



FOR MODEL NUMBER MSD660 / MSD660 GS

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# OWNER'S MANUAL SENTINEL™ SERIES/ AVIATION RESCUE SWIMMER/ DRY SUIT

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## MOBILITY BASED SIZING™

In order to take your measurements correctly and select the appropriate size, please follow the instructions provided on our website at:

[www.mustangsurvival.com/mobility](http://www.mustangsurvival.com/mobility)

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MSD660 / MSD660vGS AVIATION

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## DESCRIPTION

### MSD660 / MSD660vGS – AVIATION RESCUE SWIMMER DRY SUIT

THE SENTINEL™ SERIES AVIATION RESCUE SWIMMER DRY SUIT IS A WATERPROOF, BREATHABLE, FR CONSTANT WEAR DRY SUIT DESIGNED TO AID IN HYPOTHERMIA PROTECTION FOR EXTENDED OVER WATER MISSIONS IN COLDER CLIMATES.

The MSD660 and MSD660 GS is based on the Sentinel™ Series platform and offers a great deal of mobility and comfort. Optimizing fit, comfort and functionality are extremely important, especially when a poorly fitted suit can impede on a mission's efficiency and your safety. Validated by NAVAIR and the SAR Model Manager Office, Naval Special Warfare, and swift water and ice rescue instructors and trainers, our Sentinel™ Series is designed to be compatible with all types of equipment used in these environments.

- Waterproof breathable tri-laminate NOMEX®/GORE-TEX® shell fabric (MIL-DTL-32149)
- Mobility Based Sizing™ reduces bulk and increases range of motion, offering a semi-custom size fit without the custom price tag
- Low profile, lightweight and corrosion resistant YKK Aquaseal® waterproof front entry and relief zippers
- Two-point attachment removable suspender system for an improved fit, mobility and comfort
- Rapid Repair Technology™ enables users to self-replace neck and wrist seals and repair small leaks in an hour or less
- Rapid Repair latex wrist and neck seals with FR protective wristover cuffs and NOMEX® fleece neck cover
- Reinforced elbows, knees, and seat
- Right arm air exhaust valve to vent excess trapped air out of the suit
- Flexible molded foam knee and elbow pads to help prevent injury and still allow the use of external knee pads
- Neoprene cummerbund Velcro® waist adjustment
- Integrated NOMEX®/GORE-TEX® dry socks
- Left arm low profile zippered shoulder pocket with dual pen holders
- 2 expanding thigh and calf pockets with Velcro® closures
- SOLAS grade retro-reflective tape on the upper shoulders and arms for increased visibility.
- 1 Package of YKK® lubricant

# MSD660 / MSD660vGS – AVIATION RESCUE SWIMMER DRY SUIT (CONT'D)

The MSD660 / MSD660 GS is easily donned/doffed by the wearer using a diagonal watertight entry zipper across the torso and wearer's left shoulder and includes a relief zipper. Customized fit can be achieved through adjustment of the internal suspenders to modify trunk length for improved range of motion.

Every MSD660 / MSD660 GS produced by Mustang is leak tested to ensure waterproof integrity prior to leaving our factory. All suits are 100% tested to ensure the highest level of reliability and performance.

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**WARNING: DRY SUITS ALONE PROVIDE INADEQUATE PROTECTION FOR EXTREME CLIMATE DIFFERENCES. ALL USERS SHOULD WEAR APPROPRIATE THERMAL UNDERGARMENTS TO PREVENT HYPOTHERMIA (IN COLD CLIMATES) AND MOISTURE WICKING UNDERGARMENTS TO PREVENT HEAT STROKE (IN WARM CLIMATES).**

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**WARNING: DRY SUITS ARE NOT INHERENTLY BUOYANT. ALL USERS SHOULD WEAR APPROPRIATE FLOTATION DEVICES WITH THE DRY SUIT. WATER RESCUE IS INHERENTLY DANGEROUS. USERS SHOULD BE AWARE OF RISKS ASSOCIATED WITH WATER RESCUE AND COMPLETE TRAINING IN THE USE OF WATER RESCUE EQUIPMENT AND TECHNIQUES.**

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## SIZING GUIDE

Exclusively available for the Sentinel™ Dry Suits, we introduce the industry's newest improved fitting platform designed specifically for dry suit users for tactical, rescue or special operations.

Based on more than two years of extensive anthropometric research, range of motion testing and user evaluations, Mobility Based Sizing™ offers users a semi-custom suit that reduces bulk and increases range of motion without the expensive custom price tags or long lead times.

The **Mobility Based Sizing™** platform is like none other currently in the industry.

There are **24** sizes available. To order a suit that fits you best, please follow the instructions provided on our website at:

[www.mustangsurvival.com/mobility](http://www.mustangsurvival.com/mobility)

	EXTRA SMALL	SMALL	MEDIUM	LARGE 1	LARGE 2	EXTRA LARGE	DOUBLE EXTRA LARGE	TRIPLE EXTRA LARGE
SHORT	XXS	SS	MS	L1S	L2S	XLS	XXLS	3XLS
REGULAR	XSR	SR	MR	L1R	L2R	XLR	XXLR	3XLR
LONG	XSL	SL	ML	L1L	L2L	XLL	XXLL	3XLL

## INSTRUCTIONS FOR USE

This manual supplies instructional, maintenance and safety information for the MSD660 / MSD660 GS Aviation Rescue Swimmer Dry Suit.

### NECK SEALS AND WRIST FITTING

The Rubber Neck Seals and Wrist Seals may be trimmed at the initial fitting, but the seals tend to adjust to the wearer after a short period of time. If no excessive seal restriction exists, and seal fit is acceptable to the user, the seals should be left as is. Neck seals shall fit snugly and remain in direct contact with the neck through all normal head movements. Wrist seals shall fit tightly enough to prevent water entry, but not tight enough to restrict blood flow. If seal sizing is required, proceed as follows:

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**CAUTION: TRIM NECK SEALS WITH EXTREME CAUTION. A SMOOTH TRIM LINE IS ESSENTIAL. EXCESSIVE OR CARELESS TRIMMING COULD RESULT IN LOOSE SEALS THAT LEAK AND NECESSITATE REPLACEMENT. AVOID NICKING SEAL FABRIC, AS THIS COULD RESULT IN TEARING THE SEALS WHEN DONNING AND DOFFING, AND ALSO COULD RESULT IN SKIN IRRITATION.**

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1. If neck seal trimming is necessary, mark a line around circumference of neck opening. Trimming increments shall not exceed 1/4 inch at a time.
2. Carefully cut along this line with a sharp pair of scissors.
3. Trim wrist seals in same manner as neck seals, except trimming increments shall not exceed 1/8 inch at a time.
4. After trimming seals, have the user don the suit to determine seal restriction and water-sealing characteristics. Make any additional adjustments to the seal.

## ATTACHING SUSPENDERS

To attach suspenders please follow the instructions below. The removable suspenders can be used to improve fit, lower in-water resistance and reduce rescuer fatigue. Suspenders can be adjusted to a comfortable and secure position.

1. Completely unzip the entry zipper.
2. Open the suit so that the two attachment points are visible.
3. Thread the end of the nylon strap attached to the suit through the rectangular clip on the suspenders.
4. Once the nylon strap has been threaded, flare the sewn folds on the strap to prevent it from passing back through the rectangular clip.
5. Repeat these steps for the other attachment point.
6. Use the suspender strap ends to adjust for a secure comfortable fit.



## DONNING & DOFFING THE DRY SUIT

Before donning the suit, ensure that appropriate undergarments have been selected for the conditions.

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**CAUTION: ALWAYS DON THE DRY SUIT ON A CLEAN SURFACE SUCH AS A TOWEL OR TARP TO AVOID ATTRACTING DEBRIS. PEBBLES, SAND, DIRT AND OTHER DEBRIS ON THE GROUND CAN CAUSE DAMAGE TO DRY SUIT SOCK AND COMPROMISE THE SUIT'S INTEGRITY.**

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**CAUTION: USE EXTREME CARE WHEN DONNING THE DRY SUIT. PRIOR TO DONNING, REMOVE ALL RINGS, WATCHES, EARRINGS, NECKLACES AND EYEGLASSES THAT WILL CAUSE DAMAGE TO WRIST AND NECK SEALS. FOOTWEAR OTHER THAN SOCKS MUST NOT BE WORN INSIDE THE DRY SUIT.**

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## SUIT PREPARATION PRIOR TO DONNING

1. Ensure that the Velcro® wrist covers are unfastened and the ankle gussets are unzipped and opened.
2. Ensure Velcro® waist adjusters are loosened.
3. Ensure that the waterproof entry zipper is fully opened.
4. Ensure the suspenders are pulled out of the suit legs.

# DONNING & DOFFING THE DRY SUIT (CONT'D)

## DONNING THE SUIT

1. Slide your legs into the suit until your toes reach the end of the socks.
2. Don the suspenders. Ensure they are crossed in back but not twisted.
3. Apply talcum powder inside wrist seals.
4. Place the right arm into the right sleeve.
5. Carefully place the right hand into the right cuff 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.
6. Roll the Velcro® wrist covers back and refasten to a snug fit.
7. Repeat Steps 4 - 6 for the left arm.
8. 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 fingers and gently pull the seal outward and down as you push your head through. Flatten any folds or rolls of the seal against the skin.
9. Close the waterproof entry zipper. Reach over your left shoulder with your right hand and grasp the zipper toggle. While holding the top of the zipper, pull the toggle down until the zipper is completely fastened.
10. Ensure the waterproof relief zipper is completely closed and the slider is fully engaged with the zipper stop. Stow the zipper toggle in the yellow loop located under the zipper cover.

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**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 SURVIVAL TIME WHEN IN THE WATER. HAVE A FELLOW TEAM MEMBER DOUBLE-CHECK EACH SLIDE FASTENER TO ENSURE THEY ARE COMPLETELY CLOSED AGAINST THEIR SEALING PLUGS.**

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11. Close ankle gusset zippers and securely fasten the Velcro® adjustment tabs.
12. Burp the suit before water entry. Cross arms in front and gently slide fingers between the neck seal and your neck, squat down and force excess air through the neck opening.



## DOFFING THE DRY SUIT

1. Remove all equipment worn over the suit.
2. Thoroughly rinse down the exterior of the suit while wearing it, paying special attention to the seals and zippers. Remove all dirt, salt and debris.
3. Loosen Velcro® waist and unzip the ankle over cuff zippers.
4. Completely open the outer shell entry zipper and the inner immersion layer waterproof zipper. If not completely open, the zippers face the risk of being damaged during doffing.

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**CAUTION: PLACING UNDUE FORCE ON THE ZIPPER MAY DAMAGE THE SEAL AND HARM THE INTEGRITY OF THE SUIT. NEVER FORCEFULLY YANK ON THE ZIPPER.**

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5. Insert fingers between neck seal and neck. Gently stretch the seal outward and upward while pulling neck seal over your head.
6. Remove hands from wrist seals by holding onto the cuff or pull tab. Point your fingers straight, tucking the thumb underneath the seal. Slowly pull your hand through the wrist seal. Do not make a fist when putting your wrist through the seal or pull on the seal. Once your hands are out the seals invert the seals back out of the suit sleeve so that they are oriented away from the suit.
7. Pull suit down past hips and slide legs from the suit.
8. Follow the cleaning and storage instructions for the suit.

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**CAUTION: PULLING ON THE WRIST SEAL MAY DAMAGE THE SEAL.**

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**NOTE: IF WEARING SUSPENDERS, REMOVE SUSPENDERS PRIOR TO PROCEEDING**

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## CLEANING AND MAINTENANCE

### CLEANING

1. Thoroughly rinse your dry suit after every use.

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**CAUTION: DO NOT DRY CLEAN. DO NOT IRON. DO NOT BLEACH.**

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2. Treat stains with a pre-wash treatment such as Shout® or Spray 'n Wash®. Follow the manufacturer's instructions. Rinse well.
3. Machine wash warm (104° F/40° C) on gentle cycle using a gentle powder or liquid detergent. Do not use fabric softener, bleach or wash-in treatments, as they can affect the suit's breathability.

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**CAUTION: USE ONLY A FRONT LOADING WASHING MACHINE OR A TOP LOADING WASHING MACHINE THAT DOES NOT HAVE AN AGITATOR POST. WASHING MACHINES WITH AGITATOR POSTS CAN DAMAGE THE SUIT.**

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4. Tumble-dry using an air setting

# CLEANING & MAINTENANCE (CONT'D)

## MAINTENANCE

Regular zipper maintenance is recommended to maintain a watertight seal, inhibit corrosion and keep the zipper gliding freely. These steps are essential to zipper longevity:

1. Clean the zipper of any heavy deposits of mud, sand, salt or foreign substances by gently brushing and rinsing the zipper with fresh water.
2. YKK® zippers need to be lubricated on the docking end approximately every 15-20 days of field use. One package of zipper lubricant is included with your suit. Only use the lubricant recommended by Mustang Survival.
  - a. Open the zipper to expose the W-SEAL.
  - b. Open the zipper lubricant, seen in Figure 5, by either ripping the package or tearing at the notch cut-out on the pastic tube seal.
  - c. Squeeze the tube or package gently and apply a small amount of lubricant to the W-SEAL as indicated in Figure 6. Only apply to the indicated areas.
  - d. Flip over the zipper end and lubricate the back in the same highlighted areas as the front.
  - e. Close the zipper.
3. Repeat before long term storage.

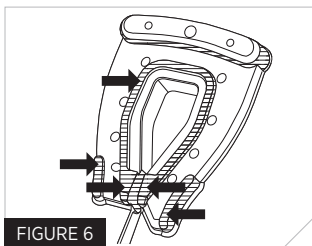
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**CAUTION: DO NOT LUBRICATE THE ZIPPER TEETH.**

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**NOTE: DO NOT DISCARD THE BLISTER PACKAGE OR PLASTIC TUBE. THE ZIPPER LUBRICANT CAN BE STORED IN THE ZIPLOCK BAG AND REUSED**

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## STORING THE DRY SUIT

Hang the suit with all zippers closed.

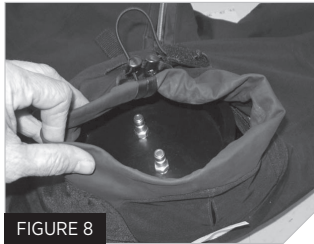
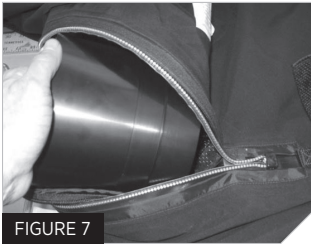
## FOLDING AND PACKING

1. Ensure that the suit is thoroughly clean and dry and that the main entry zipper is in the closed position before folding and packing.
2. Lay the suit flat on its back on a horizontal, clean surface, allowing the suit to be fully extended with none of the parts overlapping.
3. Fold the left sleeve, from the shoulder, straight across the body of the suit. Fold the right sleeve, from the shoulder, straight across the body of the suit on top of the folded left arm.
4. Fold the socks over top of the legs until they reach crotch level.
5. Fold the legs, from the crotch, up to the chest level, right below the folded sleeves.
6. Fold the suit in half.
7. To pack, roll or fold the suit ensuring that the zippers do not crease.

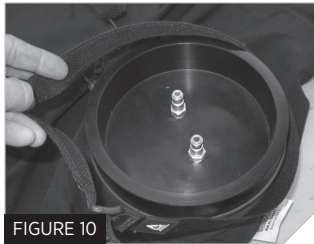
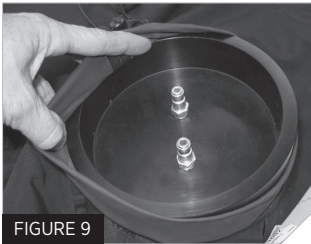
## LEAK TESTING

Leak testing is an important part of regular care and maintenance. For detailed instructions on leak testing Mustang Survival dry suits, please refer to our website [www.mustangsurvival.com](http://www.mustangsurvival.com) to download the **MA8836** user manual.

1. Completely loosen the adjustable neck seal, if equipped. Turn the dry suit inside out.
2. Place the neck plug into the dry suit, through the main entry zipper. **See figure 7.** Close the main entry zipper by reaching in through the neck opening to pull the zipper toggle.



3. Pull the narrower end of the neck plug through the opening of the neck seal. **See figure 8.**
4. Stretch the neck seal to fit securely around the neck plug (the end with the smaller diameter). **See figure 9.**



5. Fit the cinching strap over the neck seal. **See figure 10.**
6. Secure the cinching strap by pulling up the excess strap, and fasten the Velcro closures. **See figure 11.**



FIGURE 11



FIGURE 12

7. Clamp both wrist seals with the clamps provided. **See figure 12.**
8. Connect the two coiled pneumatic hoses to the output side of the control box. The two hoses are interchangeable. **See figure 13.**

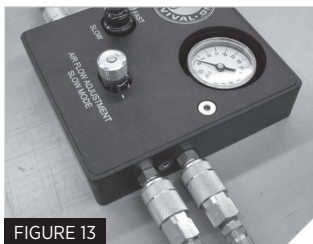


FIGURE 13



FIGURE 14

9. Connect the other ends of the coiled hoses to the neck plug. It does not matter which hose connects to which plug. **Figure 14** shows the correct configuration.
10. Ensure your configuration matches **figure 15**, that shows the two coiled pneumatic hoses correctly attached to the control box and the neck plug.

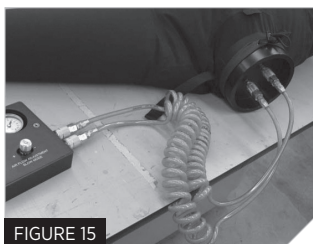


FIGURE 15



FIGURE 16

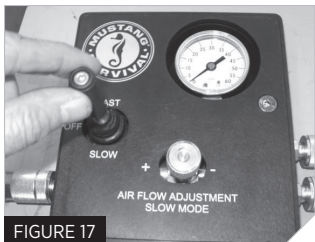


FIGURE 17

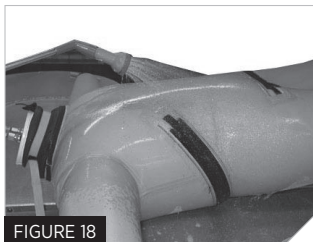


FIGURE 18

11. Connect high-pressure air source to the input side of the control box. **See figure 16.** The air pressure should be no greater than 150 psi.

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**NOTE: ENSURE THE CONTROL LEVER IS SET IN THE OFF POSITION BEFORE THE HIGH-PRESSURE AIR IS CONNECTED.**

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12. The control box has one pressure gauge and two controls. The black control lever has three positions as labeled on the control box. **See figure 17.** The knurled knob can be turned to restrict the airflow traveling into the dry suit.
13. Move the control lever to the fast position. The suit should inflate rapidly. Once the suit appears  $\frac{3}{4}$  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 pressure.
14. Spray the entire suit with a gentle soap and water solution of 0.5% soap to water by weight. Pay particular attention to the seams and zippers. **See figure 18.**
15. 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):
16. Small foamy bubbles collecting slowly on seam: Entrapped air. No leak present, no action required.
17. 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.
18. Steady stream of larger bubbles: Leak. Mark leak area and document on the inspection record.
19. Any other type of bubble formation or any sign of bubbles on a panel shall be treated as a leak.
20. 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.

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**CAUTION: THE USE OF METAL HANGARS MAY DAMAGE THE DRY SUIT.**

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## SUMMARY

The Mustang Survival Dry Suit Test Kit Model MA8836 should be used with Mustang Survival dry suits. Ensure qualified technicians use this equipment. A well-maintained suit means survival in emergencies for which normal clothes were not designed.

## EXHAUST VALVE REPLACEMENT

The exhaust valves (**PART# RE7017**) are designed to be easily replaced. They may be unscrewed and removed with little difficulty. Use the following procedure:

1. Unscrew the top of the valve housing cover.
2. If necessary, use large pliers to remove the valve. Thread damage as a result of removal is not a concern because the old valve is to be discarded.
3. Unscrew the valve body from its core and remove it from the suit.
4. Remove the rubber gaskets; set all valve parts aside.
5. Place a new valve and flapper into the hole, with the suit material between the rubber gaskets, and screw it together. Hand-tighten only.
6. Perform a leak test to ensure the suit is watertight.



FIGURE 19



## REPAIRS

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 repair requirements.

The Sentinel™ Series Aviation Rescue Swimmer Dry Suit takes advantage of Mustang's Rapid Repair Technology™ enables users to self-replace neck and wrist seals and repair small leaks in an hour or less. For detailed information on repair procedures please visit the below website and download the user manual:

**[www.mustangsurvival.com/rapid-repair-technology](http://www.mustangsurvival.com/rapid-repair-technology)**

All major repairs should be performed by the manufacturer. For inspection, testing, and repair information, please contact our customer service department at:

**1 800 526 0532**

**[custserv@mustangsurvival.com](mailto:custserv@mustangsurvival.com)**

## ACCESSORIES

**The following Accessories are available for your MSD660 / MSD660 GS:**

- NEOPRENE SURVIVAL HOOD (PART # MA7348)
- SENTINEL DRY SUIT LINER (PART # MSL600)
- SENTINEL FEMALE DRY SUIT LINER (PART # MSL601)
- YKK ZIPPER LUBRICANT (PART # MA0094)
- SENTINEL™ SERIES BASE LAYERS (MSL602/603/604/605/606)
- SENTINEL SUSPENDERS (PART # MA7649 GB)
- SENTINEL RAPID REPAIR SOCK SINGLE RIGHT (PART # RE0023)
- SENTINEL RAPID REPAIR SOCK SINGLE LEFT (PART # RE0024)
- REPLACEMENT RUBBER NECK SEAL / BERRY COMPLIANT (PART # RE0005vGB)
- REPLACEMENT RUBBER WRIST SEAL / BERRY COMPLIANT (PART # RE0008vGB)
- RAPID REPAIR DRY SUIT PATCH KIT / BERRY COMPLIANT (PART # RE0010vGB)

For more information on these items please visit  
**[www.mustangsurvival.com](http://www.mustangsurvival.com)**

# WARRANTY INFORMATION

## LIMITED WARRANTY

Mustang Survival products are warranted to be free from defects in materials and workmanship for a period of one year from the date of purchase by the initial purchaser (the Customer End user) under normal and intended conditions and use. Proof of purchase may be required at the discretion of Mustang Survival.

Products, which, in the sole judgment of Mustang Survival, have received excessive or abusive use or have been altered in any way by a dealer, the Customer or any other person, will not be covered by this limited warranty. Mustang Survival requires return of the product (postage or delivery costs prepaid by Customer) for inspection before determining whether the product will be covered under limited warranty.

A return authorization is required before the goods are returned and should be obtained by contacting our Customer Service Department. Once returned, Customer Service, Quality Assurance and Sales Departments inspect the product as required. It is then determined whether the product will be covered under this limited warranty. If the product is deemed to be covered under our warranty policy, it will either be repaired or replaced at the sole discretion of Mustang Survival at no charge to the Customer.

The only obligation or liability of Mustang Survival under this limited warranty is to repair or replace the product and Mustang Survival shall not, under any circumstances be liable for loss of use or any consequential damages sustained by the Customer. All other warranties expressed or implied, and remedies with respect to the condition or use of the product, which might otherwise be provided by law in any jurisdiction, are specifically excluded.

## **CONTACT**

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

**TF**        **1 800 526 0532**

**E**         **custserv@mustangsurvival.com**

# MUSTANG ENGINEERED

For 50 years Mustang Survival has been engineering highperformance marine gear for military, coast guard, and rescue personnel. With a focus on applied research and field-testing, we're committed to the protection and enhancement of those who push themselves to extremes. We build gear that saves lives and fuels exploration.

[www.mustangsurvival.com](http://www.mustangsurvival.com)

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