

KIRBY MORGAN DIVE SYSTEMS INCORPORATED



KMDSI HELMET & BANDMASK OPERATOR / USER TRAINING GUIDE

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MAINTENANCE AND TRAINING POLICY CHANGES
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Kirby Morgan Dive Systems, Inc., (“KMDSI”) and Dive Lab, Inc., constantly works on changes that will aid KMDSI dealers, diving contractors, and individual users of KMDSI equipment the ability to track helmet and band mask maintenance and/or repair.

KMDSI regularly revises all the SuperLite Helmet Operations and Maintenance Manuals and continuously works to improve all KMDSI equipment manuals. The current checklists are also available on the KMDSI website www.kirbymorgan.com, as a download. It is intended that users of KMDSI helmets and masks use these checklists when performing maintenance and/or using the equipment. These checklists are considered the minimum equipment guidelines. These checklists should be tailored by the user to meet the user requirements based on use and environmental conditions.

Diving Contractor Maintenance Policies:

Most diving contractors are requiring that their divers have their helmets and masks inspected by an authorized KMDSI trained technician, and some even require that only a KMDSI Certified Technician conduct repairs. KMDSI cannot override the maintenance and repair policies set by companies or organizations, but does strongly recommend companies carefully evaluate their policies and incorporate the KMDSI maintenance and repair recommendations to minimize unnecessary and redundant procedures. The KMDSI maintenance checklists represent the minimum recommended maintenance.

All KMDSI Helmets and Masks are designed with the professional diver in mind. Most maintenance and repairs can be performed by the owner/user using common hand and test tools following the procedures in the appropriate KMDSI Operations and Maintenance Manual. The owner can purchase genuine Kirby Morgan parts and components from any Authorized KMDSI Dealer. KMDSI strongly recommends that person(s) electing to do their own maintenance and repairs, to do so only if they have the proper tools and background training and experience to perform the maintenance. Maintenance and repair training is available by Dive Lab Inc., as well as other specially authorized KMDSI Dealers. The A2.1 Overhaul, Maintenance, and Inspection Checklist **should be** performed **at least annually** and as dictated by condition revealed during daily/monthly inspection. The A2.2 Monthly Inspection, and Maintenance Checklist **should be** performed at least once a month, and/or as stated in the procedure. The A2.3 Daily Set-up and Functional Checklist **should be** completed prior to commencement of diving operations. All persons performing repairs should keep good maintenance records and all receipts. Technical questions can be addressed to KMDSI or Dive Lab or any Authorized KMDSI Dealer.

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Appendices:

All Helmet and Band Mask Checklists are similar. The checklists are kept separate from the operations and maintenance manuals to minimize time required for changes due to procedural or equipment changes.

Appendix 2: KMDSI Recommended Maintenance and Checklists for all SuperLite and KM Helmet models

A2.1 Overhaul, Inspection and Maintenance

A2.2 Monthly Helmet Inspection

A2.3 Daily Helmet and EGS Set-up and Functional Checklist

A2.4 Supervisors Equipment Checks (prior to water entry)

A2.5 Supervisors (in-water checks)

A2.6 Post Dive Cleaning Maintenance and Inspection

Appendix 3: KMDSI Maintenance Log

Appendix 4: Bleed/Relief Valve

Appendix 5: Quick Sanitizing Procedures

Appendix 6: Thread Insert Testing Procedure

MAINTENANCE AND INSPECTION PROCEDURES / POLICIES:

The following section describes details and specific maintenance and inspection procedures that are used to complete the daily, monthly, and annual checklists, to ensure optimum reliability and performance. These procedures are used in conjunction with the daily pre and post dive maintenance checklists. The periodicities called out in the appendix section of each checklist are the minimum recommended for Helmets for Bank Masks being used under good conditions. Equipment used in harsh conditions, i.e., contaminated water, welding / burning operations, or jetting, will require more frequent servicing.

The intention of the maintenance checklists is to help maintain all Helmet and Mask components in good working order in accordance with KMDSI factory specifications and to identify worn or damaged parts and components before they affect safety, performance, and reliability. Whenever the serviceability of a component or part is in question, or doubt exists, replace it. All components and parts have a service life and will eventually require replacement.

NOTE: The side block (43a or 43b) does not need to be removed from the helmet annually providing, after removal, helmet components do not show excessive

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corrosion and verdigris. KMDSI recommends that at a minimum, the side block be completely removed at least every **three (3) years**. Clean and inspect the stud and securing screw and replace it if bent, striped, or any damage is detected.

NOTE: The pipe thread fittings used on the umbilical adapter (67) and the emergency gas valve (50) are the only fittings that require sealing with Teflon® tape. Liquid Sealant is not recommended for pipe threads. When installing Teflon® tape on pipe threads, 3 mil tape should be used. Apply the tape starting one thread back from the end of the fitting in a clockwise direction under tension. 1- 1/2 wraps is all that is needed. The use of more than 1-1/2 wraps could cause excess Teflon® tape to travel into the breathing system.

In all, Helmet and Band Mask Manuals, chapters 5, 6, 7, and 8 gives guidance on all routine and corrective maintenance and repairs. Disassembly and reassembly of components is explained in a step-by-step manner that may not necessarily call out that all O-rings and normal consumable items will be replaced. The manual is written in this way so that if an assembly, component, or part is being inspected or disturbed between normal overhaul intervals it is acceptable to reuse O-rings and components providing they pass a visual inspection (Section 5.3.1.). When conducting scheduled overhauls all O-rings should be replaced. The side block should be removed from the helmet at least every three (3) years so that the stud and securing screw can be inspected. All O-rings should be lubricated with the appropriate lubricant.

Lubrication / Cleanliness:

All new Helmets and Band Masks are lubricated during assembly at KMDSI using Christo Lube®. Seasoned Helmets and Band Masks that have previously been used for air diving but are also intended to be used with breathing gas mixtures in excess of 50% oxygen by volume, should be cleaned in accordance with the applicable Operations and Maintenance Manual and lubricated with oxygen compatible lubricants such as Christo-Lube®, Flourolube®, Krytox®, Tribolube® or other oxygen compatible lubricants. **DO NOT MIX LUBRICANTS!** All breathing air supply systems must be filtered and must meet the requirements of grade D quality air or better. Helmets and band masks used for air diving or enriched air at 50 % oxygen or less can be lubricated with food grade silicone grease Dow Corning 111® or equivalent. KMDSI uses Christo-Lube® at the factory for lubrication of all gas train components requiring lubrication, and highly recommends its use.

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Before 1999, Kirby Morgan Dive Systems, Inc., used Danger and Warning Notices in the helmet and mask owner's manual limiting the breathing gas percentage to less than 23.5 percent oxygen. This was due primarily to cleaning issues in regards to possible fire hazards and was in compliance with the recommendations of the Association of Standard Test Methods (ASTM), National Fire Protection Agency (NFPA), and the Compressed Gas Association (CGA) as well as other industry standards. During the 1990's open circuit scuba use of enriched-air (Nitrox) by technical and recreational divers became very popular, and as use increased, so did the number of combustion incidents during the mixing and handling of the breathing mixtures. These combustion incidents brought attention to the dangers and inherent risks associated with oxygen and oxygen enriched gas mixtures.

KMDSI cannot dictate or override regulations or recommendations set forth by industry standards or governing bodies pertaining to enriched gas use. However, it is the opinion of KMDSI and Dive Lab that breathing gas mixtures up to 50% oxygen by volume should not pose a significant increased risk of fire or combustion in Kirby Morgan Helmets and Masks low-pressure components and does not warrant the need for the stringent specialized oxygen cleaning and post-sampling particulate analysis normally accomplished for components used in high pressure oxygen valves, regulators, and piping systems. The decision for using 50% has been primarily based on a long history of operational field use of KMDSI helmets and masks, by the US Navy and Commercial Diving Industry. However, this is not intended to down play the need for cleaning and maintenance. All helmets and masks, as well as gas transporting components should be maintained carefully and cleaned at regular intervals and/or whenever contamination is found or suspected.

KMDSI feels confident that as long as Kirby Morgan helmets and masks are cleaned and maintained in accordance with the procedures set forth in the applicable maintenance manuals and maintenance checklist procedures, the equipment should not pose a significant increased risk of a fire or ignition originating in the helmet or mask low-pressure <250 psig (<17.2 bar) or less components when used with enriched gases of up to 50% oxygen. However, CAUTION should be exercised any time enriched gases are handled or used. In general, helmets and masks used primarily for mixed gas use are subject to far less oil and particulate contamination than those used for air diving. For this reason, helmets and masks commonly used with both air and enriched breathing gases should be cleaned and maintained with even greater care and vigilance. It is important that all internal gas-transporting components, i.e., side block, bent tube, and demand regulator assemblies remain clean and free of hydrocarbons, dirt, and particulates. Whenever the equipment is depressurized, all exposed ports or fittings should be plugged /capped to help maintain foreign material exclusion. Gas train components should be cleaned according

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to the procedures outlined in the applicable Operations and Maintenance Manual at least annually and whenever contamination is suspected or found. Normal interior and exterior surfaces should be cleaned at least daily at the completion of daily diving operations.

Helmets and masks used in waters contaminated with oils and other petroleum or chemical contaminants will require cleaning after each dive.

Helmet and mask components requiring lubrication should be lubricated sparingly with lubricants approved for oxygen use such as Christo-Lube®, Krytox®, or Flourolube®. KMDSI highly recommends using Christo-Lube®, and uses Christo-Lube® during the assembly of all KMDSI gas train components.

Regardless of the approved lubricant used, avoid mixing different kinds of lubricants. Persons mixing, handling, and working with breathing gases should be properly trained in all aspects of gas safety handling and use.

CAUTION: Do not use lubricants of any kind on the diaphragm or exhaust valves. Use of lubricants on exhaust valves can attract and hold debris that could interfere with the component.

NOTE: Refer to Chapters 6, 7, and 8 for removal and disassembly / reassembly procedures.

NOTE: The helmet weights do not need to be removed from the helmet unless fiberglass damage is present or suspected.

NOTE: During annual or routine overhauls, all O-rings and soft goods including exhaust valves should be replaced. KMDSI offers standard overhaul kits that have all the necessary parts.

NOTE: The neck dam rubber need not be replaced as long as inspection reveals no damage, or significant wear and the rubber components are not dried out.

NOTE: The oral nasal mask requires replacement only if inspection reveals damage, distortion, or signs of damage. The oral nasal flapper valve should be replaced at least annually.

NOTE: All threaded fasteners and parts require careful cleaning and inspection as well as the mating parts. Replace any and all threaded parts or components that show signs of wear or damage.

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KIRBY MORGAN HELMETS AND BAND MASK CHECKLISTS/TRAINING:

Kirby Morgan Dive Systems, Inc., (“KMDSI”) has developed the pre and post dive maintenance checklists as well as the other maintenance checklists to assist divers, tenders, and diving supervisors. The new checklists are for all KMDSI SuperLite Helmets, KM-37, 47, 57, 77 and Band Masks and intended to be used as a guide to help ensure helmets and masks are set-up and maintained properly. In addition, KMDSI is in the process of standardizing all SuperLite helmet and band mask manuals for those who use multiple models of KMDSI equipment. KMDSI always welcomes all constructive criticism on the new checklists, manuals, and products.

Training Policies and Guidelines:

Dive Lab, Inc. oversees all (KMDSI) factory repair and maintenance training for all Kirby Morgan products. Kirby Morgan authorizes selected overseas dealers, depending on experience, knowledge, facility assets, and geographical location to teach KMDSI helmet and band mask technician training. Selected dealers receive additional training to allow them to teach specific equipment only. All KMDSI training certificates are issued by Dive Lab upon review of course completion documentation and verification of the technician trainer certification status. Only Dive Lab can conduct KMDSI dealer technician training. All KMDSI technicians are issued a technician certification number which is entered into the technician/operator/user data bank so that KMDSI product and part changes, as well as bulletins, repair notices, tech tips and updates can be e-mailed. All non-dealer technicians, as well as persons trained as Operator/User are also on the mailing list.

The KMDSI training policies and guidelines are intended to help persons performing repairs, maintenance and training that have received KMDSI standardized training on the equipment as the manufacture intended. The training also teaches the parameter of intended use and limitations of the equipment. Non KMDSI dealer technicians trained by authorized KMDSI dealers are encouraged to teach the KMDSI operator/user course, however, the course curriculum must be presented within the guidelines set-up in the basic repair technicians guide, Doc. # TechTmg 03101.

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Only KMDSI dealer technicians are authorized to perform repairs for profit. Non-dealer technicians must limit repairs to their own equipment, company owned equipment, and equipment belonging to company employees as dictated by company policy. Non-dealer technicians performing repairs for profit do so without authorization of KMDSI or Dive Lab.

It is strongly recommended that all technicians document all repairs and maintenance. KMDSI dealer technicians must document all work performed on all KMDSI helmets, band masks, and KMDSI equipment worked on, and records must be kept. All helmets and band masks must be accompanied by a log book. The log book is important because it shows the history of use, repair, and maintenance. Dealers receiving helmets or masks for repair or maintenance must have a log book so they can document the work they perform. Dealers working on helmets or masks not accompanied by a log or record of use and maintenance will require at a minimum an inspection IAW appendix A2.1. The A2.1 must be performed at least once every 12 months on helmets and masks in use. Helmets and masks that have been in storage for up to 2 years, which have not been used since the last A2.1 was performed will require a monthly inspection IAW the A2.2.

Fiberglass and Gel Coat:

KMDSI Dealers should not work on helmets or masks that have had fiberglass repairs done by someone other than KMDSI certified repair technicians that are certified to perform fiberglass repairs. Helmets that have been coated with coatings like Rhino Lining® or truck bed urethane should be turned away. Painting of helmets is not recommended and should be discouraged. Dealers can deny servicing helmets that have been painted, or show signs of repairs completed by non KMDSI trained technicians, or repairs made improperly.

All KMDSI certified technician trainers must certify or assist in certifying at least one technician course per year in order to remain as an active technician trainer. Dealer technicians are issued a new certificate each year for four years providing they remain active and abide by all the KMDSI technician guidelines and requirements. Dealers are required to keep records of repairs and training conducted.

Dealer qualifications are listed on the KMDSI and Dive Lab's website so that users of KMDSI products can review certification and qualification status. Non-Kirby Morgan dealers and persons not trained by Dive Lab that perform repairs for profit, do so against the recommendation of KMDSI and Dive Lab. Non-KMDSI certified persons that pose as certified KMDSI / Dive Lab trained technicians are a serious safety threat to the diving industry and all users of KMDSI equipment. Dive Lab trained technicians

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working for diving contractors or as free-lance divers cannot perform repairs for profit, and can only work on their own equipment, company equipment, and equipment belonging to the employees of the company, as dictated by company policy. This is done to prevent persons from trying to become back yard helmet mechanics. All work and repairs must be documented. Any helmets and masks presented for work that do not have a log book showing work history, must be overhauled IAW Appendix A2.1.

The KMDSI training and certification policies have been established to help protect the user, technician, and KMDSI dealers by promoting safety through knowledge, experience, and the proper maintenance of KMDSI products.

KMDSI dealers that have been trained and authorized to teach technician courses must teach the course set-up by Dive Lab. Dealers are not allowed to create their own course curriculum and must teach IAW the training guide and instruction provided by KMDSI and Dive Lab.

KMDSI technicians can only teach the equipment they were actually trained on as listed on their certification. All the equipment trained on during technician or operator / user training (Formally Inspector Training) must be listed on a properly filled out course completion form sent to Dive Lab no later than 30 days after completion of training with the \$25.00 processing fee.

Dealer technicians that are authorized to teach helmet and band mask technician training must run at least one technician course per year in order to remain on the active instructor list.

Dealer Training:

Dealer training is valid for 4 years. Dealer technician certification is renewable annually by Dive Lab, as directed by KMDSI providing dealers remain eligible.

Dealer Repairs:

Kirby Morgan Dealers that have not received technician training by Dive Lab may not perform repairs or service on KMDSI equipment until training has been completed. Dealers may only perform repairs on the KMDSI equipment for which they have been trained on. Persons working as technicians at a KMDSI dealership that have not received training by Dive Lab, must only work under the supervision of a trained KMDSI dealer technician, and that technician is responsible for signing off all work completed.

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Fiberglass Repair:

Face port insert repair, fiberglass, and gel-coat repairs can only be completed by Dive Lab trained and certified technicians that have received fiberglass repair training. Dealers are not allowed to contract out fiberglass, gel-coat or insert repairs made by boat yards or other non Dive Lab/KMDSI trained persons.

All fiberglass and gel-coat repairs should be documented with before and after pictures of work. The pictures will be available to the customer as well as KMDSI and Dive Lab.

All equipment repairs by KMDSI dealers must be documented. The dealer must provide customer with a cost estimate prior to start of any work or repairs. All work and repairs are to be clearly documented.

All KMDSI Helmet and Band Mask Technicians that have taken the KMDSI Repair Technicians Course may teach the KMDSI Operator/User Course IAW the guidelines laid out in the Repair Technician Training Guide # TechTmg 03101.

KMDSI Helmet and Band Mask Operator/User Course (5-7 hours):

The KMDSI Helmet and Band Mask Operator/User Course is intended to instruct personnel in the manufacturer's recommended maintenance and set-up procedures, as well as basic inspection and adjustment procedures. The operator course is not intended to be a repair technician course and does not qualify person(s) to perform repairs or overhauls. The course is intended to teach divers, tenders, and diving supervisors how to make pre-dive assessments as to the condition and serviceability of KMDSI helmets and band masks based on pre-dive visual inspection and functional tests using the applicable KMDSI checklists and Operations and Maintenance Manuals. The course usually takes 5-8 hours. The course certificate is valid for two years initially and three years upon re-certification.

KMDSI Maintenance and Repair Technician Course (3 day):

The KMDSI Technician Course is intended to instruct technicians and users of KMDSI helmets and band masks how to perform routine and corrective maintenance procedures and equipment overhauls. The course covers demand regulator and side block overhauls, as well as all recommended owner level repairs, including face port insert testing. The course does not include insert repair or fiberglass and gel coat repair. The course certificate is valid for three years.

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Certification:

Certificates and wallet cards are only issued by Dive Lab, Inc., upon review of course completion paperwork. Any Technician or Operators Courses taught by “Dealer Technician must have each attendee complete a course completion form. The Technician teaching the course should fill out the top portion of the form. All information should be filled out so that future important notices or changes to procedures can be e-mailed. The forms should be sent by the Instructor to Dive Lab, Inc., within 30 days of course completion along with \$25.00 (for each certificate to be issued). KMDSI / Dive Lab has the right to deny certification to any individuals due to previous unethical or practices not in line with the intent of KMDSI Technician/Operator Courses.

Responsibility of Trained Personnel:

All persons that have received Kirby Morgan training have a responsibility to ensure the helmets and masks they work on are set-up, and adjusted in accordance with the applicable pre-dive checklists and the Operations and Maintenance Manuals. Helmets or masks that fail inspections or tests, as well as those with worn, damaged, or non-approved components that could affect safety or performance, must be repaired prior to use. All scheduled maintenance, as well as daily pre and post dive maintenance, should be documented. Helmets or masks requiring fiberglass or insert repairs, or other repairs outside the scope of basic technician, must be only be repaired by a certified KMDSI repair technician trained and authorized to perform the repairs. Many of the checklists undergo changes from time to time. All Technicians and Operator/Users should periodically check the Dive Lab and KMDSI web page for manual changes and updates. New e-mail addresses should be sent to Dive Lab so files can be updated to ensure important notices and changes can be forwarded. For further information on training contact Dive Lab at www.divelab@aol.com

KIRBY MORGAN OPERATOR / USERS TRAINING
ALL MODELS
17A/B, 17-C, 17-K, 27, AND KM-37, KM-47, KM-57, KM-77
ENABLING OBJECTIVES
(Formerly known as Inspector Training)
10-21-09

- Upon completion of the KMDSI Operator / User Course, the trainee will be able to perform the KMDSI recommended pre-dive inspection and maintenance procedures in accordance with the KMDSI Inspection and Maintenance Checklists:

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

- State the KMDSI recommended maintenance periodicities and the definitions or guidelines for each.

NECK DAM/RING ASSEMBLY

- Upon instruction of this section the student will be able to:
 - a) Describe/perform a proper inspection of Yoke/Neck Clamp Assemblies on the SL-17 A/B Helmet
 - b) Describe/perform a thorough inspection of the weldment areas of concern.
 - c) Explain and demonstrate the proper adjustment of the Neck Clamp and Latch Catch Mechanisms.
 - d) The areas of inspection and the difference between the Push-Pin Plunger and the new style Pull-Pin Plunger and the reasons for the upgrade.
 - e) Demonstrate proper removal, inspection, cleaning, and lubrication of Helmet/Neck Ring O- ring and state the recommended lubricants.
 - f) Explain the SL-27, KM-37, 47, 57, 77 type Neck Dam with pull pins. How is it different than the SL-17A/B.
 - g) Explain/demonstrate the proper placement of the Safety Pin and Lanyard and the reasons for it (17A/B only).
 - h) Describe/perform a thorough inspection of a Neck Dam, both neoprene and latex. Explain what type of contaminants and environmental conditions will cause deterioration of each.

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HELMET ASSEMBLY

- Upon instruction of this section the student will be able to explain:
 - a) How the KMDSI maintenance and inspection procedures and instructions are to be used.
 - b) How the KMDSI maintenance system is structured and where information may be found.
 - c) Explain the responsibilities of a KMDSI Technician and Operator / User.
 - d) Explain/demonstrate a proper, thorough exterior Helmet Inspection and explain the types of damage that might be found, and areas of concern.
 - e) Explain and demonstrate the inspection of the Face Port and related components.
 - f) Describe/perform a thorough inspection of the Helmet Locking Collar assembly (SL-17K, 27, KM-37, 47, 57, 77).
 - g) Describe/perform an inspection of the sealed Pull-Pins and state what they are looking for and how to identify a Rebuilt Pin from a New Pin (17K, 27, KM-37, 47, 57, 77) and how the Pins should be serviced.
 - h) Explain/demonstrate a thorough inspection of the Swing Catch Assembly and the Helmet Ring, describing areas of concern (17K, 27, KM-37, 47, 57, 77).
 - i) State the purpose of the Helmet Liner/Cushion and why it should be maintained in good condition, how it can be tailored to fit.
 - j) Describe/perform proper inspection and required maintenance of Communications System.
 - k) Explain the proper maintenance and inspection of the Oral/Nasal Mask and Valve Assembly.
 - l) Explain the purpose of the Oral/Nasal Mask Valve Assembly.
 - m) State the advantages/disadvantages and limitations of the Double Exhaust and the reasons.
 - n) Perform Main Exhaust /Water Dump Valve Inspection, thoroughly describing, “seating surface”.

SIDE BLOCK

- Upon instruction of this section, the student will be able to explain the inspection and operation of the following Side Block Components:
 - a. One-way Valve
 - b. Defogger Valve
 - c. Auxiliary Gas or (EGS) Valve
 - d. Valve Knob Components.

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DEMAND REGULATOR

- Upon instruction of this section, the student will be able to state and demonstrate:
 - a) KMDSI recommended daily and monthly maintenance.
 - b) Properly, clean and inspect using the daily post dive Checklist, reassemble, adjust, fine- tune the Demand Regulator.
 - c) Explain sanitizing procedures of the Demand Regulator and associated components, and what safety precautions must be observed.
 - d) Explain how Helmet parts and components are cleaned and corrosion is removed.
 - e) Explain how to perform O-ring inspections and how to lubricate components.

EMERGENCY GAS SUPPLY

- Upon instruction of this section, the student will be able to:
 - a) State the periodicity for the Hydrostatic and Visual Inspection for the Emergency Gas Cylinder.
 - b) Conduct a thorough visual and functional test and inspection of all EGS components, including the maintenance records to ensure maintenance is in compliance with manufacturers recommendations.
 - c) Demonstrate/perform testing of the First Stage Relief Valve.
 - d) Check/demonstrate/perform the correct recommended setting of the over-bottom of the First Stage Regulator for the Emergency Gas Supply (EGS) Cylinder.
 - e) Explain the hazards involved in not having EGS gas up to the First Stage when diving.

KMDSI MAINTENANCE LOG

Appendix 3 (4-14-09)

<input type="checkbox"/> Helmet or Mask Model#	<input type="checkbox"/> Helmet or Mask Model#
<input type="checkbox"/> Serial #	<input type="checkbox"/> Serial #
<input type="checkbox"/> Harness#	<input type="checkbox"/> Harness#
<input type="checkbox"/> Daily Pre-Dive A2.3	<input type="checkbox"/> Daily Pre-Dive A2.3
<input type="checkbox"/> Daily Post Dive A2.6	<input type="checkbox"/> Daily Post Dive A2.6
<input type="checkbox"/> Monthly Inspection/Maintenance A2.2	<input type="checkbox"/> Monthly Inspection/Maintenance A2.2
<input type="checkbox"/> Overhaul/Inspection A2.1	<input type="checkbox"/> Overhaul/Inspection A2.1
Other	Other
Date	Date
Technician (Print)	Technician (Print)
Technician (Sign)	Technician (Sign)
Remarks	Remarks

Check all that apply

Check all that apply

<input type="checkbox"/> Helmet or Mask Model#	<input type="checkbox"/> Helmet or Mask Model#
<input type="checkbox"/> Serial #	<input type="checkbox"/> Serial #
<input type="checkbox"/> Harness#	<input type="checkbox"/> Harness#
<input type="checkbox"/> Daily Pre-Dive A2.3	<input type="checkbox"/> Daily Pre-Dive A2.3
<input type="checkbox"/> Daily Post Dive A2.6	<input type="checkbox"/> Daily Post Dive A2.6
<input type="checkbox"/> Monthly Inspection/Maintenance A2.2	<input type="checkbox"/> Monthly Inspection/Maintenance A2.2
<input type="checkbox"/> Overhaul/Inspection A2.1	<input type="checkbox"/> Overhaul/Inspection A2.1
Other	Other
Date	Date
Technician (Print)	Technician (Print)
Technician (Sign)	Technician (Sign)
Remarks	Remarks

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**KIRBY MORGAN SUPERLITE DEEP SEA DIVING HELMET
MODELS 17A/B, 17C, 17K, 27, and KM-37, KM-47, KM-57, KM-77
MONTHLY INSPECTION AND MAINTENANCE CHECKLIST**

Appendix A2.2

4-14-09

This inspection is the minimum recommended maintenance and **should be** performed at least **ONCE A MONTH** with Helmet(s) in continuous use (used for more than 20 diving days in a month) or at least every **TWO (2) MONTHS**, with Helmet(s) used less than 10 diving days a month.

This checklist is intended to aid persons performing routine maintenance and inspections of all KMDSI Helmets. This 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. This checklist is intended to be used for all models of KMDSI SuperLite and KM-37 Helmets.

NOTE: KMDSI strongly recommends that all repairs be performed by trained Personnel.

NOTE: Helmets being used in polluted waters, or extreme environments, will require more frequent inspection and maintenance.

NOTE: This checklist should be used in conjunction with the most current Operations and Maintenance Manual. For latest Manual revisions please check the KMDSI web page at www.kirbymorgan.com.

NOTE: During removal of components for inspection, O-rings and other consumable items may be reused, providing they are clean and a visual inspection does not reveal any damage or deterioration.

NOTE: Perform the Yoke/Neck Clamp Assembly, Helmet, and Side Block/Demand Regulator inspection procedures with gas supplies not connected to the Side Block. Attach the gas supply at Step 5 of the “Side Block/Demand Regulator” inspection procedure.

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Date:
Helmet Serial #:
Associated Equipment Serial #(s):
Technician (print name):

PROCEDURES	INITIALS
SL-17A/B YOKE / NECK CLAMP ASSEMBLY HELMET ATTACHMENT COMPONENTS	
Note: FOR SL-17K, SL-17C, SL-27, AND KM-37, KM-47, KM-57, SKIP TO STEP 1, PAGE 3	
NOTE: KMDSI recommends that Neck Clamps older than five years old be removed from service and replaced. However, neck clamps that show no signs of damage and or deterioration can remain in service if the user/owner elects and should be inspected at least weekly I.A.W. Steps 1-6 of this procedure.	
1. Remove the Yoke/Neck Clamp Assembly from the Helmet. Perform a visual inspection of all components. Ensure the Neck Dam has no holes, tears, and/or damage. The neoprene must be firm. The Neck Dam should fit snug, but should never fit a diver tight enough to cause discomfort. Guidance SL-17A/B O&M Manual.	
2. Visually inspect all metal parts of the Clamp Assembly for damage. Check the Hinge Pins for loose fit, signs of cracking, distortion, and/or any damage. Guidance SL-17A/B O&M Manual.	
3. Visually inspect the Adjustment Stud on the Neck Clamp for signs of cracking, distortion, bending, stripped and/or damaged threads by loosening Nut (4) all the way to the shoulder of the Stud, and manually squeezing the Neck Dam Clamp to expose the portion of the Stud that is normally hidden by the Stud Block. If any damage is present the, Neck Clamp requires replacement. Guidance SL-17A/B O&M Manual.	

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4. Check the Rear Hinge Tab and Hinge for signs of cracking, bending, distortion, and/or loose fasteners. Guidance, 7.9.4 SL-17A/B O&M manual	
5. Check the Latch Catch Assembly for proper operation. Check for worn and/or damaged parts as well as loose and/or missing screws. Ensure the proper Safety Pin is present. Guidance SL-17 A/B O&M Manual.	
6. Test mate the Yoke/Neck Clamp to the Helmet. Check for proper Clamp adjustment and smooth operation. When properly adjusted, use a 7/16" open-end wrench on Nut as a back-up wrench and a 7/16" deep well socket with a torque wrench. Ensure Lock Nut is torqued to 60 inch lbs. Repair/replace and/or adjust parts as necessary. Guidance 17A/B O&M Manual.	
PROCEDURES	
HELMET MODELS: SL-17K, SL-17C, SL-27, KM-37, KM-47, KM-57, KM-77 HELMET ATTACHMENT COMPONENTS (Neck Ring Assembly)	
1. Remove the Neck Ring Assembly from the Helmet. Remove and inspect the O-ring for damage or deterioration, nicks and / or cuts. Clean and inspect the O-ring groove for damage. Lightly lubricate with recommended lubricant and reinstall. Guidance, applicable O&M Manual.	
2. Inspect the Chin Strap of the head liner and/or new style chin strap attached inside helmet attachment components for signs of wear or damage. Guidance, applicable O&M Manual. Note: KMDSI recommends at least one style of the chin strap be used. Either the strap on the headliner or the chin strap that attaches inside the helmets.	
3. Inspect the Neck Dam material for signs of wear or damage. Ensure the Neck Dam has no holes, tears, and/or damage. The neoprene must be firm. The Neck Dam should fit snug, but should never fit a diver tight enough to cause discomfort. Check to ensure it is free of deterioration. Guidance, applicable O&M Manual.	

4. Visually inspect the locking collar for signs of damage. Check to ensure the neck pad can slide to allow for proper adjustment. Check for loose or missing fasteners. Guidance, applicable O&M Manual.	
5. Check the two sealed Pull Pins for smooth operation. Visually inspect for signs of oil leakage. Guidance, applicable O & M Manual.	
Caution: If Sealed Pull Pins do not operate smoothly, or if oil is leaking, from the Pull Pins, the Pull Pins should be serviced by an Authorized / Certified KMDSI Repair Technician trained to overhaul Pull Pins.	
6. Visually inspect the metal Helmet Ring at the base of the Helmet for signs of damage to the sealing surface. Any damage requires an inspection by an Authorized KMDSI Technician. Guidance Applicable O&M Manual.	
7. Check the Swing Tongue Catch for smooth operation. Check for obvious worn or damaged parts and components. Guidance O&M Manual.	
PROCEDURES	
HELMET SHELL, All MODELS OF KMDSI SUPERLITE AND KM HELMETS	
1. Visually inspect Helmet Shell exterior for loose and/or missing fasteners and obvious signs of fiberglass damage; including cracks, gouges, and/or depressions.	
NOTE: Any gouges deeper than 1/16" should be repaired. Fiberglass and gel coat repairs must be completed by a technician that has received certification for Helmet Shell repairs by KMDSI or Dive Lab, Inc.	
2. Remove and inspect Helmet Liner/Cushion for tears, broken snaps and/or neck strap damage. Check the condition of the foam. Repair/replace as necessary. Guidance O&M Manual.	

<p>3. Remove the Earphones and Microphones from their holders. Remove the covers from the Earphones and inspect. Remove microphone from Oral Nasal Mask. Clean and repair/replace as necessary. Perform a communications check. Guidance O & M Manual.</p>	
<p>4. Remove the Nose Clearing Device and Oral Nasal Mask. Remove the Oral Nasal Valve body as an assembly. Clean the oral nasal valve and Valve Body as an assembly. Clean the Oral Nasal Mask. Inspect Mask and Valve Assembly for damage and/or deterioration. Replace the Oral Nasal Mask if any damage is found. Replace the Oral Nasal Valve if it appears dried, stiff, or does not lay flat. Clean and inspect the Nose Clearing Pad, Shaft and O-rings for wear. Replace the Pad if deteriorated and/or damaged. Replace O-rings if any signs of wear or damage is present. Lightly lubricate the Shaft O-rings and the Shaft, then reinstall. Reinstall Oral Nasal Mask and Valve Assembly. Guidance O & M Manual.</p>	
<p>5. On The SL-17 A/B Remove Helmet O-ring at the base of the Helmet. Wipe O-ring and O-ring groove with a clean cloth. Inspect the O-ring groove for damage. Inspect the O-ring for cracking, cuts, and/or signs of damage/deterioration and replace if necessary. Lightly lubricate the Neck Dam O-ring and reinstall on the Helmet. Guidance O & M Manual.</p>	
<p>6. Without air to the Helmet, check the operation of the Steady Flow Valve and Emergency Supply Valve. If the Valves do not operate smoothly they should be disassembled, cleaned, and lubricated. Guidance, applicable O&M manual.</p>	
<p>7. Remove the Main Exhaust Valve Cover and inspect the Main Exhaust/Dewatering Valve and Seat for damage and/or contamination. Ensure the Valve material is not hardened, distorted, and/or warped. Replace the Valve if questionable. Reinstall the Cover. Guidance, applicable O&M manual.</p>	
PROCEDURES	
SIDE BLOCK/DEMAND REGULATOR	

<p>NOTE: Ensure gas supplies ARE NOT attached to the Helmet EGS and steady flow valve; remove protective dust caps, DO NOT open the Steady Flow/Defogging Valve.</p>	
<p>1. Check the Umbilical Supply One-Way Valve for proper operation by sucking on the Umbilical Adapter with the Emergency Valve open and the steady flow valve shut. No gas should be drawn through the One-Way Valve. Guidance applicable O&M manual.</p>	
<p>2. Remove the Regulator Cover Clamp, Cover, and Diaphragm. Visually inspect the interior of the Regulator Body for corrosion and/or contamination. Clean as necessary. Guidance applicable O&M manual.</p>	
<p>3. Carefully inspect the Diaphragm for cuts, tears, and/or deterioration. If any damage is found, replace the Diaphragm. Guidance applicable O&M manual.</p>	
<p>4. Carefully check the Regulator Exhaust Valve for warping, distortion, stiffness, and/or damage. This is checked by pressing on the Flapper Valve from inside the Regulator. Check the Regulator Body Valve Seat Spokes. The Spokes should be flat and even. Straighten if deformed. If the Valve shows signs of damage and/or deterioration, replace the Valve. Guidance applicable O&M manual.</p>	
<p>5. Attach an air supply source to the Umbilical Adapter and set the supply pressure to between 135 - 150 psig (9.3 – 10.3 bar). Adjust the Regulator Adjustment Knob out, until a slight free flow develops, then adjust in until the free flow just stops and check the Lever play. There should be between 1/16” - 1/8” of play in the Lever. Adjust as necessary. Guidance applicable O&M manual. Reinstall the Diaphragm, the Cover, and the Clamp.</p>	
<p>6. Depress the Purge Button. The Button should travel 1/16” – 1/8” before gas starts to flow and a strong purge should be felt when the Button is fully depressed. If the Regulator Purge travel is less than 1/16” or greater than 1/8”, readjust the Lever. Guidance O&M manual.</p>	
<p>7. Check the Steady Flow Valve for proper operation.</p>	

NOTE: The Steady Flow Valve will rotate approximately two complete revolutions from closed to full open. With the air pressure to the Helmet between 135 - 150 psig (9.3 - 10.3 bar), turning the Steady Flow Valve ½ turn open should result in a strong flow of gas through the Defogger Train.	
8. Secure the gas supply, then bleed down and remove the umbilical from the Inlet Adapter.	
9. Attach a regulated gas supply (normally the EGS system), adjusted to between 135 – 150 psig (9.3 – 10.3 bar), to the Emergency Valve on the Side Block. On the Side Block, open the Emergency Supply Valve all the way, and then slowly open the regulated gas supply. Check the function of the Regulator Purge, Regulator Adjustment Knob, and the Steady Flow Valve in accordance with previous steps 6 and 7. Check for gas exiting from the One-Way Valve. There should be no gas exiting the Umbilical Adapter.	
NOTE: The Emergency Gas System consists of a good quality First Stage Regulator equipped with, an Over-Pressure Bleed/Relief Valve, and an Emergency Gas Supply Hose that connects to the Emergency Valve on the Helmet Side Block.	
PROCEDURES	INITIALS
EMERGENCY GAS SUPPLY (EGS)	
1. Check the hydrostatic date and the last visual inspection record (“VIP”) of the cylinder. Ensure the date(s) are within the specified range. The VIP is done at least annually and the hydrostatic test is done at least every five (5) years.	
2. Check the maintenance record of the EGS components to ensure the First Stage Regulator maintenance has been performed in accordance with the manufacturer’s recommendations.	
3. Check all of the Hoses for signs of blisters, cover slippage, cuts, and/or abrasions. Replace any Hose(s) that shows signs of leakage/damage. If a Quick Connect EGS Hose is being used, inspect the quick connect and fittings for signs of wear/damage.	
4. If a Submersible Pressure Gauge is used, ensure it has been compared to a gauge of known accuracy.	
5. Test the First Stage Regulator’s Bleed/Relief Valve. Guidance 6.12 or as per “Appendix 4”: Bleed/Relief Valve Cleaning, Inspection, and Overhaul Procedures”.	
6. Perform a leak check of all EGS components and fittings using soapy water in a pressurized condition. Repair/replace items as necessary.	

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7. Inspect the Harness Assembly for signs of wear or damage. Repair/replace as necessary.	
--	--

Technician Signature: _____ Date: _____

Comments: _____

KMDSI highly recommends that a certified KMDSI Repair Technician make all repairs and that only genuine KMDSI repair and replacement parts be used. Owners of KMDSI products that elect to do their own repairs and inspections should only do so if they possess the knowledge and experience. All inspections, maintenance, and repairs should be completed using the appropriate KMDSI Operations and Maintenance Manual(s). Persons performing repairs should retain all replacement component receipts for additional proof of maintenance history. Should any questions on procedures, components, or repairs arise, please contact Kirby Morgan Dive Systems, Inc., by telephone at (805) 928-7772 or via e-mail at info@kirbymorgan.com, or contact Dive Lab, Inc., by telephone at (850) 235-2715 or via e-mail at divelab@aol.com.

NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template for creating blank pages to record all the maintenance performed

**KIRBY MORGAN SUPERLITE DEEP SEA DIVING HELMET MODELS
17A/B, 17C, 17K, 27, AND KM-37, KM-47, KM-57, KM-77
HELMET AND EMERGENCY GAS SYSTEM
DAILY SET-UP AND FUNCTIONAL CHECKLIST
APPENDIX A2.3**

4-14-09

THIS DAILY SET-UP AND FUNCTIONAL CHECKLIST SHOULD BE COMPLETED PRIOR TO COMMENCEMENT OF DAILY DIVING OPERATIONS OR AT LEAST ONCE A DAY IF BEING USED DURING CONTINUOUS DIVING.

NOTE: During removal of components for inspection, O-rings and other consumable items may be reused, providing they are clean and a visual inspection does not reveal any damage or deterioration.

WARNING: These are recommended minimum checks when using Kirby Morgan Helmets or Masks. Additional checks may be required as dictated by the conditions and tasks being performed. **Failure to perform in-water checks may result in serious injury or death.**

CAUTION: All diving conducted using Kirby Morgan Helmets or Band Masks must include the use of a fully functional, properly maintained Emergency Gas System (“EGS”). The EGS should be maintained in accordance with the applicable Operations and Maintenance Manual(s).

NOTE: Steps 3(a) - 3(d) use the EGS for setting up and checking the Helmet systems. For a proper check of the Demand Regulator adjustment, the First Stage Regulator must have an intermediate supply pressure output between 135 – 150 psig (9.3 – 10.3 bar). The First Stage Bleed/Relief Valve should be set between 180 - 200 psig (12.4 – 13.8 bar). Do not attach the Umbilical until Step 6.

Date:
Helmet Serial #:
Associated Equipment Serial #(s):
Technician (print name):

STEP	PROCEDURES	INITIALS
SL-17 A/B YOKE / NECK CLAMP ASSEMBLY STEP 1.1 Helmet Attachment Components		
Note: For SL-17K, SL-17C, SL-27, KM-37, KM-47, KM-57, KM-77 skip to step 1.2		
WARNING: Anytime Helmets and Neck Clamps / Yoke Assemblies are mixed, the Neck Clamp must be checked for proper function, fit and adjustment prior to diving.		
1.1 Yoke/Neck Clamp Assembly SL-17 A/B Note: Applicable to SL-17 A/B ONLY. For all other helmet models skip to step 1.2	Diver/Tender- Check the following (a - c):	
	a. Visually inspect the Yoke/Neck Clamp Assembly for signs of damage. Check the Neck Dam for tears, holes, and/or cuts. Ensure the Neck Dam is of the proper size and fit.	
	b. Test-mate the Yoke Assembly to the Helmet and check for proper Neck Clamp adjustment. If adjustment is necessary, use a 7/16" open-end wrench on Nut (4) as a back-up wrench and a 7/16" deep well socket with a torque wrench and ensure Lock Nut (6) is torqued to 40 inch lbs. Repair/replace and/or adjust parts as necessary. Guidance O&M Manual	
	c. Ensure the Latch Catch Assembly works properly, is not bent or deformed. Also check that the Safety Pin is present and attached with lanyard. Guidance O&M Manual	
1.2 Neck Dam Ring Assembly 17K, 17C, 27, KM-37, 47, 57, 77	Diver/Tender – Check the following (a-d):	
	a. Visually inspect the Neck Dam Ring Assembly for signs of damage. Check the Neck for tears, holes, and/or cuts. Ensure the Neck Dam is of the proper size and fit.	
	b. Lightly lubricate the Neck Ring O-ring if the O-ring appears dry.	

STEP	PROCEDURES	INITIALS
	c. Test-mate the Neck Dam Ring Assembly to the Helmet and check for proper adjustment.	
	d. Ensure the sealed Pull Pins work properly.	
2. Visually Inspect the Helmet	Diver/Tender- Check the following (a - d):	
	a. Visually inspect Helmet Shell interior and exterior for damage and/or contamination. Check that the Oral Nasal Valve is correctly installed and the Oral Nasal Mask is installed on the Regulator Mount Nut. Ensure the Nose Clearing Device operates smoothly. Lubricate as necessary. Guidance O&M Manual.	
	b. Ensure the Earphones and Microphones are installed correctly. Guidance applicable O&M Manual.	
	c. Inspect the Head Cushion for proper fit, broken snaps, tears, and/or rips. Guidance applicable O&M Manual.	
	d. Check the O-ring at the base of the Helmet for signs of damage. Ensure the O-ring is lightly lubricated. (SL-17 A/B only)	
3. EGS Inspection	Diver/Tender- Check the following (a - d):	
NOTE: The EGS being used must be properly maintained and fully functional.	a. Visually inspect all EGS Hoses for signs of damage.	
	b. Check the hydro date and ensure the cylinder is within the VIP and the hydrostatic date. Visually inspect the cylinder and valve for obvious signs of damage.	
	c. Ensure the First Stage Regulator pressure and the Over-Pressure Bleed/Relief Valve settings have been checked within the past month.	
	d. Inspect the Safety Harness and Cylinder Retainer for wear and/or damage. Repair/replace as necessary.	

4. Check the Helmet EGS	Diver/Tender- Check the following (a - f):	
	a. Orally check the One-Way Valve. Guidance O&M Manual.	
	b. Connect the First Stage Regulator to the EGS Cylinder and the Helmet Emergency Supply Valve. With the cylinder turned OFF, open and close the Side Block Emergency Valve to check for smooth operation. Then open and close the Steady Flow/Defogger Valve to verify smooth operation.	
	c. Rotate the Regulator Adjustment Knob in fully (clockwise), then rotate out (counterclockwise) 3 – 4 rotations to check for smooth operation.	
	d. Open the EGS Supply Valve on the cylinder. Log the pressure _____ psig. Next open the Emergency Supply Valve on the Side Block.	
	e. Momentarily open the Helmet Steady Flow 3/4 to 1 full turn. Check for a strong flow of gas out of the Defogging Train, and then close.	
	f. Check for gas escaping from the One-Way Valve. If any gas flow is detected the One-Way valve should be overhauled or replaced.	
5. Check the Demand Regulator adjustment NOTE: If the Purge Button travels further than 1/8” before gas starts flowing, or has a weak flow of gas	Diver/Tender- Check the following (a - d):	
	a. Rotate the Demand Regulator Adjustment Knob out (counterclockwise) until a slight free flow develops. Next rotate in (clockwise) until the free flow stops.	
	b. Slowly depress the Purge Button to check for excessive travel. The Purge Button should travel no less than 1/16” and no more than 1/8” (1.5 – 3.0 mm) before gas flow is heard.	
	c. Depress the Purge Button all the way and verify a strong surge of gas.	

when fully depressed, the adjustment of the Regulator is necessary. Guidance O&M Manual.	d. Ensure the Side Block Emergency Valve is shut and the Bail Out Cylinder Valve is open. Log the cylinder pressure _____ psig.	
6. Attach the Umbilical	Tender: Blow down the Umbilical and attach it to the Umbilical Adapter on the One-Way Valve.	
7. Check the Communications	Diver: Perform communications check.	
8. Check the Hot Water Supply (if applicable)	Tender: Check hot water supply connections if applicable.	
9. Check the Dry Suit Inflation Hose (if applicable)	Tender: Check the dry suit Inflation Hose Connection. Ensure the dry suit Inflation Valve and Exhaust Valve function properly.	
10. Tender-Check the Entire Rig	Tender: Soap and leak check the Helmet/Mask gas fittings and connections including the EGS.	
11. Neck Clamp pin 17A/B only	Tender-Check to ensure the following	
	a. Neck Clamp properly adjusted and Safety Locking Pin present.	
	b. Diver's Safety Harness is in good condition	
	c. Umbilical Strain Release.	
	d. EGS Hose Quick Disconnect in good working order	
	e. Boots, gloves, knife, and other accessories.	
12. Tender	Note comments or discrepancies below in the comments section. Log maintenance in the applicable maintenance log.	

Technician Signature: _____ Date: _____

Comments: _____

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NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template to create blank pages to record all the maintenance performed.

**KIRBY MORGAN SUPERLITE DEEP SEA DIVING HELMET MODEL
17A/B
SUPERVISORS EQUIPMENT CHECKS
PRIOR TO ENTRY INTO WATER
APPENDIX A2.4.1**

10-21-09

NOTE: This checklist is intended to be used with both KMDSI SuperLite 17A and B.

NOTE: Helmet(s) being used in polluted waters, or extreme environments, will require inspection that is more frequent.

CAUTION: KMDSI strongly recommends the use of a Tender to assist the diver when “dressing-in”. The Tender should ensure the Helmet Liner is fastened to the Helmet Shell and the Chinstrap is properly fastened under the divers chin, once the Helmet is donned. After closing the Yoke/Neck Clamp Assembly, ensure that the safety pin is installed.

WARNING: These are recommended minimum checks when using Kirby Morgan Helmets or Masks. Additional checks may be required as dictated by the conditions and tasks being performed. Failure to perform in-water checks may result in serious injury or death.

CAUTION: All surface supplied diving with Kirby Morgan Helmets must include a fully functional, properly maintained Emergency Gas System (“EGS”). The EGS should be maintained in accordance with the applicable Operations and Maintenance Manual(s).

Date:
Helmet Serial #:
Associated Equipment Serial #(s):
Technician (print name):

STEP	PROCEDURES	INITIALS
1. Supply Gas	Supervisor: a. Ensure gas to the diver.	
2. Check Breathing System	Diver- Check the following (a - e):	
	a. Open and close the Steady-Flow Valve to ensure proper operation.	
	b. Check breathing resistance. Set Demand Regulator Adjustment Knob for minimum inhalation effort.	
	c. Press Purge Button to check gas purge function.	
	d. Ensure Nose Block Device slides freely.	
e. Ensure Emergency Valve opens and closes properly. Then, ensure Emergency Valve is closed and the Bail Out Cylinder Valve is open.		
3. Check Communications	Diver: Perform communications check.	
4. Check Hot Water Supply (if applicable)	Tender: Check hot water supply connections. Ensure topside hot water supply has been switched to diver and verify flow to hot water shroud and suit (if used).	
5. Check Dry Suit Inflation Hose (if applicable)	Tender: Check dry suit Inflation Hose Connection. Ensure dry suit Inflation Valve and Exhaust Valve function properly.	
6. Check Entire Rig	Tender: Soap and leak check Helmet/Mask gas fittings and connections, including Emergency Gas System.	
7. Check Diver's Entire Rig	Supervisor/Tender- Check adjustment/fit of the entire rig, including the following (a - f):	
NOTE: On the SL-17A/B, this procedure will ensure the	a. On SuperLite 17 A/B, ensure the Rear	

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<p>Neck Clamp w/Yoke Assembly is properly adjusted prior to descent.</p> <p>NOTE: All equipment must be adjusted properly and functioning correctly. The Helmet/Mask must be breathing easily and properly.</p>	<p>Hinge Tab is fully engaged on the alignment sleeve. Using thumb on the bottom of Regulator Body, and middle finger on Neck Clamp, attempt to “pop” Neck Clamp w/Yoke Assembly from bottom rim of Helmet .</p>	
	b. Diver’s Safety Harness.	
	c. Umbilical strain release.	
	d. EGS Hose Quick Disconnect.	
	e. Boots, gloves, knife, and other accessories.	
	f. Helmet supply pressure, minimum 115 psig.	
<p>8. Check Breathing</p>	<p>Diver: Check to ensure helmet is breathing properly.</p> <p>Note: All equipment must be adjusted properly and functioning correctly. The Helmet/Mask must be breathing easily and properly.</p>	

Technician Signature: _____ Date: _____

Comments: _____

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Persons performing repairs should retain all replacement component receipts for additional proof of maintenance history. Should any questions on procedures, components, or repairs arise, please contact Kirby Morgan Dive Systems, Inc., by telephone at (805) 928-7772 or via e-mail at info@kirbymorgan.com, or contact Dive Lab, Inc., by telephone at (850) 235-2715 or via e-mail at divelab@aol.com.

NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template to create blank pages to record all the maintenance performed.

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**KIRBY MORGAN SUPERLITE DEEP SEA DIVING HELMET MODELS
17C, 17K, 27, KM-37, 47, 57, 77
SUPERVISORS EQUIPMENT CHECKS
PRIOR TO ENTRY INTO WATER
APPENDIX A2.4.2**

10-21-09

NOTE: This checklist is intended to be used with KMDSI SuperLite 17C, 17K, 27 and KM-37, 47, 57, 77.

NOTE: Helmet(s) being used in polluted waters, or extreme environments, will require inspection that is more frequent.

CAUTION: KMDSI strongly recommends the use of a Tender to assist the diver when “dressing-in”. The Tender should ensure the Helmet Liner is fastened to the Helmet Shell and the Chinstrap is properly fastened under the divers chin, once the Helmet is donned.

WARNING: These are recommended minimum checks when using Kirby Morgan Helmets or Masks. Additional checks may be required as dictated by the conditions and tasks being performed. Failure to perform in-water checks may result in serious injury or death.

CAUTION: All surface supplied diving with Kirby Morgan Helmets must include a fully functional, properly maintained Emergency Gas System (“EGS”). The EGS should be maintained in accordance with the applicable Operations and Maintenance Manual(s).

Date:
Helmet Serial #:
Associated Equipment Serial #(s):
Technician (print name):

STEP	PROCEDURES	INITIALS
1. Supply Gas	Supervisor: a. Ensure gas to the diver.	
2. Check Breathing System	Diver- Check the following (a - e):	
	a. Open and close the Steady-Flow Valve to ensure proper operation.	
	b. Check breathing resistance. Set Demand Regulator Adjustment Knob for minimum inhalation effort.	
	c. Press Purge Button to check gas purge function.	
	d. Ensure Nose Block Device slides freely.	
e. Ensure Emergency Valve opens and closes properly. Then, ensure Emergency Valve is closed and the Bail Out Cylinder Valve is open.		
3. Check Communications	Diver: Perform communications check.	
4. Check Hot Water Supply (if applicable)	Tender: Check hot water supply connections. Ensure topside hot water supply has been switched to diver and verify flow to hot water shroud and suit (if used).	
5. Check Dry Suit Inflation Hose (if applicable)	Tender: Check dry suit Inflation Hose Connection. Ensure dry suit Inflation Valve and Exhaust Valve function properly.	
6. Check Entire Rig	Tender: Soap and leak check Helmet/Mask gas fittings and connections, including Emergency Gas System.	
7. Check Diver's Entire Rig <u>Danger:</u> Both Pull Pins must engage	Supervisor/Tender- Check adjustment/fit of the entire rig, including the following (a - f):	
	a. Ensure the sealed Pull Pins are fully engaged on the base of the Helmet	

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<p>correctly Or the Neck Dam Ring Assembly could flood. Drowning may result.</p> <p>Attempt to rotate pull pins, if pin rotates this is an indication that pin is not correctly engaged</p>	Ring into the Locking Collar/Neck Pad Assembly.	
	b. Diver's Safety Harness.	
	c. Umbilical strain release.	
	d. EGS Hose Quick Disconnect	
	e. Boots, gloves, knife, and other accessories	
	f. Helmet supply pressure, minimum 115 psig (7.93 bar).	
8. Check Breathing	<p>Diver: Check to ensure helmet is breathing properly.</p> <p>Note: All equipment must be adjusted properly and functioning correctly. The Helmet/Mask must be breathing easily and properly.</p>	

Technician Signature: _____ Date: _____

Comments: _____

KMDSI **highly** recommends that a certified KMDSI Repair Technician make all repairs and that only genuine KMDSI repair and replacement parts be used. Owners of KMDSI products that elect to do their own repairs and inspections should only do so if they possess the knowledge and experience. All inspections, maintenance, and repairs should be completed using the appropriate KMDSI Operations and Maintenance Manual(s). Persons performing repairs should retain all replacement component receipts for additional proof of maintenance history. Should any questions on procedures, components, or repairs arise, please contact Kirby Morgan Dive Systems, Inc., by telephone at (805) 928-7772 or via e-mail at info@kirbymorgan.com, or contact Dive Lab, Inc., by telephone at (850) 235-2715 or via e-mail at divelab@aol.com.

NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template to create blank pages to record all the maintenance performed.

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**KIRBY MORGAN SUPERLITE DEEP SEA DIVING HELMET MODELS
17A/B, 17C, 17K, 27, KM-37, 47, 57, 77
SUPERVISORS IN-WATER CHECKS
APPENDIX A2.5**

4-14-09

WARNING: These are recommended minimum checks when using Kirby Morgan Helmets or Masks. Additional checks may be required as dictated by the conditions and tasks being performed. Failure to perform in-water checks may result in serious injury or death. See Chapter 2 of the KMDSI SuperLite 17A/B Operations and Maintenance Manual for air supply requirements.

CAUTION: Diving with Kirby Morgan Helmets must include a fully functional, properly maintained Emergency Gas System (“EGS”). The EGS should be maintained in accordance with the applicable Operations and Maintenance Manual(s).

WARNING: If diving is conducted with less than the minimum recommended supply pressure, the diver must tailor the work to prevent over breathing the system, resulting in exhaustion.

Date:
Helmet Serial #:
Associated Equipment Serial #(s):
Technician (print name):

STEP	PROCEDURES	INITIALS
1. Check Breathing	Diver: Ensure Helmet is breathing properly. Set the Demand Regulator Adjustment Knob for minimum inhalation effort. Report: Breathing OK	

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STEP	PROCEDURES	INITIALS
2. Check Helmet/Equipment for Leaks	Diver: Ensure Helmet/Mask is watertight. NOTE: If the diver is wearing a dry suit, diver reports that a proper seal has been made after checking for water leakage.	
3. Maintain Gas Supply Over-Bottom Pressure NOTE: If the above over-bottom pressure cannot be supplied, the diver will have to tailor his workload to avoid exhaustion. NOTE: The Demand Regulator and Side Block Assembly have a maximum design pressure of 250 psig (17 bar) over-bottom.	Console Operator: Maintain minimum over-bottom gas supply pressure for depth (fsw x 0.445) + required over bottom for depth, in accordance with the applicable O & M Manual for the type of supply system. Required over-bottom for depth: 0 - 60 fsw (0 - 18.3 msw), 90 psig (6.2 bar) 61 - 100 fsw (18.6 - 30.5 msw), 115 psig (7.9 bar) 101 - 132 fsw (30.8 - 40.2 msw), 135 psig (9.3 bar) 133 -165 fsw (40.6 - 50.3 msw), 165 psig (11.4 bar) 166 -220 fsw (50.6 - 67.1 msw), 225 psig (15.5 bar)	

Technician Signature: _____ Date: _____

Comments: _____

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NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template to create blank pages to record all the maintenance performed.

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**KIRBY MORGAN SUPERLITE DEEP SEA DIVING HELMET MODELS
17A/B, 17C, 17K, 27, KM-37, 47, 57, 77
POST DIVE CLEANING, MAINTENANCE, AND INSPECTION CHECKLIST
APPENDIX A2.6**

4-14-09

Post dive cleaning and inspection should be performed at the end of daily diving operations or at least every 24 hours during continuous diving operation.

NOTE: Helmet(s) being used in polluted waters, or extreme environments, will require more frequent cleaning, inspection and maintenance.

NOTE: During removal of components for inspection, O-rings and other consumable items may be reused, providing they are clean and a visual inspection does not reveal any damage or deterioration.

NOTE: This cleaning and maintenance schedule is recommended for all SuperLite Helmets and KM-37 and should be performed at least on a **DAILY** basis.

NOTE: Detailed instructions are located in the applicable O & M Manual.

Date:
Helmet Serial #:
Associated Equipment Serial #(s):
Technician (print name):

PROCEDURES	INITIALS
1. Secure and bleed down gas supplies.	
2. Disconnect and cap (or bag and tape) the Helmet Gas Connections and disconnect the communication wires. Cap (or bag and tape) the Umbilical End.	
3. Wash the exterior surface of the Helmet with a solution of mild detergent and fresh water, then rinse. Inspect for signs of damage.	
4. Remove the Head Cushion Assembly. Inspect for damage. If the Head Cushion has gotten wet with perspiration or water, clean and hang-up for drying or airing.	

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5. Remove the Demand Regulator Clamp, Cover, and Diaphragm Assembly. Wash the interior of the Demand Regulator with mild detergent and fresh water, then rinse thoroughly.	
6. Dislodge the earphones. If the interior of the Helmet and Liner has gotten wet, remove the earphone protective covers, wash with mild detergent solution, rinse with fresh water and allow to dry.	
7. Remove the microphone from the Oral Nasal Mask. Wash with a mild detergent solution and rinse with fresh water.	
8. Wipe interior of the Helmet, including the Oral Nasal Mask. Wash with a mild detergent solution and rinse with fresh water. For sanitizing procedures, refer to “Appendix 5: Quick Sanitizing Procedure.”	
9. Rotate the Regulator Adjustment Knob fully out (counter clockwise). Close the Emergency Supply and Steady Flow Valves.	
10. Clean the Neck Dam and Neck Clamp and Latch Catch (SL-17A/B Assembly with a mild detergent solution. Operate the Neck Clamp and Latch Catch (SL-17A/B), rinse with fresh water. Clean the Neck Ring, and Pull Pin Assemblies (SL17K, 17C, 27, KM-37, 47, 57, 77) with mild detergent solution, thoroughly rinse with fresh water.	
11. Wipe all surfaces with a clean, dry towel to remove water droplets. Allow to air dry.	
12. Cap (or bag and tape) the Emergency Gas Whip on the First Stage Regulator. Wash the exterior of all EGS components, the First Stage Regulator, the Gas Cylinder, the Submersible Pressure Gauge, and the Harness Assembly with a mild detergent solution and rinse with fresh water.	
13. Note any damage or discrepancies found during cleaning.	

Technician Signature: _____ Date: _____

Comments: _____

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NOTE: The Maintenance Log, Appendix 3, may be used as a template to create blank pages to record all the maintenance performed.

BLEED/RELIEF VALVE CLEANING INSPECTION AND OVERHAUL PROCEDURES

Appendix 4

4-14-09

The bleed/relief valve should be disassembled, cleaned, and inspected at least once a year, and anytime the valve fails monthly lift testing, or fails to maintain a seal when within the specified range. The bleed/relief valve is easily cleaned using a nylon toothbrush and a 50/50 solution of vinegar and fresh water. Cleaning for 15 minutes in an ultrasonic sink, if available, with the 50/50 vinegar solution is highly recommended.

Repair parts are available from Kirby Morgan Dive Systems Inc. (KMDSI). Normal replacement parts include the o-ring, soft seat, spring, and hex nut. The O-ring should be replaced at least annually. The other parts require replacement only if worn or damaged. An exploded view of the valve is located in all KMDSI Helmet and Band Mask Operations and Maintenance Manuals.

CLEANING:

Tools:

1/2" open-end wrench

1/8" Allen wrench

Nylon toothbrush

Vinegar

Fresh water

Mild dish detergent

Ultrasonic sink, if available

Magnifying glass

New valve body o-ring

WARNING: DO NOT use cleaning solvents (i.e. mineral spirits, bleach, etc.) when cleaning the bleed/relief valve. The use of cleaning solvents may lead to failure of the bleed/relief valve.

1. Secure gas pressure to the first stage regulator, then bleed off.
2. Remove the bleed/relief valve from the regulator body using the 1/2" open-end wrench.
3. Remove, cut, and discard the bleed/relief valve body o-ring.
4. Using the 1/2" open-end wrench to hold the bleed/relief body, use the 1/8" Allen wrench to remove the Allen head adjustment screw. Then, shake out the spring and soft seat.
5. Place all parts in the 50/50 solution of vinegar and water and allow to soak for 15 to 30 minutes. If using an ultrasonic sink, reduce time to 15 minutes.
6. Using the nylon toothbrush, brush all components to remove corrosion and mineral deposits. Then, rinse with fresh water and blow or air dry.
7. Using the magnifying glass, carefully inspect all components for excessive corrosion and/or damage. Replace the spring and/or adjustment nut, if either part is excessively corroded or shows signs of wear

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and/or damage. Inspect the soft seat for nicks, cuts, and wear and replace if any damage is found. Replace the entire assembly if any damage to the valve body is present.

NOTE: A deep groove in the soft seat is normal. Replacement is only necessary if the rubber seat is deteriorated, cut, and/or chipped.

REASSEMBLY:

1. After cleaning, inspection and/or parts replacement reassemble the valve by installing the soft seat, spring, and adjustment nut. Screw the adjustment nut down until it is approximately 1/2 thread from being flush with the top of the valve body.
2. Lightly lubricate a new o-ring, then install on the valve body.
3. **Test the bleed/relief valve according to the test procedure below.**

LIFT CHECK/SETTING THE BLEED/RELIEF VALVE:

Tools required:

Adjustable first stage scuba regulator or controlled adjustable pressure source

Intermediate test gauge

1/2" open-end wrench

1/8" Allen wrench

HP air source at least 500 psig (34.4 bar).

Mild dish detergent

The purpose of lift checking the bleed/relief valve is to ensure it operates properly, allowing excess pressure to escape in the event the first stage develops a slight leak. Without the bleed/relief valve, high-pressure gas will continue to increase until the emergency supply hose ruptures, possibly causing injury and a complete loss of the Emergency Gas System (EGS). This procedure explains the steps necessary for readjusting the bleed/relief valve after it is cleaned, overhauled or any time the valve is tested.

CAUTION: Ensure the bleed/relief valve is only installed in a low-pressure port of the first stage regulator.

DANGER: Do not use oxygen, or mixed gas containing more than 23% oxygen by volume, for lift checking the bleed/relief valve. The use of oxygen, or mixed gas, in a high-pressure supply system not designed and cleaned for oxygen service, can result in a fire or explosion causing serious injury or death.

NOTE: The bleed/relief valve is lift checked and/or adjusted using an adjustable first stage regulator, equipped with a low-pressure test gauge, which is used for adjusting the intermediate pressure of scuba regulators. The check/adjustment can be performed using a standard scuba test stand, or a gas control console, using air or mixed gas with an oxygen content below 23% by volume. If a first stage scuba regulator is used, it must be able to be adjusted to the desired lifting pressure. The pressure gauge should be compared to a gauge of known accuracy.

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1. Install the bleed/relief valve in a low-pressure port on an adjustable first stage regulator, or install on a scuba test stand that has an adjustable pressure supply, then tighten with the 1/2" open-end wrench.
2. Install an intermediate pressure gauge in one of the low-pressure ports of the first stage regulator.
3. Install the first stage regulator on the cylinder. Ensure the bleed/relief valve and intermediate pressure gauge are attached to low-pressure ports facing up.
4. Wet the bleed/relief valve with soapy water to help indicate when gas flow starts.
5. Slightly crack open the gas supply so a very slight flow of gas is traveling to the first stage, until the intermediate pressure gauge travels no further. Leave the supply valve only slightly cracked open. Most first stage regulators use an intermediate setting between 130 - 150 psig (9.3 – 10.3 bar).
6. Slowly, increase the intermediate setting of the first stage until the pressure gauge indicates 180 psig (12.4 bar). If the bleed/relief valve starts venting before a pressure of 180 psig (12.4 bar) is reached (as indicated by small bubbles forming or by “popping”), turn the adjustment screw in (clockwise) using the 1/8" Allen wrench on the bleed valve hex nut 1/16th -1/8th turn, or until all leakage stops as indicated with the soapy water. If a pressure above 200 psig (13.8 bar) is reached with out the bleed/relief valve forming bubbles or popping, slowly back out (counterclockwise) on the adjustment hex nut 1/16th of a turn at a time until bubbles form.

NOTE: If the Allen screw on the bleed/relief valve hex nut is rotated too far, too fast, the bleed/relief valve will pop open. This could possibly require the air to be secured at the cylinder to reset the seat before the adjustment can be accomplished.

7. Continue this procedure as necessary until the bleed/relief valve consistently starts to forms bubbles at a pressure between 180 and 200 psig (12.4 -13.8 bar). After the valve has been set to just bubble or pop off, back out on the regulator adjustment nut until the pressure is set back to 135 psig (9.3 bar), or at the factory setting of the first stage regulator.
8. Re-wet the bleed/relief valve, and then slowly increase the intermediate pressure on the first stage regulator to recheck the lift pressure once more. The bleed/relief valve should start forming bubbles between 180 - 200 psig (12.4 -13.8 bar) After final adjustment; reset the first stage regulator to 135 psig (9.3 bar), or to the manufacturer’s recommended pressure setting. Spray the bleed/relief valve with soapy water and ensure there are no leaks.
- 9. After a successful leak check, the bleed/relief valve may be reinstalled into the system.**

NOTE: The bleed/relief valve can now be installed in any first stage regulator, providing the first stage has an intermediate setting of 135 - 165 psig (9.3 – 11.4 bar).

TROUBLESHOOTING:

Problem:

Valve pops open and will not stop flowing:

Check:

If while setting the bleed/relief valve the valve pops open and will not stop flowing, secure the air supply valve and allow the valve to reseal. Try the procedure again, ensuring that the supply valve is only **slightly** cracked open, allowing full test pressure but minimizing high flow potential.

Problem:

After resetting the first stage to 135 psig (9.3 bar), the valve continues to leak:

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Check:

This indicates the valve body seating surface or the soft seat is either dirty or damaged. Usually, cleaning both the metal body seating surface in the valve body and the soft seat will fix the problem. If, after cleaning, the problem persists, replace the soft seat and spring and retest the unit. If, after this has been accomplished, the seat continues to leak, then replacement of the complete valve will be necessary.

QUICK SANITIZING PROCEDURE

Appendix 5

4-14-09

The purpose of this procedure is to sanitize the components directly exposed to each diver's mouth and nose to help eliminate germs. KMDSI recommends sanitizing after each diver when in use by multiple divers, and after each diving day when used by a single diver. To accomplish this properly, all components exposed to the diver's breathing should be sanitized. On the Helmets and KMB Band Masks, this will include the Oral Nasal Mask and internal cavity of the Demand Regulator. For best results, the Demand Regulator Cover and Diaphragm should be removed so the interior surfaces, as well as the Diaphragm, can be properly exposed to the cleaning solution and rinse water.

CAUTION: Carefully dilute germicidal cleansing solutions in accordance with the manufacturer's recommendation. If solution is not of the recommended strength, it will not act as an effective disinfectant. Failure to thoroughly rinse germicidal cleansing solution from diving equipment may result in lung irritation and/or long-term degradation of rubber and silicone components.

Listed below are four solutions, used by the U.S. Militaries, which have proven to be effective when used in accordance with the manufacturer's recommendations. If no other solutions are available, a solution of mild dish detergent and water and hand scrubbing with a soft brush or rag can be done. Note: to maximize germ killing, solutions should remain in contact with components for a minimum of 10 minutes.

1. SaniZide Plus: P/N: 34805 (spray) or 34810 (gallon), Ready to use; do not dilute.

SAFETEC of America, Inc
1055 E. Delavan Ave.
Buffalo, NY 14215 USA
1-800-456-7077

2. Advance TB_E: P/N: AD160 (spray) or AD1128 (gallon), Infection Control Technology available): Ready to use.

Infection Control Technology
1751 So. Redwood Rd.
Woodscross, UT 84087 USA
1-800-551-0735

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3. **Bi-Arrest 2:** P/N: BP201 (4 ounces) or BP 222 (32 ounces), Infection Control Technology. Mix two pumps of the concentrate with 16 ounces of fresh water.
Infection Control Technology
1751 So. Redwood Rd.
Woodscross, UT 84087 USA
1-800-551-0735
4. **Confidence Plus:** P/N: 10009971 (32 ounces) Mix one ounce of concentrate with one gallon of fresh water.
Mine Safety Appliances
1-800-MSA-2222

Sanitizing Procedure: Unless otherwise directed, use the following procedure to disinfect the Oral Nasal Mask and Demand Regulator: For disassembly and reassembly procedures, refer to the appropriate KMDSI Operations and Maintenance Manual.

- 1) Wet or immerse all components to be sanitized. Allow to stay in contact with the solution for at least 10 minutes while lightly scrubbing over the components with a nylon toothbrush or clean dishrag to help remove mucus or saliva build up.
- 2) If the solution appears to be drying, apply more solution to keep it wet for the full 10 minutes.
- 3) After 10 minutes, thoroughly rinse components under running potable water while brushing or rubbing.
- 4) If the equipment is not being used immediately, allow the components to air dry or pat dry with a clean towel and reassemble.

KMDSI Operator / User Training
KMB 18/28
Student Enabling Objectives
7-12-06

STUDENT ENABLING OBJECTIVES

•Perform set-up, adjustment and pre-dive functional inspection procedures for Kirby Morgan Band Masks; KMB 18 and KMB 28 in accordance with the applicable Operations and Maintenance Manuals and the following checklists:

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

HOOD SPIDER and RETAINING CLAMP

- Upon instruction of this section the student will be able to:
 - a) Describe/perform a proper inspection of the Hood Assembly
 - b) Describe/perform a thorough inspection of the Spider Assembly
 - c) Describe/Perform a though inspection of the Clamp Assembly.
 - d) Explain what conditions will hasten aging of the Hood and Spider rubber components.

FRAME COMPONENT ASSEMBLY

- Upon instruction of this section the student will be able to:
 - a) Explain/demonstrate a proper visual inspection of the Frame Assembly.
 - b) Explain the physical and material differences between the KMB 18 and KMB 28.
 - c) Explain the Monthly, and Daily maintenance.
 - d) Explain the purpose of the Oral Nasal Mask and Valve Assembly and the reason a correctly installed Valve is in the sealing surface out position. The student will also be able to elaborate upon the dangers involved with incorrectly installing the Valve, not using genuine KMDSI parts, or just not having an Oral Nasal Mask or Valve installed.
 - e) Demonstrate proper inspection of the Whisker Assembly.
 - f) State the advantages/disadvantages and limitations of the double exhaust and the reasons.
 - g) Conduct an inspection on the Defogger and EGS Valves and explain "flats" and be able to point out what to look for regarding the serviceability of the control knobs.

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- h) Perform Main Exhaust/Water Dump Valve inspection, thoroughly describing, “seating surface”.
- i) Describe/perform proper inspection or required maintenance of communications system.

SIDE BLOCK/DEMAND REGULATOR

- Upon instruction of this section the student will be able to:
 - a) Demonstrate/perform the two different ways of checking the One-Way Valve and explain which test is the most stringent and why.
 - b) Demonstrate how to remove the Demand Regulator Cover to inspect, clean in accordance with recommended procedure, inspect and re-assemble, adjust, fine tune.
 - c) Demonstrate how to properly perform an inspection on the Demand Regulator Diaphragm and state “satisfactory” criteria.
 - d) Explain the purpose/reason for cleaning Oral Nasal Mask and Demand Regulator components with germicidal cleaning solutions.

EMERGENCY GAS SUPPLY

- Upon instruction of this section the student will be able to:
 - a) Conduct a thorough inspection of all EGS components including the maintenance records to ensure maintenance is in compliance with manufacturers recommendations.
 - b) Demonstrate/perform both testing and adjusting on the First Stage Over-Pressure Relief Valve.
 - c) Check/demonstrate/perform the correct recommended setting of the Over-Bottom of the First Stage Regulator for the Emergency Gas Supply (EGS) Cylinder.
 - d) Demonstrate/perform proper inspections of Harness Assembly, pointing out trouble areas of high wear.

**KMB 18/28 (BANDMASK)
MONTHLY MASK INSPECTION
APPENDIX A2.2
4-14-09**

This inspection is the minimum recommended maintenance and **should be** performed at least **ONCE A MONTH** with Mask(s) in continuous use (used for more than 20 diving days in a month) or at least every **TWO (2) MONTHS**, with Mask(s) used less than 10 diving days a month.

NOTE: Mask(s) being used in polluted waters, or extreme environments, will require more frequent inspection.

NOTE: During removal of components for inspection, O-rings and other consumable items may be reused, providing they are clean and a visual inspection does not reveal any damage or deterioration.

NOTE: Perform the Side Block/Demand Regulator inspection procedures with gas supplies not connected to the Side Block. Attach the gas supply at Step 5 of the “Side Block/Demand Regulator” inspection procedure.

Date:
Mask Serial #:
Associated Equipment Serial #(s):
Technician (print name):

PROCEDURES	INITIALS
HOOD ASSEMBLY	
1. Remove the Earphones from their pockets in the Hood. Remove the Hood (2) from the Mask. Perform a visual inspection of all components. Guidance O & M Manual.	
PROCEDURES	
2. Visually inspect all metal parts of the Band Assembly, band keeper, components, including the Band Screws, for damage. Replace if necessary. Guidance O & M Manual.	

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3. Visually inspect the Hood for signs of damage and/or deterioration. Guidance O & M Manual.	
4. Check the Head Harness (Spider) for signs of tearing, deterioration, and/or damage. Ensure all five legs of the Spider are present. Guidance O & M Manual.	
MASK ASSEMBLY	
1. Visually inspect the Mask exterior for loose and/or missing fasteners and obvious signs of fiberglass damage; including cracks, gouges or depressions.	
NOTE: On the KMB-18, any gouges in the fiberglass shell deeper than 1/16” should be repaired. Fiberglass and gel coat repairs MUST be completed by a technician that has received certification for Helmet Shell repairs by KMDSI or Dive Lab, Inc. Any cracks or depressions with fractures must be checked by an Authorized KMDSI Repair Facility.	
2. Remove the Covers from the Earphones. Remove Microphone from Oral Nasal Mask. Inspect and repair/replace as necessary. Perform a communications check. Guidance O & M Manual.	
CAUTION: The Nose Block device MUST be replaced when installing a new Oral Nasal Mask. Stretching the Oral Nasal Mask over the Nose Block Device can cause the Oral Nasal Mask to tear.	
3. Remove the Nose Clearing Device and Oral Nasal Mask. Remove the Oral Nasal Valve as an assembly. Clean the Valve and the Valve Body as an assembly. Clean the Oral Nasal Mask. Inspect Mask and Valve Assembly for damage and/or deterioration. Replace the Oral Nasal Mask if any damage is found. Replace the Oral Nasal Valve if it appears dried, stiff, and/or does not lay flat. Clean and inspect the Nose Clearing Pad, Shaft and O-rings for wear. Replace the Pad if deteriorated or damaged. Replace O-rings if worn. Lightly lubricate the Shaft O-rings and Shaft, then reinstall. Reinstall Oral Nasal Mask and Valve Assembly. Guidance O & M Manual.	
PROCEDURES	

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4. Remove the Comfort Insert (14) [KMB 18 only]. Clean and inspect the Comfort Insert for damage and/or deterioration. Mark N/A for KMB28	
5. Without air to the Side Block, check the operation of the Defogger and Auxiliary Supply Valve (EGS). If the Valves do not operate smoothly, they must be overhauled or replaced. Guidance O & M Manual.	
6. Remove the Main Exhaust Valve Cover. Inspect the Main Exhaust/Dewatering Valve and Seat for damage and/or contamination. Ensure the Valve material is not hardened, distorted, and/or warped. Replace the Valve if questionable. Reinstall the Cover.	
SIDE BLOCK/DEMAND REGULATOR	
1. Check the Umbilical Supply One-Way Valve for proper operation by sucking on the Umbilical Adapter with the Emergency Valve open. No gas should be drawn thru the One-Way Valve.	
2. Remove the Regulator Cover Clamp, Cover, and Diaphragm. Visually inspect the interior of the Regulator Body for corrosion and/or contamination. Clean as necessary. Guidance O & M Manual.	
3. Carefully inspect the Diaphragm for cuts, tears, and deterioration. If any damage is found, replace the Diaphragm.	
4. Carefully check the Regulator Exhaust Valve for warping, distortion, stiffness, and/or damage. This is checked by pressing on the Flapper Valve from inside the Regulator. Check the Regulator Body Valve Seat Spokes. The Spokes should be flat and even. Straighten if deformed. If the Valve shows signs of damage and/or deterioration, replace the Valve. Guidance O & M Manual.	
5. Attach an air supply source to the Umbilical Adapter and set the supply pressure to between 135 - 150 psig (9.3 – 10.3 bar). Adjust the Regulator Adjustment Knob out, until a slight free flow develops, then adjust in until the free flow just stops and check the Lever play. There should be between 1/16” - 1/8” of play in the Lever. Adjust as necessary. Reinstall the Diaphragm, the Cover, and the Clamp. Guidance O & M Manual.	
PROCEDURES	

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6. Depress the Purge Button. The Button should travel 1/16" – 1/8" before gas starts to flow and a strong purge should be felt when the Button is fully depressed. If the Regulator Purge travel is less than 1/16" or greater than 1/8", readjust the Lever. Guidance O & M Manual.	
7. Check the Steady Flow Valve for proper operation.	
NOTE: The Steady Flow Valve will rotate approximately two complete revolutions from closed to full open. With the air pressure to the Mask between 135 - 150 psig (9.3 - 10.3 bar), turning the Steady Flow Valve one full rotation should result in a strong flow of gas through the Defogger Train.	
8. Secure the gas supply, then bleed down and remove the gas supply from the Inlet Adapter.	
9. Attach a regulated gas supply (normally the EGS system), adjusted to between 135 – 150 psig (9.3 – 10.3 bar), to the Emergency Valve on the Side Block. On the Side Block, open the Emergency Supply Valve all the way, and then slowly open the regulated gas supply. Check the function of the Regulator Purge, Regulator Adjustment Knob, and the Steady Flow Valve in accordance with previous steps 6 and 7. Check for gas exiting from the One-Way Valve. There should be no gas exiting the Umbilical Adapter.	
PROCEDURES	INITIALS
EMERGENCY GAS SUPPLY (EGS)	
NOTE: The Emergency Gas System consists of a good quality First Stage Regulator equipped with a submersible pressure gauge, an Over Pressure Bleed/Relief Valve, and an Emergency Gas Supply Hose that connects to the Emergency Valve on the Mask Side Block.	
1. Check the hydrostatic date and last visual inspection record ("VIP") of the cylinder. Ensure date(s) are within the specified range. The VIP is done at least annually and the hydrostatic test is done at least every five years.	
2. Check the maintenance record of the EGS components to ensure the First Stage Regulator's maintenance has been performed in accordance with the manufacturer's recommendations.	
3. Check all Hoses for signs of blisters, cover slippage, cuts, and/or abrasions. Replace any Hose(s) that show signs of leakage/damage. If a Quick Connect EGS hose is being used, inspect quick connect and fittings for signs of wear/damage.	

4. If a submersible pressure gauge is used, ensure it has been compared to a gauge of known accuracy.	
5. Test the First Stage Bleed/Relief Valve. Guidance per “Appendix 4: Bleed/Relief Valve Cleaning, Inspection, and Overhaul Procedures”.	
6. Log the lifting pressure _____ psig.	
NOTE: An adjustable First Stage Regulator and a Gas Cylinder with a minimum of 500 psig (34.5 bar) available are required for this step.	
NOTE: The Bleed/Relief Valve should be adjusted to start relieve between 180 - 200 psig (12.4 – 13.8 bar) when tested.	
7. Check the over-bottom setting of the First Stage Regulator to ensure it is within the manufacturer’s specified pressure range. For KMDSI Helmets and Masks, the minimum over-bottom for the emergency supply is 135 psig (9.3 bar) and the maximum 165 psig (11.4 bar). Log the intermediate pressure.	
8. Perform a leak check of all EGS components and fittings using soapy water in a pressurized condition. Repair/replace items as necessary.	
9. Inspect the Harness Assembly for signs of wear and/or damage. Repair/replace as necessary.	

Technician Signature: _____ Date: _____

Comments: _____

KMDSI **highly** recommends that a certified KMDSI Repair Technician make all repairs and that only genuine KMDSI repair and replacement parts be used. Owners of KMDSI products that elect to do their own repairs and inspections should only do so if they possess the knowledge and experience. All inspections, maintenance, and repairs should be completed using the appropriate KMDSI Operations and Maintenance Manual(s). Persons performing repairs should retain all replacement component receipts for additional proof of maintenance history. Should any questions on procedures, components, or repairs arise, please contact Kirby Morgan Dive Systems, Inc., by telephone at (805) 928-7772 or via e-mail at info@kirbymorgan.com, or contact Dive Lab, Inc., by telephone at (850) 235-2715 or via e-mail at divelab@aol.com.

NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template for creating blank pages to record all the maintenance performed.

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**KMB 18/28 (BAND MASK)
DAILY MASK AND EMERGENCY GAS SYSTEM
SET-UP AND FUNCTIONAL CHECKLISTS
APPENDIX A2.3**

4-14-09

THIS DAILY SET-UP AND FUNCTIONAL CHECKLIST SHOULD BE COMPLETED PRIOR TO COMMENCEMENT OF DAILY DIVING OPERATIONS AND AT LEAST EVERY 24 HOURS IF IN CONTINUOUS USE.

WARNING:

These are recommended minimum checks when using Kirby Morgan KMB 18/28 Band Masks. Additional checks may be required as dictated by the conditions and tasks being performed. **Failure to perform in-water checks may result in serious injury or death.**

NOTE: Mask(s) being used in polluted waters, or extreme environments, will require more frequent inspection.

NOTE: During removal of components for inspection, O-rings and other consumable items may be reused, providing they are clean and a visual inspection does not reveal any damage or deterioration.

NOTE: Perform the Side Block/Demand Regulator inspection procedures with gas supplies not connected to the Side Block. Attach the gas supply at Step 5 of the “Side Block/Demand Regulator” inspection procedure.

NOTE: Steps 3(a) - 3(e) use the EGS for setting up and checking the Mask’s systems. For a proper check of the Demand Regulator adjustment, the First Stage Regulator must have an intermediate supply pressure output between 135 – 150 psig (9.3 – 10.3 bar). The First Stage Bleed/Relief Valve should be set between 180 - 200 psig (12.4 – 13.8 bar). Do not attach the Umbilical until Step 6.

Date:
Mask Serial #:
Associated Equipment Serial #(s):
Technician (print name):

STEP	PROCEDURES	INITIALS
<p>1. Hood and Band Assembly</p> <p>NOTE: When the screws that hold the Bands in position are properly torque, the Hood and Face Seal cannot be removed from under the Bands.</p>	<p>Diver/Tender: Check the following (a-d):</p>	
	<p>a. Visually inspect the Hood and Face Seal for signs of damage. Check the Hood for tears, holes, and/or cuts. Ensure the Face Seal is properly glued to the Hood.</p>	
	<p>b. Check the screws that hold the Bands in position. They must be properly torque to <i>26 inch pounds (28 kg cm)</i>. If the old style non band keeper hood is in use, ensure the Hood protrudes at least $\frac{1}{4}$" to $\frac{1}{2}$" (6 – 12 mm). Guidance O & M Manual.</p>	
	<p>c. Inspect the Bands. Ensure the welds exhibit no signs of cracking and/or parting. Inspect all band keeper components</p> <p>DANGER: If the Bands become loose, the Hood and Face Seal could separate from the Mask. This would cause the Mask to flood, which could cause drowning.</p>	
	<p>d. Inspect the Spider to ensure there are no tears and/or cracks in the material. Ensure all five legs are present. If it is worn and/or cracked, it must be replaced.</p>	
<p>2. Visually Inspect Mask</p> <p>NOTE: KMDSI recommends replacement of the Hose Assembly (117a) on the KMB-18A every 2-years, regardless of condition.</p>	<p>Diver/Tender: Check the following (a-g):</p>	
	<p>a. Visually inspect the interior/exterior of the Band Mask for any obvious signs of damage. Check to make sure the Oral Nasal Valve is correctly installed and the Oral Nasal Mask is installed on the Regulator Mount Nut. Ensure the Nose Clearing Device operates smoothly. Lubricate as necessary. Guidance O & M Manual.</p>	
	<p>b. Ensure the Earphones and the Microphone are installed correctly. Check the Wire Lugs to ensure they are not touching each other. Guidance O & M Manual.</p>	
	<p>c. Ensure the Demand Regulator Cover is not excessively dented, with dents deeper than $\frac{1}{4}$ inch.</p>	

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STEP	PROCEDURES	INITIALS
<p>2. Visually Inspect Mask (Cont.)</p> <p>NOTE: The EGS being used must be properly maintained and fully functional.</p>	<p>d. Inspect the Regulator Hose Assembly on the KMB-18A. The Hose(s) and fittings must be in good shape. On the KMB-18B, the Bent Tube must not have any dents and/or compressed areas exceeding 1/8"</p>	
	<p>e. Check all moving parts to ensure smooth and proper operation.</p> <ol style="list-style-type: none"> 1) Defogger Control Knob 2) Auxiliary Knob (EGS) 3) Nose Block Device 4) Regulator Adjustment Knob 	
	<p>f. Ensure the One-Way Valve is operational</p> <p>WARNING: The One-Way Valve must be tested daily prior to commencing diving operations. DO NOT DIVE THE MASK if the One-Way Valve is not operating properly. If the Hose parts near the surface, serious injury could result to the divers' lungs and/or eyes. In extreme cases, this could be fatal.</p>	
	<p>g. Connect the First Stage Regulator to the EGS Cylinder and the Mask Emergency Supply Valve. With the Cylinder turned OFF, open and close the Side Block Auxiliary Valve (EGS) to check for smooth operation. Then open and close the Defogger Valve to check for smooth operation. Guidance O&M Manual.</p>	
<p>3. EGS Inspection</p>	<p>Diver/Tender: Check the following (a-e):</p>	
	<p>a. Visually inspect all EGS hoses for signs of damage.</p>	
	<p>b. Check to ensure the cylinder is within the VIP and the hydro dates.</p>	
	<p>c. Ensure the First Stage Regulator pressure setting and the Over Pressure Bleed/Relief Valve settings have been checked within the past month. (Maintenance Log).</p>	

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STEP	PROCEDURES	INITIALS
	d. Inspect the Safety Harness and Cylinder Retainer for wear and damage. Repair/replace as necessary.	
	e. Document inspection/maintenance in Maintenance Log (Appendix 3).	
4. Check the Mask	<p>Diver/Tender: Check the following (a-d):</p> <p>a. Rotate the Regulator Adjustment Knob in fully (clockwise), then rotate out (counterclockwise) 3 – 4 rotations to check for smooth operation.</p> <p>b. Open the EGS Supply Valve on the cylinder. Log the pressure _____ psig. Then open the Emergency Supply Valve on the Side Block.</p> <p>c. Momentarily open the Mask Defogger $\frac{3}{4}$ to 1 full turn. Check for a strong flow of gas out of the Defogging Train, and then close.</p> <p>d. Check for gas escaping from the One-Way Valve.</p>	
5. Attach the Umbilical	Tender: Blow down the Umbilical and attach it to the Umbilical Adapter on the One-Way Valve.	
6. Check the Demand Regulator Adjustment	<p>Diver/Tender: Check the following (a-d):</p> <p>a. Rotate out (counterclockwise) on the Demand Regulator Adjustment Knob until a slight free flow develops. Then rotate in (clockwise) until the free flow stops.</p> <p>b. Slowly depress the Purge Button to check for excessive travel. The Purge Button should travel in no less than 1/16" and out no more than 1/8" (1.5 - 3.0 mm) before gas flow is heard.</p> <p>c. Depress the Purge Button all the way, verify a strong surge of gas.</p>	
Note: If the Purge Button travels further than 1/8" (3mm) before gas starts flowing, or has a weak flow of		

STEP	PROCEDURES	INITIALS
gas when fully depressed, adjustment of the regulator is necessary. Guidance O&M Manual	d. Ensure the Side Block Emergency Valve is closed, and the Bail Out Cylinder Valve is open. Log the cylinder pressure _____ psig.	
7. Check the Communications	Diver: Perform communications check.	
8. Check the Hot Water Supply (if applicable)	Tender: Check the hot water supply connections. Ensure topside supply has been switched to the diver and verify flow to hot water shroud and suit (if used).	
9. Check the Dry Suit Inflation Hose (if applicable)	Tender: Check the dry suit Inflation Hose Connection. Ensure the dry suit Inflation Valve and Exhaust Valve function properly.	
10. Check the Entire Rig	Tender: Soap and leak check the Mask gas fittings and connections including the EGS.	
11. Check the Diver's Entire Rig	Supervisor/Tender: Check adjustment/fit of the entire rig, including the following (a-d):	
	a. Diver's Safety Harness	
	b. Umbilical Strain Release	
	c. EGS Hose Quick Disconnect	
	d. Boots, gloves, knife, and other accessories NOTE: All equipment must be adjusted properly and functioning correctly.	
12. Check Breathing	Diver: Check to ensure the Mask is breathing easily. NOTE: The Mask must be breathing easily and properly	
13. Diver(s) Is Ready	Diver: Report when you are ready to enter the water.	

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Technician Signature: _____ Date: _____

Comments: _____

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NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template to create blank pages to record all the maintenance performed.

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**KMB 18/28 (BANDMASK)
SUPERVISORS EQUIPMENT CHECKS
PRIOR TO ENTRY INTO WATER
APPENDIX A2.4
7-12-06**

NOTE: Helmet(s) being used in polluted waters, or extreme environments, will require more frequent inspection.

CAUTION: KMDSI strongly recommends the use of a Tender to assist the diver when “dressing-in”. The Tender should ensure the Helmet Liner is fastened to the Helmet Shell and the Chinstrap is properly fastened under the divers chin, once the Helmet is donned. Prior to closing the Yoke/Neck Clamp Assembly, ensure that the Clamp is installed.

WARNING: These are recommended minimum checks when using Kirby Morgan Helmets or Masks. Additional checks may be required as dictated by the conditions and tasks being performed. Failure to perform in-water checks may result in serious injury or death.

CAUTION: All surface supplied diving with Kirby Morgan Helmets must include a fully functional, properly maintained Emergency Gas System (“EGS”). The EGS should be maintained in accordance with the applicable Operations and Maintenance Manual.

Date:
Helmet Serial #:
Associated Equipment Serial #(s):
Technician (print name):

STEP	PROCEDURE	INITIALS
1. Check Breathing System	Diver - Check the following (a-e):	
	a. Open and close Steady Flow Valve to ensure proper operation.	
	b. Check breathing resistance, adjust Demand Regulator Adjustment Knob for minimum inhalation effort.	
	c. Press Purge Button to check gas purge function.	
	d. Ensure Nose Block Device slides freely.	
	e. Ensure Emergency Valve opens and closes properly, then verify Emergency Valve is shut and the Bail Out Cylinder Valve is open.	
2. Check Communications	Diver: Perform communications check.	
3. Check Hot Water Supply (if applicable).	Tender: Check the hot water supply connections. Ensure topside supply has been switched to the diver and verify flow to hot water shroud and suit (if used).	
4. Check the Dry Suit Inflation Hose (if applicable)	Tender: Check the dry suit Inflation Hose Connection. Ensure the dry suit Inflation Valve and Exhaust Valve function properly.	
5. Check Entire Rig.	Tender: Soap and leak check the Mask gas fittings and connections, including the EGS.	
6. Check the Diver's Entire Rig NOTE: All equipment must be adjusted properly and	Supervisor/Tender - Check adjustment of entire rig, including the following (a-e):	
	a. Diver's Safety Harness	
	b. Umbilical Strain Release	
	c. EGS Hose Quick Disconnect	

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functioning correctly.	d. Boots or fins, gloves, knife, and other accessories	
	e. Helmet supply pressure, minimum 115 psig.	
7. Check Breathing	Diver: Check to ensure helmet is breathing easily. NOTE: The Mask must be breathing easily and properly.	

Technician Signature: _____ Date: _____

Comments: _____

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NOTE: The Maintenance Log, Appendix 3, of the Operations and Maintenance Manual may be used as a template for creating blank pages to record all the maintenance performed.

**KMB 18/28 (BANDMASK)
SUPERVISORS IN-WATER CHECKS
APPENDIX A2.5
4-14-09**

- NOTE:** Mask(s) being used in polluted waters, or extreme environments, will require more frequent inspection.
- NOTE:** During removal of components for inspection, O-rings and other consumable items may be reused, providing they are clean and a visual inspection does not reveal any damage or deterioration.
- WARNING:** These are recommended minimum checks when using Kirby Morgan Band Masks. Additional checks may be required as dictated by the conditions and tasks being performed. Failure to perform in-water checks may result in serious injury or death. See Chapter 2 of the KMDSI SuperLite 17A/B Operations and Maintenance Manual for air supply requirements.
- CAUTION:** All surface supplied diving with Kirby Morgan Band Mask(s) must include a fully functional, properly maintained Emergency Gas System (“EGS”). The EGS should be maintained in accordance with the applicable Operations and Maintenance Manual(s).
- WARNING:** If diving is conducted with less than the minimum recommended supply pressure, the diver must tailor the work to prevent exhaustion.

Date:
Mask Serial #:
Associated Equipment Serial #(s):
Technician (print name):

STEP	PROCEDURE	INITIALS
1. Check Breathing	Diver: Ensure Mask is breathing properly. Adjust the Demand Regulator Adjustment Knob for easy inhalation. Report: Breathing OK	
2. Check Mask/Equipment for Leaks	Diver: Ensure Mask is watertight. NOTE: If the diver is wearing a dry suit, diver reports that a proper seal has been made after checking for water leakage.	
3. Maintain Gas Supply Over-Bottom Pressure NOTE: If the above over-bottom pressure cannot be supplied, the diver will have to tailor his workload to avoid exhaustion. NOTE: The Demand Regulator and Side Block Assembly have a maximum design pressure of 250 psig (17 bar) over-bottom.	Console Operator: Maintain minimum over-bottom gas supply pressure for depth (fsw x 0.445) + required over-bottom for depth, in accordance with the applicable O & M manual for the type of supply system. Required over-bottom for depth: 0 - 60 fsw (0 - 18.3 msw), 90 psig (6.2 bar) 61 - 100 fsw (18.6 - 30.5 msw), 115 psig (7.9 bar) 101 - 132 fsw (30.8 - 40.2 msw), 135 psig (9.3 bar) 133 -165 fsw (40.6 - 50.3 msw), 165 psig (11.4 bar) 166 -220 fsw (50.6 - 67.1 msw), 225 psig (15.5 bar)	

Technician Signature: _____ Date: _____

Comments: _____

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NOTE: The Maintenance Log, Appendix 3, may be used as a template to create blank pages to record all the maintenance performed.

**KMB 18/28 (BANDMASK)
POST DIVE CLEANING
MAINTENANCE AND INSPECTION
APPENDIX A2.6
4-14-09**

Post diving cleaning and inspection should be performed at end of daily diving operations or at least every 24 hours if in continuous use.

NOTE: Mask(s) being used in polluted waters, or extreme environments, will require more frequent inspection.

NOTE: During removal of components for inspection, O-rings and other consumable items may be reused, providing they are clean and a visual inspection does not reveal any damage or deterioration.

NOTE: This cleaning and maintenance schedule is recommended to be performed on a **DAILY** basis.

NOTE: Detailed instructions are located in Chapter 5.

Date:
Mask Serial #:
Associated Equipment Serial #(s):
Technician (print name):

PROCEDURES	INITIALS
1. Secure and bleed down gas supplies.	
2. Disconnect and cap (or bag and tape) the Mask Gas Connections and disconnect the communication wires. Cap (or bag and tape) the Umbilical End.	
3. Wash the exterior surface of the Mask with a solution of mild detergent and fresh water, then rinse. Inspect for signs of damage.	

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PROCEDURES	INITIALS
4. Dislodge the Earphones from their pockets in the Hood. Remove the Earphone protective covers, clean and rinse to allow to dry.	
5. Clean Hood Assembly. Rinse with fresh water and inspect for damage. Hang-up for drying or airing.	
6. Remove the Demand Regulator Clamp, Cover, and Diaphragm Assembly. Wash the interior of the Demand Regulator with mild detergent and fresh water, then rinse thoroughly.	
NOTE: While rinsing the interior of the Demand Regulator DO NOT depress the Purge Button. This action will introduce foreign matter into the Inlet Valve and Seat.	
7. Remove the Microphone from the Oral Nasal Mask. Avoid getting water on the Oral Nasal Mask, Microphone and Earphones.	
8. Wipe down interior of the Mask, including the Oral Nasal Mask with a mild detergent and fresh water solution. Thoroughly rinse with fresh water while cycling the Defogger Knob, Auxiliary Gas Knob (EGS) and Regulator Adjustment Knob. For sanitizing procedures, refer to “Appendix 5: Quick Sanitizing Procedure.”	
9. Fully back out on the Regulator Adjustment Knob, counterclockwise (this will prolong the life of the Inlet Valve Seat). Shut the Auxiliary Supply (EGS) and Steady Flow Valves.	
10. Wipe all surfaces with a clean dry towel to remove water droplets. Allow to air dry.	
11. Cap (or bag and tape) the Emergency Gas Whip on the First Stage Regulator. Wash the exterior of all EGS components, the First Stage Regulator, the Gas Cylinder, the submersible pressure gauge, and the Harness Assembly with a mild detergent solution and rinse with fresh water. Hang-up Harness Assembly for drying or airing.	

Technician Signature: _____ Date: _____

Comments: _____

Comments: _____

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