Kirby Morgan®
Deep Sea Diving Helmets

KM Diamond

A2.2
Monthly Inspection And Maintenance Checklist

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 for the KM Diamond helmet. 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 document the maintenance as it is completed and act as a guide. 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.

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

NOTE: Helmets being used in extreme environments will require more frequent inspection.

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.

Date: _____

Helmet Serial Number _____ Diamond Main Tube # _____

Diamond POD Serial # _____ Diamond Exhaust Serial # _____

Associated Equipment Serial #(s): _____

Technician *(print name)*: _____

1. Neck Ring Assembly and Helmet Attachment Components

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1) Remove the Neck Ring Assembly from the helmet. 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 without thinning sections. 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 module.	
2) Remove and inspect the Neck Ring Assembly 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 module	
3) Inspect the interior mounted Chin Strap for signs of wear or damage. Verify attachment screws tighten down & holding. Guidance, applicable O & M module.	
NOTE: KMDSI recommends the chin strap be used AT ALL TIMES.	
4) Visually inspect the locking collar for signs of damage. Check for loose or missing fasteners. Check to ensure the neck pad can slide to allow for proper adjustment and lock in place. Guidance, applicable O & M module.	
5) Check the two sealed Pull Pins for smooth and correct operation. Verify that the holding screws are bottomed out. Visually inspect for signs of oil leakage. Guidance, applicable O & M module.	

⚠ CAUTION

If Sealed Pull Pins do not operate smoothly, or if oil is leaking, from the Pull Pins, the Pull Pins should be serviced.

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.	

7) Check the Swing Catch for smooth operation with and without the Neck Ring Assembly in place. Check for obvious worn or damaged parts and components. Guidance applicable O & M module	

2. Helmet Assembly

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1) Visually inspect Helmet Shell exterior for loose and/or missing fasteners and obvious signs of damage; including cracks, gouges, and/or depressions.	
2) Remove and inspect Head Cushion for tears and broken snaps. Remove foam from liner and check the condition of the foam. Lightly lubricate male snaps with Molykote® silicone grease or equivalent. Repair/replace as necessary. Guidance applicable O & M module.	
3) Remove communication module from the helmet. Remove the covers and protectors from the earphones and inspect. Inspect the microphone. Inspect O-ring & mount nut. Perform a communications check. Clean and repair/replace as necessary. Guidance applicable O & M module.	
4) Without air to the helmet, check the operation of the Steady Flow Valve, Emergency Supply Valve (EGS), SBV (Surface Bypass Valve), and OPRV (overpressure relief valve). If the Valves do not operate smoothly they should be disassembled & cleaned. Guidance, applicable O & M module.	
5) Remove the Nose Block Device and Diamond Oral Nasal Mask from the helmet.	
6) Remove the Oral Nasal Valve body as an assembly. Clean the Oral Nasal Valve and Valve Body as an assembly. Clean the Diamond Oral Nasal Mask.	

Procedures	Initials
7) Inspect Mask and Valve Assembly for damage and/or deterioration. Replace the Diamond Oral Nasal Mask & Oral Nasal Valve if any damage is found. Replace the valve if it appears dried, stiff, or does not lay flat. Clean and inspect the Nose Block Pad, Shaft and O-rings (2) for wear. Replace the Pad if deteriorated or damaged. Replace O-rings if any signs of wear or damage are present. Lightly lubricate the shaft O-rings and the shaft, then reinstall. Reinstall Valve Assembly into Diamond Oral Nasal Mask. Guidance applicable O & M module.	
8) Inspect Oral Nasal Mount (lower) and inspect screws, washers and mount for damage or deterioration & reinstall. Replace if necessary. Reinstall mount followed by Diamond Oral Nasal Mask. Guidance applicable O & M module.	
9) Inspect dewatering valve from inside the helmet, Ensure the Valve material is not hardened, distorted, and/or warped. Replace the Valve if questionable. Guidance Modular O&M Manual.	

3. Water Purge Assembly

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1) Remove both the internal & external Pick Up Tubes on the Water Purge Assembly. Next remove Water Purge Assembly body from helmet. Guidance applicable O & M module.	
2) Inspect the assembly body, O-ring and valve for damage and/or contamination. Ensure the valve material is not distorted, and/or warped. Replace the Water Purge Assembly if body or valve is questionable. Reinstall the O-ring, Water Purge Assembly & attach Pick Up Tubes. Guidance applicable O & M module.	

4. Water Shrouds

Begin by inserting a water hose into the side block shroud receiver and flush with clean water for 2 minutes.

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1) Inspect all tie wraps (6) used on the water shroud system for wear and effectiveness. Shrouds should be held in place with little to no movement. Guidance applicable O & M	
2) Remove the Diamond Exhaust Assembly. Inspect Cap Screws for damage and/or corrosion. Clean as necessary. Locate a spare tie wrap P/N 520-038 and set aside. Next cut tie wrap on Diamond Valve Shroud and remove from assembly. Guidance applicable O & M module. Inspect, clean and set aside.	
3) Test holding power of the Inhale Regulator Shroud Lid by lifting and closing lid onto bishop pins. Ensure lid will continue to hold firmly.	

5. Diamond Exhaust Assembly

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1) Rotate Open Circuit Control Knob to confirm operation and that it is holding the closed position on the resistive O-ring. **NOTE:** Valve will turn less than a ½ a turn to be in the complete open or closed position	
2) Inspect and clean Diamond Exhaust Assembly covers and reattach Diamond Valve Shroud using Tie Wrap P/N 520-038. Guidance applicable O&M module.	
3) Carefully inspect the receiving slot O-rings for damage and misalignment. Lightly lubricate O-rings with Christo-lube® or equivalent. Lubricate the tops of the Bishop Screws (makes lid close easier).	

6. SBV (Surface Bypass Valve)

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1) Rotate the Control Handle back and forth to confirm proper operation. If handle does not operate properly service will be required by a trained KMDSI Technician.	
2) Use 3⁄16" Allen Wrench to confirm mounting screws (3) and bracket are tight.	
3) Use ¼" flat screwdriver to confirm SBV bracket and screw (1) is tight.	
4) Cut and remove tie wrap that holds BET (Breathing Equalizer Tube) in place.	
5) Inspect the condition of the black butterfly valve. Ensure the valve material is not hardened, distorted, or warped. Replace the Valve if questionable.	
6) Reinstall BET onto SBV & install tie wrap P/N 520-049 to complete installation of BET.	

7. Side Block/Demand Regulator

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.

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1) Check the umbilical supply One Way Valve for proper operation by sucking on the Umbilical Adapter with the Emergency or Steady Flow Valve open. No gas should be drawn through the One Way Valve. Alternate method is to attach the Bailout whip to the EGS. Close the Steady Flow Knob & turn in the Regulator Adjustment Knob all the way. Pressurize the bailout system. No gas should escape the One Way Valve.	

Procedures	Initials
2) Open Inhale Regulator Shroud Lid and remove the Regulator Cover Assembly. Visually inspect the interior of the Regulator Body for corrosion or contamination. Wash the interior of the Demand Regulator with mild detergent and fresh water, then rinse thoroughly.	
3) Carefully inspect the Diaphragm & Regulator Purge Cover for cuts, tears, and/or deterioration. If any damage is found, replace the Diaphragm and Regulator Purge Cover. Guidance applicable O & M module.	
4) Attach a regulated air supply source to the Umbilical Adapter and set the supply pressure to between 135–150 psig (9.3–10.3 bar). Rotate the Flex Knob out counterclockwise slowly until a slight free flow develops, then rotate in clockwise until the free flow just stops and check the Lever Play. There should be between 1⁄16″–1⁄8″ (1.6–3.18 mm) of play in the Lever. Adjust as necessary. Guidance applicable O & M module. Reinstall the Diaphragm and Regulator Cover Retainer Assembly.	
5) Depress the Purge Cover. The cover should travel 1⁄8″–1⁄4″ (3.18–6.35 mm) before gas starts to flow, and a strong purge should be felt when the cover is fully depressed.	
NOTE: If the purge cover has NO play, or play is greater than 1⁄4″ (6.35 mm) BEFORE gas flow is heard, the demand regulator requires internal adjustment, per "1.1.4 Adjusting the 455 Balanced Regulator" on page 455BAL-2.	
6) Check the Steady Flow Valve for proper operation.	
SPECIAL NOTE: To avoid confusion, be aware that the Defogger Valve is also commonly referred to as the Steady Flow Valve, or Free Flow, e.g. P/N 520-524 knob is called The Flex Knob, Steady Flow on the exploded views.	
NOTE: The Steady Flow Valve will rotate approximately 1 3⁄4 revolutions from closed to full open. With supply pressure to the helmet between 135–150 psig (9.3–10.3 bar), turning the Steady Flow Valve 1⁄2 turn open should result in a strong flow of gas through the Air Train Assembly.	

Procedures	Initials
7) Conduct helmet pressure test, exhaust regulator OPV and water purge assemblies for proper lift settings, if adjustment are necessary, Guidance Modular O & M Manual "KM Diamond Water Purge Assembly Maintenance and Testing" & "KM Diamond Surface Bypass Valve Maintenance and Testing" modules.	
8) Turn off the gas supply, then bleed down the system 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 (EGS) 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: A complete 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 (EGS) on the Helmet Side Block.	

8. Emergency Gas System

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
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.	

Procedures	Initials
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) Check Submersible Pressure Gauge to 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.	
7) Inspect the Harness Assembly for signs of wear or damage. Repair/replace as necessary.	

Recorded service in helmet maintenance log book? ☐ Yes ☐ No

I_____ hereby certify that I have performed the work required in the A2.2 and that **I AM** a certified KMDSI / Dive Lab technician.

Print Name: _____

Signature: _____ Date: _____

ID #: _____ Date of Certification: _____

I_____ hereby certify that I have performed the work required in the A2.2 and **I AM NOT** a certified KMDSI / Dive Lab technician.

Technician/Owner Print Name: _____

Signature: _____ Date: _____

Comments: _____

KMDSI strongly 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 user guide and 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 kmdsi@kirbymorgan.com, or contact Dive Lab, Inc., by telephone at (850) 235-2715 or via e-mail at divelab@divelab.com.

NOTE: The Maintenance Log, Appendix 3, found in the Misc. Appendices checklists on the Kirby Morgan website, may be used as a template to create blank pages to record all the maintenance performed.

