

**KIRBY MORGAN SUPERLITE DEEP SEA DIVING HELMET
MODELS 17 A/B, 17-C, 17K, 27, AND KM-37
OVERHAUL, MAINTENANCE, AND INSPECTION CHECKLIST
APPENDIX A2.1**

8-25-06

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 SuperLite and KM-37 Helmets. The checklist should be used in conjunction with the latest version of the applicable 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. Specific detailed procedures for each section of this checklist can be found in the latest version 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: When performing the A2.1, all O-rings must be replaced.

NOTE: This checklist does not match all the KMDSI SuperLite Helmet Operations and Maintenance Manuals, chapter, page, and paragraph.

NOTE: Helmets being used in polluted waters, or 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 or www.divelab.com.

Date:

Helmet Serial #:

Associated Equipment Serial # (s):

Technician (print name):

Remarks:

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PROCEDURES	INITIALS
SL-17A/B YOKE / NECK CLAMP ASSEMBLY Helmet Attachment Components	
Note: FOR SL-17K, SL-17C, SL-27, AND KM-37 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 and are kept in service, should be inspected at least weekly I.A.W. the Monthly Inspection A2.2, steps 1-7.	
1. Remove Yoke / Neck Clamp Assembly (14) from Helmet. Remove the neoprene Neck Dam and carefully inspect for tears, holes, and damaged areas and deterioration. Replace or repair the Neck Dam if any damage is present or if the material shows signs of deterioration. Guidance 17A/B O&M Manual	
2. Disassemble the Rear Hinge Tab (26), Hinge (23), and Sleeve (24) from the Yoke/Neck Clamp and inspect for cracking, bending, distortion, and/or corroded fasteners. Replace parts as necessary. KMDSI recommends replacing the two Hinge Bolts (25) annually. Reassemble and torque fasteners (28, 29) to 20 inch lbs and torque Bolt (25) to 50 inch lbs. Guidance SL-17 A/B O&M Manual.	
3. Remove the Nylock nut (6), Lock Nut (4) and washer (5) 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 is present, the Neck Clamp will require replacement. Guidance SL-17 A/B O&M Manual	
4. Remove the Latch Catch Assembly (22) from the Yoke (31). Inspect the mounting screws (15). Replace screws if any damage is found. Inspect the Spring (20) Spring and Plunger Shaft (21), for signs of corrosion; test operate the mechanism, disassemble and clean and overhaul if any corrosion or damage is found. Repair/Replace parts as necessary, reassemble. Guidance SL-17A/B O&M Manual	
5. Re-assemble all Yoke/Neck Clamp/Dam Components. Replace the Nylock Nut (6) if the Nylock Nut does not have at least 12 inch lbs of running torque. Guidance SL-17 O&M Manual	

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<p>6. 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 nut (6), and a back-up wrench, on nut (4). after neck clamp is adjusted, torque the nylock lock nut (6) 50 inch lbs. repair/replace parts as necessary. guidance sl-17 a/b o&m manual</p>	
<p>PROCEDURES</p>	<p>INITIALS</p>
<p>SL-17K, SL-17C, SL-27, and KM-37 Neck Ring / Assembly HELMET ATTACHMENT COMPONENTS</p>	
<p>Note: The Neck Ring / Dam components of the SL-17K/KM-37, C, and SL-27 are virtually identical and use the same components and parts. However, when performing maintenance or repairs refer to the specific manual for the helmet model being serviced.</p>	
<p>1. Remove the neck ring / dam assembly from the helmet. remove and discard the o-ring. clean the o-ring groove and inspect 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, applicable o&m manual.</p>	
<p>2. Remove the four neck strap retainer screws, then remove the neck strap assembly. inspect the neck strap for signs of wear or damage. replace the strap if any wear or damage is found. guidance, applicable o&m manual.</p>	
<p>3. Carefully inspect the Neck Dam material for signs of wear, holes, tears, or any damage, replace if any damage is found. Guidance, applicable O&M Manual.</p>	
<p>Note: The Sealed Pull Pins are filled at the factory with silicon oil. The Pins are not serviceable by the owner / user. The Pins should only be serviced by an authorized KMDSI repair facility.</p>	

<p>4. Remove the Sealed Pull Pin Assemblies, clean, and inspect the pin recess. Inspect the pins for the presence of silicon oil, which would 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 by a trained technician. Replace parts and components as necessary; reassemble Guidance, applicable O&M Manual.</p>	
<p>5. Locking collar: disassemble locking collar components including the hinge pins and neck pad components. clean and inspect, replace components as necessary. guidance, applicable o&m manual.</p>	
<p>6. Disassemble the Swing Tongue Catch Assembly, clean, and inspect all components. Replace components as necessary and reassemble, Guidance O&M Manual.</p>	
<p>PROCEDURES</p>	<p>INITIALS</p>
<p>HELMET ASSEMBLY</p>	
<p>1. On the SL-17A/B only, KMDSI recommends yearly removal of the Alignment Screw (87) from the rear weight (89). Also, conduct a visual inspection of the tapped threads used by the Alignment Screw (87) in the Rear Weight. Ensure the threads are in good condition. Guidance applicable O & M Manual</p>	
<p>2. On the SL-17A/B only, visually inspect the Sleeve (88) and ensure it is not damaged and/or deformed. Replace as necessary. Clean all residual Loctite™ from the Alignment Screw (87), using a stainless or brass wire brush. Thoroughly inspect all threaded surfaces for corrosion and/or degradation. Guidance, applicable O & M Manual.</p>	
<p>3. On the 17 A/B only, apply thread locker such as Loctite™ 222 or equivalent, to the Alignment Screw (87) and insert into the Rear Weight (89), torque to 35 inch lbs. Guidance O & M Manual.</p>	
<p>NOTE: Any gouges into the fiberglass deeper than 1/16” must be repaired as soon as possible by a KMDSI Technician that has received certification for Helmet Shell repairs by KMDSI or Dive Lab, Inc should only accomplish fiberglass and gel coat repairs. Only an Authorized KMDSI Repair Facility should repair any cracks, depressions and/or fractures.</p>	

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<p>4. Remove and inspect the Helmet Liner/Cushion. Check the condition of the foam and the liner material. Check the Snaps and Neck Strap, Repair/replace as necessary. Guidance, applicable O & M Manual.</p>	
<p>5. Remove Earphones and Microphones from their holders. Remove covers from Earphones and inspect. Remove Microphone from Oral Nasal Mask. Perform a communications check. Guidance O & M Manual.</p>	
<p>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.</p>	
<p>6. Remove the Nose Clearing Device. Clean and inspect the Nose Clearing Pad, Shaft. Replace O-rings. Guidance, applicable O & M Manual.</p>	
<p>7. Remove Oral Nasal Mask and Oral Nasal Valve as an assembly. Clean Valve and Valve Body as an assembly. Clean and inspect Mask and Valve Assembly for damage. Guidance, applicable O & M Manual</p>	
<p>8. Remove the Helmet O-ring (80) at the base of the Helmet (SL-17A/B). Clean and inspect the O-ring groove for damage. Lightly lubricate a new O-ring and install. Guidance O&M Manual.</p>	
<p>9. Remove the Demand Regulator from the Helmet and set aside. Guidance, applicable O & M Manual.</p>	
<p>NOTE: The Demand Regulator must be removed prior to removing the Whisker. Annual Demand Regulator maintenance is discussed in the Demand Regulator Section of each, applicable O & M manual.</p>	
<p>NOTE: If using the Tri-Valve or Quad-Valve Exhaust System refer to applicable section of the pertinent O&M Manual.</p>	
<p>NOTE: For installing Tri-Valve or Quad Valve, refer to applicable section of the pertinent O&M Manual.</p>	
<p>10. Remove the Whisker from the Regulator Body, then clean and inspect. Clean and inspect the Whisker. Replace all Valves at least annually or any time they show any signs of deterioration, wear, and/or damage. Guidance, applicable O & M Manual.</p>	
<p>NOTE: If using the Old Style Double Exhaust Whisker refer to applicable section of the pertinent O & M Manual.</p>	

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<p>11. Perform a View Port Insert Pull Test. Replace/repair inserts as necessary. Replace View Port O-ring. Guidance, applicable O & M Manual.</p>	
<p>NOTE: 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.</p>	
<p>12. On the 17 A/B, 17C, and 17K, remove the Main Exhaust Valve Cover and replace the Main Exhaust/Dewatering Valve. Clean and inspect the Seat for damage and/or contamination. For SL-27 cut the tie wrap and remove the cover clean and inspect the Seat for damage replace dewatering valve. Guidance, applicable O & M Manual</p>	
<p style="text-align: center;">PROCEDURES</p>	<p style="text-align: center;">INITIALS</p>
<p style="text-align: center;">SIDE BLOCK All Helmet Models</p>	
<p>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. The emergency valve can be overhauled in place providing excessive corrosion or contamination is not present. KMDSI recommends at least every <i>THREE (3) years</i> the Side Block Assembly be physically removed from the Helmet, overhauled and reinstalled, per applicable O & M Manual. SIDE BLOCK PROCEDURES CONTINUED:</p>	
<p>1. Remove and replace Umbilical Adapter with a new one.</p>	
<p>2. Remove, disassemble, and overhaul the One-Way Valve Guidance, applicable O & M manual.</p>	
<p>3. Remove, disassemble, and overhaul the Emergency Valve and Steady Flow Valve components, replace all O-rings. Guidance applicable O& M Manual</p>	

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PROCEDURES	
DEMAND REGULATOR	
<p>NOTE: KMDSI recommends the following parts on the Demand Regulator be replaced on an annual basis or as dictated by condition revealed during daily/monthly inspection. The Inlet Valve Seat (P/N 510-580) on the Inlet Valve (P/N 545-026), Nut (P/N 530-303), Inlet Nipple O-ring (P/N 510-014), Exhaust Valve (P/N 510-552), Adjustment Shaft Washer (P/N 520-032), and O-ring (P/N 510-011).</p>	
<p>NOTE: The Demand Regulators used in the various models of Helmets use the same adjustment and set-up procedures.</p>	
1. Disassemble the Demand Regulator per O& M Manual. Visually inspect the interior of the Regulator Body for corrosion and/or contamination. Clean as necessary. Guidance, applicable O& M Manual.	
2. After the Regulator has been disassembled, clean and inspect all parts per O& M Manual. Replace all O-rings and the inlet valve seat. The nylon Adjustment lock-nut on the inlet valve shaft must never be reused. If the Adjustment Nut is reused, the Regulator may not maintain proper adjustment. Guidance, applicable O& M Manual	
3. Re-assemble the Demand Regulator. Guidance, applicable O&M Manual.	
4. Ensure Adjustment Shaft rotates smoothly and there is no binding.	
5. Mount the Regulator in the Helmet. Guidance, applicable O& M Manual	
<p>NOTE: KMDSI recommends replacement of the Hose Assembly (47a) on the SL-17A every TWO years, regardless of its condition.</p>	
<p>NOTE: Replace the Teflon™ O-ring at the Side Block end of the Bent Tube and the O-ring at the Demand Regulator Inlet Side of the Bent Tube.</p>	
6. On the SL-17 A/B, 17-C, 17K / KM-37, and SL-27, re-install the Exhaust Whisker onto the Exhaust Flange of the Regulator and attach the Whisker to each side of the Face Port Retainer. Guidance, applicable O& M Manual.	
7. Reinstall Oral Nasal Mask Valve Assembly and Nose Block Device. Guidance, applicable O& M Manual	

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8. Adjust the Demand Regulator in accordance with the O& M Manual and fine-tune as necessary. Guidance, applicable O& M Manual.

IMPORTANT NOTES ON REGULATOR ADJUSTMENT

- Whenever a new Inlet Valve or Soft Seat is installed, allow the Regulator to sit for 24 hours with the Adjustment Knob turned in all the way, before adjusting. This will allow the rubber in the Inlet Valve Stem to set against the Inlet Nipple. If the Regulator is to be used immediately, be aware that the Rubber Seat will take a set, changing the adjustment and the Regulators performance. This requires a readjustment of the Regulator after the first day of use.
- Normally, if the Regulator leaks breathing gas, the Regulator Adjustment Nut is too tight and must be loosened until the lever has 1/16th - 1/8th of an inch of freedom at the end.
- If the Regulator continues to free flow after proper adjustment has been made, check to insure the gas supply pressure is between 135 - 150 psig (9.3 – 10.3 bar). If the pressure is correct but the free flow continues, both the Inlet Valve Soft Seat and/or the Inlet Nipple must be inspected for damage. Generally, if the Inlet Nipple has missing chrome or a bent/damaged knife-edge it will damage the Soft Seat and will not make a proper seal. Best practice if the Inlet Nipple requires replacement; replace the Soft Seat as well.

PROCEDURES	INITIALS
EMERGENCY GAS SUPPLY (EGS) Perform steps 1 thru 9 if applicable.	
NOTE: 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.	
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 service in accordance with the manufactures recommendations.	

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4. If a Submersible Pressure Gauge is used, ensure it has been compared to a gauge of known accuracy.	
5. Overhaul and test the First Stage Bleed/Relief Valve. Guidance, applicable O& M Manual, or KMDSI Bleed/Relief Valve Cleaning, Inspection, and Overhaul Procedure.	
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 is required for this step.	
NOTE: The Bleed/Relief Valve should be adjusted to start relieving between 180-200 psig (12.4 – 13.8 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 minimum over bottom for the emergency supply is 135 psig and the maximum 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.	

Tehnician Signature: _____ Date: _____

Comments: _____

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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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