MUSTANG SURVIVAL
INDUSTRIAL DRY SUIT,
MUSTANG MODEL MSD901

DESCRIPTION AND MAINTENANCE INSTRUCTIONS
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1.0 INTRODUCTION

1.1 GENERAL

1.1.1 This manual provides information on the hazards of cold-water immersion, the function and features of the Mustang Survival Industrial Dry Suit Model MSD901. Also included are test, maintenance and repair instructions to assist qualified Life Support Equipment Technicians.

1.1.2 Read this manual thoroughly to become familiar with the operation of the zippers, pockets and seals. The lives of crewmembers may depend on the condition of the MSD901. Keep the manual in a convenient location for easy reference in the event that the suit requires inspection, repair or cleaning.

1.1.3 This manual consists of eight sections, each organized into a number of subsections (see the Table of Contents).

1.2 CONTACT

1.2.1 For further information concerning this manual or the suit, contact Mustang Survival:

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1.3 RIGHTS RESERVED

1.3.1 Neck Seal - *United States Patent No. 6,668,386 Canadian Patent No. 2,381,720*

1.3.2 Thermal Liner - *United States Patent No. 5,267,519 Canadian Patent No.2,082,793*

1.3.3 Tug-Tite® is a registered trademark of Mustang Survival.

1.3.4 Velcro™ is a trademark of American Velcro™ Inc.

1.3.5 GORE-TEX® is a registered trademark of W. L. Gore and Associates.

1.3.6 SeamGrip™ is a trademark of McNett Corporation.

1.3.7 Cordura® is a registered trademark of DuPont Corporation.

1.4 RESPONSIBILITIES

1.4.1 The individual to whom the suit is issued or assigned, following internal training, assumes responsibility for pre and post use inspections and for returning the suit to the Life Support Equipment shop for periodic inspection and testing on required dates.

1.4.2 Each operational organization is responsible for the instruction and survival training of all MSD901 users in the following:

a. Fitting of the dry suit

b. Purpose, use and operation of all accessories

c. Importance and method of visual pre and post use inspections

1.4.3 The Life Support Equipment shop is responsible for:

a. Inspection upon first issue from the supply depot or contractor

b. Ensuring the suit is complete and serviceable prior to issue

c. Periodic inspection and testing of the suit (see section 6.6)

d. Maintenance, cleaning and repair when required

e. Requisitioning and maintaining stocks of spare parts

f. Maintenance of inspection records for all Mustang Survival MSD901 units

1.5 DESCRIPTION

1.5.1 Application

1.5.1.1 The MSD901 Industrial Dry Suit may be used in lieu of traditional dry suits and anti-exposure work suits when a suit of greater durability, comfort and protection from exposure to cold is required.

Figure 1. MSD901 Industrial Dry Suit

1.5.1.2 Built to endure the most extreme operating environments, the MSD901's revolutionary three-layer modular system is a result of Mustang's ongoing commitment to research and development. Crewmembers may use the MSD901 when operating in conditions requiring dry suit use. The MSD901 is designed for more industrial applications such as aids to navigation maintenance, buoy deck operations, fisheries boardings and other applications where damage to the suit is likely to occur.

1.5.2 **Protection**

1.5.2.1 Mustang's patented breathable closed cell (PVC) foam not only aids in the moisture management system, but it also provides inherent buoyancy and the basis for hypothermia protection, even in the event of damage to the suit.

1.5.3 **Comfort**

1.5.3.1 The Thermal Liner is constructed of our patented breathable closed-cell foam. The Thermal Liner is engineered with multiple apertures, then quilted using wicking fabrics, designed to pull excess moisture vapor (sweat) away from the wearer's body.

1.5.3.2 The Immersion Module uses GORE-TEX® fabric, designed to allow the escape of excess moisture vapor while providing a waterproof barrier to the outside elements. Trim to fit wrist seals and adjustable neck seal aid in the system's delivery of superior comfort and flexibility, reducing heat stress and fatigue associated with long or strenuous operations.

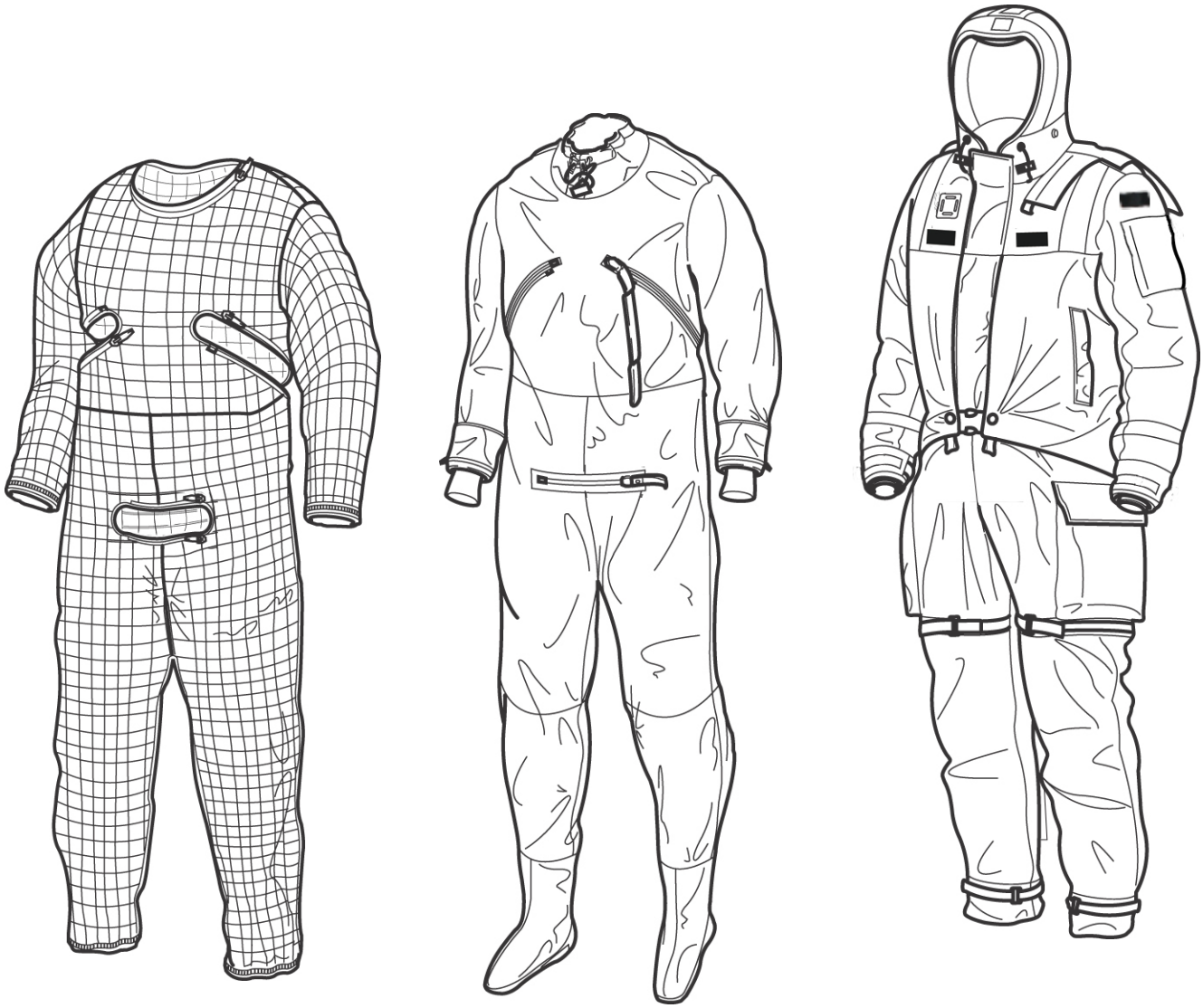
1.5.4 **Durability**

1.5.4.1 The MSD901's Outer Shell is constructed of 210-denier nylon and reinforced in high abrasion areas with even more rugged 500-denier Cordura® nylon panels.

1.5.5 Configuration

1.5.5.1 The MSD901 provides hypothermia protection and inherent buoyancy using three interconnected modules to form a single system. Each module may be repaired, to a degree, or replaced individually.

Figure 2. MSD901 Industrial Immersion Work Suit Layers



Thermal Liner - MA3010 **Immersion Module - MA3007** **Outer Shell - MA3004**

1.5.5.2 The first module is a breathable foam liner which provides hypothermia protection and flotation while reducing heat stress (United States Patent No.5267519, Canadian Patent No.2082793). The innermost Thermal Liner is constructed of ultra soft, polyvinylchloride (PVC) closed-cell foam and incorporates our patented “Breathability System”.

1.5.5.3 The second module is the Immersion Module and provides the suit with watertight integrity and the equivalent protection of a dry suit. The Immersion Module is made from GORE-TEX®,

providing a breathable waterproof layer. This module's sleeve openings maintain watertight integrity with neoprene seals. The Immersion Module's neck seal (United States Patent No.6,668,386, Canadian Patent Pending) is constructed of a waterproof, polyurethane/polycarbonate-coated nylon stretch material and is closed via an adjustable, elastic drawstring system that effectively seals water outside the module and allows personnel to wear the suit comfortably. The module is fitted with waterproof socks.

1.5.5.4 The third module is the Outer Shell. The Outer Shell is an orange/black urethane-coated nylon shell, which provides a durable water-resistant barrier to wind, sea spray and rain. This module is vented allowing the suit to breathe. The knee and seat portions of the Outer Shell are reinforced. An integral foam-lined hood provides protection both in and out of the water.

NOTE: Appropriate thermal undergarments (such as polypropylene underwear) should be worn to enhance the protection afforded by the MSD901 and assist in wicking moisture away from the body.

1.5.6 **Fit**

1.5.6.1 This suit is available in five sizes.

SIZE	CHEST CIRCUMFERENCE		HEIGHT	
S	34" - 38"	86 - 96 cm	5'5" - 5'9"	165 - 175 cm
M	38" - 42"	96 - 106 cm	5'7 - 5'11"	170 - 180 cm
L	42" - 46"	106 - 116 cm	5'9" - 6'1"	175 - 185 cm
XL	46" - 50"	116 - 127 cm	5'11" - 6'3"	180 - 190 cm
XXL	50" - 54"	127 - 137 cm	6'1" - 6'5"	185 - 195 cm

2.0 IMMERSION AND ANTI-EXPOSURE CLOTHING

2.1 HAZARDS

2.1.1 Cold-water immersion is a life-threatening situation, and your survival depends on the clothing you wear. Cold, shock, hypothermia, loss of dexterity and mental sharpness and drowning are your primary concerns. Many strong swimmers drown within yards of safety in cold water. This suggests that many drown because of the rapid shock of immersion, causing immediate hyperventilation, water ingestion, and often heart failure, which may occur in water below 59°F (15°C).

2.1.2 Without adequate buoyancy and insulation, individuals rely on swimming ability and endurance for survival. Your strength and endurance are seriously diminished in colder water, reducing your ability to overcome waves, currents, spray, etc.

2.1.3 Hypothermia results when your body loses heat faster than it can be replaced, and can occur in any environment below 98.6°F (37°C), our normal body core temperature. Water conducts heat away from our body 25-30 times faster than air, presenting a high risk.

2.1.4 Shivering is the body's way of generating heat to replace lost heat. The smallest blood vessels constrict close to the skin, reducing the blood circulation to your hands and feet. Circulation to the body core is also restricted, where it is needed most, resulting in a loss of dexterity. As the effect of cold increases, muscles weaken and stiffen, leading to the loss of feeling and reduced co-ordination. Your decision-making and thinking processes slow down.

2.1.5 Proper clothing reduces many of these hazards, improving your chances of survival. Clothing should provide insulation from the cold and should not hinder mobility. Ensure buoyancy is provided either inherently in your outfit, or with an additional life preserver, preferably both.

2.1.6 Generally there are two types of immersion protective clothing:

a. Wet suits

b. Dry suits

2.2 WET SUITS

2.2.1 Wet suits allow some water in, but restrict water movement into and out of the suit. Your body heats up the water that becomes, more or less, trapped in the suit. If the openings of the suit become restricted, the warmed water stays inside the suit longer, reducing heat loss. If a wet suit is damaged or torn, the level of protection is reduced.

2.3 DRY SUITS

2.3.1 Dry suits protect you during cold-water immersion by using, in conjunction with garments worn under the suit, the trapped air as an insulation layer from the cold water. Most dry suits utilize seals at the wrists, neck and ankles, unless incorporating gloves and boots. These seals are made from waterproof materials, insulated or non-insulated.

3.0 MSD901 FEATURES

3.1 GENERAL

3.1.1 Familiarize yourself with all the features of the suit to maximize its effectiveness. Illustrations are provided as an additional reference.

3.1.2 The suit is made of watertight fabric and has neoprene wrist seals and an adjustable neck seal, a main entry waterproof zipper. The suit is watertight and is intended to keep the wearer dry in the event of immersion. Multiple pockets are included for convenient storage.

3.2 HYPOTHERMIA PROTECTION

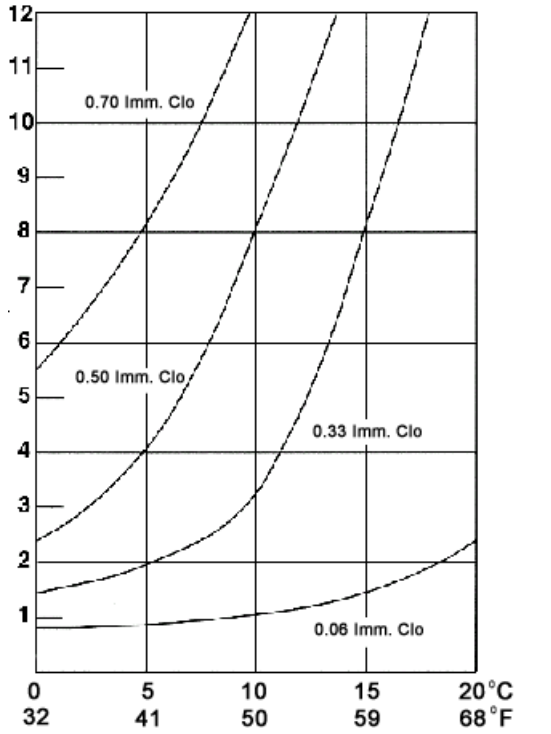
3.2.1 Immersion in cold water is a danger for anyone working on or near the water. The length of time a person can survive in cold water largely depends on both the water's temperature and the thermal protection of their protective clothing.

3.2.2 To create the most effective protection against hypothermia, Mustang Survival begins by evaluating the clothing's immersed Clo value, which depicts the level of thermal insulation a garment provides. Clo is a measurement of insulation, much like the 'R' values assigned to fiberglass house insulation. We determine the rate at which heat is lost from the body, as well as the difference in temperature between the skin and the water.

3.2.3 Figure 3 indicates random samples of Immersed Clo values and the corresponding estimation of survival time in cold water (assuming a thin person with a 5.5° F (3° C) drop in body core temperature).

3.2.4 When tested on a thermally insulated manikin, the MSD901 measures 0.74 Immersed Clo in stirred water. This level of immersion protection provides approximately six hours of survival time in 32° F water temperatures.

Figure 3. Clo Insulation Graph



NOTE: When using Figure 3, keep in mind that the chart was derived empirically by mathematical modeling and conservatively applied to the tenth percentile (thin) individual in calm (stirred) water.

With the complexity of factors involved, there is no guarantee as to the accuracy of the predicted survival time on an individual case basis.

3.3 TESTING

3.3.1 Each MSD901 is tested and proven 100% watertight.

3.4 ASSEMBLED MSD901

Figure 4. Component Locations

3.5 OTHER FEATURES

- Adjustable neck seal (US Patent No. 6,668,386, Canadian Patent Pending)
- Neoprene wrist seals provide easy donning and comfort
- Watertight zippers and seams
- Insulated hood easily folds into collar and stays in place in all conditions
- Waist belt openings are compatible with law enforcement equipment
- Hand-warmer chest pockets, and extra large cargo pockets at hips
- Highly abrasion resistant, reinforced seat, and knees
- 80 SQ. IN. SOLAS/IMO approved high visibility reflective tape
- Highly visible Outer Shell
- Leg gussets to accommodate large boots

3.5.1 Neck and Wrist Seals

3.5.1.1 The adjustable neck and neoprene wrist seals (located on the Immersion Module) are adjustable, allowing the user to stretch each seal over their head or hand and are watertight.

3.5.2 Main Entry Zipper

3.5.2.1 The main entry zipper, located on the Immersion Module (see figure 4), is a heavy-duty zipper with nickel-silver teeth that provides a watertight seal when closed and wraps around the upper torso.

3.5.2.2 The main entry zipper starts on the front of the suit, under the left armpit, and extends around the back to the front under the right armpit. A nylon thong is attached to the zipper slider, assisting the wearer in opening and closing the zipper.

CAUTION: Avoid snagging your clothing in the zipper, as this may break the zipper's seal.

3.5.2.3 The zippers should always be left in the closed position while the suit is stored, to reduce stress on the opening. See section 6.5.5 for zipper care procedures and for recommended zipper cleaners and lubricants.

3.5.3 Relief Zipper

3.5.3.1 The relief zipper (see figure 4) is black, with metal teeth and provides a watertight seal when fully closed. It is located on the front of the MSD901 Immersion Module and extends horizontally across the groin area.

3.5.3.2 The zipper closes right to left, from the wearer's point of view. A nylon thong is attached to the zipper slider, assisting the wearer in opening and closing the zipper.

3.5.4 Neoprene Hood (MA7348)

3.5.4.1 A neoprene hood to be attached to the Outer Shell, is supplied in the calf pocket. The hood combats anti-exposure when a crewmember, wearing the suit, enters the water. The hood features an adjustable face guard that allows the user to adjust the level of protection and a

lanyard to prevent accidental loss. The hood is designed to be stored in the calf pocket that has a mating snap for the lanyard.

3.5.5 **Law Enforcement Belt**

3.5.5.1 Five law enforcement belt keepers are positioned to provide maximum stability for carried equipment.

3.5.6 **Leg Gusset Zippers**

3.5.7 Leg gussets accommodate donning large boots without removal.

4.0 ASSEMBLY

WARNING: The MSD901 should be worn with all three modules assembled. The modules are not to be worn independently. A loss of protection and wear resistance will result if worn improperly.

4.1 STEP 1 LAYOUT THE THERMAL LINER AND IMMERSION MODULE

a. Lay out the Thermal Liner and the Immersion Module side by side in the same orientation as worn.

NOTE: Check the labels of the Thermal Liner to ensure they are located on the inside (the seams of the Thermal Liner should face out).

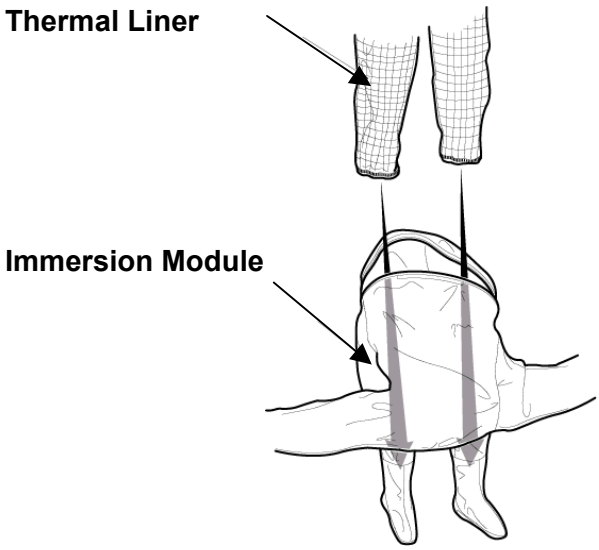
b. Ensure the Immersion Module's neck seal is fully opened and facing up and that the waterproof zipper is fully opened.

4.2 STEP 2 CONNECT THE THERMAL LINER/IMMERSION MODULE AT THE ANKLE

a. Fold the top half of the Immersion Module over at the waist toward the legs. Ensure the lower portion of the module is exposed.

b. Keeping the bottom flat and straight, insert each leg of the Thermal Liner down into each leg of the Immersion Module until it reaches the interconnection zipper at the ankle (see figure 5).

Figure 5. Positioning the Thermal Liner and Immersion Module for Assembly



NOTE: Ensure the legs do not twist, maintaining a matching orientation during insertion.

c. After pushing your hand down between the Thermal Liner and the Immersion Module, grab the Thermal Liner ankle zipper and the Immersion Module ankle zipper.

d. Pull both legs out together, turning them inside out to expose the zippers (see figure 6).

Figure 6. Pulling a Leg Out Exposing a Zipper

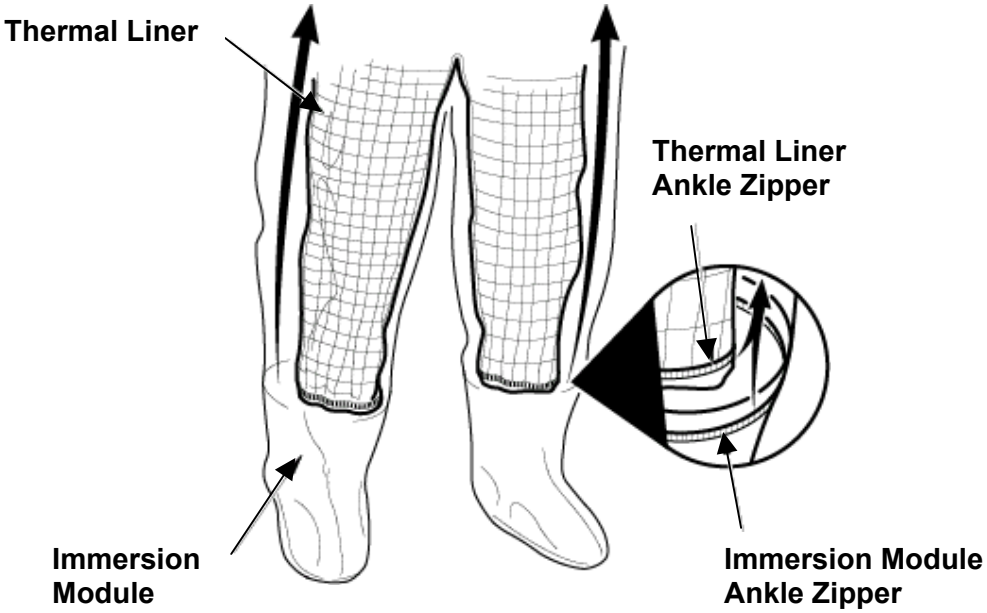
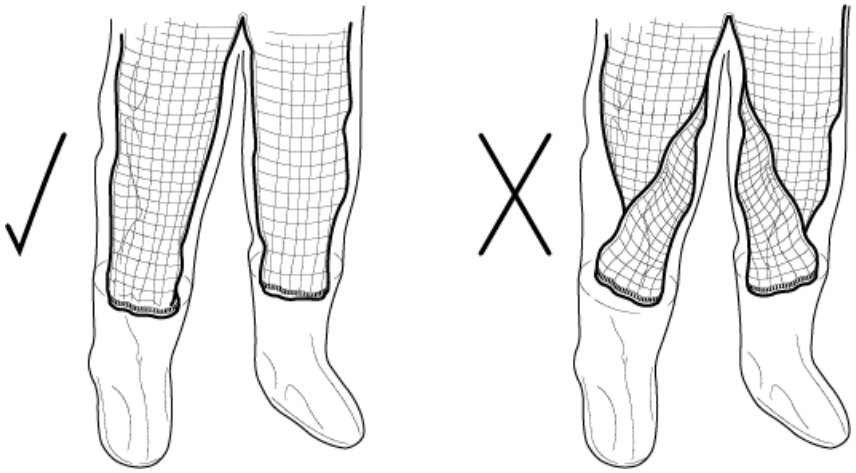
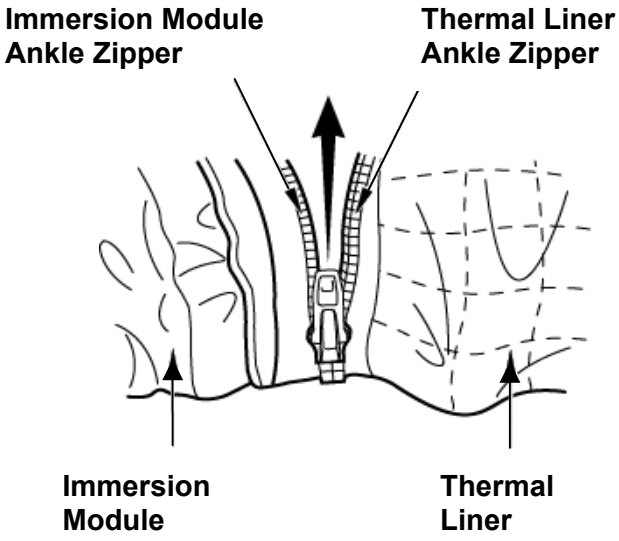


Figure 7. Straight/Twisted Thermal Liner Legs



e. Attach the two ankle zippers. The Immersion Module zipper will only work in one direction (see figure 8). Apply the same procedure to the other leg.

Figure 8. Thermal Liner and Immersion Module Connected at the Ankles



f. Push the two legs completely down into the Immersion Module ensuring they are lined up.

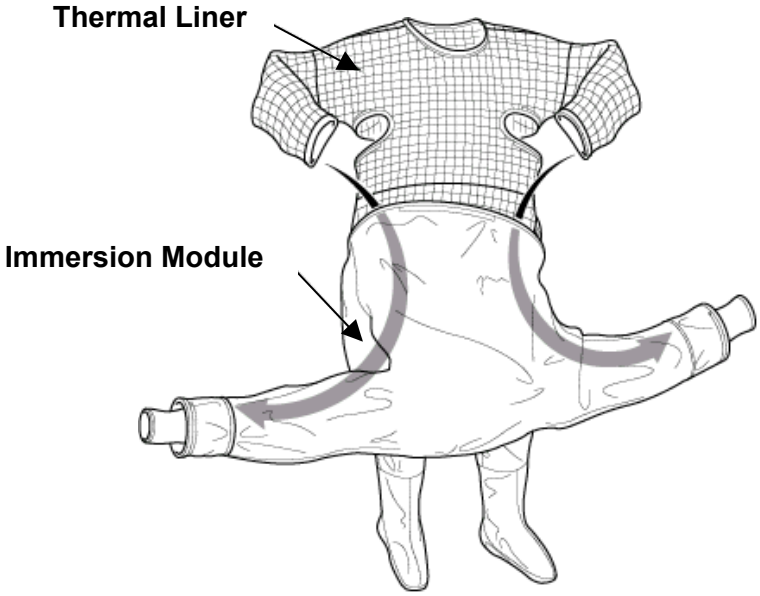
4.3 **STEP 3 SUSPENDERS (MA7650)**

4.3.1 See section 4.11.2 for detailed instructions for suspender attachment.

4.4 **STEP 4 WAIST AND WATERPROOF ZIPPER CONNECTION- PART I**

a. After laying the Immersion Module back out flat, push the left arm of the Thermal Liner down to the end of the left arm of the Immersion Module (see figure 9).

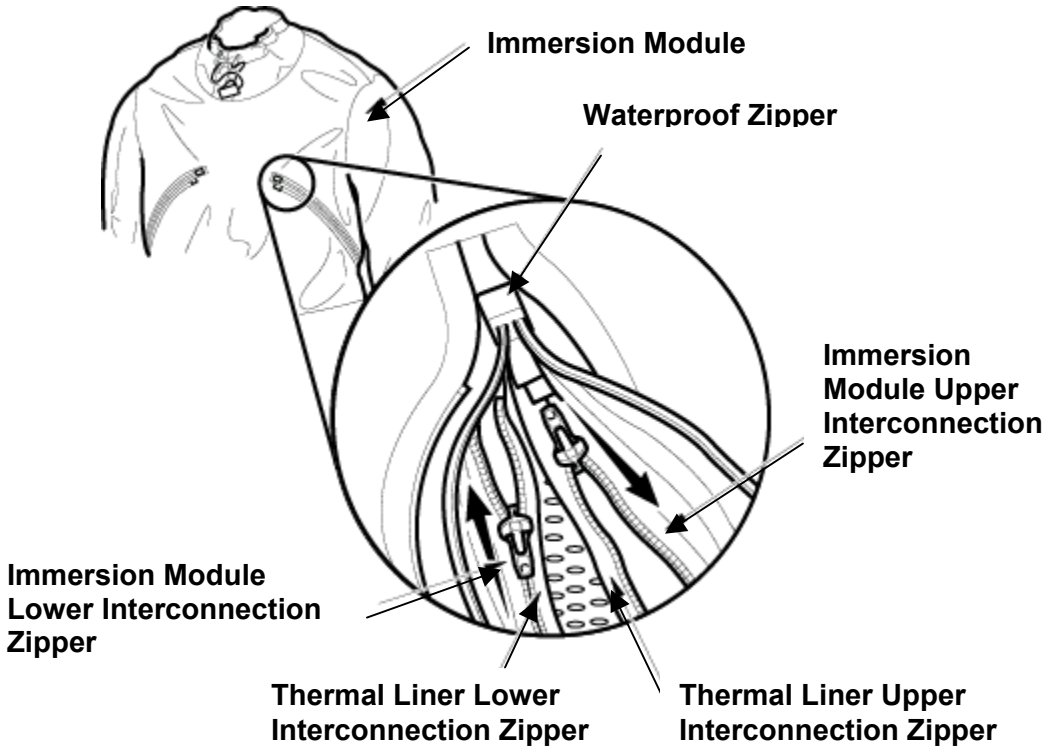
Figure 9. Insertion of the Thermal Liner into the Arm of the Immersion Module



b. Repeat this procedure with the right arm.

c. To join these layers, start at the end of the waterproof zipper underneath the left arm and close the length of the lower Immersion Module/Thermal Liner interconnection zipper (see figure 10).

Figure 10. Closing the Lower Interconnection Zipper



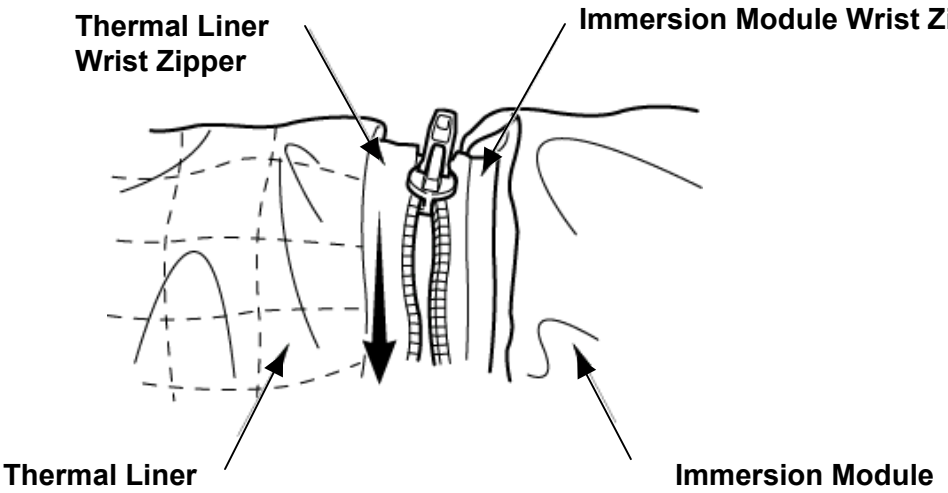
4.5 STEP 5 WRIST CONNECTION

a. Push your hand between the two layers down the left arm, grab the arms at the interconnection zippers and pull both arms through.

NOTE: Ensure that the arms do not twist. Maintain a matching orientation during insertion.

b. Line up the zipper on the Immersion Module with the zipper on the cuff of the Thermal Liner and connect them (see figure 11).

Figure 11. Thermal Liner and the Immersion Module Connected at the Wrist



c. Push the cuffs back through the arm to the normal position.

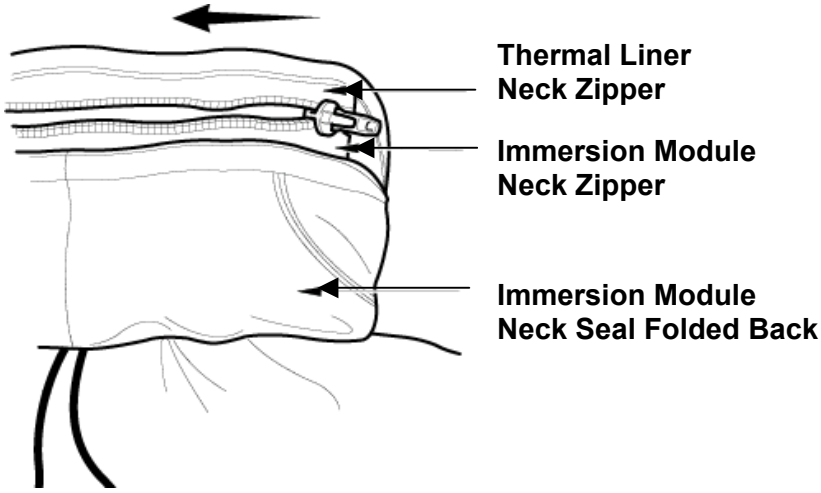
d. Repeat this procedure for the right arm.

4.6 STEP 6 NECK CONNECTION

a. Grasp the edge of the Immersion Module neck seal and expose the interconnection zipper.

b. Align the Immersion Module zipper end with the Thermal Liner zipper end (see figure 12).

Figure 12. Connecting the Thermal Liner and the Immersion Module at the Neck



c. Fasten the zipper and close until the two are completely joined, then fold the neck seal back down.

CAUTION: Avoid pinching the Immersion Module waterproof material with the zipper slider.

4.7 STEP 7 WAIST AND WATERPROOF ZIPPER CONNECTION - PART II

4.7.1 Complete the connection of the Immersion Module to the Thermal Liner by starting at the end of the interconnection zippers (located at the end of the opened waterproof zipper). Close the length of the upper Immersion Module/Thermal Liner interconnection zipper.

4.7.2 Fold the two layers out and lay them flat.

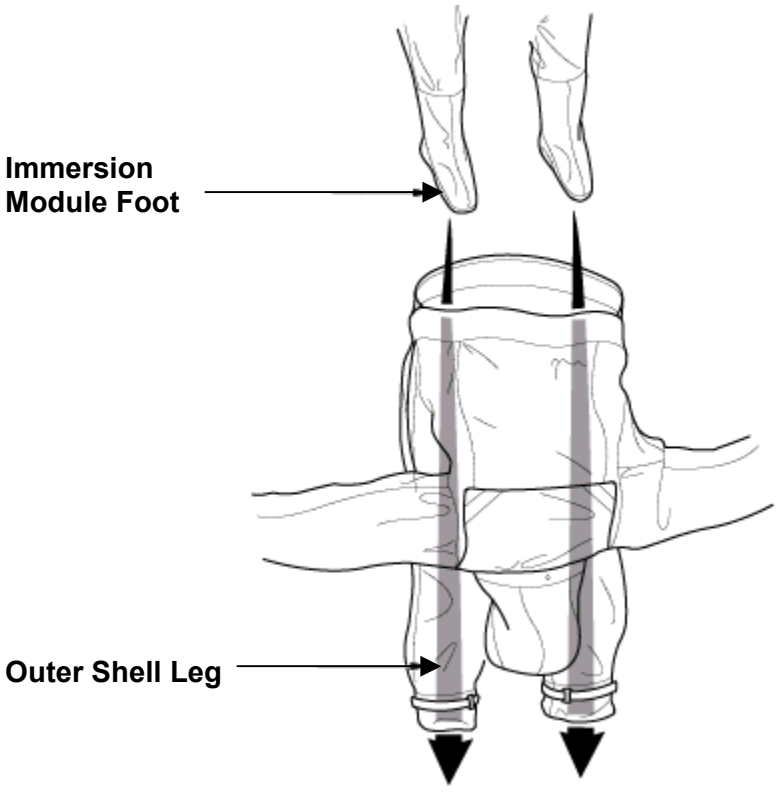
4.8 STEP 8 ADDING THE OUTER SHELL

a. Lay the Outer Shell out flat with the chest zipper facing up. Unzip the chest and ankle gusset zippers. Completely loosen the wrist adjustment straps.

b. Fold the Outer Shell over at the waist exposing the leg openings.

c. Feed the left leg of the Thermal Liner/Immersion Module assembly through the left leg of the Outer Shell and pull it through. Repeat this procedure for the right leg (see figure 13).

Figure 13. Leg of the Thermal Liner/Immersion Assembly Fed Through the Outer Shell



d. Feed the left arm of the assembly through the left arm of the Outer Shell and pull it through. Repeat this procedure for the right arm. Do not connect the wrist interconnection zippers yet.

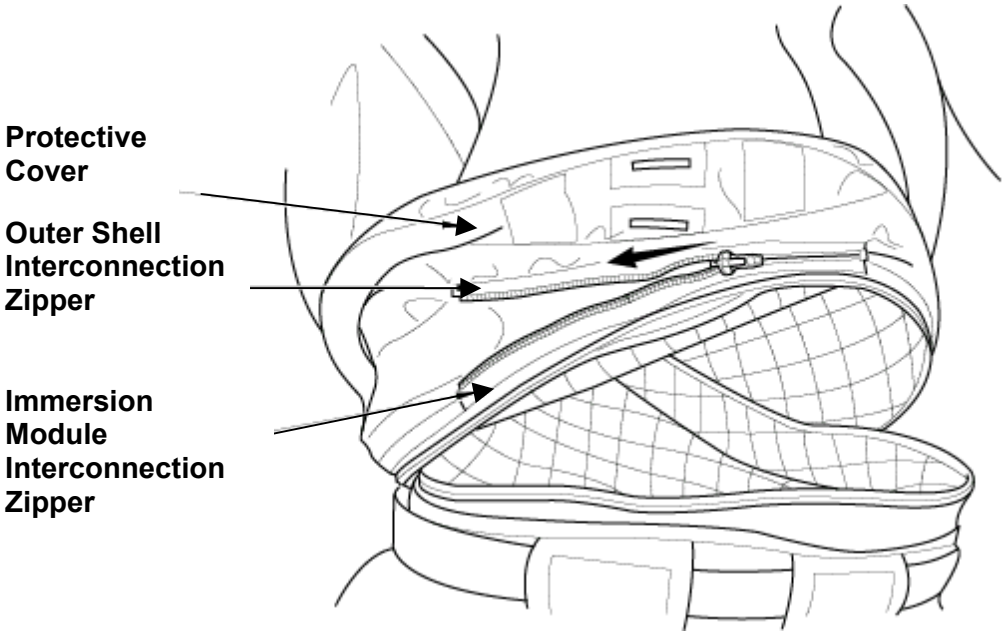
e. Pull the neck seal up to the neck of the Outer Shell.

4.9 STEP 9 OUTER SHELL WAIST AND WATERPROOF CONNECTION

a. Fold back the protective flaps of the Outer Shell to give access to the interconnection zippers (see figure 14).

b. Line up the two ends of the lower Immersion Module interconnection zipper with the corresponding Outer Shell zipper. Connect the two ends and fasten them the length of the zipper.

Figure 14. Upper Interconnection of the Outer Shell to the Immersion Module



c. Line up the two ends of the upper interconnection zipper on the Immersion Module with the corresponding zipper of the Outer Shell. Connect the two ends and fasten them the length of the zipper.

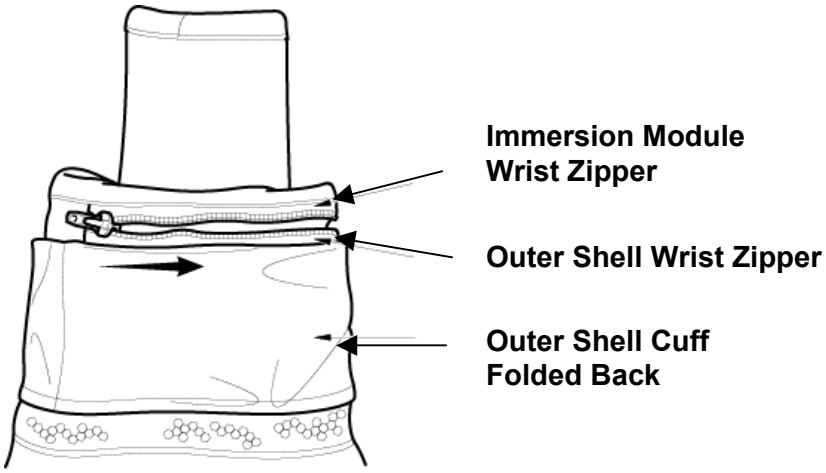
d. Lay the suit out flat.

4.10 STEP 10 OUTER SHELL WRIST CONNECTION

a. Fold back the left wrist of the Outer Shell exposing the Immersion Module interconnection zipper.

b. Line up the zipper with the neoprene Outer Shell wrist zipper and connect the two securely (see figure 15).

Figure 15. Connecting the Immersion Module and the Outer Shell at the Wrist



c. Fold the wrist of the Outer Shell back over to cover the interconnection zipper.

d. Repeat this procedure for the right wrist.

4.11 SUSPENDERS (MA7650)

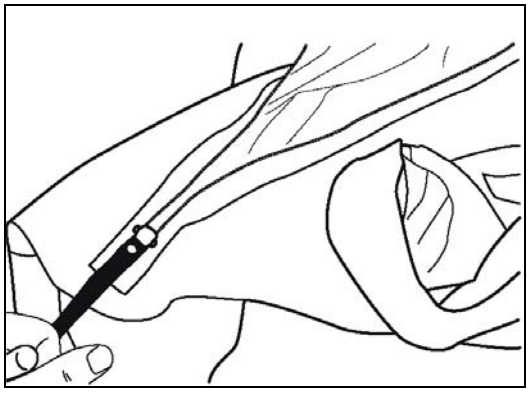
4.11.1 Suspenders are not required when using the MSD901, unless sizing dictates. However, properly attached suspenders may improve the fit and mobility. The MSD901 is equipped with attachment loops, on the Immersion Module, that accommodate the suspender system. The suspenders pass through the Thermal Liner. The suspenders may be adjusted from the inside. Remove and re-attach as required.

4.11.2 Suspender Attachment Instructions

4.11.2.1 Required materials: MSD901 and two suspenders.

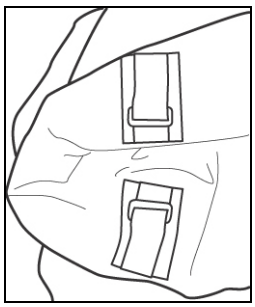
a. Completely unzip the MSD901 entry zipper.

Figure 16. Step a. Suspender Attachment



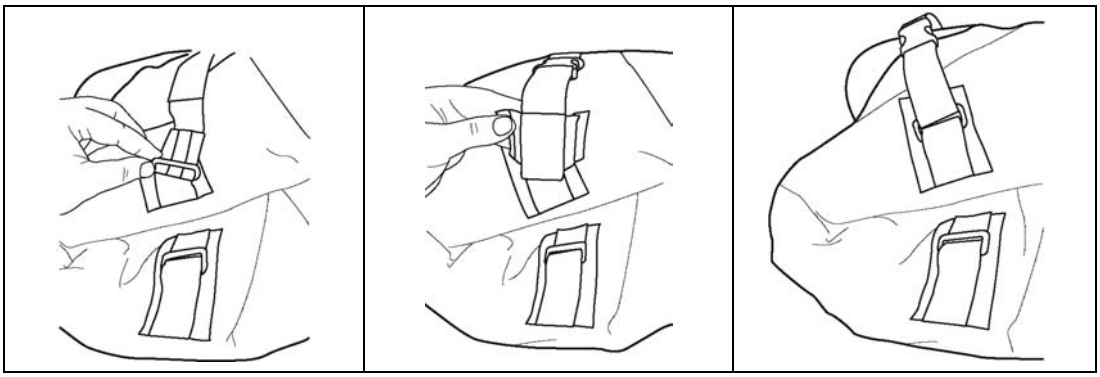
b. Open the suit so that the (front and back) attachment loops are accessible (as shown below).

Figure 17. Step b. Suspender Attachment



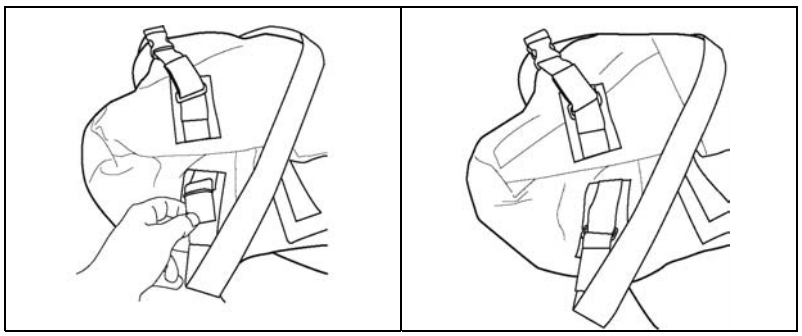
c. Attach the end of the suspender, with the buckle, to the suit's front attachment point by unpeeling the Velcro flaps and lifting the Velcro strap that is folded on itself. Fold the flaps over the strap (so that hook Velcro faces hook Velcro). Pass the suspender through the attachment loop. The strap end can now be folded over itself so the Velcro patches close. To secure the suspender, wrap the Velcro flaps around the edges of the strap and attach to Velcro on the opposite side of the strap.

Figure 18. Step c. Suspender Attachment



d. Pass the suspender strap through the front and back pass-through slots on the Thermal Liner. While keeping the strap straight, attach the non-adjusting end of a suspender to the suit's back attachment point (as shown below). This should be similar to Step c.

Figure 19. Step d. Suspender Attachment

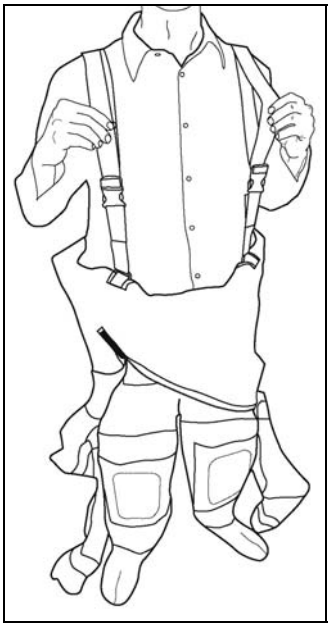


e. Repeat these steps to attach the other suspender. It is recommended to use two suspenders for even support.

f. Alternatively, the suspenders may be attached so they are crossed over the user's back.

g. Use the suspender strap ends to adjust for a secure comfortable fit.

Figure 20. Step g. Suspender Attachment



4.12 TRIM TO FIT WRIST SEAL INSTRUCTIONS

4.12.1 Your suit comes equipped with universal-sized wrist seals that have a tapered sealing surface at the end of the cuff. This tapered end allows you to modify the size of the cuff opening to match the physical characteristics of your hand and wrist. Trimming the end of the cuff increases the diameter of the end opening, allowing a larger wrist to be inserted and sealed comfortably without damaging the cuff. Users with unusually boney wrists should try to make the wrist seal fit properly further up the arm where the sealing surface is smooth.

NOTE: Once the wrist seal is trimmed, it may not provide an adequate seal for a smaller wrist.

4.12.2 **Required materials:** Ruler, sharp scissors and talcum powder. See below for trim to fit wrist seal instructions for used suits.

4.12.3 Trim to Fit Instructions - New Suits

4.12.3.1 The trim table below details recommended "Trim Off" lengths relative to wrist size. To ensure a watertight seal that provides safety, the fit should be slightly uncomfortable without cutting off circulation to your hand. Don't cut off more wrist seal than recommended, otherwise the safety provided may be compromised.

a. Use a tailor's measuring tape or some other means (string) to determine each wrist circumference (measure just above the wrist joint towards the elbow). Left and right wrist sizes may vary. Measure again to confirm.

Figure 21. Step a. Trim to Fit Instructions - New Suits

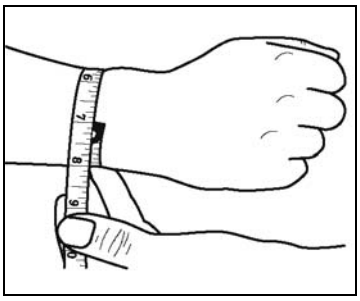


Figure 22. Trim to Fit Instructions - Trim Guide

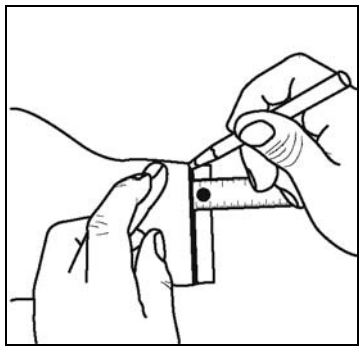
Trim Off	To Fit Wrist
0”	5 1/2” - 6”
1/4”	6 1/2”
1/2”	7”
3/4”	7 1/2”
1”	8”

b. Refer to the trim table above and determine the recommended “Trim Off” amount. (Eg: a wrist size of 7” requires approximately 1/2” be trimmed from the cuff end).

c. If wrist circumference is 6” or less, try on the cuff “as is” to gauge the comfort and seal provided. Continue with trimming only if required.

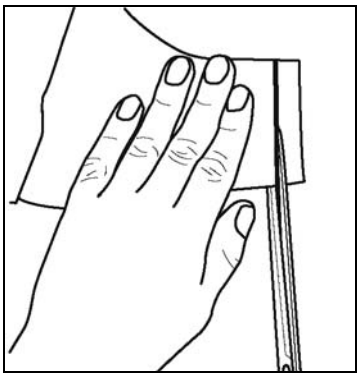
d. If trimming is required, mark a circular line around the cuff that is offset from the original cuff end by the recommended “Trim Off” amount.

Figure 23. Step d. Trim to Fit Instructions - New Suits



e. Using sharp scissors, or a razor, carefully cut the cuff end at the marked line. Evaluate the fit and comfort after each cut. Apply talcum powder to your hand and wrist to make donning the cuff much easier. Don the sleeve by pointing the fingers straight, tucking the thumb underneath and inserting the hand through the seal. Do not make a fist when putting your wrist through the seal. Forcing the wrist through a cuff that is too small may tear the cuff end open.

Figure 24. Step e. Trim to Fit Instructions - New Suits



f. If further trimming is required, shorten the cuff end $^1/_8$" at a time until the optimum balance of fit and comfort is achieved. It is not recommended to exceed the original cut by more than $^1/_2$".

g. To maximize the protection provided by the wrist seals, try to minimize flexing of the hand-wrist-arm muscles when in the water.

4.12.4 Trim to Fit Instructions - Used Suits

4.12.4.1 The condition of a used suit may not be obvious, so carefully don each of the wrist seals prior to trimming. To ensure a watertight seal that provides safety, the fit should be slightly uncomfortable without cutting off circulation to your hand. Don't cut off more than the required amount, otherwise the safety provided by the wrist seal may be compromised. Perform the following steps to trim the wrist seals of a used MSD901.

a. Apply talcum powder to your hand and wrist to make donning the cuff much easier.

b. Don the sleeve by pointing the fingers straight, tucking the thumb underneath and inserting the hand through the seal. Do not make a fist when putting your wrist through the seal. Forcing the wrist through a cuff that is too small may tear the cuff end open.

c. If further trimming is required, shorten the cuff end $^1/_8$" at a time until the optimum balance of fit and comfort is achieved.

d. To maximize the protection provided by the wrist seals, try to minimize flexing of the hand-wrist-arm muscles when in the water.

5.0 DONNING\DOFFING INSTRUCTIONS

WARNING: The MSD901 must be worn with all three modules assembled. The modules are not to be worn separately. A loss of protection and wear resistance will result if worn improperly.

NOTE: The MSD901 may be donned without assistance.

5.1 STEP 1 SUIT PREPARATION PRIOR TO DONNING

a. Completely loosen the neck seal.

b. Ensure the adjustable neck seal has a snug but comfortable fit. Adjust as required.

c. Ensure the wrist, thigh and ankle adjustment straps are fully loosened.

d. Fully open the front entry zipper.

e. Unzip and fold back the chest ventilation zippers to expose the waterproof zipper. (See section 6.5.5 for regular zipper maintenance).

f. Fully open the waterproof zipper.

CAUTION: Use extreme caution when donning the MSD901. Prior to donning, remove all rings, watches, earrings, necklaces and eyeglasses that will cause damage to wrist and neck seals.

5.2 STEP 2 DONNING INSTRUCTIONS

a. Pick up the MSD901 and fold the top of the Outer Shell backward, over the waist.

b. Fold the top of the Immersion Module forward, over the waist.

c. Slowly slide your legs in until your toes reach the end of the socks.

d. Gently push one hand through the wrist seal using the index finger of the opposite hand to stretch the seal as you push your hand through. Repeat for the opposite hand. Ensure insulating undergarments are not sandwiched between seal and skin. Flatten any folds or rolls of the seal against the skin.

e. Bring the upper portion of the suit over your head, aligning the neck opening with the top of the head. Reach inside the top of the neck seal with the fingers and gently pull the seal outward and down as you push your head through. Ensure insulating undergarments are not sandwiched between seal and skin. Flatten any folds or rolls of the seal against the skin.

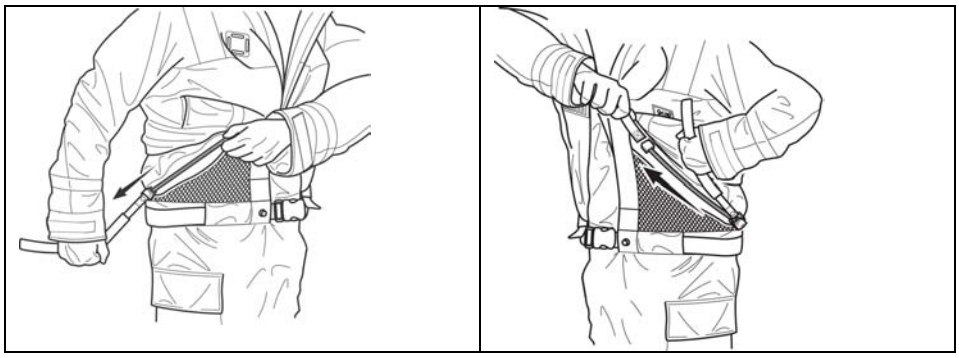
5.3 STEP 3 CLOSING THE WATERPROOF ENTRY ZIPPER

a. Fold the protective cover away exposing the waterproof entry zipper.

b. Grasping the waterproof entry zipper donning strap with your left hand, begin pulling the zipper slider with your right hand to start to close the waterproof zipper, continuing to close the zipper as far as you can (see figure 25).

c. Switch hands, and with your left hand grasp the zipper slider and continue closing the waterproof zipper until it is completely closed while holding the donning strap with your right hand to gain leverage.

Figure 25. Closing the MSD901



d. Ensure the waterproof relief zipper is completely closed.

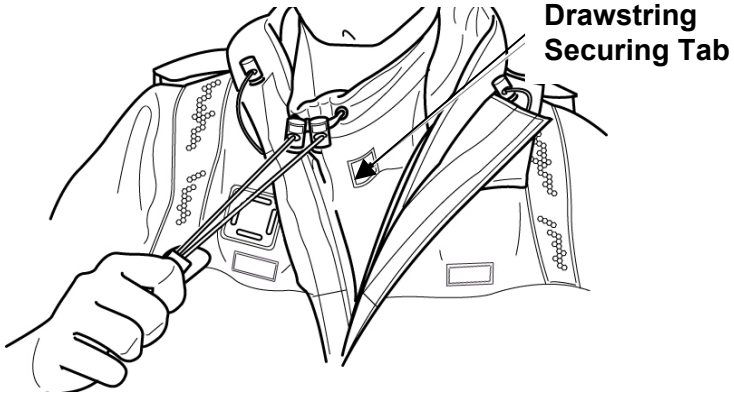
WARNING: Failure to completely close the waterproof entry zipper and the relief zipper will result in leakage of water inside the suit and reduction of in-water survival time. Have a fellow crewmember double-check each slide fastener to ensure they are completely closed against their sealing plugs.

e. Fold the protective cover over the waterproof zipper and snap it in place at the ends. Adjust the chest ventilation zippers on the Outer Shell.

5.4 STEP 4 ADJUSTING THE MSD901 AFTER DONNING

a. Adjust the neck seal to a snug but comfortable fit. Do not tighten the neck seal to a point of discomfort (see figure 26).

Figure 26. Adjusting the Neck Seal



b. Secure the ends of the neck seal drawstring to the tab located at the outer edge of the neck seal.

c. Fasten and adjust the Outer Shell waist belt.

d. Adjust the ankle, thigh and wrist straps.

5.5 SECURING THE MSD901 IN EMERGENCY SITUATIONS

5.5.1 General

5.5.1.1 In the event of entering the water, the MSD901 has a number of emergency features that are crucial to your survival.

5.5.2 Neck Seal

5.5.2.1 After entering the water, tighten the neck seal by grasping the drawstrings and pulling the tabs out and away from the neck until a snug, comfortable fit is achieved.

5.5.3 Wrist Seals

5.5.3.1 The neoprene wrist seals prevent the entry of water into the suit. Refer to the trim-to-fit instructions 4.12. Tightening the closures on the Outer Shell enhances the integrity of the watertight wrist seals.

5.5.4 Thermal Hood

5.5.4.1 The hood, if not deployed already, can be removed from its stowed position in the collar. Tighten the drawstrings on both sides of the hood to secure it about the face.

5.5.5 Inflatable Head Support Pillow

5.5.5.1 Inflate the head support pillow.

a. Place mouthpiece against mouth.

b. Depress black rim to open valve.

c. Blow to inflate.

d. Release black rim to close valve.

e. Repeat if further inflation is required.

5.6 DOFFING PROCEDURE

f. Remove all other equipment donned over the MSD901 before proceeding.

g. Wash down the MSD901 while wearing it, paying particular attention to the entry and relief slide fasteners. Remove all traces of salt.

h. Unbuckle the waist belt and release the ankle, wrist and thigh adjustment straps.

CAUTION: Failure to completely open the waterproof entry zipper will result in damage to the suit when it is doffed.

i. Fold the waterproof zipper cover out of the way, and completely open the waterproof zipper.

j. Completely loosen the neck seal drawstring and open the chest zipper.

k. Insert fingers between the neck seal and neck. Gently stretch the seal outward and upward while pulling shoulders and head out of the suit.

l. Insert two fingers under wrist seal and gently pull seal outward. Cup the hand, fingertips and thumb together, and gently pull your hand from seal. Repeat for other hand.

m. Remove your legs from the suit.

n. Hang the suit by the hanging loop, halfway close waterproof zipper and hang until dry.

6.0 MAINTENENCE AND CARE

6.1 GENERAL

6.1.1 After immersion in water (other than clean water), the suit modules should be either washed or rinsed separately. To increase the life of the garment, it is recommended to wash the suit only when required.

6.1.2 Refer to section 6.3 for cleaning instructions.

6.2 SEPARATING THE LAYERS

a. Remove the suspenders (section 4.11) and thermal hood (section 5.5.4).

b. Roll back the Outer Shell wrist material approximately three inches to expose the wrist interconnection zipper.

c. Unzip the wrist interconnection zippers.

d. Repeat steps **b.** and **c.** for the opposite wrist.

e. Fold open the Outer Shell around the waist to expose the upper and lower waist interconnection zippers.

f. Unzip the upper zipper in the center of the back.

g. Unzip the lower zipper to completely disconnect the Outer Shell from the Immersion Module.

h. Remove the Outer Shell from the Immersion Module.

i. Completely loosen the neck seal drawstring.

j. Roll back the neck seal exposing the neck thermal lining interconnection zipper.

k. Unzip the neck thermal lining interconnection zipper.

l. Unzip the waterproof zipper around the waist circumference and fold the suit open to expose the upper and lower waist interconnection zippers.

m. Unzip the upper and lower waist interconnection zippers.

n. Unzip the upper and lower interconnection zippers adjacent to the waterproof relief zipper.

o. Reach between the Immersion Module and Thermal Liner to the wrist and pull the wrist cuff through (inside out) exposing the interconnection zipper.

p. Unzip the wrist interconnection zipper.

q. Repeat steps **o.** and **p.** for opposite wrist.

r. Reach between the Immersion Module and Thermal Liner to the ankle and pull the ankle cuff through, inside out, exposing the ankle interconnection zipper.

s. Unzip the ankle interconnection zipper.

t. Repeat steps **r.** and **s.** for the opposite ankle.

6.3 CLEANING

6.3.1 For spot cleaning the Outer Shell when assembled, hand-wash the suit in fresh water (100°F or less) using a mild powdered soap solution, then thoroughly rinse and hang the suit to dry.

CAUTION: Do not hang the suit by the neck seal. Use a strong wood or plastic hanger and support the suit by the Outer Shell, using the hanging loop located inside the Outer Shell neck area to secure the suit while drying. Do not stow wet.

Do not use bleach or other chlorine products.

Do not use fabric softeners.

Do not dry clean.

Do not use commercial laundry facilities.

Ensure all pockets are emptied and layers have been separated.

NOTE: Unzip all interconnection zippers before laundering.

6.3.2 Mud and soil stains should be removed from the Outer Shell. Mud stains must be either allowed to dry and then removed with a cloth brush, or sponged clean with cold fresh water. Other stains should be sponged with cold fresh water. After cleaning, the suit should be thoroughly air-dried.

6.3.3 **Outer Shell**

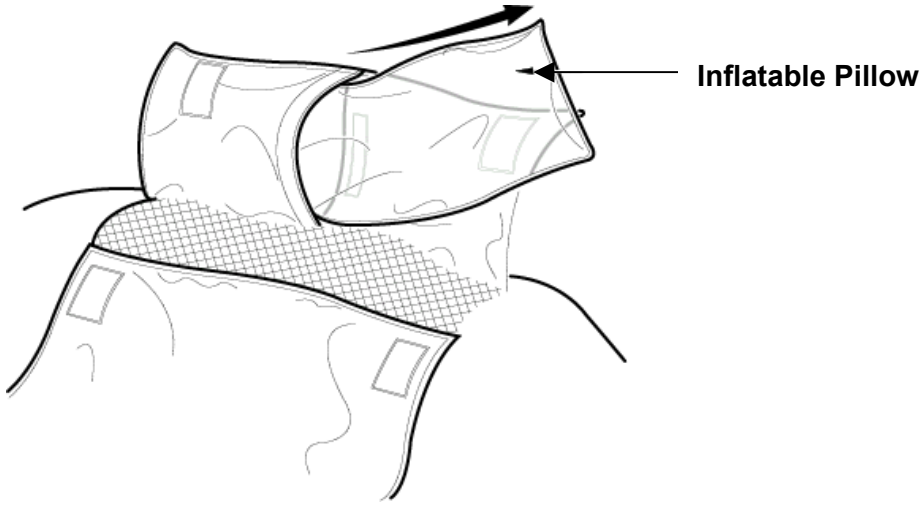
a. Empty the contents of all pockets and remove the thermal hood from the collar.

b. Close all vent and pocket zippers prior to washing.

c. Unsnap and fold the hood open.

d. Remove the inflatable pillow from the suit (see figure 27).

Figure 27. Removing the Inflatable Pillow



e. Machine wash in warm water (100°F) using mild powdered soap.

f. The Outer Shell may be tumble-dried on a low heat setting, or hung to air-dry.

g. Upon drying, replace the inflatable pillow in the suit.

6.3.4 **Immersion Module**

a. Machine wash in warm water (100°F) using mild liquid or powdered soap in a Permanent Press or Normal Cotton Sturdy cycle.

b. Hang the Immersion Module to air-dry.

NOTE: Do not bleach.

c. Problem stained areas can be pre-treated with a mild liquid stain remover.

d. Refer to section 6.5.5 for metal zipper cleaning guidelines.

6.3.5 **Thermal Liner**

b. Wash by hand in warm water using a mild powdered soap.

c. Rinse thoroughly in clean water.

d. Hang to air-dry.

CAUTION: Ensure the Outer Shell, Immersion Module and Thermal Liner are completely dry before reassembling.

6.4 **DAMAGE TREATMENT**

6.4.1 Singed, burnt or worn areas of the Thermal Liner or the Outer Shell should be cut away and patched. See section 6.6.10.1 for patching procedure and limits of repair.

NOTE: Cut away material no more than 2 inches (50.8 mm) in diameter.

6.5 **TREATMENT AFTER IMMERSION**

6.5.1 Whenever a suit has been immersed in water, it must be treated as specified below and then inspected in accordance with the current authorized servicing schedule.

6.5.2 **Fresh Water Immersion**

6.5.2.1 Allow the suit to dry naturally, preferably in the open air. If the insides of the socks are waterlogged, drying may be hastened by blowing with oil-free compressed air at room temperature.

6.5.3 **Salt Water Immersion**

6.5.3.1 Disassemble the three layers and rinse thoroughly with clean, fresh water. Allow the suit modules to dry naturally, preferably in the open air.

6.5.4 **Chlorinated Water Immersion**

6.5.4.1 Immersion of the suit in chlorinated water is not recommended. If the suit is immersed in chlorinated water, use the same washing procedure as for salt water immediately following immersion.

6.5.5 **Metal Zipper Care**

6.5.6 Zipper cleaning is the first step to zipper longevity. Clean the zipper of any mud, sand, salt or foreign elements. Use warm soapy water to remove any heavy deposits.

6.5.6.1 For the metal entry and relief zippers, use one of the zipper manufacturers' recommended cleaning fluids listed in figure 28. Every few uses, apply a recommended wax (see figure 28) for zipper lubrication. Use a recommended wax after cleaning (see figure 28) for zipper lubrication. For example, a daily use suit requires wax once a week.

Figure 28. Recommended Zipper Cleaning Fluids and Waxes

CARE PRODUCT	PRODUCT NAME	SUPPLIER
Cleaning Fluid	Zippy Cool	YKK USA
	Zip Care	McNett
	BDM Fluid	BDM UK
Lubricating Wax	Zippy Cool	YKK USA
	Zip Wax	McNett
	BDM Wax	BDM UK

6.5.7 **Storage**

6.5.7.1 It is important that the MSD901 is stored in:

a. A dry area, where normal room temperature may be maintained.

b. An area without excessive sunlight, and ultra violet rays, and is free of petroleum products, acids and other damaging contaminants.

CAUTION: Never store the suit wet.

Never hang the suit from the neck seal; doing so may result in suit damage.

6.6 **INSPECTION**

6.6.1 **General Suit Examination**

6.6.2 Periodically examine your MSD901 for visual signs of abrasion or damage. Lay the suit modules on a clean, flat surface. Ensure the suit is dry, inside and out. Visually check for small rips, tears, or punctures, which may be repaired by a suitable repair station*. Major rips, tears, or punctures should be referred to Mustang for inspection and repair.

* Please contact Mustang Survival Corp. for more information.

NOTE: Proper care of this garment is extremely important for best results and extended service.

6.6.3 **Service Life**

6.6.3.1 The suit's service life is determined on condition rather than age. Suits may remain in service indefinitely if properly maintained and all tests and inspections are satisfactory.

6.6.4 **Work Area**

6.6.4.1 The work area where inspection and maintenance of the suit is performed should be smooth and flat, where the suit will not snag, tear or otherwise be punctured or damaged and should also be cleared of all non-essential equipment and materials. The working surface should be free of harmful contaminants such as oil, grease, acids or solvents. Work areas, which are subjected to wide temperature variations, should be avoided.

6.6.5 Inspection Intervals

6.6.5.1 The suit should be inspected:

a. On receipt from the supply depot or contractor.

b. Periodic inspections; depending on the environmental conditions of usage, not to exceed 90 days unless in storage.

c. Before and after use by the individual issued the suit.

d. Whenever the integrity of the suit is in doubt.

6.6.6 Visual Inspection

6.6.6.1 A close visual inspection should be performed prior to issue, by the issuer and the suit user.

6.6.6.2 To perform a close visual inspection, ensure:

a. There is no excessive wear or damage to the material, particularly stiffness, discoloration, burns, tears and frayed edges.

b. There is no separation of the seams, broken or missing stitches.

c. All metal components are intact and free from damage or corrosion.

d. The zippers are intact and operating smoothly.

e. All adjustment straps are adjusting freely and smoothly.

f. All pockets and pocket closures are intact.

g. Neck, wrist seals and socks have not deteriorated: cuts, tears, detachment.

6.6.7 Periodic Inspection

6.6.7.1 The suit manufacturer, or a qualified approved technician* with the appropriate equipment, should carry out the in-depth periodic inspection (every 90 days).

* Please contact Mustang Survival Corp. for more information.

This inspection includes:

a. Visual inspection

b. Leak testing every second periodic inspection (unless damage is suspected)

c. Zipper, or slide fastener inspection

d. Head pillow inspection

6.6.8 Head Pillow Inspection

6.6.8.1 Check the inflatable head support for damage and ensure that it is properly attached. Check the inflation hose(s) for deterioration or leaks. The head support/buoyancy ring should be inflated and tested for leaks at least every three months. This can be done using one of the following two methods:

a. Inflate the bladder, then immerse it in water and check for bubbles. Ensure that both bladder and the Outer Shell are completely dry inside and out before returning the bladder to its pocket.

b. Inflate the bladder, let stand for 8 hours and check for firmness.

c. Seam Grip™, or an equivalent adhesive, may be used to repair minor leaks.

d. Major leaks should be evaluated and repaired by Mustang Survival or the bladder may be replaced.

6.6.9 Retro Reflective Tape

6.6.9.1 Check retro reflective tape for condition and adhesion. Replace if necessary, see section 8.0 for a parts list. For best adhesion, repair should be completed by a suitable repair station*.

* Please contact Mustang Survival Corp. for more information.

6.6.9.2 Have a qualified approved technician* test for leaks on periodic inspection, every six months and prior to issue, and when a visual inspection raises any doubt about the integrity of the suit.

* Please contact Mustang Survival Corp. for more information.

6.6.10 Suit Leakage Test

6.6.10.1 The following suit leakage test uses Mustang Survival Dry Suit Test Kit (MA8836). Your equipment may differ and, if so, the test should be adjusted accordingly. Mustang Survival offers an opportunity to purchase the Dry Suit Test Kit (MA8836) used in this test. Contact us for more information.

Figure 29. Suit Leakage Test Kit

a. Separate and turn the Immersion Module inside out.

b. Place the neck plug into the suit, through the main entry zipper. Close the main entry zipper by reaching in through the neck opening to pull the zipper toggle.

Figure 30. Step b. Suit Leakage Test

c. Pull the narrower end of the neck plug through the opening of the neck seal.

Figure 31. Step c. Suit Leakage Test

d. Stretch the neck seal to fit securely around the neck plug (the end with the smaller diameter).

Figure 32. Step d. Suit Leakage Test

e. Fit the cinching strap over the neck seal.

Figure 33. Step e. Suit Leakage Test

f. Secure the cinching strap by pulling up the excess strap, and fasten the Velcro closures.

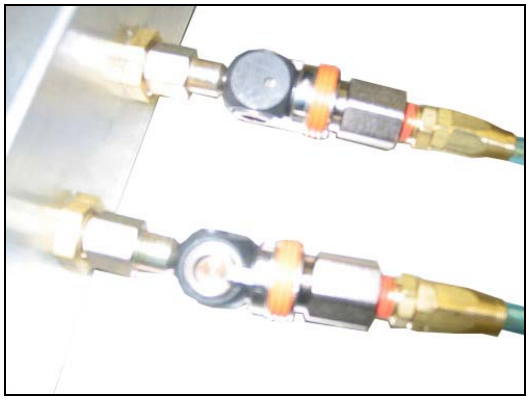
Figure 34. Step f. Suit Leakage Test

g. Clamp both wrist seals with the clamps provided.

Figure 35. Step g. Suit Leakage Test

h. Connect the two coiled pneumatic hoses to the output side of the control box. The two hoses are interchangeable.

Figure 36. Step h. Suit Leakage Test

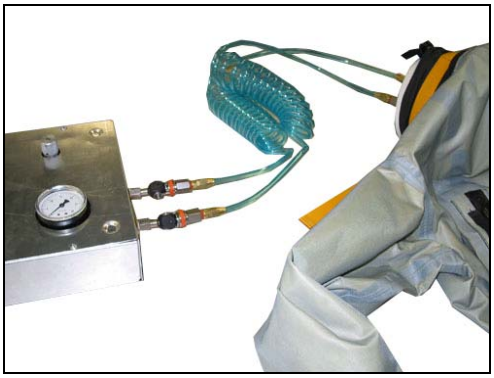


i. Connect the other ends of the coiled hoses to the neck plug. It does not matter which hose connects to which plug. Figure 30 shows the correct configuration.

Figure 37. Step i. Suit Leakage Test

j. Ensure your configuration matches figure 31, that shows the two coiled pneumatic hoses correctly attached to the control box and the neck plug.

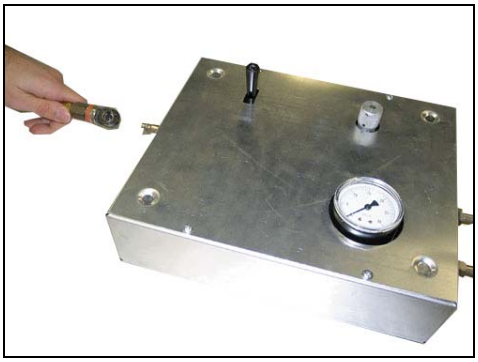
Figure 38. Step j. Suit Leakage Test



k. Connect high-pressure air source to the input side of the control box. The air pressure should be no greater than 150 psi.

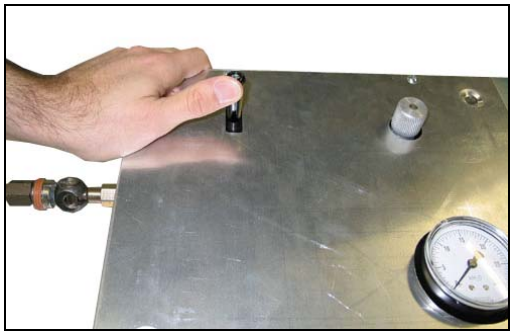
NOTE: Ensure the control lever is set in the off position before the high-pressure air is connected.

Figure 39. Step k. Suit Leakage Test



l. The control box has one pressure gauge and two controls. The black control lever has three positions as labeled on the control box. The knurled knob can be turned to restrict the airflow traveling into the dry suit.

Figure 40. Step l. Suit Leakage Test



m. Move the control lever to the fast position. The suit should inflate rapidly. Once the suit appears ¾ inflated, move the lever to the slow position. Turn the knurled knob to restrict the airflow rate until the suit inflates up to 12 in. water pressure. Twist the knurled knob further to hold pressure inside the suit at 12 in. water.

n. Spray the entire suit with a soap and water solution of 0.5% soap to water by weight. Pay particular attention to the seams and zippers.

Examine any area of the suit where bubbles are forming and take action depending on the severity as follows (note that bubbles forming at a rate of less than one per second are probably not leaks):

i. Small foamy bubbles collecting slowly on seam: Entrapped air. No leak present, no action required.

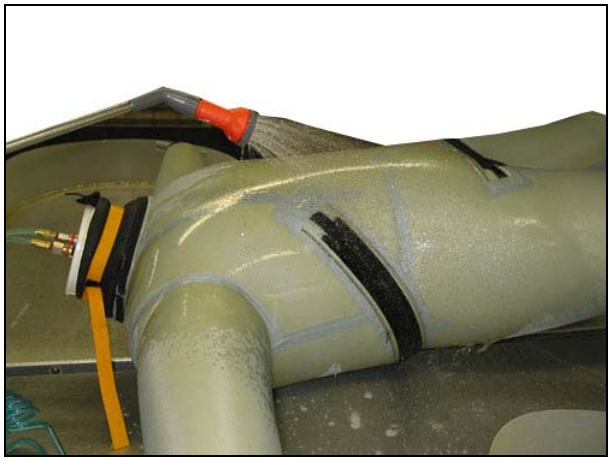
ii. Small foamy bubbles collecting quickly on seam: Uncertain. Agitate seam around bubbles to remove any entrapped air. If bubbles persist

after 10 minutes then consider as leak, mark leak area with a china marker, and document on the inspection record.

iii. Steady stream of larger bubbles: Leak. Mark leak area and document on the inspection record.

iv. Any other type of bubble formation or any sign of bubbles on a panel shall be treated as a leak.

Figure 41. Step n. Suit Leakage Test



o. When the test is completed, move the control lever to the off position. Remove the clamps from the suit and disassemble the rest of the test kit. Hang the suit to dry.

p. Hang the suit from a sturdy bar to air dry, and turn the suit right side out after it is completely dry. Use heavy plastic or wooden hangers, to avoid damaging the neck seal.

Figure 42. Step p. Suit Leakage Test

6.7 REPAIRS

6.7.1 General

6.7.1.1 The protection provided by this dry suit relies very much on its watertight characteristics. It is extremely important that damaged suits are handled in accordance with the following repair requirements.

NOTE: Only Mustang Survival should perform Immersion Module repairs.

6.7.1.2 Qualified repair personnel can normally perform repairs to the Outer Shell and Thermal Liner, with adequate facilities. The manufacturer should do all major repairs, unless otherwise authorized by Mustang Survival Corp. This section provides some information to assist with minor or emergency repairs to the suit and related components.

NOTE: Stitching shall not be used for repair of tears or holes, other than for Outer Shell or Thermal Liner.

6.7.1.3 The proper work area is defined in section 6.6.4 of this document.

6.7.2 Inspection Failures

6.7.2.1 These are the recommended repairs for any suit failing inspection:

a. Missing, damaged or corroded parts of components shall be replaced.

b. Heavily soiled areas shall be cleaned using only mild soap and water with a soft, non-abrasive nylon or synthetic bristle brush. Other cleaning agents or solvents must not be used.

c. Worn, broken or missing stitching on the Outer Shell and Thermal Liner should be repaired.

d. Any additional parts or components found to be defective should be repaired or replaced.

6.7.3 Attaching Parts

6.7.3.1 When attaching parts, such as pockets, to the Outer Shell the following general practices should be followed:

a. Markings must be made carefully only with tailor's chalk.

b. Fold over the fabric corners and other cut parts corners to prevent fraying.

c. Place the part to be attached into position, and mark the edge of the attachment area.

d. Stitch the part into place (see section 6.7.4).

6.7.4 Stitching

6.7.4.1 All repairs involving sewing shall be done with thread that corresponds to the color of the material being sewn. The thread to be used is outlined in section 8.0.

6.7.4.2 Seam repairs, stitching, and joining of the Outer Shell and the Thermal Liner shall be done using a single needle lockstitch, eight to ten stitches per inch. Securely backstitch all ends of stitching, including breaks in thread, not less than $^1/_2$ inch (12 mm). The seam allowance to be used is 1-$^1/_2$ inch (37 mm) ±$^1/_8$ inch (3 mm).

6.7.5 Leak Repairs

6.7.5.1 Arrange with Mustang Survival to have the Immersion Module returned to repair the damage.

6.7.6 Limits of Repair

6.7.6.1 It is recommended that the following guidelines be used in determining potential for repair of the Outer Shell and Thermal Liner. A qualified approved technician* should make all repairs.

a. Replace defective interconnection slide fasteners (see section 6.7.9).

b. Additional replaceable parts are listed in section 8.0.

c. Do not patch the neck or wrist seals or socks.

* Please contact Mustang Survival Corp. for more information.

6.7.7 Repair Materials

6.7.7.1 The full description and part numbers of the materials required for repairs are detailed in section 8.0 of this manual.

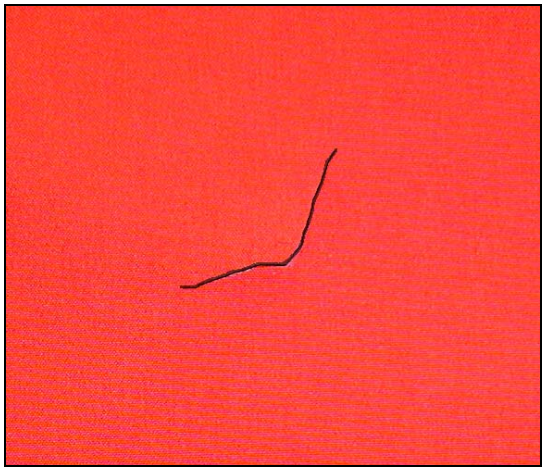
6.7.8 Patching

NOTE: The Immersion Module should not be patched. Return any damaged Immersion Modules to Mustang Survival for damage appraisal and repair.

6.7.8.1 Patching of minor tears and holes on the Outer Shell should conform to the following:

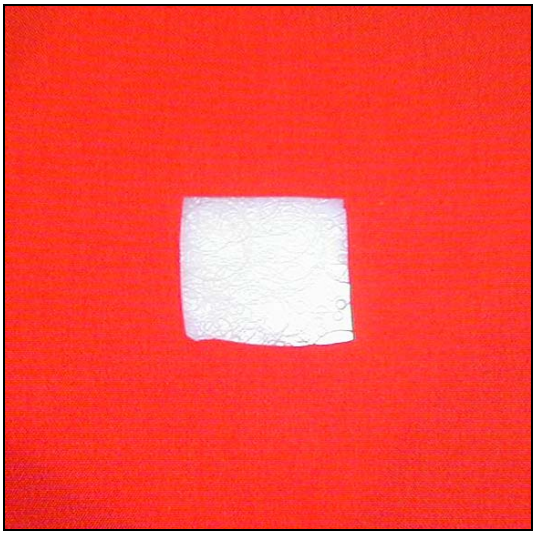
a. Clean the area around the tear of foreign material.

Figure 43. Step a. Patching



b. Cut a square, or rectangle, in the damaged fabric slightly larger than the hole.

Figure 44. Step b. Patching

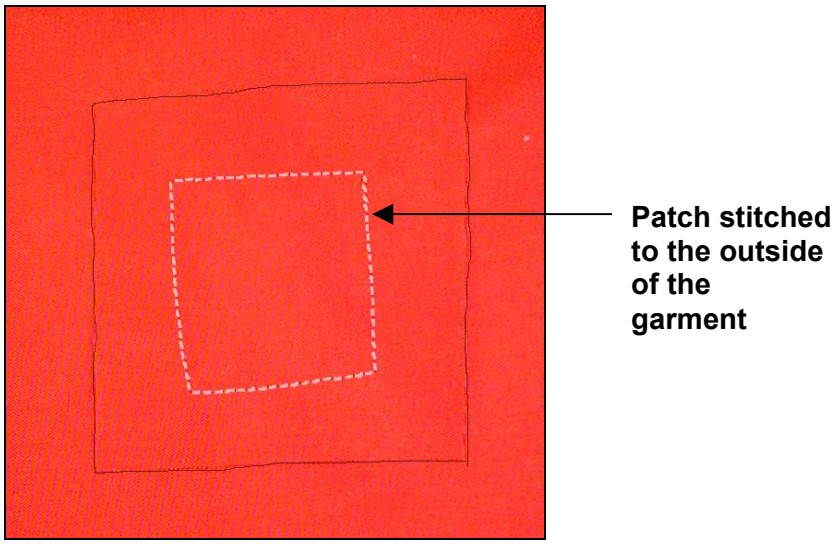


c. Cut a patch of the original material being repaired, exceeding the hole in size by not less than 1-½ inch (37 mm).

d. Apply the fabric patch to the outside of the suit and ensure that the weave corresponds to that of the material surrounding the repair area.

e. Single-stitch the patch to the suit ¼ inch (6 mm) from the edge of the hole.

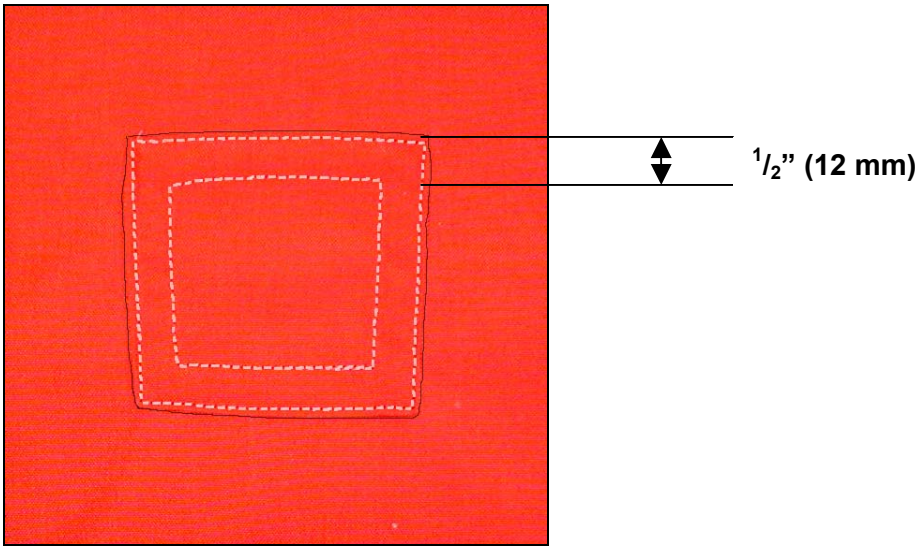
Figure 45. Steps c., d. and e. Patching



f. Roll an edge of the patch under itself and single-stitch approximately $^{1}/_{2}$ inch (12 mm) from the original stitch.

g. Repeat this for each edge of the patch, until the patch is secured.

Figure 46. Steps f. and g. Patching



h. Repair closely grouped small holes or tears with one large patch, rather than several small ones.

i. If the damage extends across a seam, the patch may also extend across the seam.

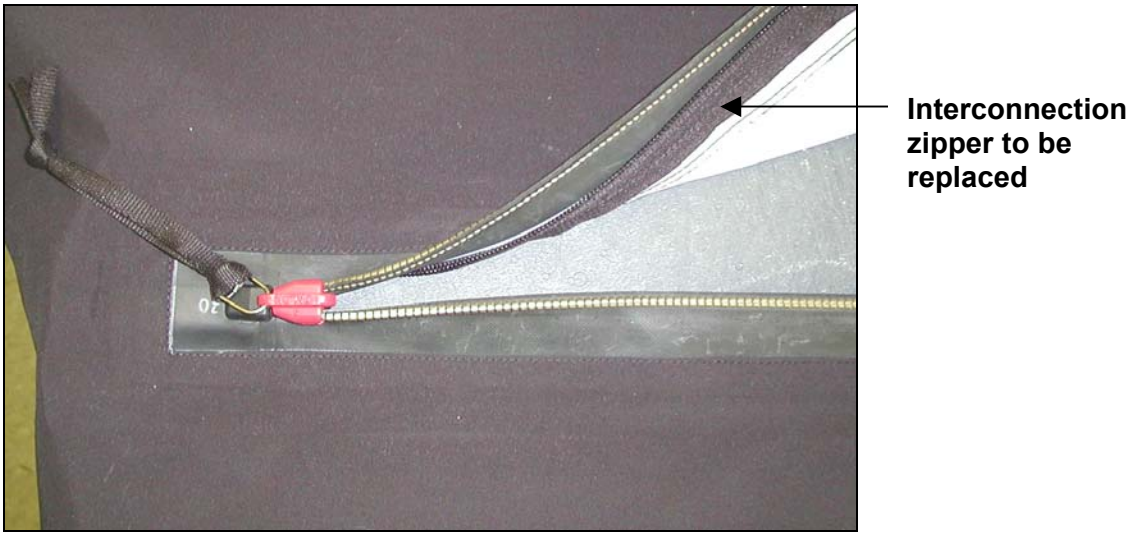
6.7.9 Interconnection Zipper Replacement

NOTE: Only interconnection zippers may be replaced. Do not attempt to replace the waterproof zippers on the Immersion Module.

6.7.9.1 Replace the interconnection zippers as follows:

a. Identify the interconnection zipper to be replaced. Use the list of parts in section 8.0.

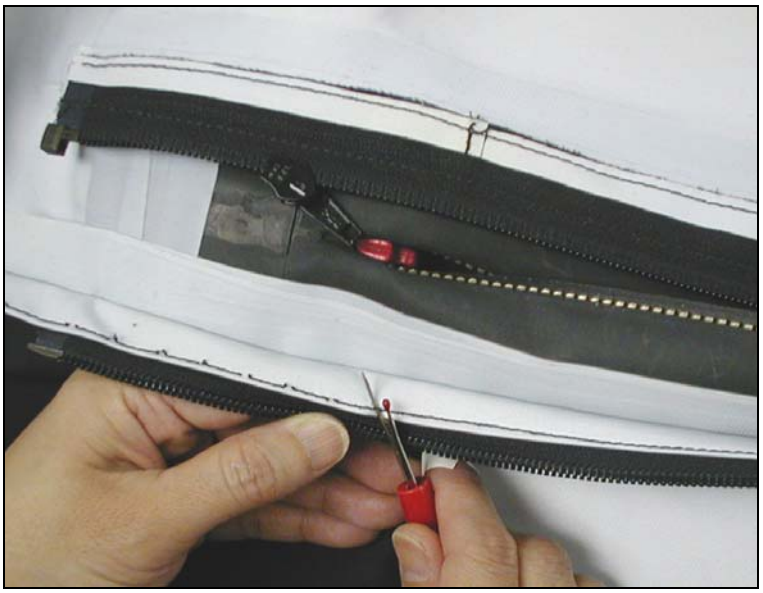
Figure 47. Step a. Interconnection Zipper Replacement



b. Cut the stitching around the zipper (see figure 48); ensuring the beginning of the stitching is broken.

NOTE: Be careful not damage the Immersion Module.

Figure 48. Step b. Interconnection Zipper Replacement



c. Remove the broken zipper by gently pulling it away.

Figure 49. Step c. Interconnection Zipper Replacement

d. Align the edge of the fabric closely to the edge of the replacement zipper tape and sew $^{1}/_{8}$ inch from the edge, until completely attached.

Figure 50. Step d. Interconnection Zipper Replacement

7.0 SUMMARY

The Mustang Survival Industrial Immersion Work Suit Model MSD901 is a constant wear dry suit that protects crewmembers in harsh marine environments with cold-water immersion features and flotation. The suit is easily donned, maintained and stored. Qualified approved technicians, with proper equipment, or Mustang Survival Corp. may make suit repairs. A well-maintained suit means survival in emergencies for which normal clothes were not designed.

8.0 PARTS LIST

These materials are highly recommended for repairs and replacements. Item order quantity is based on their availability. Qualified repair personnel can perform some repairs, with adequate facilities. The manufacturer should do all major repairs, unless otherwise authorized by Mustang Survival Corp.

Figure 51. Parts List for the MSD901 Outer Shell

PART NUMBER	NOMENCLATURE	MIN ORDER QUANTITY
HD7580	BRASS DULL BLACK GROMMET	50 EA
EL101013	ELASTIC LACING	1 ROLL (100 MTRS)
HD768613	CORRUGATED HOSE (ENSURE HIGH QUALITY CABLE TIES ARE APPLIED)	10 EA
HD7630	ORAL VALVE THREAD LOCK	10 EA
FA10512	ORANGE TACKLE	10 MTRS
TA1093	2 IN. SOLAS REFLECTIVE	50 YDS
HD756513	BLACK ALUMINUM EYELETS (SLEEVE POCKET)	50 EA
FA124013	NYLON MESH	10 YDS
HD713913	WAISTBELT BLACK BUCKLE	10 EA
WE701513	1-$^1/_2$ IN. WIDE NYLON WEBBING, WAISTBELT	1 ROLL (50 YDS)
FA100313	BLACK ACRYLIC URETHANE	10 YDS
FA106713	DENIER CORDURA® (KNEES, BUTT)	10 YDS
HD716113	1 IN. BLACK LOOPLOCS	10 EA
HD719013	1 IN. D-RING	10 EA
WE800013	1 IN. BLACK WEBBING (WRIST, THIGH, ANKLE STRP.)	1 ROLL (100 YDS)
VE911013	1 IN. BLACK LOOP FASTENER	1 ROLL (50 MTRS)
VE910013	1 IN. BLACK HOOK FASTENER	1 ROLL (50 MTRS)
VE901013	3/4 IN. BLACK LOOP FASTENER	1 ROLL (50 MTRS)
VE901013	3/4 IN. BLACK HOOK FASTENER	1 ROLL (50 MTRS)
TA1091	1 IN. SOLAS REFLECTIVE	1 ROLL (50 MTRS)
HD756813	BLACK CORDLOC (NECK)	10 EA
HD7770	DOME CAP	20 EA
HD7780	STUD	20 EA
HD7785	SOCKET	20 EA
HD718530	EYELET	20 EA
VE931013	2 IN. BLACK LOOP FASTENER	1 ROLL (50 MTRS)

FA108613	POLYESTER BLACK FLEECE (HANDWARMER PKT.)	5 MTRS
LC102013	CONTINUOUS DIAMOND WEAVE (ZIPPER THONGS)	1 ROLL (2 GROSS)
TH886610	WHITE NYLON THREAD FOR REFLECTIVE TAPE	1 CONE
TH88662	ORANGE NYLON THREAD ON ORANGE FABRIC	1 CONE
TH886613	BLACK NYLON THREAD ON BLACK FABRIC	1 CONE
FA108113	POWERNETTING (NECK SEAL)	
FA108413	FLEECE (NECK)	
HD715213	BLACK FAST TAB	
VE930013	BLACK 2” HOOK FASTENER	
MA7348	NEOPRENE HOOD	1 EA
LA4616	USCG CREST BADGE	5 EA
LA4617	EMBROIDERED FLAG BADGE	5 EA

Figure 52. MSD901 Immersion Module (Part Number MA3007) and Index Numbers

Figure 53. Parts List for the MSD901 22 Immersion Module

INDEX NUMBER	PART NUMBER	NOMENCLATURE	MIN ORDER QUANTITY
1	EL101013	ELASTIC LACING	1 ROLL (100 MTRS)
2	HD756813	CORD LOCKS	10 EA
3	VE910013	BLACK HOOK FASTENER 1 IN.	1 ROLL (50 MTRS)
4	VE911013	BLACK LOOP FASTENER 1 IN.	1 ROLL (50 MTRS)
5	TA108113	WIDE RIBBON TAPE $^{5}/_{16}$ IN.	1 ROLL (100 YDS)
	MA7650	SUSPENDERS	1 PAIR

Figure 54. Zipper List for the MSD901 Immersion Module

INDEX NUMBER	SUIT SIZE	PART NUMBER	NOMENCLATURE	MIN ORDER QUANTITY
Z1	S	Zi9190LH	12 $^{1}/_{2}$ IN. LEFT HALF OF ZIPPER (BACK)	10 EA
	M	Zi9190LH	"	10 EA
	L	Zi9190LH	"	10 EA
	XL	Zi9190LH	"	10 EA
	XXL	Zi9190LH	"	10 EA
Z2	S	Zi916213LH	9 IN. ZIPPER BLACK (WRIST)	10 EA
	M	Zi916213LH	"	10 EA
	L	Zi916213LH	"	10 EA
	XL	Zi916213LH	"	10 EA
	XXL	Zi916213LH	"	10 EA
Z3	S	ZI9138LH	28 IN. LEFT HALF OF ZIPPER (COIL PIN)	10 EA
	M	ZI9138LH	"	10 EA
	L	ZI9138LH	"	10 EA
	XL	ZI9138LH	"	10 EA
	XXL	ZI9138LH	"	10 EA
Z4	S	Zi9195LH	18 IN. LEFT HALF OF ZIPPER (COIL PIN)(NECK)	10 EA
	M	Zi9195LH	"	10 EA
	L	Zi9195LH	"	10 EA
	XL	Zi9195LH	"	10 EA
	XXL	Zi9195LH	"	10 EA

Figure 55. MSD901 Thermal Liner (Part Number MA3010) and Index Numbers

Figure 56. Parts List for the MSD901 Thermal Liner

INDEX NUMBER	PART NUMBER	NOMENCLATURE	MIN ORDER QUANTITY
1	FA125113	NYLON DRAINAGE MESH FOR PATCHING	5 YDS
2	FA124213	NYLON MESH FOR PATCHING	1 YD
3	TH850513	BLACK QUILTING THREAD	1 CONE

Figure 57. Zipper List for the MSD901 Thermal Liner

INDEX NUMBER	SUIT SIZE	PART NUMBER	NOMENCLATURE	MIN ORDER QUANTITY
Z1	S	Zi916213RH	9 IN. RIGHT HALF OF ZIPPERS	10 EA
	M	Zi916213RH	"	10 EA
	L	Zi916213RH	"	10 EA
	XL	Zi916213RH	"	10 EA
	XXL	Zi916213RH	"	10 EA

INDEX NUMBER	SUIT SIZE	PART NUMBER	NOMENCLATURE	MIN ORDER QUANTITY
Z2	S	ZI9195RH	18 IN. RIGHT HALF OF ANKLE ZIPPER	10 EA
	M	ZI9195RH	"	10 EA
	L	ZI9195RH	"	10 EA
	XL	ZI9195RH	"	10 EA
	XXL	ZI9195RH	"	10 EA
Z3	S	ZI9190RH	12 1/2 IN. RIGHT HALF OF WRIST ZIPPER	10 EA
	M	ZI9190RH	"	10 EA
	L	ZI9190RH	"	10 EA
	XL	ZI9190RH	"	10 EA
	XXL	ZI9190RH	"	10 EA
Z4	S	ZI9160RH	41 1/2 IN. RIGHT HALF OF ZIPPER	10 EA
	M	ZI9160RH	"	10 EA
	L	ZI9401RH	"	10 EA
	XL	ZI9401RH	"	10 EA
	XXL	ZI9161RH	"	10 EA
Z5	S	ZI9138RH	28 IN. RIGHT HALF OF NECK ZIPPER	10 EA
	M	ZI9138RH	"	10 EA
	L	ZI9138RH	"	10 EA
	XL	ZI9138RH	"	10 EA
	XXL	ZI9138RH	"	10 EA

Figure 58. Expendables List for the MSD901

INDEX NUMBER	PART NUMBER	NOMENCLATURE	MIN ORDER QUANTITY
1	GL1027	ADHESIVE GLUE	1 CAN (5.28 galls US)
2	MI5008	AQUASEAL FORMULA ZIPCARE	24 EA