or 200 to 240 (± 10) V a.c.
Power consumption at start up	0.55 kVA
Pump weight	13 kg
Controller weight	7 kg

## Ordering Information

Product Description	Order No.
STP-L301C ISO100 Inlet	B75800010
STP-L301 ISO100 Inlet	B75800090
STP-L301 DN100CF Inlet	PT470Z000
STP-L301C DN100CF Inlet	PT47AZ030
Accessories & Spares	Order No.
SCU-21 Control unit	PT21Z0Z04
STP301/451 Water Cooling Coil	YT21CA001
STP301/451/603/1003 Air Cooler 100-120 VAC	YT011A003
STP301/451/603/1003 Air Cooler 200-240 VAC	YT011A005
STP straight connection cable, 3m	B70700010
STP straight connection cable, 5m	B70700000
Connection cable, 12m	PT21Y0B08
Type B P/Cab 3M Europe Plug	A50506010
Type B P/Cab 3M Ring Terminals	B70700090
Type B P/Cab 3M UK Plug	A50505010
Type B P/Cab 5M Ring Terminals	B70700040

# STP603 Turbomolecular Vacuum Pump

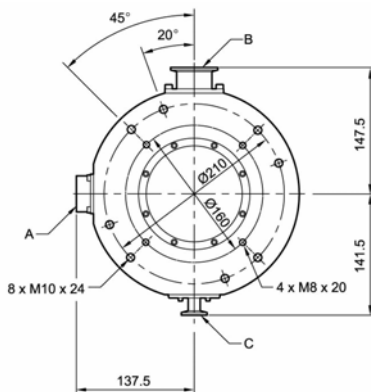
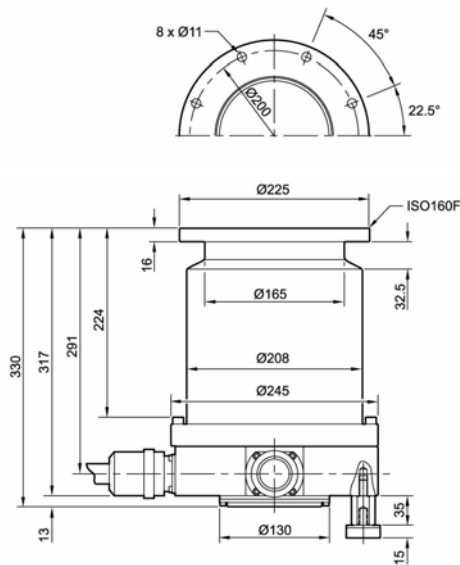


Edwards STP603 is a new turbomolecular pump for use in the most advanced semiconductor applications. Edwards rotor technology gives class-leading performance for maximum process flexibility. This pump has been approved for use by major equipment manufacturers in the semiconductor and magnetic media industries.

## Features & Benefits

- Advanced rotor technology
- Maximized process flexibility
- Oil free
- Low vibration
- High reliability

## Dimensions

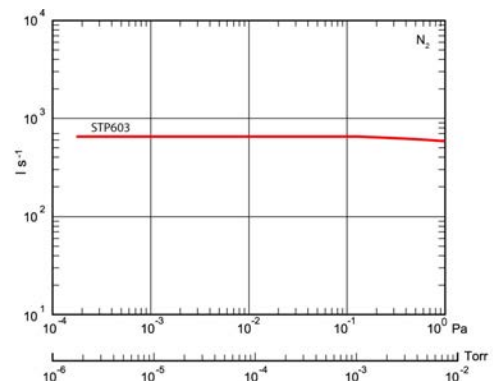
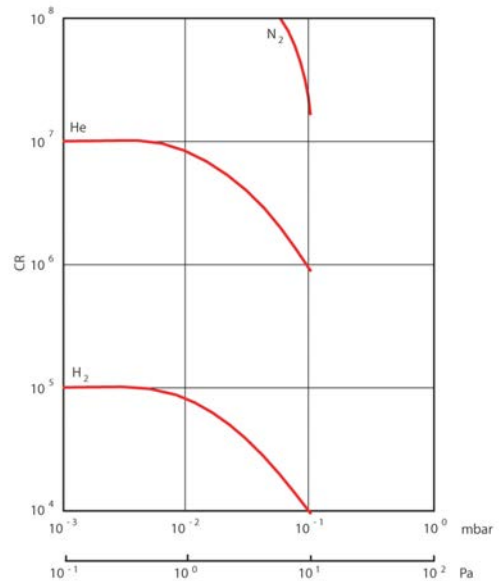


A Electrical connector    B Outlet port    C Purge port

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	ISO160F
Outlet port	KF40
Pumping Speed	
N <sub>2</sub>	650 ls <sup>-1</sup>
H <sub>2</sub>	550 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>10 <sup>5</sup>
Ultimate pressure with bake out heating (VG/ISO flange)	6.5 x 10 <sup>-6</sup> Pa (5 x 10 <sup>-8</sup> Torr)
Ultimate Pressure with bake out heating (ICF flange)	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Max continuous outlet pressure	13 Pa (0.1 Torr)
Rated speed	35000 rpm
Starting time	6 min
Max inlet flange temp	120 °C
Input voltage	100 to 120 (± 10) V a.c. or 200 to 240 (± 10) V a.c.
Power consumption at start up	0.8 kVA
Pump weight	31 kg
Controller weight	9 kg

## Ordering Information

Product Description	Order No.
STP603 ISO160F Inlet	YT39B0030
STP603C ISO160F Inlet	YT39B0110
STP603 DN160CF Inlet	YT390Z005
STP603C DN160CF Inlet	YT39AZ002
Accessories & Spares	Order No.
SCU-800 Control unit	YT49Z2Z00
Water cooling coil	YT170A001
STP301/451/603/1003 Air Cooler 100-120 VAC	YT011A003
STP301/451/603/1003 Air Cooler 200-240 VAC	YT011A005
Vibration Isolator ISO200-K	B58061000
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
Connection Cable 3m	B75130050
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060

# STP1003 Turbomolecular Vacuum Pump

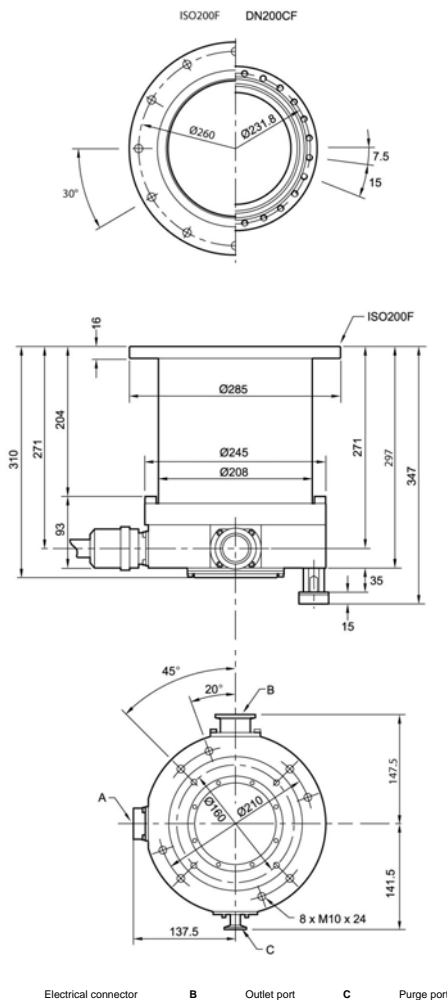
Edwards corrosion resistant STP1003C is a new turbomolecular pump for use in the most advanced of semiconductor applications. Edwards rotor technology gives class-leading performance for maximum process flexibility. This pump has been approved for use by major equipment manufacturers in the semiconductor and magnetic media industries.



## Features & Benefits

- Advanced rotor technology
- Maximized process flexibility
- Oil free
- Low vibration
- High reliability

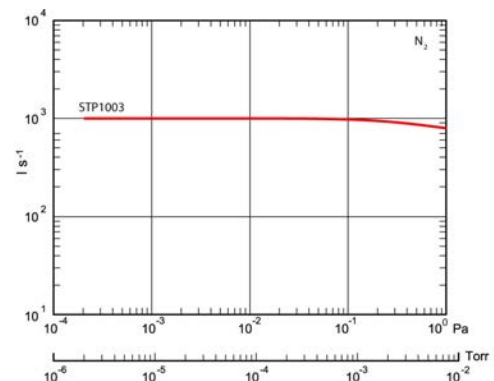
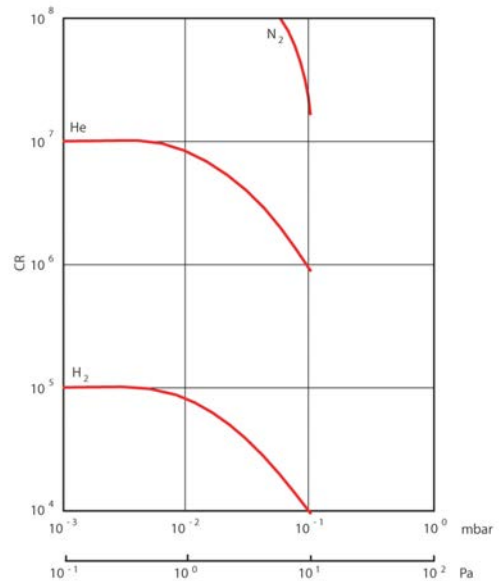
## Dimensions



## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves





## Technical Data

Inlet flange	ISO200F
Outlet port	KF40
Purge port	KF10
Pumping Speed	
N <sub>2</sub>	1000 ls <sup>-1</sup>
H <sub>2</sub>	800 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>10 <sup>5</sup>
Ultimate pressure with bake out heating (VG/ISO flange)	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Ultimate pressure with bake out heating (ICF flange)	10 <sup>-8</sup> Pa (10 <sup>-10</sup> Torr)
Max continuous outlet pressure	13 Pa (0.1 Torr)
Rated speed	35000 rpm
Starting time	6 min
Max inlet flange temp	120 °C
Input voltage	100 to 120 (± 10) V a.c. or to 240 (± 10) V a.c.
Power consumption at Start up	0.8 kVA
Pump weight	31 kg
Controller weight	9 kg

## Ordering Information

Product Description	Order No.
STP1003C ISO200F Inlet	YT39B0130
STP1003 ISO200F Inlet	YT390Z001
STP1003C DN200CF Inlet	PT39AZ003
STP1003 DN200CF Inlet	YT39B0010
Accessories & Spares	Order No.
SCU-800 Control unit	YT49Z2Z00
Water cooling coil	YT170A001
STP301/451/603/1003 Air Cooler 100-120 VAC	YT011A003
STP301/451/603/1003 Air Cooler 200-240 VAC	YT011A005
Vibration Isolator ISO200-K	B58061000
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
Connection Cable 3m	B75130050
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060

# STPH301C Turbomolecular Vacuum Pump

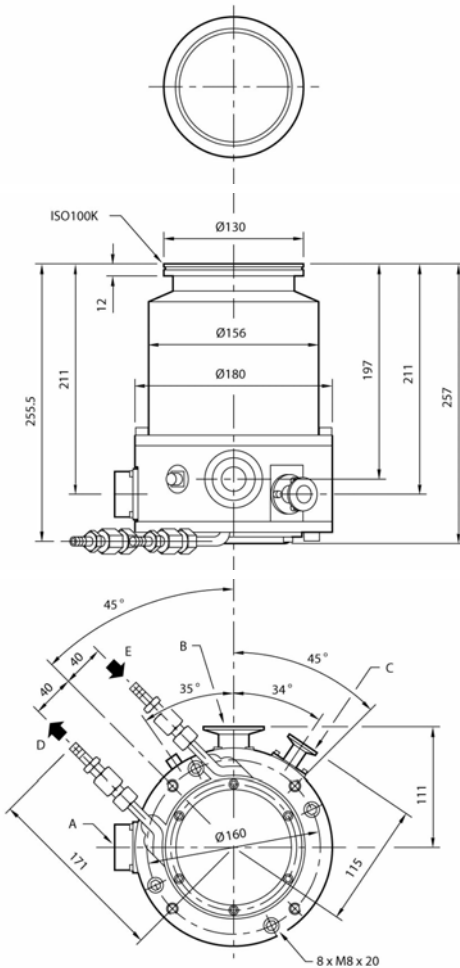


Edwards high performance STPH301C turbomolecular pump has been designed for use in the harshest of semiconductor applications. The pumps field proven reliability and class-leading performance give maximum process flexibility. The STPH301C has been approved for use by major equipment manufacturers in the semiconductor and magnetic media industries.

## Features & Benefits

- Advanced rotor technology
- Higher gas throughput
- Maximized process flexibility
- Oil free
- Low vibration

## Dimensions

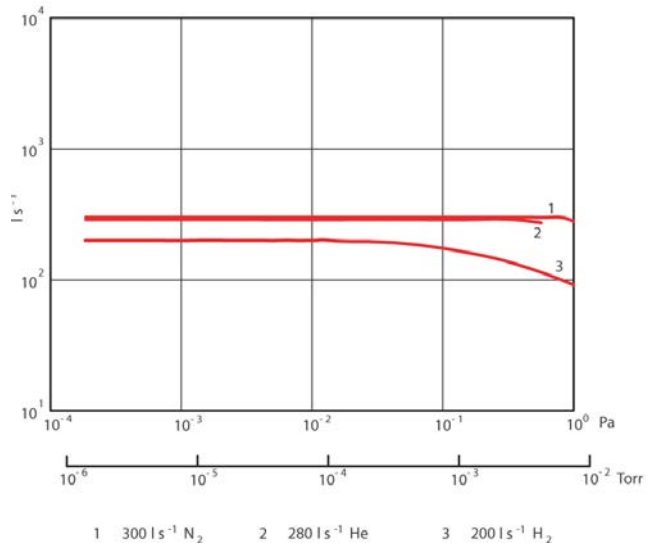


A Electrical connector    B Outlet port    C Purge port  
 D Cooling water out    E Cooling water in

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	ISO100K
Outlet port	KF40
Purge port	KF10
Water cooling fitting	PT1/4
Pumping Speed	
N <sub>2</sub>	300 ls <sup>-1</sup>
H <sub>2</sub>	200 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	10 <sup>3</sup>
Ultimate pressure with bake out heating	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Max continuous outlet pressure	660 Pa (5 Torr)
Max Nitrogen throughput	2500 sccm
Rated speed	48000 rpm
Starting time	4 min
Max inlet flange temperature	120 °C
Input voltage	100 to 120 (± 10) V a.c. or 200 to 240 (± 10) V a.c.
Power consumption	0.6 kVA
Pump weight	15 kg
Controller weight	9 kg

## Ordering Information

Product Description	Order No.
STPH301C ISO100K Inlet	B71901010
STPH301C DN100CF Inlet	YT340Z004
STPH301CV TMS ISO100F Inlet	YT3416001
STPH301CV TMS DN100CF Inlet	YT3416005
Accessories & Spares	Order No.
SCU-800 Control unit	YT49Z2Z00
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
Connection Cable 3m	B75130050
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060
TMS Connection Cable Kit	PT330V000
TMS Connection Cable Kit	PT330V001
TMS Connection Cable Kit	PT330V002

# STPH451 Turbomolecular Vacuum Pump

Edwards high performance STPH451C turbomolecular pump has been designed for use in the harshest of semiconductor applications. The pumps field proven reliability and class-leading performance give maximum process flexibility. The STPH451C has been approved for use by major equipment manufacturers in the semiconductor and magnetic media industries.



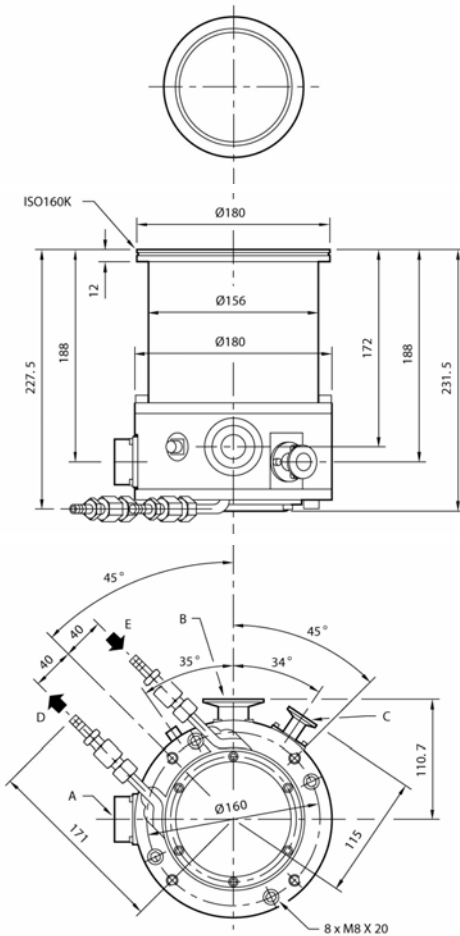
## Features & Benefits

- Advanced rotor technology
- Higher gas throughput
- Maximized process flexibility
- Oil free
- Low vibration

## Applications

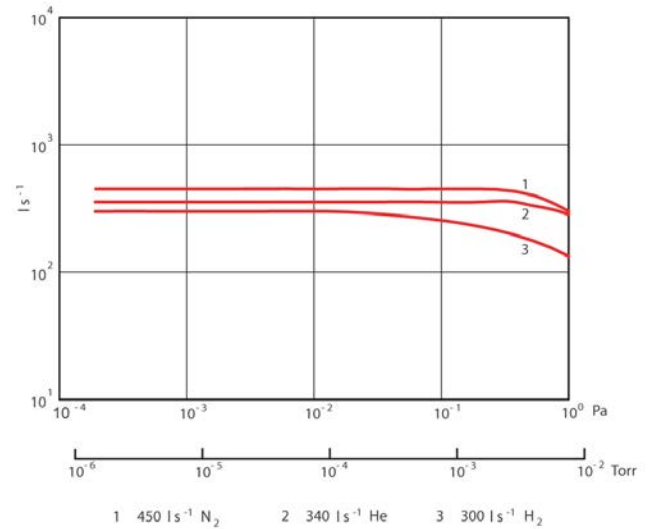
- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Dimensions



- |   |                      |   |                  |   |            |
|---|----------------------|---|------------------|---|------------|
| A | Electrical connector | B | Outlet port      | C | Purge port |
| D | Cooling water out    | E | Cooling water in |   |            |

## Performance Curves



## Technical Data

Inlet flange	ISO160K
Outlet port	KF40
Purge port	KF10
Water cooling fitting	PT1/4
Pumping Speed	
N <sub>2</sub>	450 ls <sup>-1</sup>
H <sub>2</sub>	300 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	10 <sup>3</sup>
Ultimate pressure with bake out heating	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Max continuous outlet pressure	660 Pa (5 Torr)
Max Nitrogen throughput	2500 sccm
Rated speed	48000 rpm
Starting time	4 min
Max inlet flange temperature	120 °C
Input voltage	100 to 120 (± 10) V a.c. or 200 to 240 (± 10) V a.c.
Power consumption	0.6 kVA
Pump weight	15 kg
Controller weight	9 kg

## Ordering Information

Product Description	Order No.
STPH451C ISO160K Inlet	B71901001
STPH451C DN160CF Inlet	PT340Z005
STPH451CV TMS ISO160F Inlet	YT3416007
STPH451CV TMS DN160CF Inlet	YT3416006
Accessories & Spares	Order No.
SCU-800 Control unit	YT49Z2Z00
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
Connection Cable 3m	B75130050
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060
TMS Connection Cable Kit	PT330V000
TMS Connection Cable Kit	PT330V001
TMS Connection Cable Kit	PT330V002



# STPA803C Turbomolecular Vacuum Pump

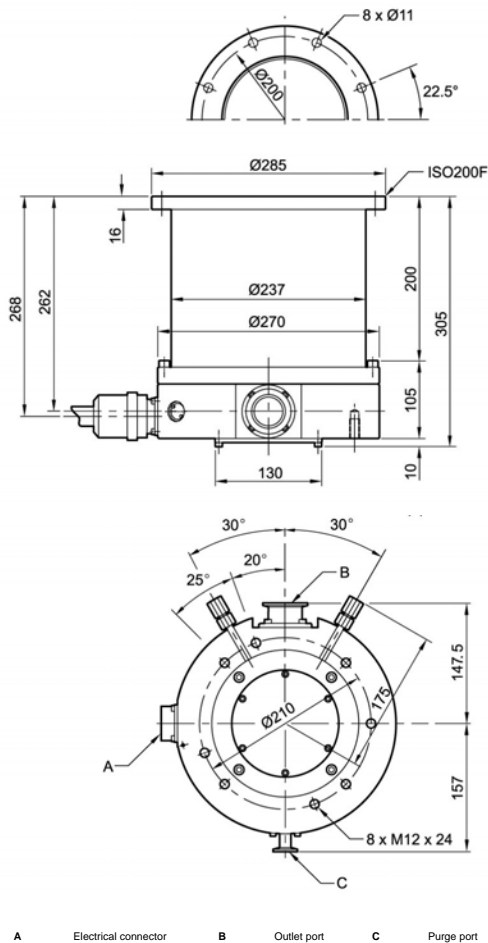


Edwards STPA803C turbomolecular pump is designed for use in semiconductor applications. Edwards advanced rotor technology gives class-leading performance for maximum process flexibility. The STPA803C has been approved for use by major equipment manufacturers in the semiconductor and magnetic media industries.

## Features & Benefits

- Advanced rotor technology
- Maximized process flexibility
- Oil free
- Low vibration
- High reliability

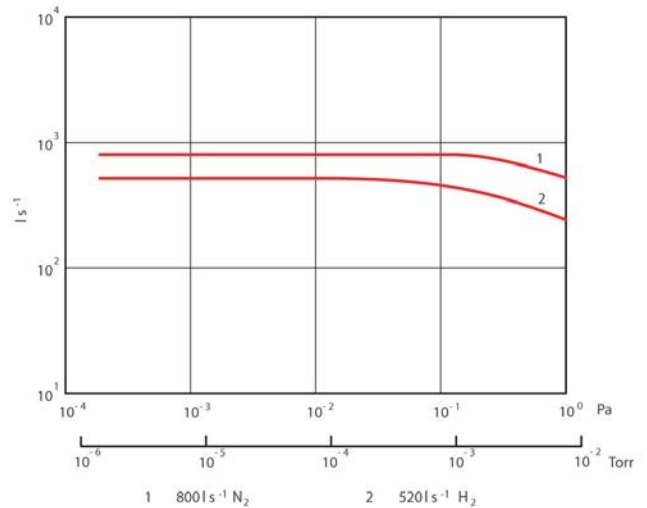
## Dimensions



## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	ISO160F
Outlet port	KF40
Purge port	KF10
Water cooling fitting	PT1/4
Pumping Speed	
N <sub>2</sub>	800 ls <sup>-1</sup>
H <sub>2</sub>	520 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	10 <sup>3</sup>
Ultimate pressure with bake out heating	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Max continuous outlet pressure	270 Pa (2 Torr)
Max Nitrogen throughput	1500 sccm
Rated speed	32500 rpm
Starting time	7 min
Max inlet flange temperature	120 °C
Input voltage	200 to 240 (± 10) V a.c.
Power consumption	0.85 kVA
Pump weight	39 kg
Controller weight	9 kg

## Ordering Information

Product Description	Order No.
STPA803C ISO160F Inlet	YT36B0040
STPA803C DN160CF Inlet	YT36B0010
STPA803CV (TMS) ISO160F Inlet	YT3626000
STPA803CV (TMS) DN160CF Inlet	YT3626003
Accessories & Spares	Order No.
SCU-800 Control unit	YT49Z2Z00
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060
TMS Connection Cable Kit	PT330V000
TMS Connection Cable Kit	PT330V001
TMS Connection Cable Kit	PT330V002

# STPA1303C Turbomolecular Vacuum Pump

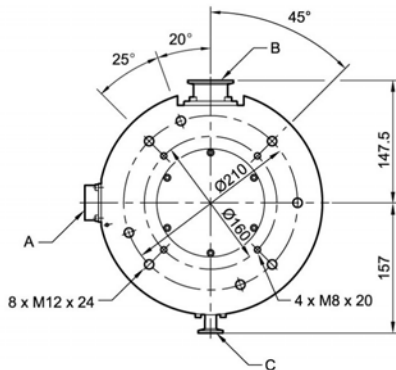
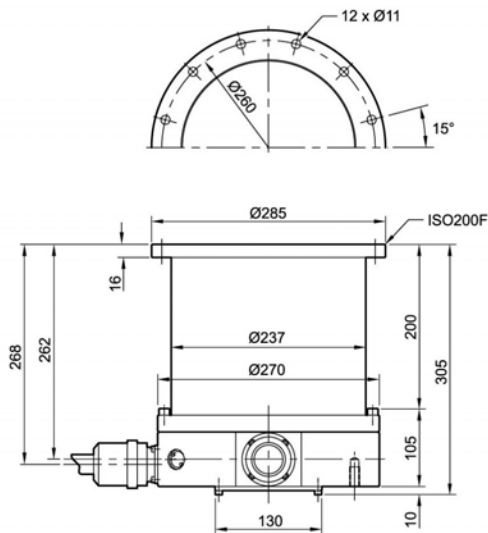


Edwards STPA1303C is a turbomolecular pump designed for use in semiconductor applications. Edwards advanced rotor technology gives class-leading performance for maximum process flexibility. The STPA1303C has been approved for use by major equipment manufacturers in the semiconductor and magnetic media industries.

## Features & Benefits

- Advanced rotor technology
- Higher gas throughput
- Maximized process flexibility
- Oil free
- Low vibration

## Dimensions

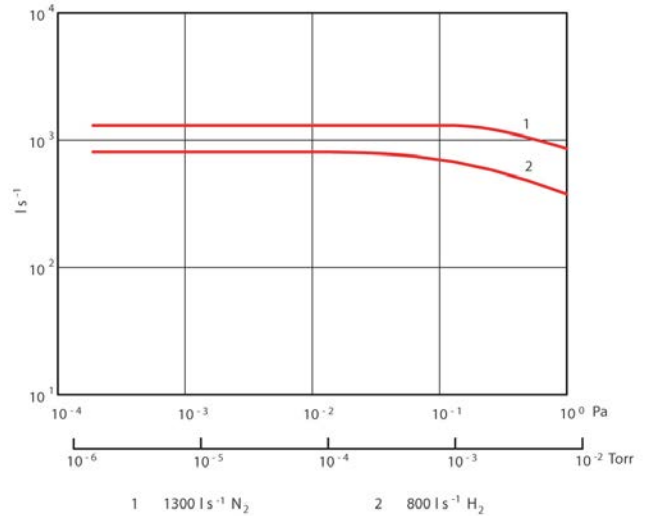


A Electrical connector    B Outlet port    C Purge port

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	ISO200F
Outlet port	KF40
Purge port	KF10
Water cooling fitting	PT1/4
Pumping Speed	
N <sub>2</sub>	1300 ls <sup>-1</sup>
H <sub>2</sub>	800 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	10 <sup>3</sup>
Ultimate pressure with bake out heating	10 <sup>-7</sup> Pa (10 <sup>-9</sup> Torr)
Maximum continuous outlet pressure *	270 Pa (2 Torr)
Maximum Nitrogen throughput *	1500 sccm
Rated speed	32500 rpm
Starting time	7 min
Maximum inlet flange temperature	120 °C
Input voltage	200 to 240 (± 10) V a.c.
Power consumption	0.85 kVA
Pump weight	39 kg
Controller weight	9 kg

\* Water cooled

## Ordering Information

Product Description	Order No.
STPA1303C ISO200F Inlet	B71802020
STPA1303C DN200CF Inlet	YT36B0030
STPA1303C TMS ISO200F Inlet	YT3626005
STPA1303C TMS DN200CF Inlet	YT3626004
Accessories & Spares	Order No.
SCU-800 Control unit	YT49Z2Z00
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
Connection Cable 3m	B75130050
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060
TMS Connection Cable Kit	PT330V000
TMS Connection Cable Kit	PT330V001
TMS Connection Cable Kit	PT330V002

# STPA1603C Turbomolecular Vacuum Pump

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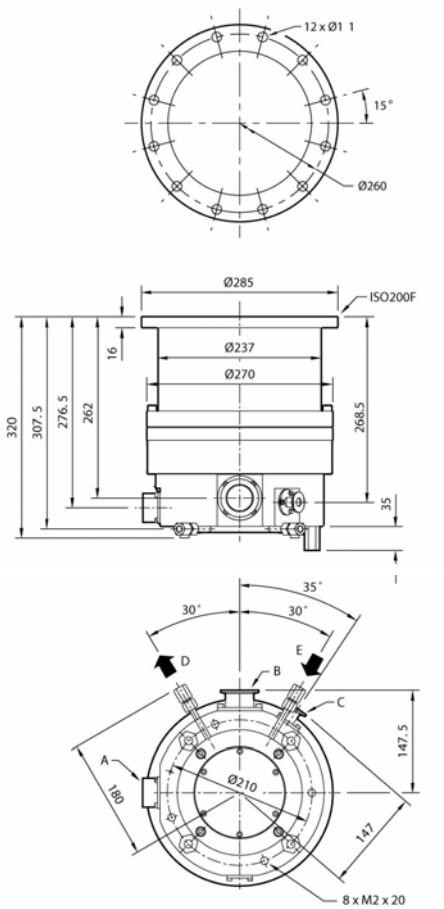


The small and powerful Edwards STPA1603C turbo-molecular pump has been designed using Edwards advanced rotor technology. This provides high throughput, maximum reliability and class leading performance which is demanded by the latest generation of semiconductor processes. Its half rack controller and compact design provide considerable space saving, whilst its advanced deposition reduction system gives improved reliability and performance. The STPA1603C has been qualified on the latest 200 mm etch tools as well as on new generation 300 mm oxide etch processes.

## Features & Benefits

- Advanced rotor design
- Increased performance
- Higher gas throughput
- High reliability
- Maintenance free

## Dimensions

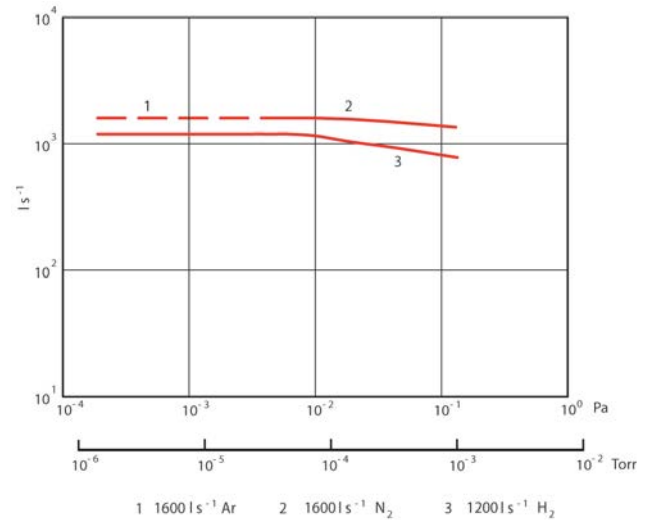


- |   |                      |   |                  |   |            |
|---|----------------------|---|------------------|---|------------|
| A | Electrical connector | B | Outlet port      | C | Purge port |
| D | Cooling water out    | E | Cooling water in |   |            |

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves





## Technical Data

Inlet flange	ISO200F
Outlet port	KF40
Purge port	KF16
Water cooling fitting	PT1/4
Pumping Speed	
N <sub>2</sub>	1600 ls <sup>-1</sup>
H <sub>2</sub>	1200 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>7 x 10 <sup>3</sup>
Ultimate pressure with bake out heating	10 <sup>-7</sup> Pa
Max allowable backing pressure	266 Pa (2 Torr)
Max Nitrogen throughput	2500 sccm
Rated speed	36500 rpm
Starting time	7 min
Mounting position	Any
Water cooling flow	2 lmin <sup>-1</sup>
Temperature	5-25 °C
Pressure	0.3 MPa
Recommended purge gas flow	20 sccm
Input voltage	200 to 240 (± 10) V a.c.
Power consumption	0.85 kVA
Pump weight	35 kg
Controller weight	9 kg

## Ordering Information

Product Description	Order No.
STPA1603C ISO200F Inlet	B75100010
STPA1603C DN200CF Inlet	B75100100
STPA1603CV TMS ISO200F Inlet	YT4616004
STPA1603CV TMS DN200CF Inlet	YT4616005
Accessories & Spares	Order No.
SCU-800 Control unit	YT49Z2Z00
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060

# STPA2203C Turbomolecular Vacuum Pump

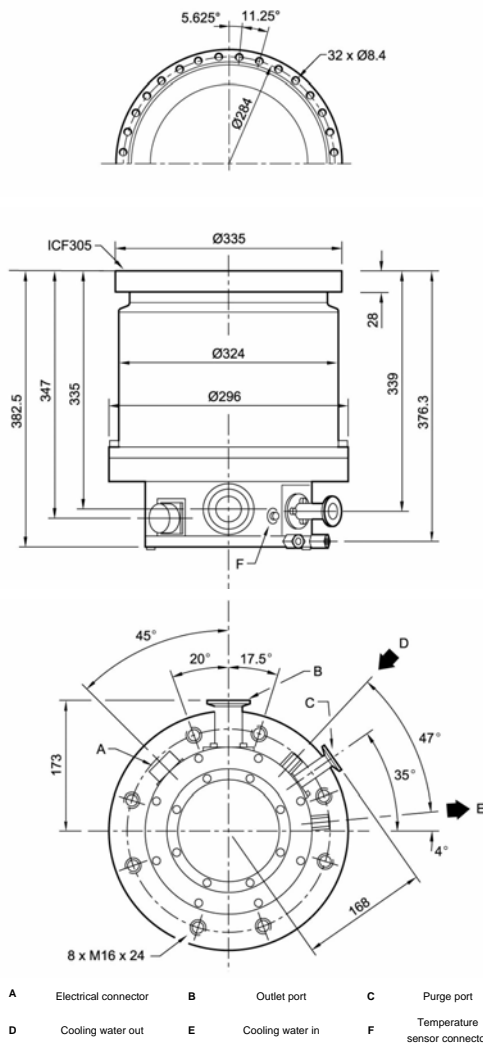


Edwards STPA2203C is a new turbomolecular pump designed for use in semiconductor applications. It has advanced rotor technology that gives class-leading performance for maximum process flexibility. A new half rack controller gives additional space savings and incorporates d.c. drive technology for battery-free operation. The STPA2203C has been approved for use by major etch, ion implant and deposition equipment manufacturers in the semiconductor and magnetic media industries.

## Features & Benefits

- Advanced rotor design
- Higher gas throughput
- Maximized process flexibility
- 5 Axis Magnetic Suspension System
- Zero contamination

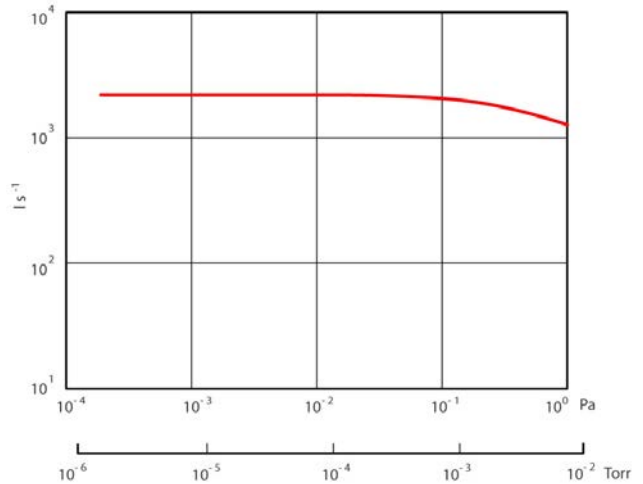
## Dimensions



## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	ISO250F
Outlet port	KF40
Purge port	KF10
Water cooling fitting	PT1/4
Pumping Speed	
N <sub>2</sub>	2200 ls <sup>-1</sup>
H <sub>2</sub>	1700 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>2.5 x 10 <sup>4</sup>
Ultimate pressure	10 <sup>-6</sup> Pa (10 <sup>-8</sup> Torr)
Maximum allowable backing pressure	400 Pa (3 Torr)
Maximum Nitrogen throughput	1500 sccm
Rated speed	27000 rpm
Starting time	7 min
Mounting position	Any
Water cooling flow	2 lmin <sup>-1</sup>
Water cooling temperature	5-25 °C
Pressure	0.3 MPa
Recommended purge gas flow	20 sccm
Input voltage	200 to 240 (± 10) V a.c.
Power consumption	1.5 kVA
Pump weight	61 kg
Controller weight	12 kg

## Ordering Information

Product Description	Order No.
STPA2203C ISO250F Inlet	YT4V0Z002
STPA2203C DN250CF Inlet	YT4V0Z003
STPA2203CV TMS ISO250F Inlet	YT4V66001
STPA2203CV TMS DN250CF Inlet	YT4V66002
Accessories & Spares	Order No.
SCU-1600 Control unit	YT76Z0Z00
Power Cable 5m	B75030020
Power Cable 10M	PT35Y0A00
STP straight connection cable, 5m	B75030010
STP straight connection cable, 10m	B75030040
5m TMS connection cable kit	PT351V000
10m TMS connection cable kit	PT351V001
15m TMS connection cable kit	PT351V002

# STP-XA2703 Turbomolecular Pump



The STP-XA2703C turbo pump offers high performance in the process range of high vacuum to 2300 sccm process flow with enhanced throughput for all gases.

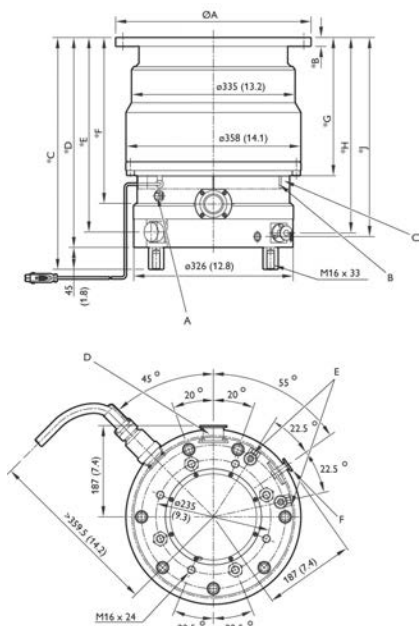
This pump is based on a new platform design offering features to improve thermal management, which enhances performance on harsh processes, increases the maximum process flow capability and reduces the effects of corrosion and deposition.

The outstanding performance is suited to both light and harsh applications, such as semiconductor etch, implant, lithography and LCD processes.

## Features & Benefits

- Advanced rotor design
- Increased H<sub>2</sub>, N<sub>2</sub> and Ar performance
- Improved performance in the process pressure range of high vacuum to 2300 sccm
- Maintenance free
- 5-axis magnetic suspension system

## Dimensions



	VG250	ISO250F	ICF305 (DN250CF)
A	350 (13.8)	335 (13.2)	305 (12.0)
*B	15 (0.6)	15 (0.6)	28 (1.1)
*C	454 (17.9)	454 (17.9)	459 (18.1)
*D	409 (16.1)	409 (16.1)	414 (16.3)
*E	377.5 (14.9)	377.5 (14.9)	383 (15.1)
*F	319 (12.6)	319 (12.6)	325 (12.8)
*G	262 (10.3)	262 (10.3)	267 (10.5)
*H	379.5 (14.9)	379.5 (14.9)	385 (15.2)
*J	387 (15.2)	387 (15.2)	393 (15.5)

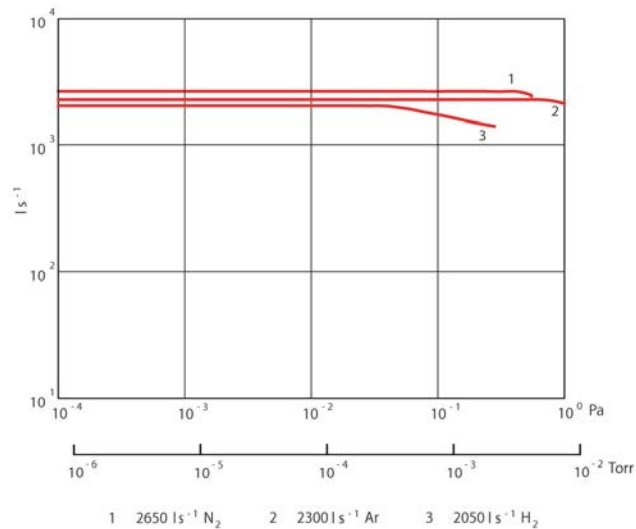
mm (inch)

- A Temperature management system (TMS) sensor
- B TMS Heater (TMS spec only)
- C TMS heater cover (TMS spec only)
- D Outlet port KF40
- E Cooling water port Fc 1/4 ISO
- F Purge port KF10

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves



## Technical Data

Inlet flange	VG250
Pumping Speed	
N <sub>2</sub>	2650 ls <sup>-1</sup>
H <sub>2</sub>	2050 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>6 x 10 <sup>3</sup>
Ultimate pressure	10 <sup>-7</sup> Pa
Max allowable backing pressure	266 Pa
Max allowable gas flow	
N <sub>2</sub> (water cooled)	2300 sccm (3.8 Pam <sup>3</sup> s <sup>-1</sup> )
Ar (water cooled)	1900 sccm (3.2 Pam <sup>3</sup> s <sup>-1</sup> )
Rated speed	27500 rpm
Starting time	8 min
Mounting position	Any orientation
Water cooling Flow	3 lmin <sup>-1</sup>
Water cooling Temperature	5-25 °C (41-77 °F)
Pressure	0.3 MPa
Recommended purge gas flow	50 sccm (8.4 x 10 <sup>-2</sup> Pam <sup>3</sup> s <sup>-1</sup> )
Input voltage	200 to 240 V a.c. (± 10)
Power consumption	1.5 kVA
Pump weight	75 kg (165 lb)
Controller weight	12 kg (26.4 lb)

## Ordering Information

Product Description	Order No.
STP-XA2703C VG250	YT660Z110
STP-XA2703C ISO250	PT660Z140
STP-XA2703C DN250CF	YT6610010
Accessories & Spares	Order No.
SCU-1600 Control unit	YT76Z0Z00
Power Cable 5m	B75030020
Power Cable 10M	PT35Y0A00
STP straight connection cable, 5m	B75030010
STP straight connection cable, 10m	B75030040

# STP-XA3203 Turbomolecular Pump



The STP-XA3203C turbo pump offers high performance in the process range of high vacuum to 2300 sccm process flow with enhanced throughput for all gases.

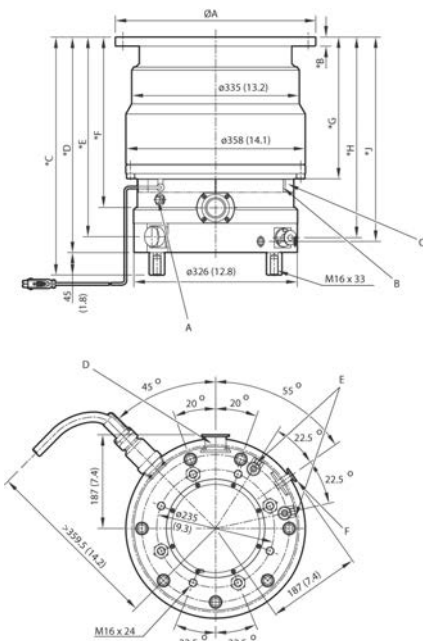
This pump is based on a new platform design offering features to improve thermal management, which enhances performance on harsh processes, increases the maximum process flow capability and reduces the effects of corrosion and deposition.

The outstanding performance is suited to both light and harsh applications, such as semiconductor etch, implant, lithography and LCD processes.

## Features & Benefits

- Advanced rotor design
- Increased H<sub>2</sub>, N<sub>2</sub> and Ar performance
- Improved performance in the process pressure range of high vacuum to 2300 sccm
- Maintenance free
- 5-axis magnetic suspension system

## Dimensions



	VG300	ISO320F	ICF356 (DN320CF)
A	400 (15.8)	425 (16.7)	356 (14.0)
*B	18 (0.7)	20 (0.8)	28.5 (1.1)
*C	415.5 (16.4)	415.5 (16.4)	454.5 (17.9)
*D	370.5 (14.6)	370.5 (14.6)	409.5 (16.1)
*E	339 (13.3)	339 (13.3)	378.5 (14.9)
*F	280.5 (11.0)	280.5 (11.0)	320.5 (12.6)
*G	223.5 (8.8)	223.5 (8.8)	262.5 (10.3)
*H	341 (13.4)	341 (13.4)	380.5 (15.0)
*J	348.5 (13.7)	348.5 (13.7)	388 (15.3)

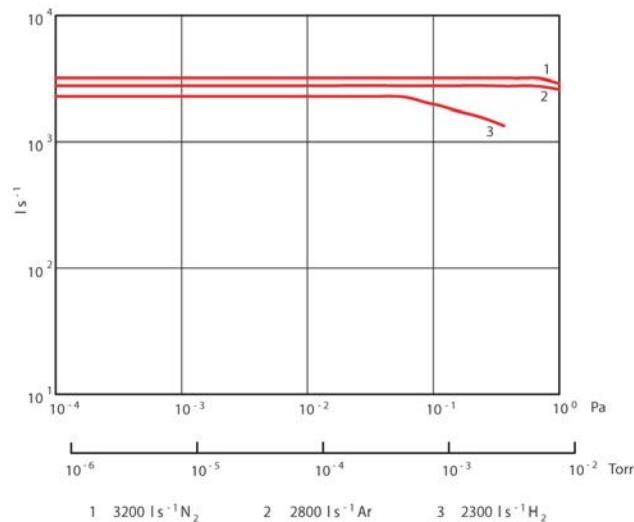
mm (inch)

- A Temperature management system (TMS) sensor
- B TMS Heater (TMS spec only)
- C TMS heater cover (TMS spec only)
- D Outlet port KF40
- E Cooling water port 1/4 ISO
- F Purge port KF10

## Applications

- Plasma etch (chlorine, fluorine and bromine chemistries) for metal (aluminum), tungsten and dielectric (oxide) and polysilicon
- Electron cyclotron resonance (ECR) etch
- Film deposition CVD, PECVD, ECRCVD, MOCVD
- Sputtering
- Ion implantation source, beam line pumping end station

## Performance Curves





## Technical Data

Inlet flange	ISO320F
Pumping Speed	
N <sub>2</sub>	3200 ls <sup>-1</sup>
H <sub>2</sub>	2300 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	>6 x 10 <sup>3</sup>
Ultimate pressure	10 <sup>-7</sup> Pa
Max allowable backing pressure	266 Pa
Max allowable gas flow	
N <sub>2</sub> (water cooled)	2300 sccm (3.8 Pam <sup>3</sup> s <sup>-1</sup> )
Ar (water cooled)	1900 sccm (3.2 Pam <sup>3</sup> s <sup>-1</sup> )
Rated speed	27500 rpm
Starting time	8 min
Mounting position	Any orientation
Water cooling	
Flow	3 lmin <sup>-1</sup>
Temperature	5-25 °C (41-77 °F)
Pressure	0.3 MPa
Recommended purge gas flow	50 sccm (8.4 x 10 <sup>-2</sup> Pam <sup>3</sup> s <sup>-1</sup> )
Input voltage	200 to 240 (± 10) V a.c.
Power consumption	1.5 kVA
Pump weight	80 kg (176 lb)
Controller weight	12 kg (26.4 lb)

## Ordering Information

Product Description	Order No.
STP-XA3203C ISO320F	YT660Z050
STP-XA3203C DN320CF	PT660Z080
STP-XA3203C VG300	YT660Z150
Accessories & Spares	Order No.
SCU-1600 Control unit	YT76Z0Z00
Power Cable 5m	B75030020
Power Cable 10M	PT35Y0A00
STP straight connection cable, 5m	B75030010
STP straight connection cable, 10m	B75030040

# STP-XA4503C Turbomolecular Pump



The STP-XA4503C magnetic bearing turbomolecular pump has a wide process window, from high vacuum, to high flow requirements with enhanced throughput for all gases.

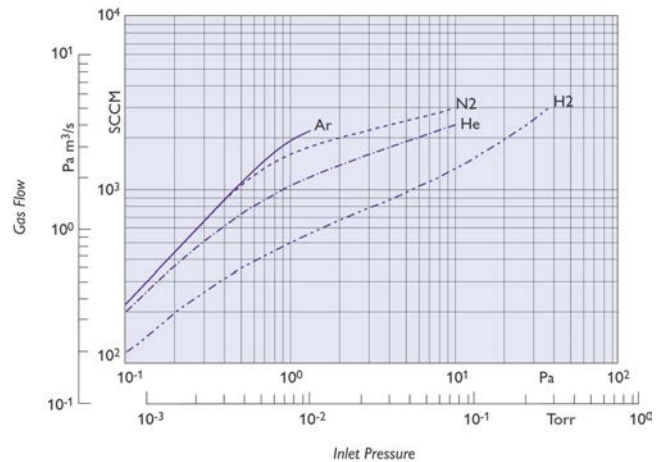
This pump is based on a new design, offering features to improve thermal management, which enhances performance on harsh processes, increases the maximum process flow capability and reduces the effects of corrosion and deposition.

It has been designed to handle light and harsh duty applications, such as etch, implant, lithography and FPD processes.

## Features & Benefits

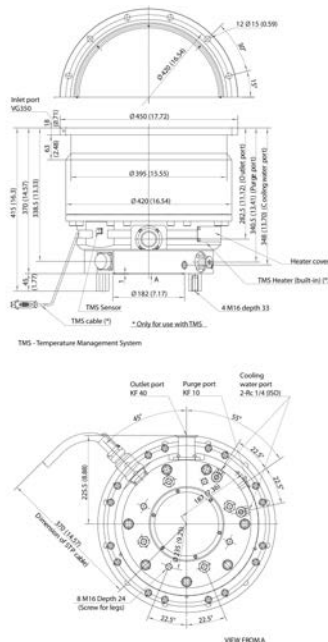
- Advanced Rotor Design
- Increased Argon performance
- Highest pumping speed in its class
- Wide process window
- Higher throughput at lower pressure

## Performance Curves



P-Q characteristics of STP-4503C series  
Inlet port: VG350 / Backing pump: 17000 l/min / With inlet screen

## Dimensions



## Ordering Information

Product Description	Order No.
STP-XA4503C ISO320F Inlet	YT670Z040
Accessories & Spares	Order No.
SCU-1600 Control unit	YT76Z0Z00
STP straight connection cable, 5m	B75030010
STP straight connection cable, 10m	B75030040
Power Cable 5m	B75030020
Power Cable 10M	PT35Y0A00

## Technical Data

Inlet flange size	VF300, ISO320F, VG350
Backing port size	KF40
Pumping speed	
N <sub>2</sub>	3800 to 4300 ls <sup>-1</sup> (dependant on model)
H <sub>2</sub>	2500 ls <sup>-1</sup>
Compression ratio	
N <sub>2</sub>	>10 <sup>8</sup>
H <sub>2</sub>	6 x 10 <sup>3</sup>
Ultimate pressure	10 <sup>-7</sup> Pa / 10 <sup>-9</sup> mbar
Max allowable backing pressure	266 Pa / 2.66 mbar
Max allowable gas flow N <sub>2</sub> (Water cooled only)	2800 sccm / 4.73 Pam <sup>3</sup> s <sup>-1</sup>
Maximum allowable gas flow Ar(Water cooled only)	2150 sccm / 3.63 Pam <sup>3</sup> s <sup>-1</sup>
Rated speed	24000 rpm
Run up time to 90% rated speed	12 minutes
Mounting position	Any orientation
Water cooling	
Flow	3 ls <sup>-1</sup>
Temperature	5 – 25 °C / 41 – 77 °F
Pressure	0.3 MPa
Recommended purge gas flow N <sub>2</sub>	50 sccm / 8.4 x 10 <sup>-2</sup> Pam <sup>3</sup> s <sup>-1</sup>
Input voltage	200 – 240 ±10 % V a.c.
Maximum input power (without TMS)	1.5 KVA

# SCU-350 Control Unit

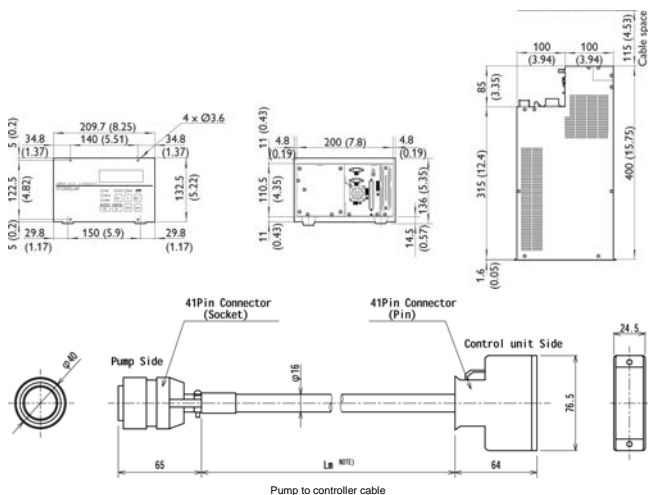


The Edwards new SCU-350 control unit is a EU-RoHS compliant controller for small sized turbo pumps. It is fully compatible with the current control unit models, but has an improved vibration property at low frequency range. It also has lower input voltage, which contributes to a reduction in electric capacity and tool power consumption. The SCU-350 has improved noise immunity and is equipped with universal voltage function for operation with supply voltage from 100-240 VAC without switching.

## Features & Benefits

- Better vibration property
- No peak vibration movement across all frequencies
- Compact design
- Smallest size control unit in its class
- Energy saving

## Dimensions



## Applications

- STP301/451 series
- STPL301/L451 series

## Technical Data

Magnetic bearing control system	Digital control
Input voltage	100-120 / 200-240V a.c.
Power consumption (Start up)	Max 350 VA
Power consumption (continuous)	Max 150 VA
Input frequency	50/60 ±2 Hz
Leak current	3.5 mA
Main breaker rated current	5 A
Motor drive system	3-phase DC
Allowable ambient temperature	0 to 40 °C (32 to 104 °F)
Weight	8 kg
Panel display	LCD

## Ordering Information

Product Description	Order No.
SCU-350 Turbo Pump Control Unit	YT21Z3ZC0
SCU-350 Turbo Pump Control Unit with RS232	YT21ZEZC0
SCU-350A Turbo Pump Control Unit with ABS	YT21ZCZC0
Accessories & Spares	Order No.
Type B P/Cab 3M Ring Terminals	B70700090
Type B P/Cab 5M Ring Terminals	B70700040
Type B P/Cab 10M Ring Terminals	PT21Y0A00
Type B P/Cab 15M Ring Terminals	PT21Y0A01
STP straight connection cable, 3m	B70700010
STP straight connection cable, 5m	B70700000
STP straight connection cable, 10m	B70700130
STP straight connection cable, 15m	B70700070
STP straight connection cable, 20m	B70700150

# SCU-800 Control unit

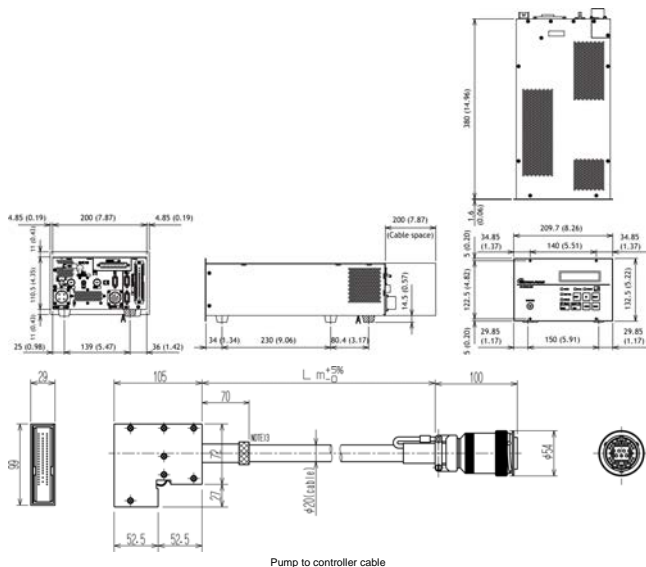
The Edwards SCU800 turbo pump control unit is a fully digital controller, and has perfect compatibility for middle sized pumps. New AVR (Auto vibration reduction) technology achieves a further reduction in vibration levels, and the advanced pre-maintenance call function provides advanced notice of precise maintenance time. The reliability focused design, enhanced communication function, and perfect compatibility bring significant back up units savings and contributes to a reduction in total C<sub>0</sub>O.



## Features & Benefits

- Universal Controller
- Single controller is used for middle sized pumps. No requirement for different controllers for each pump type
- Service back up stocks will be reduced
- Advanced Pre-maintenance Function
- AVR (Auto Vibration Reduction) minimizes the rotate system vibration during acceleration.

## Dimensions



## Applications

- STP603/1003 series
- STPH301/H451 series
- STPH803/H1303 series
- STPA803C/A1303 series
- STPA1603 series

## Technical Data

Magnetic bearing control system	Digital control
Input voltage	100 – 120 ±10 V a.c. 200 – 240 ±10 V a.c.
Power consumption (without Temperature Management System, TMS)	Max 850 VA
Power consumption (with TMS)	Max 1200 VA
Input frequency	50/60 ±2 Hz
Leak current	3.5 mA
Main breaker rated current	10 A
Motor drive system	3-phase d.c.
Allowable ambient temperature	0 to 40 °C (32 to 104 °F)
Weight	8.5 kg
TMS control unit	Built-in
Serial communication function (RS232/RS485)	Standard
Panel display	LCD

## Ordering Information

Product Description	Order No.
SCU-800 Turbo Pump Control Unit	YT49Z2Z00
Accessories & Spares	Order No.
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
Power Cable 15m	PT49Y0A02
Power Cable 20m	PT49Y0A03
STP straight connection Cable, 5m	B75130020
STP straight connection cable ,10m	B75130060
STP straight connection cable, 15M	B75130070
STP straight connection cable, 20M	B75130190

# SCU-1600 Control unit

The fully digital SCU-1600 turbo pump control unit is compatible with STP turbo pumps ranging from 2000  $\text{ls}^{-1}$  to 4500  $\text{ls}^{-1}$ . It provides reliability, enhanced communication and pump compatibility with reduced back-up unit requirements and minimized overall cost of ownership.



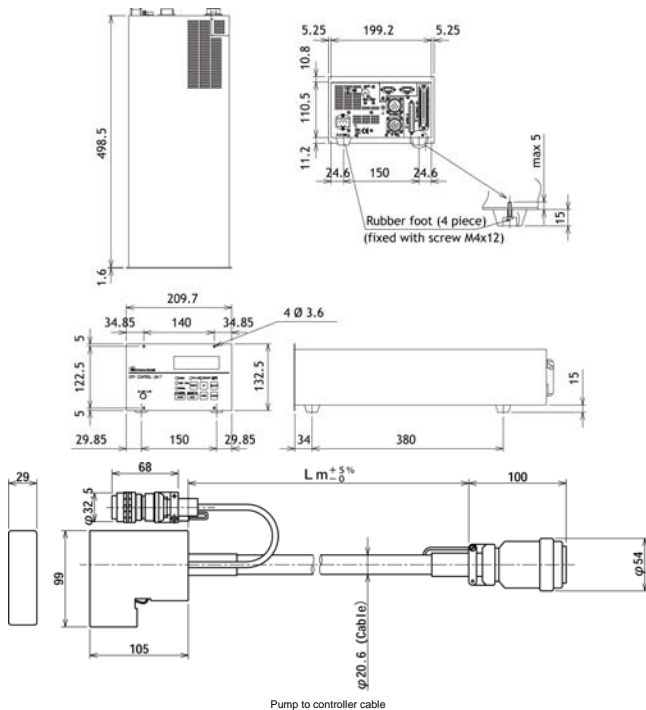
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## Features & Benefits

- Advanced pre-maintenance function
- Precise maintenance timing
- Two stage warning messages
- Rotor imbalance monitoring
- Back-up bearing damage monitoring

## Dimensions



## Applications

- STP-A2203/2503/2803/3003/3503
- STP-F2203
- STP-XA2703/3203/4503
- STP-XH2603/3203

## Technical Data

Magnetic bearing control system	Digital control
Input voltage	200 – 240 $\pm$ 10 V a.c.
Power consumption (without Temperature Management System, TMS)	Max 1600 VA
Power consumption (with TMS)	Max 2100 VA
Input frequency	50/60 $\pm$ 2 Hz
Leak current	3.5 mA
Main breaker rated current	15 A
Motor drive system	3-phase d.c.
Allowable ambient temperature	0 to 40 °C (32 to 104 °F)
Weight	12 kg
TMS control unit	Built-in
Serial communication function (RS232/RS485)	Standard
Operation switch	Start, Stop, Reset, Select, Up, Down, Enter, Manual/Remote
Panel display	LCD

## Ordering Information

Product Description	Order No.
SCU-1600 Turbo Pump Control Unit	YT76Z0Z00
Accessories & Spares	Order No.
Power cable, 5m	YT76Y0A01
Power cable, 10m	YT76Y0A02
Power cable, 15m	YT76Y0A03
Power cable, 20m	YT76Y0A04
STP straight connection cable, 5m	B75030010
STP straight connection cable, 10m	B75030040
STP straight connection cable, 15m	B75030220
STP straight connection cable, 20m	B75030230