

# SuperLite® 17B Neck Clamp Area

## Contents

<b>17BNK-1</b>	<b>1.1 SuperLite® 17B Latch Catch Assembly, Pull Pin</b>	17BNK-9	1.6.1.1 Yoke Replacement and Reassembly
<b>17BNK-2</b>	<b>1.2 Daily Maintenance</b>	<b>17BNK-10</b>	<b>1.7 Latch Catch Assembly</b>
<b>17BNK-2</b>	<b>1.3 Monthly Maintenance</b>	17BNK-10	1.7.1 Latch Catch Assembly Disassembly
17BNK-2	1.3.1 Neck Clamp and Yoke Assembly On SL 17B Helmets	17BNK-11	1.7.2 Latch Catch Mechanism Reassembly
17BNK-2	1.3.2 Latch Catch Mechanism On SL 17B Helmets	<b>17BNK-11</b>	<b>1.8 Neck Clamp Assembly</b>
<b>17BNK-2</b>	<b>1.4 SL 17B Chin Strap and Yoke Strap</b>	17BNK-11	1.8.1 Neck Clamp Assembly Adjustment /Inspection
17BNK-3	1.4.1 Chin Strap Replacement	<b>17BNK-13</b>	<b>1.9 Neck Dam</b>
17BNK-3	1.4.2 Chin Strap Installation	17BNK-13	1.9.1 Neck Dam Replacement
17BNK-3	1.4.3 Removal of the Yoke Strap	17BNK-13	1.9.1.1 Pre '84 and Cold Water Type Neck Dams
17BNK-4	1.4.4 Replacement of the Yoke Strap	17BNK-16	1.9.1.2 Four Hole Method of Attaching Neck Dam to Hinge Tab
<b>17BNK-5</b>	<b>1.5 Alignment Sleeve</b>	17BNK-16	1.9.1.3 Patch Method of Attaching Neck Dam to Hinge Tab
17BNK-7	1.5.1 Sleeve Removal and Inspection	17BNK-16	1.9.1.4 Drawstring Type Neck Dam Installation
17BNK-7	1.5.2 Sleeve Replacement	<b>17BNK-17</b>	<b>1.10 O-ring Seal Replacement</b>
<b>17BNK-7</b>	<b>1.6 Neck Clamp and Yoke Assembly</b>		
17BNK-7	1.6.1 Yoke Removal and Disassembly		

### 1.1 SuperLite® 17B Latch Catch Assembly, Pull Pin

**NOTE:** The Safety Pin is a required component of the latch catch assembly and must be used when in diving operations.

The latch catch assembly includes the pull pin and safety pin. The purpose of this assembly is to ensure that the neck clamp assembly remains securely fastened around the base of the helmet, so as to keep the helmet on the diver's head. This arrangement functions in a similar manner to the old “dummy pin” on a heavy gear helmet.

All SuperLite® 17B helmets sold by KMDSI have the Pull Pin Latch Catch Assembly, part number 505-010 (brass) or 505-011 (chrome) on the helmet to lock the Yoke in position. The mounting system for the Pull Pin Latch Catch Assembly is identical to the old style Push Pin Latch Catch Assembly, # 505-015 which is now obsolete.

Each Pull Pin Latch Catch Assembly is shipped with a Safety Pin, P/N 535-900 which is a required component on the helmet. It can be used with or without a cord attached to prevent loss of the Safety Pin when not in use. All Pull Pin Latch Catch Assemblies, P/N 505-010 or 505-011,

which are sold as spare or replacement parts, include this Safety Pin, P/N 535-900.

The Latch Catch is designed so that if the pin is pulled and the yoke drops down, the neck clamp will remain closed. (Similar to having two separate locks).



*Obsolete push pin latch catch assembly. This device should not be used any longer.*



*Current latch catch assembly with safety pin.*

## 1.2 Daily Maintenance

1) Operate the neck clamp and latch catch as you rinse these items (the neck clamp/yoke assembly) with clean, fresh water



*The neck clamp and latch catch must operate properly. They must be regularly inspected and serviced.*

2) Rinse the neck dam and entire neck clamp/yoke assembly and allow to dry. Remove the O-ring from the bottom of the helmet, clean and lubricate.

## 1.3 Monthly Maintenance

### 1.3.1 Neck Clamp and Yoke Assembly On SL 17B Helmets

Inspect the neck clamp and yoke assembly and test for proper operation per "1.8.1 Neck Clamp Assembly Adjustment/Inspection" on page 17BNK-11.

### 1.3.2 Latch Catch Mechanism On SL 17B Helmets

Inspect the latch catch mechanism and test for proper operation per "1.8.1 Neck Clamp Assembly Adjustment /Inspection" on page 17BNK-11.

## 1.4 SL 17B Chin Strap and Yoke Strap

**ALL KMDSI helmets must be equipped with an internal helmet chin strap.**

**NOTE:** An internal chin strap has been standard on the SL 17 A/B since 2004 and must be used during all diving operations.

The chin strap should be regularly inspected to ensure it is in good condition. If it is worn, frayed or not in good working order it must be replaced.

The importance of a properly functioning chin strap cannot be overstressed. If the chin strap is missing or not engaged, the diver's face will not

be properly positioned in the oral nasal mask. This can lead to a build-up of carbon dioxide inside the helmet.

The chin strap will also help to retain the helmet on the diver's head in the rare event that the neck clamp/yoke assembly becomes disengaged from the bottom of the helmet shell. If this happens however, the helmet can still flood if the diver does not maintain an upright position in the water.

### ⚠ WARNING

**The chin strap must be properly installed into the helmet and used on every dive. Without a properly functioning chin strap installed and correctly used, the diver may suffer from exposure to carbon dioxide. This can lead to unconsciousness, serious personal injury, and death.**

### ⚠ WARNING

**The chin strap will help to retain the helmet to the diver's head in the rare event the neck clamp/yoke separates from the bottom of the helmet. However, even if the helmet stays on the diver's head, it may flood, which can lead to drowning, unconsciousness, serious personal injury, or death.**

#### 1.4.1 Chin Strap Replacement

Tools required:

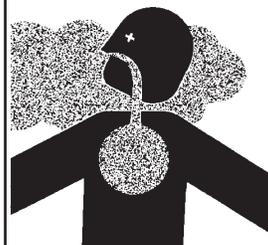
- Flat Blade Screwdriver

1) The chin strap is removed by removing the screws that secure the two snap tabs that penetrate the helmet shell and attach to the two front weights.

2) Remove the snap tabs and the chin strap. There is no need to remove the weights if you are only replacing the chin strap.

3) Clean off all traces of the old RTV silicone sealant inside the helmet where the snap tabs lay against the helmet shell, and in the holes that the screws thread into to secure the snap tabs.

### ⚠ WARNING



**Use silicone sealant in a well ventilated area. Do not breathe the fumes from uncured silicone sealant. These fumes are dangerous and can cause unconsciousness. They can also cause long term damage to body tissue. Read and follow all precautions listed on the silicone sealant tube and Material Safety Data Sheet.**

#### 1.4.2 Chin Strap Installation

Tools required:

- Torque screwdriver and Flat Blade Attachment
- RTV Silicone Sealant (Dow Corning® 732 or Equivalent).

1) Thread the screw on the port weight through the snap tab and the mount hole on the left side of the chin strap.

2) Fill the hole where the screw threads into the weight with silicone sealant.

3) Thread the screw into the hole and torque the screw. See "Torque Specs" module.

4) Wipe off any excess silicone sealant.

5) Follow the same procedure for the snap tab on the right side of the helmet.

#### 1.4.3 Removal of the Yoke Strap

If the yoke strap is old and worn out you can simply cut it to remove it, if you are unable to replace it immediately. Otherwise, removal of an old strap can be done as part of the installation of the replacement strap.



*A replacement yoke strap (top)  
and guide strap (bottom).*

#### 1.4.4 Replacement of the Yoke Strap

##### Tools required:

- Flat Blade Screwdriver

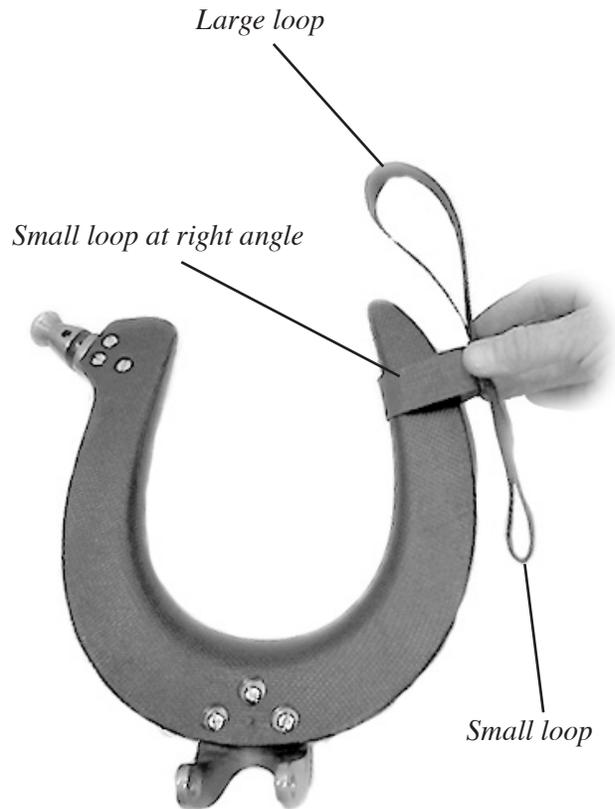
1) Remove the yoke from the neck clamp by removing the rear hinge bolt.



*The yoke and neck clamp (with neck dam)  
must be separated from each other.*

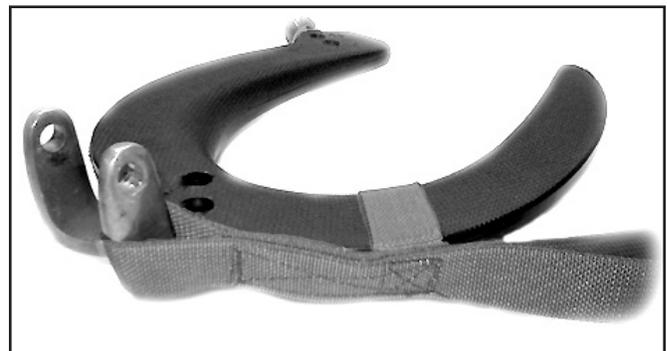
2) Look at the guide strap. You will note that there is a short loop that is fastened at a right angle to the longer part of the strap. The longer part of the strap has a large loop in the front and a smaller loop at the rear.

With the yoke sitting right side up (i.e. flat side up), slide the short loop that sits at the 90 degree angle over the right side of the yoke.



*Slide the guide strap onto the right side of the yoke*

3) Slide the guide strap back along the yoke until you can hook the small rear loop over the right arm of the rear hinge.



*The small loop at the rear of the guide strap  
encircles the right arm of the rear hinge.*

4) Reinstall the neck clamp onto the yoke. Tighten the bolt until the end of the bolt protrudes from the lock nut.



*This is how the guide strap should look when it is properly installed (note that the neck clamp/yoke assembly shown is upside down to allow you to see where the strap installs).*

5) Install the non-adjustable loop on the yoke strap on the side of the yoke where the latch catch assembly is mounted.

In some cases, it may be necessary to remove the latch catch to install the loop. Follow the procedures for removal and reinstallation per "1.6.1 YokeRemovalandDisassembly" on page 17BNK-7.



*Installation of the non-adjustable loop on the yoke strap.*

6) For proper use of the yoke strap, see "1.4.4 Replacement of the Yoke Strap" on page 17BNK-4.



*Completed installation of the Yoke Strap*

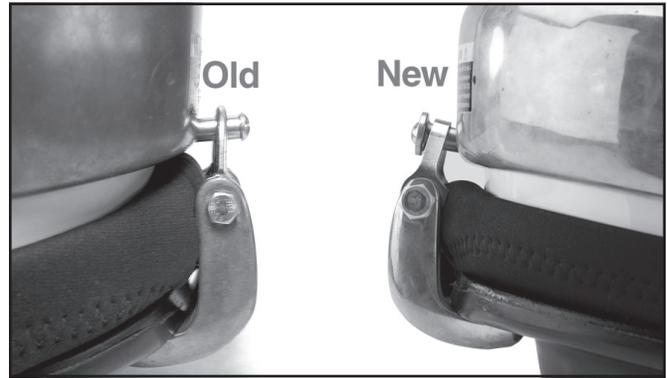
## 1.5 Alignment Sleeve

*Beginning in November, 2003, all SuperLite® 17B Helmets come equipped with a redesigned alignment sleeve. The current part, Part #550-339, has a flange on its outer end which helps to ensure that the rear hinge tab loop cannot become dis-*

*lodged from its correct position over the Alignment sleeve. The old style straight sleeve, Part # 550-039 is discontinued and no longer available.*

The alignment sleeve provides the attachment point for the rear hinge tab. It should never need replacing, unless it is bent or otherwise seriously damaged. KMDSI recommends at a minimum, yearly removal and inspection of the alignment screw from the rear weight. Conduct a visual inspection of the tapped threads in the rear weight and the male threads of the alignment screw. Replace the weight and/or screw if threads are damaged.

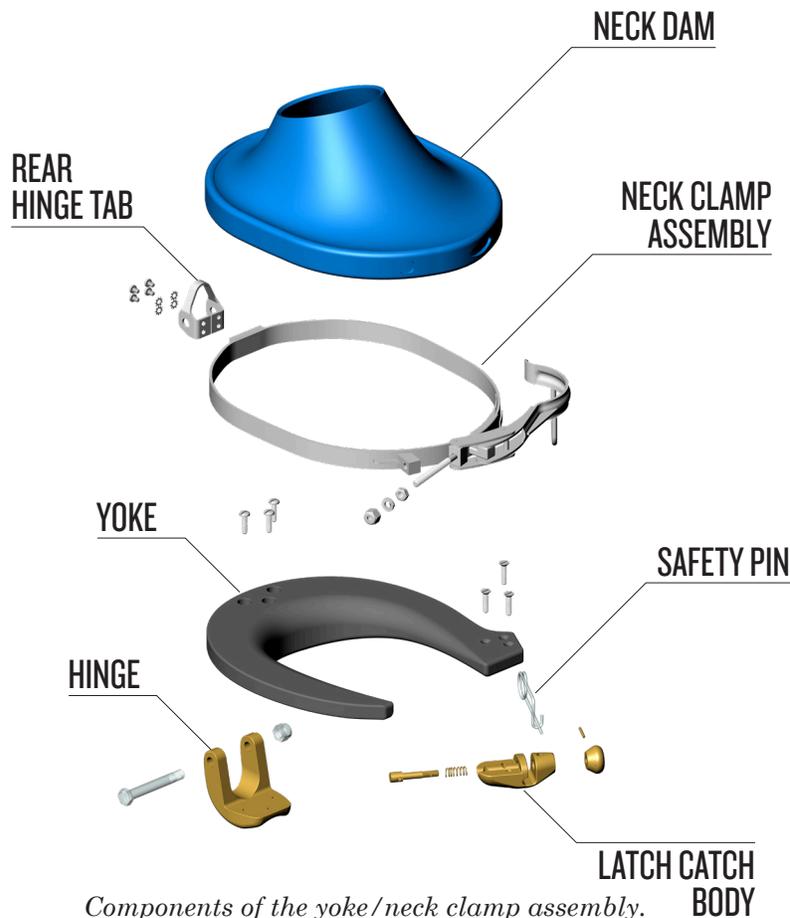
*The current sleeve part number, may not work with some dry suits without modification to the dry suit.*



*You can clearly see the difference between the old and current alignment sleeves, in the photos above and below.*

**Old**  
P/N 550-039

**Current**  
P/N 550-339



*Components of the yoke/neck clamp assembly.*

### 1.5.1 Sleeve Removal and Inspection

#### Tools required:

- Torque Screwdriver
- Flat Blade Screwdriver Adapter for Torque Wrench
- Wire Brush, Stainless Steel or Brass Bristles Only
- Loctite® 222 or Equivalent

1) To remove the sleeve, simply unscrew it from its attachment to the rear weight. The sleeve slips over the screw that holds it in place.

2) Visually inspect the sleeve to ensure it is not damaged or deformed. Replace as necessary. Clean all residual Loctite® from the alignment screw using a stainless or brass wire brush and thoroughly inspect all threaded surfaces for corrosion or degradation; replace if questionable / required.

**NOTE:** The use of a mild steel wire brush to clean fasteners can leave steel residue on the stainless components that will later corrode, making the stainless fasteners appear corroded.

### 1.5.2 Sleeve Replacement

1) Apply Loctite® 222 or equivalent to the alignment screw, insert it into the alignment sleeve and screw it into the rear weight until the alignment screw just bottoms out, then torque. See "Torque Specs" module.

## 1.6 Neck Clamp and Yoke Assembly

### 1.6.1 Yoke Removal and Disassembly

#### Tools required:

- Flat Blade Screwdriver
- Loctite® 222 Thread Locker
- Torque Wrench
- Flashlight or Penlight to Aid Visual Inspection

- Wire Brush—Either Stainless Steel or Brass Bristles, Only

**NOTE:** The use of a mild steel wire brush to clean fasteners can leave steel residue on the stainless components that will later corrode, making the stainless fasteners appear corroded.

**NOTE:** Yokes manufactured after 1999 are now made of urethane with a stainless steel core (previously fiberglass).

1) Unscrew the three screws that fasten the latch catch assembly to the yoke. Using the stainless or brass wire brush clean all residual Loctite® from all screws. Thoroughly inspect all threaded surfaces for corrosion or degradation; replace if required or questionable.



*Begin the disassembly of the yoke by removing the latch catch assembly.*

2) Remove the three screws (and washers if fiberglass yoke) that secure the hinge to the yoke. Using the stainless or brass wire brush clean all residual Loctite® from all screws. Thoroughly inspect all threaded surfaces for corrosion or degradation; replace if required or questionable.



*Note the proper engagement of the latch catch assembly in the top photo on this side of the page. Also note that the center line of the yoke bisects the entire helmet.*



*Note that the latch catch assembly on this side of the page does not properly engage the bail on the neck clamp. Also note the yoke is "skewed" and is not centered across the rest of the helmet.*



*To disconnect the yoke from the neck clamp, you must remove the three screws at the rear of the yoke.*

3) Perform all functional test/ inspection on the latch catch assembly. After removal, using the flashlight/ penlight, shine the beam into the drain hole(s) top and bottom of the latch catch assembly body that houses the stainless steel spring. Visually inspect the spring and the plunger for corrosion or degradation.

Pull, rotate and release the knob repeatedly ensuring the spring actuates and the plunger does not bind and is not bent. Determine that the plunger fully engages the latch catch body towards the yoke. If overhaul or corrective maintenance is required; see "1.7 Latch Catch Assembly" on page 17BNK-10

4) Remove the bolt from the hinge. Clean and inspect the bolt for damage. Remove the four screws and the star washers that fasten the rear hinge tab to the neck clamp.

Thoroughly clean and inspect the screw(s) and the star washers, inspect the hinge tab for signs of damage. Replace any parts that show signs of wear or damage.

5) Reinstall the rear hinge tab using the star washers and the screws and using a torque screwdriver torque the screws. See "Torque Specs" module.

**NOTE:** KMDSI recommends Loctite® 222 or equivalent be used on the screws. The star washers also provide locking capability.

6) Reinstall the neck clamp assembly back onto the yoke using the bolt and nut with the nylon insert. Insert the bolt through the hinge and rear hinge tab. You can reuse the nut provided that it cannot be turned with your fingers once it reaches the point where the nylon insert engages the bolt.

### 1.6.1.1 Yoke Replacement and Reassembly

1) Use Loctite® per the manufacturer's instructions and insert the three screws through the yoke and thread them into the latch catch assembly. Tighten with the torque screwdriver. See "Torque Specs" module.



*The latch catch assembly must be fastened to the yoke using Loctite® to secure the screws.*

2) Use Loctite® thread locker or equivalent and install the three screws (and washers if fiberglass yoke) at the rear of the yoke and into the hinge. Tighten so they are just snug but you can still shift the yoke on the hinge. You are now going to fine tune the yoke alignment to the helmet.

3) With the helmet resting face down on the face port, mount the neck clamp/yoke assembly onto the helmet completely and close the clamp without catching the bail in the catch.

(Reference diagram on page 17BNK-8), the yoke should be centered on the hat and the catch slot should be over the bail. If the yoke is not centered, shift it on the hinge until it is centered,

then gently lift the yoke up without shifting it out of position and using a torque screwdriver tighten the screws. See "Torque Specs" module.

## 1.7 Latch Catch Assembly

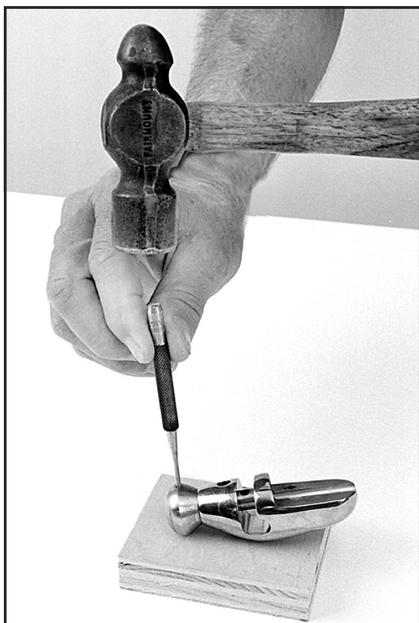
### 1.7.1 Latch Catch Assembly Disassembly

#### Tools required:

- Block of Wood
- Pin Punch
- Ball Peen Hammer
- Vice Grip® Pliers
- Torque Screw Driver Flat Blade Attachment

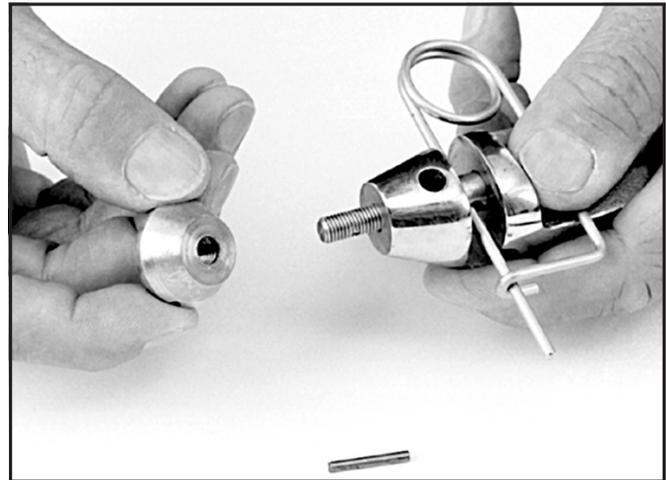
1) Remove the three screws that secure the latch catch assembly to the yoke.

2) With the latch catch assembly positioned on the edge of a block of wood, drive the pin through the knob.



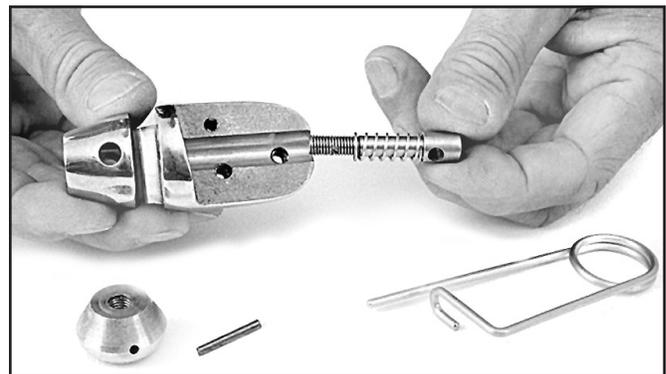
*The pin secures the knob to the end of the plunger.*

3) Unscrew the knob. Use the safety pin to keep the plunger shaft from turning while you unscrew the knob.



*Once the pin is driven out, you can remove the knob from the plunger.*

4) Remove the safety pin, plunger and spring.



*Remove the plunger and spring for service.*

5) Clean all parts in a mild solution of white vinegar and water, removing all traces of corrosion from the shaft. Clean all of the threads.



*Inspect the spring and plunger and clean in a mild solution of white vinegar.*

6) Carefully inspect for signs of wear or damage. Replace damaged or worn parts as needed.

### 1.7.2 Latch Catch Mechanism Reassembly

- 1) Slide the spring onto the plunger.
- 2) Insert the plunger into the latch catch body.
- 3) Screw the knob onto the plunger.
- 4) Align the hole in the knob with the hole in the end of the plunger.
- 5) Drive the pin through the hole in the knob and the plunger until the end of the pin is flush with the side of the knob.

## 1.8 Neck Clamp Assembly

### 1.8.1 Neck Clamp Assembly Adjustment /Inspection

#### Tools required:

- 7/16" Open-End Wrench
- Wire Brush—Either Stainless Steel or Brass Bristle

**NOTE:** The neck clamp assembly will periodically need adjustment as the neck dam ages and grows thinner. Replacement of the neck dam will also require neck clamp adjustment.

**NOTE:** Dry suits used with neck clamps must not cause the clamp to close with excessive force. The clamp must work properly with the dry suit. If the adjustment stud adjustment nut is backed out all the way and the clamp closes with excessive force, do not use.

Adjustments must be made with the neck clamp/yoke assembly open.

1) Visual inspection of the adjustment stud portion of the neck clamp is accomplished by loosening the lock nut with the washer all the way to the shoulder (towards the clamp), until the entire threaded portion is exposed. Then squeeze the clamp and expose the previously hidden portion of the adjustment stud.

Inspect the entire threaded surface for corrosion or degradation and ensure the entire surface is thoroughly inspected and /or cleaned with the stainless or brass wire brush, or replace the neck clamp assembly if required.

**IMPORTANT SAFETY NOTE:** The neck clamp assembly, like all other mechanical parts, will wear over time, thus requiring routine maintenance and eventual replacement. KMDSI strongly recommends that all Kirby Morgan SuperLite® 17B Neck Clamp Assemblies should be carefully and thoroughly inspected for signs of damage and wear at least monthly (weekly if older than five years) and visually inspected daily for obvious signs of damage.



*The neck clamp assembly must be periodically inspected for signs of wear and tested for proper closure.*

The clamp should also be checked daily for proper adjustment prior to commencement of dive oper-

ations. Worn, deformed or damaged neck clamps, especially those damaged from improper adjustment, pose a potentially serious safety hazard to the user. All neck clamp assemblies will eventually become worn to a point where they must be replaced. Proper routine inspection should reveal wear and any damage before it becomes a danger to the user.

In April of 1999 KMDSI started embossing all new neck clamp assemblies with the date of manufacture and identification number. All newly manufactured neck clamps undergo inspection and testing in accordance with AWS Standard D1.1.

**KMDSI recommends a maximum service life of five years for neck clamps that are used in harsh environments** (i.e. welding, cutting, and contaminated waters) or other practices that can degrade the metal components of the neck clamp. All neck clamps should be visually inspected at least monthly in detail with the neck dam fabric removed or pulled free so all welds can be visually inspected for signs of cracking or damage as well as bends in the clamp.

Neck clamps kept in service after 5 years should be inspected at least weekly or more frequently. Additionally, the three pins and clevis welds should be carefully inspected, as well as the adjustment stud. All metal parts should be carefully inspected for signs of wear or damage. The stainless nylon lock nut will wear out over time and will require replacement.

If any metal components appear worn or damaged, the neck clamp must be replaced. This inspection is considered the minimum. The use of other nondestructive test methods such as dye penetrate testing can be used to validate suspected damage.

Neck clamp assemblies which are bent or deformed due to improper adjustment or accidental damage, may be sent to a KMDSI dealer, factory trained in repair and maintenance, for possible repair. Users must keep in mind that there are limits to restoring used or abused parts. A fixture can be used that resembles the bottom of a SL 17A/B to reshape bent or deformed neck clamps.

If there is any question regarding the condition

of the neck clamp, **DO NOT** use it. Suspected worn or damaged neck clamp assemblies should be taken to a factory trained KMDSI dealer for inspection.

Check fit and adjustment of the neck clamp by installing the clamp on the helmet, ensuring that the neck clamp is seated properly over the O-ring area of the helmet. When closing the lever, the lever should get tight at the mid-point of travel, and once the lever is past the mid-point of travel, the clamp should close easily.

### **WARNING**

**The neck clamp must be closed properly to help keep the helmet on the diver correctly. If the neck clamp does not function properly the helmet could come off the diver's head. Drowning could result.**

**Do not force the clamp shut.** If it does not close as described, you **MUST** adjust the clamp by loosening the adjustment-lock nut. From the closed position, if you pull out on the lever approximately 1-2 inches, the lever should snap closed when released. As the neck dam ages it compresses. The clamp must be adjusted by tightening the adjustment-locking nut so that the clamp operates as described above.

The stainless steel nylon lock nut will require periodic replacement due to the periodic adjustments to the clamp that **MUST** be made as the neck dam ages, or you change to a dry suit mount or install a new neck dam. You should not have to force the clamp shut.

Proper adjustment of the neck clamp should not be hampered when used with dry suits compatible with the SL 17A/B helmet. Always check the clamp adjustment after the first dive.

After the first dive with a new neck dam the neoprene will compress from the water pressure and will usually require the clamp to be adjusted in slightly. The tension should be checked prior to each dive.

1) To adjust the neck clamp, start by loosening the lock nut and adjusting the position of the nut as necessary.

2) The outer lock nut has a nylon insert. This lock nut should be replaced when it no longer offers resistance on the neck clamp stud. The nut should have a running torque of at least 6 inch pounds.

3) When the neck clamp assembly is correctly adjusted, the clamp should fit tight at the middle of its travel when mated to the helmet shell. Once the lever is past midline, movement of the lever should be easy.



*Proper adjustment of the neck clamp assembly should place the bail squarely in the groove of the latch catch body when the clamp is closed.*

From the closed position, the diver should be able to pull the lever open about one to two inches and when released, the lever should snap closed. Proper adjustment of the neck clamp places the bail of the neck clamp squarely in the groove of the latch catch body when the clamp is closed.

4) If the neck clamp binds and does not close correctly after adjustment, the neck clamp must be re-shaped by a trained KMDSI dealer.

## 1.9 Neck Dam

### 1.9.1 Neck Dam Replacement

Available Neck Dams Pre '84

Part Number	Description
510-649	Neck Dam, pre '84, Small
510-528	Neck Dam, pre '84, Medium
510-650	Neck Dam, pre '84, Large
510-651	Neck Dam, pre '84, X-Large

Draw String Type

Part Number	Description
510-533	Neck Dam, Drawstring (Standard)
510-643	Neck Dam, Drawstring X-Large

Cold Water

Part Number	Description
510-652	Neck Dam, Cold Water, Small
510-531	Neck Dam, Cold Water, Medium
510-530	Neck Dam, Cold Water, Large
510-653	Neck Dam, Cold Water, X-Large

General:

The neck clamp assembly (with the neck dam) and yoke assembly are bolted together and used as a single unit. KMDSI offers three distinctly different style neck dams (previously listed) which are mission specific, but the style is often dictated by personal preference due to size constraints. It should be noted that use of the pre '84 and cold water neck dams, which are preferred by some divers, have some maintenance issues. Due to the required monthly visual inspection of the neck clamp assemblies (weld points, etc.) these neck dams may require replacement more often than the drawstring type. This is due to the additional stress and wear placed on them during removal /reinstallation for clamp inspection. In comparison, the drawstring type neck dams are designed for the easiest installation & removal.

#### 1.9.1.1 Pre '84 and Cold Water Type Neck Dams

##### Installation

##### Tools required:

- Two 7/16" wrenches
- Pliers
- Flat Tip Screwdriver, Medium
- One pair of sharp scissors
- Thread Locker, Loctite® 222 or Equivalent
- New neck dam (part# 510-649 or 510-528 or 510-650 or 510-651)

1) Remove the neck clamp/yoke assembly completely from the helmet. Remove the old neck dam and properly dispose of it.

2) Remove the bolt and nut that connects the

yoke to the neck clamp at the hinge sleeve. Separate the yoke and the clamp assembly.

3) Unscrew the four rear hinge tab screws with the star washers from the hinge tab and retain for future use. Remove the rear hinge tab from the neck clamp and the neck dam.

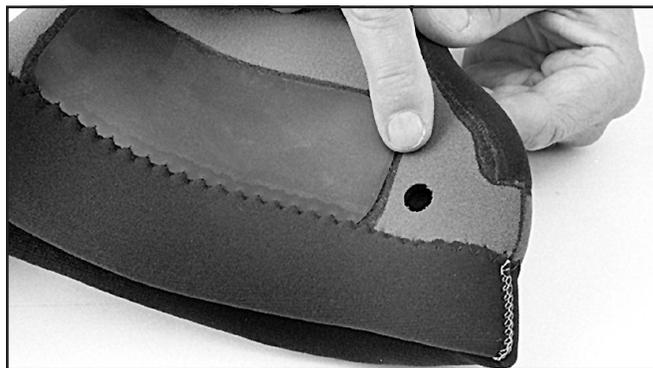


*You must separate the yoke from the neck clamp to replace the neck dam.*

4) Remove the neck clamp lock nut and slip the threaded portion of the adjustment arm out of the retaining block. Remove the lock washer and the nut and retain for future use.

5) With the clamp lock nut removed from the threaded neck clamp adjustment bolt, pull the front of the neck clamp open by pressing down on the block end of the neck clamp and up on the lever end.

6) The neck dam has two holes in the upper sleeve. The starting hole is the larger of the two next to the sewn (and glued) seam. The second smaller hole is used for the block that receives the threaded portion of the adjustment arm on the clamp.

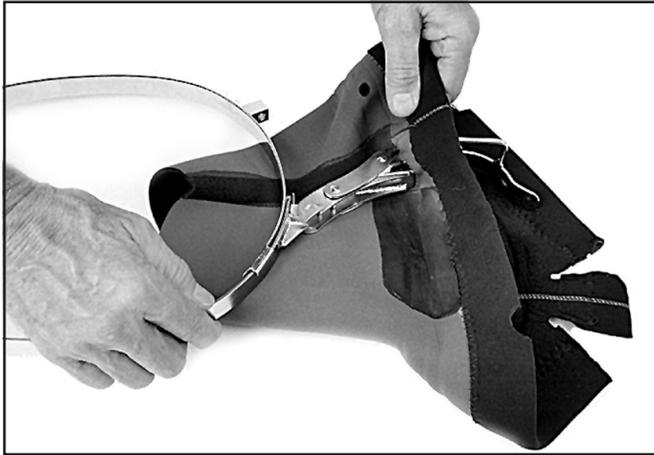


*This hole is where the neck clamp is fed through the neck dam.*

**NOTE:** Installation of the pre'84 or cold water neck dam can be a difficult and time consuming process which requires patience so as not to inflict damage on the rubber. KMDSI recommends that a solution of warm soapy water be poured into the starting hole of the neck dam to aid in clamp insertion.

7) Set the neck clamp down with the open ends facing you with the lever end on your right with the locking loop down. Place the neck dam inside the clamp in the position it should be when assembled. (Rubber side in-cloth out, with the outer edge rolled up towards the clamp).

8) Start feeding the end of the neck clamp without the lever into the large hole of the new neck dam. Work the rubber around the neck clamp assisting it over the block and the guide tracks on the clamp. Carefully work the rubber around the clamp, continually lifting it over the block, ensuring the internal rubber is not snagged or damaged.



*Feeding the neck clamp through the neck dam.*

When the rear-sewn seam is just past the hinge tab mount plate on the rear of the neck clamp, stop feeding the rubber. This is the correct position. Even out the rubber on the neck dam so it is uniform in stretch all around the neck clamp.

9) The two ends of the neck clamp are now overlapping. The lever end of the neck clamp must now be inserted into the guide tracks of the lever end of the neck clamp. The block that receives the threaded adjustment arm should be in the correct position to be accepted by the second (smaller) hole in the new neck dam. Ensure the sleeve is not stretched unevenly (the hole at the base of the handle should not be pulling or stretched into an elongated shape).



*The block on the neck clamp must protrude through the hole in the neck dam.*

10) Run the nut onto the threaded adjustment bolt arm about ½ inch, slip on the lock washer, insert the adjustment arm through the block and

thread on the lock nut. Work the lever of the neck clamp back and forth, checking that the ends of the clamp are engaged, tracking correctly and not binding.



*Insert the stud through the block and screw the nut onto the adjustment stud.*

11) Make sure the rear sewn seam of the neck dam is next to, but not on, the rear hinge tab of the neck clamp. Install the clamp onto the helmet shell and close. The purpose for this is to ensure the neck dam material is properly aligned.

**NOTE:** The neck clamp assembly will require adjusting so that the neoprene gets compressed tightly against the helmet. At this point feel for the hinge tab mounting surface under the neoprene, and once located use a marker to trace its outline, staying just slightly inside the mounting plate, so that after the neoprene patch is cut, the cut out opening will be slightly smaller than the hinge tab mounting plate.

**NOTE:** There are two ways to mount the neck dam over the hinge tab screws. The first is to cut individual holes for each of the hinge tab screws, and then sandwich the neoprene between the hinge tab and clamp.

The other way is to cut a small rectangular piece of material from the area where the hinge tab mounting surface is for the screws. Sandwiching is preferred by many, saying the neck dam lasts longer and remains drier. Both ways will work; however, if the neoprene is to be sandwiched using the four hole method, the screws must have thread locker applied and be re-torqued after 24 hours of the initial torque. Torque the screws. See "Torque Specs" module.

### 1.9.1.2 Four Hole Method of Attaching Neck Dam to Hinge Tab

1) Feel for the hinge tab mounting surface under the neoprene, and once located, use a heated nail or metal scribe to burn a hole for each of the screws that secure the dam to the hinge tab. Use care not to damage the surrounding area and ensure the hole diameters are as large as the screws.

2) Visually inspect each screw prior to reuse, if any abnormalities are present, replace.

**NOTE:** KMDSI recommends use of a non-locking thread locker such as Loctite® 222 or equivalent in this application along with the use of the star washers.

3) Install the hinge tab and secure using the four screws and washers. Torque the screws. See "Torque Specs" module. Allow to set for at least 24 hours, then remove one screw, apply thread locker, and torque. See "Torque Specs" module. Repeat this procedure with the other three screws.

### 1.9.1.3 Patch Method of Attaching Neck Dam to Hinge Tab

1) Using a sharp pair of scissors carefully cut out a square from the neck dam over the hinge plate, slightly smaller than the hinge plate itself.

2) Visually inspect each screw prior to reuse, if any abnormalities are present, replace.

**NOTE:** KMDSI recommends use of a non-locking thread locker such as Loctite® 222 or equivalent in this application along with the use of the star washers.

3) Using the screws and the washers, mount the rear hinge tab onto the neck clamp hinge tab mounting plate. Ensure that none of the neoprene from the neck dam is in between the tab and the tab mounting plate. Using a torque screwdriver and torque the screws. See "Torque Specs" module.

**NOTE:** KMDSI recommends the employment of Black Magic on the edges of the square cut out

of the neck-dam in step 12, to avoid any inadvertent tearing or shredding of neck dam material.

4) Visually inspect the previously removed hinge bolt and nut prior to reuse. If any abnormalities are present or the nylon insert is worn, replace. Tighten the nut onto the bolt until the end of the bolt protrudes past the nylon insert.

5) Adjust the neck clamp per "1.8.1 Neck Clamp Assembly Adjustment/Inspection" on page 17BNK-11.

### 1.9.1.4 Drawstring Type Neck Dam Installation

#### Tools required:

- 7/16" Wrench
- New Neck Dam (Part# 510-533 or 510-643)
- Thread Locker, Loctite® 222 or Equivalent

1) Remove the old neck dam. Remove the nylon lock nut from the adjustment stud on the neck clamp assembly. Place the lock nut and washer aside so they are not lost.

2) Place the neck clamp/yoke assembly in your lap, or on a table, upside down. Swing the yoke up until it is against your chest. Hold the neck clamp handle and the adjustment stud together in your right hand.

3) Do this step very carefully. Locate the large hole in the neck dam, which is found between the front seam and the large reinforcing patch.

4) Feed the stud and handle through the hole from the same side the patch is located on to the opposite side of the neck dam.

5) Position the neck dam so that it does not slide any further onto the neck clamp assembly. Slide the open end of the neck clamp assembly onto the opposite side of the clamp, engaging the tracks of the clamp. Hold the neck dam and the neck clamp assembly so the clamp does not come apart.

6) Feed the small hole in the neck dam over the adjustment block on the neck clamp assembly.

7) Place the lock washer onto the adjustment stud of the neck clamp.

8) Insert the adjustment stud through the adjustment block on the neck clamp assembly. Thread the lock nut onto the adjustment stud. (Replace the lock nut if the nylon insert is worn.) Do not tighten at this time.

**NOTE:** Due to periodic readjustment and wear KMDSI recommends replacement of the neck clamp Nylock nut whenever worn or when it can be rotated by hand. Nylon lock type nuts are designed to maintain initial torque; however, repeated use disables the nut's designed "locking" capability.

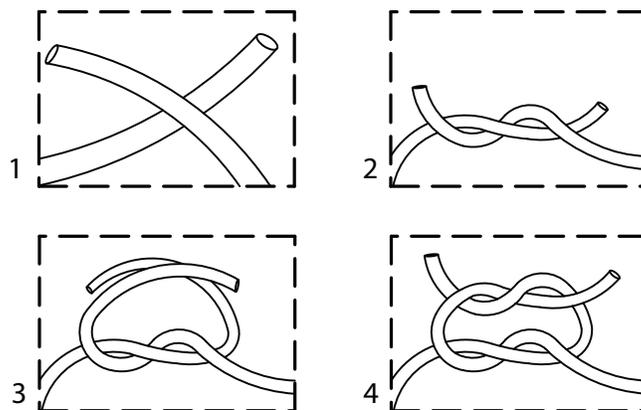
9) Feed the tab at the rear of the neck dam through the space between the sleeve and the rear hinge tab. Pull the tab up as far as it will go.



*Pull the tab on the drawstring neck dam through the opening of the hinge tab.*

**NOTE:** You may find it easier to pull the tab through this space by tying a separate loop of string through the tab and feeding it through first.

10) Feed one end of the string through the tab in the neck dam. Draw up on the string until the neck dam material is snug. Do not over tighten. Tie a series of square knots (at least three) with the string. Tape the knots with electrical tape. Tuck the knots into the sleeve of the neck dam. Adjust the neck clamp assembly per "1.8.1 Neck Clamp Assembly Adjustment /Inspection" on page 17BNK-11.



*Tie a series of at least three square knots in the drawstring to secure the dam around the clamp.*

## 1.10 O-ring Seal Replacement

### Tools required:

- Silicone Lubricant Dow Corning® 111 or Equivalent.
- Clean Rag or Q-Tips
- New O-ring (Part #510-446)

The O-ring on the base of the helmet shell is tough, but should be replaced at least once a year, or whenever it starts showing signs of wear. It must be in good condition with no visible nicks, tears or cracking. The O-ring makes the seal between the helmet shell and the neck dam on the neck clamp/yoke assembly.



*The o-ring on the base of the helmet should be replaced once annually or whenever it shows signs of wear.*

To replace the O-ring, lightly lubricate with silicone lubricant. Clean the O-ring groove in the helmet with a clean rag or Q-tips™ and inspect the groove for damage, cracks etc.

Install the new, clean, lubricated O-ring by stretching it over the bottom of the helmet shell.