

Welch®

**OEM, Industrial & Refrigeration Catalog
2005-2006**

**Foreline Traps & Hose Adapter Kits
Catalog Pages 26 & 27**

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Foreline Traps

Foreline Trap Selection

For protection against contaminants in vacuum systems



Foreline traps are used to prevent harmful substances generated or resident in vacuum systems from damaging vacuum pumps. Particulates can become lodged in a pump mechanism causing physical damage. Vapors can condense to liquids within the vacuum pump as a natural result of gas compression. Liquid water, solvents and acids can cause serious damage to a vacuum pump mechanism. (Refer to CHEMSTAR®, pages 6 and 7 for work with corrosive gases).

Foreline traps are also used to prevent oil backstreaming, the migration of oil molecules from vacuum pumps back into vacuum systems causing contamination of those systems. This is more likely to occur at vacuum levels of 1×10^{-2} Torr (1.33×10^{-2} mbar) or deeper that are maintained continuously over long periods of time.

TRAP SELECTION TABLE				
Effectiveness Rating: *** Very Good ** Good * Fair N/R Not Recommended	COAXIAL TRAP	ACID NEUTRALIZATION TRAPS	COLD TRAPS	
	Stainless Steel Element	Calcium Hydroxide	Dry Ice Slurry	Liquid Nitrogen
TRAP APPLICATIONS				
Prevent Oil Backstreaming	**	N/R	***	***
Trap Water Vapor	N/R	N/R	***	***
Trap Organics ¹	N/R	N/R	***	***
Trap Acidic Vapors	N/R	***	*	***
TRAP MAINTENANCE				
Time Interval To Replace Element	Six Months	Depends on Acid Vapor Load	-	-
Need Only Clean Trap	No	No	Yes	Yes
Refrigerant Hold Time (Hours with no load)	-	-	24	2 to 4
TRAP CHARACTERISTICS				
Trapping Mechanism Operating Temperature	Room Temp	Room Temp	-79°C	-198°C
Limiting Pressure (Torr)	10^{-4}	10^{-2}	10^{-4}	10^{-5}
Can Lower Pump Base Pressure	—	-	Yes	Yes

Note:

1. Examples: paraffins, solvents, organic acids, alcohols.

Application Note for Cold Traps

Cold traps employing a dry ice slurry or liquid nitrogen are effective as long as the refrigerant level is maintained. If the trap warms up while the pump is running, all of the trapped condensables will be ingested by the vacuum pump, contaminating the oil.

Cold traps must be cleaned out at the end of each day. If the pump is run overnight, the trapped condensables will ultimately be ingested by the pump as the trap warms up. Cleaning a Dry Ice Slurry/Liquid Nitrogen trap is easy. The steps are: 1. Turn off the pump; 2. Leak air into the trap; 3. Remove the center well and plexiglass ring to a hood. The center well can be washed off into a beaker or the condensables can be allowed to evaporate in the hood.

Foreline Traps & Hose Adapter Kits

Dry Ice/Liquid Nitrogen Trap



- Hose barb connection accepts 7/16 in. (11 mm) I.D. hose
- Removable 3 quart center well for dry ice/isopropyl alcohol slurry (do not use acetone) or liquid nitrogen
- Visible trapping surface
- Cold temperature up to 12 hours depending on vapor load with dry ice slurry
- Cold temperature up to 2 hours depending on vapor load with liquid nitrogen

TUBING NEEDED	DIAM.	HEIGHT	DIAMETER	IN/OUT OFFSET	TRAP CAT. NO.	REPL. SEAL CAT. NO.
7/16 I.D.	10	8.25	10.75	3.5	1420H-14	545210

Tubing cat. no. 331040-5

Coaxial Traps



- ISO NW flange connection
- Reduces oil backstreaming
- Stainless steel construction
- Easy replacement of elements
- Element must be ordered separate from trap

ISO SIZE	CAPACITY	DIAM.	HEIGHT ¹	CAT. NO.
NW 16	To 4 CFM (140 L/min)	3.75	8.25	541001
NW 25	To 12 CFM (340 L/min)	5.50	8.25	541002
Stainless steel element for ISO NW 16 Trap				541921
Stainless steel element for ISO NW 25				541922

1. Distance between ISO NW inlet and outlet connections.

Acid Neutralization Trap



- ISO NW flange connection
- Calcium Hydroxide element
- Element changes from white to bluish-transparent when spent

ISO SIZE	CAPACITY	CATALOG NUMBER		
		TRAP	REPLACEMENT ELEMENT	PUMP CONNECTOR KIT FOR TRAP ¹
NW 16	To 2 CFM (57L/min)	1420H-21	1420E-02	1420K-16
NW 25	To 12 CFM (340L/min)	1420H-20	1420E-01	1420K-25

1. Includes hinge clamp, centering ring and elbow. Use with CHEMSTAR® vacuum pumps.

Hose Adapter Kits • Hose Adapters • Hose Valves



1420H-01

- Kits ensure proper sized tubing adaptors, and clamps for vacuum tight connections
- Kits include at least 5 ft(1.5m) of thick walled rubber vacuum hose

ADAPTER KITS FOR PUMP MODELS	PUMP INLET O.D.	APPLIANCE CONNECTOR O.D.	CAT. NO.
8890 (GEM)	3/8	1/4 and 3/8	1420H-12
8890 (GEM)	3/8	7/16 and 1/2	1420H-01
1400, 1405, 1399, 8905	7/16	1/4 and 3/8	1420H-01
1402, 1380, 8907, 8912, 8917, 8920, 8925	13/16	1/4 and 3/8	1420H-02

Dimensions are in inches