

# Neck Ring Assembly, Locking Collar and Front Stand Offs

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### 1.1 Helmet Attachment to the Diver

The ring on the base of the helmet shell has a machined O-ring sealing surface. The O-ring that seals against this surface sits within the outer edge of the neck dam ring assembly. The neck dam ring is actually a multi piece assembly, consisting of the upper split rings and the lower stepped ring. The neck dam is captured (sandwiched) between these parts.

The locking collar and neck pad assembly has a smaller opening than a diver's head so the helmet is almost impossible to accidentally dislodge. The neck pad pushes against the neck dam and lower portion of the head cushion, firmly securing the helmet to the diver's head. The neck pad also

helps prevent neck dam ballooning. Each diver must personally adjust the fit of their helmet by adjusting the neck pad, as well as the head cushion. Correct adjustment of these parts helps create a good fit.

Both sides of the helmet locking collar have a latch catch block to receive the locking sealed pull pins. If the sealed pull pins are turned to the locking position while the locking collar is open, the locking collar will snap into the locked position when it is pushed up into the helmet neck ring. The sealed pull pin on each side must be pulled to release the locking collar to remove the helmet. This system provides an extremely secure method of attaching the helmet to the diver's head.

The locking sealed pull pin is filled with silicone fluid to prevent fine sand or mud from entering the mechanism, which helps to keep it from jamming.

The head cushion is made from layers of open cell foam inserted into a head shaped nylon bag. Adding or subtracting foam layers from the bag can adjust the fit of the head cushion. The head cushion must be adjusted correctly for the helmet to fit properly.

The head cushion spacer, intended for divers with smaller sized heads, provides a better fit of the helmet and oral nasal mask. This spacer helps properly position the top and back of the head by incorporating a large foam piece in the lower neck area, helping to push the head forward and position the face well into the oral nasal mask, important for reducing carbon dioxide buildup.

The correct relationship of the helmet shell to the locking collar, the head cushion, head cushion spacer, and chin cushion, will result in a properly fitting, safer, more comfortable helmet.

## 1.2 Trimming the Neck Dam

If your helmet is new, or any time you replace the neck dam, it must be adjusted to fit you. New neck dams are cone shaped and will probably be too tight if not properly trimmed.

The neck dam must be trimmed to fit your neck. To trim the neck dam, have your tender hold the neck dam opening so that the two “edges” of the neck dam are parallel. The neck dam must be under slight tension but must not be stretched beyond its normal length. Trim the neck dam with the largest, sharpest scissors available, in order to make as few cuts as possible. There must be no jagged edges on the neck dam or it may tear.



*Trimming the neck dam.*

Trim only  $\frac{1}{4}$  inch off the neck dam at a time. When you are done, the neck dam must be just tight enough so that it does not leak. This may feel a bit snug out of the water, but should be comfortable underwater.

### **⚠ CAUTION**

**Avoid trimming neoprene neck dams too much. Neoprene neck dams will loosen over time as they are used and the cells of the foam neoprene break down. If you trim the neck dam too much it will be too loose and will leak. Trim the neck dam until it is snug, then stretch it before use.**

If you have a neoprene neck dam, it may also need to be stretched for it to fit properly. Trim the neck dam until it is still snug, then stretch it by sliding it over a SCUBA tank or similar object, then allow it to sit overnight. If you still cannot get the proper fit by stretching the neck dam, it must be trimmed further. Do not trim more than  $\frac{1}{4}$  inch at a time.

### **⚠ WARNING**

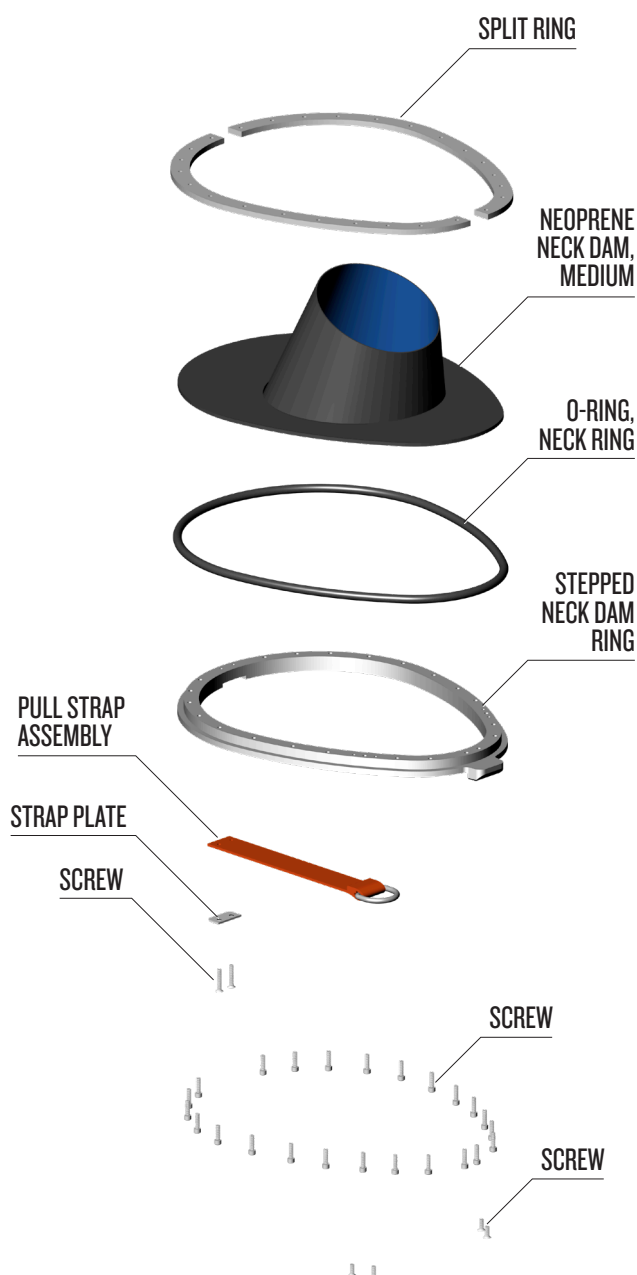
**There must be no holes in the neck dam. If there are holes in the neck dam the helmet could leak or flood. In addition, the demand regulator will not operate properly. Drowning could result.**

**⚠ WARNING**

The O-ring on the neck dam ring assembly on the Kirby Morgan helmet must be in place and in good condition. It must be properly lubricated for smooth operation. Without a proper functioning O-ring the helmet will leak and possibly flood. Drowning could result.

**⚠ WARNING**

Never dive with a neck dam that is too tight. A neck dam that is too tight could cause the diver to pass out due to pressure on the carotid artery in the neck. This could lead to severe personal injury or death.



*Neck ring components.*

As the neoprene neck dam ages, it will become looser, due to a natural breakdown of the cells. This is particularly true if the helmet is locked in and out of a bell or saturation system. As the neck dam becomes worn it will need replacement to ensure that it seals properly.

### 1.2.1 Adjusting the Neck Pad

Another component that controls the fit of the Kirby Morgan helmet is the adjustable neck pad. The neck pad, which is mounted on the locking collar, slides back and forth along the locking collar body for adjustment to fit different divers. Two screws and adjustment nuts lock the neck pad to the locking collar. Loosening these screws from the mount nuts allows the neck pad to be adjusted.

The following procedure requires a diver and tender. You do not need to have the air on to the helmet if you do not use the neck dam ring assembly. If the neck dam assembly is used, the diver must have air to the helmet to breathe.

With the helmet face down on a suitable surface, pull and turn each of the sealed pull pins until they are locked open. Swing the locking collar/neck pad assembly out away from the base of the helmet. Slightly loosen the screws until the neck pad can slide back and forth. Be sure each of the head cushion snaps are attached to their corresponding snap inside the helmet.

Pick up the helmet and pull the nose block device knob out fully. Position the helmet on your head so the oral nasal mask is in the proper position on your face, covering your nose and mouth. Turn the sealed pull pins to the locking position with the ridge on the pins engaging the notch in the sleeve and the pins fully retracted.

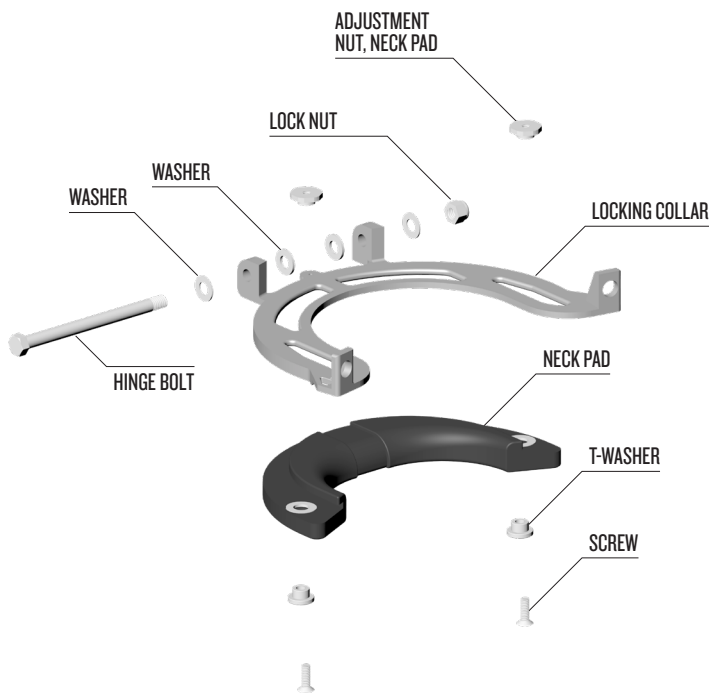
Tilt your head forward so the locking collar/neck pad assembly may be swung forward and locked

up into its closed position. The sealed pull pins must snap into place on the locking collar.

Lift your head back up and slide the neck pad forward until it is snug but comfortable. Mark the position of the neck pad on the locking collar using an indelible marker. Pull the sealed pull pins out to their unlocked position and allow the locking collar to open.

Remove the helmet. Position the neck pad on the locking collar at the marked position and tighten the screws on each side. After the adjustment screws are tightened, don the helmet again, tilt your head forward and lock the locking collar/neck pad assembly. Move your head in various positions to make sure the pad is adjusted for comfort.

The helmet is now adjusted for your head. It should need no further adjustment unless another diver uses the helmet.



*Exploded view of the locking collar assembly.*

### 1.3 Daily Maintenance of the Neck Dam

1) Remove the neck dam/neck ring assembly, clean with sanitizing solution, rinse thoroughly and allow to dry. Remove the O-ring from the neck ring assembly, clean and lubricate. Clean O-ring groove, then reinstall O-ring.

2) If the neck dam is damaged it should be replaced.

### **⚠ WARNING**

**Avoid patching a torn or punctured neck dam. If the patch comes off underwater the helmet could flood and/or cause the demand regulator to free flow. Serious injury, drowning or death may result. A damaged neck dam should be replaced.**

### 1.4 Monthly Maintenance (or between jobs) (See Dive Lab Checklist A2.2)



#### NOTE

By definition “Monthly” is the minimum recommended maintenance that should be performed at least once a month with the helmet in continuous use, (used for more than 20 diving days a month) or at least every two months with the helmet used less than 10 diving days a month. Maintenance should also be performed any time the condition of the helmet is in question.

#### 1.4.1 Locking Collar Assembly & Helmet Ring

Check the two sealed pull pins to make sure they operate smoothly and engage the pins on the locking collar properly.

The sealed pull pins, P/N 505-110, lock the helmet onto the divers head, and should be inspected carefully in accordance with Dive Lab checklists A2.1, A2.2 and A2.3. Sealed pull pins should be regularly checked for signs of corrosion and silicone fluid leakage. If the sealed pull pins stick, do not provide adequate tension, do not pass inspection, or are in any way questionable, it is essential that they be serviced by certified personnel, factory trained specifically to perform rebuilds on the sealed pull pins. Read more on this topic; see Maintenance & Repair Bulletin #2 of 2012 on the KMDSI website [www.kirbymorgan.com](http://www.kirbymorgan.com), under “Support” go to Bulletins.

**⚠ WARNING**

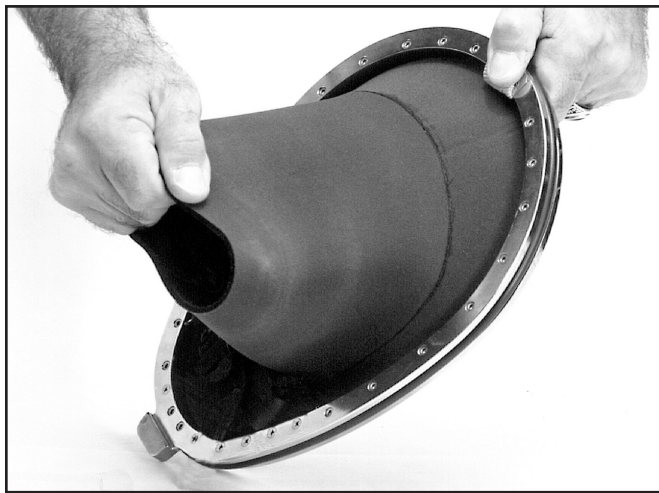
The sealed pull pins must operate smoothly with a positive action. If the pins do not release properly the diver may not be able to remove the helmet quickly if necessary. If the pins do not lock with a positive action the locking collar assembly will not lock properly and the helmet may come off the diver's head. If this happens underwater, drowning could result.

**1.4.2 Neoprene Neck Dam Ring Assembly**

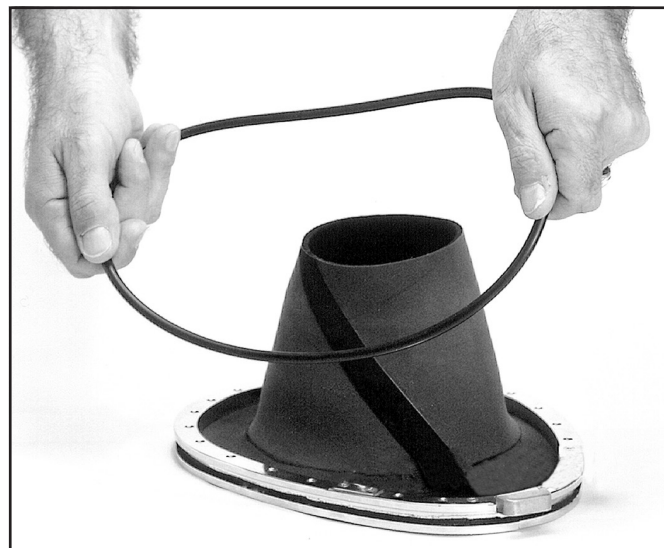
Inspect the neck dam carefully. There must be no holes in the neck dam. If you are using a latex neck dam, the latex must be firm, not sticky. If there is any damage to the latex, the neck dam must be replaced. Do not patch a latex neck dam.

**⚠ WARNING**

**Avoid patching a torn or punctured neck dam. If the patch comes off underwater the helmet could flood and/or the demand regulator assembly may not function properly. A damaged neck dam should be replaced.**



*Check the neck dam for holes.*



*Inspect the O-ring on the neck ring.*

Inspect the O-ring on the neck dam ring assembly. It must be in good condition with no nicks, tears, or cracking. Replace the O-ring if it shows signs of wear.

Check to see if the neck dam has pulled away from the neck ring. This requires a close visual inspection.

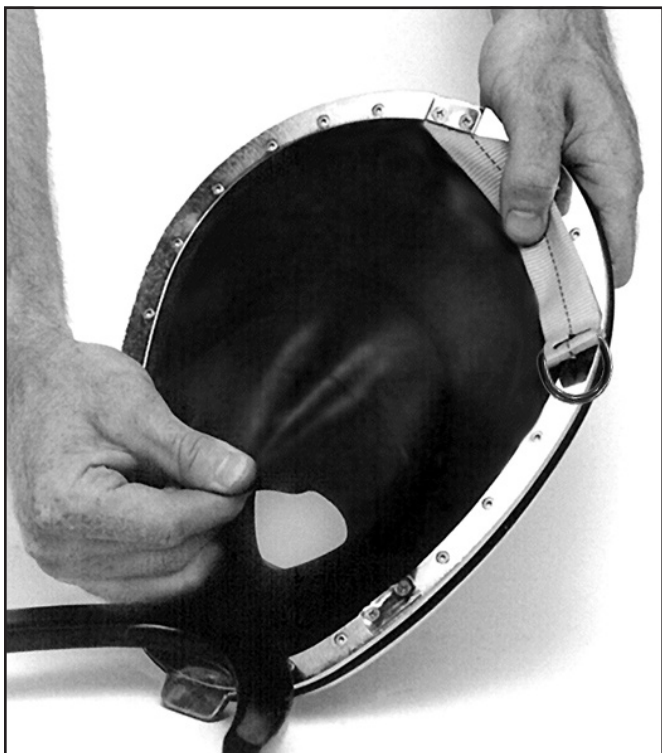
Check the screws on the ring to ensure they are properly tightened.

**1.4.3 Latex Neck Dam Ring Assembly**

Inspect the neck dam carefully. There must be no holes in the neck dam. The latex must be firm, not sticky. If there is any damage to the latex the neck dam must be replaced. Do not patch a latex neck dam.

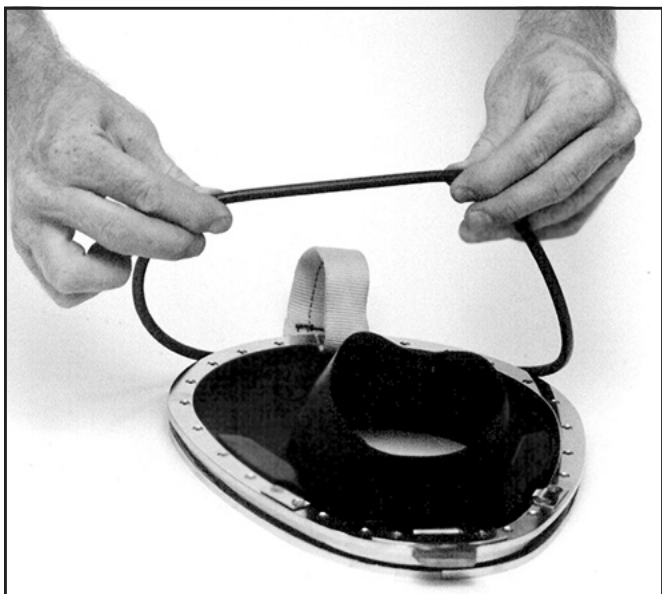
**⚠ WARNING**

**Avoid patching a torn or punctured neck dam. If the patch comes off underwater the helmet could flood and/or the demand regulator assembly may not function properly. A damaged neck dam should be replaced.**



*Check the neck dam for holes.*

Inspect the O-ring on the neck ring assembly. It must be in good condition with no nicks, tears, or cracking. Replace the O-ring if it shows signs of wear or damage.



*Inspect the O-ring on the neck ring.*

## 1.5 Neck Ring Assembly

### 1.5.1 Sealing Arrangement

The neck dam is available in several sizes and is fabricated in a cone shape. The standard neck dam on Kirby Morgan helmets is made of foam neoprene. Optional latex neck dams are available. Instructions for both types will be found here.

The neck dam seals against the diver's neck. The fit of the neoprene neck dam may be made larger by trimming. Only trim a maximum of ¼" at a time; trimming too much will result in a loose fit.

#### **⚠ WARNING**

**Pulling the neck dam over the diver's head can be difficult. Stretching (expanding) the seal and placing it part way over the head can help reduce the force needed to don the neck dam. Proper training is necessary to install the neck dam over the diver's head and onto his neck. Although the possibility is very remote, injury may result if this procedure is not done properly. If a diver does not know how to don the neck dam, he must seek proper instruction before proceeding.**



#### **NOTE**

If you must trim the neck dam, be careful not to trim off too much material. The neck dam must fit snugly. While it may be a slight bit uncomfortable out of the water, and may feel snug, once in the water the neck dam will loosen slightly due to compression of the neoprene foam.

### 1.5.2 Removal of the Neck Dam

#### **Tools required:**

- 7/64" Allen Wrench Attachment on Torque Screwdriver
- #2 Phillips Head Attachment on Torque Screwdriver
- X-Acto® Knife or Razor Blade
- Needle Nose Pliers
- Small Punch

- 1) Remove the O-ring from the groove on the outside of the neck ring assembly.
- 2) Use the hex key and unscrew all the screws from the stepped ring.
- 3) Separate the split rings and neck dam from the stepped ring.
- 4) Discard the old neck dam.
- 5) Clean all parts as needed.

### 1.5.3 Neoprene Neck Dam Replacement

#### Tools required:

- 7/64" Allen Wrench Attachment on Torque Screwdriver
- #2 Phillips Attachment on Torque Screwdriver
- Small, Sharp Punch

#### **⚠ WARNING**

KMDSI neoprene neck dams come in a variety of sizes. Be sure to obtain the right size neck dam for your neck. A neck dam that is too tight will be very uncomfortable and can cause you to pass out.

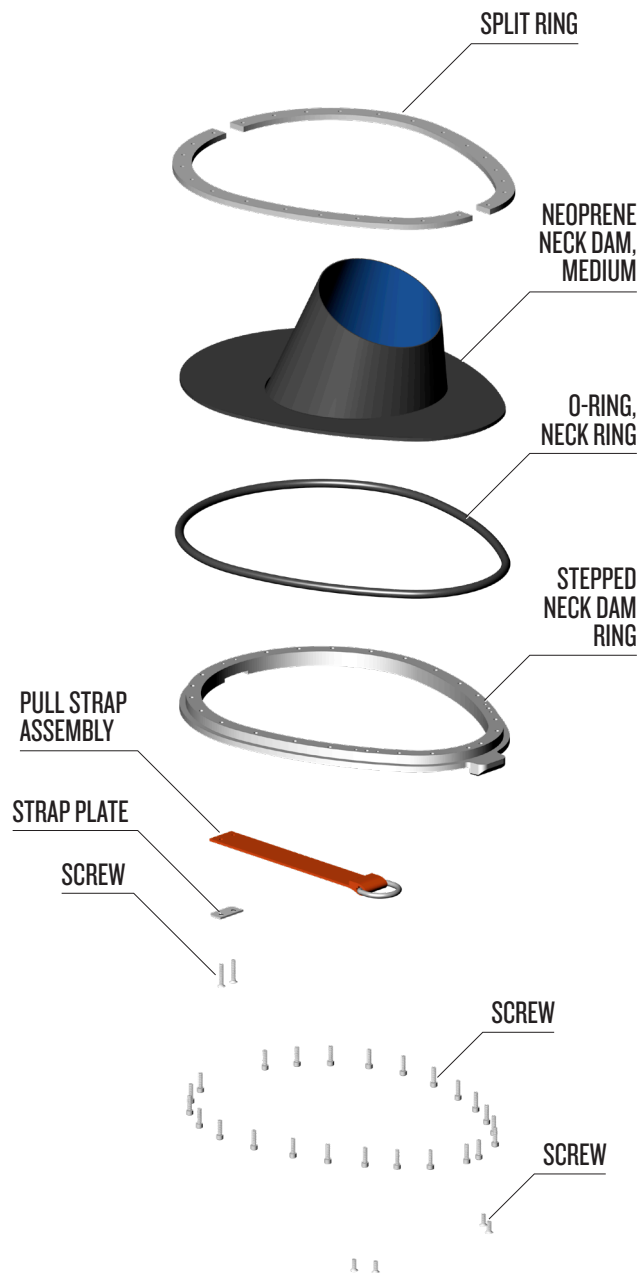


VIDEO



How To: Replace KM Standard Neoprene Neck Dam

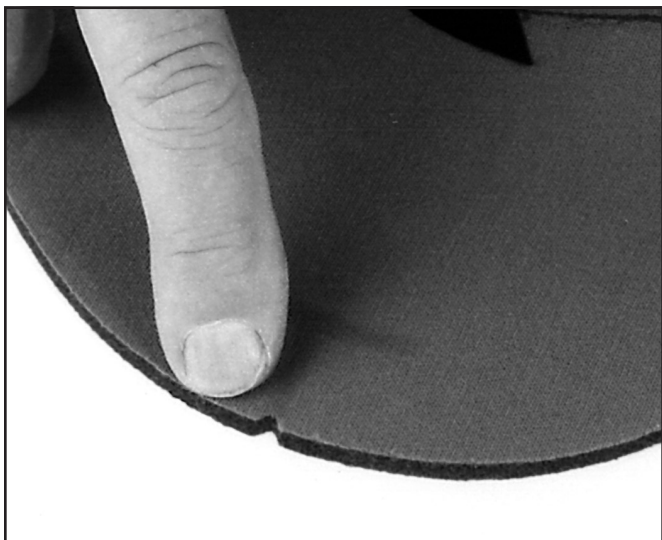
<https://www.youtube.com/watch?v=kZ3vIZzke2w>



*BlowApart drawing of the neck ring assembly for the helmet.*

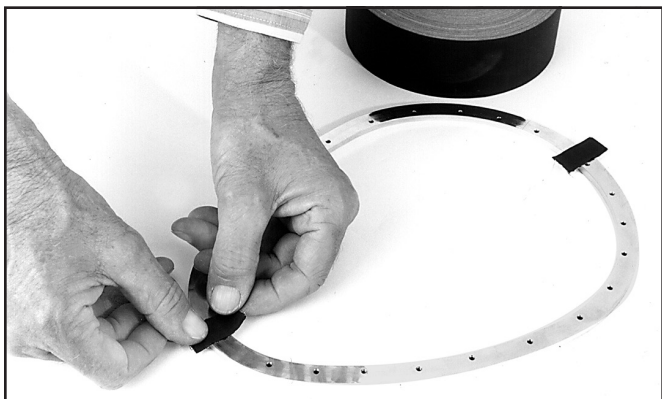
New neck dams are supplied with no holes punched in them for the mounting screws. As the screws are inserted and tightened, they cut their own holes in the neck dam.

Before starting installation, note the index marks or "notches" on the neck dam. These will line up with the ends of the two split rings. You may find it useful to use a small piece of tape to hold the split rings in alignment.



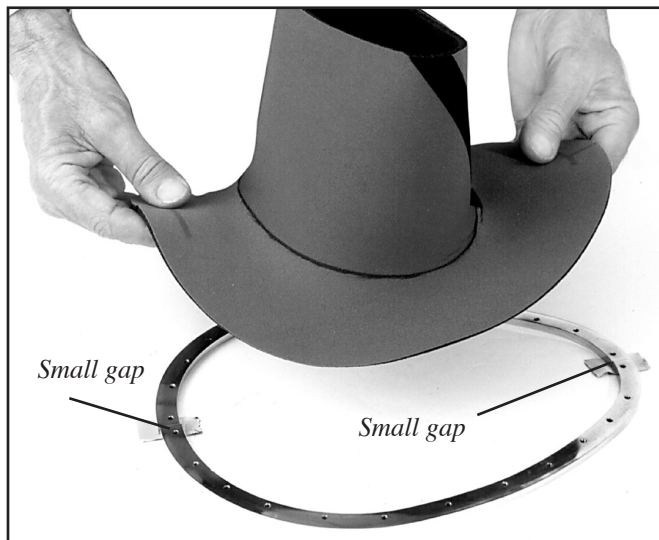
*The base of the neck dam will be marked and notched for alignment with the joints on the split rings.*

1) Lay the split rings on a flat, level work table with the two mating edges lined up to face each other with a small gap (.060-.080 inch) between them. Tape the two rings together with a small bit of duct tape. Then flip the rings over so the tape is on the bottom.



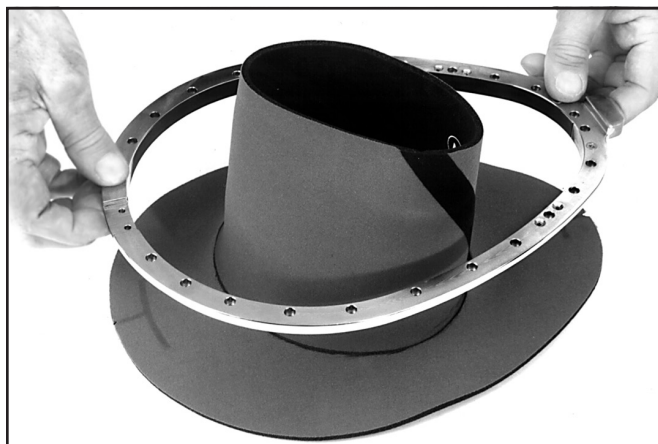
*Tape the two rings together with a small bit of duct tape.*

2) Position the neck dam on top of the split rings so the counter bored holes for the screw heads is facing up or on top. The neck dam will be inside out, with the seam tape that covers the diagonal seam on the outside of the neck dam. The base of the neck dam will be marked and notched for alignment with the joints on the split rings.



*Place the neck dam on top of the split rings.*

3) Place the stepped ring over the neck dam. The countersunk holes must be on top, while the step must be on the bottom. The tongue on the front of the stepped ring will also stick up above the ring.



*Place the stepped neck dam ring on top of the neck dam.*

4) The alignment marks on the neck dam must be positioned directly over the joints in the split rings. The neck dam must also be properly aligned from side to side with the curvature of both the split rings and the stepped ring.

5) Once everything is aligned properly, using a small, sharp punch, push through the neoprene and align the holes on either side of the groove for the pull strap.



*Use a small, sharp punch to locate the bottom hole.*

6) Apply a small amount of silicone grease to the tip of the screws that will secure the neck dam. This keeps them from binding in the neoprene on installation.

7) Insert the Allen head screws into the aligned holes on either side of the pull strap groove and start the screws. You must apply enough pressure to penetrate the neoprene. Once the threads engage continue tightening the screws three turns.

8) Use the punch to align the two screw holes at the base of the tongue (opposite end) on the stepped ring and start the screws into these holes. Tighten the screws three turns.

9) Press down on the stepped ring midway between the two ends of the ring. Pull the edge of the neck dam through the gap between the two sets of rings. The neck dam should protrude an equal distance all along the length of the ring between the two ends and it should be fairly taut, no dips.

10) Install a screw at the widest diameter of the stepped ring on one side and tighten three turns once you have penetrated the neoprene.

11) Install another screw directly across from the one installed in the previous step, at the widest diameter of the stepped ring. Be sure that the neck dam protrudes from between the rings the same distance all the way around.

12) Install the remaining screws as previously explained.

13) Install the pull strap assembly as per "1.8.2 Neck Ring Assembly Pull Strap Replacement" on page NKDM-13.

14) Torque all the screws. See "Torque Specs" module.

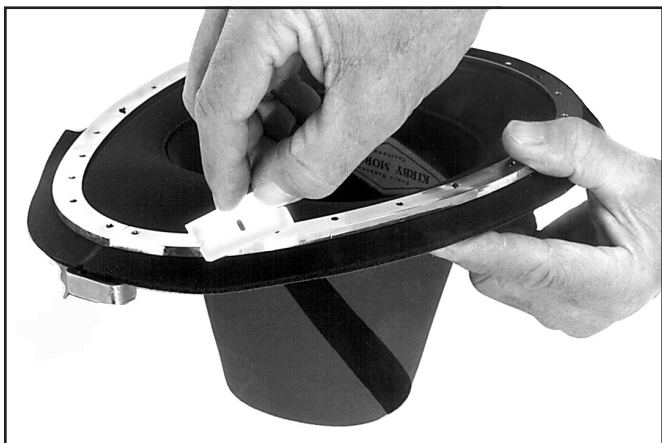


*Tighten all the screws. See "Torque Specs" module.*

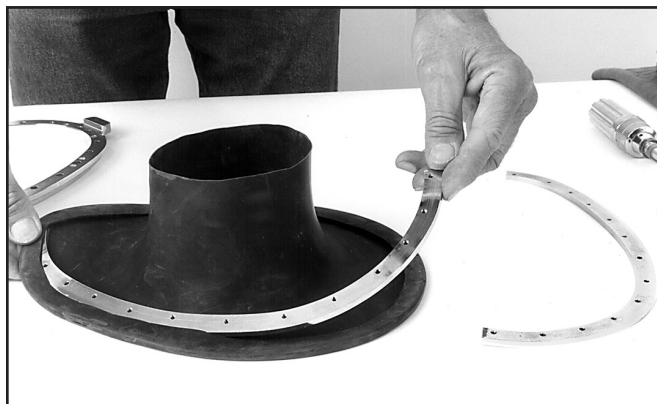
15) Allow the neck ring assembly to sit for 24 hours. This will give the neoprene time to compress and settle.

16) Re-torque all screws after 24 hours. See "Torque Specs" module.

17) Trim the excess neoprene that sticks out beyond the stepped ring. Use a new sharp razor to start the cut. Once the cut is started, pull on the neoprene and maintain tension on it as you continue cutting. The cutting edge of the blade should follow the outside rim of the split rings. The point of the blade should be directed inside against the corner where the top of the stepped ring meets the step. You must have a clean cut with no loose strips of neoprene hanging from the neck dam that could interfere with the seal of the O-ring.



*Trim the excess neoprene using a sharp razor.*



*Install the split rings inside the trimmed outer lip of the neck dam.*

18) Check the torque adjustment on the neck ring assembly on a regular basis to help prevent failure of the neck seal.

19) New neoprene neck dams may need to be stretched to fit the diver's neck properly. The best method is to stretch the neck dam over a scuba cylinder and allow it to sit overnight.

#### 1.5.4 Latex Neck Dam Replacement

##### Tools required:

- $\frac{7}{64}$ " Allen Wrench.
- #2 Phillips Screwdriver
- Torque Screwdriver with a  $\frac{7}{64}$ " Allen Wrench Attachment and #2 Phillips Head Screwdriver Attachment.
- Silicone Grease
- Felt Tip Pen
- Sharp Razor Blade

New neck dams are supplied without mounting screw holes punched in them. As the mounting screws are inserted and tightened they cut their own holes in the neck dam.

1) Install the split rings inside the trimmed outer lip of the neck dam. Turn the neck dam over and lay it flat on the work surface. The split rings will now be hidden by the neck dam.

2) Place the stepped neck dam ring on top of the neck dam.

3) Align and center the stepped ring to the split rings by looking at both ends. Feel the inside edge of the stepped ring and the split rings by pressing on the dam. This will help you center the split rings.

#### **⚠ CAUTION**

**The neck dam, stepped ring and split rings MUST be properly aligned in order for the screws to thread correctly.**



*Center the split rings by pressing on the dam and feeling the inside edge of the stepped ring and the split rings.*

4) Lubricate the tips of the neck dam mounting screws lightly with silicone grease. This will prevent them from grabbing and twisting the rubber.

5) Use the punch to align the holes, if necessary, and start mount screws into each one of the split

rings, one on either side of the groove where the pull strap is mounted. This will help hold and align everything while the other screws are installed.

6) Use a torque screwdriver with a  $\frac{7}{64}$ " Allen wrench attachment. Press down and turn the screw at the same time. This will punch the hole in the neck dam and start the mount screw into the split ring.

### ⚠ CAUTION

**The center screws cannot be torqued with a torque screwdriver, "hand torquing" these with a  $\frac{7}{64}$ " Allen wrench is sufficient.**



*Use the screw to punch through the neck dam.*

7) Tighten the screws. See "Torque Specs" module.

8) Install a second set of screws in the two holes immediately adjacent to the tongue on stepped ring.

9) Once the four "holding" screws are in place, screw the rest of the neck dam mount screws in until snug. Then torque the neck dam mount screws in a staggered pattern, taking up the tension a little bit at a time. See "Torque Specs" module.

10) Similar to neoprene neck dam installation, use a sharp razor blade to trim the

excess latex off the outside flap on the neck dam.

### 1.5.5 Trimming a Latex Neck Seal

#### Tools required:

- Large, sharp scissors

Anytime you replace the neck dam, it may need to be adjusted (trimmed) to fit properly. New neck dams are cone shaped and may be too tight if not properly fitted to the diver's neck.

### ⚠ WARNING

**Never dive with a neck dam that is too tight. A neck dam that is too tight could cause the diver to pass out due to pressure on the carotid artery in the neck. This could lead to severe personal injury or death.**

1) To trim the neck dam, have your tender hold the neck dam open so that the two "edges" of the neck dam are parallel. The neck dam should be under slight tension but should not be stretched beyond its normal length.

2) Trim the neck dam with the largest, sharpest scissors available in order to make as few cuts as possible. There should be no jagged edges on the neck dam or it may tear. Trim only  $\frac{1}{4}$  inch (6.0 mm) off the neck dam at a time, trying it on after each trim.



*Trim latex neck dams with the largest, sharpest scissors available.*

3) When you are done, the neck dam should be just snug enough so that it does not leak. This

may feel a bit snug above water, but will be very comfortable under water.

## 1.6 O-ring Seal Replacement

The O-ring on the neck ring assembly must be replaced annually, or whenever it shows signs of wear. The O-ring makes the seal between the bottom ring on the base of the helmet and the neck ring assembly.

To replace the O-ring, simply stretch it over the bottom of the sides of the neck dam ring assembly. The O-ring must be lubricated with a light coating of silicone grease before each diving day.



*Lubricate the O-ring with a light coating of silicone grease before each diving day.*

### **⚠ WARNING**

The O-ring on the neck ring assembly of the Kirby Morgan helmets is made from a special compound and has unique dimensions. It is a softer durometer O-ring than is commonly available. There are no equivalent O-rings manufactured by other vendors. This O-ring must be replaced with a KMDSI O-ring. Failure to do so could lead to seal failure and helmet flooding. This could lead to drowning.

## 1.7 Front Stand Offs

In October 2014, with the exception of the SL 17B, all Kirby Morgan helmets began shipping with Front Stand Offs, P/N 540-039 (two per hel-

met). These serve as “front legs” that will help protect the swing catch assembly, sealed pull pins and other components from damages if the helmet is set down roughly or hard. Each stand-off takes one screw, P/N 530-059, to attach.

Front Stand Offs unfortunately will not retrofit to earlier helmets. Retrofit is not possible because the large bottom ring area has now been specially redesigned with uniquely shaped recesses to hold the front stand offs.

A Front Stand Off Kit can be ordered using P/N 525-116. The kit includes two stainless steel screws P/N 530-059 and two Front Stand Offs P/N 540-039.

The Front Stand Offs are not required for proper dive operations and it is recommended to be removed if the diver is using a lock in dress. Regardless of the diver's exposure protection worn it is up to the diver if they choose to have it installed during diving operations.

The Stand Offs primarily help protect the swing catch assembly, sealed pull pins and other components from damages **if the helmet is set down roughly or hard when topside.**

### 1.7.1 Front Stand Off Removal

Tools required:

- ¼" Flat Blade Screwdriver

1) Use a ¼" flat blade screwdriver to unscrew screws holding the Front Stand Offs in place.

### 1.7.2 Front Stand Off Reinstallation

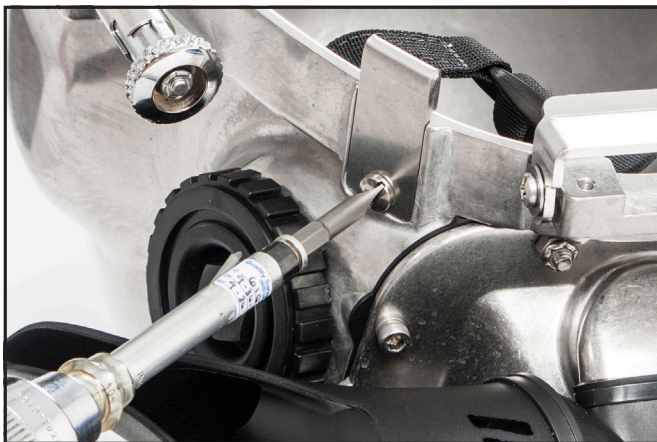
Tools required:

- ¼" Flat Blade Screwdriver
- Loctite® 248

1) Apply medium thread locking compound Loctite® 248 to the screw.



2) Use a ¼" flat blade screwdriver to attach the front stand off with screw onto helmet shell or bottom ring and torque. See "Torque Specs" module.



## 1.8 Neck Ring Assembly Pull Strap

### 1.8.1 Neck Ring Pull Strap Removal

Tools required:

- #2 Phillips Attachment on Torque Screwdriver

The neck ring assembly pull strap may become worn through use. If it is only slightly frayed it is

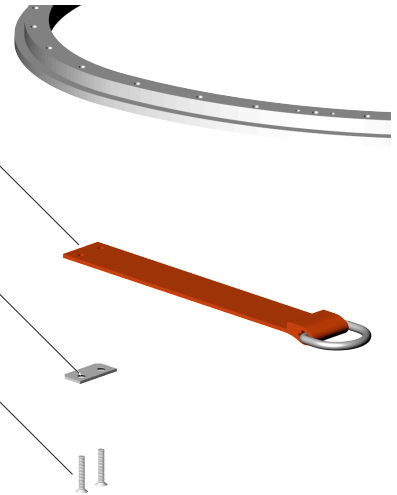
possible to singe the nylon edges with a soldering iron or match to help prevent further fraying.

1) Unscrew the two screws that secure the strap plate to the stepped ring

**PULL STRAP ASSEMBLY**

**STRAP PLATE**

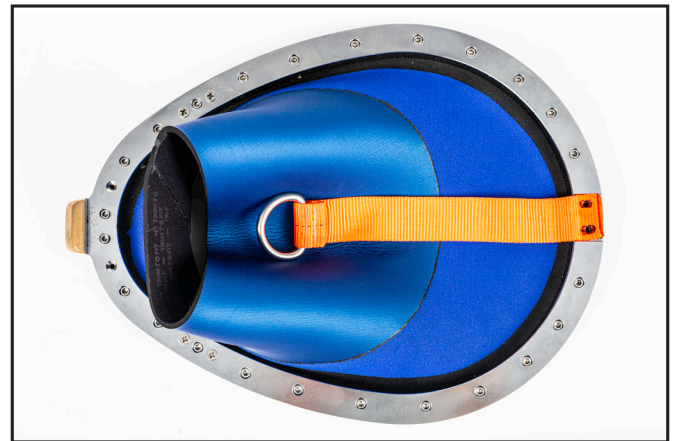
**SCREW**



*Diagram of the pull strap.*

### 1.8.2 Neck Ring Assembly Pull Strap Replacement

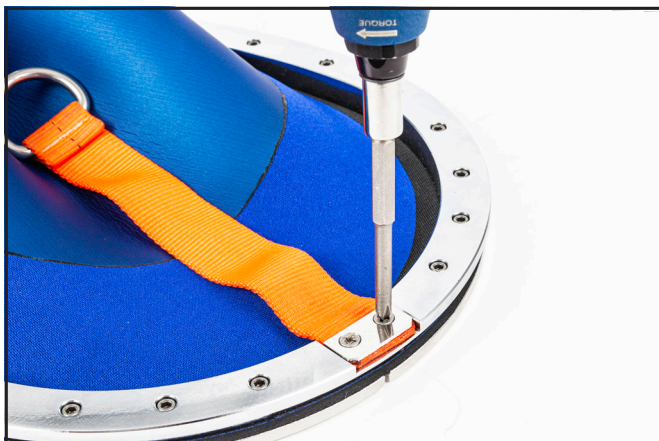
1) Position the pull strap on the neck ring so the loop with ring is facing inward of the neck ring assembly.



2) Place the strap plate over the pull strap with the cornered edges of the plate facing the outer leading edge of the stepped neck dam ring and the straight edge of the plate facing the inward side of the stepped neck dam ring.



3) Install the two screws that secure the strap plate to the neck ring assembly and torque. See "Torque Specs" module.



## 1.9 Locking Collar

Proper function of the locking collar is essential because this device helps hold the helmet on the diver's head.

### 1.9.1 Locking Collar Removal

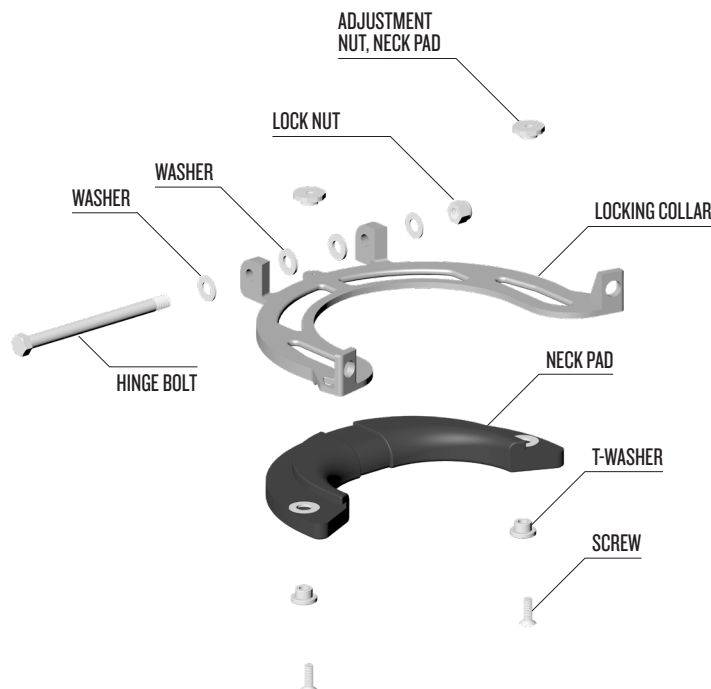
#### Tools required:

- $\frac{1}{16}$ " Open End Attachment on Torque Wrench (or Box Wrench & Socket)
- $\frac{1}{16}$ " Open End Wrench

If the locking collar is damaged through careless handling it may need to be replaced.

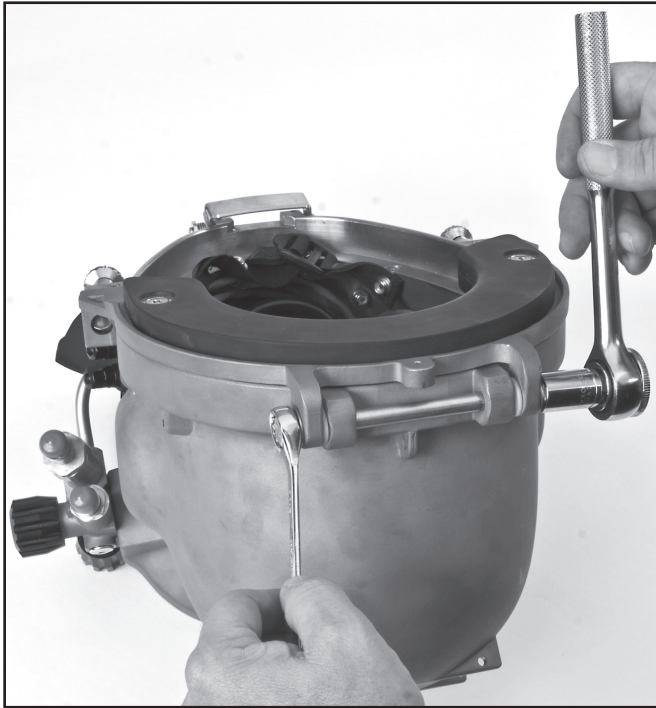
### ⚠ CAUTION

The fit of the Kirby Morgan helmet is partially determined by the adjustment of the neck pad. If the neck pad is not properly adjusted it may be very uncomfortable on the diver's neck. Take the time to adjust the neck pad properly and check the fit prior to each dive to ensure the adjustment has not changed.



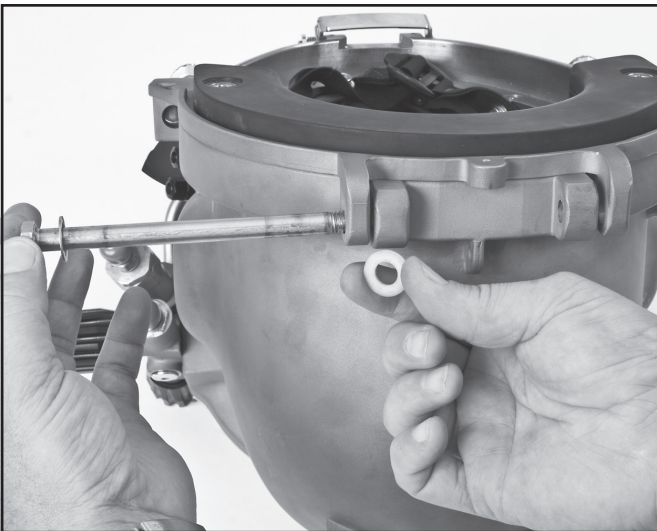
*Exploded view of the locking collar assembly.*

- 1) Use the two open end wrenches to remove the bolt from the collar.



*Loosen the bolt to remove it from the hinge.*

2) Slide the bolt out of the hinge. Take care not to lose the two Teflon® washers that sit between the locking collar and the rear hinge mounts on the helmet ring.



*Slide the bolt out from the hinge, taking care not to lose the Teflon® washers.*

3) Turn the sealed pull pins until they are disengaged and lift the locking collar away.

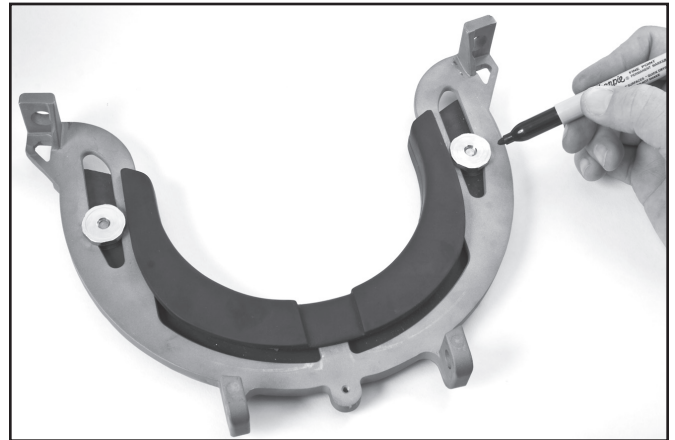
4) Clean all parts that will be reused.

## 1.9.2 Locking Collar Disassembly

### Tools required:

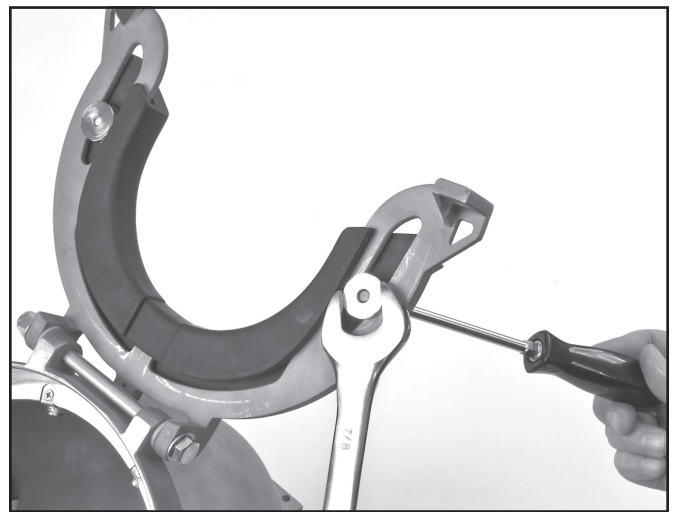
- 3/8" Slot Blade Attachment on Torque Screwdriver
- 7/8" Open End Wrench

1) Prior to disassembly of the locking collar, mark the position of the adjustment nuts on the collar so that it will be easy to reinstall the neck pad.



*Prior to disassembly of the locking collar, mark the position of the washers.*

2) Unscrew and remove the two screws that hold the neck pad. Take care not to lose the T-washers or adjustment nuts.



*Unscrew the two screws that hold the neck pad.*

3) Slide the neck pad off the locking collar.



*Slide the neck pad off the locking collar.*

4) If the neck pad needs replacement, remove and save the screws, T-washers and adjustment nuts for reuse, or replace them if damaged or corroded.

### 1.9.3 Locking Collar Reassembly

#### Tools required:

- $\frac{3}{8}$ " Slot Blade Attachment on Torque Screwdriver
- $\frac{7}{8}$ " Open End Wrench

1) Inspect the Teflon® washers for wear. Replace if necessary.

2) Inspect the neck pad. Replace if damaged.

3) Install the T-washers in the recesses of the neck pad.

4) Slide the neck pad onto the locking collar. The neck pad must be oriented so that the groove for the pull strap will be on the inside of the helmet. The large flange on the neck pad must be on the outside of the locking collar.

5) Align the neck pad using the previous position of the mount nuts. Insert the screws and tighten them with the adjustment nuts.

6) With the helmet resting face down, place the locking collar in position on the hinge on the bot-

tom of the helmet ring, but do not close the catch mechanism.

7) Insert the bolt through one of the stainless washers and through the locking collar hinge just far enough so that the tip of the hinge pin shows at the first bolt hole on the locking collar hinge.

8) Slide one of the Teflon® washers between the locking collar and hinge block on the rear of the helmet ring.



*Make sure to re-install the Teflon® washers.*

9) Push the bolt through the opening in the washer and all the way through both hinge blocks until the tip of the bolt just protrudes from the opening in the second hinge block.

10) Slide the second Teflon® washer between the hinge block and the locking collar.

11) Push the bolt through the opening in the second Teflon® washer and the locking collar until it protrudes from the locking collar.

12) Install the second stainless washer onto the protruding hinge pin.

13) Tighten the nut until the bolt threads just protrude past the end of the Nylock insert. Do not overtighten. This will possibly cause the hinge on the collar to bind.



*The end of the bolt should protrude  
past the end of the nylock insert.*