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HOW DO I INSTALL THE HIGH PRESSURE GAS DELIVERY SYSTEM?

Joule Thomson refrigerators operate using high pressure gas to cool a sample stage with high temperature precision and very low noise. The most commonly used gas is nitrogen gas. In order to ensure maximum performance of the Joule Thomson refrigerator, with minimum operational problems, the type of nitrogen gas used is very important. Correct installation of the high pressure gas system is critical to trouble-free and safe operation.

For more information on the types of nitrogen gas required for operation with Joule Thomson refrigerators, please refer to the Technical Support Bulletin entitled “What are the Specifications for the Nitrogen Gas used in Joule Thomson Refrigerators?”

HIGH PRESSURE GAS DELIVERY SYSTEM INSTALLATION

► NOTE

Please contact your facilities department for any specific rules and regulations regarding high pressure gas usage and installation for your building. These instructions are not meant to override the regulations within your facility, but instead to provide guidelines for the correct installation for the integration into the Joule Thomson cooling system.

- (1) Install high pressure nitrogen gas tank close to equipment.
 - Secure to wall or lab bench using locally approved gas tank restraints.
- (2) Install high pressure gas regulator to high pressure gas tank.
 - Typically you need a CGA 580 connector on tank and regulator.
- (3) Open tank valve, note starting delivery pressure of gas tank.
 - This should be about 2640 psi.
 - Please refer to the technical support bulletins on nitrogen gas specifications (TSB-001) or nitrogen gas tank times (TSB-002) for more information on alternatives.
- (4) Open regulator valve to provide gas flow that is audible at outlet of regulator.
- (5) Use teflon tape to wrap Gas Line Adapter threads.
 - Install into port of regulator housing.
 - This should provide a leak free high pressure seal.
- (6) Adjust gas pressure to maintain audible flow of nitrogen.
- (7) Unpack the 5' (5 foot) stainless steel gas line, carefully uncoil, gently straighten line.

- Do not kink or make sharp bends.
 - Keep gas line straight near fittings at end.
 - Retain the threaded barrel which was attached to the ends of the gas line to provide a hermetic seal during shipment.
 - You will use this during normal operation of the system.
- (8) Attach one end of the 5' stainless steel gas line to the fitting on the gas line adapter now installed in the high pressure gas regulator.
- Gas line connector nuts need only to be finger tight.
 - If this is not sufficient to make a high pressure seal, tighten only an additional 1/4 turn with 1/4 inch wrench.
- (9) Adjust gas pressure to maintain audible flow of nitrogen.
- (10) If the system has just been delivered from the factory, unpack high purity/high pressure nitrogen filter.
- Remove it from its plastic storage bag with moisture absorbing packet.
 - Remove and retain metal caps used to provide a hermetic seal during shipment.
 - You will use these during normal operation of the system.

► **NOTE**

If the system has been in use previously, recharge the nitrogen gas filter with new filter material. Filter contents should be changed after every third tank of nitrogen used.

Connect other end (free end) of the 5' gas line to the inlet connector of the filter.

► **NOTE**

Do not open filter package and remove end caps until you are ready to connect the gas line. The filter should be mounted vertically with the intake at the top.

- (11) Adjust gas pressure to maintain audible flow of nitrogen.
- Mount filter so that it is vertical.
 - If you cannot do this, make sure that one end is at least 3/4" higher than the other end.
- (12) Unpack the 3' (three foot) or 6" (six inch) stainless steel gas line following the instructions of step 7 above.
- Use line of most convenient length.
 - The shorter, the better.
 - Again, the connector nuts need only be finger tight.
- (13) Attach gas line to exhaust end of filter.
- (14) Adjust gas pressure to maintain audible flow of nitrogen.
- (15) Purge high pressure gas delivery system for 5 minutes.

(16) Turn off gas.

(17) Use threaded barrel and filter end cap to hermetically seal free end of gas line.

► **NOTE**

Before connecting the high pressure gas line set up to the Joule Thomson refrigerator system, it is recommended that you read the technical support bulletin on Clogging in Joule Thomson Refrigerators (TSB 010).

FURTHER QUESTIONS

If you have further questions, please do not hesitate to contact MMR Technologies, Inc.:

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