Chapter 5
Service and Replacement Parts

Troubleshooting Guidelines

The Chillgard LE Refrigerant Monitor is designed to provide long and trouble-free monitoring.

If repairs are indicated, it is possible the user can diagnose and correct the problem using the following:

- Troubleshooting Guidelines (TABLE 5-1)
- Replacement Parts List (TABLE 5-2)
- Accessories Parts Lists (TABLE 5-3)

⚠ WARNING

Hazardous Voltage!
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

Table 5-1.Troubleshooting Guidelines

SYMPTOM	SOLUTION
No Output/ Power LED does not Light (no power)	Check and correct AC input power.
	Check AC wiring. and check for loose wires on terminal barrier input
	Check wiring to unit power supply; remove power supply cover and check fuse; replace if necessary
	Check for 24 VDC power supply output
	Replace LED board
Beacon will not Light when in Alarm 3 (beacon alarm)	Check that plug is connected to circuit board
	Check that the unit has exceeded Alarm 3
	Replace beacon assembly
No Analog Output	Check connection on board to 4-20 mA output
	Check board output with meter
	Replace circuit board

Table 5-1.Troubleshooting Guidelines (cont.)

SYMPTOM	SOLUTION
No RS-485 Communication	Check connection and polarity on board to RS-485 output
	Check and correct dip switch address and repower unit
	Replace circuit board
Noisy Output	Check input power
	Check tubing connection between optical bench and sound dampening element
	Replace optical bench
Calibration has Significantly Changed from Previous Reading	Check that gas is properly applied
	Clear inlet of particle matter
	Replace optical bench
Pump Not Running	Cycle the power and observe the pump; the FAULT light should be OFF
	Replace pump and cycle power; FAULT light should be OFF
	Replace the circuit board
FAULT Light Turns ON	Check the IR bench lamp; it must be flashing Replace optical bench
	For the unit equipped with pump, check the in-line filter, check tubing for leaks, and check for adequate flow rate
	Check if pump is electronically connected
	Check if pump is running
	Remove tubing from inlet and outlet
	Check if Sequencer manifold (if applicable) is electronically connected
	Check if the inlet line or filters are blocked
Under-range failed (zero limit is minus 20 ppm)	Adjust display zero to 0.0 via the keypad with zero air or zero scrubber applied
	Check the zero air cylinder; replace if necessary
	Check the zero scrubber; replace if necessary
Calibration failed (coefficients out of range)	Replace zero scrubber or change zero air supply
	Check span gas supply
	Check all tubing, filters and fittings for leaks
	For all sequencer units, make sure unit is locked on the selected

Table 5-1.Troubleshooting Guidelines (cont.)

SYMPTOM	SOLUTION
	sample port used for calibration\
	Leak-test the flow system
	Return the unit to MSA for service
Sensor flow failed (leaky or blocked sample line)	Remove all input lines to the sensor module
	Attach one line at a time to check for sample input
	Check all end-of-line filters; sample flow failure is always the present point being sampled
	Check operation of all manifold sample valves
	Leak test the flow system
	Return the unit to MSA for service
Sensor temperature range failed (checks for temperature range of over 67°C)	Check the connection of the IR source into the motherboard
	Replace optical bench
	Return to MSA for service
Memory protect (checks checksum of setup and cal values)	Replace the control board
	Return to MSA for service
External reset failed (checks the external reset button)	If not used, check for jumper
	If used, verify switch is wired normally-closed
Display failure (display communications)	Repower unit
	Check for broken or cracked display
	Replace display
Audio alarm failure (audio alarm)	Check output terminals
	Check for faulty horn buzzer

*⚠ **WARNING: Exercise caution as potential shock hazard exists**

Table 5-2. Replacement Parts List

COMPONENT/ASSEMBLY		PART NO.
Diffusion R-11	Optical Bench	10052377
Diffusion R-12	Optical Bench	10052378
Diffusion R-22	Optical Bench	10052379
Diffusion R-123	Optical Bench	10052380
Diffusion R-134 A	Optical Bench	10052421
Diffusion Sound Dampening Element		10032706
Calibration Cap		10034395
Power Supply		10034189
Power Filter		10034402
Diffusion Sensor PCB Assembly		10031467
LED Display		10039025
LED Cable Assembly		10034517
Four-Point Manifold Assembly		10033554
Strobe		634674
External Filter		711561
Pump Sound Dampening Element		10037529
Pump		10037963
Pumped Sensor Printed Circuit Board Assembly		10035346
Pumped R-11 Optical Bench		10052422
Pumped R-12 Optical Bench		10052423
Pumped R-22 Optical Bench		10052424
Pumped R-123 Optical Bench		10052425
Pumped R-134 A Optical Bench		10052426
In-Line Filter		10037357
Tubing Assembly		10037896
Pressure Sensor		10032335
Printed Circuit Board Assembly, Control		10033233
Printed Circuit Board, Membrane Switch		10034274
Strobe Light, red, 24 VDC		634674
Buzzer		637123
Horn		10035633

Table 5-3. Calibration Accessories Parts List

COMPONENT/ASSEMBLY		PART NO.
REFRIGERANT CALIBRATION GAS (IN AIR)	100 ppm R123	803498
	100 ppm R11	803499
	100 ppm R12	804866
	100 ppm R22	804868
	100 ppm R134a	803500
ZERO Air		801050
Calibration Box		10035292

Service and Assistance

When ordering replacement parts or to obtain assistance regarding any problem with the Chillgard LE Refrigerant Monitor, please provide the following information (found on a label located on the side of the instrument):

- serial number
- model number.

To obtain parts and/or assistance, contact the nearest MSA representative or write or call:

Mine Safety Appliances Company
Sales Department
P.O. Box 427, Pittsburgh, PA 15230

1-800-MSA-INST.