

**OFF AIRCRAFT MAINTENANCE
WITH ILLUSTRATED PARTS BREAKDOWN**

HELMET ASSEMBLY BUILDUP

**A/A24A-56 HELMET UNIT, INTEGRATED
(JOINT HELMET MOUNTED CUEING SYSTEM)**

Reference Material

Testing and Troubleshooting	WP004 00
HDU Alignment/IPD Adjustment	WP007 00
A/A24A-56 Helmet Unit, Integrated (Joint Helmet Mounted Cueing System)	WP008 00
Upper Helmet Vehicle Interface	WP009 00
Visor Assembly	WP011 00
Rescue and Survival Equipment	NAVAIR 13-1-6.5
Aircrew Personal Protective Equipment (Helmets and Masks)	NAVAIR 13-1-6.7-3
Oxygen Hose and Communication Test Set - Intermediate Maintenance with Illustrated Parts Breakdown	NAVAIR 17-15BC-22
NATOPS General Flight and Operating Instructions	OPNAVINST 3710.7 (series)
The Naval Aviation Maintenance Program (NAMP)	OPNAVINST 4790.2 (series)

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. This work package (WP) provides helmet assembly buildup procedures. This WP is made up of sizing and helmet configuration buildup. Refer to [WP008 00, figure 1](#), to assist in indicating which part numbers for the required helmet shell assembly should be requisitioned for the helmet configuration buildup.

3. After helmet assembly buildup procedures are done, refer to [WP004 00](#) for testing on the HMDTS.

4. SIZING.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Tape Measure, Cloth	MIL-C-29127	81349

Materials Required

None

5. GENERAL.

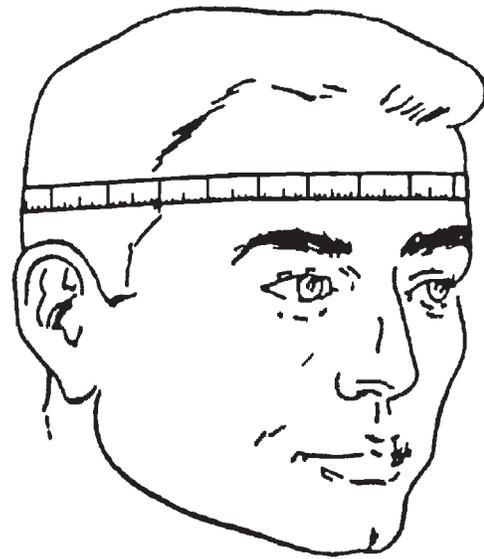
6. The concept of sizing as used in this WP refers to the basic methods to be done by the Aircrew Survival Equipmentman for requisitioning the correct size helmet shell from supply. When the basic helmet shell assembly size has been determined and requisitioned, the helmet shell assembly is ready for buildup to the ultimate configuration desired.

7. The helmet shell assembly required for each configuration is determined by the helmet shell size and the type of visor assembly needed for the helmet configuration buildup. The illustrated parts breakdown ([WP008 00, figure 1](#)) indicates which helmet assembly part number is required for each configuration.

8. HELMET SIZING.

9. To select the correct size helmet shell assembly for the aircrewmember, do substep below:

a. If TACAIR helmets are available, aircrewmember should trial fit to make sure that correct size is ordered. If TACAIR helmets are not available, measure the circumference of the head, at the hatband, with a cloth tape measure. Refer to [figure 1](#) as a guide for sizing.



AFE559-30-1-006

Figure 1. Head Circumference Measurement

NOTE

Sizing instructions are provided only as general guidance. Because of the wide variation in head shapes to be encountered, it is not possible to give detailed guidance. The helmet is designed to provide lightweight head protection and should fit close to the head. For this reason, aircrewmember's should be fitted with the smallest helmet size that provides an acceptable fit.

b. When the correct size has been determined, requisition the helmet assembly through normal supply channels. Refer to [table 1](#) for helmet assembly sizing part number information.

Table 1. Helmet Assembly Sizing Guide

Circumference (Inches)	Comparable Hat Size	Shell and Liner Size Required	Part Number
21 - 22.5	7 or less	Medium	90A8045-1
22.5 - 24	7 1/4	Medium/Large	
	7 1/2	Large	90A8045-2
24 - 24.9	7 7/8 or more	Extra-Large	90A8045-3

NOTES

 When possible, the aircrewmember should be fitted with the smallest sized helmet that will provide a safe comfortable fit.

10. HELMET CONFIGURATION BUILDUP.

Support Equipment Required

None

Materials Required

None

11. GENERAL.

12. The helmet shell assembly required for each helmet configuration varies according to aircraft mission and type visor assembly required. [Table 1](#), along with the information in the illustrated parts breakdown ([WP008 00](#), [figure 1](#)), will assist in indicating which part number for the required helmet shell assembly should be requisitioned for the helmet assembly configuration buildup.

13. When the basic helmet shell assembly and components are received, carefully inspect the shipping containers for evidence of damage or signs of abuse. Open each container and verify that all the required items have been included. If any parts are defective, damaged or missing, replace all parts in the shipping container, prepare a Quality Deficiency Report (QDR) ([WP002 00](#)) and contact the applicable authority. When the helmet shell assembly components have been accepted, it may be built up by adding or removing major components in order to get the desired helmet assembly configuration for the required application.

14. ASSEMBLY OF COMPONENTS.

15. Order of Assembly. Refer to [table 2](#) for components and order of assembly required to make the various helmet assembly configurations. Fabricated components and parts shall be installed on the helmet shell assembly in accordance with and in the order shown in [table 2](#).

NOTE

For clarification in determining the right and left side of the helmet assembly during buildup, assume the helmet to be donned by the aircrewmember and determine helmet sides relative to the aircrewmember's right and left sides.

Table 2. Assembly of Components

Order of Assembly	Component/Assembly To Be Installed	Page Reference
1	Installation of Reflective Tape on Helmet Assembly	6
2	Installation of Visor Snap Fasteners	7
3	Installation of Helmet Bladder Kit	8
4	TPL Liner Fitting	9
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16	Installation of Helmet Plate Assembly AN/AVS-9	41

16. INSTALLATION OF REFLECTIVE TAPE ON HELMET ASSEMBLY.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Heat Gun	ET1600	55719

Materials Required

Nomenclature	Specification or Part Number
Cloth, Lint-free	MIL-C-85043 TYPE 1
Detergent, General Purpose	MIL-D-16791 TYPE 1, NIIN 00-282-9699
Tape, Reflective, High Intensity, White, 1-Inch*	NIIN 01-082-8927
Tape, Reflective, High Intensity, White, 3-Inch*	NIIN 01-078-8660
Tape, Reflective, Orange, 1-Inch, CL 1	L-S-300 (NIIN 00-656-1494)
Tape, Reflective, Orange, 2-Inch, CL 1	L-S-300 (NIIN 00-656-1186)
Tape, Reflective, Red, 1-Inch, CL 1	L-S-300 (NIIN 00-949-7552)
Tape, Reflective, Red, 3-Inch, CL 1	L-S-300 (NIIN 00-949-7598)
Tape, Reflective, White, CL 3	L-S-300 (NIIN 00-100-2153)
Tape, Reflective, Yellow, 1-Inch, CL 1	L-S-300 (NIIN 00-753-3208)
Tape, Reflective, Yellow, 3-Inch, CL 1	L-S-300 (NIIN 00-057-4545)

* High intensity grade white tape provides greatest total reflectiveness and is most preferred for visual detection. Submit requisitions for high intensity grade tape to routing identifier code ZNC.

a. Install reflective tape on helmet shell assembly per substeps below:



DETERGENT, GENERAL, PURPOSE, MIL-D-16791, TYPE 1

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(1) Clean outside of helmet shell assembly with damp lint-free cloth and general purpose detergent to remove all traces of grease, salt or foreign material.

(2) Remove all traces of cleaning agent with a clean damp cloth. Dry with a clean, dry cloth.

(3) Inspect all surfaces of the helmet shell assembly for obvious signs of cracks, soft parts, splits or other defects which would be cause for replacement of the item. Chipped paint shall not be cause for replacement of helmet shell assembly. Defective helmet shell assemblies shall be disassembled and replaced and damaged parts shall be disposed of per the correct directives. Undamaged parts shall be kept for replacement on other helmet shell assemblies.



Refurbishment of helmet shell assembly by other than removal or replacement of reflective tape is unauthorized.

(4) Aviator helmet assemblies shall be taped per the provisions of OPNAVINST 3710.7 series (General NATOPS) and any Type Commander Directives. (QA)



Application of any type of coating on top of reflective tape is not authorized.

NOTE

Use of heat gun increases adhesion of the reflective tape.

(5) Remove protective backing from reflective tape and put in desired position on helmet shell assembly surface. Avoid excessive stretching, air bubbles and wrinkles. To get maximum adhesion, apply firm pressure to tape or use heat gun. Strip overlap should be minimized.

(6) Document per OPNAVINST 4790.2 series. (QA)

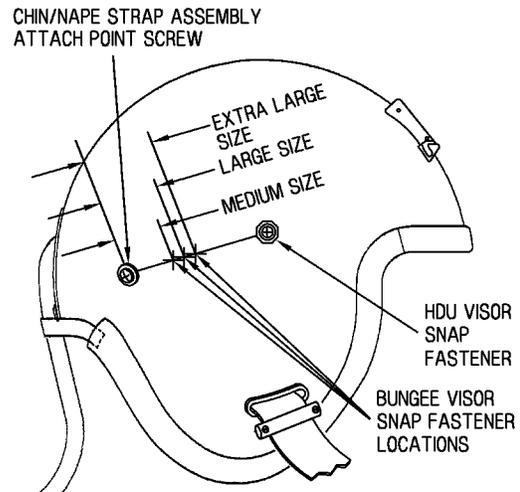
17. INSTALLATION OF VISOR SNAP FASTENERS.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Drill Bit, Number 32	DBE32A	55719

Materials Required

Nomenclature	Specification or Part Number
Adhesive	RTV-102/732, NIIN 00-877-9872
Pencil, Lead Snap Kit (2)	A-A-2771 G026-1159-01



006002

Figure 2. Bungee Visor Snap Fastener Location

18. LOCATION AND INSTALLATION OF BUNGEE VISOR SNAP FASTENER STUDS.

a. Make sure HDU is removed from helmet.

b. Locate and install bungee visor snap fastener studs on helmet assembly per substeps below:

(1) Position helmet on work bench with the left-hand side facing the technician.

(2) On the helmet shell exterior surface, use a measuring device as a guide and a lead pencil and mark a line across the helmet shell from the center of the HDU visor snap fastener rearward to the center of the chin/nape strap assembly attach point screw. Refer to figure 2.

(3) Repeat step 18.b.(2) on other side of helmet assembly.

(4) From the center of the right-hand chin/nape strap assembly attach point screw using a measuring device, measure forward along the line drawn in step 18.b.(2) toward the HDU visor snap fastener 2 5/8 inches on a medium size helmet, 2 7/8 inches on a large size helmet, and 3 inches on an extra large size helmet.

(5) Using a lead pencil, make a mark at the applicable position on the helmet shell. Repeat above procedure for the other side of the helmet.

NOTE

When drilling holes in helmet assembly shell, make sure drill is held perpendicular to helmet assembly shell surface.

(6) At the marked hole locations, drill each screw hole using a number 32 drill bit. Deburr holes.



ADHESIVE, RTV-102/732

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NOTE

Snap kit P/N G026-1159-01 is made up of a snap fastener, flat washer, screw, lock washer, and nut.

(7) Apply RTV to the first few threads of each screw.

(8) With flat washer, lock washer and nut positioned on the interior surface of the helmet shell at the drilled location, attach snap fastener to outer surface of helmet using screws. Tighten securely in position.

(9) Install earcups into earcup cavities of helmet and contact aircrewmember to arrange a post maintenance fit check.

(10) Document per OPNAVINST 4790.2 series. (QA)

19. HDU VISOR SNAP FASTENERS.

a. Helmet assembly comes from supply with HDU visor snap fasteners installed. To remove and replace HDU visor snap fasteners, refer to [WP008 00](#).

20. INSTALLATION OF HELMET BLADDER KIT.

Support Equipment Required

None

Materials Required

Nomenclature	Specification or Part Number
Adhesive	MIL-A-46106, NIIN 00-225-4548
Chalk, White	SS-C-266
Kit, Bladder Assembly	GW9163-01

a. Install pile fasteners and hook fastener on bladder assembly per [figure 3](#) and [substeps](#) below:

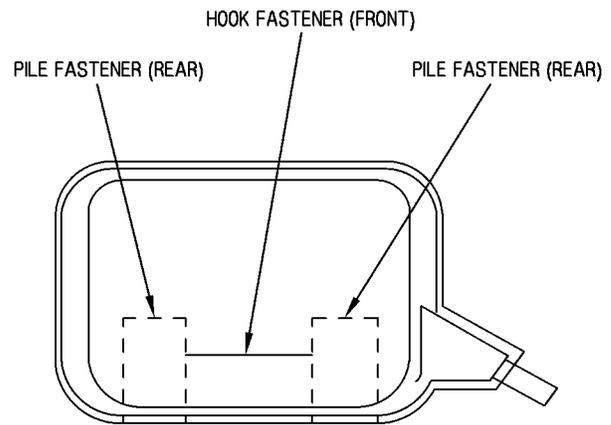
(1) With helmet upright on work bench, position bladder assembly in helmet assembly interior centered against rear inner surface of the energy absorbent liner with the identification label visible.

(2) Make sure bladder lays flat against the energy absorbent liner and lower edge of bladder is even with and parallel to the nape area edgeroll of the helmet assembly with helmet bladder inlet tube oriented toward the left helmet earcup cavity.

(3) Maintaining centered position, lift lower edge of bladder up to expose hook fastener tabs installed on the energy absorbent liner.

(4) Using white chalk, lightly mark location for installation of mating pile fastener tabs on the underside of the bladder.

(5) Remove bladder from helmet assembly and put label side down on work bench.



BLADDER SUBASSEMBLY

Figure 3. Bladder Fastener Location

006003

(6) Remove backing from pile fastener tabs and press firmly in position at marked locations on the bladder.

(7) Turn bladder over; determine center of bladder and mark using white chalk on bottom edge of bladder.

(8) Remove backing from hook fastener tab, align center of tab with mark on bladder centerline, and install tab horizontally along bottom edge of bladder.

(9) Put bladder in helmet assembly interior to verify correct fastener tab alignment and positioning.

(10) Document per OPNAVINST 4790.2 series. (QA)

b. Insert bladder in helmet assembly and attach it to the fastener tabs on the energy absorbent liner.

c. Make sure bladder lies smoothly across the surface of the energy absorbent liner and is correctly aligned with the nape edgeroll.

d. Make sure the helmet bladder inlet tube is oriented toward the left helmet earcup cavity.

e. Pull helmet bladder inlet tube through the helmet assembly from the inside outward.

f. Put inlet supply tube over the inlet connector QD. Refer to figure 4

g. Push inlet connector QD flush against the helmet assembly exterior. Make sure there is no twisting of bladder or inlet helmet bladder inlet tube.

h. Secure bladder inlet tube to inlet connector QD with tiedown strap making sure the head of the tiedown strap is positioned on the underside of the inlet connector QD.



ADHESIVE, MIL-A-46106

302

i. Apply adhesive to screws.

j. Install inlet connector QD cover over inlet connector QD and secure to helmet assembly using screws and washers.

k. Document per OPNAVINST 4790.2 series. (QA)

l. Do HELMET BLADDER LEAKAGE TEST per WP00500.

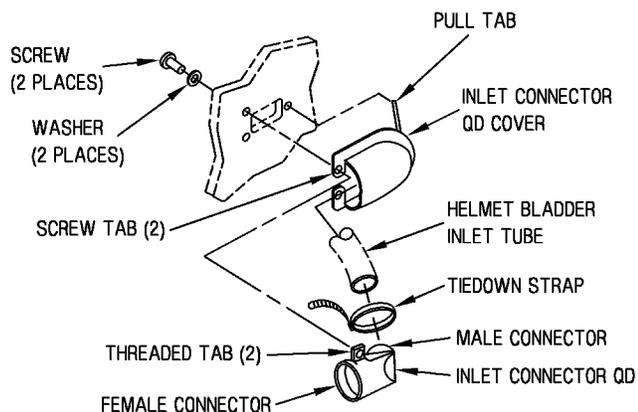


Figure 4. Bladder Installation

006004

21. TPL LINER FITTING.

Support Equipment Required

None

Materials Required

Nomenclature	Specification or Part Number
Tape, Double-faced, Vinyl, 1 x 2 Inch	A-A-1243
Thread, Nylon, Type E	V-T-295

22. INSTALLATION OF TPL ASSEMBLY. Install TPL (6 or 8, figure 1, WP00800) to the helmet assembly per substeps below:

a. If 1 x 2 inch pressure-sensitive hook fastener tabs are not on the inside surface of the energy absorbing liner, installation is required. Do substeps below:

(1) Install two tabs on the inside front of the energy absorbing liner left and right of center over the eyes, 1/8 inch from front edge of the liner.

(2) Install two tabs in the rear approximately 1 1/2 inches left and right of center and 1/2 inch from the bottom edge of the liner.

b. To prevent bunching of TPL cover fabric, secure the TPL cover to the preformed layer assembly using four 1 x 2 inch pieces of double-sided tape per substeps below. Refer to figure 5, this WP.

(1) Position the cloth cover over the preformed layer assembly. The single seam is positioned to the rear.

(2) Position tape strips with the 2-inch length horizontal at the front, rear and both sides of the preformed layer assembly under the cover fabric overlap.

(3) Press cover in position over the tape strips.

c. Put the TPL inside the helmet shell by squeezing the TPL sides together to clear the ear-cups. Make sure large holes on top of the TPL are facing forward. Release TPL and attach liner cover to hook fastener tabs. Refer to figure 6

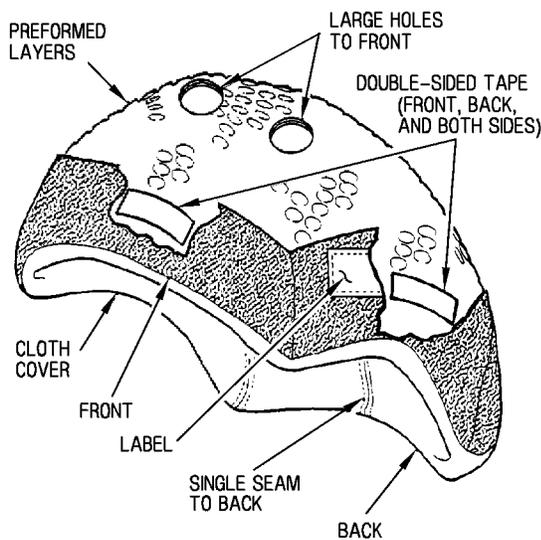


Figure 5. Preventing Bunching of TPL

006005

aircrewmember's head without changing the fit. Remove layers from the inside of the TPL assembly to relieve pressure and to make the best fit.

TPL layers can be modified by cutting out areas in the layer/layers over the hot spots or pressure points. No cutting should be done on the layer that comes in contact with the aircrewmember's head (the inside layer). The size and shape of the removed area of TPL should match the shape and size of the irritated area on the aircrewmember's head. Circular shapes, (i.e. penny, nickel, quarter and so on) work best for correction of hot spots, while half round shapes (i.e. half-moon, quarter-moon and crescent-moon) usually get rid of areas of pressure.

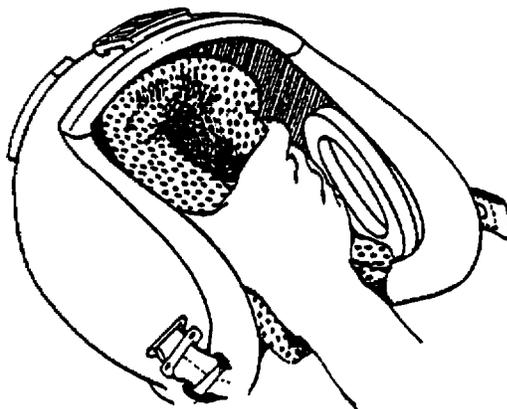


Figure 6. Putting TPL in Helmet Shell

006006

a. After preliminary adjustments to the TPL have been completed, have the aircrewmember put on the helmet to inspect fit and comfort. If further adjustment/modification is required, do next step.

WARNING

The TPL assembly requires a minimum of two layers and a maximum of five layers to provide correct fit.

d. Make sure front edge of the TPL is aligned with the front edge of the energy absorbing liner inside the helmet and that the TPL is centered in the helmet.

23. FITTING THE TPL ASSEMBLY. Fit the TPL assembly to the aircrewmember's by doing substeps below.

NOTE

Remove layers from the outside of the TPL assembly to lower the helmet on the

b. Remove TPL layers one at a time from the liner. Pressure relief around the ears can be achieved by removing layers from the outside of the liner. Number each layer as it is removed (first layer No. 1, second layer No. 2 and so forth) to aid in reassembly, if required. Remove up to, but no more than, three layers from the assembly. Inspect for correct fit after each layer is removed.

c. If a satisfactory fit has been achieved, have the aircrewmember remove the helmet.

d. If after the above steps have been done and a safe, stable fit cannot be obtained, the TPL may

be heated so that it conforms to the aircrewmember's head shape. Do CUSTOM FITTING OF TPL ASSEMBLY per next step.



To prevent heat damage to the TPL plastic layers, do not store the helmet in a closed cockpit or automobile. Temperatures in these closed areas can exceed 200° F (93.3° C) on an 85° F (30° C) day.

24. CUSTOM FITTING OF TPL ASSEMBLY.
Custom fit TPL assembly per substeps below.

NOTE

Refer to AMSO for nearest location of a suitable oven for heating the TPL.

a. Reassemble the TPL by replacing the removed layers in the order in which they were removed. After the TPL is assembled, secure the layers by passing a heated soldering pencil through all five layers at the initial attachment point.

b. Reinstall TPL cover on the layers before heating.

c. Set the oven rack to the lowest position and heat the oven to 200° ± 5° F. Put a thermometer on the rack in a position where it may be observed during the whole heating process.

d. Thoroughly brief the aircrewmember on the fitting procedures, emphasizing those to be done by the aircrewmember.



Do not try to heat the TPL in a microwave oven (which will not heat the layers) or toaster oven (which will damage the liner).

Do not remove the cloth; the TPL is heated as a unit.

Monitor the oven temperature constantly to avoid overheating. Do not leave the TPL unattended while heating.

e. After 15 minutes, make sure the oven is stabilized at the pre-set temperature and put the TPL with the fabric side down in the center of the oven rack. Set timer. Refer to [table 3](#).

Table 3. Maximum Heating Time per Number of Layers

Numbers of Layers	Time (Minutes)
5	8
4	7
3	6
2	5

NOTE

Heating characteristics of ovens vary. The time stated above is a guideline and may have to be adjusted to suit your oven.

f. To allow easy positioning of the heated liner into the helmet, put masking tape over the rear hook fastener tapes on the energy absorbing liner.



The TPL plastic layers will be hot. When removing the TPL from the oven, touch the fabric cover only.

NOTE

The below steps are to be done by the aircrewmember assisted by the Aircrew Survival Equipmentman (PR), and should be completed within 30 seconds of removal of the heated liner from the oven.

g. Remove the TPL from the oven, touching only the fabric-covered part. Squeeze the sides of the TPL to clear the earcups and insert the heated TPL into the helmet with the wide end toward the front. The Aircrew Survival Equipmentman (PR) should hold the rear part of the TPL tightly against the energy-absorbing liner during donning to make sure the TPL does not bunch up in the rear.

h. With the TPL symmetrically aligned in the helmet, have the aircrewmember hook thumbs over the edgeroll, spread the helmet slightly and rotate the helmet rearward and down to don. Make sure edgeroll on the helmet brow is positioned just out of the line of sight as the aircrewmember looks up.

i. Have the aircrewmember apply down pressure on helmet with palms of hands until the ears are centered in the earcups. Maintain this pressure for five minutes.

j. Have the aircrewmember release down pressure at the end of five minutes. Inspect helmet fit. If required, remove one layer from the inside of the TPL and repeat steps b through j. If the fit is satisfactory.

k. When a satisfactory fit is achieved, have the aircrewmember doff the helmet. Lift the rear part of the TPL away from the energy-absorbing liner and remove masking tape from the hook fastener tapes. Secure TPL to the hook fastener tapes.

1. Document per OPNAVINST 4790.2 series. (QA)

25. ZETALINER FITTING.

Support Equipment Required

None

Materials Required

Nomenclature	Specification/ Part Number
Correction Fluid	A-A-212 TYPE 1
Emery Cloth (fine grit)	P-C-451
Isopropyl Alcohol	TT-I-735 or MIL-I-10428, NIIN 00-855-1158, NIIN 00-855-6160, NIIN 01-190-2538, NIIN 01-220-9907

26. SELECTING THE CORRECT LENGTH SIZE OF ZETALINER.

a. Measure the TPL from front to back (figure 9).

b. Count the number of TPL layers and then refer to table 5 to select the correct thickness of the zetaliner.

c. Using the TPL length and thickness refer to table 4 and select the corresponding zetaliner part number.

27. ZETALINER INSTALLATION.

a. Remove TPL from helmet.

(1) Inspect the Energy Absorbing Liner (EAL) for looseness, wrong fit, holes, cracks, or torn fabric.



ISOPROPYL ALCOHOL, TT-I-735 OR MIL-I-10428

1001

NOTE

It may be required to clean the EAL area with isopropyl alcohol before attaching the hook tapes.

- (a) Install the hook tapes on EAL if not installed.
- (b) Remove the self-adhesive from the package and cut the self-adhesive hook fastening strip into 4 pieces.
- (c) Rough up surface of EAL with emery cloth or other suitable alternate to allow adhesive of hook to stick correctly.
- (d) Trim the corners of the hook adhesive. Attach the adhesive side to the EAL (figure 7).
- (e) Put two pieces of tape front and rear of helmet shell.
- (f) Front tapes should not be in center, position tapes left and right of center (figure 7).

(2) For combat edge, complete the attachment of hook and pie fasteners in accordance with paragraph 20, INSTALLATION OF HELMET BLADDER KIT, this WP.

(3) Remove the zetaliner from the package.

NOTE

When the hook and loop is attached to the helmet liner it may be required to realign the zetaliner on the helmet.

(4) Identify front and top of zetaliner (figure 8). Insert liner top-side first and with the front of the liner towards the front of the helmet.

(5) Make sure the zetaliner is centered in the helmet.

- (a) Press the zetaliner against the hook fastening strips at the front.
- (b) Make sure the front and rear edges of the zetaliner is flushed with the EAL and does not protrude past the edge-roll.
- (c) Press the zetaliner against the center and then the strips at the back of the helmet next.
- (d) Restore the communication cord to its correct location.

(6) Zetaliner Fitting Procedures.

- (a) Don skull cap if normally worn.
- (b) Have the aircrewmember don helmet.
- (c) Inspect helmet browline offset to center eye position (Figures 11 and 12). Helmet offset is 1.75 - 2.25 inches. Zetaliner can be moved slightly forward or aft to increase or decrease offset.
- (d) Adjust earcups, add, cut or adjust spacers as required.
- (e) Connect chin strap.
- (f) Adjust nape strap.
- (g) Deleted.
- (h) Have aircrewmember to subjectively evaluate fit and make any required adjustments.

Table 4. Sizing Chart for Zetaliner

Part Number	Helmet Size	Thickness
95122A	Medium	1/4"
95123A	Medium	3/8"
95124A	Medium	1/2"
95125A	Medium	5/8"
95132A	Medium	1/4"
95133A	Medium	3/8"
95134A	Medium	1/2"
95135A	Medium	5/8"
95142A	Large/X-Large	1/4"
95143A	Large/X-Large	3/8"
95144A	Large/X-Large	1/2"
95145A	Large/X-large	5/8"
95152A	X-Large	1/4"

Table 4. Sizing Chart for Zetaliner (Continued)

Part Number	Helmet Size	Thickness
95153A	X-Large	3/8"
95154A	X-Large	1/2"
95155A	X-Large	5/8"
95162A	X-Large	1/4"
95163A	X-Large	3/8"
95164A	X-Large	1/2"
95165A	X-Large	5/8"

Table 5. TPL and Zetaliner Comparison

Number of TPL Layers	Zetaliner Thickness
NOTE	
To select the correct zetaliner thickness, review the information below and then select the part number that meets the thickness size in table 1 . Also the length of the zetaliner is a factor. It may be required to try a thinner or thicker zetaliner for a correct fit.	
2 TPL Layers	1/4" Zetaliner
3 TPL Layers	3/8" Zetaliner
4 - 5 TPL Layers	1/2" Zetaliner
5 + TPL Layers	5/8" Zetaliner



Excessive correction fluid applied to EAL will damage the liner.

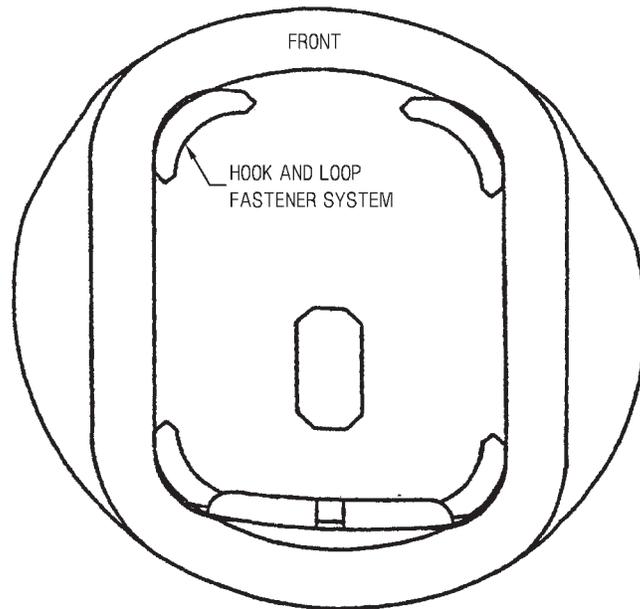
(7) Marking of EAL. Zetaliner placement in helmet after fitting has a direct affect on mask adjustment, offset, and comfort. Report to crewmember if zetaliner is removed and installed.

- (a) Apply correction fluid sparingly and press against the EAL to make sure of correct reinstallation of the zetaliner when removed.

NOTE

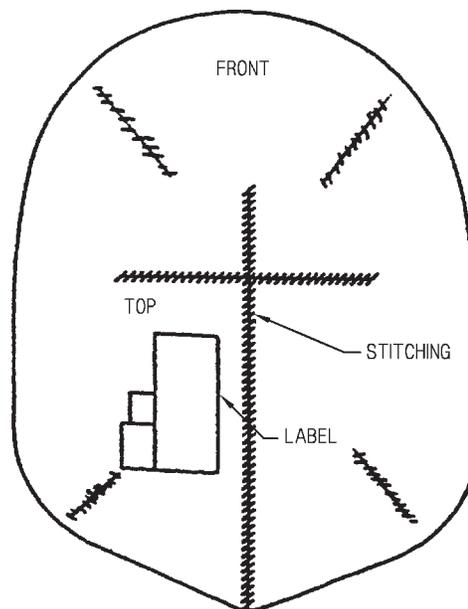
Before marking the zetaliner and EAL, make sure the helmet has been correctly fitted to the crewmember. Zetaliner will be marked to coincide to the EAL markings. It may be required for the crewmember to fly with the helmet to make sure of the correct comfort position for the zetaliner before doing the marking procedures.

- (b) Use two dots of correction fluid in front and one in the rear ([figure 10](#)).



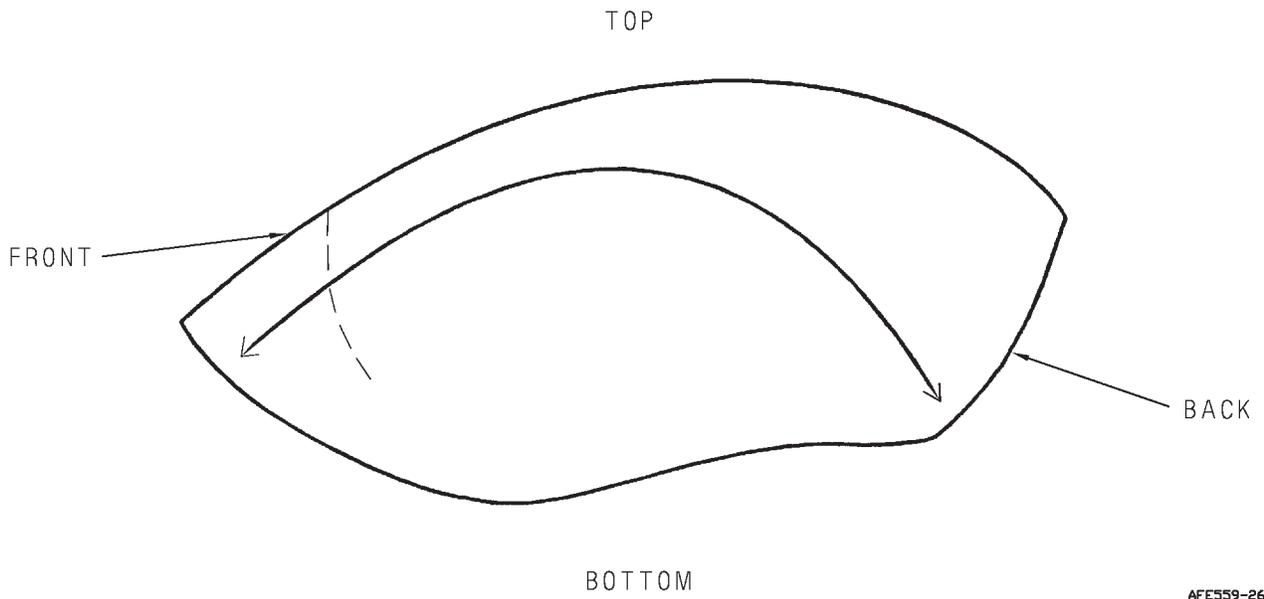
AFE559-24-1-001

Figure 7. Bottom (inside) Attachment of the Hook and Loop Fastener



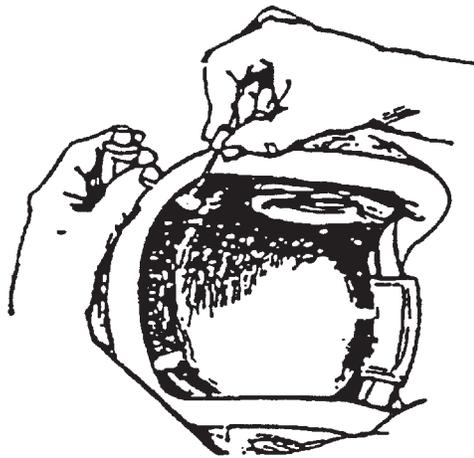
AFE559-25-1-001

Figure 8. Top (outside) Attachment of the Hook and Loop Fastener



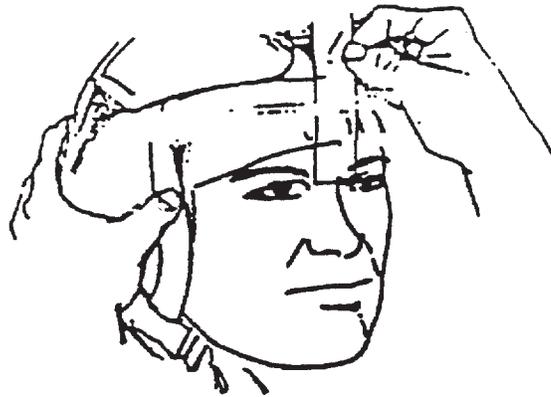
AFE559-26-1-001

Figure 9. Zetaliner Length Measurement



AFE559-27-1-001

Figure 10. Mark Zetaliner and EAL



AFE559-28-1-001

Figure 11. Inspect Eye Offset to Helmet Browline

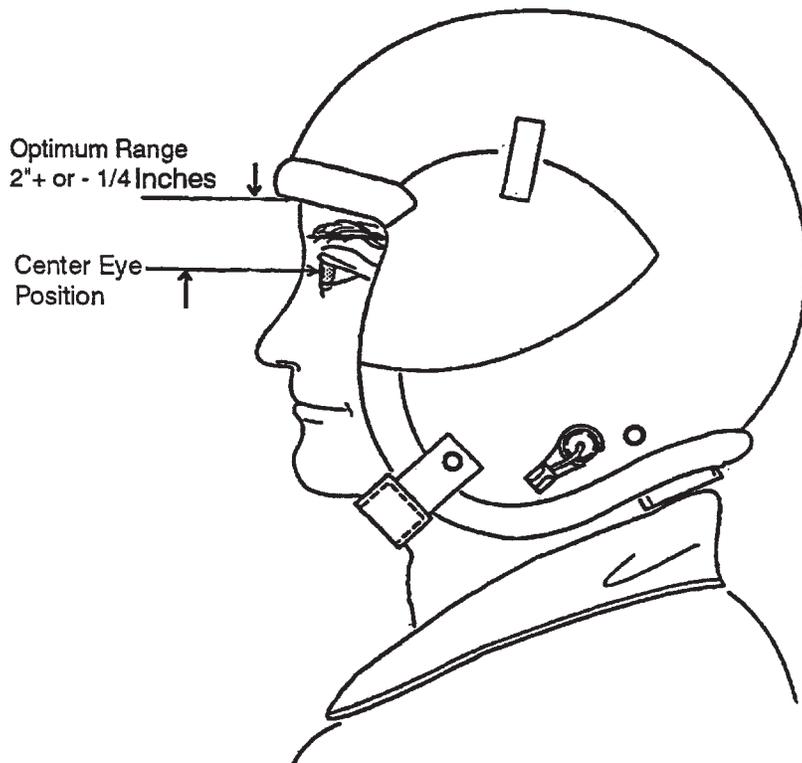


Figure 12. Eye Offset to Helmet Browline

AFE559-29-1-001

28. HELMET COMPONENT ADJUSTMENTS.

Support Equipment Required

None

Materials Required

None

a. Have the aircrewmember don the helmet per substeps below. Refer to figure 13.



Spread helmet only enough to allow ease of donning and doffing. Excessive spreading may damage helmet.

- (1) Hook thumbs in earcups and spread helmet slightly.
- (2) Put edgeroll on helmet brow against forehead.
- (3) Rotate helmet toward the rear and down on head.

NOTE

The edgeroll on the helmet brow should be positioned just out of the aircrewmember's line of sight as the aircrewmember looks up.



Figure 13. Donning Helmet

006013

b. Rotate the helmet toward the rear until the edgeroll on the brow is out of the field-of-view.

c. Inspect earcup position, making sure the earseals completely surround the ears.

NOTE

For best sound attenuation and comfort, the earseals should be compressed to about half of their initial thickness.

Earcup spacer pads can be used whole, cut into quarters or cut in half along or across.

d. Inspect earseal compression. If required, adjust compression by adding earcup spacer pads. Refer to figure 14.

NOTE

Because of anatomical variations (e.g. unusual head breadth, thick/muscular neck) some aircrewmember's will be unable to don the helmet with the barrel clamps installed. In these instances, removal of the clamps from the integrated chin/nape strap is authorized.

e. Loosen clamp screws and slide clamps down as far as possible on the nape strap. Adjust the nape straps for a snug fit. Slide the clamps up until they contact the shell and tighten screws. Clamps will now hold adjusted nape straps in position.

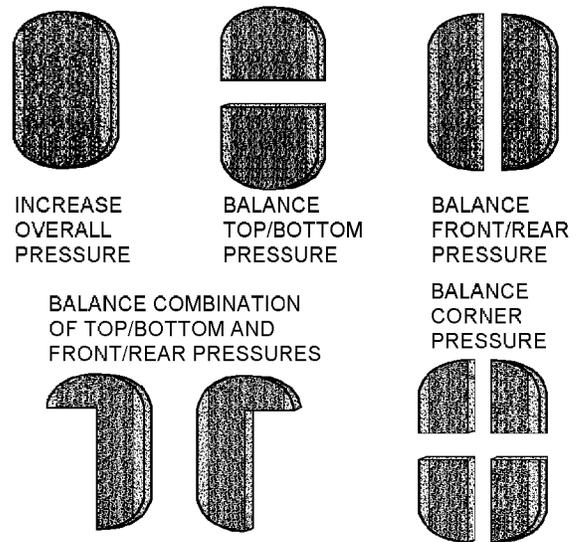


Figure 14. Earseal Compression

006014

f. Tighten chin strap to the desired tension. When the desired tension is attained, the chin strap can be fastened and unfastened by way of the snap fastener and stud on opposite end of the chin strap.

g. After a trial wearing period of approximately 30 minutes, have the aircrewmember evaluate the helmet fit. If the aircrewmember is satisfied with the fit, continue with the helmet buildup. If the helmet does not fit correctly, (for example, pressure points exist, the helmet is too tight or sits high on aircrewmember's head or aircrewmember complains of hot spots) have aircrewmember describe and point out areas where the problem is located. Take note of the location, size and shape of any exposed skin areas that appear irritated (red color or grooves in soft tissue of scalp). To correct these fit problems, do TPL LINER FITTING or ZETALINER FITTING, this WP.

29. INSTALLATION OF OXYGEN MASK BAYONET RECEIVERS.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Drill Bit, Number 25	DBE25A	55719
Scissors	3452	70574

Materials Required

Nomenclature	Specification or Part Number
Adhesive	EC1357, NIIN 00-165-8614, NIIN 00-273-8717
Kit, Bayonet Receiver	GW9117
Pencil, Lead	A-A-2771
Thread, Nylon, Size E	V-T-295



Make sure TPL assembly/zetaliner and chin/nape strap assembly are correctly fitted and adjusted to aircrewmember's head before drilling holes in helmet shell assembly. Location/alignment of the bayonet receivers are not adjustable.

a. Have aircrewmember don correctly fitted helmet assembly.

NOTE

Aircrewmember's who will be wearing personal prescription glasses, aviator sunglasses or laser spectacles during flight should be wearing those items while fitting the mask.

b. With helmet correctly fitted and oriented on head, have aircrewmember hold oxygen mask in correct position on face.

c. Insert each bayonet of oxygen mask harness assembly into a bayonet receiver to the second locking position. The projections on bayonet receiver should be positioned toward the tip end of the oxygen mask bayonet.

d. While aircrewmember holds correctly adjusted oxygen mask to face, make sure straps of oxygen mask have equal tension.

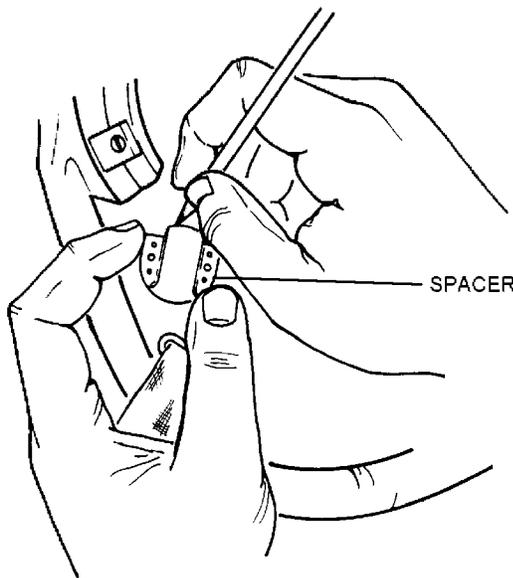
NOTE

Make sure placement of bayonet receivers are no closer than 1/2 inch from edge roll of helmet shell assembly.

e. While holding bayonet receiver assemblies firmly against the helmet shell assembly, make sure offset bayonet is flush with and parallel to helmet shell assembly edgeroll.

f. Trace each bayonet receiver with a lead pencil on the helmet shell assembly. Do not use marker or grease pencil.

g. While holding only the bayonet receiver spacers against the helmet shell assembly at marked positions, use a lead pencil to mark the location of the upper receiver screw hole on the right and left hand sides of the helmet shell assembly. Refer to [figure 15](#).



006015

Figure 15. Marking Bayonet Receiver Placement

NOTE

When drilling holes in helmet shell assembly, make sure drill is held perpendicular to helmet shell assembly.

h. Remove mask and helmet from wearer and remove earcup assemblies. Hold pile fastener fabric inside helmet shell assembly away from area to be drilled. At the marked hole locations, drill each screw hole using a number 25 drill bit.

i. Attach spacers and receivers to helmet shell assembly using the upper screw, lock washer and backplate. Do not tighten screw more than four turns, allowing the assembly to rotate to its best location for the user, during mask fitting.

j. Reinstall earcup assemblies and have aircrew-member don helmet assembly and oxygen mask assembly, again inserting each bayonet into the second locking position of receiver.

NOTE

If experiencing difficulty inserting bayonet into receiver as a result of the helmet shell edgeroll, fabricate and install bayonet receiver shims per paragraphs 30 and 31.

k. Readjust the straps on the mask tightening upper left and lower right straps together, then upper right and lower left straps together, keeping mask centered on face and equalizing tension on straps. While tightening straps, allow bayonet receivers to rotate freely to their best location for the individual. Refer to figure 16.

l. Make sure comfortable, air tight fit of the mask is achieved by having crewman breathe while manually twisting the oxygen hose to cut off air supply through hose. If leaks occur between mask and face, inspect by doing substeps below:

(1) Make sure correct mask size has been issued.

(2) Inspect fit of nape strap.

m. Using the receiver as a template, mark position of the remaining hole in the right and left hand receivers on the helmet shell surface with a lead pencil. Remove earcups from helmet shell interior and remove installed receivers.

n. Drill remaining holes by doing procedures detailed in paragraph 29h. Install spacers and receivers on helmet shell at drilled locations using screws, lock washers and backplates. Tighten mounting screws securely making sure receiver and spacer conform to the contour of the helmet surface.

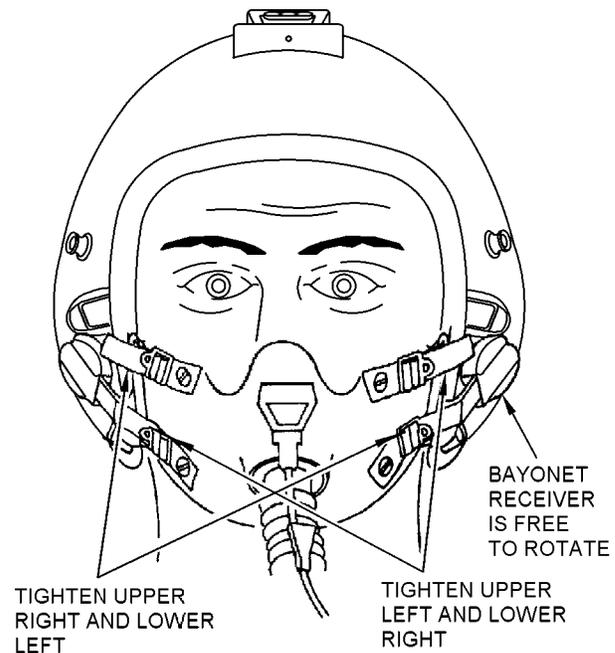


Figure 16. Bayonet Positioning

006016



ADHESIVE, EC1357

12

o. Using adhesive, glue down pile fastener tape over backplate.

p. Replace earcup assemblies.

q. Do functional test on Oxygen Mask Assembly per NAVAIR 17-15BC-22.



When mask is issued temporarily for transporting passengers or crewmembers or if worn for a trial fitting, the straps require not to be cut but, folded under and tacked to prevent possible injury to face and eyes during bailout or ejection.

r. Cut excess adjustment strap to aircrew preference but, not less than 1.5 inches.

s. Sear cut end of each strap.

t. If desired by aircrewmember, oval shaped opening in buckle may be tacked to the strap using two turns of size E nylon thread, doubled. Tie with surgeon's knot and secure with square knot.

u. Document per OPNAVINST 4790.2 series. (QA)

30. FABRICATION AND INSTALLATION OF BAYONET RECEIVER SHIMS.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Hand File (Rough Cut)	9-31310	53800
Small Hand Held Grinder (Rotary)	84922	18531

Materials Required

Nomenclature	Specification or Part Number
Adhesive	EC1357, NIIN 00-165-8614, NIIN 00-273-8717
Adhesive	MIL-A-46106, NIIN 00-225-4548
Screw, Pan Head, 6-32 x 0.500-Inch, Black	MS51957-30B, NIIN 00-469-5382
Spacer Kit, Bayonet	80B4858, NIIN 01-141-5916

NOTE

Shims are fabricated from spacers provided in spacer kit 80B4858. Shims are intended for use by aircrew wearing helmets that aircrew physiognomy causes difficulty attaching the offset bayonets to the receivers.

a. Remove spacers from the package.

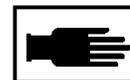
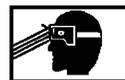
b. Position a spacer between the jaws of a bench vise with one raised projection facing the technician and clamp in position.

c. Using a small hand held rotary grinder with a grinding drum or a rough cut hand file, grind or file raised projection flush next to surface of spacer.

d. Loosen vise and position remaining raised projection into position, clamp in position and repeat grinding/filing procedure.

e. Remove right and left earcups from helmet shell earcup cavity pile fastener material and position earcups clear of work area. Pull installed pile fastener material away from the interior surface of the earcup cavity and fold clear of work area.

f. Remove four screws, four lock washers and two backplates securing installed spacers and receivers to helmet shell exterior, dispose of screws but keep remaining items for use during installation.



NOTE

A small amount of adhesive may be applied to each screw before adding lock washer and backplate.

g. Using P/N MS51957-30B screws, lock washers and backplate, reinstall shim, spacer and receiver on helmet shell exterior. Make sure concave surface of shim is flush with helmet shell exterior before securing in position.



ADHESIVE, EC1357 12

h. Using adhesive, bond pile fastener material in position on interior surface of earcup cavity.

31. FABRICATION AND INSTALLATION OF BAYONET RECEIVER TAPERED SHIMS.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Hand File (Rough Cut)	9-31310	53800
Small Hand Held Grinder (Rotary)	84922	18531

Materials Required

Nomenclature	Specification or Part Number
Adhesive	EC1357, NIIN 00-165-8614, NIIN 00-273-8717
Adhesive	MIL-A-46106, NIIN 00-225-4548
Screw, Pan Head, 6-32 x 0.500-Inch, Black	MS51957-30B, NIIN 00-469-5382
Spacer Kit, Bayonet	80B4858, NIIN 01-141-5916

NOTE

Shims are fabricated from spacers provided 80B4858. They are intended for use by aircrew experiencing difficulty inserting the bayonet into the jaw receiver because of either individual physiognomy or helmet shell/edge roll interference.

a. Remove spacers and fabricate required shims by doing the below procedure on each spacer.

(1) Position the spacer to be modified between the jaws of a bench vise with one of the raised projections facing the technician and clamp in position.

(2) Starting at the forward rivet head positioning dimple, use a small hand held rotary grinder with a grinding drum or a rough cut hand file and grind or file evenly rearward on the raised projection reducing the profile of the projection from 4/32 of an inch to 1/32 of an inch on the aft tang.

(3) Repeat the grinding or filing on the opposite protrusion, making sure the aft tang finished dimension is 1/32 of an inch.

(4) Do steps a.(1) thru a.(3) above on the remaining spacer.

(5) Sand the ground or filed surfaces of both newly fabricated shims smooth. Verify the desired dimensions have been achieved and the shims are uniform in appearance.

b. Remove right and left earcups from helmet shell earcup cavity pile fastener material and position earcups clear of work area. Pull installed pile fastener material away from the interior surface of the earcup cavity and fold clear of work area.

c. Remove four screws, four lock washers and two backplates securing installed spacers and receivers to helmet shell exterior, dispose of screws but keep remaining items for use during installation.



ADHESIVE, MIL-A-46106 302

NOTE

A small amount of adhesive may be applied to each screw before adding lock washer and backplate.

d. Using new MS51957-30B screws, lock washers and backplate, reinstall shim, spacer and receiver on helmet shell exterior. Make sure concave surface of shim is flush with helmet shell exterior before securing in position.



ADHESIVE, EC1357 12

e. Using adhesive, bond pile fastener material in position on interior surface of earcup cavity.

32. INSTALLATION OF PILE TAPE ON HELMET ASSEMBLY.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Scissors	3452	70574

Materials Required

Nomenclature	Specification or Part Number
Acid Brush	1127-0004-P10
Adhesive	EC1357, NIIN 00-165-8614, NIIN 00-273-8717
Fastener Tape, Pile, Type I, 2-Inch Width	MIL-F-21840, NIIN 00-926-4930
Pencil, Lead	A-A-2771

NOTE

Use of any size of type pile fastener tape available through local supply is authorized. Black or olive green are preferred colors.

Refer to NAVAIR 13-1-6.5, Rescue and Survival Equipment, for addition of hook tape to emergency signal light.

a. Raise visor to full up position and lock in position with visor lock knob.

b. At a point 0.25 inch aft of raised visor, center a 2 x 2 piece of pile fastener tape on crown of helmet shell assembly. Hold in position and trace lightly around pile fastener tape with a lead pencil to make an outline on the surface of the reflective tape installed on the helmet shell assembly. Refer to [figure 17](#).

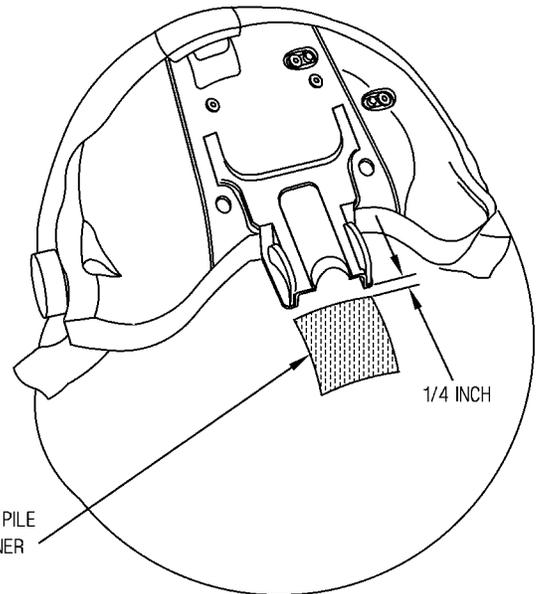


Figure 17. Pile Tape Location

006017



ADHESIVE, EC1357 12

c. Apply adhesive with acid brush to outlined area and allow adhesive to dry for 30 minutes.

d. Apply adhesive to underside of pile fastener tape and a second coat of adhesive to helmet area with acid brush. Allow adhesive to become tacky (approximately 15 minutes).

e. Press pile fastener tape firmly on prepared area on helmet shell assembly.

f. Document per OPNAVINST 4790.2 series. (QA)

33. INSTALLATION OF UPPER HVI.

Support Equipment Required

None

Materials Required

None

a. Upper HVI is received from supply completely installed in helmet shell assembly. If upper HVI is not completely installed, refer to WP00900 for installation procedures.

b. Refer to WP00900 for maintenance of upper HVI.

34. IPD ADJUSTMENT.

Support Equipment Required

None

Materials Required

None

a. Do IPD ADJUSTMENT per WP00700.

35. VISOR TRIMMING.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Cloth Tape Measure	MIL-C-29127	81349
Knife	GGG-K-450	81348
Razor Blade	GG-R-60	81348
Safety Goggles	G-G-531	81348
Small Hand Held Grinder (Rotary)	84922	18531
Visor Template	81D5189-3 or -4	53655

Materials Required

Nomenclature	Specification/ Part Number
Grease Pencil	SS-P-186
Masking Tape	A-A-883 TYPE 1
Pencil, Lead	A-A-2771

a. Do the standard oxygen mask fitting procedures (see NAVAIR 13-1-6.7-3).

b. Verify IPD Adjustment is complete per WP00700 before continuing.

c. Verify visor down lock latch is in the nominal position (Figure 18, Sheet 1).

d. Install visor on helmet display unit (HDU).

e. Rotate visor to the down position.

NOTE

Do not do next step until the oxygen mask and combat edge equipment, if installed, have been leak tested and passed.

f. Put a small piece of masking tape even with the top edge of visor on HDU. Tape should be approximately centered on HDU (Figure 18, Sheet 2).

g. Remove visor from helmet display unit (HDU).

h. Apply masking tape down center and sides of the visor on both inside and outside (Figure 18, Sheet 3).

i. Using a knife or razor blade, trim excess masking tape from the edge of visor.

j. Install the visor on the HDU per WP01100.

k. Lower and lock visor in the down position and make pencil mark on the masking tape on the HDU (Figure 18, Sheet 2).

NOTE

Make sure oxygen mask is in the normal flight position with both bayonets inserted into the receiver and the chin strap fastened.

Once the aircrewmember has donned the helmet, it should remain on the aircrewmember until directed to be removed to allow for setting of the liner. Premature removal of the helmet will affect the fitting of the visor during the trimming process and may adversely affect the final fit.

l. Rotate visor to the up position and have aircrewmember don helmet and oxygen mask. Make sure the mask is centered on the aircrewmember's face and nose.

m. Lower the visor until it latches or contacts the edgeroll or oxygen mask. If visor contacts edgeroll before contacting oxygen mask, grind visor per substeps below until visor latches or contacts oxygen mask.

(1) Mark where the visor contacts the edgeroll with a grease pencil.

(2) Remove visor from HDU.



Grinding the visor polycarbonate lens produces a dust which is irritating to the eyes and respiratory system. During grinding, wear eye protection and avoid breathing dust.

Heating the polycarbonate above its melting temperature can also produce vapors which are irritating. Avoid heating material above its melting point.

Protective Personal Equipment (PPE), should be worn as determined by local Industrial Hygienist or Ship's Safety Officer in accordance with NAVAIR A1-NAOSH-SAF-000.



Remove no more than 1/8 inch of visor material at a time. Removing more than 1/8 inch of the visor at a time will damage the visor.

(3) Wearing appropriate PPE, and using a small hand held rotary grinder, remove small amounts of visor material at points marked with a grease pencil. Install visor on HDU per WP0100 and have aircrewmember don helmet and oxygen mask.

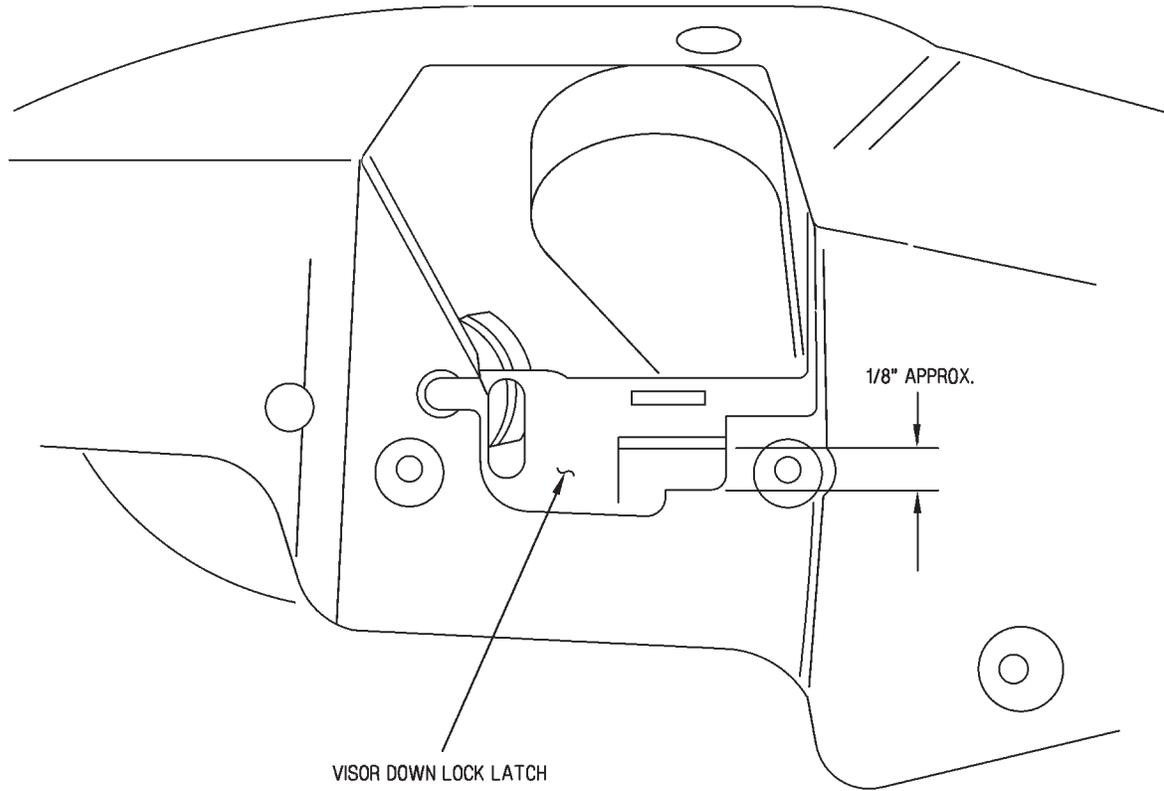
(4) Rotate visor to the latch down position or until it contacts the oxygen mask. If visor still contacts the edgeroll, repeat steps m(1) through m(4), this WP.

n. With visor rotated down, contacting the crown of the oxygen mask, make a mark on the HDU masking tape (figure 18, sheet 4).

n1. Remove the visor from the HDU.

o. Measure and record the distance between the marks recorded in step k, and step n on the HDU masking tape (figure 18, sheet 4).

p. Measure up, from nose cutout position, the distance recorded in step b, on the visor and make a grease pencil mark (figure 18, sheet 5).



VISOR DOWN LOCK LATCH POSITION

Figure 18. Visor Trimming (Sheet 1 of 6)

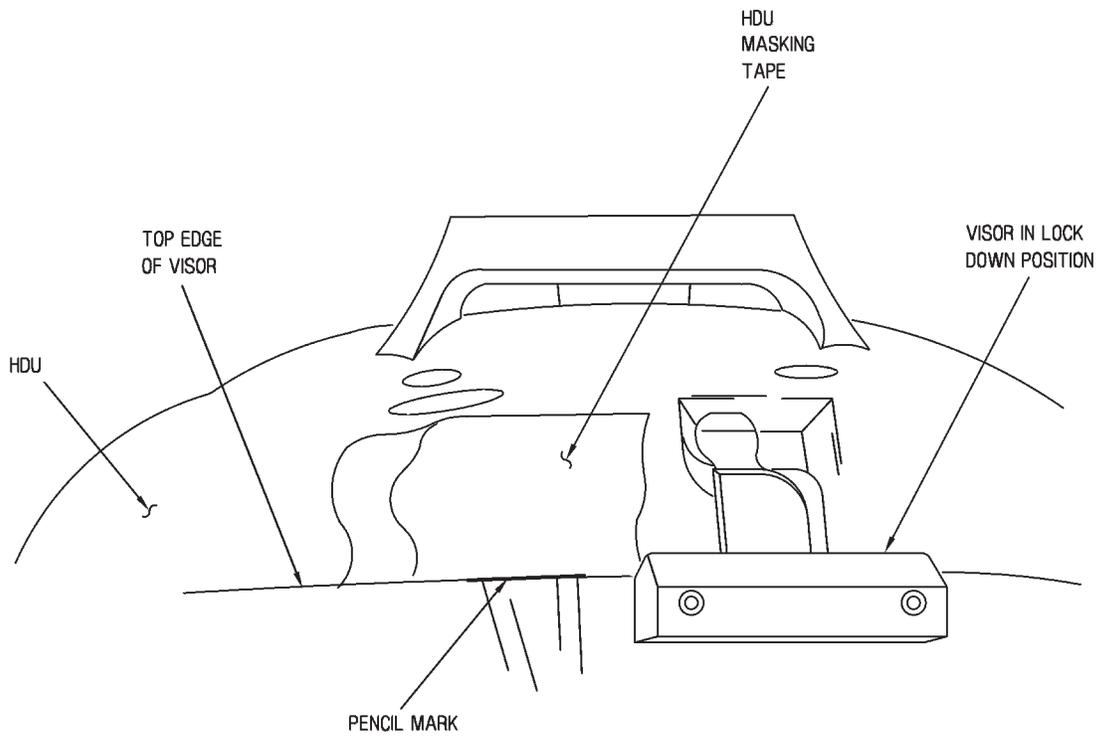


Figure 18. Visor Trimming (Sheet 2)

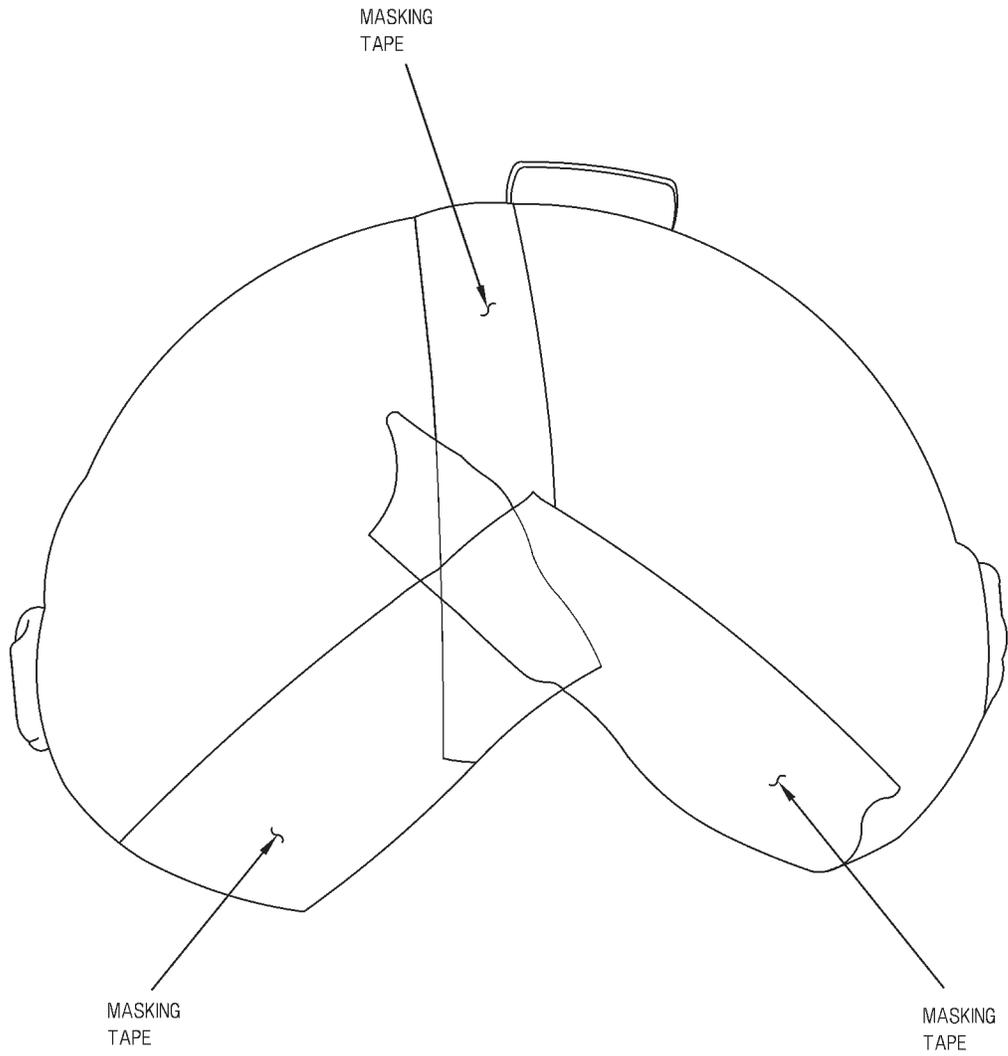


Figure 18. Visor Trimming (Sheet 3)

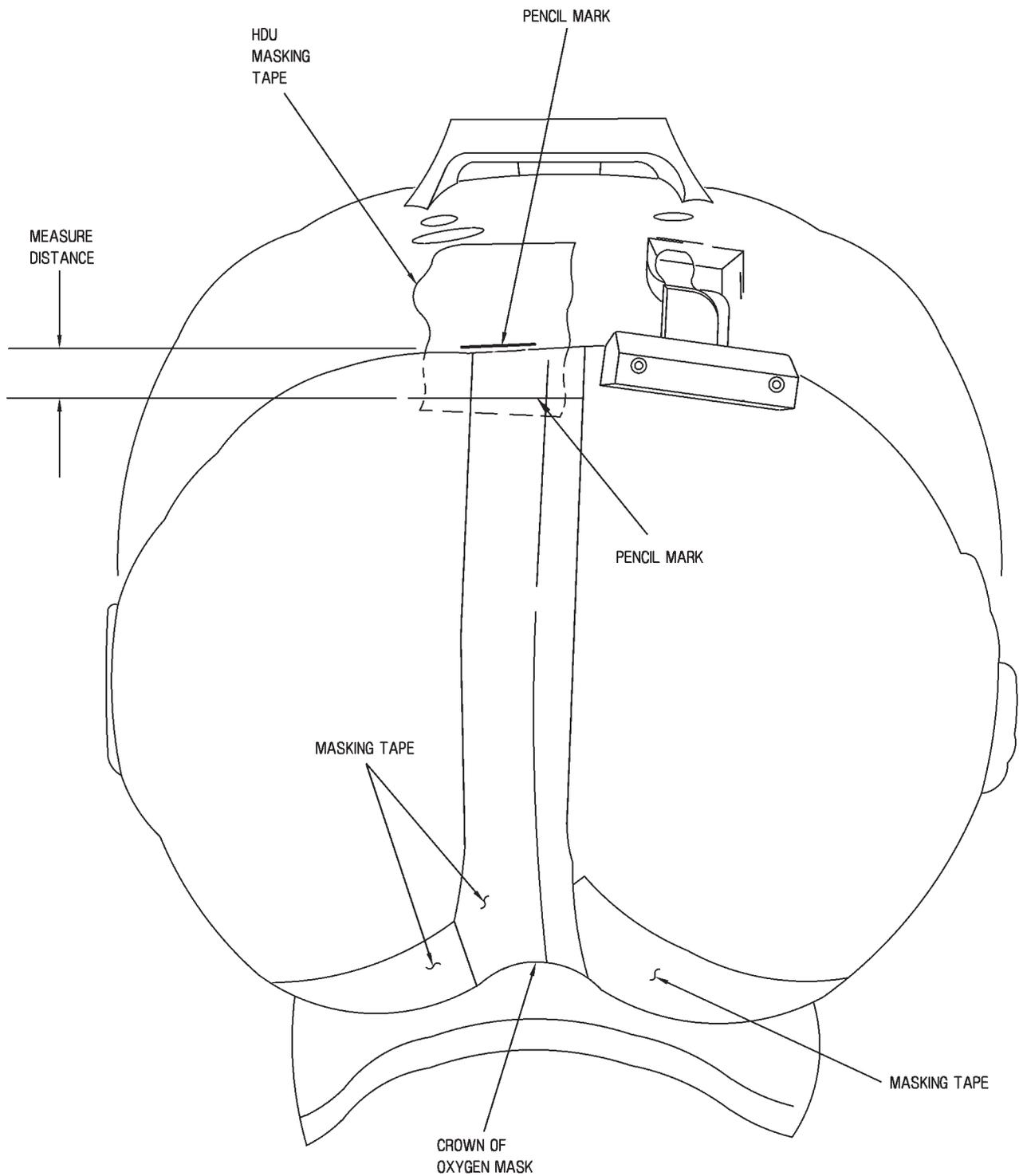
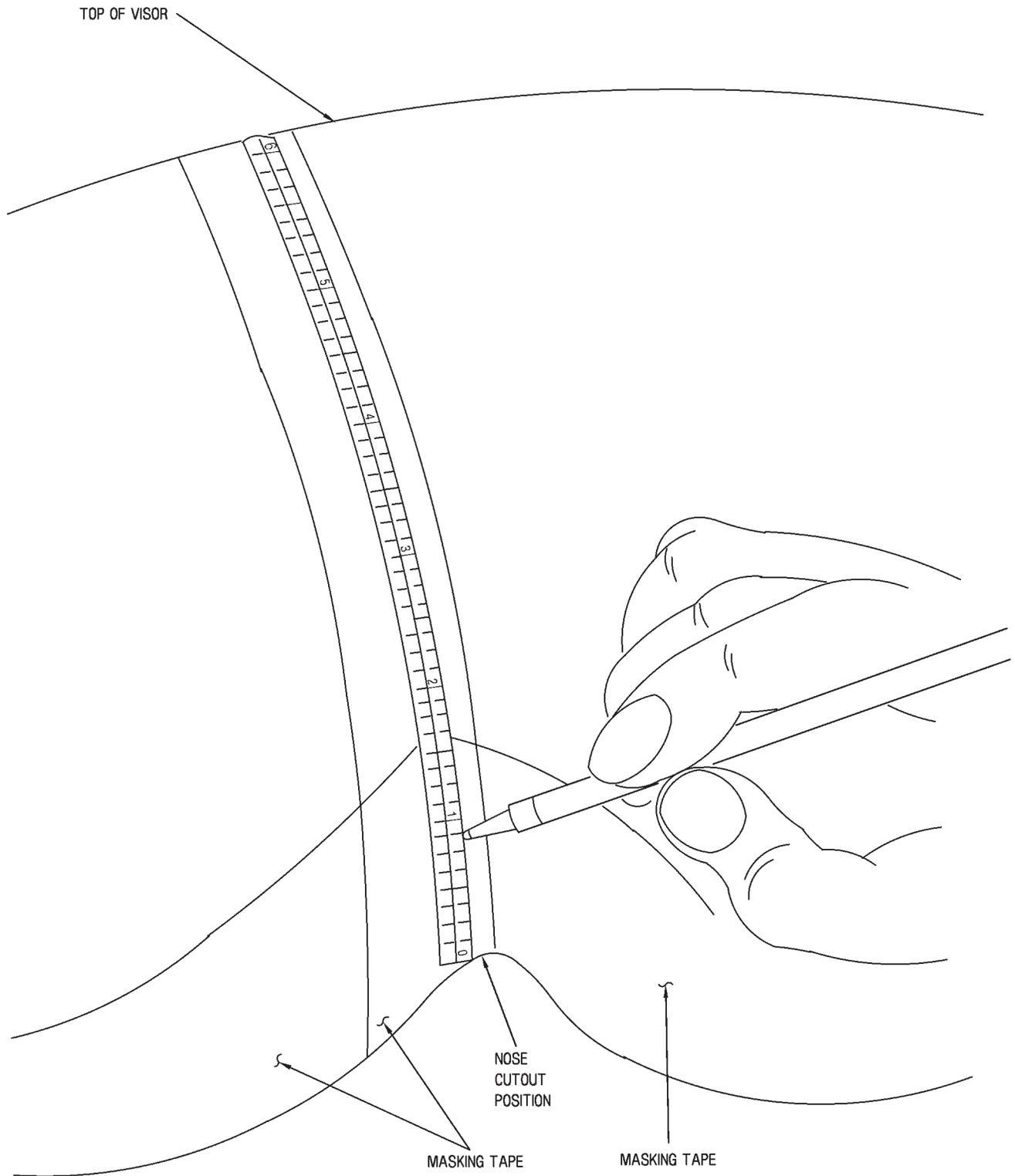
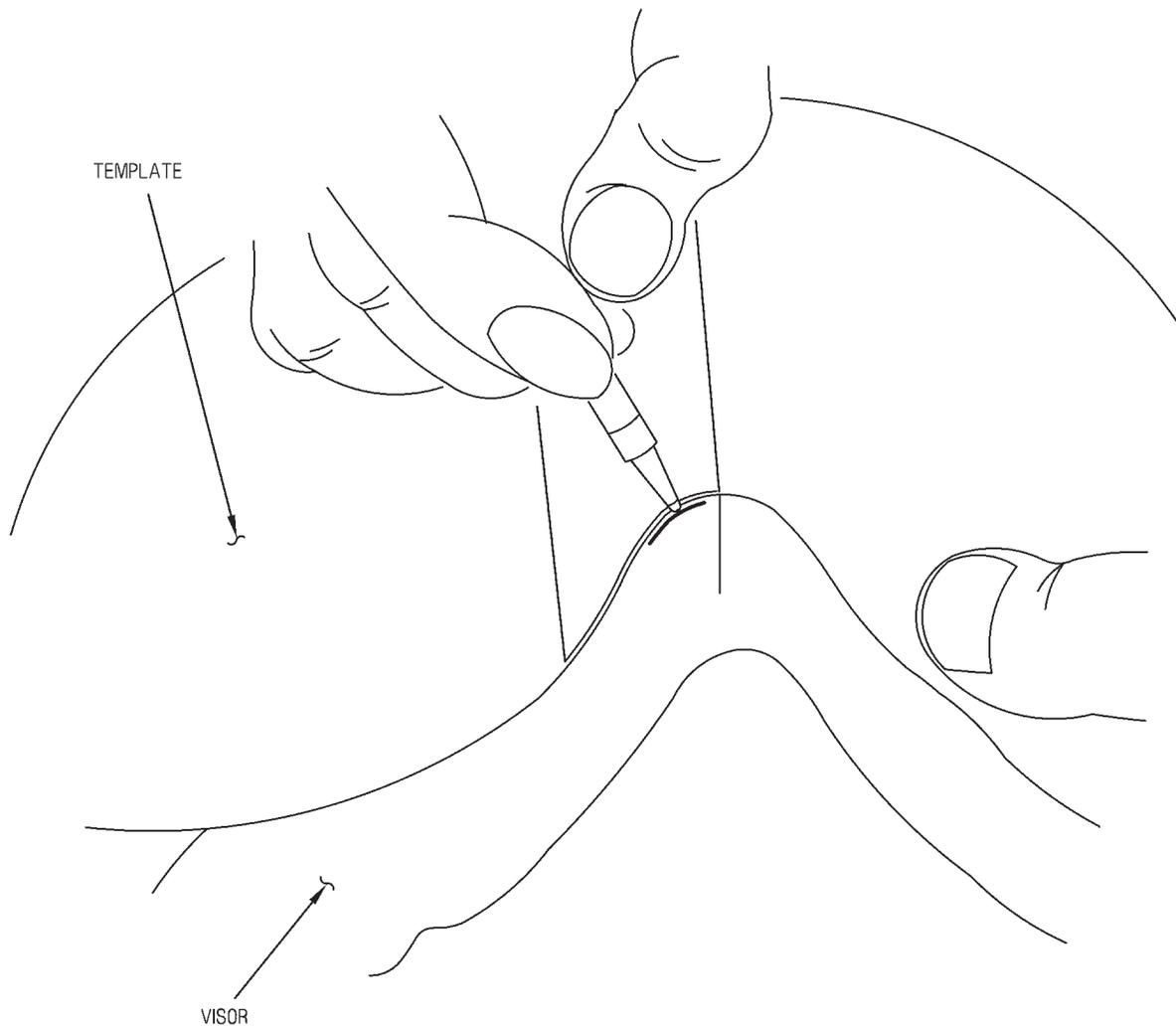


Figure 18. Visor Trimming (Sheet 4)



MARKING THE VISOR FOR THE
NOSE CUTOUT POSITION

Figure 18. Visor Trimming (Sheet 5)



MARKING THE VISOR WITH THE
NOSE CUTOUT TEMPLATE

Figure 18. Visor Trimming (Sheet 6)

CAUTION

Be careful with template not to scratch or damage visor.

NOTE

Do not use factory trimmed nose cutout of new visor as the guide for lateral positioning of the nose cutout template on the visor. The nose cutout template and the factory trimmed nose cutout of the visor may not be in the same lateral position on the visor. Use Combat Edge Visor/Bungee Visor as template.

q. Position applicable oxygen mask nose cutout template on front of visor so the highest point is aligned with both the vertical and horizontal lines of mask  (figure 18, .

r. Trace a grease pencil line along the bottom edge of oxygen mask nose cutout of trimming template  (figure 18, .

s. Remove visor template from the front of visor.

WARNING

Grinding the visor polycarbonate lens produces a dust which is irritating to the eyes and respiratory system. During grinding, wear eye protection and avoid breathing dust.

Heating the polycarbonate above its melting temperature can also produce vapors which are irritating. Avoid heating material above its melting point.

Protective Personal Equipment (PPE), should be worn as determined by local Industrial Hygienist or Ship's Safety Officer in accordance with NAVAIR A1-NAOSH-SAF-000.

CAUTION

Remove no more than 1/8 inch of visor material at a time. Removing more than 1/8 inch of the visor at a time will damage the visor.

t. Wearing appropriate PPE, trim the visor using a the small hand held rotary grinder, from the bottom edge of the visor to grease pencil mark. Use the outline marks from the bungee visor as a guide during grinding to assist in obtaining the correct nose cutout for the mask used. Verify fit between 1/8-inch increments to prevent the removal of too much visor material.

NOTE

Make sure the oxygen mask is in the normal flight position and the chin strap is secured and tightened correctly.

u. Deleted.

v. Install visor on HDU and lower the visor to the down lock position or until the visor contacts the oxygen mask or face.

w. If visor interferes with the oxygen mask or face, mark the bottom edge of the visor, remove and trim.

x. Continue this process until the visor can be lowered to the down lock position with a gap from 1/16 to 3/16 inch between the bottom edge of the visor and the aircrewmember's face and oxygen mask.

NOTE

The visor may contact the oxygen mask while the aircrewmember is doing look up test.

y. Make sure the visor does not contact the face when the aircrewmember looks up, left or right.

z. Rotate visor assembly up.

aa. Remove visor from HDU.

CAUTION

Metal objects may destroy visor if used to remove masking tape.

ab. Using fingers or a non-marring tool, remove masking tape from visor. Be careful not to damage visor.

ac. Make sure aircrewmember's IPD is still aligned correctly before proceeding with helmet buildup. If adjustment to helmet IPD is required, do IPD  .

ad. Document per OPNAVINST 4790.2 series. (QA)

ae. Have aircrewmember remove helmet.

36. INSTALLATION OF VISOR TANGS.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Knife	GGG-K-450	81348
Razor Blade	GG-R-60	81348
Safety Goggles	G-G-531	81348
Small Hand Held Grinder (Rotary)	84922	18531

Materials Required

Nomenclature	Specification or Part Number
Adhesive	2216 B/A, GRAY, NIIN 00-145-0019
Cotton Tip Swab	GG-A-616
Double-Sided Masking Tape	4962
Emery Cloth (fine grit)	P-C-451
Grease Pencil	SS-P-186
Isopropyl Alcohol	TT-I-735, or MIL-I-10428, NIIN 00-855-1158, NIIN 00-855-6160, NIIN 01-190-2538, NIIN 01-220-9907
Masking Tape	A-A-883 TYPE 1
Visor Tang Kit	620532-01-00

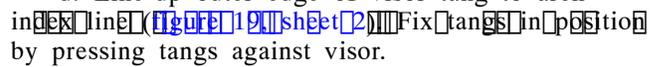
a. Cut 8-10 pieces of double-sided masking tape 1/8 inch wide by 1/2 inch long.

b. Put the double-sided masking tape in several areas on the back side of the left and right visor tangs (figure 19, sheet 1).

NOTE

Visor tangs should match as closely as possible the contour of the visor obtained during the trimming process.

c. Lower the visor to the lock down position.

d. Line-up outer edge of visor tang to arch in  by pressing tangs against visor.

e. Remove visor from HDU.

f. Turn visor over and trace bottom edge contour of visor tangs with a grease pencil.

g. Remove visor tangs from visor.

h. Trim visor along grease pencil marks (figure 19, sheet 3).

i. Using a sharp knife or razor blade, deburr the lower edge of the visor where visor was trimmed.

j. Trial fit the visor tangs directly to visor.

k. If tangs do not fit or rock in position, locate high spots on visor.

l. Mark high spots with a grease pencil.



Grinding the visor polycarbonate lens produces a dust which is irritating to the eyes and respiratory system. During grinding, wear eye protection and avoid breathing dust.

Heating the polycarbonate above its melting temperature can also produce vapors which are irritating. Avoid heating material above its melting point.

Protective Personal Equipment (PPE), should be worn as determined by local Industrial Hygienist or Ship's Safety Officer in accordance with NAVAIR A1-NAOSH-SAF-000.

m. Wearing appropriate PPE, use a small hand held rotary grinder and trim the visor.

n. Repeat steps j through m until visor tangs fit firmly in position.

n1. Position visor tangs in their final location on visor. Make sure there are no visible gaps between visor tangs and visor (figure 19, sheet 2).

o. Secure visor tangs, in position, to visor with double-sided masking tape (figure 19, sheet 4).

p. Attach the visor to the HDU.

q. Lower the visor to the lock down position.

r. If tangs interfere with the helmet edge roll when rotating the visor to the lock down position, reposition visor tangs by moving tangs away from edge roll. Repeat visor grinding steps through m. as necessary to eliminate interference using care to remove as little visor material as possible.

37. BOND VISOR TANGS IN POSITION.

a. Position visor tangs in their final location on visor. Make sure there are no visible gaps between visor tangs and visor (figure 19, sheet 2).

b. Using small pieces of masking tape, mark the edges of the visor tangs on the front and rear surfaces of visor.

c. Remove the visor tangs.



ISOPROPYL ALCOHOL, TT-I-735 OR MIL-I-10428 1001

d. Clean area with isopropyl alcohol where visor tangs and visor will be mated. Allow to air dry.

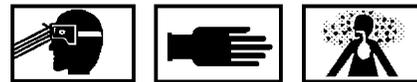
e. Using fine grit emery cloth, roughen up the surface of the visor within the masked area on the front and back surface of the visor and roughen up the surface of the visor tang gluing area. The abraded area on the visor should have a dull appearance.

f. Remove masking tape from visor and visor tangs.



ISOPROPYL ALCOHOL, TT-I-735 OR MIL-I-10428 1001

g. Clean visor tangs and visor with isopropyl alcohol. Allow to air dry.



ADHESIVE, 2216 B/A, GRAY

1069



Adhesive should be applied within 90 minutes of mixing base and accelerator.

Adhesive should be applied to visor tangs evenly to prevent running on visor assembly.

h. Apply a uniform bead of adhesive with wooden end of cotton tip swab or any other suitable applicator, to both visor tangs and visor surfaces.

NOTE

All masking tape should be removed before bonding visor tangs to visor.

i. Install visor tangs on visor. Make sure a 3-5 mm thick bond line is achieved between visor tangs and visor.



ISOPROPYL ALCOHOL, TT-I-735 OR MIL-I-10428 1001

j. Clean up excessive adhesive from front and back of visor with cotton tip swabs and isopropyl alcohol.

k. Inspect and make sure no visible gaps are between visor tangs and visor.



Allow adhesive to dry per manufacturer specifications listed below.

l. Use masking tape to hold visor tangs in position until adhesive reaches handling strength, approximately 8-12 hours (figure 19, sheet 4).

m. Even though the visor can be safely handled after 8-12 hours, allow 7 days for adhesive to fully cure before issuing to aircrewmember for flight.

n. Document per OPNAVINST 4790.2 series. (QA)

38. INSTALLATION OF VISOR TANG RECEIVERS.

Support Equipment Required

Nomenclature	Type Designation/ Part Number	CAGE
Drill Bit, Number 28	DBE28A	55719
Safety Goggles	G-G-531	81348

Materials Required

Nomenclature	Specification or Part Number
Double-Sided Masking Tape	4962
Pencil, Lead	A-A-2771
Receptacle Kit, Visor Tang	135427-1

- a. Attach display unit to helmet shell.
- b. Attach visor to display unit.
- c. Lower the visor to the lock down position.
- d. Apply double-sided masking tape to helmet side of tang receiver mounting flange.



Grinding the mounting flange material produces a dust which is irritating to the eyes and respiratory system. During grinding, wear eye protection and avoid breathing dust.

Heating the polycarbonate above its melting temperature can also produce vapors, which are irritating. Avoid heating material above its melting point.

PPE should be worn as determined by local Industrial Hygienist or Ship's Safety Officer in accordance with NAVAIR A1-NAOSH-SAF-000.

e. Position the left and right tang receivers (part of visor tang receptacle kit P/N 135427-1) so the ends of the visor tang is inside the tang receiver. If necessary, and wearing appropriate PPE, trim the mounting flange material slightly with a hand held grinder to allow the tang receiver mounting flange to clear screw heads or bayonet receivers.

f. Secure the visor tang receivers to the helmet shell temporarily by pushing them against helmet shell in desired location.

g. Rotate the visor up and down several times to make sure visor tangs clear tang receivers.

h. Mark the visor tang receiver mounting holes using a lead pencil (figure 20).

i. Make sure visor tangs go into the tang receivers when rotating the visor to the lock down position.

j. If tangs interfere with edge of tang receiver when rotating the visor to the lock down position, reposition visor tangs by moving tangs away from edge roll or grind receiver. If the tang receiver interferes with the snap or bayonet receiver, grinding of receiver to remove interference area is acceptable.

k. Inspect visor operation.

l. Inspect clearance of visor tang receivers.

m. Remove HDU and visor from helmet.

n. Remove earcups.

n1. Remove visor tang receiver from helmet.

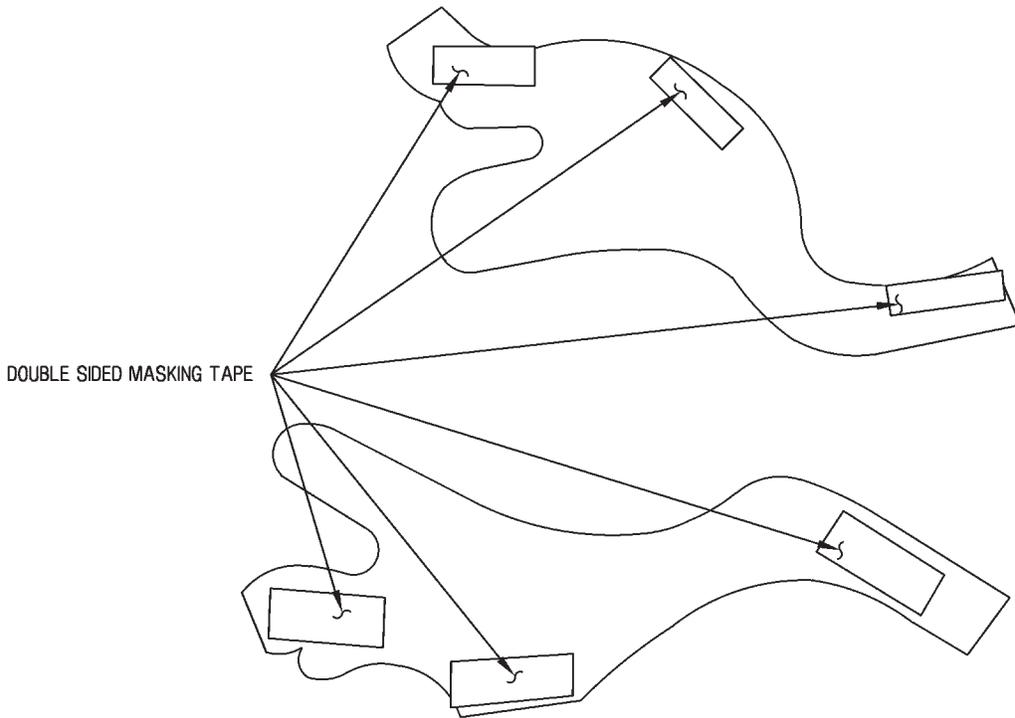
o. Using a number 28 drill bit, drill a hole through each of the marked hole positions.

p. Deleted.

q. Remove double-sided masking tape from back side of visor tang receiver flange.

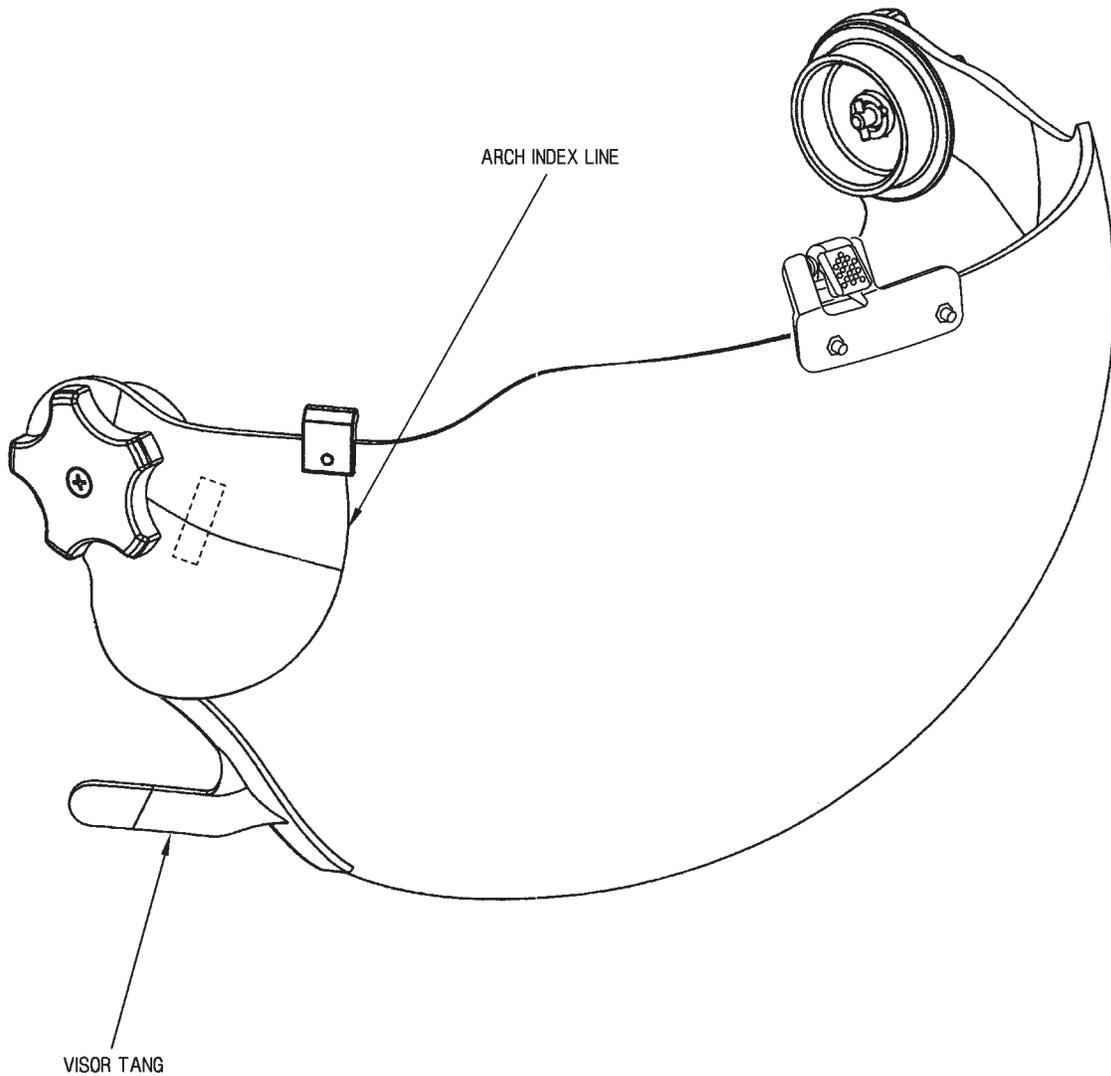
r. Replace visor tang receiver flange on helmet.

s. Attach visor tang receiver with screws, lock washers and nuts (from outside in) provided in visor tang receptacle kit P/N 135427-1.



PREPARING THE VISOR TANGS FOR VISOR TRIMMING

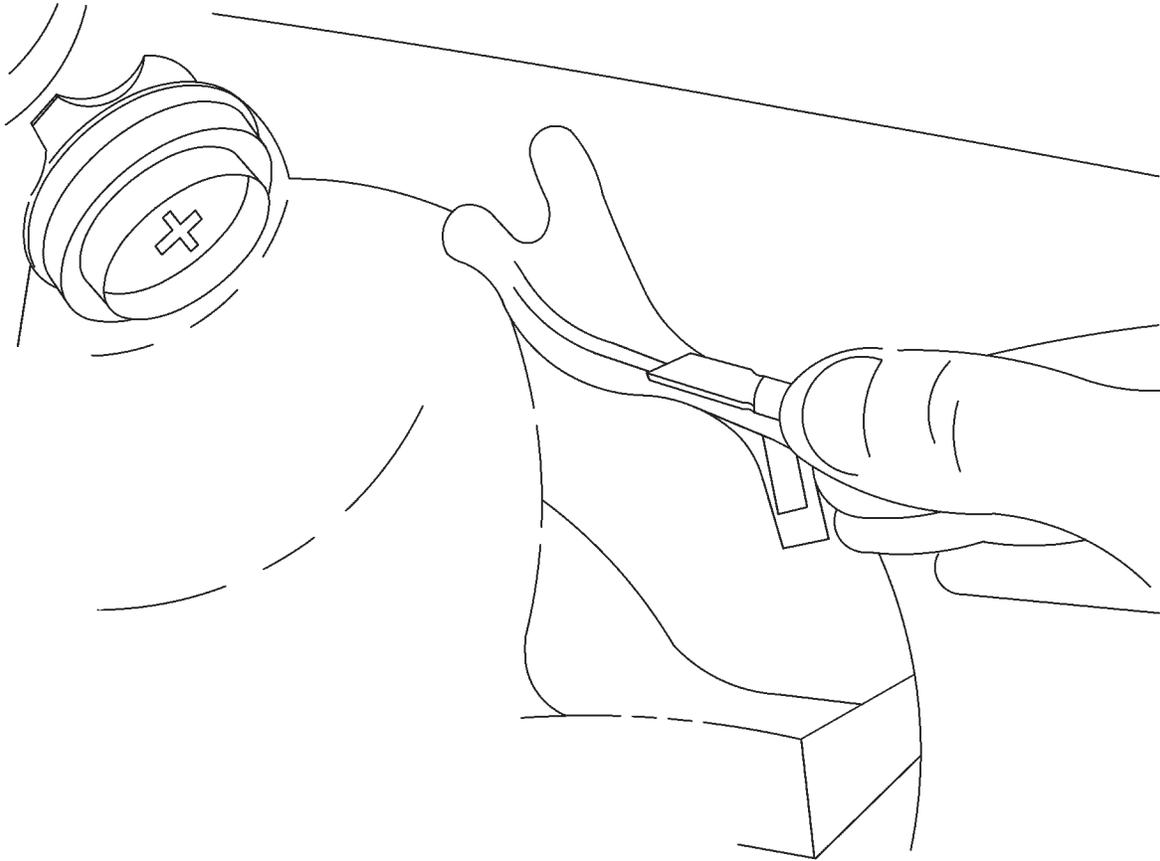
Figure 19. Visor Tang Trimming (Sheet 1 of 4)



(RIGHT VIEW)

LOCATING THE VISOR TANG POSITION ON THE VISOR

Figure 19. Visor Tang Trimming (Sheet 2)



MARKING THE VISOR TO TRIM FOR VISOR TANGS

Figure 19. Visor Tang Trimming (Sheet 3)

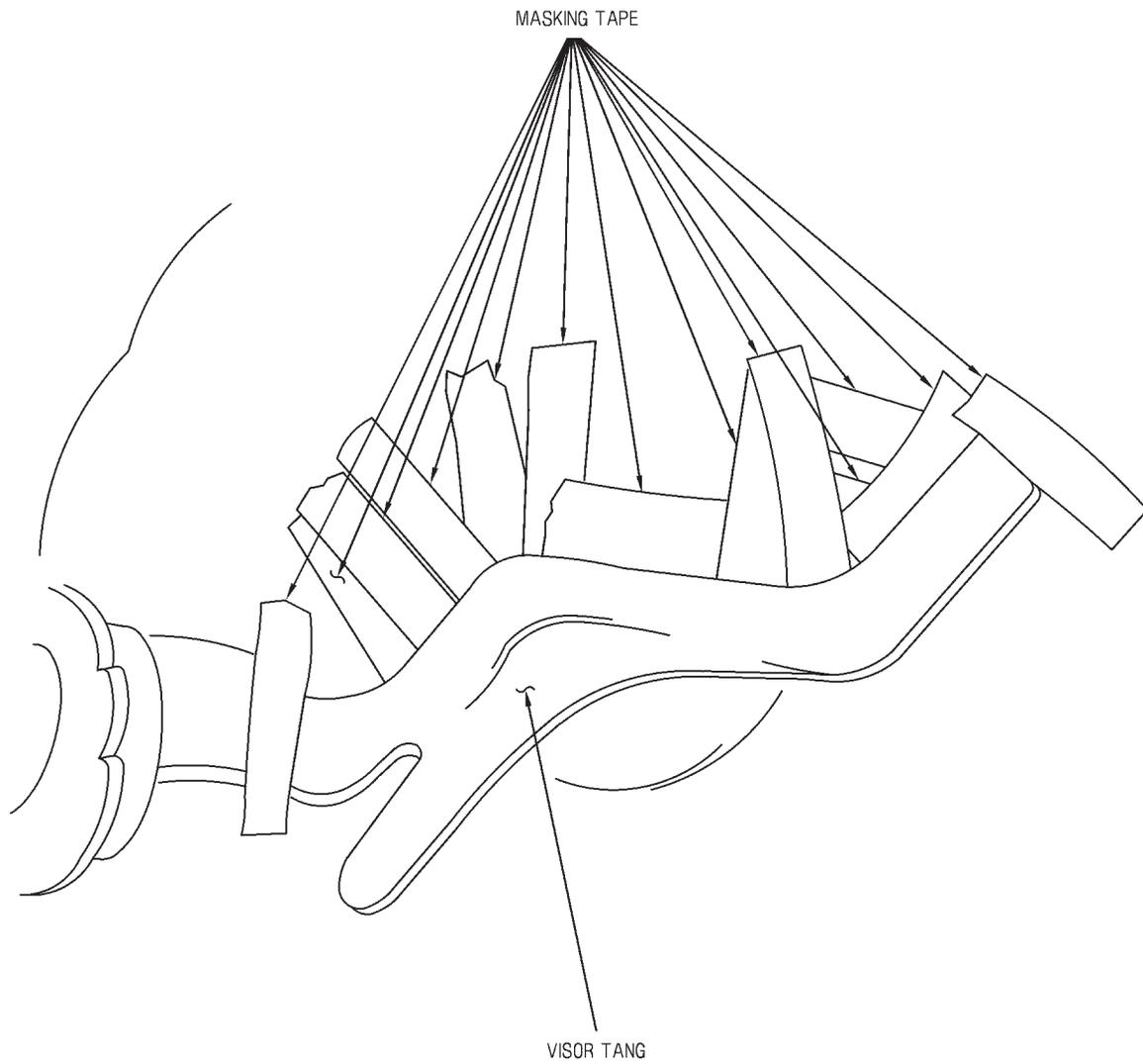
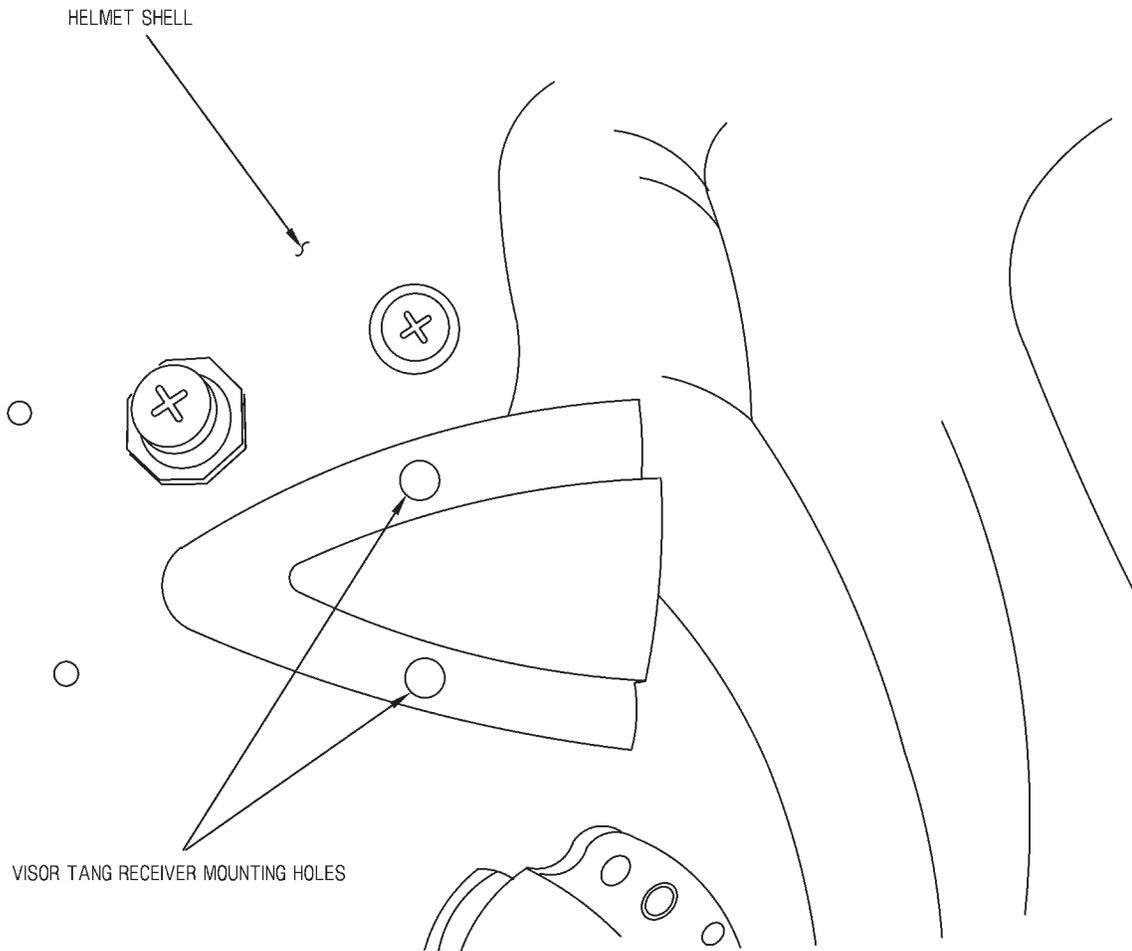


Figure 19. Visor Tang Trimming (Sheet 4)



MOUNTING HOLE LOCATIONS FOR THE
VISOR TANG RECEIVERS

Figure 20. Visor Tang Receivers

6-39. INSTALLATION OF NIGHT VISION IMAGE INTENSIFIER SET (NVIIS) AN/AVS-9 (V) HELMET MOUNT ASSEMBLY.

Support Equipment Required

None

Materials Required

Quantity	Description	Reference Number
1	Drill Bit, Number 16	DBE16A, NIIN 00-189-9261
1	Drill Bit, Number 40	DBE40A, NIIN 00-189-9285
1	Metal Spatula	GGG-C-746, NIIN 00-680-2634
1	Tape Measure, Dressmaker's	A-A-1666, NIIN 00-782-3520
As Required	Adhesive	MIL-A-5540, CLASS 3, FORM B, NIIN 00-142-9913, NIIN 00-515-2246
As Required	Adhesive	RTV 102/732, NIIN 00-877-9872
As Required	Adhesive	RTV 154/157, NIIN 00-181-8380
1	Bracket Kit, Helmet [Note 1]	265030-3
1	Helmet Mount Assembly (AN/AVS-9 (V))	273735-1
As Required	Tape, Pressure Sensitive	A-A-1243, NIIN 00-782-6220

Notes: 1. Bracket Kit P/N 265030-3 contains all required hardware to attach the P/N 273735-1 Helmet Mount Assembly to the JHMCS Helmet Shell; four #6-32 hex head screws, four lock washers, left hand mounting bracket (thick concave bracket), right hand mounting bracket (thin concave bracket) and two interior backing plates.

NOTE

Prior to installation of the helmet mount assembly, ensure the crewmember's helmet has been properly fit, adjusted and that all visual alignment procedures have been satisfactorily completed.

a. Detach the two lift-the-dot snap fasteners securing the forward edges of the Helmet Display Unit (HDU), lift and unlock the HDU latch and remove the unit from the helmet. Set HDU aside for reinstallation.

b. Invert the helmet on the workbench; remove the TPL or Zetaliner, set aside for reinstallation. Keeping the helmet inverted, detach the earcups from the helmet earcup cavity pile fastener material and position them clear of work area.

c. Loosen and remove the two screws securing the Upper Helmet Vehicle Interface (UHVI) cable clamp to the nape of the helmet, remove the upper portion of the clamp from the interior of the helmet and set aside for re-assembly.

d. On the exterior of the helmet, loosen and remove the two screws and flat washers from the underlying lock washers and flanged nuts securing the integrated chin/nape strap to the rear of the helmet. Loosely reassemble the removed items onto the grommeted ends of the chin/nape strap to prevent twisting or position shift during maintenance.



Use extreme caution when removing energy absorbing liner assembly. Use of liner removal aids, other than the approved metal spatula or ruler is not authorized and may damage the liner, which will result in reduced impact protection.

e. Invert helmet on workbench with the brow of the helmet facing the technician, at the center of the nape of the helmet, carefully insert a thin metal spatula (or a 12-inch by 1-inch metal ruler may be used) between the inner surface of the helmet shell bottom edge of the lower half of the two piece energy absorbing (EA) liner. Using the spatula as a lever, pull inward and upward on the liner, until the lower edge of the liner can be grasped with the free hand.

f. Rotate the lower half of the EA liner approximately 90 degrees to the left or right to clear the earcup cavity edgeroll and completely withdraw the rear half from the helmet shell interior. Withdraw the front half of the EA liner from the helmet shell interior, rotating as necessary to clear the earcup cavity edgeroll.

g. Place the helmet upright on the workbench with the brow of the helmet facing the technician. Locate the center of the allan screw hole on the front surface of the Universal Connector (UC), then using a cloth measuring tape, measure downward from the center of the hole toward the brow edgeroll. Ensuring the tape measure is flat on the helmet surface, using a number 2 medium lead pencil, draw a vertical line downward on the helmet shell, from the allan screw hole toward the leather edgeroll identifying helmet brow centerline.

NOTE

When measuring exposed threads on the left hand latching screw, ensure measurement is taken from the rear edge of the cylindrical nut and not from the hexagonal latching screw lock nut.

h. Adjust helmet mount assembly left hand latching screw to leave .250-inch of threads exposed, when measured from the rear edge of the threaded cylindrical nut. Ensure the latching screw lock nut is loosened.

i. Using a number 2 medium lead pencil, place an alignment mark on the bottom edge of the helmet mount assembly at the center (11/16ths of an inch) of the ledge formed by the bracket of the vertical height adjustment mechanism.

j. Position the helmet mount assembly across the brow of the helmet, with the lower edge resting level along the upper edge of the helmet brow edgeroll.

k. Using the alignment mark made in [step i.](#), align the helmet mount assembly over the vertical centerline mark on the brow edgeroll.

l. Visually verify the alignment of the mark made on the helmet mount assembly with the vertical centerline mark on the brow edgeroll, and ensure the lower edge of the mount assembly lies evenly across the upper edge of the helmet brow edgeroll. (QA)

m. Maintaining alignment, press the mount assembly firmly into place on the helmet brow. Apply masking tape to the right and left extensions of the mount assembly starting downward from the crown of the helmet, over the middle of each extension, continuing downward over the brow edgeroll wrapping under the brow. Secure the free end of the tape to the inner surface of the helmet.

NOTE

During installation of the required hardware, it may be necessary to cut one of the brow edgeroll securing stitches at the right or left hand corner of the brow edgeroll to facilitate proper orientation and positioning of the mount assembly brackets.

The right hand mounting bracket features two latching notches, one deep notch and one shallow notch, with four attaching screw slots. These features have been incorporated to permit minor adjustments to the mount assembly's position on the helmet to optimize eye relief and interpupillary distance adjustments of the Night Vision Image Intensifier Sets (NVIIS) for each crewmember.

n. Cut two pieces of pressure sensitive tape 1-inch wide by 2-inches long. Center the right hand

mounting bracket onto the exposed adhesive side of one of the 2-inch long tape sections and position the left hand mounting bracket onto the remaining tape section.

o. Using a rotary head punch, punch holes in the pressure sensitive tape at the center of the fore and aft attaching screw slots closest to the shallow latching notch on both the right and left hand mounting brackets. Remove the protective backing from the remaining side of the pressure sensitive tape.

p. Position the right hand side of the helmet toward the technician. Position the right-hand mounting bracket under the mount assembly latching hook, with the shallow notch facing down and away from the center of the helmet. Engage the mount assembly latching hook into the shallow notch of the right-hand mounting bracket.

q. Using hand pressure, press downward firmly on the right mount assembly extension, position the concave surface of the right hand mounting bracket flush with the surface of the helmet shell, ensuring the inboard edge of the mounting bracket is parallel to the right hand edge of the mount assembly. Press bracket firmly into place on the helmet shell.

r. Maintaining this alignment, using a number 2 medium lead pencil, place a mark on the helmet shell, through the hole punched in the tape, at the center of the fore and aft attaching screw slots closest to the shallow notch, designating drilling locations for the bracket attaching screws.

s. Position helmet on workbench with the left side of the helmet toward the technician. Lift the locking latch and insert the head of the previously adjusted latching screw into the center cutout of the left-hand mounting bracket (thick concave bracket). Close the locking latch, ensuring the head of the latching screw remains centered in the left-hand bracket cutout.

t. Using hand pressure, press down firmly on the left mount assembly extension, position the concave surface of the left mounting bracket flush with the surface of the helmet shell. The head of the latching screw must remain centered in the cutout, and the inner edge of the mounting bracket must be positioned parallel to the left edge of the mount assembly. Press bracket firmly into place on the helmet shell.

u. Maintaining this alignment, using a number 2 medium lead pencil, place a mark on the helmet shell, through the hole punched in the tape, at the center of the fore and aft attaching screw slots, designating drilling locations for the bracket attaching screws.

v. Remove masking tape from the mount assembly and the helmet shell; remove mount assembly and set aside for use in alignment check, leaving the mounting brackets in place at their designated locations.

w. Attach the HDU to the universal connector and visually verify that no interference exists between the HDU and the mounting brackets. As a final check, from a standard sheet of paper cut a 4-inch by 8-inch piece to use as a go-no-go gage, slide the paper between the HDU housing and the brackets. If resistance is felt, the bracket is contacting the inner surface of the housing and the bracket must be repositioned. Refer to steps 14 through 19. (QA)

x. After satisfactorily completing the interference check, remove the brackets from the helmet shell, remove the pressure sensitive tape from the brackets, properly dispose of the tape and set brackets aside for use during assembly.

y. At selected locations on the right and left-hand sides of the helmet, using a no. 40 (0.098) drill bit, drill a pilot hole. Use a no. 16 drill bit to enlarge each of the four holes to the finished dimension of 0.177-inch.

NOTE

Apply a small amount of RTV to the first few threads of the left and right-hand mounting bracket attaching screws, and to the chin/nape strap attaching screws.

z. Position a backing plate, with the flat surface of the backing plate toward the interior surface of the left hand side of the helmet shell, align the built in nuts of the backing plate beneath the two drilled attaching screw holes. On the outer surface of the helmet, align the left hand mounting bracket over the drilled holes, with the center cutout toward the top of the helmet, and secure in place with a 5/64-inch allen key, using two screws and lock washers.

aa. Repeat the installation procedure for the right hand mounting bracket, ensuring the shallow notch of the bracket faces down and away from the top of the helmet.

ab. Place helmet mount assembly into position on the helmet shell, engage the right hand latching hook, lift the locking latch, placing the head of the left hand latching screw into the center cutout of the left mounting bracket and close the locking latch. If the helmet mount assembly is too loose, adjust the latching screw to provide the desired tension, ensuring the mount assembly is centered on the helmet when the locking latch is closed. Once desired

tension is achieved, tighten the latching screw lock nut to maintain proper position. Remove the helmet mount assembly from helmet and set aside during reinstallation of removed internal helmet components.

ac. Invert helmet on workbench and reinstall the front half of the two piece energy absorbing liner, ensuring front edge of liner is flush with the inner surface of the helmet shell brow edgeroll. Holding the front half of the liner in place, insert the back half of the liner into the helmet, ensure both portions of the liner are centered within the helmet, then push the rear liner into place.

ad. Reinstall the upper portion of the HVI cable clamp onto the nape area of the helmet, using the two attaching screws.

ae. Attach the integrated chin/nape strap to the attachment points on the rear of the helmet using two screws, flat washers, locking washers and flanged nuts.

af. Attach earcups to the pile fastener fabric on the interior of the helmet earcup cavity.

NOTE

If during crewmember goggle fit process, difficulty is experienced in obtaining proper eye relief or interpupillary distance using goggle adjustments, minor adjustments to the position of the helmet mount assembly may be accomplished by means of right hand mounting bracket attaching slot selection. To adjust the position of the mount assembly slightly to the right (as worn), place the attaching screws in the inboard attaching slots. To adjust position of the mount assembly slightly to the left (as worn), install the right hand mounting bracket with the deep notch facing down and away from the center of the helmet, using the attaching slots closest to the deep notch.

ag. Contact crewmember to schedule an NVIIS adjustment and alignment appointment.

ah. Upon completion of NVIIS fit verification, if helmet brow edgeroll securing stitching was cut to accommodate mounting bracket installation, apply adhesive to the exposed helmet surface and the underside of the edgeroll leather, and wait 15 minutes. After 15 minutes, press the edgeroll leather firmly into place on the helmet shell.

ai. Make appropriate entries on required record cards, in accordance with OPNAVINST 4790.2 Series Manual Instructions. (QA)

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