



**Instructions for Liquid Nitrogen  
Cold Trap System**

**CTS-LN Part No. 093345**

# Introduction

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Congratulations on your purchase of the SGE Liquid Nitrogen Cold Trap System. Please take time to carefully read the instructions in this manual to ensure trouble-free operation of your cold trap.

The SGE Cold Trap System uses liquid nitrogen to control the flow of cryogen to a low thermal mass cold trap through a pneumatically operated valve. This valve fits directly onto the cold trap tee (Item 1, Diagram 1). The pneumatic valve is actuated using compressed air (or other suitable gas such as nitrogen) at a pressure of 50 psi).

For further information and ordering of spare parts, please visit our web site at:

**[www.sge.com](http://www.sge.com)**

# Installation

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- Ensure that the lower part of the valve is adequately tightened (items 2 and 3, Figure 1).
- The pneumatically operated valve (6) should be mounted on the outside of the GC oven wall but not close to high-temperature regions such as detectors or injectors. The valve can be held in position with the mounting bracket provided (12). The bracket can be held in place by drilling two holes with a 1/8 in drill bit in the oven panel and using the metal screws provided.
- The valve should be mounted so the cold trap tee (1) can be passed through the oven wall and connected directly to the 1/16 in connector on the valve. Ensure that the cold trap is fully held in the Vespel® ferrule in the valve before tightening.
- To the inlet on the pneumatic head (6), connect the tee union (7) containing the fixed vent. A Vespel sealing ring VSR/16 makes the seal. The nut on the sidearm of the tee should not be removed as it contains a restrictor designed to relieve the pressure in the pneumatic valve head when the source pressure is switched off.
- A 1/16 in stainless steel line (9) should be run between the Union Tee (7) where it is connected using the nut (8) and the switching valve MTV-3 (Diagram 2). On the switching valve, the line is connected to the position labelled "To Pneumatic Valve". For these connections, VSR/16 sealing rings should be used.
- The actuating gas (usually air) should be connected to the MTV-3 valve as shown in Diagram 2. For correct operation of the valve, it is essential not to insert the stainless steel tubing too far as it may damage the valve poppet. If automation of the cooling function is required, a solenoid valve can replace the MTV-3 valve. A source gas pressure of at least 50 psi is required to actuate the pneumatic head.
- Connect the supplied 1/8 in stainless steel tubing from the high pressure liquid nitrogen source to either one of the 1/8 in connectors (eg. 4) on the pneumatic valve. Use the GFF/8 ferrules provided to seal the tubing into the valve.
- Connect some more of the 1/8 in stainless steel tubing from the remaining 1/8 in connector (5) on the valve to the modified Whitey valve (11) which should be mounted on a suitable panel. Connect the 1/8 in tubing (10) to the

inlet of the valve as indicated by the arrow on the valve body showing the direction of flow.

- The 1/8 in tubing from the liquid nitrogen source and the bottom part of the MOVPT 8/8/16 valve should be insulated to reduce the amount of liquid nitrogen required to maintain the required temperature.

*Flexible foam hose or foam adhesive tape may be used as well as urethane foam which can be applied from aerosol containers. These insulating materials are available from suppliers of refrigeration equipment.*

- Pass through the cold trap tee the section of the capillary column which requires trapping.

## Operation

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Prior to the commencement of cold trapping, the system should be cooled by opening the Whitey valve sufficiently to bring the system down to a temperature such that liquid nitrogen (bluish haze) is observed venting through the Whitey valve. The valve may then be closed to a position of reduced flow that is just sufficient to maintain the system at the desired temperature. This position can be held and returned to at a later time by setting the screw and locking nut in the base of the Whitey valve.

When the system has been brought down to the required temperature, simply opening the pneumatic valve by switching the MTV-3 (or solenoid) valve cools the cold trap. The cold trap will be cooled almost immediately.

The temperature attained in the cold trap and the volatility of the components, which can be trapped successfully in the capillary column, will depend on:

- purge flow set with the Whitey valve and;
- GC oven temperature.

Turning off the actuating air to the pneumatic head (by switching the MTV-3 valve) stops the flow of liquid nitrogen to the cold trap. The cold trap will heat up quickly and uniformly due to its low thermal mass design.

## Packing List

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Part no.	Description	Qty
093347	Liquid nitrogen Cold Trap Tee	1
0933427	MOVPT 8/8/16 with Mounting Bracket	1
0933609	Modified Whitey valve ORS-2	1
072603	GFF/16, pkt of 10	1
072602	GFF/8, packet of 10	1
	2 metres 1/8" x 2.2mm annealed S/S tubing	
0624161	3 metres 1/16" x 0.8mm annealed S/S tubing	
093218	Clippard Switching Valve MTV-3	1
072653	Vespel Sealing Rings (VSR/16)	1
MN-0061-A	Instruction manual	1

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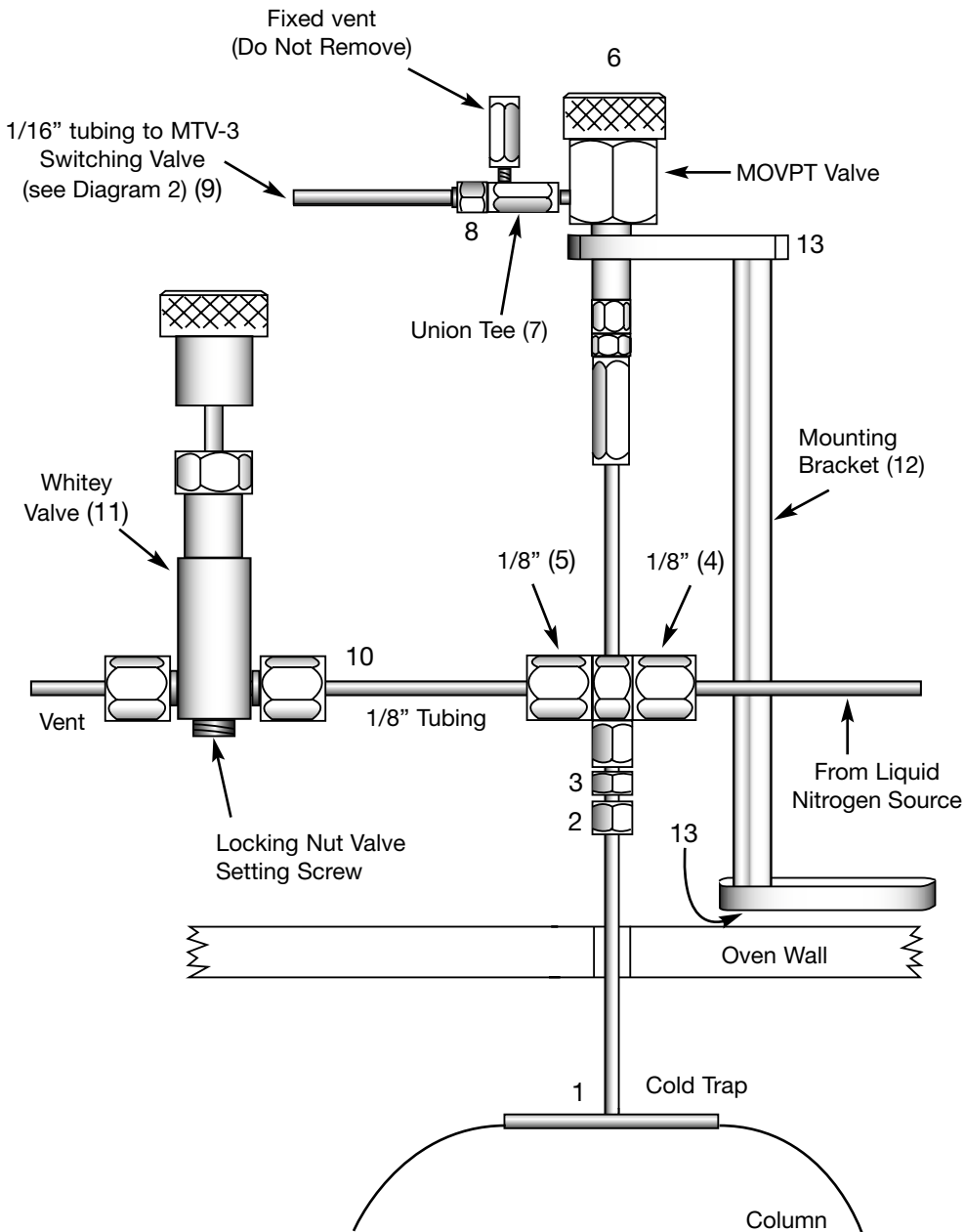
## Table 1 Part Descriptions of Diagram 1

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This listing describes the individual parts shown in Diagram 1. The part numbers represent the SGE order numbers for replacement items.

<b>Item</b>	<b>Description</b>
1	Liquid Nitrogen Cold Trap Tee
2	1/16 in Nut
3	1/16 in Union
4	1/8 in Nut
5	1/8 in Nut
6	Pneumatic Valve Head
7	Tee Union containing the fixed vent
8	1/16 in nut off Tee Union
9	1/16 in Stainless Steel Tubing
10	1/18 in Stainless Steel Tubing
11	Whitey Valve
12	Mounting Bracket
13	Grub Screw

# Diagram 1 Liquid N2 Valve Assembly

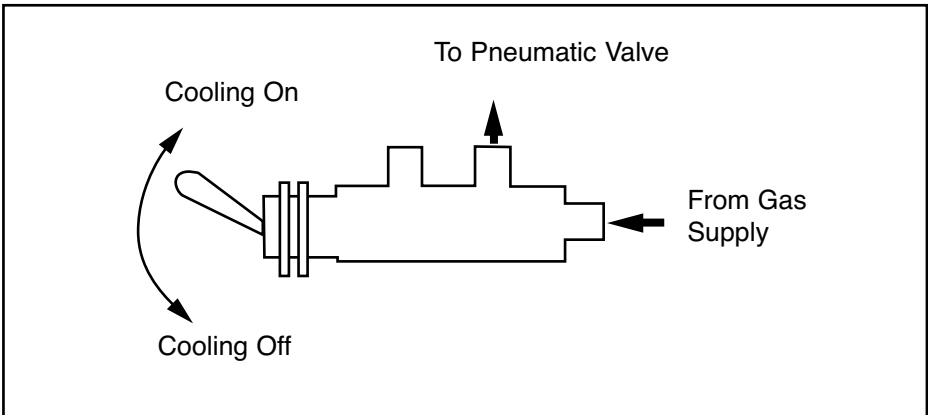


## Diagram 2 Switching Valve (MTV-3)

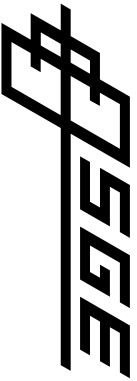
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- Mount the switching valve (MTV-3) in a convenient place in the panel to the GC. The actuating gas sources should be connected to the inlet of the valve as shown in diagram 2.
- For correct operation of these valves, it is essential not to insert the stainless steel tubing too far because this may damage the valve poppet.

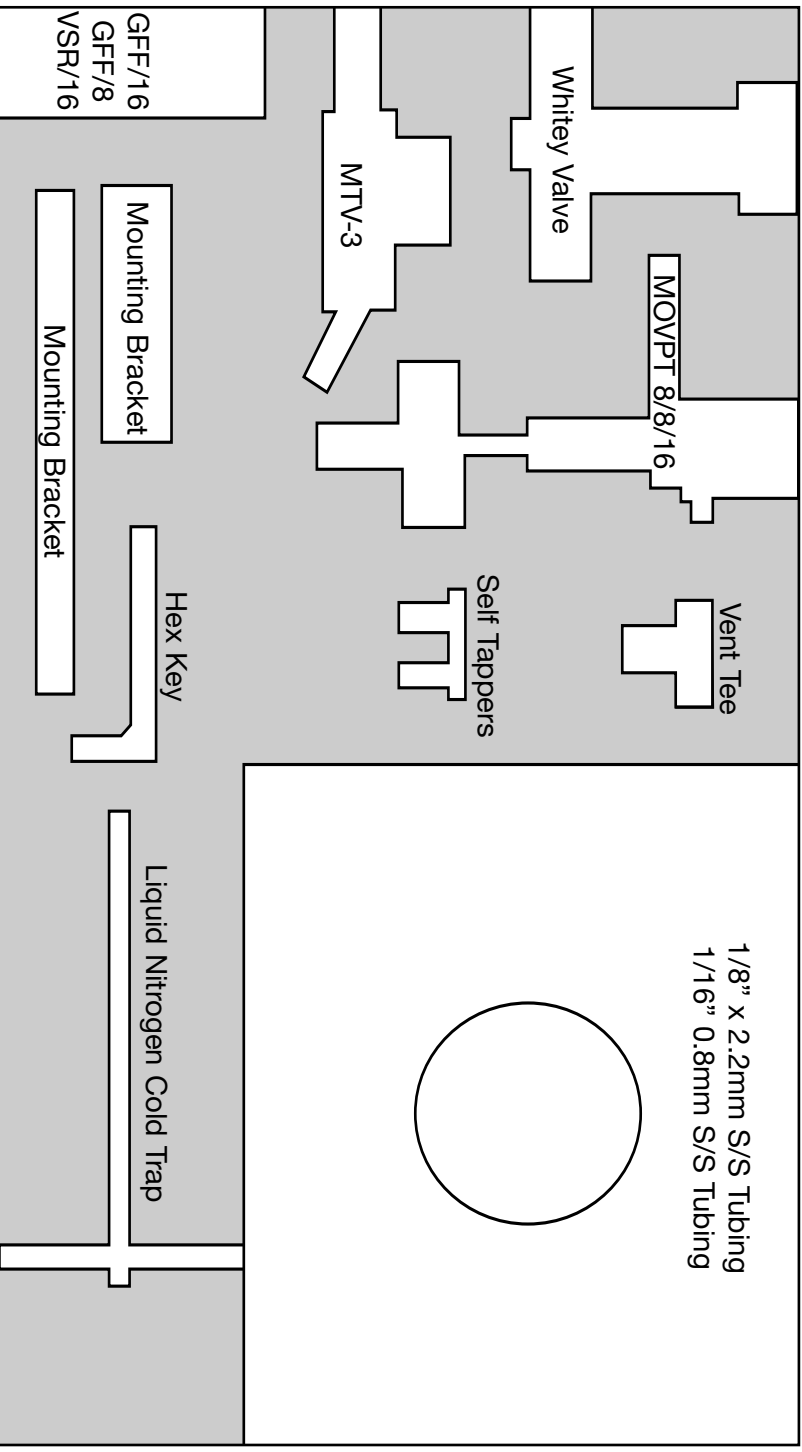
Diagram 2: Switching Valve (MTV-3)







# CTS-LN Contents



1/8" x 2.2mm S/S Tubing  
1/16" 0.8mm S/S Tubing

Whitey Valve

MOVPT 8/8/16

Vent Tee

Self Tappers

MTV-3

Hex Key

Mounting Bracket

Mounting Bracket

Liquid Nitrogen Cold Trap

GFF/16  
GFF/8  
VSR/16

Mounting Bracket

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