Chapter 4.0
Troubleshooting

4.1 General

Kirby Morgan diving helmets are highly reliable life support equipment which should not malfunction if proper preventative maintenance procedures are followed. Most problems encountered in using the helmet can be easily remedied. The following information covers most potential operating difficulties.

4.2 Communication Malfunction		
Symptoms	**Probable Cause**	**Remedy**
No sound at either com box or helmet.	**Communications box not on.**	**Activate switch and adjust volume.**
	Communications incorrectly hooked up.	Switch terminal wires.
	Communications not hooked up.	Plug into terminals.
	Communicator not functional.	Replace communicator.
Communications weak or broken up.	Terminals in comm module corroded	Clean terminals with wire brush. Terminals should be bright, shiny metal.
Communications only work when wire is wiggled back and forth.	Break in diver's communication wire.	Splice wire if damage is minor. Replace wire if damage is major.
Communications only work when connector is wiggled back and forth.	Break in waterproof connector.	If connector is suspect, remove from line and test line for integrity prior to replacing connector.
Diver speech weak or can't be heard.	Microphone in helmet dead.	Replace microphone as per manual.

4.3 One Way Valve Malfunction		
Symptoms	**Probable Cause**	**Remedy**
One way valve allows back-flow.	Foreign matter in valve.	Disassemble valve, clean and rebuild.
One way valve doesn't flow any gas.	Foreign matter in valve.	Disassemble valve, clean and rebuild.

4.4 Side Valve Malfunction		
Symptoms	**Probable Cause**	**Remedy**
Defogger can't be shut off. Helmet free flows through defogger.	Seat assembly damaged or debris under seat.	Clean and/or replace seat assembly.
Defogger valve will not flow gas.	No air in umbilical.	Turn air on to diver's supply topside.
	Foreign matter in side block or one way valve.	Disassemble side block and clean.
Defogger valve knob hard to turn.	Valve stem bent.	Replace valve stem.

4.5 Water Leakage Into Helmet		
Symptoms	**Probable Cause**	**Remedy**
Water leakage into helmet.	Exhaust valve damaged or stuck open.	Seat or replace valve.
	Communications module O-ring extruded or damaged.	Replace o-ring.
	Communications module not properly tightened.	
	Diaphragm damaged or not seated properly.	Seat or replace diaphragm.
	O-ring in neck dam ring damaged or missing.	Replace o-ring.
	Port retainer screws loose.	Tighten screws.
	Neck dam torn or damaged.	Replace neck dam.
	Hair caught between o-ring and base of helmet.	Remove hair from this space.
	Head cushion or chin strap caught under o-ring at neck dam.	Clear cushion or dam
	Regulator assembled improperly.	Check for proper assembly.
	Torn/punctured diaphragm.	Replace diaphragm.

4.6 Demand Regulator Malfunction		
Symptoms	**Probable Cause**	**Remedy**
Regulator continuously free flows.	Adjustment knob not screwed in.	Screw in adjustment knob.
	Bent tube damaged causing misalignment of adjustment nipple.	Check the inlet nipple and soft seat. Replace as necessary.
	Supply pressure too high.	Adjust supply pressure lower than 225 p.s.i. over ambient.
	Regulator out of adjustment.	Adjust regulator
Regulator continuously free flows when underwater only.	Neck dam turned down, or too large for divers neck.	Neck dam must be turned up. Replace neck dam with proper size.
	Hair caught between o-ring and base of helmet.	Clean hair out.
	Neck dam torn.	Repair or replace neck dam.
Regulator is hard breathing.	Adjustment knob screwed too far in.	Screw adjustment knob out.
	Supply pressure too low.	Increase supply pressure.
Regulator does not supply gas.	Gas supply pressure too low.	Increase supply pressure to minimum required for depth.
	Regulator is out of adjustment.	Adjust regulator
	No gas in umbilical	Turn diver's gas supply on topside.
	Blockage in breathing system.	Disassemble regulator, clean, and adjust.

4.7 Emergency Gas Supply Valve		
Symptoms	**Probable Cause**	**Remedy**
Bail-out bottle drained without diver opening EGS valve	Stem fails to seat in valve body.	Replace EGS valve body.
	Debris under sea causing leakage.	Service valve.
	Leaking over-pressure relief valve on bail-out regulator.	Service valve.
	Leaking bail-out regulator on bottle.	Service regulator.
Knob difficult to turn.	Stem bent.	Replace stem.
	Packing nut too tight.	Adjust nut to correct torque.
Valve will not flow gas.	Foreign matter in valve.	Disassemble, clean, and reassemble.
	Stripped control knob.	Replace knob.

Chapter 5.0
Inspection and Maintenance

5.1 Routine Maintenance

Routine and preventative maintenance is critical and must be done on a regular basis. All parts and components of the helmet have a useful service life and eventually will require replacement. Some items, when properly maintained, can go many years before replacement becomes necessary. Each helmet or mask should have a logbook that tracks the usage, maintenance and repairs.

It is essential to safety of the user that a routine and periodic schedule of maintenance, inspection, and testing be carried out. Helmets should be inspected pre-dive on a daily basis. Helmets in continuous use around the clock should be rotated out every 24 hours and have a daily pre-dive inspection performed. Post dive cleaning and inspections should be completed each time helmet or mask use is finished for the day. To minimize the spread of germs, sanitizing should be performed after use, and in between use by different divers. Sanitizing procedures and recommended solutions are described and explained in the General preventative section of each KMDSI helmet and mask manual. If the user is in doubt about the serviceability or has questions in general, please contact your local KMDSI authorized repair facility or KMDSI at Tel. 805-928-7772. Check the Dive Lab website at www.divelab.com for the most up-to-date maintenance procedures.

KMDSI Maintenance Checklist are located on the KMDSI and Dive Lab websites. The checklists are intended for all helmet and mask models. There are also checklists for the KMB-18/28 band masks which are done up the same as the helmet checklists.

A2.1. All SL and KM helmets (all models) Recommended Annual Maintenance Inspection and Overhaul
A2.2. Monthly Maintenance
A2.3. Daily Set-Up and Functional Checklist
A2.4. Supervisor's Equipment Checks Prior to Entry
A2.5. Supervisor's Equipment Checks In-Water
A2.6. Post Dive Cleaning

Daily Pre-Dive Maintenance A2.3

The helmets and masks should be set up in accordance with the Daily Set-Up and Function Checklist A2.3. The checklist can be laminated placed on a clipboard and checked off with a grease pencil. Completion should be logged in both the supervisors log and the helmet or mask log book. The daily pre-dive is minimum daily checks KMDSI recommends. The daily pre dive may be modified to suit the needs of the user providing the basic intent of the checklist is being completed in a manner with the original intent.

Daily Post Dive Maintenance A2.6

The helmets and masks should be cleaned in accordance with the A2.4 checklist The checklist can be laminated placed on a clipboard and checked off with a grease pencil. Completion should be logged in both the supervisor's log, and the helmet or mask log book. The daily pre-dive is minimum daily checks KMDSI recommends. The daily post-dive may be modified to suit the needs of the user providing the basic intent of the checklist is being completed in a manner consistent with the original intent.

Supervisors Equipment Checks A2.4 and A2.5

These checks should be conducted by the diving supervisor or by persons designated by the supervisor in accordance with company policy.

5.2 Monthly Maintenance

A monthly inspection should be performed IAW the A2.2 checklist on a monthly or as directed by the A2.2 and / or anytime serviceability of the helmet or mask is in doubt. Helmets or masks used in contaminated waters or for welding, burning, and jetting operations will require service and inspection more frequently. If a situation arises that casts any doubt as to the serviceability of a part or component it should be replaced.
Use the appropriate manual for the model helmet or mask being serviced.

5.3 Yearly Maintenance

Overhaul/Inspection Checklist A2.1

The A2.1 checklist procedure fulfills all requirements for complete inspection. The checklist should be performed at least annually and or more often if daily and monthly inspections reveal signs of excessive corrosion, contamination, improper operation or signs of damage. The daily and monthly inspections will determine the necessity for overhaul with greater accuracy than simply placing a number of hours on the overhaul schedule. All O-ring's, exhaust valves, and soft goods should be replaced at least once a year. In between overhauls the soft goods can be cleaned inspect and reused providing a careful inspection reveals no damage or deterioration. The A2.1 checklist should be filled out and retained in the maintenance files and provides an excellent record of maintenance. All maintenance should be annotated in the helmet log.

The Overhaul Checklist Procedure A2.1 is intended to aid persons performing routine overhauls of KMDSI SuperLite Helmets and Band Masks. The checklist should be used in conjunction with the applicable Operations and Maintenance Manual for the model helmet being serviced and is primarily intended to guide and document the maintenance as it is completed. Specific detailed procedures for each section of this checklist can be found in the Operations and Maintenance Manuals. This checklist when completed should be retained in the equipment maintenance files and the helmet or mask log book should be updated. The checklist's are intended to be used for all models of KMDSI SuperLite and KM Helmets and band masks. All KMDSI helmet and band mask manuals can be downloaded free at www.kirbymorgan.com.