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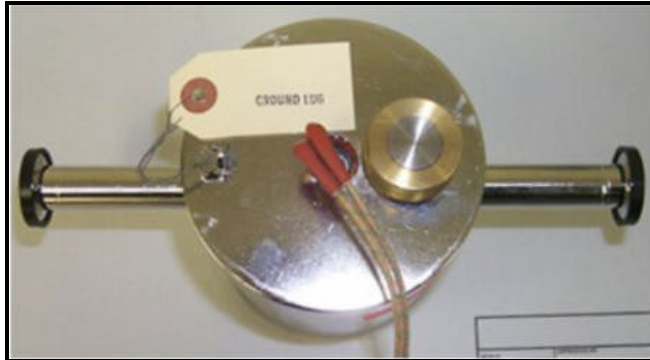
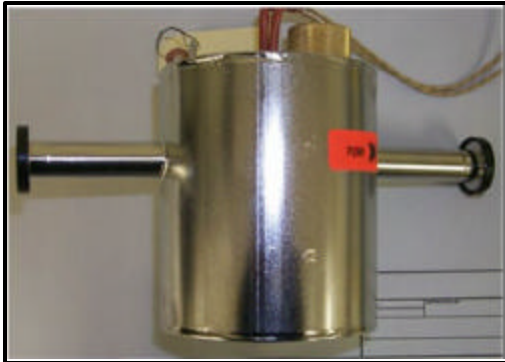
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THE MOLECULAR SIEVE

Molecular Sieve Trap

The molecular sieve trap is a foreline trap which employs synthetic zeolites (molecular sieve (13X) as an absorbent. The large surface area of the 13X) sieve, and its large pore size of 10 to 13 angstroms produce excellent absorption of water and oil vapor and other larger gas molecules found in the vacuum line. Molecular sieve traps have been in use since the early 1960's. They were used to prevent oil back streaming and reduce the base vacuum limited by water vapor. A typical application was to start a sputter-ion pump at room temperature when the use of a sorption pump was not practical. Today, the trap when used properly is still very effective in reducing or preventing back-streaming from rotary vane pumps and is very widely used.



Operation/Installation on Molecular Sieve Trap

Mount the vacuum ports in the horizontal to minimize direct exposure to the pump oil vapor. The molecular sieve is loaded into the trap through a 3/4" ID vacuum type fill port and is held in position by a retaining screen. Radial vanes are located in the space around the screen and inner trap body to direct gas flow through the molecular sieve bed.

Review and look for excess dust from the pellets due to rubbing against themselves during shipping. Sometimes it is advantageous to hit both intake and exhaust port of trap with a shop vacuum to remove excess dust prior to hook up. Although the dust is non-abrasive it can cause an unwanted build up especially if combined with the oil found in many mechanical vacuum pumps.

A tube heater (one to three depending on the model) is mounted in fitted heater sockets.

These heaters are used for periodically re-activating the molecular sieve in place to drive off trapped water and oil vapor. This procedure is necessary when the base vacuum will not return to its low point. Bake out is accomplished by connecting the heater leads to 115 VAC power source. **Always connect a ground wire to the ground lug for safety.** In some cases a three-wire heater with built-in ground wire and grounded twist connector can be used. Heat is self regulating when connected directly to the power source for 90 mins. Typically, a timer is used. During bake-out the mechanical pump must be running and should be gas ballasted. During bake-out, pressures in the foreline will rise to more than 10^{-1} Torr. Mass 55 peaks (oil vapor) can rise to levels in excess of an untrapped pump on the high vacuum side of the trap during bake-out. It is suggested, the trap be valved off from the system during this process. Normal cycle is 90 mins. with heater on, valves off and a 90 min. cool-down period.

Continuous Trapping of a Molecular Sieve Trap

To provide continuously trapped pumping it is suggested that two traps be used in parallel. In this way one trap can be re-activated (baked-out) while the other trap is being used. A small auxiliary pump can be used to pump out the saturated trap during bake-out. Re-activation can also be accomplished by replacing the molecular sieve with a fresh replacement charge.

Replacement Charges

HyVac replacement charges are pre-baked and ready to use. Eventually, the sieve charge should be replaced as there is some oil residue that becomes baked on. Suggested sieve charge replacement is every year or after 10 bake-outs.



Summary

The molecular sieve trap will provide one of the best oil vapor attenuation factors for a trap not requiring liquid nitrogen. These traps will also lower the base vacuum attainable with an untrapped pump. In order to maintain this performance, proper operation and maintenance is required. With all traps and pumps, there is no hard and fast rules for reconditioning and maintenance. Therefore, close observation of performance parameters and replacement materials will be the best guide in a vigorous maintenance program.

HyVac Products, Inc. manufactures mechanical vacuum pumps, gauges, traps, filters and supporting components for most every application and supports a network of qualified dealers to help you.

#1 & #2 Molecular Sieve charges are prebaked.

#1 Heater is 115 VAC 75 Watt.

#2 Heater is 115 VAC 125 Watt.

Ordering Information Trap Bodies

Hose Connectors

MODEL NO.	A	B	C	SIEVE CHARGE	HEATER
35000-000	3/4"	5 1/4	9	#1	#1
35001-000	1"	5 1/4	9		
35002-000	1 1/2"	7 7/8	9	#2	#2
35003-000	2"	7 7/8	9		

Flange Connectors

MODEL NO.	PORT CONNECTIONS	B	C	SIEVE CHARGE	HEATER
35008-000	NW16 both ends	5 ¼	9.3	#1	#1
35009-000	NW25 both ends	5 ¼	9.3		
35010-000	NW40 both ends	7 7/8	9.3	#2	#2
35011-000	NW50 both ends	7 7/8	9.3		

Refill of Molecular Sieve Material

CATALOG NUMBER	DESCRIPTION	CONNECTION
35040-000	Charge #1	1lb 5oz
35040-001	Charge #2	1lb 5oz