

Vaclon Plus CombiTSP pumps

The CombiTSP integrates the Vaclon pump, TSP cartridge, and TSP cryopanel, or Ambient Shield, to increase pumping speed in the same footprint.

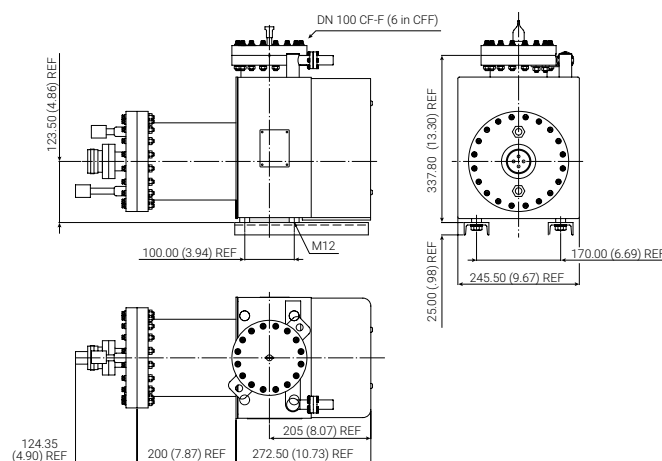
The gettering properties of the TSP cartridge deliver faster pump down to ultrahigh and extreme high vacuum (UHV/XHV) enabling lower ultimate base pressure.

The cryopanel, or Ambient Shield, further improve pumping efficiency for getterable gases.

The StarCell element provides the highest speed and capacity for methane, argon, and helium.

Ideal for particle physics and other low-pressure based research, such as surface science, nanotechnology, and materials science, these pumps are customizable with different high-voltage feedthroughs, body geometries, and pumping elements to meet your needs.

Vaclon Plus 150 CombiTSP pump (side-mounted TSP)



Dimensions: millimeters (inches)

Technical Specifications

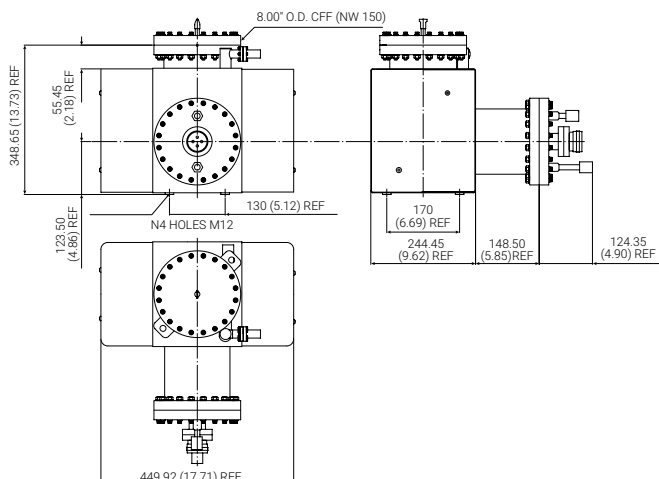
Pump	
Vaclon Plus 150 CombiTSP	N ₂ – 610
	H ₂ – 1,380
Vaclon Plus 300 CombiTSP	N ₂ – 720
	H ₂ – 1,580
Vaclon Plus 500 CombiTSP	N ₂ – 880
	H ₂ – 1,930

Nominal net pumping speed at 20 °C (L/s) with StarCell elements (water-cooled cryopanel)

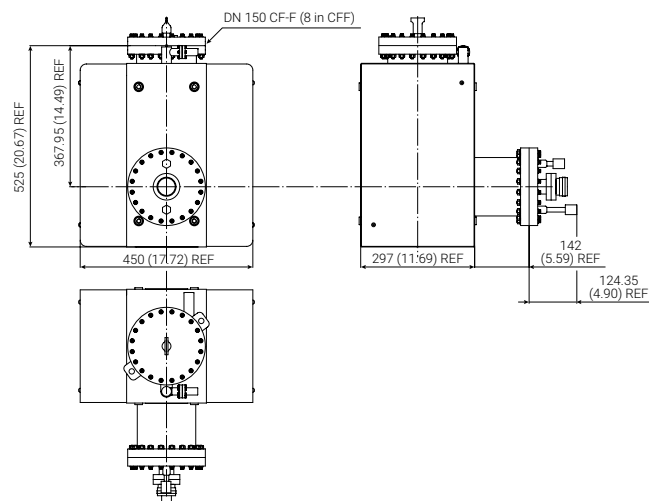
Customized designs available on request:
contact your local Agilent office for more detail.

Titanium sublimation combination pumps models

Vaclon Plus 300 CombiTSP pump (side-mounted TSP)



Vaclon Plus 500 CombiTSP (side-mounted TSP)



Dimensions: millimeters (inches)

Titanium sublimation combination pumps

- Titanium sublimation combination ion pumps offer maximum pumping performance for creating ultra and extreme high vacuum environments. The titanium sublimation creates extra high getterable gas pumping speeds, while the ion pumping mechanisms handle the nongetterable gases such as argon and methane.
- This CombiTSP pump is a Vaclon Plus 150, 300, or 500 pump with an extra side–or bottom–mounted 8 in ConFlat port. The combination pump includes the cylindrical cryopanel and TSP source mounted to the extra port. Getterable gases enter the end of the cylindrical cryopanel and are pumped by being combined with the freshly deposited titanium there. Liquid nitrogen cooling the cryopanel or ambient shield increases the efficiency of the gettering process and adds to the water pumping speed.
- CombiTSP combination pumps are now also available with an ambient shield that replaces the cryopanel. See Page 52.
- The Agilent Vaclon Plus series of combination pumps allow the addition of a cryopanel or ambient shield, at the bottom of the pump* or from the side. This can be a significant advantage in situations where height restrictions are present.

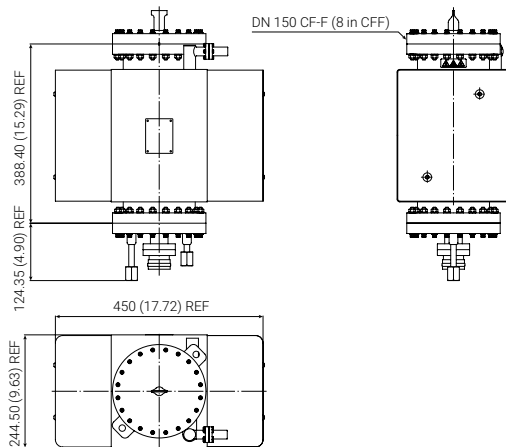
Customized pump configurations are also available.

**Not available on Vaclon Plus 150 Combi Pumps.*

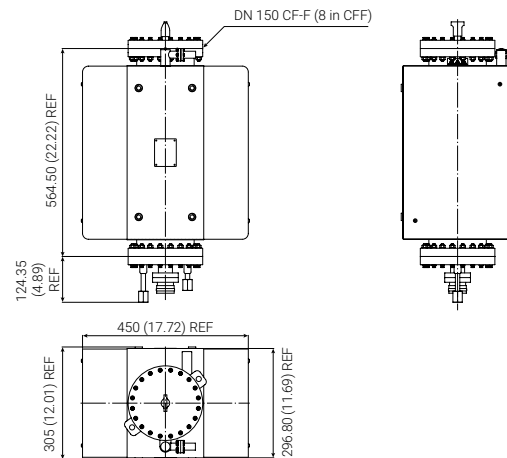
For ion pump control unit selection, see IPCMini and 4UHV controllers on pages 58 and 60 respectively

Vaclon Plus CombiTSP pumps

Vaclon Plus 300 CombiTSP pump (bottom-mounted TSP)



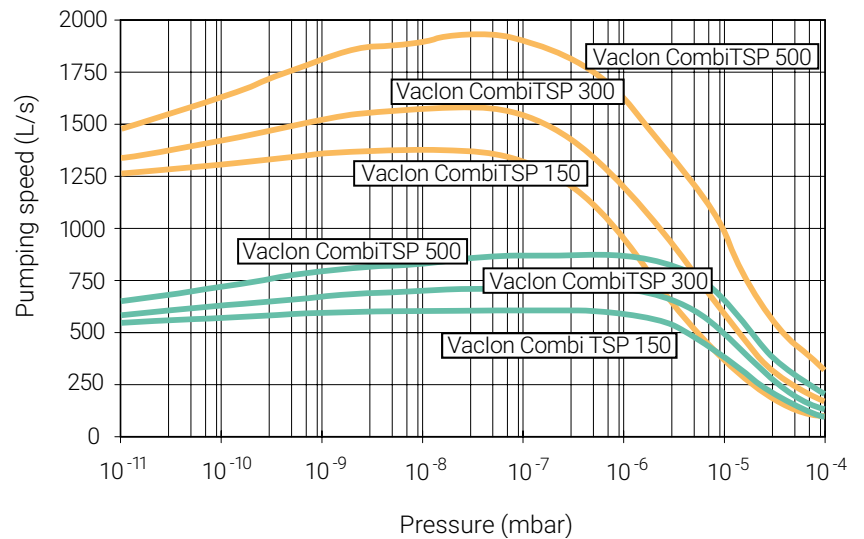
Vaclon Plus 500 CombiTSP pump (bottom-mounted TSP)



Dimensions: millimeters (inches)

Ion CombiTSP pumps
with Cryopanel at 20°C -
pumping speed

- Nitrogen StarCell
- Hydrogen StarCell



Titanium sublimation combination pumps models

Ordering information

The Vaclon Plus CombiTSP 150, 300, and 500 pumps can be supplied with the factory-installed sublimation cryopanel, or ambient shield (for PN list see page 57), and TSP cartridge included, not installed.

Cables and controllers should be ordered separately. For Vaclon Plus part numbers, see Pages 26-35.

Vaclon Plus 150, 300, and 500 CombiTSP pumps	Voltage	Part number
Vaclon Plus 150 Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192510
Vaclon Plus 150 Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192511
Vaclon Plus 150 StarCell, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192540
Vaclon Plus 150 StarCell, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192541
Vaclon Plus 150 Noble Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192520
Vaclon Plus 150 Noble Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192521
Vaclon Plus 300 Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192610
Vaclon Plus 300 Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192611
Vaclon Plus 300 StarCell, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192640
Vaclon Plus 300 StarCell, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192641
Vaclon Plus 300 Diode, with cryopanel, TSP cartridge, and installed heater bottom-mounted	120 V	9192612
Vaclon Plus 300 Diode, with cryopanel, TSP cartridge, and installed heater bottom-mounted	220 V	9192613
Vaclon Plus 300 StarCell, with cryopanel, TSP cartridge, and installed heater bottom-mounted	120 V	9192642
Vaclon Plus 300 StarCell, with side-mounted cryopanel, TSP cartridge, and installed heater bottom-mounted	220 V	9192643
Vaclon Plus 300 Noble Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192620
Vaclon Plus 300 Noble Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192621
Vaclon Plus 300 Noble Diode, with bottom-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192622
Vaclon Plus 300 Noble Diode, with bottom-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192623
Vaclon Plus 500 Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192710
Vaclon Plus 500 Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192711
Vaclon Plus 500 StarCell, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192740
Vaclon Plus 500 StarCell, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192741
Vaclon Plus 500 Diode, with bottom-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192712
Vaclon Plus 500 Diode, with bottom-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192713
Vaclon Plus 500 StarCell, with bottom-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192742
Vaclon Plus 500 StarCell, with bottom-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192743
Vaclon Plus 500 Noble Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192720
Vaclon Plus 500 Noble Diode, with side-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192721
Vaclon Plus 500 Noble Diode, with bottom-mounted cryopanel, TSP cartridge, and installed heater	120 V	9192722
Vaclon Plus 500 Noble Diode, with bottom-mounted cryopanel, TSP cartridge, and installed heater	220 V	9192723

Pumps are equipped with standard Fischer high voltage feedthroughs.
Agilent also offers pumps with the SHV 10 kV (SAFECONN) feedthrough option.
For further information, please contact Agilent or your local rep.

4UHV and IPCMini control units available.
See Pages 68-71.

Replacement parts and accessories	Voltage	Weight kg (lb)	Part number
TSP filament cartridge on DN 40 CF-F (2.75 in CFF)		2.7 (6.0)	9160050
TSP replacement filaments, 1 package of 12. Each TSP cartridge requires 3 filaments.		0.4 (2.0)	9160051
Titanium sublimation pump control unit (order cables separately)	120 V	17.7 (39.0)	9290032
Titanium sublimation pump control unit (order cables separately)	220 V	17.7 (39.0)	9290033
TSP cartridge cable, 3.5 m (12 ft)		9.1 (20.0)	9240730
Sublimation cryopanel on DN 160 CF-F (8 in CFF)		10.5 (23.0)	9190180

Typical pumping speed per square centimeter (per square inch) of titanium sublimation surface for various gases

When used together, the ambient shield and titanium sublimation pumps are particularly suitable for gases such as H₂, N₂, H₂O, CO, CO₂, and O₂.

The following table shows the pumping speed expected for each gas according to the inner ambient shield available surface.

Gas	H ₂	N ₂	O ₂	CO	CO ₂	H ₂ O	CH ₄	Ar	He
Typical pumping speed per unit area, in L/s*cm ² (L/s*in ²)	3.1 (20)	4.7 (30)	9.3 (60)	9.3 (60)	7.8 (50)	3.1 (20)	0	0	0

Note: Ambient shield inner pumping surface: 1300 cm² - 201.5 in²
Ambient temperature: 20°C

Ordering Information

CombiTSP pump with ambient shield	Part number
TSP Ambient Shield	9190180M001
Vaclon Plus 150 Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192510M100
Vaclon Plus 150 Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192511M100
Vaclon Plus 150 Noble Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192520M100
Vaclon Plus 150 Noble Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192521M100
Vaclon Plus 150 StarCell, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192540M100
Vaclon Plus 150 StarCell, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192541M100
Vaclon Plus 300 Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192610M100
Vaclon Plus 300 Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192611M100
Vaclon Plus 300 Noble Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192621M100
Vaclon Plus 300 StarCell, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192640M100
Vaclon Plus 300 StarCell, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192641M100
Vaclon Plus 300 Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192612M100
Vaclon Plus 300 Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192613M100
Vaclon Plus 300 Noble Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192622M100
Vaclon Plus 300 Noble Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192623M100
Vaclon Plus 300 StarCell, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192642M100
Vaclon Plus 300 StarCell, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192643M100
Vaclon Plus 500 Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192710M100
Vaclon Plus 500 Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192711M100
Vaclon Plus 500 Noble Diode, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192720M100
Vaclon Plus 500 StarCell, with side-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192740M100
Vaclon Plus 500 StarCell, with side-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192741M100
Vaclon Plus 500 Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192712M100
Vaclon Plus 500 Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192713M100
Vaclon Plus 500 Noble Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192722M100
Vaclon Plus 500 Noble Diode, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192723M100
Vaclon Plus 500 StarCell, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 120 V	9192742M100
Vaclon Plus 500 StarCell, with bottom-mounted ambient shield, with TSP cartridge and with installed heater 220 V	9192743M100