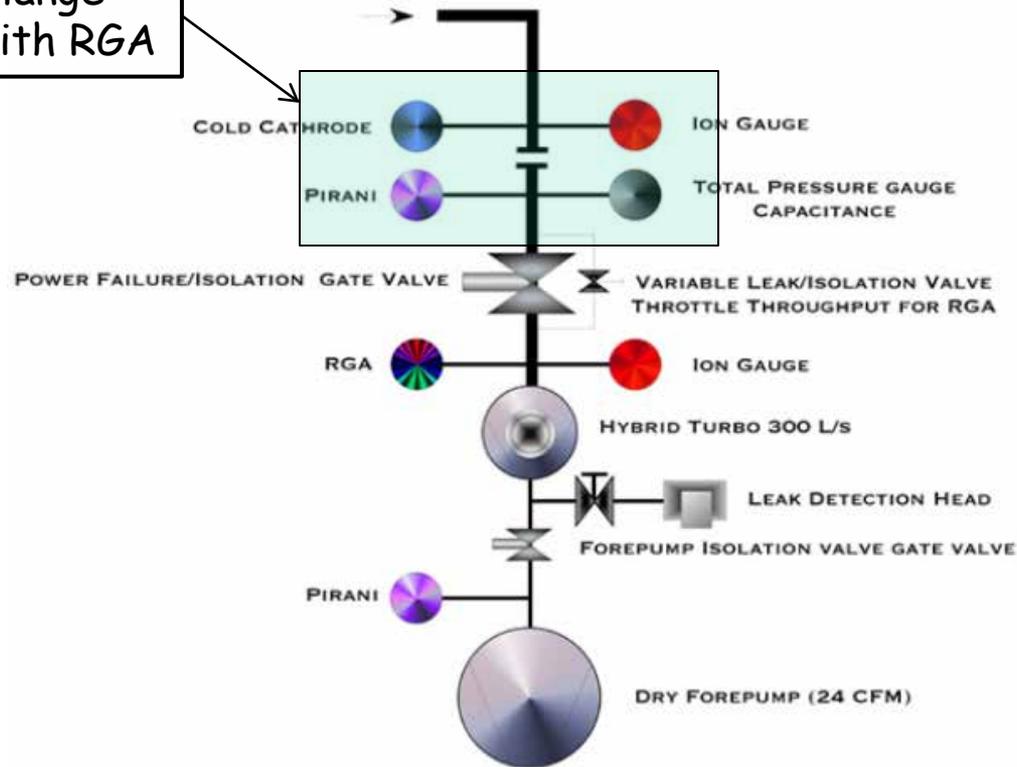


MICE SS Vacuum System

Basic Vacuum System Design

Hybrid Turbo Cart Conceptual Design

Mounted on turret flange
 TP gauge replaced with RGA



C.Kendziora 7.02.08

Scroll Pump

Dry Scroll Vacuum Pump



ISP-90



ISP-250c

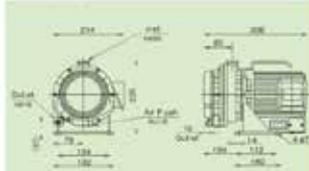


ISP-500c

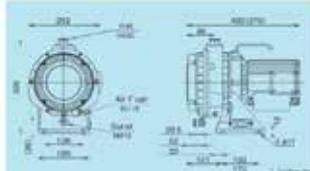


ISP-1000

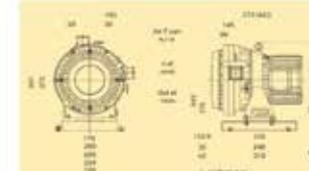
Dimensions



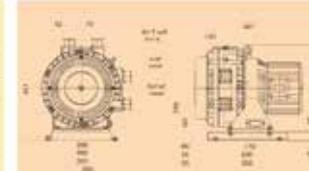
Dimensions



Dimensions



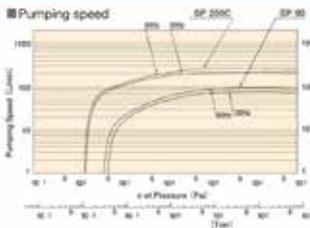
Dimensions



Trade name		Oil free scroll vacuum pump	
Model	SP 90	SP 250C	
Displacement	30 L/min	250 L/min	
Ultimate pressure	Pa/Torr	2.0 x 10 ⁻⁶ / 1.5	2.0 x 10 ⁻⁶ / 1.5
Motor power	kW	0.15	0.4
Voltage	V	100, 115, 200, 230 (with thermal protection)	100, 115, 200, 230, 400, 480
Motor size	40(A)	55(A) or 75(A)	55(A) or 75(A)
Weight	kg	14	23
Leak tightness	Pa·L/s	2.0 x 10 ⁻⁶	
Water vapor	g/day	200 at 1 Torr	250 at 1 Torr
Air flush	L/min	30 at 1 Torr	30 at 40 Torr
Oil at connection	mm	30	
Oil at connection	mm	19	
Cooling system		air-cooled	
Ambient temperature	°C	5~40	

● Ultimate pressure is measured as total pressure. Torque is measured in an anechoic room.

Pumping speed



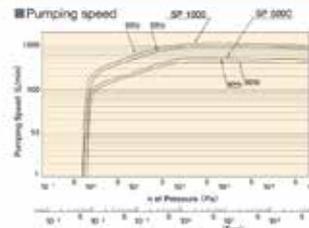
Air Flush

Purpose of Air Flush
 Pumping of harmful gas by vacuum pump can cause condensed moisture to remain in pump. This remaining moisture can cause failure to ultimate pressure or pump. Air flush operation is necessary to pump remaining moisture inside. Air flush operation does not only pump moisture but also recovers ultimate pressure.

Trade name		Oil free scroll vacuum pump	
Model	GP 500C	GP 1000	
Displacement	L/min	500 L/min	1000 L/min
Ultimate pressure	Pa/Torr	2.0 x 10 ⁻⁶ / 1.5	2.0 x 10 ⁻⁶ / 1.5
Motor power	kW	0.6	1.4
Voltage	V	100, 115, 200, 230 (with thermal protection)	100, 115, 200, 230, 400, 480
Motor size	40(A)	55(A) or 75(A)	55(A) or 75(A)
Weight	kg	44	60
Leak tightness	Pa·L/s	2.0 x 10 ⁻⁶	
Water vapor	g/day	250 at 1 Torr	
Air flush	L/min	100 at 1 Torr	
Oil at connection	mm	40	
Oil at connection	mm	25	40
Cooling system		air-cooled	
Ambient temperature	°C	5~40	10~40

● Ultimate pressure is measured as total pressure. Torque is measured in an anechoic room.

Pumping speed



How to select

SP 500C T V

- 500= Displacement of vacuum pump
- T= Three phase S= Single phase
- V= Vertical inlet H= Horizontal inlet

Applications

Synchrotron Facility
 Evacuation units for beam line in Synchrotron and X-ray source facilities



High Vacuum Pumping System
 Roughing pump for Turbo and Sputtering, Sputter Pump



- Sputtering equipment, Vacuum deposition equipment.
- Ion plating equipment
- Gas recovery devices
- Vacuum equipment
- Leak detectors
- Device handling system

- Surface modification, Electron beam process
- Vacuum furnace, Heat treatment furnace
- Laboratory use
- Vacuum packaging machine
- Others



Technical specifications

Specifications		ATH 31 +	ATH 200 (I)	ATH 300 (CI)
Inlet flange (ISO-K or CF-F)		DN63	DN100	DN100 (DN160)
Pumping speed	N ₂ l/s	30	200	250 (300)
	He l/s	20	130	215 (240)
Compression ratio	N ₂	10 ¹¹	> 10 ⁹	> 10 ⁹
	He	2.10 ⁷	10 ⁵	10 ⁵
Ultimate pressure	mbar	< 5.10 ⁻¹⁰	< 5.10 ⁻¹⁰	< 5.10 ⁻¹⁰
Maximum inlet pressure	mbar	0.5	4.10 ³	0.1
Maximum exhaust pressure	mbar	45	4	10
Intermediate port	Bride	DN16	DN25	DN16
Pumping speed	N ₂ l/s	1	10	5
	He l/s	1	8	5
Recommended primary pump		PPM, ACP, AMD	PPM, ACP, AMD	PPM, ACP, AMD
Exhaust flange		DN16	DN16	DN25
Orientation		Any	Any	Any
Rotational speed	RPM	42000	36000	42000
Noise level	dB(A)	< 45	< 53	< 53
Vibration level	mm/s	< 0.1	< 0.3	< 0.3
Maximum power	VA	100	100	300
Start-up time	min.	2	< 6	< 3.5
Weight ISO-K/CF-F	kg	1.2 / 2.2	5.5 / 9.7	6.5 / 10.5
Cooling		natural, air, water	natural, air, water	natural, air, water
Dimension h, d (ISO-K)	mm	101, 94	187, 156	200, 160

(*) : measured following Pneuport standard (CF-F flanges, after 48 hours of baking with Pascal primary pump).

Monitoring

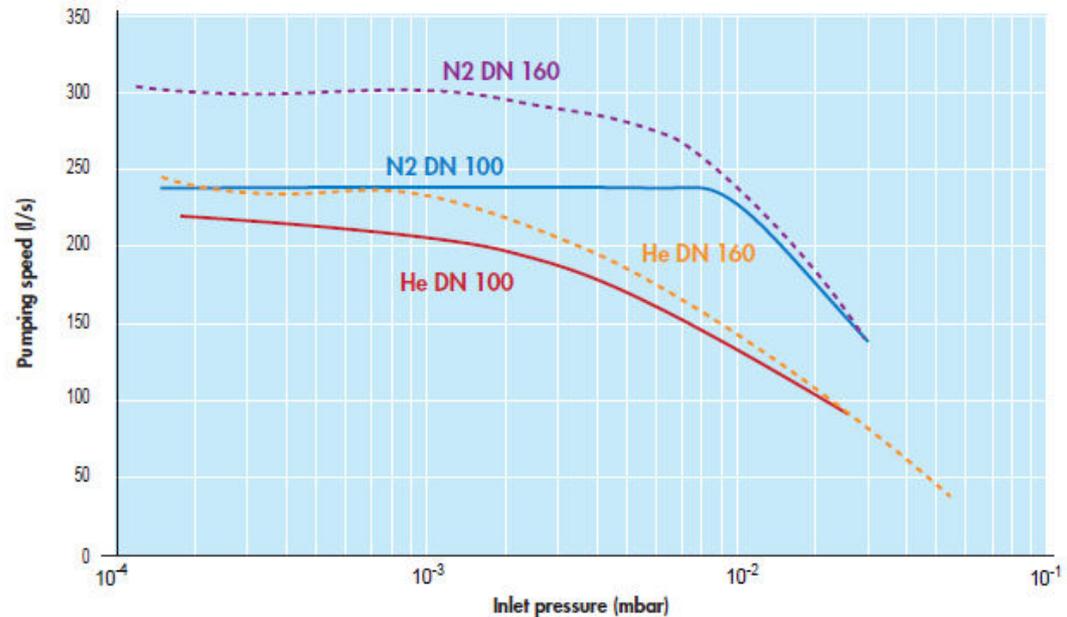
Turbo Performance

ATH 300 - Optimized for heavy duty applications

Wide operating pressure range from 10^{-10} mbar (torr) up to 0.1 mbar (torr) with a wet or dry fore pump

A chemical version equipped with a gas purge is available for pumping corrosive gases - ATH 300 CI.

Pumping speed ATH 300 (CI)



To increase

Gate Valve



Pneumatic actuator

double acting
 with position indicator
 with solenoid

DN		Ordering numbers (specify control voltage)				
mm	inch	ISO-F	CF-F metric threads	CF-F UNF threads	ASA-LP (T) ASA (A)	JIS
63	2 ½	14036-PE44	14036-CE44	14036-UE44	14036-TE44	14036-JE44
80	3	14038-PE44	14038-CE44	14038-UE44	on request	on request
100	4	14040-PE44	14040-CE44	14040-UE44	14040-TE44	14040-JE44
160	6	14044-PE44	14044-CE44	14044-UE44	14044-TE44	14044-JE44
200	8	14046-PE44	14046-CE44	14046-UE44	14046-TE44	14046-JE44
250	10	14048-PE44	14048-CE44	14048-UE44	14048-TE44	14048-JE44
320	12	14050-PE44	on request	on request	14050-TE44	14050-JE44
350	14	on request	on request	on request	on request	on request
400	16	14052-PE44	on request	on request	14052-AE44	14052-JE44

without position indicator, without solenoid: 140 . . . E14

with position indicator, without solenoid: 140 . . . E24

without position indicator, with solenoid: 140 . . . E34 (specify control voltage)

3-position

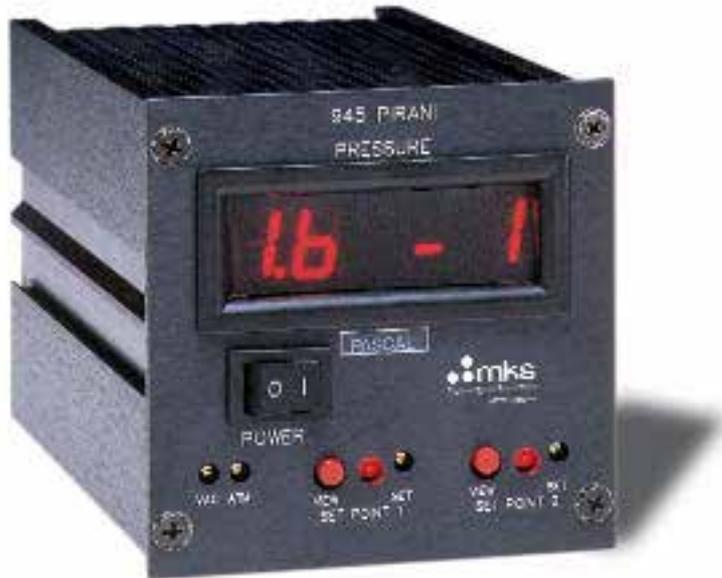
RGA - Stanford Research System



Pirani Gauge - MKS



1×10^{-4} torr



Televac Convection Gauge

Specifications

Vacuum Measurement Range	1 mTorr to 1,000 Torr (Air/N ₂)
Accuracy	+/- 1 mTorr at 1-10 mTorr +/- 10% of reading at 10 to 1000 mTorr +/- 20% of reading at 50 Torr – 120 Torr +/- 10% of reading at 120 Torr – 1000 Torr
Response Time	<500 milliseconds from 10 ⁻⁵ Torr to Atmosphere
Operating Temperature	+15 degrees C to 50 degrees C
Bakeout Temperature	250 degrees C (w/ 2 3/4 Conflat Flange)
Mounting Position	Must be mounted vertically
Mechanical Connection	1/8 NPT, NW16, NW25, 2 3/4 CF and others
Electrical Connection	Octal connector
Sensor Material	Nickel-plated Brass & Stainless Steel
Overpressure Tolerance	150 PSIG
Dimensions	Max. Height 3.5" (for 1/8" NPT) Max. Width 1.25" (for 1/8" NPT)

Ordering Information

Instrument Selection

Many Televac instruments are compatible with the 4A Convection Gauge Tube. Consider the MC300 panel-mount instrument with two 4A stations or the MP4AR self-contained remote for remote mounted applications. Televac also features other panel mount instruments, which combine the 4A convection for rough vacuum measurement and Televac's cold or hot ionization gauge tubes for high and ultra high vacuum measurement.



MC300 Panel Mount Instrument



MP4AR Self-Contained Remote

Summary

- All controllers are mounted in a $\frac{1}{2}$ high rack
- Gate valve needs gas pressure
 - ◆ Run off N2 bottle
 - ◆ Loss of AC caused pressure to close valve
- Separate instrumentation on SS vacuum space & pumping system
 - ◆ Multiple low and high-vacuum gauges
 - ◆ Have both cold and hot cathode gauges
- Only the Pirani will work with field on, however
 - ◆ Well, maybe the Televac too.