

**PREVENTIVE  
MAINTENANCE CHECKLIST FOR  
IMPROVED OUTER TACTICAL VEST (IOTV)  
AND  
IMPROVED OUTER TACTICAL VEST GEN II  
(IOTV GEN II)**

PART OF THE  
INTERCEPTOR BODY ARMOR SYSTEM

**NOTICE**

To effectively perform the tasks in this checklist, you must be experienced in using the PMCS table in TM 10-8470-208-10. The item numbers in this checklist are the same as those in the PMCS tables.

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP/TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. You may also send in your recommended changes via electronic mail or by fax. Our fax is DSN 793-0726, and Commercial 309-782-0726. Our e-mail address is [TACOMLCMC.DAFOR2028@us.army.mil](mailto:TACOMLCMC.DAFOR2028@us.army.mil). A reply will be furnished to you.

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**20 MARCH 2011**



**NOTE**

Illustrations in this manual show, for the most part, the IOTV. Unless otherwise indicated, the procedures for the IOTV and IOTV Gen II are identical and the use of IOTV illustrations does not affect the procedure.

**BEFORE USE CHECKS****SOLDIER**

1. Inspect Base Vest Assembly.
  - a. Open the vest assembly and lay it flat on a clean surface so the exterior of the vest is facing the ground and the interior of the vest is facing up.
  - b. Inspect the interior fabric of the vest and collar/yoke assembly for any cuts, frays or abrasions, or any damage that may interfere with the proper function of the body armor. NMC if any cuts, frays, abrasions or damage that may interfere with the proper function of the body armor.
  - c. Inspect the interior fabric of the vest and collar/yoke assembly for any dirt, stains or debris. Brush off any dirt or debris with a brush or rag. NMC if any petroleum-based stains.
  - d. Run hands over entire surface of body armor to ensure ballistic inserts are flat. Smooth out any folds or bunching. NMC if cannot be flattened.
  - e. Check the security of the hook and loop fasteners that close the inside fabric of the vest and that attach the ballistic inserts to the interior vest fabric. NMC if hook and loop fastener tape does not function.
  - f. Run fingers or hand around collar/yoke assembly checking for creases or bunching in the ballistic fabric. Smooth out any folds or bunching. NMC if cannot be flattened.
  - g. Turn vest over so that interior fabric faces down and the exterior fabric faces up (Figure 1).

- h. Inspect the exterior fabric of the vest and collar/yoke assembly for any cuts, frays or abrasions or any damage that may interfere with the proper function of the body armor. NMC if any cuts, frays, abrasions or damage that may interfere with the proper function of the body armor.

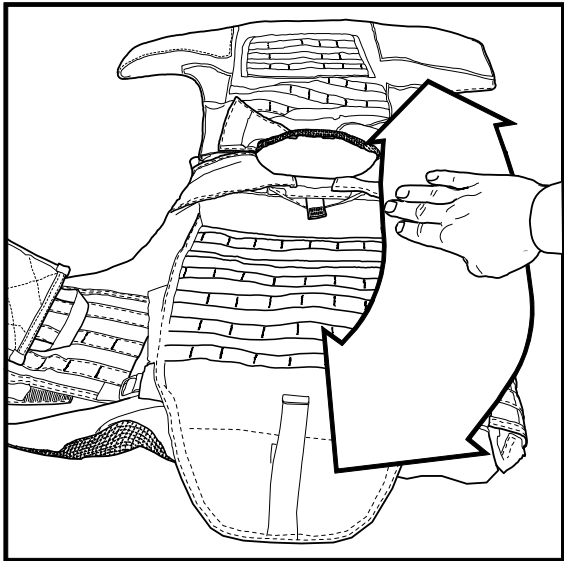


Figure 1. Smoothing Out IOTV.

2. Inspect ESAPI/ESBI plates (Figure 2). Turn in plates if:
- Outer cover is damaged exposing the ceramic tile material.
  - Plate is cracked and you hear loose pieces rattling around when shaken.
  - Creaking or squeaking of ceramic tile heard when plate twisted by hand.

- d. Composite backing is delaminating (backing material plies are separating).
- e. Cracking of the ceramic tile is felt or heard as you firmly pinch the outer ½-inch perimeter of the plate.
- f. Plate has been hit by a bullet or fragment.

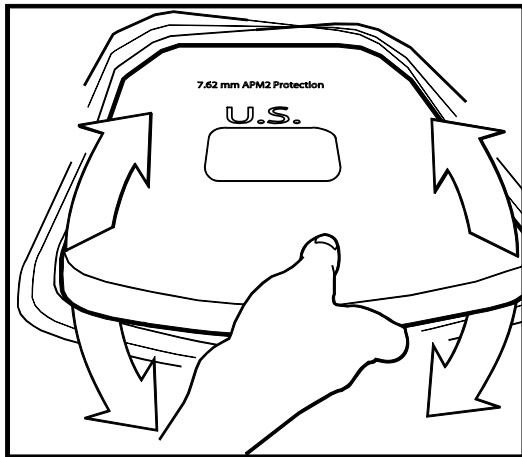
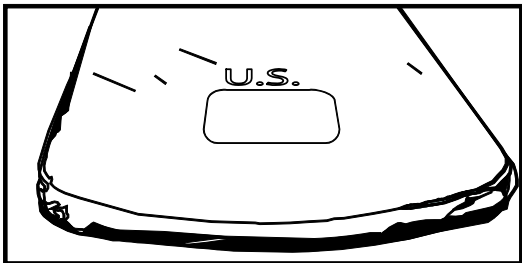


Figure 2. Inspect Plates.

3. Don the IOTV.
  - a. Slip over head if the left shoulder is connected, or slide onto shoulders from right side if left shoulder strap is separated.
  - b. To connect left shoulder straps, sandwich hook and loop fastener strap on front carrier between the two hook and loop fastener straps on back carrier.
  - c. Secure snap fastener.
  - d. Cover the buckle by folding over fabric flaps on carrier and securing hook and loop fastener.

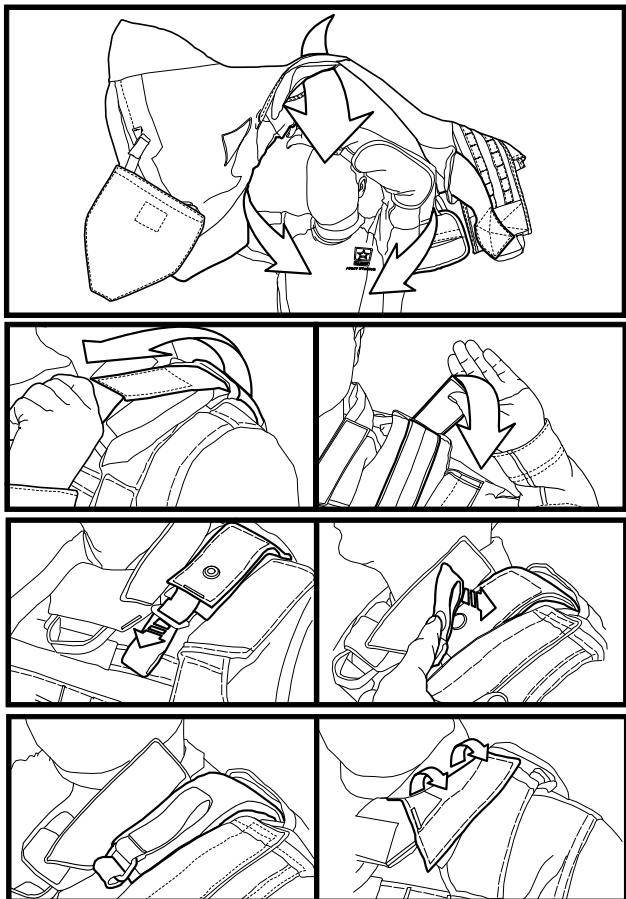


Figure 3. Donning IOTV (Over-the-Head Method).

- e. Secure internal elastic band by lifting front carrier and pulling two halves of the elastic band forward and connecting hook and loop fasteners (Figure 4).
- f. With the front carrier down, lift up the front flap to reveal the side plate carrier attachment points (Figure 5).
- g. Pull on of the side plate carriers around the body and attach to same side hook and loop fastener in front. Repeat with other side.
- h. Close the front flap, securing with hook and loop fasteners, and tuck the bottom of the front flap up into the front flap pocket.

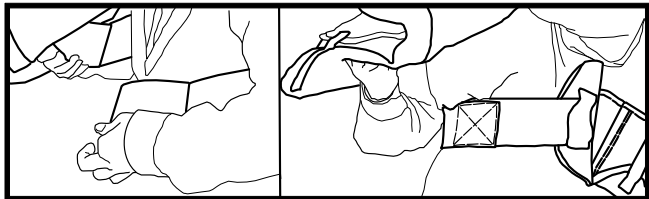


Figure 4. Securing Internal Elastic Bands.





Figure 5. Securing Side Plate Carriers.

**LEADER/SECOND SOLDIER**

4. Check for proper fit of IOTV or IOTV Gen II.
  - a. Carrier should fit snugly with no gaps or folds in fabric. There should be a 1-inch overlap of the front and back carriers under the arm (Figure 6). Readjust if necessary.

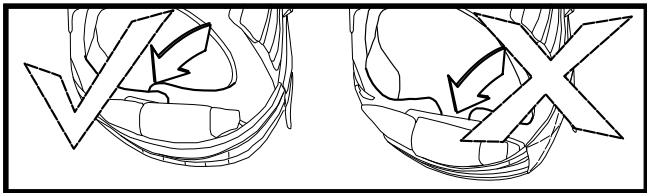


Figure 6. Correct Side Ballistic Protection.

- b. Lift front cover. Side plate carriers should not overlap. Readjust if necessary.

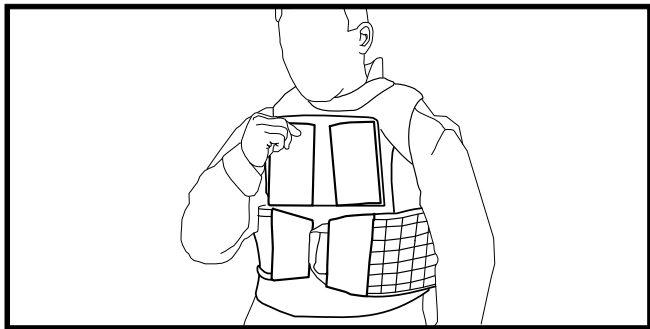


Figure 7. Side Plate Carrier Check.

- c. Any additional pouches or gear should not cross front and back carriers, interfere with the cable release or connect the side plate carrier to the back carrier. Readjust if necessary.

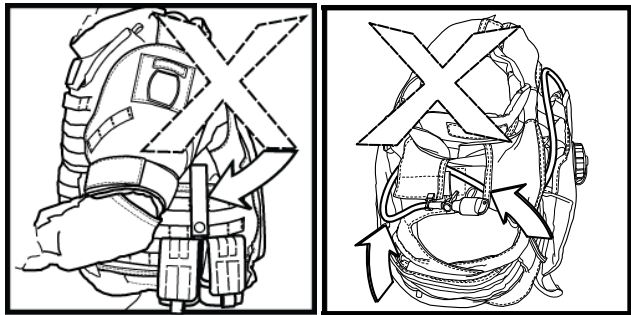


Figure 8. Check for Bridging.

- d. Check both shoulders for proper overlap. Front and back carriers should overlap a minimum of 1-inch. Readjust if necessary.
- e. Check the cable release handle pocket on the front of the vest. The cable release handle should be fully seated and should not be hanging out. (IOTV Only) Ensure the cable stop is present. NMC if cable stop is not present.

5. Check for proper cable release routing.
  - a. Open top panel on back carrier.
  - b. Ensure the long and short cables are not crossing and run freely through the vest. Readjust if necessary.
  - c. Ensure the cable routes through both webbing loops (Figure 10, Items 1 and 2). Readjust if necessary.
  - d. Ensure the cable extends at least 1 ½ inches past the left-most webbing loop (Figure 10, Item 1). NMC if cable is too short.
  - e. Ensure the cable is not taped, tied or otherwise secured to the IOTV and the Land Warrior webbing is not to secure the cable release. Remove any tape or ties.
  - f. Close top flap and open back flap.
  - g. Ensure all six straps from the side plate carriers and internal elastic bands are attached to the three pieces of center webbing.
  - h. Ensure the cable extends at least 1½ inches past the last webbing loop (Figure 10, Item 3). NMC if cable is too short.
  - i. Ensure the cable is not taped, tied or otherwise secured to the IOTV.
  - j. Ensure all excess webbing is secured in the webbing retainer bands (Figure 9).

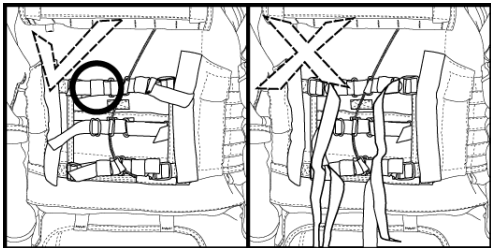


Figure 9. Webbing Properly Stowed.

## 6. Re-seal back flap.

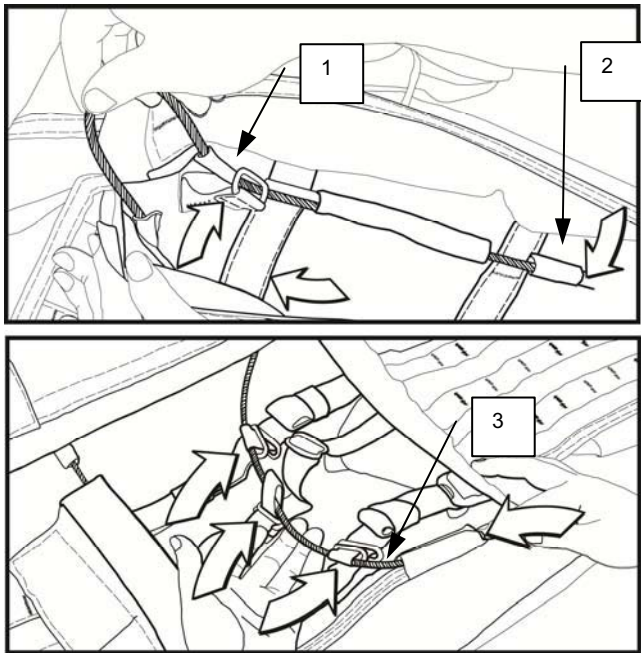


Figure 10. Back Cable Routing.

## 7. Ensure all components are attached to IOTV per unit SOP.

**AFTER USE CHECKS**

**SOLDIER**

8. Doff IOTV.
  - a. Lift front flap and detach side plate carriers by separating hook and loop fastener tapes.
  - b. Lift front carrier and detach elastic band at hook and loop fasteners.
  - c. Either lift the IOTV over the head or separate the left shoulder strap and slide IOTV off the right shoulder.
9. Inspect ESAPI/ESBI plates.
  - a. Turn in plates if:
    - Outer cover is damaged exposing the ceramic tile material.
    - Plate is cracked and you hear loose pieces rattling around when shaken.
    - Creaking or squeaking of ceramic tile heard when plate twisted by hand.
    - Composite backing is delaminating (backing material plies are separating).
    - Cracking of the ceramic tile is felt or heard as you firmly pinch the outer ½-inch perimeter of the plate.
    - Plate has been hit by a bullet or fragment.
  - b. Clean your ESAPI/ESBI thoroughly before storing.
  - c. Place the ESAPI/ESBI into the IOTV pockets in the same manner as when worn. This prevents loss of plates.
  - d. Store the IOTV system as flat as possible to avoid bunching of materials.
  - e. It is recommended that the system, when dry, be stored in a plastic bag to keep out dirt, dust and moisture.

**MONTHLY CHECKS****SOLDIER**

10. Disassemble IOTV.
- Remove SAPI/ESAPI plates from the front and back carriers, if installed (Figure 11).

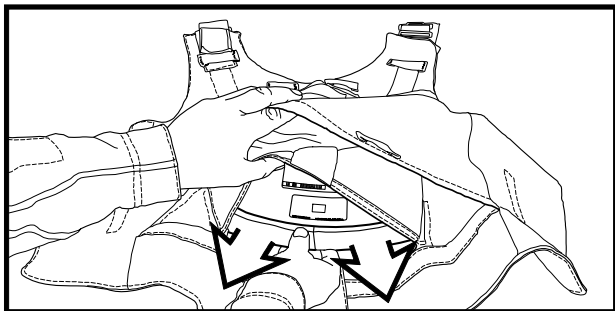


Figure 11. Removing ESAPI Plates.

- Remove ESBI plates from side carriers, if installed (Figure 12).

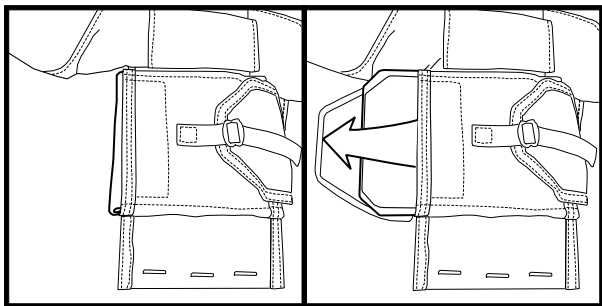


Figure 12. Removing ESBI Plates (IOTV shown).

- c. Remove the deltoid protectors, lower back protector and groin protector, if attached and remove ballistic inserts from each (Figure 13).

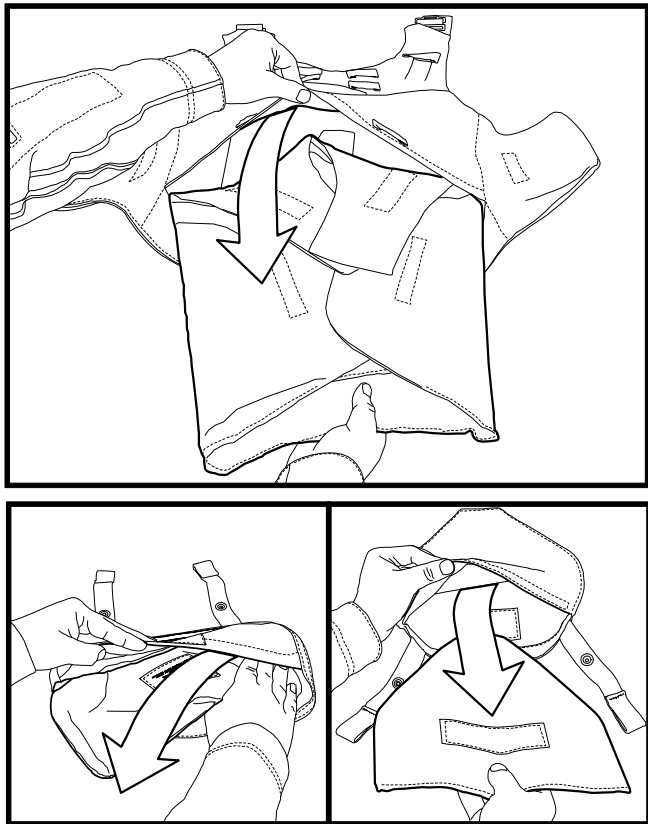


Figure 13. Removing Soft Ballistic Inserts.



- d. Remove yoke/collar from vest and remove yoke/collar ballistic inserts (Figure 14).

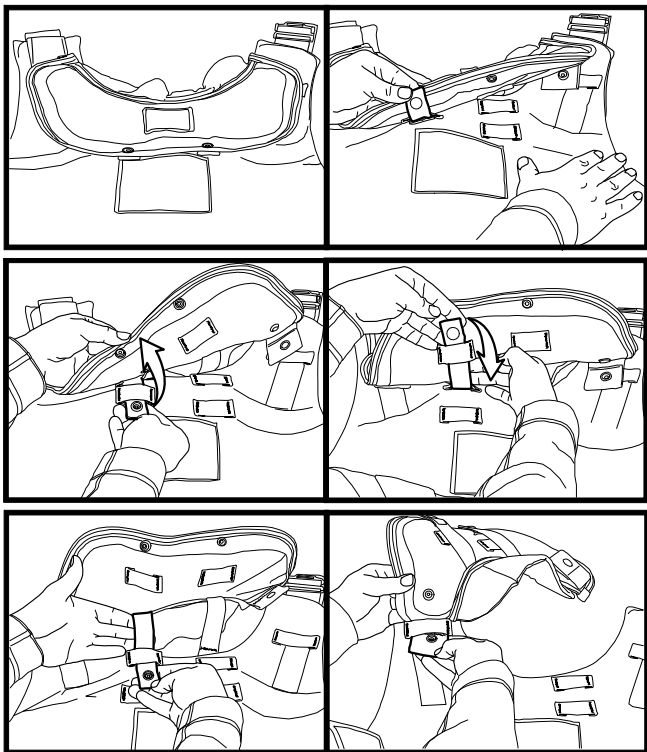


Figure 14. Removing Yoke/Collar Assembly.

- e. Separate the front and back IOTV carriers by removing the cable release completely, and unsnapping and releasing the hook and loop fasteners on the left shoulder.

- f. Remove side plate carriers and internal elastic band.
  - g. Remove ballistic inserts from front and back carriers.
11. Inventory the body armor. Check the data label on each component to ensure each component is in the same size or size range (Figure 15 for IOTV, Figure 16 for IOTV Gen II). NMC if item sizes are mismatched.

- Front Carrier
  - Front Ballistic Insert
- Back Carrier
  - Back Ballistic Insert
- Side Plate Carrier (Right & Left)
- Right & Left Internal Elastic Band
- Cable Release Assembly
  - Cable Stop
- Yoke/Collar Assembly
- Lower Back Protector
  - Lower Back Protector Ballistic Insert
- Groin Protector
  - Groin Protector Ballistic Insert
- Deltoid Protector (x2)
  - Deltoid Protector Ballistic Insert (x2)
- ESAPI (x2)
- ESBI (x2)

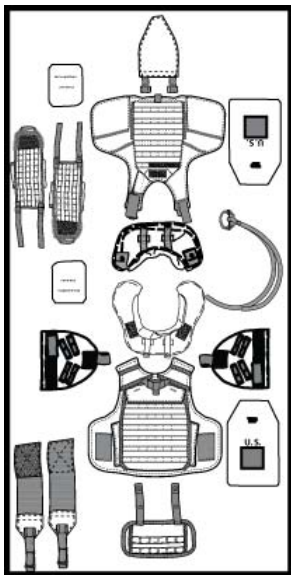


Figure 15. IOTV Inventory.

- Front Carrier
  - Front Ballistic Insert
- Back Carrier
  - Back Ballistic Insert
- Universal Side Plate Carriers (x2)
  - Universal Side Plate Pockets(x2)
- Right & Left Internal Elastic Band
- Cable Release Assembly
- Yoke/Collar Assembly
- Lower Back Protector
  - Lower Back Protector Ballistic Insert
- Groin Protector
  - Groin Protector Ballistic Insert
- Deltoid Protector (x2)
  - Deltoid Protector Ballistic Insert (x2)
- ESAPI (x2)
- ESBI (x2)

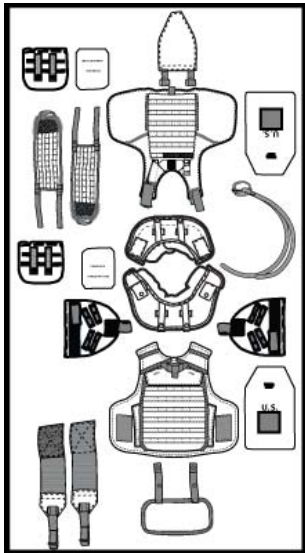


Figure 16. IOTV Gen II Inventory.

12. Inspect each cloth item for tears, punctures or abrasions. NMC if any tears, punctures or abrasions.
13. Inspect soft ballistic inserts for any tear, puncture, abrasion or heavy discoloration. NMC if any damage or heavy discoloration.

14. Inspect each item for heavy staining.
- Apply foaming cleanser (issued with IOTV) to stain and scrub using applicator head (Figure 17). If foaming cleanser is not available, use a mixture of mild detergent and water and scrub with a soft bristle brush.
  - Wait 1 minute and wipe excess foam away with a cloth.



Figure 17. Cleaning IOTV.

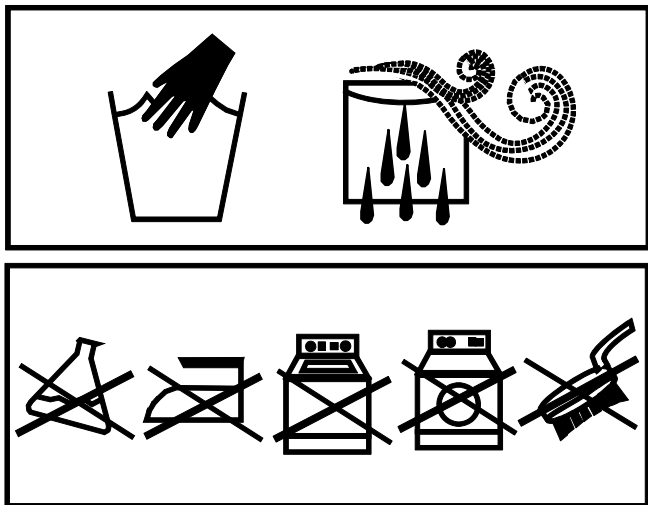


Figure 18. Cleaning Restrictions.

### WARNING

**WASHING IOTV COMPONENTS IN HOT WATER WILL DAMAGE THE FABRIC. WASH IOTV COMPONENTS IN COLD WATER ONLY.**

15. Wash all components, except ESAPI/ESBI, soft ballistic inserts and cable assembly (Figure 18).
  - a. Remove dirt from outer surface using a cloth or soft bristle brush.
  - b. Hand wash IOTV outer-shell and component carrier covers only in cold or warm water, with mild detergent or soap.
  - c. Air dry all components away from direct heat or sun.

16. Clean ESAPI/ESBI plates.
  - a. Remove loose dirt and lint from the outer surface of the ESAPI/ESBI using a cloth or soft bristle brush. Never use a stiff bristle brush.
  - b. Wet the ESAPI/ESBI in a sink or shower using warm, not hot, water.
  - c. Apply a mild soap or detergent to the soiled areas and scrub with a cloth or soft bristle brush. Scrub only long enough to remove soil.
  - d. Heavy grease/oil stains may be pre-spotted with a detergent mixture and scrubbed with a soft brush.
  - e. Rinse the ESAPI/ESBI with warm water until all suds are completely gone.
  - f. Let the plate dry by itself, away from heat or open flame.
17. Clean soft ballistic inserts, and cable assembly with a damp cloth.
18. Install soft ballistic inserts in carrier (front, back, lower back protector, groin protector, yoke/collar, and deltoid protector).
  - a. Lay the carrier on a flat surface with inner side (or side with label) facing up (Figure 19).
  - b. Separate hook and loop seam and install soft ballistic insert with the label side facing up.
  - c. Position insert, aligning the hook and loop tapes and ensuring the carrier material is smooth and flat after the installation.
  - d. Re-seal seam of the insert pocket. NMC is seam does not re-seal.

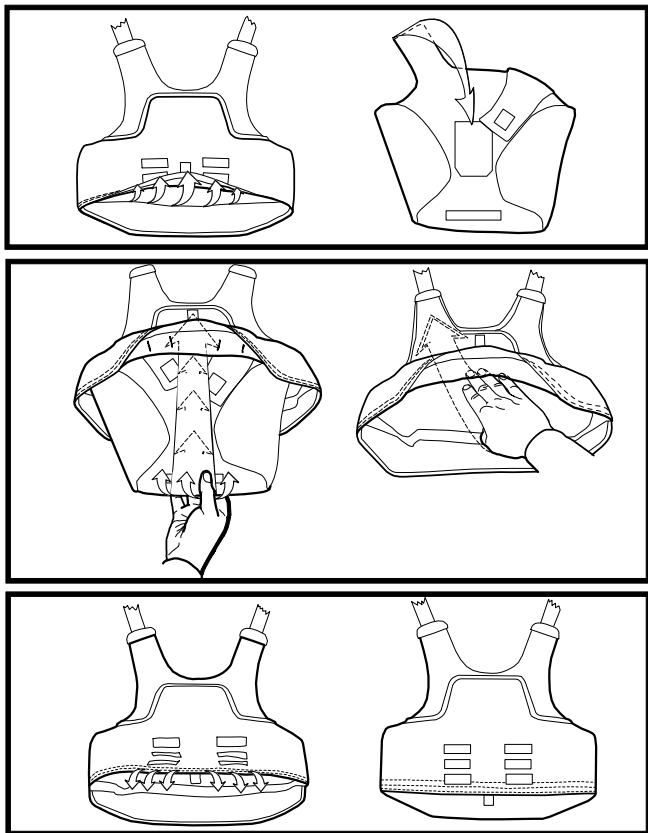


Figure 19. Installing Soft Ballistic Inserts.

19. Install cable release assembly.
- (IOTV ONLY) Route the cables through the grommets on the cable stop. It does not matter which cable goes through which grommet.
  - Insert the cable through the cable release handle pocket and route through the right shoulder (Figure 20).

#### NOTE

On the IOTV Gen II, the cable release routing channel is sewn as one piece throughout the front carrier. The second step in Figure 20 is only required for the IOTV.)

- (IOTV ONLY) Continue to route cable through the release cable webbing channel on the right shoulder of the front carrier (Figure 20).
- Stow the cable-release handle in the cable release handle pocket and secure with the hook and loop patches inside the pocket.
- Adjust right shoulder buckle so that the reducer buckle is even with the cable webbing channel.

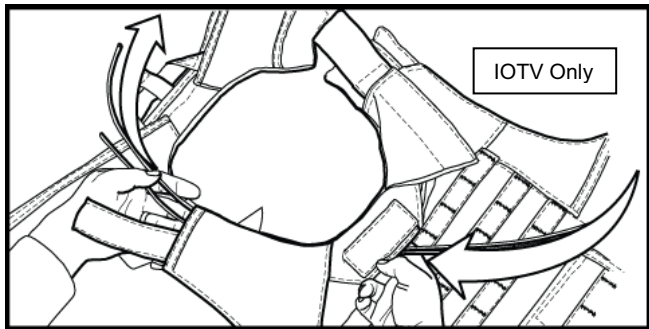


Figure 20. Installing Cable Release on Front Carrier (Sheet 1 of 2).



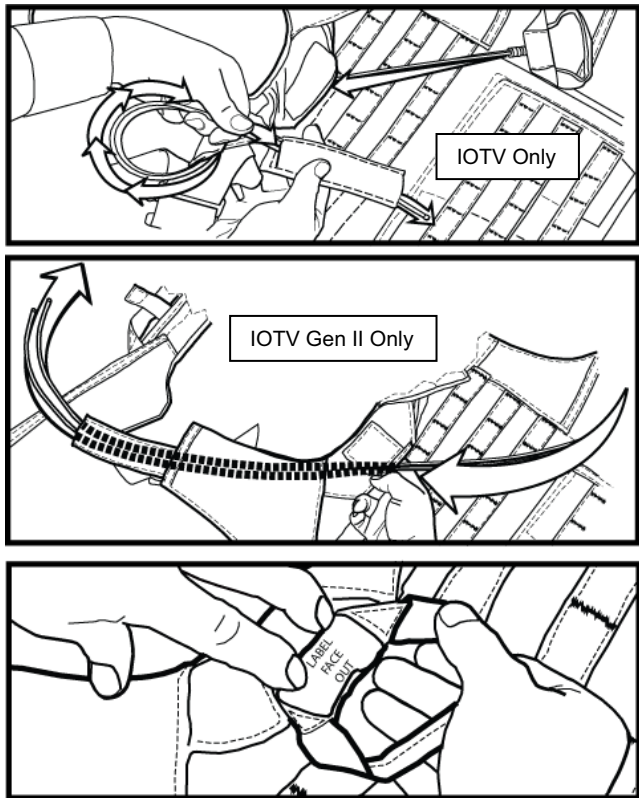


Figure 20. Installing Cable Release on Front Carrier (Sheet 2 of 2).

20. Assemble the front and back carriers.
- Lay both back and front carriers on a flat surface with like shoulder together (right to right, left to left) (Figure 21).
  - Route the left shoulder of the front carrier into the left shoulder of the back carrier. Repeat for right side.
  - Open the upper access panel on the back carrier. The buckle from the front carrier shoulder straps should now be in the back carrier.
  - Route both lengths of the cable release through the opening at the top of the upper access panel.



Figure 21. Connecting Front and Back Carriers.

- e. For both shoulders, insert strap loops into the front carrier shoulder buckles (Figure 22).

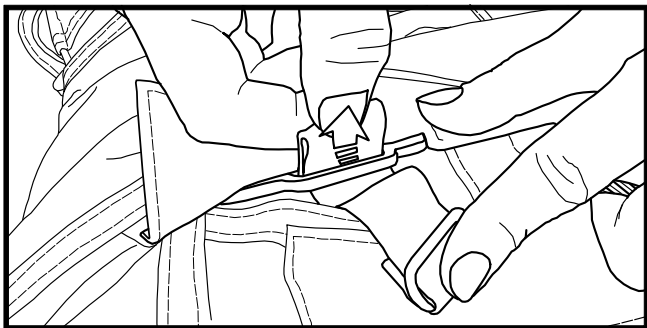


Figure 22. Routing Strap Loops into Front Carrier Shoulder Buckles.

- f. Route the short cable release through the portion of the right hand webbing loop that sticks out of the buckle (Figure 23).
- g. Continue routing the release cable through the center cable routing channel and through the left hand webbing loop that sticks out of the buckle.
- h. Secure upper access panel at hook and loop seam.

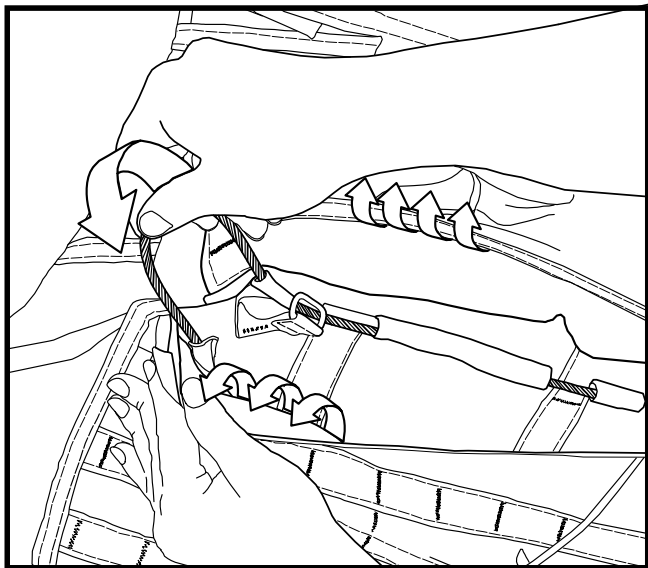


Figure 23. Routing Cable Release (Upper Panel).

21. Install the internal elastic bands and side plate carriers (Figure 24).
  - a. Lay back carrier flat with label side facing down.
  - b. Route the 1-inch strap of the right internal elastic band through the webbing loop and wing channel on the right side of the carrier. Repeat for left side.
  - c. Ensure the internal elastic bands are flat and the labels are facing down (toward the carrier). Route the free end of the 1-inch webbing on the right internal elastic band through the metal ring on the center webbing loop.
  - d. Route the end of the webbing back through the buckle leaving at least 2 inches of excess.
  - e. Route the right side plate carrier through the right wing channel, positioning the metal rings near the webbing loops. The label should be facing the carrier. Repeat for the left side.
  - f. Starting at the top center webbing loop, place the metal ring on the left side plate carrier over the top center webbing. Place the metal ring from the right side plate carrier over the center webbing (right over left).
  - g. Place the metal ring from the left internal elastic band over the middle webbing loop. Place the metal ring from the right internal elastic band over the middle webbing loop (right over left).
  - h. Place the metal ring on the left side plate carrier over the bottom center webbing. Place the metal ring from the right side plate carrier over the bottom center webbing (right over left).
  - i. Route the cable release through the center webbing loops from top to bottom.
  - j. Place end of release cable in the retention pocket.
  - k. Gather any loose straps and secure using elastic keepers.
  - l. Close back pocket and tuck the bottom of back flap up into the back flap pocket.

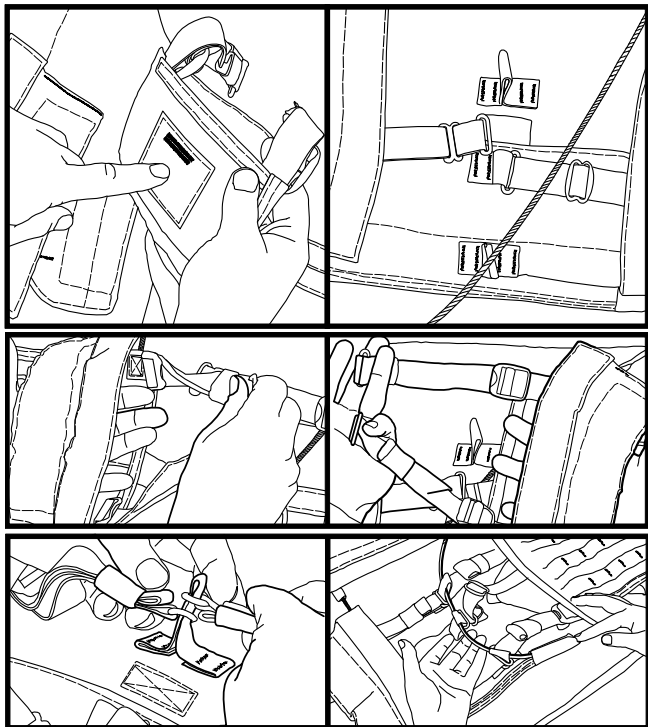


Figure 24. IOTV Cable Routing, Lower Panel.

22. Attach yoke/collar assembly (Figure 25).
  - a. Lay IOTV on a flat surface with the inside surface facing up.
  - b. Position the yoke back collar on the back carrier with label facing up.
  - c. Attach back collar assembly to back carrier using standard MOLLE weave at both attachment points.
  - d. Mate hook and loop fasteners to complete attachment.
  - e. Position the front yoke on the front carrier with label facing up.
  - f. Route side straps on collar through mating loops on carrier and snap.
  - g. Use standard MOLLE weave to attach remaining straps to carrier.

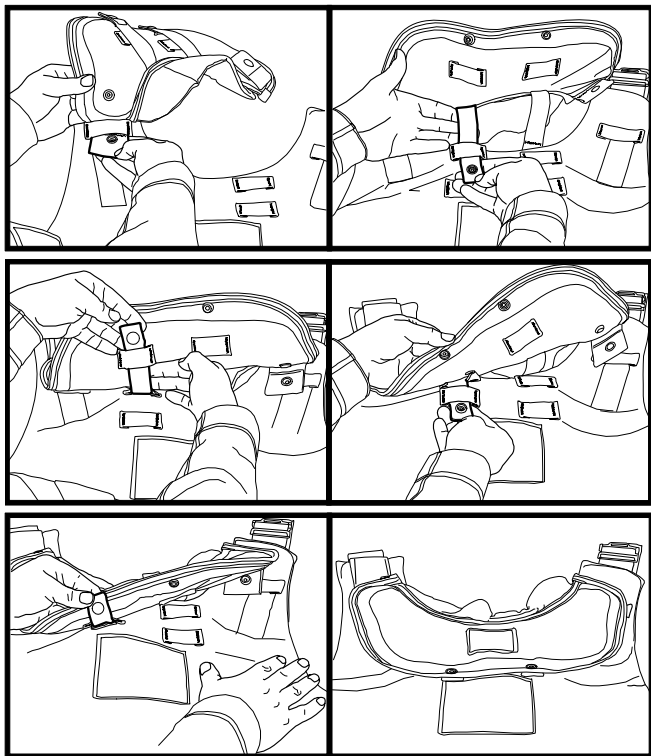


Figure 25. Attaching Yoke/Collar Assembly.



23. Install groin protector and lower back protector (as required) (Figure 26).
- Lay carriers on flat surface with interior facing up.
  - Lay groin protector near bottom of front carrier with label facing up.
  - Route straps on groin protector through loops and snap.
  - Lay the lower back protector near the bottom of the back carrier with label facing up.
  - Route straps on lower back protector through loops and snap.

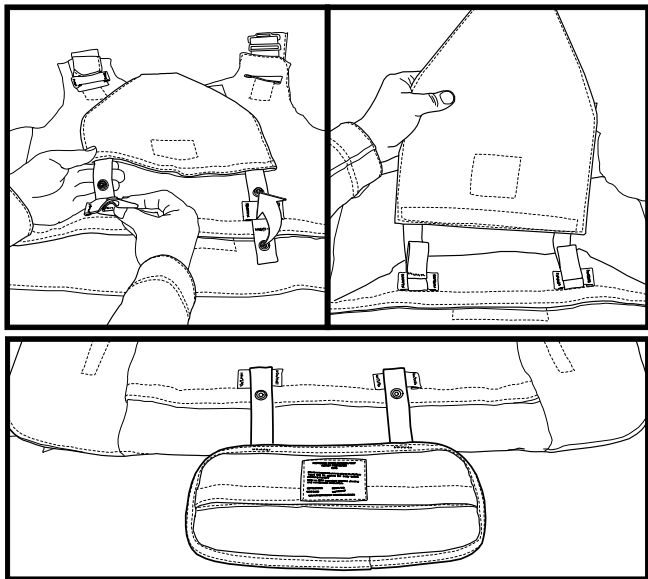


Figure 26. Attaching Groin and Lower Back Protectors.

24. Install deltoid protector (as required) (Figure 27).

- a. Route the nylon webbing at the top of the deltoid protector over the top of the shoulder channels of the IOTV/IOTV Gen II vest.
- b. Continue to route the webbing back underneath the shoulder channels but above the yoke/collar assembly (if installed).
- c. Secure with hook and loop fasteners and repeat for other side.
- d. Don vest. Deltoid protectors should be as high as possible without interfering with motion. Deltoid protectors should be centered on the arm.
- e. Route bicep webbing through straps and snap. Deltoid protector should be above the crease of the elbow.

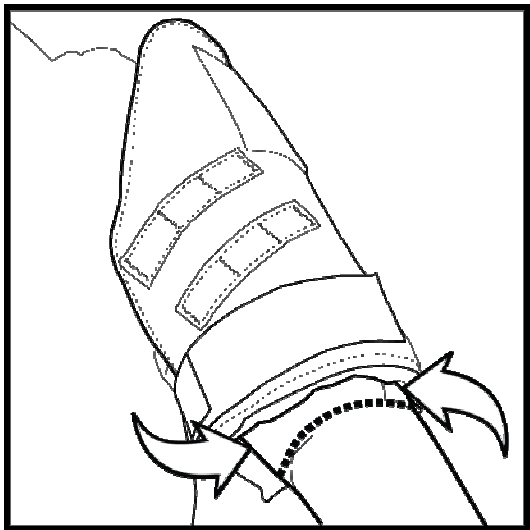


Figure 27. Installing Deltoid Protectors.

25. Install ESAPI plates (as required) (Figure 28).
- Lay carriers on a flap surface with interior facing up.
  - Separate seam to open insert pocket and lift soft armor insert by pulling strap.
  - Insert ballistic plate so that it curves up (label faces up).
  - Secure ballistic plate in pocket by attaching the strap to surface of pocket exterior.
  - Re-seal seam of the insert pocket.
  - Repeat for other plate.

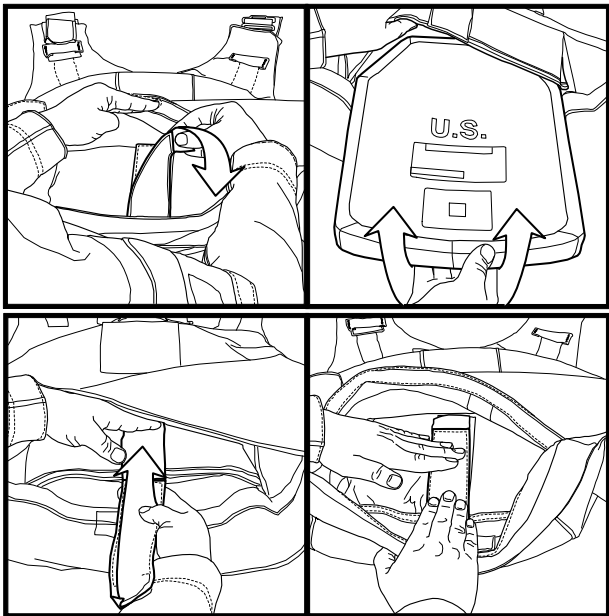


Figure 28. Inserting ESAPI Plates.

26. Install ESBI plates (as required).
  - a. Lay back carrier on flap surface with the interior facing up and side plate carriers folded out, exposing the side plate pockets.
  - b. Unfasten hook and loop fasteners on top flap of side plate pocket and pull out flap.
  - c. Insert the side ballistic plate.
  - d. Fold flap back into pocket and reattach the hook and loop fastener tape.
  - e. If using X-Small ESAPI plates, insert into unbuckled bottom flap and into top flap. Buckle bottom flap closed, ensuring the nylon webbing is routed back through the buckle (from bottom to top).
  
27. Adjust IOTV size (Figure 29).
  - a. Don IOTV.
  - b. When securing the internal elastic bands, ensure the hook and loop fastener tapes are matched and square.
  - c. When securing the side plate carriers to the front carrier, ensure the side plate carriers are squared on the hook and loop fastener tape. The hook and loop fastener tape should match as closely as possible.
  - d. Have an assistant open the lower access panel on the back carrier.
  - e. The assistant should tighten straps until the vest fits firmly and comfortably on the body. Ensure all straps are adjusted evenly. Start with the internal elastic bands and then adjust the side plate carriers.
  - f. Secure excess webbing in webbing keepers.
  - g. When completed, close the lower access panel and tuck the bottom up into the back flap pocket.

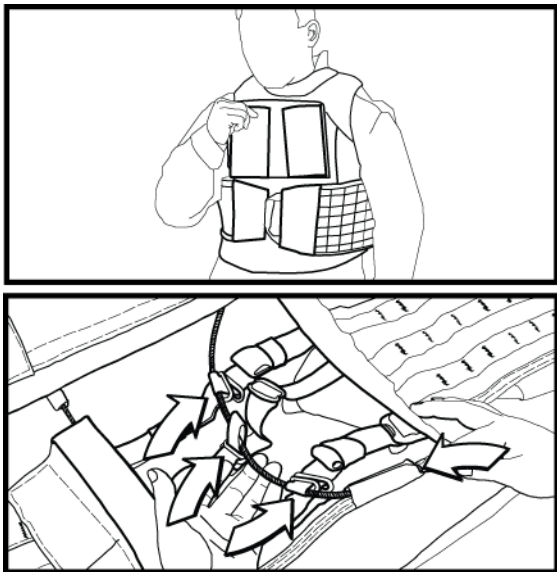


Figure 29. Adjusting Size.

## 28. Adjust ESBI Pocket position (Figure 30).

- a. The ESBI pocket on the IOTV Gen II may be repositioned to provide more protection and comfort depending on individual and mission needs.
- b. To reposition the ESBI pocket, unsnap and remove MOLLE straps. Reattach pockets using standard MOLLE weave as necessary.
- c. The pocket may be adjusted to the front or back of the carrier as necessary.
- d. The pocket may be moved up (toward the head) or down (toward the legs).

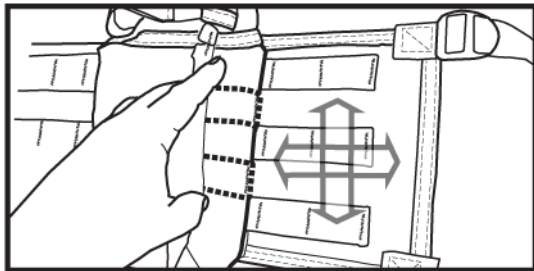
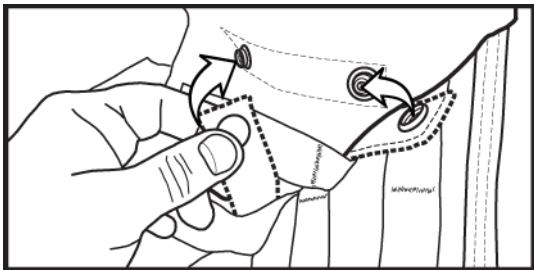
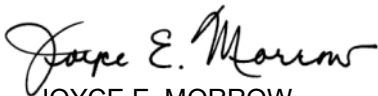


Figure 30. Adjusting ESBI Plates.

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.  
General, United States Army  
Chief of Staff

Official:



JOYCE E. MORROW  
Administrative Assistant to the  
Secretary of the Army  
1107507

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