



SENTINEL™ SERIES
RAPID REPAIR
TECHNOLOGY™
USER'S MANUAL

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INTRODUCTION

RAPID REPAIR TECHNOLOGY™

THE SENTINEL™ SERIES DRY SUITS TAKE ADVANTAGE OF MUSTANG'S RAPID REPAIR TECHNOLOGY™ WHICH ENABLES USERS TO SELF-REPLACE NECK, WRIST AND SOCK SEALS IN AN HOUR OR LESS, AND REPAIR MINOR LEAKS IN THE DRY SUIT SHELL.

Qualified repair personnel can normally perform minor repairs, with adequate facilities. This guide covers instructions for using Mustang's Rapid Repair Technology to perform **the following procedures:**

Neck Seal Replacement

Wrist Seal Replacement

Minor Leak Repair

Sock Replacement

WARNING: THE PROTECTION PROVIDED BY YOUR DRY SUIT RELIES VERY MUCH ON ITS WATERTIGHT CHARACTERISTICS. IT IS EXTREMELY IMPORTANT THAT DAMAGED SUITS ARE HANDLED IN ACCORDANCE WITH REPAIR REQUIREMENTS

NOTE: A MUSTANG SURVIVAL REPAIR FACILITY SHOULD PERFORM ALL MAJOR REPAIRS OUTSIDE THE SCOPE OF THIS MANUAL

WORK AREA

The work area where 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 be clear 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.

RAPID REPAIR NECK SEAL INSTRUCTIONS

An online video tutorial of this procedure is available for viewing at mustangsurvival.com. It may be helpful to watch this video in addition to the instructions below.

ASSEMBLE MATERIALS

Make sure that you have all of the necessary equipment and materials to perform the neck seal replacement correctly.

You will need **ONE** of the following tool kits:

Rapid Repair Neck, Wrist and Sock Repair Tool Kit (Part# RE0001v02) OR

Rapid Repair Neck Seal Repair Tool Kit (Part# RE0002) & Rapid Repair Hand Iron (Part# RE0004)

Tools and Equipment Supplied by User: Light work gloves

Additionally you'll need **ONE** of the following Rapid Repair Neck Seals. Use the table below to determine which seal, based on your suit size is appropriate for the repair:

COMES STANDARD ATTACHED WITH SUIT SIZE	SEAL DESCRIPTION	SEAL PART
XS - 3XL	RAPID REPAIR RUBBER NECK SEAL, THIN, LARGE	RE0005vGB-L
-	RAPID REPAIR RUBBER NECK SEAL, THIN, SMALL	RE0005vGB-S
XS - 3XL	RAPID REPAIR RUBBER NECK SEAL, THICK, LARGE	RE0006vGB-L
-	RAPID REPAIR RUBBER NECK SEAL, THICK, SMALL	RE0006vGB-S
XL - 3XL	RAPID REPAIR NEOPRENE NECK SEAL, LARGE	RE0007-L
M - L2	RAPID REPAIR NEOPRENE NECK SEAL, MEDIUM	RE0007-M
S	RAPID REPAIR NEOPRENE NECK SEAL, SMALL	RE0007-S
XS	RAPID REPAIR NEOPRENE NECK SEAL, EXTRA SMALL	RE0007-XS
XS - 3XL	RAPID REPAIR ADJUSTABLE NECK SEAL	RE0012vGB



HEAT REMOVE CURRENT NECK SEAL

The neck seal in your current dry suit can be removed by using a simple heating method with a Mustang Hand Iron.

1. Preheat the iron to its maximum temperature, approximately 310 °F.
2. Place the circle jig inside the suit, white side up, in the middle of the neck seal opening. A properly placed jig will make a nice flat surface for the seal to sit against, with the bulk of the suit and collar out of the way. **SEE FIGURE 1.**
3. Flatten out wrinkles around the perimeter of the neck seal attachment area. Make sure there are no materials caught between the circle jig and the neck seal.
4. Pick a point on the neck seal as a starting point and heat until adhesive has softened, approximately 15 seconds. **SEE FIGURE 2.**
5. Grab neck seal and pull the neck seal away from the suit using only light force. The neck seal will separate from the suit in the area that was heated. Gloves may help as the neck seal will be hot where contacted by the iron. **SEE FIGURE 3.**
6. Continue to heat an adjacent section of the neck seal for 15 seconds.
7. Lightly pull the neck seal to detach the adjacent section. **SEE FIGURE 4.**
8. Repeat steps 6-7 until the old neck seal has been removed.

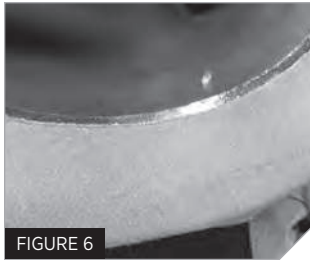
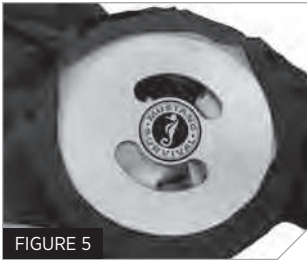
CAUTION: STOP PULLING THE NECK SEAL AWAY FROM THE SUIT WHEN RESISTANCE IS ENCOUNTERED.



PREPPING THE MATERIALS

Once the existing neck seal is removed, it is time to prepare the materials for the neck seal replacement. Make sure you have all of your tools and materials nearby during the replacement process.

1. With the circle jig still inside the suit, center the jig in the middle of the neck seal opening. You should have about 1" of suit material around the outside of the circle jig. **SEE FIGURE 5.**
3. Peel the backing paper off the replacement heat activated neck seal.
4. Place the replacement neck seal into the opening on the suit. The heat adhesive portion of the neck seal should be inside the suit facing up. There should be a 1/8" ($\pm 1/16$ ") edge of adhesive visible around the edge of the suit. **SEE FIGURE 6.**
5. Ensure that there are no wrinkles in the fabric or neck seal. Folding the neck seal in on itself will help to keep its shape and aid in the replacement process. **SEE FIGURE 7.**



ATTACHING A HEAT ACTIVATED NECK SEAL

Once your materials are prepped you are ready to attach your new neck seal.

1. Preheat hand iron to its maximum temperature, approximately 310 °F.
2. Start by heating small sections around the edge of the neck seal for 3–5 seconds to tack and hold the neck seal in place. Continue to check the alignment before heating each spot. **SEE FIGURE 8.**
3. Once the neck seal has been tacked in at least 10 places, lightly heat the entire outside of the neck seal to tack all portions of the seal into place.
4. Cover the neck seal with the non-stick fabric template provided. Carefully use the iron to melt the adhesive on the neck seal. Apply heat to a single section for at least 30 seconds using maximum hand pressure before advancing iron to the next section leaving some overlap with the previously heated section. **SEE FIGURE 9.**
5. Continue around the perimeter of the neck seal applying heat and pressure.
6. Let the neck seal and fabric cool and then remove the circle jig.
7. Inspect for proper adhesion by examining the entire perimeter on both the inside and outside of the suit.
8. Pinhole leaks may be corrected by re-heating the area for an additional 30 seconds using maximum pressure.

INSPECT REPAIR

After installation is complete the suit should be leak tested before use. If a leak originates from a wrinkle in the fabric, the neck seal should be removed and a fresh neck seal installed. Repeat the leak test.

Once you have verified there are no leaks your new neck seal is now ready to be used.



RAPID REPAIR WRIST SEAL INSTRUCTIONS

An online video tutorial of this procedure is available for viewing at mustangsurvival.com. It may be helpful to watch this video in addition to the instructions below.

ASSEMBLE MATERIALS

Make sure that you have all of the necessary equipment and materials to perform the wrist seal replacement correctly.

You will need **ONE** of the following tool kits:

Rapid Repair Neck, Wrist and Sock Repair Tool Kit (Part# RE0001v02)

OR

Rapid Repair Wrist Seal Tool Kit (Part# RE0003v02)

& Rapid Repair Hand Iron (Part# RE0004)

Tools and Equipment Supplied by User:

1. Ruler (optional)
2. Light work gloves
3. Sharp scissors (sewing/fabric scissors recommended)

Additionally you'll need **ONE** of the following Rapid Repair Wrist Seals:

COMES STANDARD ATTACHED WITH SUIT SIZE	SEAL DESCRIPTION	SEAL PART#
XS-3XL	RAPID REPAIR RUBBER WRIST SEAL, THIN, MEDIUM	RE0008vGB-M
-	RAPID REPAIR RUBBER WRIST SEAL, THIN, SMALL	RE0008vGB-S
XL-3XL	RAPID REPAIR NEOPRENE WRIST SEAL, LARGE	RE0009-L
M-L2	RAPID REPAIR NEOPRENE WRIST SEAL, MEDIUM	RE0009-M
S	RAPID REPAIR NEOPRENE WRIST SEAL, SMALL	RE0009-S

* Wrist seals are interchangeable between left and right

NOTE: THE CORRECT ORIENTATION OF WRIST JIG IS SHOWN IN FIGURE 10.

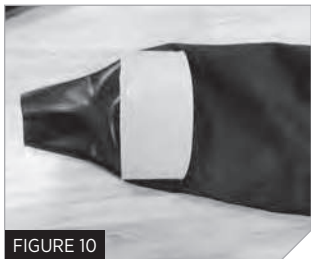


FIGURE 10



FIGURE 11

HEAT REMOVE CURRENT WRIST SEAL

The wrist seal in your current dry suit can be removed by using a simple heating method with a Mustang Hand Iron. All steps should be practiced prior to applications with heat.

1. Preheat the iron to its maximum temperature, approximately 310 °F.
2. Roll the jig to form the smallest possible diameter. **SEE FIGURE 11.**
3. Place the jig inside the suit. **SEE FIGURE 12.**
4. Center the jig about the seal and fabric interface.
5. Flatten out wrinkles around the wrist seal attachment area.
6. Lay the wrist seal flat and place the non-stick fabric sheet on top.
7. Press the iron on the non-stick fabric sheet with moderate pressure for 30 seconds. **SEE FIGURE 13.**
8. Remove the iron from the surface
9. With scissors ready, gently separate the seal from the fabric by lightly peeling. Gloves may help as the wrist seal will be hot where contacted by the iron. **SEE FIGURE 14.**

CAUTION: STOP PULLING THE WRIST SEAL AWAY FROM THE SUIT WHEN RESISTANCE IS ENCOUNTERED.

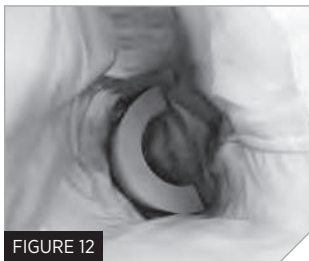


FIGURE 12



FIGURE 13



FIGURE 14

HEAT REMOVE CURRENT WRIST SEAL (CONT'D)

11. Cutting **ONLY** the wrist seal, cut open the wrist seal. **SEE FIGURE 15.**
12. Gently separate one end of the wrist seal from the suit by lightly peeling. Gloves may help as suit will be hot where contacted by iron.
13. Heat adjacent area for 20 seconds, using the non-stick fabric sheet, and continue to pull. **SEE FIGURE 16.**
14. Repeat steps 12 and 13 until seal has been completely separated. **SEE FIGURE 17.**
15. Leave the wrist seal and sleeve to cool prior to completing any further actions.



ATTACHING A HEAT ACTIVATED WRIST SEAL

The wrist seal in your current dry suit can be applied by using a simple heating method with a Mustang Hand Iron. All steps should be practiced prior to applications with heat.

1. Preheat hand iron to its maximum temperature, approximately 310 °F.
2. Flip the suit right side out.
3. Remove adhesive paper backing from wrist seal.
4. Compress the Wrist Seal replacement jig and place it into the wrist seal. **SEE FIGURE 18.**
5. Line up the jig such that approximately 1/2" of the jig is exposed. **SEE FIGURE 19.**
6. Insert the jig and wrist seal into the sleeve from the inside. Ensure that dry suit seam lines up with the seam of the wrist seal jig.
7. Ensure the suit arm becomes taut and 1/8" ($\pm 1/16$ ") of adhesive protrudes from the cuff end. **SEE FIGURE 20.**
8. Center the jig at the wrist seal and suit interface. **SEE FIGURE 21.**



FIGURE 18



FIGURE 19



FIGURE 20



FIGURE 21

10. Center the non-stick paper over the wrist seal where the seal and suit meet and press the iron with firm pressure for approximately 30 seconds.
SEE FIGURE 22.
11. Leave the non-stick sheet on the seal for approximately 10 seconds before removing.
12. Clean off any adhesive that has attached to the non-stick paper.
SEE FIGURE 23.
13. Continue around the circumference of the wrist seal applying heat and pressure to each adjacent section for 30 seconds.



INSPECT REPAIR

After installation is complete the suit should be leak tested before use. If a leak originates from a wrinkle in the fabric, the wrist seal should be removed and a fresh wrist seal installed. Repeat the leak test.

Once you have verified there are no leaks your new wrist seal is now ready to be used.

RAPID REPAIR PATCH INSTRUCTIONS

An online video tutorial of this procedure is available for viewing at mustangsurvival.com. It may be helpful to watch this video in addition to the instructions below.

LIMITS OF REPAIR

It is recommended that the following guidelines be used in determining potential for repair:

- Pinholes and small slits, cuts and tears less than 1 inch in length may be patched by the heat-sealing method.
- Do not patch the neck or wrist seals or socks.
- The total area of patches should not exceed 10% of the suit. Repair no more than 10% of any one panel.
- Any holes larger than a small slit, cut or tear less than 1 inch in length should be sent to Mustang Survival for repair.

ASSEMBLE MATERIALS

Make sure that you have all of the necessary equipment and materials to perform the puncture repair correctly. A list is provided below:

Rapid Repair Dry Suit Patches (Part# RE0010vGB)

Rapid Repair Hand Iron (Part# RE0004)

APPLY PATCH

The puncture in your dry suit can be repaired using a simple heating method with a Mustang Hand Iron. All steps should be practiced prior to applications with heat.

1. Preheat hand iron to its maximum temperature, approximately 310 °F.
2. Turn dry suit inside out.
3. Locate puncture.
4. Lay the dry suit on flat surface such that the inside surface of the suit is facing up.
5. Ensure dry suit material is flat and wrinkle free around the puncture.
6. Ensure area around puncture is both clean and dry.
7. Place the shiny side of the patch downwards so that it is in contact with the inside surface of the dry suit.
8. Ensure the patch is centered over the puncture.
9. Place hot iron on patch and apply pressure perpendicular to the flat surface for approximately 20-25 seconds (55-60 seconds for Fire Resistant Materials).
SEE FIGURES 24 AND 25.
10. Remove iron and turn off.
11. Allow patch and suit to cool for approximately 5 minutes.



INSPECT REPAIR

After repair is complete the suit should be leak tested before use.

It is recommended that a leak test be completed using Mustang Survival's Dry Suit Test Kit (**MUSTANG P/N MA8836**) or equivalent to test the complete integrity of the suit

Once you have verified that there are no leaks your suit is ready to be used.

RAPID REPAIR SOCK INSTRUCTIONS

An online video tutorial of this procedure is available for viewing at mustangsurvival.com. It may be helpful to watch this video in addition to the instructions below.

NOTE: IT IS HIGHLY RECOMMENDED THAT YOU FULLY READ THROUGH ALL THE INSTRUCTIONS BEFORE STARTING THE RAPID REPAIR PROCESS.

ASSEMBLE MATERIALS

Before beginning, make sure that you have all the necessary equipment and materials listed below to perform the sock replacement correctly.

You will need **ONE** of the following tool kits:

- Rapid Repair Neck, Wrist and Sock Seal Tool Kit (Part# RE0001v02)
- OR
- Rapid Repair Hand Iron (Part# RE0004)
- & Rapid Repair Sock Tool Kit (Part# RE0015)

Tools and Equipment Supplied by User:

1. Ruler (optional)
2. Light work gloves
3. Sharp scissors (sewing/fabric scissors recommended)

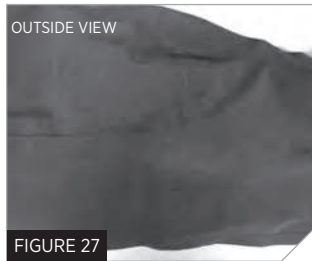
Additionally you'll need **ONE** of the following Rapid Repair Socks

COMES STANDARD ATTACHED WITH SUIT SIZE	SEAL DESCRIPTION	SEAL PART# (RIGHT SOCK)	SEAL PART# (LEFT SOCK)
XS, S	SMALL SENTINEL RAPID REPAIR SOCK - (FITS UP TO US MEN'S SIZE 9)	RE0023-S	RE0024-S
M, L	REGULAR SENTINEL RAPID REPAIR SOCK - (FITS UP TO US MEN'S SIZE 12)	RE0023-R	RE0024-R
XL, XXL, XXXL	LARGE SENTINEL RAPID REPAIR SOCK - (FITS UP TO US MEN'S SIZE 16)	RE0023-XL	RE0024-XL

IDENTIFYING REQUIRED REPAIR METHOD FOR SOCK REMOVAL

The method of sock removal depends on whether your suit has a factory installed sock, or a replacement sock (RE0016). By examining the seam attaching the sock to the suit leg, you can identify if your suit has a factory installed sock or a replacement sock.

If the seam attaching the sock to the suit is sewn and taped, as in **FIGURES 26-27**, the suit has a factory installed sock. Follow the instructions for **“Method A: Replacing a Factory Installed Sock.”**



If your suit does not have a sewn and taped seam, but rather an adhesive seam with a label stating “Rapid Repair Socks,” as in **FIGURES 28-29**, follow the instructions for **“Method B: Repeat Sock Replacement.”**



Once you have identified the method of removal appropriate to your sock, please follow the corresponding instructions below.

METHOD A: FACTORY ORIGINAL SOCK REPLACEMENT

1. Turn the suit inside out so the tape is visible.
2. Identify the seam attaching the sock to the suit. **SEE FIGURE 30.**
3. Once you have identified the seam, make a small cut along the top edge of the tape, just large enough to slide your scissors through. **SEE FIGURE 31.**
4. Carefully cut along the edge of the tape. **SEE FIGURE 32.**

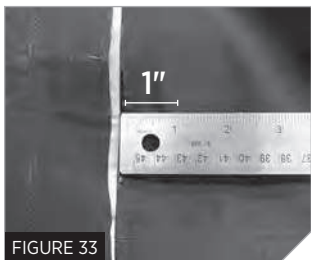
***See Page 18 for instructions on attaching the new sock to the suit leg.**



METHOD B: REPEAT SOCK REPLACEMENT

The rapid repair sock in your current dry suit can be removed by using a simple heating method with a Mustang Hand Iron. Be mindful of avoiding wrinkles on the suit side of the sock seam. This will help during the sock attachment steps. All steps should be read in full and practiced prior to applications with heat.

1. Preheat the iron to its maximum temperature, approximately 310°F.
2. Ensure the suit is right side out
 - a. If the suit has a gaiter, pull the gaiter back so the sock seam is clearly visible.
3. Trim the sock off a minimum of 1 inch away from the sock seam.
SEE FIGURES 33 AND 34.
4. Compress the jig (provided with the repair kit) to form the smallest possible diameter. **SEE FIGURE 35.**
5. Place the jig inside the suit. **SEE FIGURE 36** for the correct orientation of the jig in relation to the sock.
6. Center the jig above the sock and suit leg interface. **SEE FIGURE 37.**
7. Flatten out wrinkles around the sock attachment area.
8. Place the non-stick fabric sheet (provided with the repair kit) on the fabric.
9. Press the iron on the non-stick fabric sheet with firm pressure for 30 seconds.
SEE FIGURE 38.
10. Remove the iron and non-stick sheet from the surface.
11. Wipe off any adhesive that has attached to the non-stick paper so that you have a clean working surface.
12. With scissors ready, gently separate the sock from the suit leg.
Cutting **ONLY** the sock fabric. **SEE FIGURES 39, 40 AND 41.**
13. Gently separate one end of the sock from the suit leg by lightly peeling.
Gloves may help as the sock will be hot where contacted by the iron.
14. Heat the adjacent area for 20 seconds, using the non-stick fabric sheet, and continue to pull. **SEE FIGURE 42.**



15. Rotate the sock and repeat steps 8 to 11 until the seal has been completely separated.
16. Leave the sock and suit leg to cool prior to completing any further actions. Gloves may help when handling the items as they may still be hot where contacted by the iron.



ATTACHING THE NEW SOCK TO THE SUIT LEG

Once you have removed the damaged sock using **Method A** or **Method B** above, the new rapid repair sock can be applied to your dry suit by using a simple heating method with a Mustang Hand Iron. All steps should be read in full and practiced prior to application with heat.

1. Preheat hand iron to its maximum temperature, approximately 310°F.
2. Ensure the suit is right side out.
3. Compress the rapid repair sock replacement jig (provided with the repair kit) and place it into the sock.
4. Line up the jig so that approximately 1" of the jig is exposed around the entire circumference of the top of the sock, as in **FIGURE 43**.
5. Insert the jig and sock into the suit with the toe of the sock facing the bottom of the leg. **FIGURE 44**.
6. Gently push the sock and jig down the leg. Align the inside leg seam with the seam bisecting the grey strip at the top of the rapid repair sock (seam located 1" above the rapid repair sock label). **SEE FIGURES 45 AND 46**.
7. Ensure the suit leg becomes taut and 1/8" (\pm 1/16") of adhesive is visible. **SEE FIGURE 47**.
8. Center the non-stick paper over the replacement sock where the sock and suit meet and press the iron with moderate pressure for approximately 30 seconds. **SEE FIGURE 48**.
9. Leave the non-stick sheet on the suit for approximately 10 seconds before removing.
10. Clean off any adhesive that has attached to the non-stick paper.
11. Continue around the circumference of the suit leg by rotating the jig and applying heat and pressure to each adjacent section for 30 seconds.
12. Let the fabric cool and then remove the jig.
13. Inspect for proper adhesion by examining the entire perimeter on both the inside and outside of the suit.
14. Pinhole leaks may be corrected by re-heating the area for an additional 30 seconds using maximum pressure and the non-stick paper



FIGURE 43



FIGURE 44



FIGURE 45



FIGURE 46

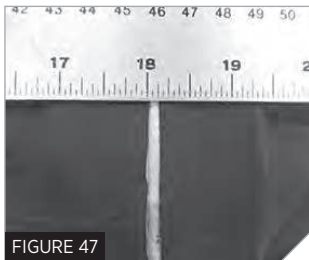


FIGURE 47



FIGURE 48

INSPECT REPAIR

After installation is complete the suit should be leak tested before use. If a leak originates from a wrinkle in the fabric, the sock should be removed and a fresh sock installed using **Method B**. Repeat the leak test. Once you have verified there are no leaks your repaired dry suit is ready to be used.

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 high-performance 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.

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