THE VACUUM ACCESSORY KITS

INTRODUCTION TO THE VACUUM ACCESSORY KIT

MMR Technologies' Vacuum Accessory Kits have been designed to provide consistent, reliable vacuum for operation of the Joule-Thomson refrigerators in their respective vacuum chamber enclosures (dewar enclosures). These kits provide a clean, tested, wire reinforced vacuum line connecting the mechanical pump to the refrigerator, a filter to minimize back streaming of oil from the pump, a reliable vacuum valve for isolating the refrigerator from the pump, a valve for backfilling the refrigerator dewar with dry gas, and a calibrated vacuum gauge close to the refrigerator vacuum chamber, sized for measurement of the vacuum pressure during refrigerator operation.

FIGURE 1. The Vacuum Accessory Kit.

There are several different kits available, depending on the system being operated and the voltage of the laboratory where the system is in operation:

PART NUMBER	VOLTAGE	SYSTEMS OPTIMIZED FOR USAGE WITH
C1805	100 to 120 V, 50/60 Hz	System I, System II Seebeck and Hall
C1806	100 to 120 V, 50/60 Hz	LTMP (Microprobe)
C1818	220 to 240 V, 50 Hz	System I, System II, Seebeck and Hall
C1819	220 to 240 V, 50 Hz	LTMP (Microprobe)

APPLICATIONS

The Vacuum Accessory Kits are designed to retrofit to any MMR cryogenic refrigeration system presently in use, and to be installed with all new systems. They provide:

- A complete, tested vacuum line between the mechanical pump and the MMR refrigerator vacuum chamber.
- A vacuum gauge tested, calibrated, and mounted immediately adjacent to the refrigerator enclosure for accurate and immediate knowledge of the pressure within the chamber.
- A vacuum valve to isolate the pump from the refrigerator dewar and to provide a means to back fill with dry gas.

FEATURES

Several unique features of the vacuum accessory kits allow simplified vacuum operation and improved operation of the Joule-Thomson cryogenic refrigerator system. The kits include:

- Intake filter for the mechanical vacuum chamber pump to prevent back streaming. This ensures sample cleanliness and consistently better vacuum pressures.
- Reinforced vacuum lines provide maximum pumping speed and allow visual inspection of the pump line to ensure cleanliness.
- A three way vacuum line valve allows the pump to operate continuously keeping the line under vacuum. This valve also allows the chamber to be backfilled with dry gas to prevent contamination of the vacuum chamber and faster pump down times.
- Easy connection of the vacuum line to the MMR vacuum chamber

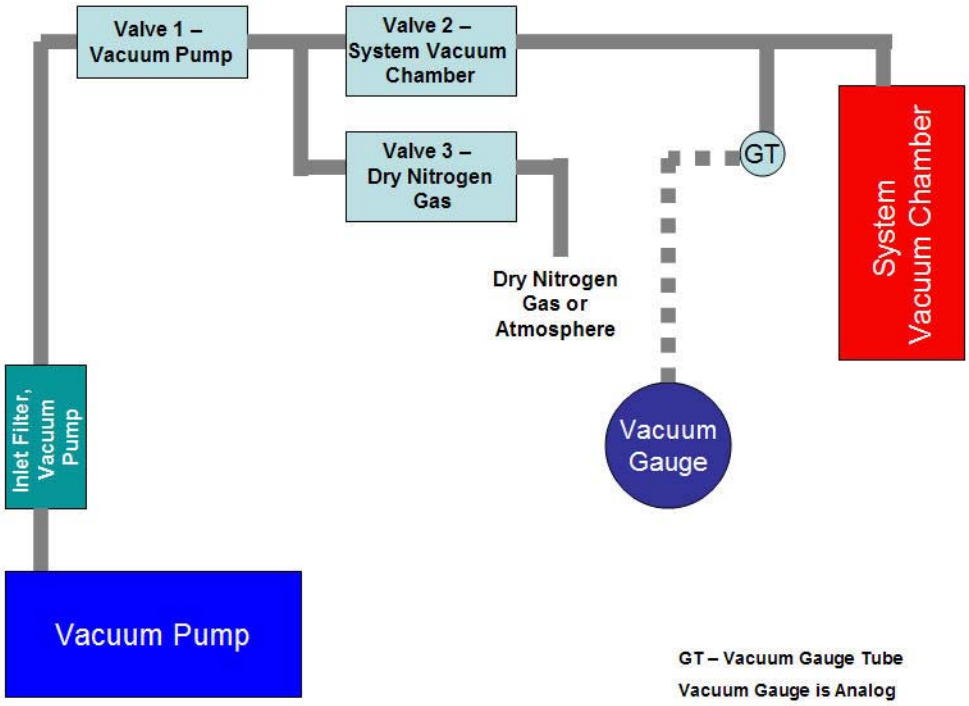

FIGURE 2. A schematic of the connections found when the vacuum accessory kit is connected to an MMR Technologies vacuum chamber and refrigerator system.

- Electronic monitoring of the vacuum pressure at or near the refrigerator chamber using a reliable, calibrated vacuum gauge which can monitor the pressure to below 1 milliTorr.
- Simple, easy to operate vacuum couplings between all components.
- The kit can be supplied with the system purchase, ensuring it is tested with the vacuum pump (when purchase through MMR Technologies) and the vacuum chamber to ensure optimal performance.
- Convenient mounting of line to wall or bench top for vibration isolation using screws or c-clamps.

Vacuum Gauge Location

Depending on the MMR Technologies system, the vacuum gauge can be located in different areas. Obviously, the closer this gauge is to the vacuum chamber, the more accurate knowledge one has of the pressure within the chamber. This is important, as a pressure of at least 8 milliTorr is required to achieve the full temperature ranges available from MMR.

The following list describes the position of the vacuum gauge with respect to the vacuum chamber:

System I	Evacuation port of vacuum chamber
System IIB	Evacuation port of vacuum chamber
System IIT	Evacuation port of vacuum chamber

Hall Dewar (LTHS)	Evacuation port of vacuum chamber
Microprobe (LTMP)	On vacuum chamber
Seebeck chamber	Evacuation port of vacuum chamber

SPECIFICATIONS

FEATURE	SPECIFICATION
Connection to Mechanical Pump	NW 25 Quick Connect vacuum coupling
Length	
Intake Filter	6.5 inch (165 mm)
Roughing Line	4 feet (1.22 m)
3-Way Valve	6.5 inch (165 mm)
Chamber Coupling Line	2 feet (0.61 m)
Power Requirements	115 V, 60 Hz (C1805, C1806) 230 V, 50 Hz (C1818, C1819)
Weight	6 pounds (2.75 kg)

FURTHER QUESTIONS

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

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