STP INTEGRATED CONTROLLER PUMP

THE INTELLIGENT CHOICE

The STP integrated controller pump series provide industry-leading performance and features a compact size integrated on-board control unit. An integrated controller eliminates the need for a conventional, rack-mounted controller and interconnecting cables. 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

- Excellent pumping performance with speeds from 300 to 4500 l/s.
- Compact design with fully integrated controller and power supply eliminates cabling requirement.
- Advanced rotor design technology offers class leading performance with compact size for all classes.
- Magnetic bearing system will allow installation in any angle.
- Automatic Balancing System (ABS) and Automatic Vibration Reduction (AVR) reduces vibration levels and provide stable operation.
- Various communication available- I/O Remote, RS232C, RS485, STP Link are standard ports, Profibus® available as option.
- Protection level IP 54 (expect STP-iX455/iXL455).
- Easy installation.

Applications

- Metrology and microscopic applications.
- Pre-clean process.
- Glass coating systems.
- Inline/Batch coating systems.
- Steel Degassing.
- Solid State Lighting.
- Semiconductor and FPD Etching systems.

On-board Pump Range

STP-iX

- STP-iX455
- STP-iXL455
- STP-iXR1606
- STP-iXR2206
- STP-iXA2206
- STP-iXA3306C
- STP-iXA4506C

STP Integrated Series and the Environment

Reducing Energy Use

Reducing global energy consumption is key in the fight against global warming. In addition to minimising the energy our production facilities and offices consume, STP integrated series enable our customers to meet their energy reduction targets. Future proofing against carbon taxes and potentially qualifying for 'Green Giants'.

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 140,000 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_2e / 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.
- Increase pumping performance.
- Very low ambient noise and low vibration.
- Reduced space requirements.

Edwards HT10 Diffusion Pump vs Magnetically Levitated Turbo Pump

	HT10 Diffusion Pump	STP-iXA2206	% reduction	CO_2 reduction per year (tonnes)**
Power consumption	5.1 kW	0.2 kW*	96%	25.2 pa**
Water consumption	400 lh^{-1}	120 lh^{-1}	70%	

EHT16 Diffusion Pump vs Magnetically Levitated Turbo Pump

	HT16 Diffusion Pump	STP-iXA3306	% reduction	CO_2 reduction per year (tonnes)**
Power consumption	9 kW	0.3 kW*	97%	Pa**
Water consumption	700 lh^{-1}	120 lh^{-1}	83%	44.8

* At 300 sccm gas load power = 0.3 kW.

** Energy source units vs kW/h kg CO_2= kWh 0.490 Source: Department for Environment, Food, Rural Affairs, UK.

	STP-iX455	STP-iXL455	STP-iXR1606	STP-iXR2206	STP-iXA2206	STP-iXA3306	STP-iXA4506
Metrology	•	•					
PVD Process	•		•	•	•	•	•
PVD Pre-Clean	•		•	•	•	•	•
Glass Coating			•	•	•	•	•
Inline/Batch coating			•	•	•	•	•
Solid State Lighting			•	•	•	•	•
Oxide Etch					•	•	•
Metal Etch					•	•	•

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.

Enabling Environmental Technology

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.

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-iXA4506

STP-iXA4506	
Peak Pumping Speed	
N_2	3800 ls^{-1} / 4000ls^{-1}/ 4300ls^{-1}
H_2	2700 ls^{-1} / 2700ls^{-1}/ 2700ls^{-1}
Compression Ratio	
N_2	$> 10^8$
H_2	10^3
Ultimate pressure	10^{-7} Pa

STP-iXR1606

STP-iXR1606	
Peak Pumping Speed	
N_2	1000 ls^{-1} / 1600 ls^{-1}
H_2	800 ls^{-1} / 1200 ls^{-1}
Compression Ratio	
N_2	$> 10^8$
H_2	1×10^3

STP-iXA2206C

STP-iXA2206C	
Peak Pumping Speed	
N_2	2200 ls^{-1}
H_2	1900 ls^{-1}
Compression Ratio	
N_2	$> 10^8$
H_2	1×10^4

STP-iXA3306C

STP-iXA3306C	
Peak Pumping Speed	
N_2	2650 ls^{-1} / 3200 ls^{-1}
H_2	2050 ls^{-1} / 2300 ls^{-1}
Compression Ratio	
N_2	$> 10^8$
H_2	1×10^3

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STP Sectional View Showing Key Features

Key

1. Advanced design rotor realizes high performance and compact size. (Reduced pump height and diameter)
2. Latest magnetic bearing technology provides lower power consumption compare to the existing models and stable operation
3. Upper and lower safety back up bearings support the rotor and protect the pump in the event of a total disruption of magnetic suspension or a massive air inrush
4. Optimised holweck stages (except for STP-iX455 and iXL455 which have whole bladed rotor) bring high throughput performance.
5. Reliable on-board platform with reduced power consumption and optimum heat structure
6. IP54 rated specification for protection against water and dust. It is innovatively designed to work in humid and high ambient temperatures.
7. Efficient motor technology enables to reduce power consumption at high flow condition
8. Purge port can be fitted as an option for all models. (Standard on STP-iXA3306C and STP-iXA4506C)
9. Flexible communication interface - I/O remote, RS232C/RS485 and STP-link port are equipped as standard, Profibus is available as an option.

Performance Curves

STP-iX455 Turbomolecular Vacuum Pump

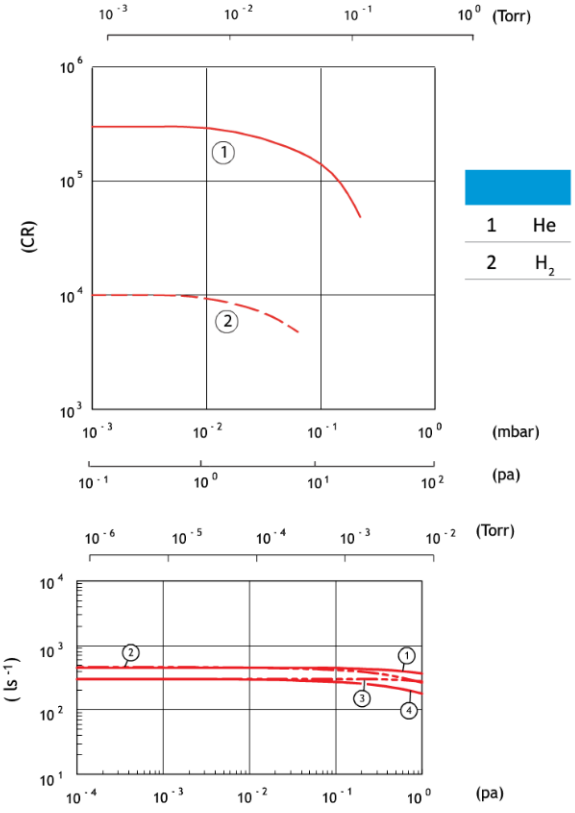
STP-iX455

Peak Pumping Speed	
N_2	300 ls^{-1}/450 ls^{-1}
H_2	300 ls^{-1}/460 ls^{-1}
Compression Ratio	
N_2	> 10^8
H_2	1 x 10^4
Ultimate pressure	
6.5 x 10^{-6} order Pa	

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

STP-iX455 Performance Curve



1	N_2	450 ls^{-1} (ISO160, VG150)
2	H_2	460 ls^{-1} (ISO160, VG150)
3	N_2	300 ls^{-1} (ISO100, VG100)
4	H_2	300 ls^{-1} (ISO100, VG100)

STP-iXL455 Turbomolecular Vacuum Pump

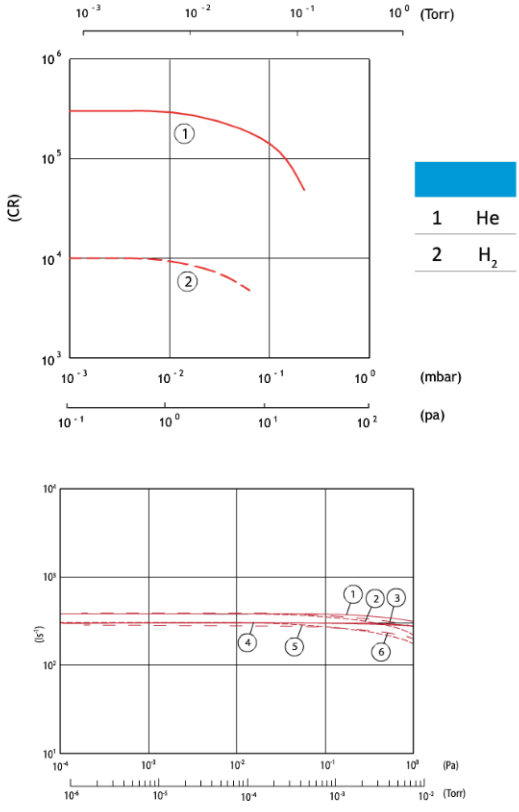
STP-iXL455

Peak Pumping Speed	
N_2	300 ls^{-1}/380 ls^{-1}
H_2	300 ls^{-1}/380 ls^{-1}
Compression Ratio	
N_2	> 10^8
H_2	1 x 10^4
Ultimate pressure	
6.5 x 10^{-6} order Pa	

Ordering information

Product description	Order no:
STP-iXL455 Turbomolecular pump ISO100K	YT642Z030
STP-iXL455 Turbomolecular pump ISO160K	PT642Z020

STP-iXL455 Performance Curve



1	N_2	380 ls^{-1} (ISO160, VG150)
2	H_2	380 ls^{-1} (ISO160, VG150)
3	He	390 ls^{-1} (ISO160, VG150)
4	N_2	300 ls^{-1} (ISO100, VG100)
5	H_2	300 ls^{-1} (ISO100, VG100)
6	He	280 ls^{-1} (ISO100, VG100)

STP-iXR1606 Turbomolecular Vacuum Pump

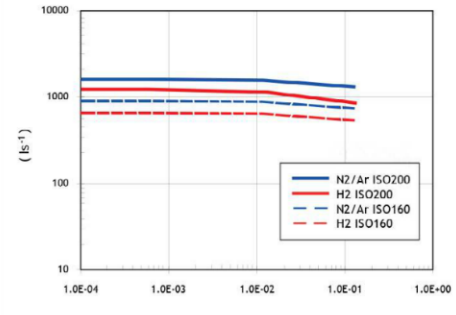
STP-iXR1606

Peak Pumping Speed	
N_2	1000 ls^{-1}/1600 ls^{-1}
H_2	800 ls^{-1}/1200 ls^{-1}
Compression Ratio	
N_2	> 10^8
H_2	1 x 10^3

Ordering information

Product description	Order no:
STP-iXR1606 Turbomolecular pump ISO160F	YT790Z070
STP-iXR1606 Turbomolecular pump VG150	YT790Z080
STP-iXR1606 Turbomolecular pump ISO200F	YT790Z010
STP-iXR1606 Turbomolecular pump VG200	YT790Z020

STP-iXR1606 Performance Curve



STP-iXR2206 Turbomolecular Vacuum Pump

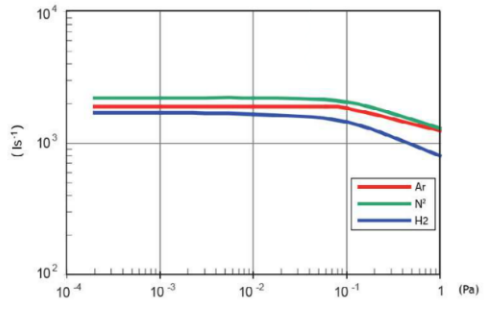
STP-iXR2206

Peak Pumping Speed	
N_2	2200 ls^{-1}
H_2	1350 ls^{-1}
Compression Ratio	
N_2	> 10^8
H_2	1 x 10^3

Ordering information

Product description	Order no:
STP-iXR2206 Turbomolecular pump ISO250F	YT850Z000
STP-iXR2206 Turbomolecular pump VG250	YT850Z010
STP-iXR2206 Turbomolecular pump DN250CF	YT850Z020
STP-iXR2206 Turbomolecular pump ISO250F Profibus	YT850Z030

STP-iXR2206 Performance Curve



STP-iXA2206 Turbomolecular Vacuum Pump

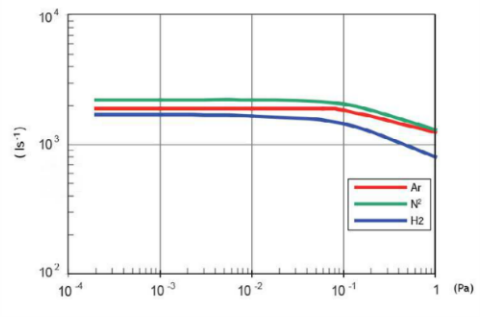
STP-iXA2206

Peak Pumping Speed	
N_2	2200 ls^{-1}
Ar	1900 ls^{-1}
Compression Ratio	
N_2	> 10^8
H_2	1 x 10^4

Ordering information

Product description	Order no:
STP-iXA2206C ISO250F	YT810Z010
STP-iXA2206C VG250	YT810Z020
STP-iXA2206C DN250CF	YT810Z030
STP-iXA2206C ISO250F Profibus	YT810Z040

STP-iXA2206 Performance Curve



STP-iXA3306C Turbomolecular Vacuum Pump

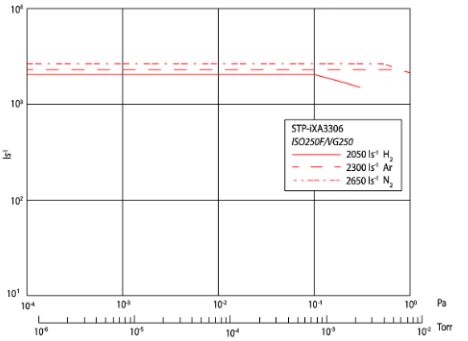
STP-iXA3306C

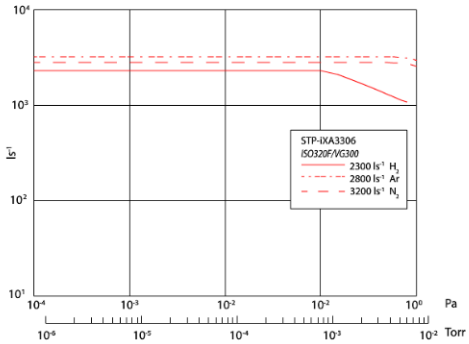
Peak Pumping Speed	
N_2	2650 ls^{-1}/3200 ls^{-1}
H_2	2050 ls^{-1}/2300 ls^{-1}
Compression Ratio	
N_2	> 10^8
H_2	2 x 10^3
Ultimate pressure	
> 10^{-7} Pa	

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

STP-iXA3306C Performance Curve





STP-iXA4506C Turbomolecular Vacuum Pump

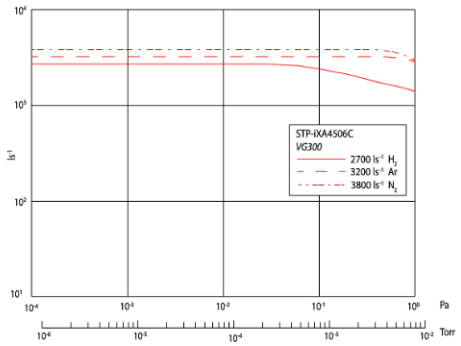
STP-iXA4506

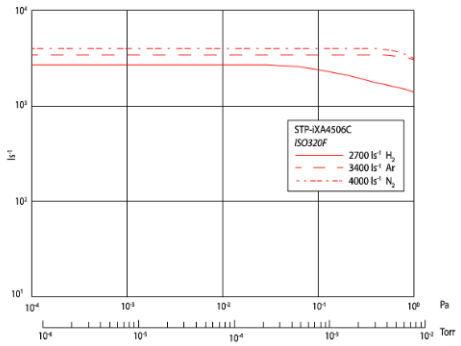
Peak Pumping Speed	
N_2	3800 ls^{-1}/4000 ls^{-1}/4300 ls^{-1}
H_2	2700 ls^{-1}/2700 ls^{-1}/2700 ls^{-1}
Compression Ratio	
N_2	> 10^8
H_2	10^3
Ultimate pressure	
	10^{-7} Pa

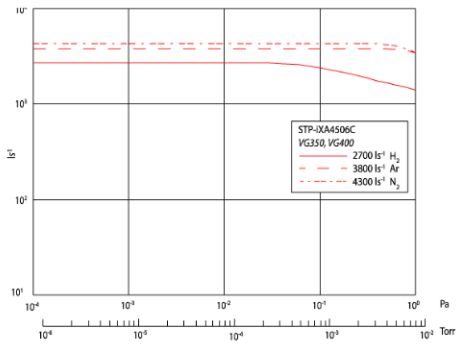
Ordering information

Product description	Order no:
STP-iXA4506C Turbomolecular pump ISO320F	YT780Z010
STP-iXA4506C Turbomolecular pump VG300	YT780Z100
STP-iXA4506C Turbomolecular pump VG350	YT780Z090
STP-iXA4506C Turbomolecular pump VG400	YT780Z030
STP-iXA4506C Turbomolecular pump ISO320F Profibus	YT780Z050
STP-iXA4506C Turbomolecular pump VG300 Profibus	YT780Z110
STP-iXA4506C Turbomolecular pump VG350 Profibus	YT780Z060

STP-iXA4506 Performance Curve

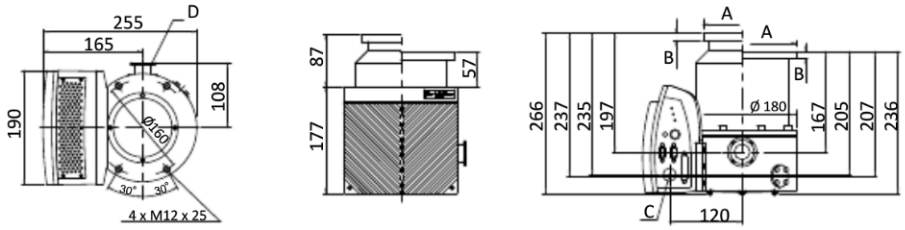






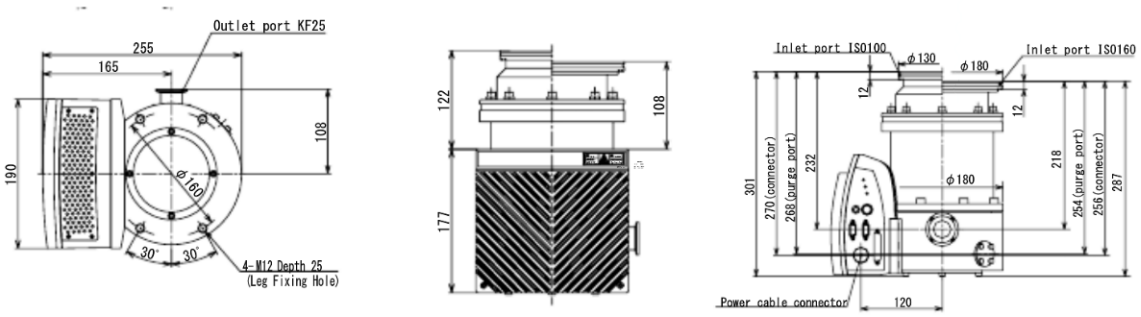
Dimensions

STP-iX455/iX455C Dimensions



Inlet Flange	ISO100	DN100CF	VG100	ISO160	DN160CF	VG150
A	130 (5.12)	152 (5.98)	182 (7.17)	180 (7.09)	203 (7.99)	235 (9.25)
B	12 (0.47)	21 (0.83)	12 (0.47)	12 (0.47)	22 (0.87)	12 (0.47)
C	Power Cable Connector					
D	Outlet Port KF25					

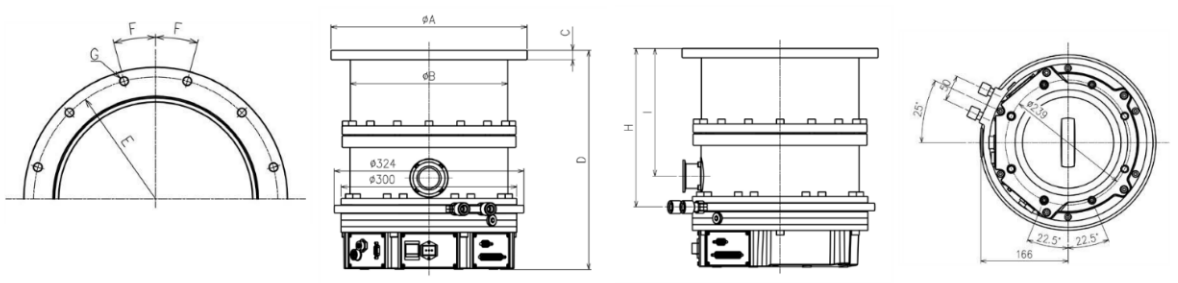
STP-iXL455 Dimensions



STP-iXR1606

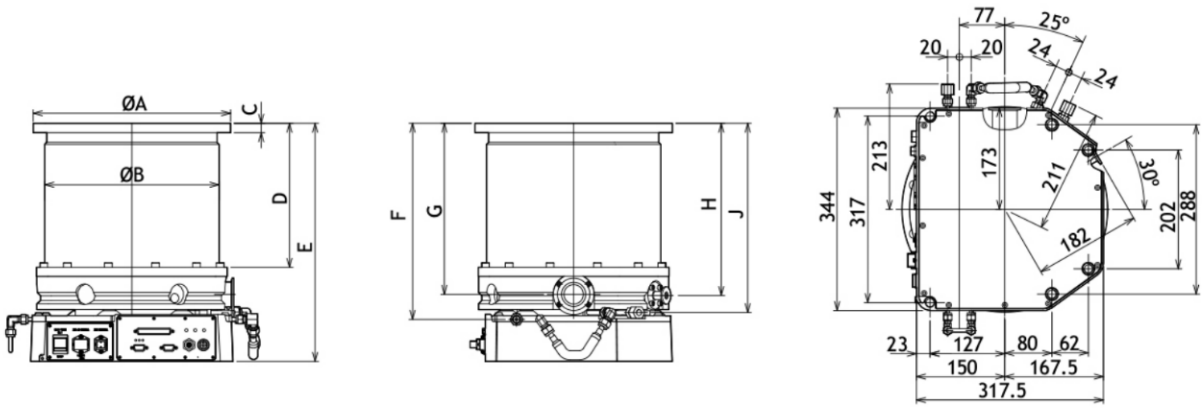
Inlet port flange	VG150	VG200	VG250	ISO160F	ISO200F	ICF250F	ICF203	ICF253	ICF305
ØA	235	300	350	225	285	335	203	253	305
ØB	237	237	237	237	237	237	237	237	237
C	15	16	16	15	16	16	22	25	28
D	420	380	380	420	380	380	420	418	380
ØE	210	270	320	200	260	310	181	231.8	284
F	22.5	22.5	15	22.5	15	15	9	7.5	5.625
G	8-Ø12	8-Ø15	12-Ø15	8-Ø12	12-Ø11	12-Ø11	20-Ø8.4	24-Ø8.4	32-Ø8.4
H	313	273	273	313	273	273	313	311	273
I	263	223	223	263	223	223	263	261	223

STP-iXR2206 Dimensions



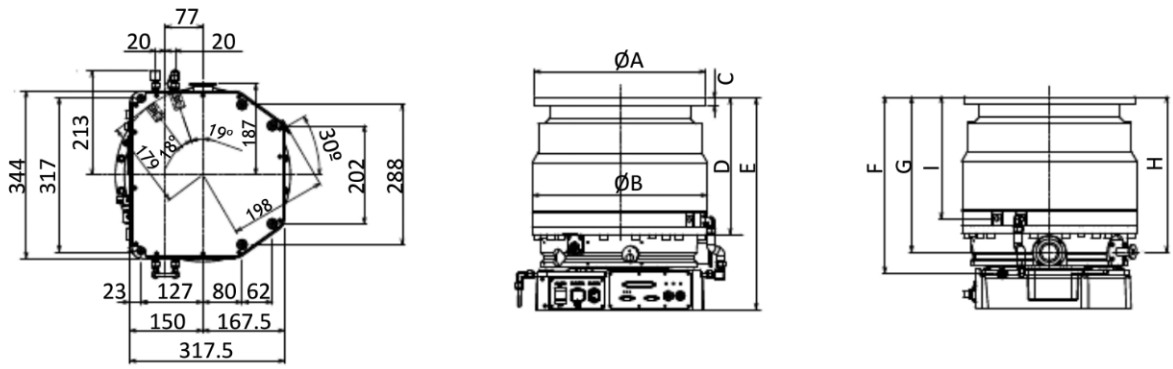
Inlet port flange	VG200	VG250	ISO200F	ISO250F	ISF253	ICF305
A	300	350	285	335	253	305
B	269	269	269	269	269	269
C	16	16	16	16	25	28
D	405	375	405	375	420	400
E	270	320	260	310	231.8	284
F	22.5°	15°	15°	15°	7.5°	5.625°
G	8-15	12-15	12-11	12-11	24-8.4	32-8.4
H	301	271	301	271	316	296
I	249	219	249	219	264	244

STP-iXA2206 Dimensions



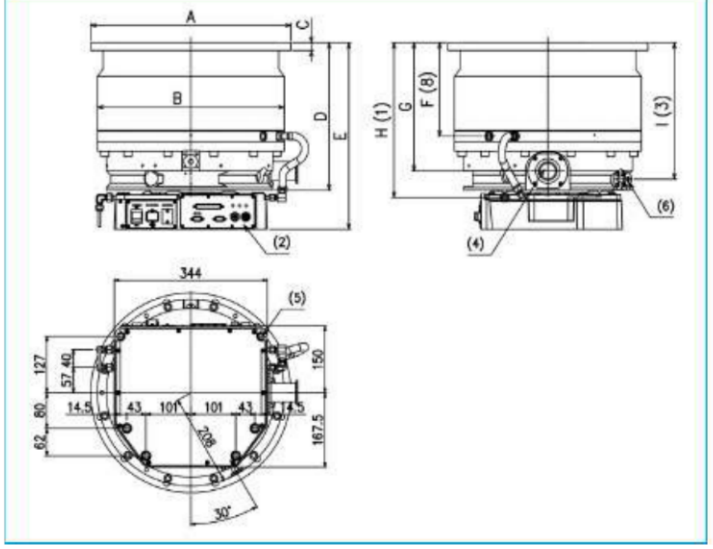
Inlet port flange	VG250	ISO250F	ICF305
ØA	350	335	305
ØB	296	296	296
C	18	16	28
D	235	245	275
E	395	405	435
F	312	322	352
G	281	291	321
H	283	293	323
I	322	332	322

STP-iXA3306C Dimensions



Inlet port flange	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

STP-iXA4506C Dimensions



No.	Item
1	Height of water cooling port (IN)
2	Control Unit
3	Height of the purge port
4	Outlet port flange
5	Screw hole for securing the base
6	Purge port
7	Cooling water port
8	Height of water coolilng port (OUT)

Inlet port flange	VG300	VG350	VG400	ISO320F	ISO400F	ICF458
ØA	400	450	520	425	510	458
ØB	420	420	420	420	420	420
C	18	18	18	20	20	28
D	387	332	332	378	332	332
E	475	420	420	466	420	420
F	266	211	211	256	211	211
G	344	289	289	335	289	289
H	404	349	349	394	349	349
I	362	307	307	353	307	307

Technical Data

	STP-iX455		STP-iXL455	
Inlet flange	ISO100K	ISO160K	ISO100K	ISO160K
Backing port size	KF25		KF25	
Pumping Speed				
N_2	300 ls^{-1}	450 ls^{-1}	300 ls^{-1}	380 ls^{-1}
H_2	300 ls^{-1}	460 ls^{-1}	300 ls^{-1}	380 ls^{-1}
Compression ratio				
N_2	$> 10^8$			
H_2	$> 1 \times 10^4$			
Ultimate pressure	6.5×10^{-6} Pa			
	5×10^{-8} Torr			
Max working pressure	1.3×10^{-1} Pa			
Allowable backing pressure	67 Pa			
Rated speed	55000 rpm			
Run-up time to 90% rated speed				
Starting time	< 6 min			
Mounting position	Any orientation			
Cooling method	Natural cooling (Air cooling Fan when baking or gas pumping)			
Lubricating oil	Not necessary			
Backing pump	240 $lmin^{-1}$			
Leakage Magnetic Flux				
Axial direction	≤ 100 mGauss			
Radial direction	≤ 100 mGauss			
Ambient temperature range	0 to 40 ˚C			
Storage temperature range	-25 to 55 ˚C			
Input voltage	48 V a.c.			
Maximum input current				
Weight	16 kg			

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 ˚C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.

	STP-iXR1606		STP-iXR2206	
Inlet flange	VG150/ISO160F /ICF203	VG200/VG250/ISO200F /ISO250F/ICF253/ICF305	VG200/ISO200F /ICF253	VG250/ISO250F /ICF305
Backing port size	KF40	KF40	KF40	KF40
Pumping Speed				
N_2	1000 ls^{-1}	1600 ls^{-1}	1850 ls^{-1}	2200 ls^{-1}
H_2	800 ls^{-1}	1200 ls^{-1}	1250 ls^{-1}	1350 ls^{-1}
Ar	-	-	1650 ls^{-1}	2000 ls^{-1}
Compression ratio				
N_2	$> 10^8$			
H_2	$> 1 \times 10^3$			
Ultimate pressure	10^{-7} Pa (10^{-9} Torr)			
Max working pressure	-			
Allowable backing pressure	266 Pa (2 Torr)			
Rated speed	36,500 rpm			
Run-up time to 90% rated speed				
Starting time	≤ 8 min		≤ 10 min	
Mounting position	Any orientation			
Cooling method	Water Cooling			
Lubricating oil	Not necessary			
Backing pump	-			
Leakage Magnetic Flux				
Axial direction	-			
Radial direction	-			
Ambient temperature range	0 to 40 ˚C			
Storage temperature range	-5 to 55 ˚C			
Input voltage	200 to 240 V a.c.			
Maximum input current	750 VA			
Weight	48 kg			

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 ˚C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.

	STP-iXA2206C	
Inlet flange	ISO250F/VG250/ICF305	
Backing port size	KF40	
Pumping Speed		
N_2	2200 ls^{-1}	
H_2	1700 ls^{-1}	
Ar	1900 ls^{-1}	
Compression ratio		
N_2	$>10^8$	
H_2	1.0 X 10^4	
Ultimate pressure	10^{-7} Pa (10^{-9} Torr)	
Max working pressure	-	
Allowable backing pressure	266 Pa (2 Torr)	
Rated speed	27000 rpm	
Run-up time to 90% rated speed	-	
Starting time	≤8 min	
Mounting position	Any orientation	
Cooling method	Water cooling	
Lubricating oil	Not necessary	
Backing pump	-	-
Leakage Magnetic Flux	-	-
Axial direction	-	-
Radial direction	-	-
Ambient temperature range	0 to 40 °C	
Storage temperature range	-25 to 55°C	
Input voltage	-	-
Maximum input power	1200 VA	
Weight	62 Kg	

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 ˚C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.

	STP-iXA3306C		STP-iXA4506C		
Inlet flange	ISO250F/VG250/ ICF305	ISO320F/VG300/ ICF356/VG350	VG300	ISO320F	VG350/VG400
Backing port size	KF40				
Pumping Speed					
N_2	2650 ls^{-1}	3200 ls^{-1}	3800 ls^{-1}	4000 ls^{-1}	4300 ls^{-1}
H_2	2050 ls^{-1}	2300 ls^{-1}	2700 ls^{-1}	2700 ls^{-1}	2700 ls^{-1}
Ar	2300 ls^{-1}	2800 ls^{-1}	3200 ls^{-1}	3400 ls^{-1}	3800 ls^{-1}
Compression ratio					
N_2	> 10^8				
H_2	2 x 10^3			1 x 10^3	
Ultimate pressure	10^{-7} Pa (10^{-9} Torr)				
Max working pressure	-			-	
Allowable backing pressure	266 Pa (2 Torr)				
Rated speed	27700 rpm			24240 rpm	
Run-up time to 90% rated speed	-				
Starting time	≤ 10 minutes			≤ 11 minutes	
Mounting position	Any orientation				
Cooling method	Water cooling				
Lubricating oil	Not necessary				
Backing pump	> 1300 $lmin^{-1}$				
Leakage Magnetic Flux					
Axial direction	< 100m Gauss				
Radial direction	< 100m Gauss				
Ambient temperature range	0 to 40 ˚C				
Storage temperature range	-25 to 55 ˚C				
Input voltage	200 to 240 ±10% ACV				
Maximum input power	1500 VA			1700 VA	
Weight	80 kg	83 kg	109 kg	111 kg	104 kg/111 kg

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 ˚C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.