

## New Agilent Ion CombiNEG 40-400



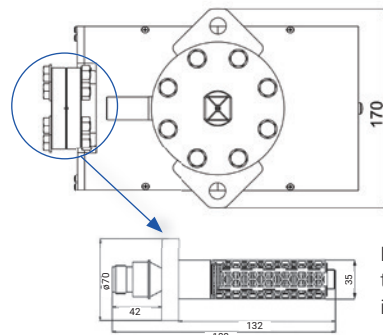
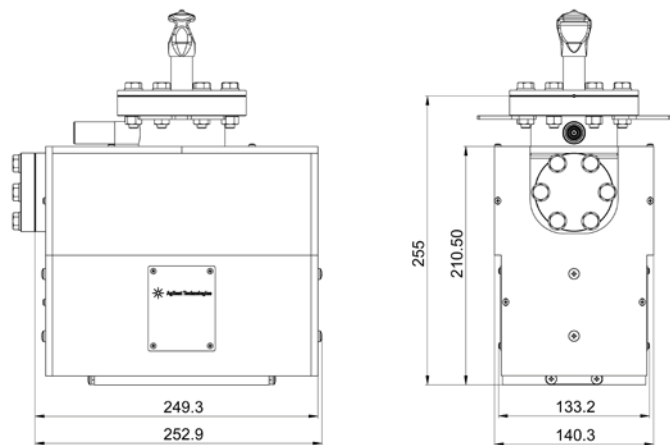
### The Perfect Partnership Between UHV Leaders

The Agilent Ion CombiNEG pumps are the result of the more than 100 years' combined vacuum experience of Agilent Technologies and SAES GETTERS. Agilent (formerly Varian Vacuum) is the inventor of the ion pump, and SAES the originator of the NEG pump concept.

The Ion CombiNEG pumps combine the state-of-the-art Agilent Ion StarCell pump with the SAES NEG cartridge. These new pumps provide optimum pumping speed for getterable gases, methane, and noble gases and reach pressure values as low as  $10^{-12}$  mbar.

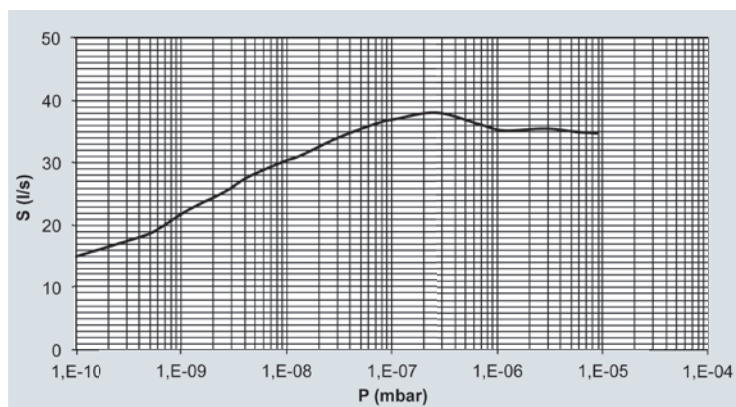
The easy insertion of the NEG cartridge into the ion pump makes the Ion CombiNEG pump a smart solution, combining ion pump and NEG cartridge technologies in the same pump volume.

## Outline Drawings



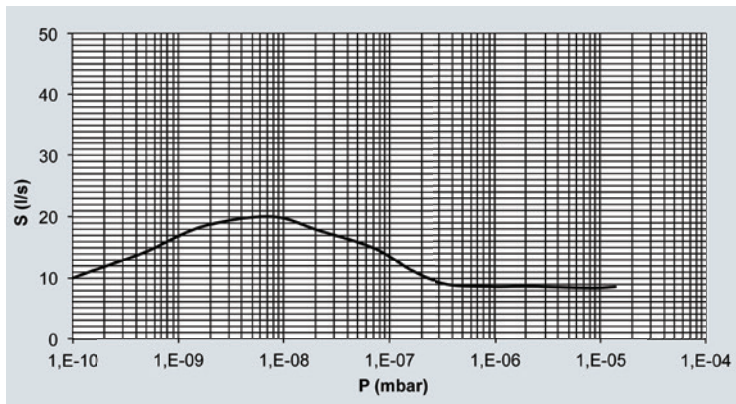
D 400-2 Cartridge,  
to be inserted  
into CombiNEG pump

## Pumping Speed - Ion CombiNEG 40-400 - StarCell, Nitrogen



Typical pumping speed vs pressure diagram for Nitrogen  
(Ion Pump only, StarCell, saturated, equipped with shield)

## Pumping Speed - Ion CombiNEG 40-400 - StarCell, Argon



Typical pumping speed vs pressure diagram for Argon  
(Ion Pump only, StarCell, saturated, equipped with shield)

## Technical Specifications

Specification	Model	
	Diode (*)	StarCell
Nominal saturated pumping speed for Nitrogen (L/s) with shield (without shield)	35 (39)	38 (43)
Nominal saturated pumping speed for Argon (L/s) with shield (without shield)	-	20 (22)
Operating life at 1E-6 mbar of Nitrogen (hours)	50000	80000
Suggested maximum baking pressure with ion pump on (mbar)	5E-6	
Protect current	30 mA	
Operating voltage (max)	+7000 Vdc +/- 10 %	-7000 Vdc +/- 10 %
Suggested starting pressure (mbar)	≤ 1E-5	≤ 1E-4
Ultimate pressure (mbar)	below 1E-11	
Inlet flange	4"1/2 CFF (DN63CF) AISI 304L ESR	
Side port	2"3/4 CFF (DN40CF)	
Internal volume (litres)	3.0	
Temperature limits (°C):		
Pump without magnets	450	
Pump with magnets	350	
HV cable	220	
Getter pump	(**)	
Material:	Body	AISI 304L
	Cathodes	Titanium    Titanium
	Anodes	AISI 304L
	Magnets	Ferrite (Ceramic 8)
	Pole piece	Iron
Weight, lbs (kg)	49.6 (22.5)	

(\*) Pumping element optimized to reduce leakage current

(\*\*) Refer to the Operating Instructions Manual provided with the getter pump.

## NEG Cartridge

The Ion CombiNEG 40-400 has a side port CFF 2”3/4 that is suitable to accommodate a SAES CapaciTorr D 400-2 getter pump.

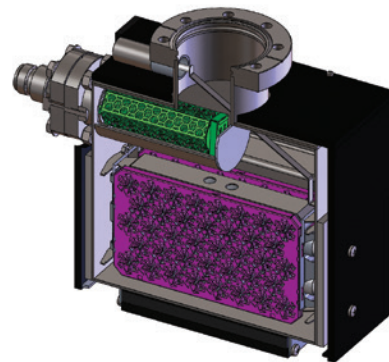
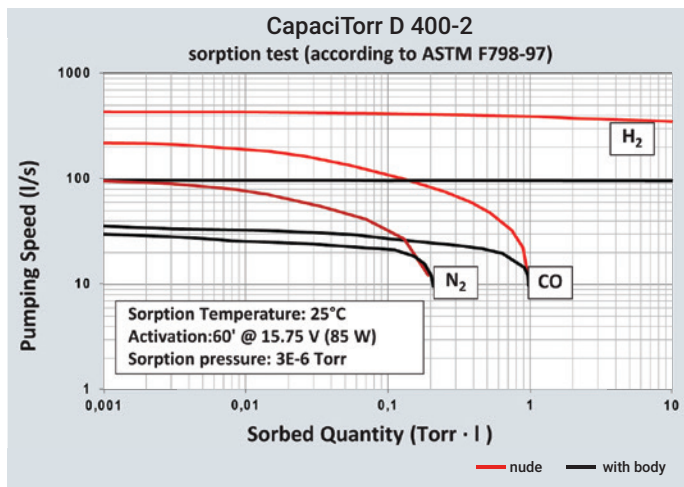
The CapaciTorr D 400-2 pump uses the high performing SINTERED St 172 (Zr-V-Fe) material in the form of disks to achieve high pumping performances in a very compact configuration.

A dedicated power supply is needed for the D 400-2 pump.



D 400-2 Cartridge

## D 400-2 Pumping Speed



Cut-away showing the main pump assembly of the Ion CombiNEG 40-400 pump (StarCell version), with the D 400-2 getter pump mounted.

## Technical Specifications

Typical Pump Characteristics		CapaciTorr D 400-2
Alloy Type		St 172
Alloy Composition		ZrVFe
Getter Mass (g)		45
Getter Surface (cm <sup>2</sup> )		380
Pumping Speed (l/s)	H <sub>2</sub>	400
	CO	180
Sorption Capacity (Torr · l)	H <sub>2</sub>	450
	CO at 25 °C	0.9
	CO total	400

Cartridge Controller Characteristics	
Input	110-240 VAC +/-10%
Frequency	50-60 Hz +/-10%
Mains cord connector	IEC Type 6A 250V
Over-voltage class	Cat II
Output voltage	0-35 VDC
Output current	6.0 A
Output power	175 W + 18 W (overload)
NEG Temperature Monitoring	✓
Tuning of output voltage	✓
Tuning of ramp time	✓
Tuning of power off time	✓
NEG Activation	Adjustable Voltage
NEG Conditioning	Adjustable Voltage
Operation Mode	Keyboard; Remote (Modbus protocol over Ethernet or RS232 interface)
Interlock	✓
USB port (for data logging)	✓

## Ordering Information - Ion CombiNEG 40-400 Pump

Pumps	Part number
Ion CombiNeg 40-400 pump, Diode, with heater, 115V	X3606-64000
Ion CombiNeg 40-400 pump, Diode, with heater, 230V	X3606-64001
Ion CombiNeg 40-400 pump, StarCell, with heater, 115V	X3606-64040
Ion CombiNeg 40-400 pump, StarCell, with heater, 230V	X3606-64041
Cables and heaters	
HV radiation resistant cable, 4 m (13 ft), with interlock (for Fischer feedthrough)	9290705
HV radiation resistant cable, 7 m (23 ft), with interlock (for Fischer feedthrough)	9290707
HV radiation resistant cable, 10 m (33 ft), with interlock (for Fischer feedthrough)	9290708
HV radiation resistant cable, 20 m (66 ft), with interlock (for Fischer feedthrough)	9290709
Heater, Ion CombiNEG 40-400 pump, 230V, 160W	9192837M005
Heater, Ion CombiNEG 40-400 pump, 120V, 160W	9192837M006

For cable part numbers with other feedthroughs, please refer to your local Agilent representative.

Controllers for Ion CombiNEG Pump	Part Number
4UHV Controller*	
200 W neg	9299010
200 W pos	9299011
IPCMini Controller*	
IPCMini, 110/220 V Fischer HV, neg	X3602-64000
IPCMini, 110/220 V Fischer HV, pos	X3602-64001

\*Ion pump controllers - 4UHV and IPCMini are available in multiple configurations.

For a complete list of part numbers, please check [www.agilent.com](http://www.agilent.com) or ask your Agilent representative.

### United States

Agilent Technologies  
121 Hartwell Avenue, Lexington MA 02421, USA  
Tel: +1 781 861 7200  
Toll free: +1 800 882 7426  
[vpl-customer@agilent.com](mailto:vpl-customer@agilent.com)

### Europe and other countries

Agilent Technologies Italia SpA  
via F.lli Varian 54, 10040 Leini, (Torino), Italy  
Tel: +39 011 9979 111  
Toll free: 00 800 234 234 00  
[vpt-customer@agilent.com](mailto:vpt-customer@agilent.com)

This information is subject to change without notice.

## Ordering Information - D 400-2 Cartridge

Getter Pump	
D 400-2 NEG Cartridge, with heater	X3605-68010
CF35 base flange with connector	X3605-68020
Controller* for NEG Cartridge D 400-2	X3605-68030
Cable (controller to cartridge) for NEG Cartridge D 400-2, 3 m	X3605-68050
Cable (controller to cartridge) for NEG Cartridge D 400-2, 20 m	X3605-68054

(\*) Power cord not included