

Титановые сублимационные насосы TSP, неиспарительные геттерные насосы NEG

Технические характеристики

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Titanium Sublimation Pumps (TSPs) are often used in combination with ion pumps or independently to remove reactive gases from the vacuum environment. Combined with an ion pump, the TSP allows for low ultimate pressures in a shorter amount of time. All TSP components are bakeable to 400 °C.

TSPs operate by heating a titanium filament and subliming (converting from solid to gas phase) titanium molecules onto a surface. Sublimed titanium molecules are then available to chemically react with reactive gases, like oxygen and nitrogen, and disassociate and diffuse hydrogen. TSPs can operate from 10^{-5} to 10^{-12} mbar and have pumping speeds in excess of 10,000 ls^{-1} for hydrogen.

Product features

TSP FILAMENT CARTRIDGE

The filament cartridge is mounted on a 2- 3/4" CFF (DN40). The feedthrough supports three titanium-molybdenum filaments and a return path for ground isolation. Each filament contains 1.5 grams of usable titanium and averages 20 hours of operation.

LIQUID CRYOSHROUD

The liquid cryoshroud consists of a double walled, type 304L stainless steel cylinder with two liquid nitrogen feedthroughs (.375 in. diameter) with flare type fittings. It provides 1578 cm^2 (245 in^2) of liquid nitrogen cooled surface area that provides pumping speeds up to 12,000 ls^{-1} for hydrogen (see table). The shroud is mounted on an 8 in. CFF (DN160).

AMBIENT SPUTTER SHIELD

The ambient sputter shield economically maximizes surface area when cooling is not practical or possible. It provides 827 cm^2 (128 in^2) of ambient temperature surface area that provides pumping speeds up to 2200 ls^{-1} for hydrogen (see table). The shield is mounted on an 8 in. CFF (DN160) or a 6 in. CFF (DN100).



Technical data

	Area	Temperature	H ₂		CO		H ₂ O	
			Rate	Speed	Rate	Speed	Rate	Speed
Typical TSP pumping speeds	$\text{cm}^2/\text{inch}^2$	°C	$\text{ls}^{-1} / \text{cm}^2$	ls^{-1}	$\text{ls}^{-1} / \text{cm}^2$	ls^{-1}	$\text{ls}^{-1} / \text{cm}^2$	ls^{-1}
Liquid cryoshroud (8")	709/110	20	2.6	1843	8.2	5814	7.3	5176
	1578/245 ⁽¹⁾	-195	17	12053	11	7799	14.6	23039
Ambient sputter shield (8")	827/128	20	2.6	2150	8.2	6780	7.3	6037
Ambient sputter shield (6")	621/96	20	2.6	1614	8.2	5092	7.3	4533

(1) applies to H₂O speed only

Ordering information

Product description	Order number	Product description	Order number
TSP cartridge 3 filaments 2-3/4" CFF	G360819	1.5 metre cable with MS connectors	MSHC1MS
TSP ambient sputter shield 6" CFF	G360190	3 metre cable with MS connectors	MSHC3MS
TSP ambient sputter shield 8" CFF	G360044	6 metre cable with MS connectors	MSHC6MS
TSP liquid cryoshroud 8" CFF	G360051	10 metre cable with MS connectors	MSHC10MS

NON-EVAPORABLE GETTER PUMPS (NEG)

NEGs are reactive metals that have been pressed onto solid substrates or sintered into discs. The amount of material used controls the speed and capacity of the NEG pump, but typically ranges from 50 to 3,500 ls^{-1} of hydrogen. As NEGs become saturated with gases, they can be reactivated without venting to atmosphere. Their prime advantage is their ability to pump for extended periods without the need for power.

NEGs are ideal for pump down, stay down applications and can be used to boost the performance of an ion pump or as a standalone pump. They are ideal for UHV applications due to their compact size and high H_2 pumping speed. They are not suitable for applications that cycle up to atmospheric pressure regularly as this will saturate the surface and they can only be reactivated a finite number of times.



Technical data

	Units	N50	N100	N200	N300	N400
Flange		DN40 (2.75") CFF				
Total mass	kg (lbs)	0.48 (1.05)	0.54 (1.19)	0.75 (1.65)	0.8 (1.79)	0.85 (1.88)
Alloy composition		Zr (70%), V (24.6%), Fe (5.4%)				
Getter mass	g	31.5	58	108	144	180
Getter surface	cm ²	187	348	642	856	1070
H ₂ pumping speed	ls ⁻¹	55	106	208	312	412
CO pumping speed	ls ⁻¹	27	51	94	125	156
H ₂ sorption capacity	Torr l	630	1170	2160	2880	3600
CO (25 °C) sorption capacity	Torr l	0.1	0.2	0.4	0.6	0.8
CO total sorption capacity	Torr l	284	526	972	1296	1620
Insertion length	mm	46	61	89	110	130
Diameter	mm	34				

Ordering information

Product description	Order number	Product description	Order number
50 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN50	400 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN400
100 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN100	1 metre cable with XLR connectors	XLRS1N100
200 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN200	3 metre cable with XLR connectors	XLRS3N100
300 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN300	6 metre cable with XLR connectors	XLRS6N100



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