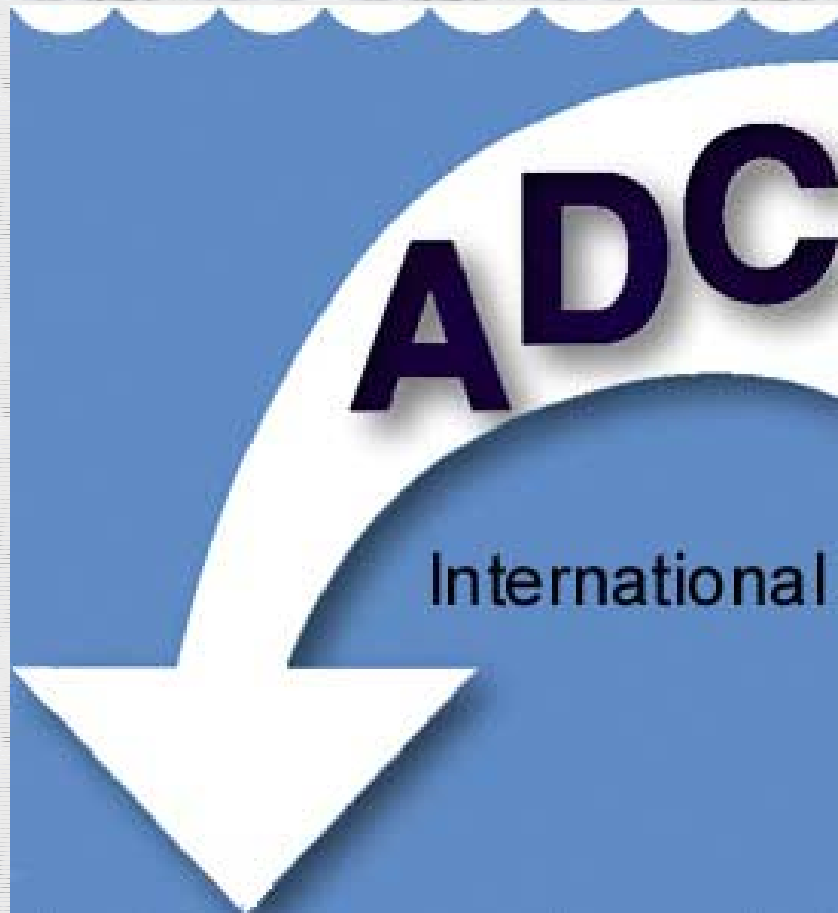


ASSOCIATION OF DIVING CONTRACTORS INTERNATIONAL



ASSOCIATION OF DIVING CONTRACTORS INTERNATIONAL

A non-profit, industry trade association established to promote safety, communication and education throughout the commercial diving and underwater industry.



EMERGENCY REMOVAL
OF
DIVING SYSTEMS INTERNATIONAL
(DSI)
SUPERLITE
DIVING HELMETS



Commercial diving helmets are generally designed and configured to furnish a high degree of protection to the diver's head while in the water. However, by the very nature of the design considerations, these helmets can be very unstable when the wearer has suffered a neck injury or loss of motor control when in an unconscious condition.



Standard emergency medical protocols are available outlining the first aid procedures to be undertaken in cases of suspected head or neck injuries. These same spinal injury considerations also apply to a diver who surfaces in an unconscious or non-responsive condition, or to a fully dressed diver who has slipped and fallen on deck and may be injured



Recognizing this fact, the Association of Diving Contractors International, Diving Systems International, representatives of the United States Navy, commercial diving companies and representatives of commercial diving schools working together as a team have developed procedures for the removal of *SuperLite* helmets in a manner intended to minimize the possibility of further injury to the diver's neck.

These procedures also furnish a removal protocol consistent with surface interval considerations related to decompression treatment of a diver in a recompression chamber. Users of these helmets should review and practice these procedures to ensure that all dive team personnel are competent in emergency removal of the helmets.

The following procedures only address the referenced models of SuperLite helmets and were developed in cooperation with Diving Systems International and may not apply to other helmet types.



Manufacturers of specific helmets should be contacted for safe removal procedures of their helmets in suspected neck (cervical spine [*c-spine*]) injuries. Likewise, manufacturers of helmets other than those identified below are encouraged to ensure that a procedure is developed and promulgated to permit safe removal in emergency circumstances and, consistent with the time lines necessary to place an injured diver in a recompression chamber.

These procedures apply to the following helmet models:

- SuperLite 17A/B
- SuperLite 17C
- Military Mark 21 (SuperLite 17B/NS)
- Superlite 27
- Superlite 17K



CAUTION

These procedures only address the removal of the helmet while the diver is on deck.

The intent of these procedures is not to furnish the reader with instruction in the safe methods of removing the injured diver from the water or in appropriate first aid and spinal immobilization procedures. All reasonable precautions should be taken to safely remove the injured diver from the water while attempting to stabilize the head and neck under the given circumstances.

The primary consideration should be to *prevent further harm!* Maintain a "neutral" position of the injured diver's head and neck at all times. Maintaining a "neutral position" only implies keeping the head and neck as immobile as possible and *not* applying any in-line traction.

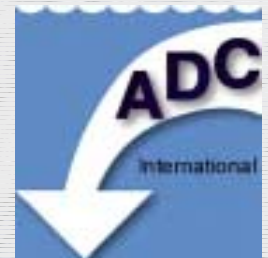
Four preliminary recommendations are presented as applicable in recovery of the injured diver from the water and removal of the helmets:



1. A minimum of two properly trained people is required to safely perform the removal of the helmet.
2. Heavy-duty bandage scissors or "paramedic" shears (trauma shears) are recommended for safe and efficient removal of the helmet, neck dam, bail-out cylinder backpack harness, weight belt and diver's suit (wet or dry). Knives should not be used.

3. It is a "judgement call" as to whether to cut or otherwise remove the bailout cylinder backpack, harness, weight belt, etc. before or after removing the helmet. However; indications are that if the bail-out or reserve breathing gas cylinder is left in place at the diver's back, it will help to stabilize the diver's position while the helmet is being removed, ease the effort of the rescuers and possibly mitigate the effects of vessel movement during the helmet removal procedure.

4. The dive team member who initially holds the injured diver's helmet / head must not assume any other responsibility during the equipment removal. His/her sole responsibility **MUST** be to solely concentrate on maintaining the neutral position of the diver's head.



MODEL 17A/B & MILITARY MK 21 HELMET REMOVAL



Have heavy bandage scissors or paramedic shears (trauma shears) and first aid kit at hand.



PARAMEDIC SHEARS & FIRST AID KIT



Address "A B C s" of first aid. ***AIRWAY – BREATHING – CIRCULATION.*** These are critical to survival and well-being!



Maintain "recovery position" of the injured diver. Right side down. The helmet side block assembly will help to maintain the neutral position of the diver's head. This position will expose the neck clamp assembly as well as facilitate secretion removal from the mouth of an unconscious diver. It is emphasized that this lateral / side positioning is much more stable than attempting removal with the helmet in the perpendicular position (diver on his/her back).

DIVER IN “RECOVERY” POSITION



Note “bail-out” supporting back while helmet rests on side block

Release the umbilical from the diver's harness and clear it, and any extraneous equipment and materials that may interfere with the diver's stabilization and helmet removal effort. Ascertain that there is sufficient slack in the umbilical to allow the helmet to be removed smoothly and moved out of the way after removal. Disconnect reserve gas (bailout) supply hose.

CUT HARNESS CLEAR



DISCONNECT BAIL-OUT WHIP



"Crack" Steady Flow (Side Block) valve to provide additional air to diver during equipment removal procedure.

Ascertain that the Nose Block Device is fully extended (outward).



OPEN (*Crack*) AIR SUPPLY VALVE



The dive team member holding the diver's head (maintaining *c-spine* alignment) should place his/her *right* hand between the yoke/neck ring assembly and the diver's right shoulder to support the assembly. The *left* hand is placed on the left side of the helmet to maintain its position.



MAINTAINING *c-spine* ALIGNMENT



The second dive team member opens the neck clamp assembly and drops the clamp assembly *slightly* to clear the rear hinge tab from the alignment pin. If the suit is mated to the helmet cut the *suit yoke* rear hinge tab from the alignment pin and cut the yoke clear of the diver's neck with the shears.



OPEN NECK CLAMP ASSEMBLY



CLEAR REAR HINGE TAB



Release helmet liner chin strap.



The second dive team member then rotates the helmet *forward and down* to clear the oral-nasal mask, *the back of the helmet rotating off the diver's head first!* The dive team member maintaining the *c-spine* position slips his/her right hand to the right side of the diver's head while moving his/her left hand to the left side of the diver's head as the helmet is being removed.

ROTATE HELMET FORWARD



The helmet is then placed in front of the diver.



MAINTAINING HEAD / *c-spine* ALIGNMENT



The second dive team member (using the bandage scissors or shears) then cuts away as much as the neck dam as accessible, as close as possible to the neck clamp. This will facilitate clamp removal with minimal movement of the head / neck.



CUTTING NECK DAM



The second dive team member then lifts the neck clamp assembly over the diver's head while the dive team member holding the *c-spine* position guides the clamp and maintains the head/neck position. Move the reserve gas cylinder, weight belt and all associated equipment clear of the diver.

LIFT NECK CLAMP ASSEMBLY



Reposition the diver on his/her back while following standard first aid / EMS spine immobilization procedures.



POSITION DIVER FOR IMMOBILIZATION & FIRST AID PROCEDURES



Using shears, cut the suit neck dam and only as much of the suit as necessary to properly evaluate the diver for additional injuries. Note that the suit may provide thermal protection for the injured diver and complete removal may not be indicated.



CUT SUIT AS NECESSARY



MODEL 27A/B, 17C & 17K HELMET REMOVAL



NOTE: This procedure is predicated on the neck ring swing catch update kit having been installed.

Have heavy bandage scissors or paramedic shears (trauma shears) and first aid kit at hand.



PARAMEDIC SHEARS & FIRST AID KIT



Address "A B C s" of first aid. ***AIRWAY – BREATHING – CIRCULATION.*** These are critical to survival and well-being!



Maintain "recovery position" of the injured diver. Right side down. The helmet side block assembly will help to maintain the neutral position of the diver's head. This position will expose the neck clamp assembly as well as facilitate secretion removal from the mouth of an unconscious diver. It is emphasized that this lateral / side positioning is much more stable than attempting removal with the helmet in the perpendicular position (diver on his/her back).

DIVER IN “RECOVERY” POSITION



Note “bail-out” supporting back while helmet rests on side block

DIVER IN “RECOVERY” POSITION



Release the umbilical from the diver's harness and clear it, and any extraneous equipment and materials that may interfere with the diver's stabilization and helmet removal effort. Ascertain that there is sufficient slack in the umbilical to allow the helmet to be removed smoothly and moved out of the way after removal. Disconnect reserve gas (bailout) supply hose.

"Crack" Steady Flow (Side Block) valve to provide additional air to diver during equipment removal procedure.

Ascertain that the Nose Block Device is fully extended (outward).

OPEN (*Crack*) AIR SUPPLY VALVE



The dive team member holding the diver's head (maintaining *c-spine* alignment) should place his/her *right* hand between the yoke/neck ring assembly and the diver's right shoulder to support the assembly. The *left* hand is placed on the left side of the helmet to maintain its position.



MAINTAINING HEAD/C-SPINE POSITION



The second dive team member then pulls and releases the two (2) pull pins releasing the locking collar.



RELEASE (2) PULL-PINS



"OPEN" Steady Flow (Side Block) valve sufficiently to provide an "overpressure" inside the helmet. This overpressure will aid in the removal of the neck clamp assembly by pneumatically assisting its removal from the helmet. The **Neck Dam Swing Catch** *must* be manually opened at this time to allow the neck dam assembly to be unsealed from the helmet.

OVERPRESSURIZE HELMET TO RELEASE NECK DAM



Carefully pull the neck dam assembly down and out of the helmet.

The dive team member maintaining the *c-spine* / *head* position adjusts his/her right hand to allow the neck dam assembly to clear the helmet.



The second dive team member then rotates the helmet *forward, up, and **then rotate back*** to clear the oral-nasal mask and the nose block device. The dive team member maintaining the *c-spine* position slips his/her right hand to the right side of the diver's head while moving his/her left hand to the left side of the diver's head as the helmet is being removed.

ROLL HELMET FORWARD

then

BACK



The second dive team member pulls the collar clear of the back of the diver's neck.



The helmet is then placed in front of the diver.

PLACE HAT CLEAR OF DIVER



Release chin strap at the neck ring.



The second dive team member (using the bandage scissors or shears) then cuts as much as the neck dam as accessible, as close as possible to the neck ring. This will facilitate removal of the neck ring with minimal movement of the head / neck.



CUTTING NECK DAM



The second dive team member then lifts the neck ring assembly over the diver's head while the dive team member holding the *c-spine* position guides the ring and maintains the head/neck position. Lift the ring assembly clear of the diver's head.



Move the bailout cylinder, weight belt and all associated equipment clear of the diver.



Reposition the diver on his/her back while following standard first aid / EMS spine immobilization procedures.



POSITION DIVER FOR IMMOBILIZATION & FIRST AID PROCEDURES



Using paramedic shears or scissors, cut the suit neck dam and as much of the suit as necessary to properly evaluate the diver for additional injuries. Note that the suit may provide thermal protection for the injured diver and complete removal may not be indicated.



CUT SUIT AS NECESSARY



In conclusion, these procedures are only guidelines to be followed in a situation where an injured diver's helmet needs to be removed. Ultimately, the responsibility to see that further harm is not done to the injured diver lies with those assisting him/her. Each situation may be different and these differences need to be taken into consideration when removing the injured diver's gear and helmet.



The logo features a blue background with a white, stylized arrow that curves from the top left towards the bottom left. The letters 'ADC' are printed in a bold, dark blue, sans-serif font across the upper curve of the arrow. Below the arrow, the word 'International' is written in a smaller, black, sans-serif font.

ADC

International