

# CHAPTER 10

## CMU-29(V)2/P CBR OVERVEST

### Section 10-1. Description

#### 10-1. GENERAL.

10-2. The CMU-29(V)2/P CBR Overvest is used to store the pusher fan and filter canister when the A/P22P-14(V)2 thru (V)4 variant Chemical, Biological, and Radiological (CBR) Respirator Assemblies are worn by fixed wing aircrews. The three respirator assembly variants are configured as the A/P22P-14(V)2, Tactical LOX; A/P22P-14(V)3, OBOGS; and A/P22P-14(V)4, Panel Mounted Oxygen Regulator. Each variant consists of the CBR Mask and Lower Assembly. The Lower Assembly consists of an H-manifold, lower hoses (for delivering both air and oxygen), pusher fan subassembly, and C2A1 canister with appropriate plumbing to connect to either LOX, OBOGS, or Panel Mounted oxygen delivery systems.

#### 10-3. CONFIGURATION.

10-4. The CMU-29(V)2/P Overvest is constructed primarily of nylon mesh, nylon straps and nylon cloth. Adjustable shoulder and waist straps along with a front slide fastener provide a means of fitting and securing the vest to the aircrew. Pockets are provided for stowage of pusher fan and filter canister, battery, flashlight, hook blade knife and oxygen regulator. The chest-mounted oxygen regulators shall be located inside a pocket secured to the vest by means of both slide fasteners and hook and pile tape. The pusher fan and filter canister and the survival item pocket are shown in figure 10-1. An inset or a view-out of the vest panel and straps are shown in figure 10-2. The CRU-79 Oxygen Regulator pocket is shown in figure 10-3, and the CRU-82/P, CRU-88/P and CRU-103/P Oxygen Regulator pocket are shown in figure 10-4. The Panel Mounted regulator configuration

does not use a pocket on the Overvest for the oxygen hose going to the regulator.

#### 10-5. DRAWING INDEX.

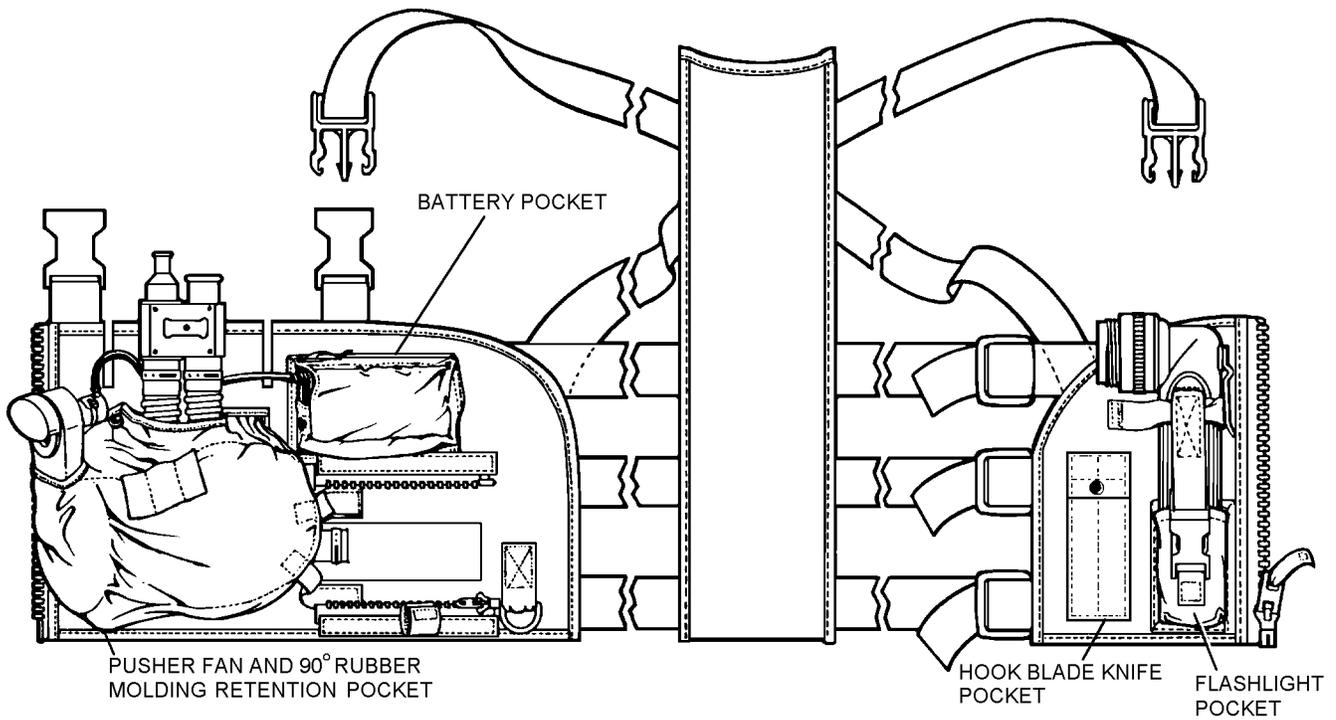
10-6. Table 10-1 indicates the drawing number and nomenclature for the CBR Overvest and components.

**Table 10-1. CMU-29(V)2/P CBR Overvest Drawings Index**

Drawing Number	Nomenclature or Description
3298AS300	Vest Assembly
3298AS320	CRU-79/P Oxygen Regulator Pocket
3298AS330	CRU-82/P, CRU-88/P or CRU-103/P Oxygen Regulator Pocket

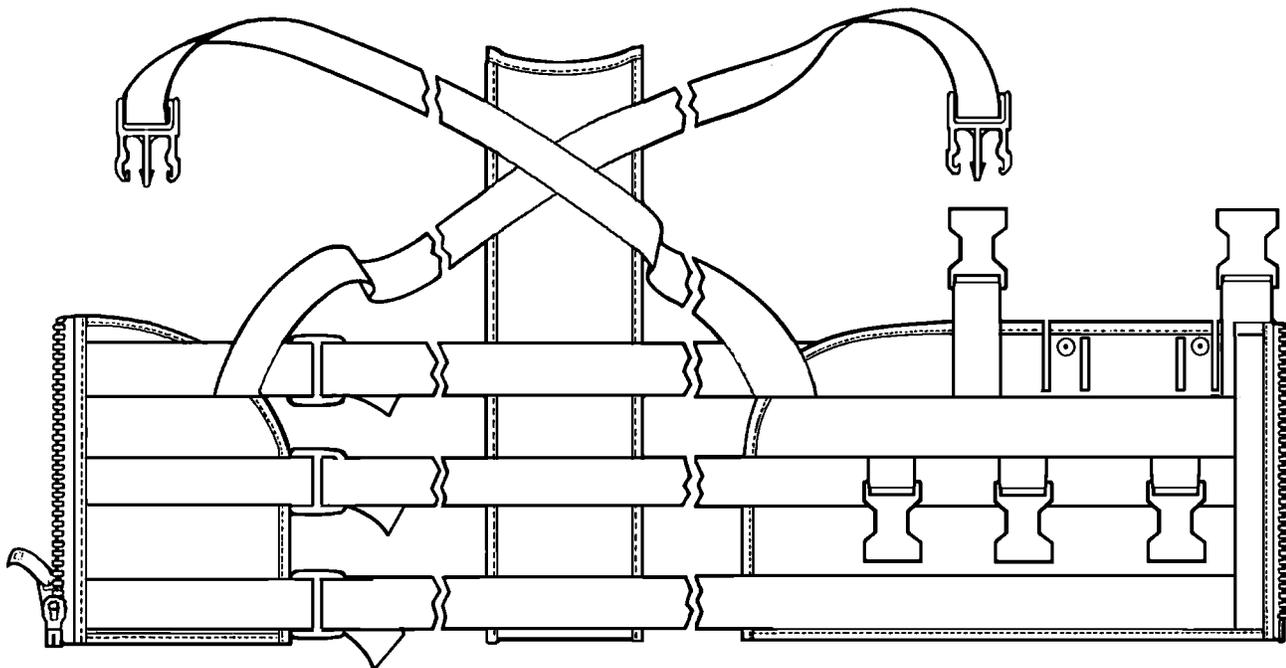
#### 10-7. APPLICATION.

10-8. The CMU-29(V)2/P Overvest is designed for fixed wing aircrews when the A/P22P-14(V)2 thru (V)4 CBR Respirator Assembly variants are required to be worn. The CBR Overvest is worn over either the SV-2B Survival Vest, CMU-33/P Survival Vest, or the ACC 380 Integrated Torso Harness to stow the CBR Respirator Assembly pusher fan and filter canister and various survival items. The illustrations and procedures contained in Chapter 4, should be used in conjunction with the illustrations and procedures in this chapter to properly integrate the A/P22P-14(V)2 through (V)4 CBR Respirator Assemblies with the CMU-29(V)2/P CBR Overvest. The specific equipment worn by each aircrewmember is specified in the NAVAIR 13-1-6 Series Aviation-Crew Systems manuals.



010001

Figure 10-1. CMU-29(V)2/P CBR Overvest



010002

Figure 10-2. CMU-29(V)2/P CBR Overvest, Interior View

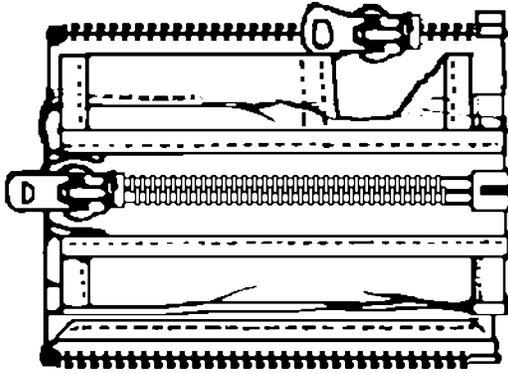


Figure 10-3. CRU-79/P Oxygen Regulator Pocket, P/N 3298AS320-1

010003

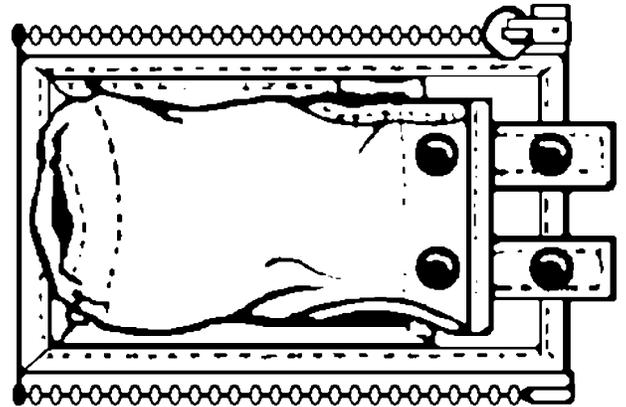


Figure 10-4. CRU-82/P, CRU-88/P, and CRU-103/P Oxygen Regulator Pocket, P/N 3298AS330-1

010004

## Section 10-2. Modifications

### 10-9. GENERAL.

10-10. The only modification authorized for the CMU-29(V)2/P Overvest at this time is modification for C-20/C-40 crew chief configuration.

**10-11. MODIFICATION OF THE CMU-29 OVERVEST FOR C-20/C-40 CREW CHIEF CONFIGURATION.** To modify the CMU-29 Overvest, proceed as follows:

1. Lay out vest with pusher fan pocket facing up.
2. Carefully remove top slide fastener chain for the regulator panel attachment on the vest and carefully remove battery pocket.

#### NOTE

Ensure snap stud is clear of pocket when sewing in place.

3. Place battery pocket (move pocket to top edge of vest) as shown in Figure 10-5, 6 1/2 inches from the slide fastener - vest edge tape. Sew battery

pocket in place using 2 rows of stitching 1/8 inch and 1/4 inch from edge.

4. Identify CRU-103/P pocket P/N 3298AS330-1 and carefully remove both slide fastener chains from regulator panel.

5. Position regulator panel on the vest panel so that it is below the battery pocket with the oxygen outlet hose opening facing the pusher fan pocket.

6. Measure 3 3/4 inches up from bottom edge of vest and place a mark for the lower right corner of the regulator panel touching the edge tape of the vest next to the horizontal straps.

7. Measure 1 3/4 inches up from bottom edge of vest and place a mark for the lower left corner of the regulator panel.

8. Once pocket is in place on the vest as shown in Figure 10-5, sew the slide fastener sides of pocket panel in place using two rows of stitches side by side 1/8 inch from edge. Using the cross stitching of regulator pocket flap as a guide, sew the center of panel in place using one row of stitches and backstitch 3/4 inch minimum on each side.

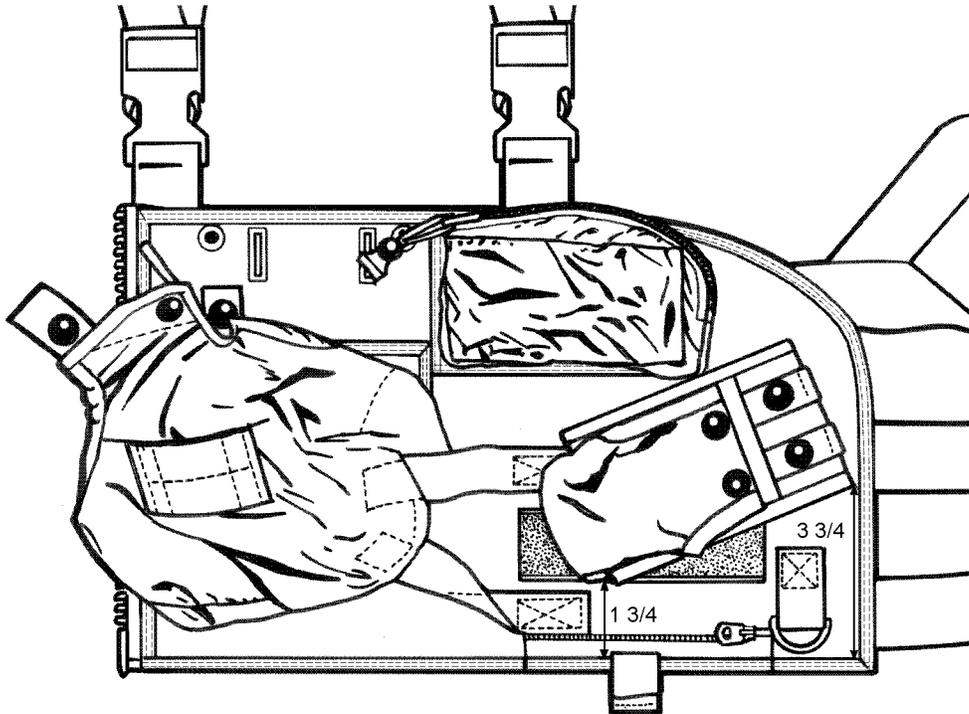


Figure 10-5. Modification for C-20/C-40 Crew Chief Configuration

010005

## Section 10-3. Installation

### 10-12. GENERAL.

10-13. This section contains installation procedures for A/P22P-14(V)2 thru (V)4 Respirator Assemblies; CRU-79/P Oxygen Regulator; CRU-82/P, CRU-88/P, or CRU-103/P Oxygen Regulator; Flashlight and Hook Blade Knife.

**10-14. INSTALLATION OF A/P22P-14(V)2 THRU (V)4 CBR RESPIRATOR ASSEMBLIES.** For installation of the A/P22P-14(V)2 thru (V)4 CBR Respirator Assemblies into the CMU-29(V)2/P CBR Overvest, proceed as follows:

#### NOTE

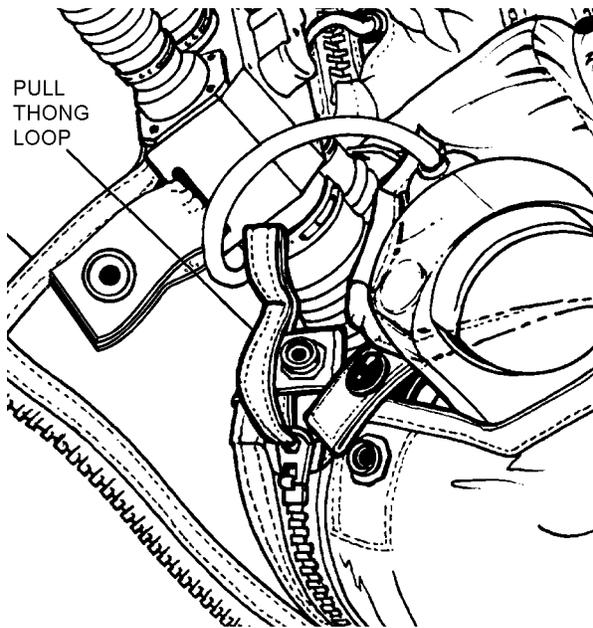
Refer to Chapter 4 for the configuration of the lower assembly, to include the pusher

fan, filter canister, oxygen regulator and oxygen regulator hose for the A/P22P-14(V)2 through (V)4 variants.

1. Place the vest on a clean dry surface with the larger panel, bearing the canister and battery pockets, facing up and the slide fastener on the left.

2. Stow the 90° rubber molding into the retention pocket. Route the regulator hose or connector through the small hole in the retention pocket. Stow the pusher fan subassembly in the retention pocket. Ensure the cable tie is connected directly below the neck of the pusher fan.

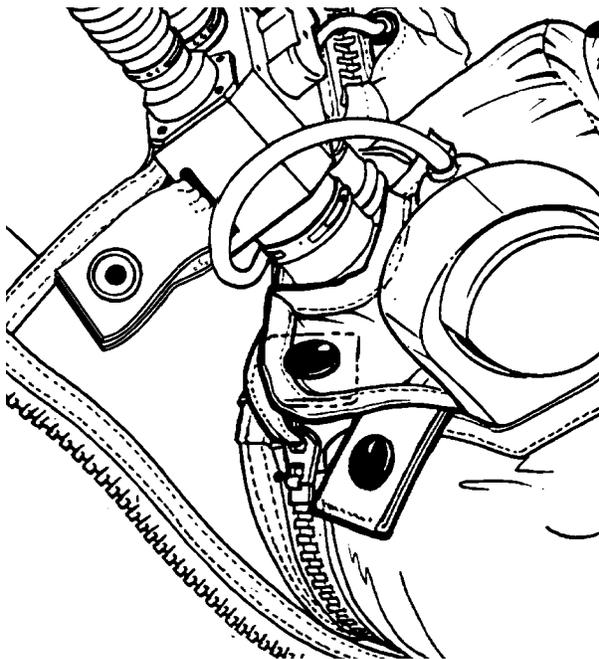
3. Close the pocket slide fastener and insert the tab bearing a snap fastener stud through the loop in the slide pull thong.



Step 3 - Para 10-14

10p14s3

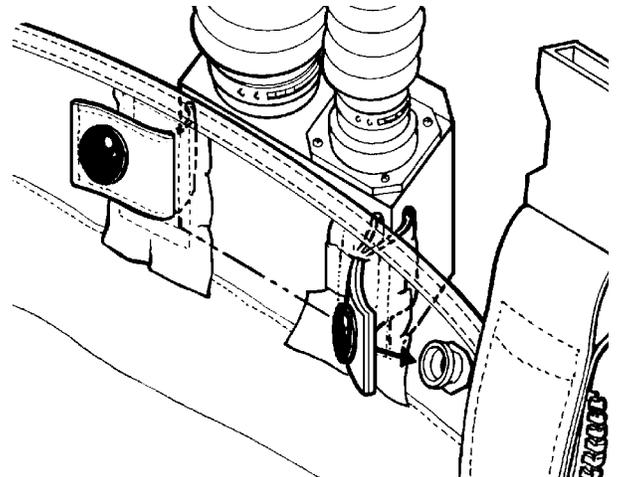
4. Secure in place with the snap fastener socket set in the pocket fabric. Secure the remaining snap fastener.



Step 4 - Para 10-14

10p14s4

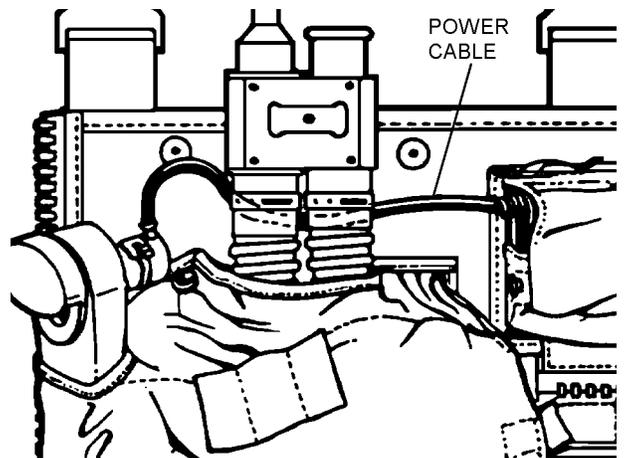
5. Reeve the snap fastener tabs on the H-manifold through the slots in the overvest and mate them to the snap fastener studs on the other side of the panel.



Step 5 - Para 10-14

10p14s5

6. Route the pusher fan power cable under the H-manifold hoses toward the battery pocket. Plug the power cable into a battery, stow and secure the battery in the pocket.



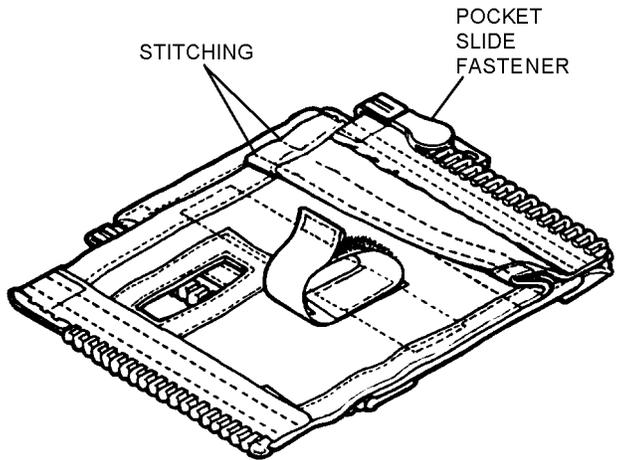
Step 6 - Para 10-14

10p14s6

**10-15. INSTALLATION OF CRU-79/P OXYGEN REGULATOR.** To install the CRU-79/P oxygen regulator, proceed as follows:

## NAVAIR 13-1-6.10

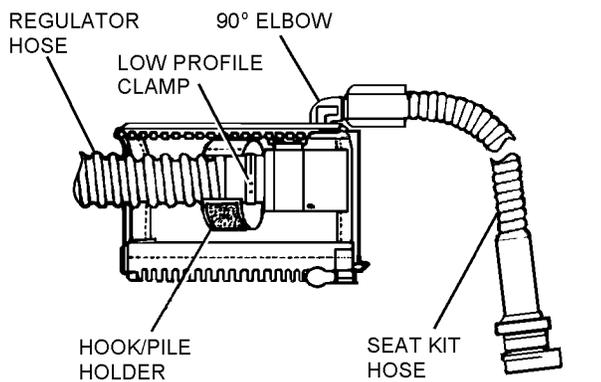
1. To accommodate the larger CRU-79/P Regulator, cut the rows of stitching on the regulator pocket interior closest to the slider and unfold.



**Step 1 - Para 10-15**

10p15s1

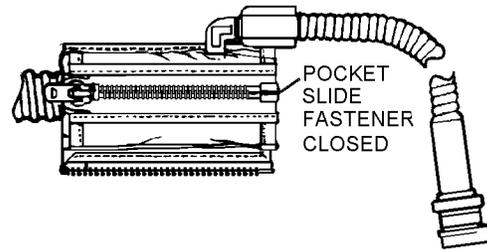
2. To install the CRU-79/P regulator in its pocket, pass the seat kit hose quick-disconnect through the inside rectangular opening. Pull the hose through the opening until the communications connector and 90° elbow are on the outside. Attach the regulator to the hose using the appropriate low profile clamp.



**Step 2 - Para 10-15**

10p15s2

3. Secure the hook and pile tape around the regulator outlet, then close the slide fastener.

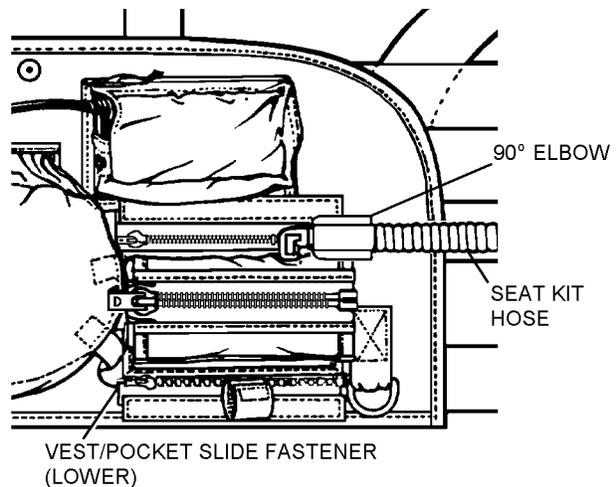


10p15s3

**Step 3 - Para 10-15**

4. Secure the regulator pocket to the vest by engaging the slide fasteners on the vest and pocket.

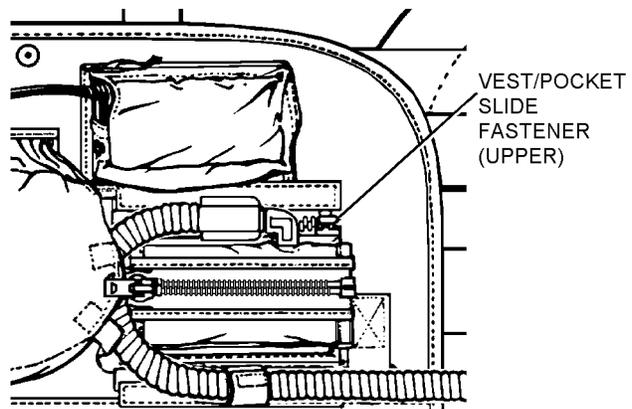
5. Orient the oxygen hose and leave it free as shown.



10p15s5

**Step 5 - Para 10-15**

6. To accommodate an individual with a shorter torso, it may be necessary to route the regulator hose under the retention pocket snaps.

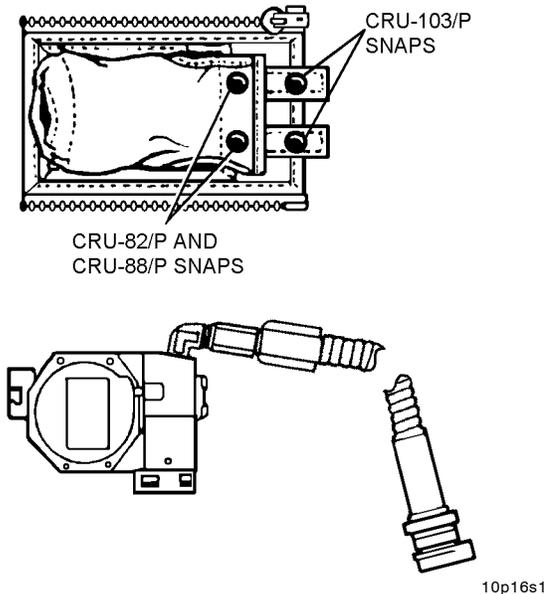


10p15s6

**Step 6 - Para 10-15**

**10-16. INSTALLATION OF CRU-82/P, CRU-88/P OR CRU-103/P OXYGEN REGULATOR.** To install the CRU-82/P, CRU-88/P or CRU-103/P oxygen regulator, proceed as follows:

1. Lay out the regulator pocket with the circular opening for the regulator outlet on the left, the snap fastener pull tabs on the right, and the hook fastener facing down.



Step 1 - Para 10-16

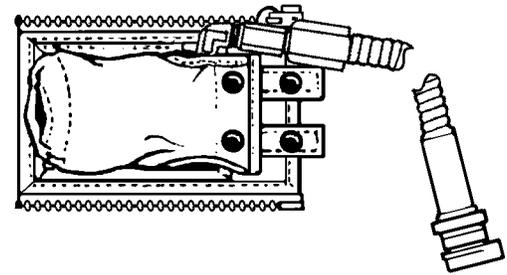
10p16s1

2. Attach the 90° elbow to the seat pan oxygen hose and the regulator.

**NOTE**

For the CRU-82/P and CRU-88/P Regulators, use the 90° elbow that comes with the CBR Respirator Assembly. For the CRU-103 Regulator OBOGS application, use the 90° elbow that comes with the Respirator Assembly. For the 103/P Regulator LOX application, use the 90° elbow that is removed from the CRU-79/P.

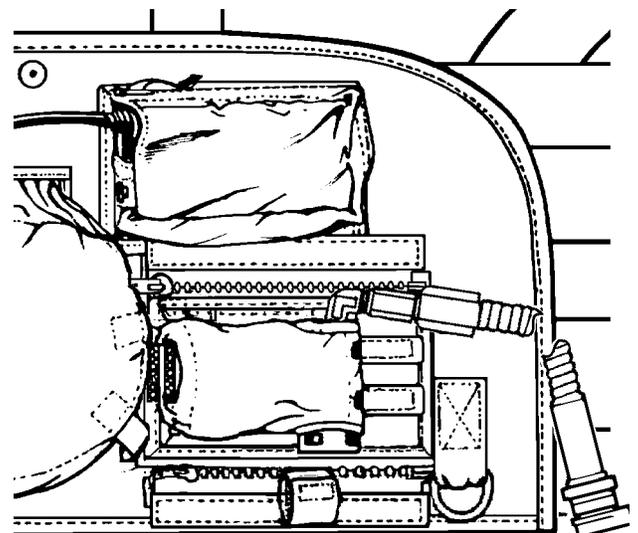
3. Insert the CRU-82/P, CRU-88/P or CRU-103/P regulator into the pocket outlet end first, and with the identification plate facing up. Ensure that the outlet extends through the opening completely, exposing the slots for engaging the pins on the MS27796 connector. Engage the snap fastener and hook and pile closures.



10p16s3

Step 3 - Para 10-16

4. Attach the regulator pocket to the vest by means of the slide fasteners. Orient the oxygen hose and leave it free as shown.



10p16s4

Step 4 - Para 10-16

5. Connect the CRU-82/P, CRU-88/P, or the CRU-103 Regulator to the 3-Pin Bayonet Connector.

**10-17. INSTALLATION OF FLASHLIGHT AND HOOK BLADE KNIFE.** To install the flashlight into CMU-29(V)2/P CBR Overvest, proceed as follows:

1. Insert a cable tie, of adequate length, through the flashlight retention strap.

2. Route cable tie around the neck of the flashlight and underneath the metal clip.

3. Insert flashlight through vest strap into flashlight pocket and secure with the plastic buckle. Position flashlight with lens pointed outward.

4. Remove hook blade knife from the survival vest or harness, as applicable, and install in the overvest hook blade knife pocket. Tether the knife to the grommet on the overvest knife pocket.

## Section 10-4. Fitting

### 10-18. GENERAL.

10-19. The CMU-29(V)2/P CBR Overvest comes in one size and is designed to fit all aircrewmember sizes by adjusting the shoulder straps and waist straps as required to fit each individual. To fit the CBR Overvest, proceed as follows:

#### NOTE

For proper fit, adjustments must be made in both standing and sitting positions.

1. Don all normal flight equipment and ensure the torso harness and survival vest have been properly fitted to the individual aircrewmember.

2. Fit and integrate CMU-29(V)2/P CBR Overvest to the survival vest and life preserver unit.

#### NOTE

The A/P22P-14(V)2 or (V)3 Respirator Assemblies shall be installed into the CMU-29(V)2/P overvest in accordance with [paragraph 10-14](#) prior to performing following steps.

The flight suit, torso harness and BTN clothing shall be donned in accordance with [Chapter 5A](#), prior to performing the following steps.

a. If using CMU-33/P, Type II vest, first remove radio pocket.

b. Don survival vest and life preserver in accordance with NAVAIR 13-1-6.7-2 or NAVAIR 13-1-6.7-4.

c. Don A/P22P-14(V)2 or (V)3 Respirator Assembly. Ensure Pusher Fan is turned on. Refer to [Chapter 4](#) for proper fitting procedures.

d. Don CMU-29(V)2/P Overvest. Position it to permit unrestricted head rotation and to eliminate cockpit controls interference.

#### NOTE

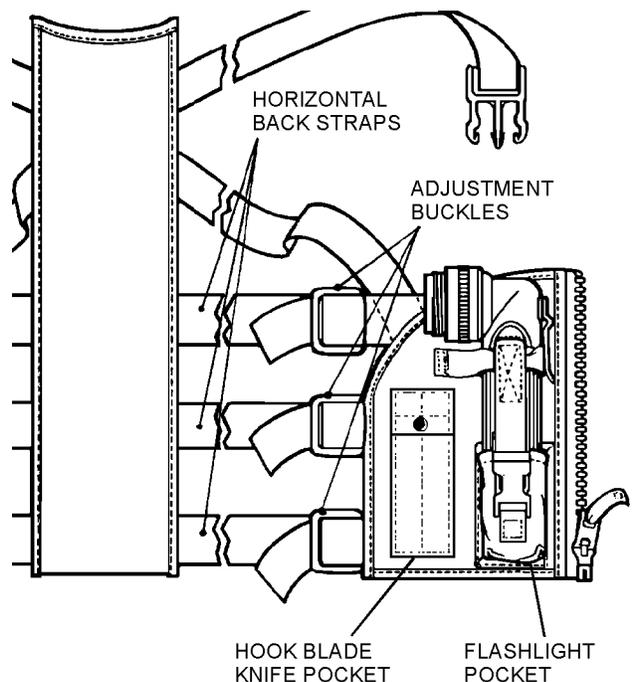
If using LPU-36/P, route tie downs through clearance slots on CMU-29(V)2/P Overvest.

e. Install CMU-29(V)2/P Overvest windblast retention straps ([figure 10-6](#)). For use with CMU-33/P vest, position straps on loops of CMU-33/P vest to ensure alignment for an in-line pull. Connect both halves of retention strap. For use without CMU-33/P, secure windblast retention straps directly to torso harness D-rings. Adjust straps for slight tension.

f. Route excess strap through tri-lock and secure by tacking using waxed 6 cord 1 turn double. Ensure tacking passes through all straps and around tri-lock center bar. Tie off tacking using a surgeon's knot followed by a square knot ([figure 10-6](#)).

g. If using CMU-33/P, Type II vest, reinstall radio pocket on CMU-33/P vest. Ensure one windblast retention strap is located behind radio and is accessible for doffing.

3. With the overvest ideally positioned, adjust the shoulder straps and waist straps for a snug but comfortable fit.



Step 3 - Para 10-19

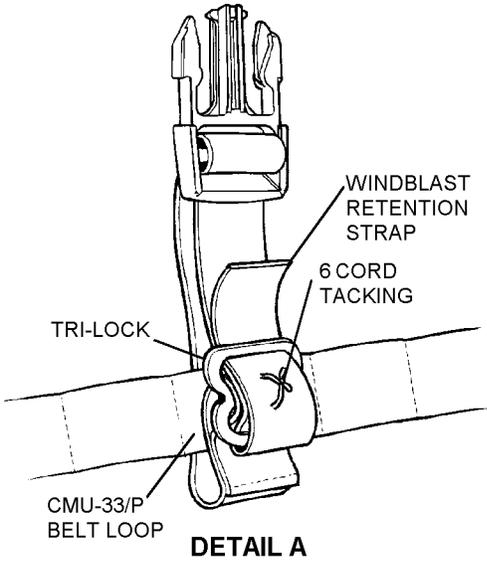
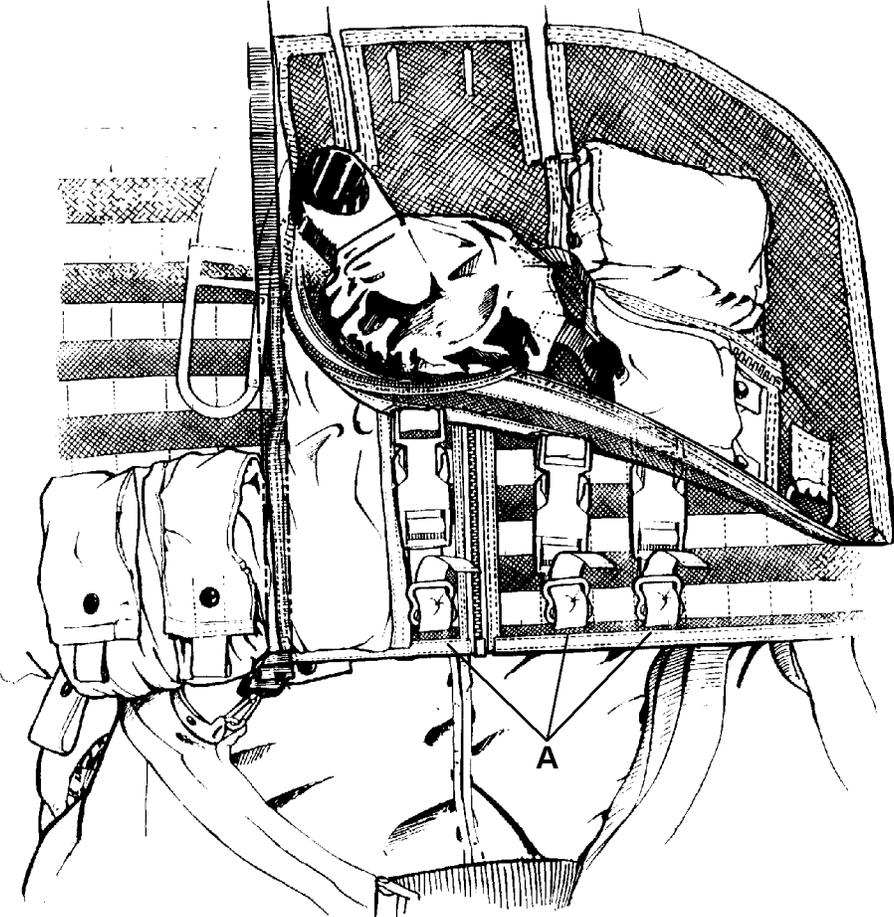
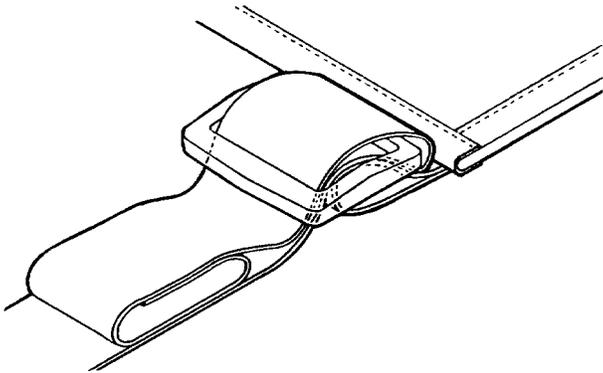


Figure 10-6. CMU-29(V)2/P Overvest Integration with CMU-33/P Vest and Torso Harness

010006

## NAVAIR 13-1-6.10

4. After adjusting the horizontal back straps, reeve the free end of the straps back through the friction adapter.



Step 4 - Para 10-19

10p19s4

5. Using a nonpermanent marker, such as tailors' chalk, make reference marks on the straps to mark their position in case the straps loosen while the aircrewmember is doffing the vest.

6. After the aircrewmember has doffed the vest, verify the position of the straps relative to the marks made in the previous step and adjust as necessary.

7. Tack all straps with one turn of waxed nylon 6 cord, single, passing the 6 cord through the webbing and around the crossbar of the friction adapter. Tie off using a surgeon's knot followed by a square knot. Sear the ends or use an overhand binder knot.

8. Fold the free ends of the straps over in 1 1/2 to 2 inch folds and tack down with one turn of waxed nylon 6 cord, single. Tie off using a surgeon's knot followed by a square knot. Sear the ends or use an overhand binder knot.

## Section 10-5. Maintenance

### 10-20. GENERAL.

10-21. Repairs or other maintenance actions required shall be performed by organizational level or above. All maintenance actions and inspections shall be recorded on the appropriate form in accordance with OPNAVINST 4790.2 Series.

**10-22. PLACE-IN-SERVICE AND SPECIAL INSPECTION.** The Place-In-Service and Special Inspections are visual inspections to be performed at O-1 level or above in accordance with [paragraph 10-23](#). The inspection shall be performed prior to placing the overvest in service and every 90 days thereafter. The 90-day Special Inspection may be waved when the vest is being stored for extended periods of time under controlled conditions. However, an inspection shall be required prior to use after storage.

**10-23. Visual Inspection.** The visual inspection of the CMU-29/P(V)2/P CBR Overvest shall be performed as follows:

1. Visually inspect survival items in accordance with the applicable chapter of NAVAIR 13-1-6.5.
2. Inspect cloth and webbing for cuts, tears, fraying and contamination.
3. Inspect stitching for security.

4. Inspect hook and pile tape for damage and security.

5. Inspect slide fasteners for damage, security, and ease of operation. Inspect thong pull tabs for presence and security of attachment.

6. Inspect hardware for security, corrosion, dents, burrs, distortion, sharp edges and ease of operation, as applicable.

7. If cleaning is necessary, proceed to [paragraph 10-24](#).

8. Ensure all discrepancies have been corrected.

9. Repack survival items as required.

10. Record inspection date and signature of inspector in accordance with OPNAVINST 4790.2 Series.

**10-24. CLEANING.** To clean vest, proceed as follows:

#### Materials Required

Quantity	Description	Reference Number
As Required	Laundry Detergent	Commercial

1. Remove all CBR components and survival items.

## 10-10 Change 5

2. Mix proper strength solution of detergent using manufacturer's instructions.



Do not use clothes dryer or hang in direct sunlight.

3. Immerse overvest in solution and allow to soak for five minutes. Agitate gently for two minutes. Drain, but do not wring out vest material.

5. Hang overvest by shoulder straps to air dry.

4. Rinse in cool, clean water until all traces of detergent are gone.

**10-25. REPAIRS AND REPLACEMENTS.** Repairs and replacements will be performed at O-Level or above. Table 10-2 lists the common repairs and replacements to maintain serviceability.

**Table 10-2. Repair/Replacement**

Description of Repair or Replacement	Paragraph Number
Replacement of loose or broken stitching Repair of small holes or tears Replacement of hook and pile fastener tapes Replacement of snap fasteners	Note 1 Note 1 Note 2 Note 3
<p>Notes: 1. Broken or loose stitching shall be repaired by restitching using stitching Type 301, 8 to 10 stitches per inch, with thread conforming to MIL-T-83193, size E, sage green (NIIN 00-130-6245) or V-T-295, size E, sage green (NIIN 00-204-3884). Backstitch 1/2 inch on all ends of stitching.</p> <p>2. Worn or damaged hook and pile fastener tapes may be repaired using the same type and length of fastener tape. Remove damaged tape and stitch new tape in position of original tape, using a single row of stitching 1/8 inch from all edges, stitch Type 301, 8 to 10 stitches per inch, with thread conforming to V-T-295, size E, sage green (NIIN 00-204-3884). Hook and pile tape on vest is 1 or 1 1/2 inches wide.</p> <p>3. Broken or missing snap fastening devices may be repaired using the same type of snap fastener. Refer to the applicable paragraph to determine the correct choice. Remove broken snap, if applicable, and attach new stud and eyelet in original position. Snap fasteners on either side of the slide fastener should be reinforced with a 14 x 1-inch strip of MIL-T-5038, Type III, nylon tape sewn on the backside.</p>	

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