

2003 Lakeshore VSM
User Guide

Volume D

Troubleshooting
NHMFL Gas Handling Systems
Miscellaneous Topics

Compiled by:
Glover Jones

Reviewed by:
Gordon Armstrong

A newer version including some improvements is under construction.

TABLE OF CONTENTS:

Volume A

1. INTRODUCTION
 - A. General Remarks
 - B. Precautions
- 1.1 EQUIPMENT MODIFICATIONS (2002)
2. EQUIPMENT LIST
 - A. Necessary Equipment
 - B. Necessary Tools

Volume B

3. INITIAL SETUP
 - A. Room Temperature
 - B. Cryogenic

Volume B.1

4. FINDING THE FIELD CENTER
5. SIGNAL CALIBRATION
 - A. X-Y Adjustment – use if low noise required
 - B. Height Adjustment – use if low noise required

Volume C

6. VSM OPERATION
 - A. Inserting Samples
 - B. Sample Data Measurements
 - C. Removing Samples
 - D. Temperature Control
 - E. Measurement Over Temperature Range

Volume D

7. TROUBLESHOOTING
 - A. Problems during the initial setup Page 4
 - B. Problems during finding the field center Page 4
 - C. Problems during the signal calibration Page 4
 - D. Problems inserting samples Page 5
 - E. Problems during data measurements. Page 5
 - F. Problems removing samples Page 5
 - G. Problems with temperature control Page 5

NHMFL GAS HANDLING SYSTEM (Helium 4)
NHMFL GAS HANDLING SYSTEM (Helium 3)

Page 6
Page 7

MISCELLANEOUS INFORMATION

Page 8

7. TROUBLESHOOTING (FAQ)

A. Initial Setup

1. Why do the dewar arms have a mounting conflict with the VSM stand when I try to insert it into the magnet?

(Answer) When installing the dewar clamp you must observe where the alignment screws are located and position clamp according to avoid conflict. Dewar mounting arms have been shortened and should not be a problem at this time. The clamp screw can also be loosened and clamp arms rotated to the proper location.

2. Why does the VSM Head not pump down?

(Answer) Check the grommet on the VSM stopper and on the probe VSM attachment screw. Clean and apply a very thin coat of high vacuum grease on grommet.

3. Why am I having trouble centering the dewar tail?

(Answer) The support frame is out of alignment. The hex screws should be loosened to allow for movement in the X and Y directions. The dewar is probably touching at the top of the magnet and will not allow for further adjustments.

B. Finding the Field Center

1. Why can't I find the field center after I have ramped magnet?

(Answer) Check the multimeter for the proper input setting. Check the breakout box connection for proper pin location. Check the Data Acquisition program for the proper settings, i.e., addresses and equipment name. The 19 – pin connector is not properly engaged. The probe is out of position.

C. Signal Calibration

1. The VSM Controller value displayed during the calibration procedure does not seem to be the maximum value.

(Answer) The VSM head might need to be adjusted up or down to allow for the Ni sample to be centered between the coils.

D. Inserting Sample

E. Data Measurements

1. Why does the data acquisition program not give me the expected data plot?

(Answer) The VSM Controller address is 10. The VSM Controller pick-up coil cable is not connected at the breakout box. The Head Driver cable and Reference cable are not properly engaged at the VSM connection.

F. Removing Samples

G. Temperature Control

1. Why did the temperature increased substantially when the sample rod was inserted during cryogenic operation?

(Answer) The sample rod was inserted in the probe to fast.

2. Why did the probe get ice inside of it?

(Answer) A small vacuum leak inside the probe allowed outside air to enter the probe and/or you did not backfill space with helium when inserting or removing the sample rod.

3. Why is the temperature controller not reading the correct temperature of the probe and/or dewar?

(Answer) The temperature controller does have the right calibration information installed on it. Identify the temperature sensor and download calibration file.

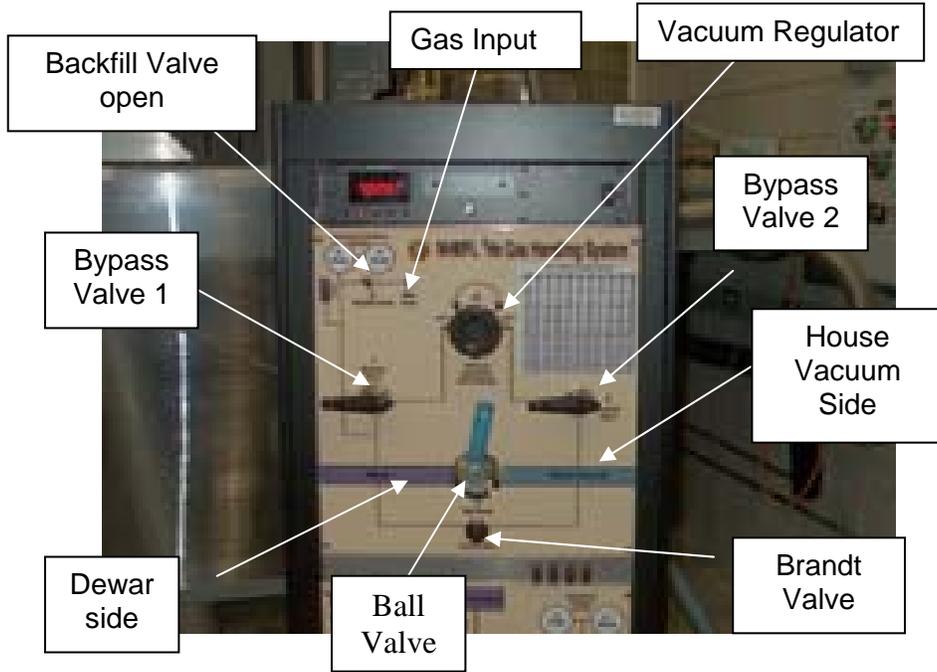


Figure 1 (Gas Handling System, Helium 4)

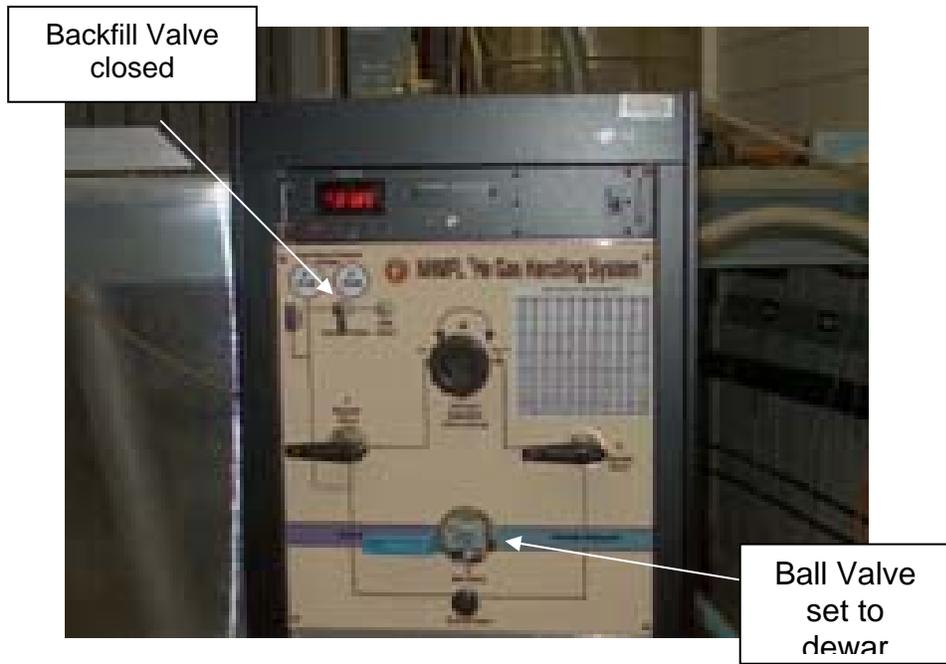


Figure 2 (Setup for vacuum on dewar)

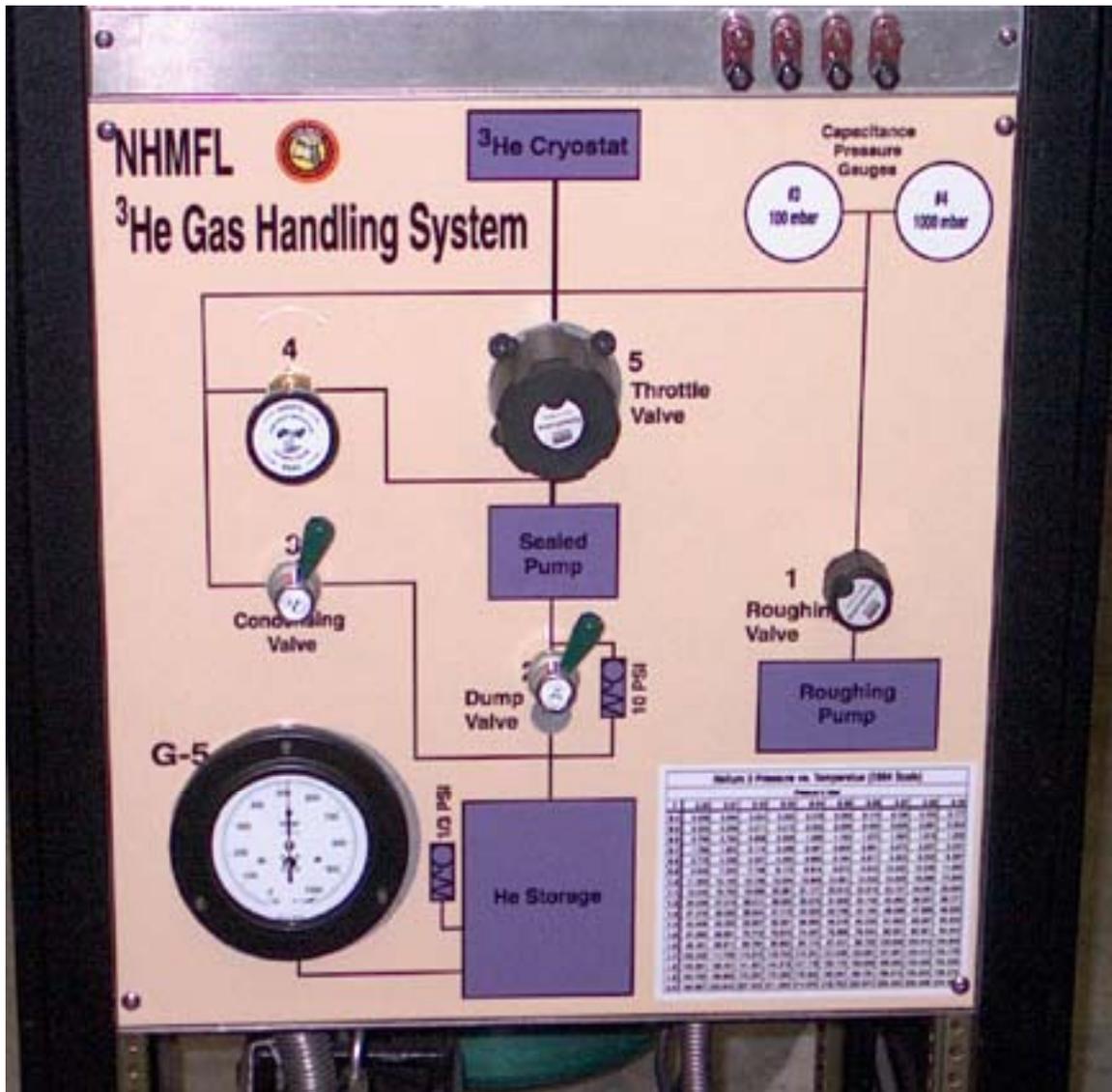


Figure 3

Miscellaneous Information:

- Heater resistance - 171 ohms connected, 158 ohms unconnected
- Pin B to Terminal Ring 7 - 12.4 ohms
- Pin J to Terminal Ring 5 - 1 ohms
- Sensor 3473 - pin E to pin F 91 ohms
pin E to pin G 27 ohms
pin E to pin H 27 ohms
- Sensor Coil - pin p to pin n 331 ohms

<u>19 pin connector</u>	<u>Terminal Ring</u>	<u>Item</u>	<u>Leads</u>
A			
B	7	Heater	
C	10		
D	8		
E		New Sensor 3473	
F		New Sensor 3473	
G		New Sensor 3473	
H		New Sensor 3473	
J		Heater	
L			
M			
N	3	Sensing Coil	TB red
	2		TE, BE
P	1	Sensing Coil	BB green
R			
S			
T		Microcoax 1	
U		Microcoax 2	
V		Shield 1,2	