Kirby Morgan®
Deep Sea Diving Helmets

All Models

A2.1
Annual Inspection/Overhaul/Maintenance Checklist

THIS INSPECTION AND MAINTENANCE SHOULD BE PERFORMED **AT LEAST ANNUALLY** AND AS DICTATED BY CONDITION REVEALED DURING DAILY/MONTHLY INSPECTION. MONTHLY INSPECTIONS DETERMINE NECESSITY FOR OVERHAUL WITH MORE ACCURACY THAN SIMPLY PLACING A NUMBER OF HOURS OF USE.

This checklist is intended to aid persons performing routine overhauls of all KMDSI model helmets, both Fiberglass & Stainless steel. The checklist should be used in conjunction with the latest version of the applicable KMDSI Modular Operations and Maintenance Manual for the model helmet being serviced. This checklist is primarily intended to guide and document the maintenance as it is completed and to help guide the technician during overhauls. Specific detailed procedures for each section of this checklist can be found in the latest KMDSI Modular Operations and Maintenance Manuals and when completed should be retained in the equipment maintenance files. This checklist is generic in nature and should be used for all models of KMDSI Helmets.

⚠ 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.

NOTE When performing the A2.1, as a schedule overhaul, all O-rings must be replaced. When using the A2.1 as an "inspection" only, in-between annual overhauls, O-rings may be reused if inspection reveals the O-rings are serviceable.

NOTE This checklist may not match all the KMDSI Modular Helmet Operations and Maintenance Manuals, chapter, page, and paragraph.

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

NOTE This checklist should be used in conjunction with the most current KMDSI Modular Operations and Maintenance Manual. Please check the KMDSI web page at www.kirbymorgan.com.

Date: _____

Helmet Model: _____

Helmet Serial Number: _____

Associated Equipment Serial #(s): _____

Technician *(print name)*: _____

1. SL 17A/B Yoke/Neck Clamp Assembly

NOTE

For SL 17K, SL 17C, SL 27, and KM 37/SS, KM 47, KM 57, KM 77, KM 97, skip to page 3, and start at step 1.

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 be kept in service if they are carefully inspected least weekly I.A.W. the Monthly Inspection A2.2, steps 1-7.

CHECK THE FOLLOWING:

Procedures	Initials
1. Remove Safety Pin then remove Yoke / Neck Clamp Assembly from Helmet. Remove the neoprene Neck Dam completely and carefully inspect for tears, holes, and damaged areas and deterioration. This MUST be done to ALL types of SL 17B Neck Dams, PRE '84, Lock in dress, Cold Water and standard drawstring style. Replace or repair the Neck Dam if any damage is present or if the material shows signs of deterioration. 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 Modular O&M Manual.	
2. Disassemble the Rear Hinge Tab and Hinge from the Yoke/Neck Clamp. Inspect all parts for damage in the form of corrosion and cracking, especially on the old style sleeve. Replace parts as necessary. Guidance, SL 17 A/B Modular O&M Manual.	
3. Remove and Inspect Yoke Strap and Strap Guide. If the yoke strap is old and worn out, replace both Strap Guide and Yoke Strap.	

Procedures	Initials
NOTE KMDSI Recommends using the new bolt and Lock Nut. If using the old style sleeve and current bolts, use thread locking compound and torque to 20 inch lbs. (2.2 Nm). If the single ⅜" bolt and lock nut are used, tighten the nut until the bolt protrudes at least one thread past the nylon in the nut. Guidance SL 17 A/B Modular O&M Manual.	
4. Remove the Lock nut and washer from the clamp adjustment stud. Clean the Stud with a wire brush and inspect for signs of line cracking, pitting, or corrosion damage. If any damage or deterioration is present, the Neck Clamp will require replacement. Guidance Modular O&M Manual.	
5. Remove the Latch Catch Assembly from the Yoke. Inspect the mounting screws. Replace screws if any damage is found. Inspect the Spring and Plunger Shaft, for signs of corrosion; test operate the mechanism, dissemble and clean and overhaul if any corrosion or damage is found. Repair/Replace parts as necessary, reassemble. Guidance Modular O&M Manual.	
6. Re-assemble all Yoke/Neck Clamp/Dam Components. Replace the Lock Nut. Guidance Modular O&M Manual.	
7. Test-mate the Yoke/Neck Clamp to the Helmet. Check for Clamp adjustment and smooth Clamp operation. When properly adjusted, the Clamp should close with moderate resistance as the handle approaches the center of travel, and then should snap firmly against the Helmet due to the cam tension. When adjusting, a deep well socket should be used with a torque wrench on the lock nut and a back-up wrench, on the nut. After Neck Clamp is adjusted, tighten nut using sound engineering practices. Repair/replace parts as necessary. Guidance Modular O&M Manual.	
NOTE **All Kirby Morgan helmet models, must be equipped with an internal chin strap.** This internal chin strap is intended as a secondary helmet retainer in an unlikely event the helmet should separate from the neck ring/clamp assembly.	
8. Visually inspect the helmet Chin Strap and fasteners. Clean as necessary. Inspect for signs of wear or damage. Replace if any damage is found. Guidance, Modular O&M Manual.	

2. Neck Ring Assembly and Helmet Attachment Components SL 17C, 17K, 27, KM-37/SS, 47, 57, 77, 97

NOTE

The Neck Ring/Dam components of the SL 17K, SL 17C, SL 27, KM 37/SS, 47, 57, 77, 97, and are virtually identical and use the same components and parts. However, when performing maintenance or repairs refer to the specific portion of the modular manual for the helmet model being serviced.

CHECK THE FOLLOWING:

Procedures	Initials
1. Remove the Neck Ring/Dam Assembly from the Helmet. Carefully inspect the Neck Dam material for signs of wear, holes, tears, or any damage, replace if any damage is found. Guidance, Modular O&M Manual.	
NOTE **All Kirby Morgan helmet models, must be equipped with an internal chin strap.** This internal chin strap is intended as a secondary helmet retainer in an unlikely event the helmet should separate from the neck ring/clamp assembly.	
2. Visually inspect the helmet Chin Strap and fasteners. Clean as necessary. Inspect for signs of wear or damage. Replace if any damage is found. Guidance, Modular O&M Manual.	
3. Remove and discard the O-ring. Clean the O-ring groove and inspect the neck ring for signs of damage, dents, bent or deformed plates. Check to insure all Neck Dam screws are present. Lightly lubricate and install new O-ring. Guidance, Modular O&M Manual.	
NOTE The sealed pull pins are filled at the factory with silicon oil. It is strongly recommended that the sealed pull pins be serviced by persons that have received the proper training.	

Procedures	Initials
4. Remove the Sealed Pull Pin Assemblies, clean, and inspect the pin recess area in the helmet shell. Inspect the pins for the presence of silicon oil, which might indicate that the seal is bad. Check for proper function. If the pins do not function smoothly, or if oil is present, the pins should be serviced. KMDSI **Pull Pins should be serviced annually**, refer to helmet maintenance log for previous pull pin service/overhaul. Replace parts and components as necessary; reassemble Guidance, Modular O&M Manual. **NOTE** Visually inspect parts for corrosion. Look for discoloration, pitting and micro cracks. These conditions could result in a part failure. Corrosion pitting may have deep cavities that are not visible. If there's any doubt about the integrity of the part it should be replaced.	
5. Locking Collar: disassemble Locking Collar components including the Hinge Pins/Bolts and Neck Pad components. Clean and inspect, replace components as necessary. Replace Lock Nut. Guidance Modular O&M Manual.	
6. If helmet is equipped with Front Stand-offs - remove, clean, inspect for bends, or damage, or any obvious damage, re-install. Guidance Modular O&M Manual.	
7. Disassemble the Swing Tongue Catch Assembly, clean, and inspect all components. Replace components as necessary and reassemble, Guidance Modular O&M Manual.	

3. Helmet Assembly

CHECK THE FOLLOWING:

NOTE Remove any and all NON KMDSI factory stickers from the fiberglass helmet shell for proper inspection.

Procedures	Initials
1. Remove and inspect the Helmet Liner/Cushion. Check the condition of the foam and the liner material. Inspect Snaps and Chin Strap (SL 17A/B only), Lightly lubricate male snaps with silicone 111, Repair/replace as necessary. Guidance, Modular O & M Manual.	

Procedures	Initials
2. Remove Earphones and Microphones from their holders. Remove covers from Earphones and inspect. Remove Microphone from Oral Nasal Mask. Perform a communications check. Guidance Modular O & M Manual.	
3. Remove communications module and auxiliary port, if equipped, clean, inspect, and replace O-ring on modules. Re-install hand tight only. Guidance, Modular O & M Manual.	
4. **SL 17A/B ONLY**, KMDSI recommends yearly removal of the Alignment Screw from the rear weight. Also, conduct a visual inspection of the tapped threads used by the Alignment Screw in the Rear Weight. Ensure the threads are in good condition. Guidance Modular O & M Manual.	
5. **SL 17A/B ONLY** visually inspect the Alignment Sleeve and ensure it is not damaged and/or deformed. Replace as necessary. Clean all residual Loctite™ from the Alignment Screw, using a stainless or brass wire brush. Thoroughly inspect all threaded surfaces for corrosion and/or degradation. Guidance Modular O & M Manual.	
6. **SL 17A/B ONLY** apply thread locker such as Loctite ™ 222 or equivalent, to the Alignment Screw and insert into the Rear Weight, torque to 35 inch lbs. Guidance Modular O & M Manual.	
7. Inspect the fiberglass helmet shell for gouges deeper than 1/16" and signs of fiberglass showing, cracks and depressions with fractures.	
NOTE **Fiberglass Helmets ONLY:** Any gouge into the gelcoat that goes through the gel coat and into the fiberglass **MUST** be repaired as soon as possible. Any gouge deeper than 1/16 inch should be inspected by a KMDSI/ Dive Lab Inc, certified technician. ONLY KMDSI technicians that have received certification for HELMET SHELL repairs by KMDSI or Dive Lab, INC. can perform helmet shell repairs.	

⚠ CAUTION

The Nose Block device MUST be removed when removing or installing the Oral Nasal Mask. Stretching the Oral Nasal Mask over the Nose Block Device will cause the Oral Nasal Mask to tear.

8. Remove the Nose Block Device. Clean and inspect the Nose Block Pad, Shaft. Replace O-rings. Guidance, Modular O & M Manual.	

Procedures	Initials
9. Remove Oral Nasal Mask and Oral Nasal Valve as an assembly. Remove valve and valve body as an assembly. Clean and inspect Mask and Valve Assembly for damage. Replace Valve and reinstall into Valve Body. Reinstall Valve Body into Mask. Guidance Modular O & M Manual.	
10. **SL 17A/B ONLY** Remove the Helmet O-ring at the base of the helmet. Clean and inspect the O-ring groove for damage. Lightly lubricate a new O-ring and install. Guidance Modular O&M Manual.	
11. Remove bent tube  **NOTE** Replace the bent tube if it is excessively scratched, dented or compressed deeper than ⅛" (3.18 mm). Check for erosion of the metal or severe corrosion. Replace if any erosion is present or integrity is in question.	
12. Remove the Demand Regulator from the helmet and set aside. Guidance, Modular O & M Manual.	
 **NOTE** For all demand regulators, except the REX, the demand regulator must be removed prior to removing the Main Exhaust Body.	
13. Remove the Face Port Retainer, Face Port and O-ring. Inspect for obvious signs of corrosion damage.  **NOTE** The face port should be replaced anytime cracks are present, anytime nicks and scratches deeper than 1⁄16" are present, or anytime the condition is questionable. **Stainless Steel Shells only:** If silicone sealant/filler shows signs of extensive trapped contaminates, remove, clean, inspect and replace with Dow Corning® RTV 732 multi purpose sealant or equivalent.	
14. Remove the exhaust main body whisker with both right and left whiskers from the regulator body. Completely disassemble exhaust system clean and inspect. Replace exhaust system rubber components if the rubber shows any signs of deterioration, wear, and/or damage.	

Procedures	Initials
15. Replace the exhaust valves at least annually or any time they show any signs of deterioration, wear, and/or damage. Guidance, Modular O & M Manual	
 NOTE If using the Old Style Latex Double Exhaust Whisker refer to applicable section of the pertinent O & M Manual.	
16. **Fiberglass Helmets ONLY:** Perform a View Port Insert Pull Test. If inserts fail test the helmet shell will have to sent to an authorized KMDSI repair facility. Replace View Port O-ring. Guidance, Modular O & M Manual.	
 NOTE **Fiberglass Helmets ONLY:** Testing of the Port Inserts should be done ONCE A YEAR, and/or whenever Port Insert damage is present or suspected. (KMDSI P/N 525-115, Thread Insert Testing Block Kit) Guidance Basic Repair Technician Training Guide, Thread Insert Testing Procedure.	
 NOTE The regulator pod does not need to be physically removed from the Helmet Shell every year providing excessive internal corrosion is not present in the pod. However, the water dump valve must be overhauled and soft goods changed in accordance with the A2.1 Annual Inspection/Overhaul/Maintenance Checklist. KMDSI recommends at least every THREE (3) years the regulator pod be physically removed from the Helmet, overhauled and reinstalled, per Modular O & M Manual modules "Stainless Steel Helmets with SuperFlow® 350 or 455 Balanced Regulators Pod" and "Stainless Steel Helmets with REX Pod." Removed regulator pod? ☐ Yes ☐ No 17. **Stainless Steel Helmets ONLY:** Clean, inspect pod, replace dewatering valve, valve cage O-ring, pod, per Modular O & M Manual modules "Stainless Steel Helmets with SuperFlow® 350 or 455 Balanced Regulators Pod" and "Stainless Steel Helmets with REX Pod."	

Procedures	Initials
18. On all applicable helmets, remove the Main Exhaust Valve Cover/adapter and replace the Main Exhaust/Dewatering Valve. Clean and inspect the seating surface for damage and/or contamination. **For SL 27:** Cut the tie wrap, remove the water purge deflector and the purge body and valve found in the water purge deflector, clean and inspect the seating surface for damage and replace dewatering valve. Guidance, Modular O & M Manual. Service entire exhaust system with Modular O & M Manual. NOTE If using the Tri-Valve or Quad-Valve Exhaust System refer to applicable section of the pertinent modular O & M Manual.	

4. Side Block

NOTE The Side Block does not need to be physically removed from the Helmet Shell every year in order to overhaul the Steady Flow, Emergency and One Way Valve providing excessive internal corrosion is not present in the side block passages or valve components. However, all valves must be overhauled and soft goods changed in accordance with the Operations and Maintenance manual. **KMDSI recommends at least every THREE (3) years the Side Block Assembly be physically removed from the Helmet, overhauled and reinstalled, per Modular O & M Manual.**

CHECK THE FOLLOWING:

Procedures	Initials
Side Block removed? ☐ Yes ☐ No	
1. Remove, disassemble, and overhaul the One-Way Valve Guidance, Modular O & M manual.	
2. Remove and replace Umbilical Adapter with a new one.	

Procedures	Initials
3. Remove, disassemble, and overhaul the Emergency Valve and Steady Flow Valve components, replace all O-rings. Guidance Modular O& M Manual. NOTE Visually inspect parts for corrosion. Look for discoloration, pitting and micro cracks. These conditions could result in a part failure. Corrosion pitting may have deep cavities that are not visible. If there's any doubt about the integrity of the part it should be replaced.	

5. Demand Regulator

NOTE KMDSI recommends the soft goods, including diaphragm and exhaust valves on all Demand Regulator models be replaced at least annually and/or as dictated by condition revealed during daily/monthly inspection. Monthly inspections will reveal the need for overhaul with greater accuracy.

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
1. Disassemble the Demand Regulator. Visually inspect the interior of the Regulator Body for corrosion and/or contamination. Clean as necessary. Guidance Modular O& M Manual. As a general guideline dents in the regulator cover should not exceed ⅛"/3.2 mm. Additional guidance on when a SuperFlow®/SuperFlow® 350 regulator cover may need to be replaced: • Sharp dents may require cover replacement even if they do not exceed ⅛"/3.2 mm • Dents that deform the regulator cover slots. These slots are critical for proper regulator function. • Dents next to the purge button which prevent smooth operation of the button • Old regulator covers that appear rippled and thin from long term use. • If there's any doubt about the integrity of the cover it should be replaced.	
2. After the Regulator has been disassembled, clean and inspect all parts. Replace all O-rings and the inlet valve seat. On Superflow & Superflow 350 regulators the adjustment lock-nut on the inlet valve shaft must never be reused. If the Adjustment Lock Nut is reused, the Regulator may not maintain proper adjustment. Guidance, Modular O& M Manual.	

Procedures	Initials
3. Re-assemble the Demand Regulator. Guidance, Modular O&M Manual.	
4. Ensure Adjustment Shaft rotates smoothly and there is no binding.	
5. On all applicable helmets, re-install the Exhaust Main Body onto the Exhaust Flange of the Regulator and attach the Whiskers to each side of the Face Port Retainer. Guidance Modular O& M Manual.	
6. Mount the Regulator in the Helmet. Guidance, Modular O & M Manual.	
7. Install bent tube in accordance with the O & M modular manual. Ensure Teflon® washer and O-ring have been replaced.	
 **NOTE** KMDSI recommends replacement of the Hose Assembly on the SL 17"A" every TWO years, regardless of its condition.	
8. Reinstall Oral Nasal Mask Valve Assembly and Nose Block Device. Guidance, Modular O& M Manual.	
9. Adjust the Demand Regulator in accordance with the O& M Manual and fine-tune as necessary. Guidance, Modular O& M Manual.	

6. Emergency Gas Supply (EGS)

The Emergency Gas System consists of a good quality First Stage Regulator an Over Pressure Bleed/Relief Valve, and an Emergency Gas Supply Hose that connects to the Emergency Valve on the Helmet Side Block.

DIVER/TENDER – CHECK THE FOLLOWING:

Procedures	Initials
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, corrosion and internal contamination. Pressure test hose assembly to 250 psig (17 Bar) if in doubt of hose integrity. Replace any hose(s), fittings that show signs of leakage/damage. KMDSI recommended hoses be tested the maximum working pressure of the hose in use at least once a year.	
4. Check the Submersible Pressure Gauge, ensure it has been compared to a gauge of known accuracy and the results documented. Check HP submersible hose for signs of corrosion and damage. Replace the hose if any damage is found. KMDSI recommends that all EGS HP hoses be leaked / pressure checked at least annually and/or to the maximum working pressure that it will be used.	
5. Clean and test the First Stage Bleed/Relief Valve, overhaul if necessary. Guidance, Modular O& M Manual, or KMDSI Bleed/Relief Valve Cleaning, Inspection, and Overhaul Procedure.	
6. Log the lifting pressure _____ psig.	
 NOTE A regulated pressure of at least 200 psig (14 Bar) is required for adjusting the bleed relief.	

Procedures	Initials
NOTE The Bleed/Relief Valve should be adjusted to start relief between 180–200 psig (12–14 bar) when tested.	
7. Check the over bottom setting of the First Stage to ensure it is within the manufacturer's specified pressure range. For KMDSI Helmets and Masks, the recommended over bottom for the emergency supply is between 135 psig to 165 psig (9.3-11.38 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.	

Recorded in service records for helmet and EGS System (maintenance log books)? ☐ Yes ☐ No

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

A2.1.1 Water Test Completed ? ☐ Yes ☐ No

I_____ hereby certify that I have performed the work required in the A2.1 and that **I AM** a certified KMDSI / Dive Lab technician.

Print Name: _____

Signature: _____ Date: _____

ID #: _____ Date of Certification: _____

I_____ hereby declare that I have performed the work required in the A2.1 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.

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.

