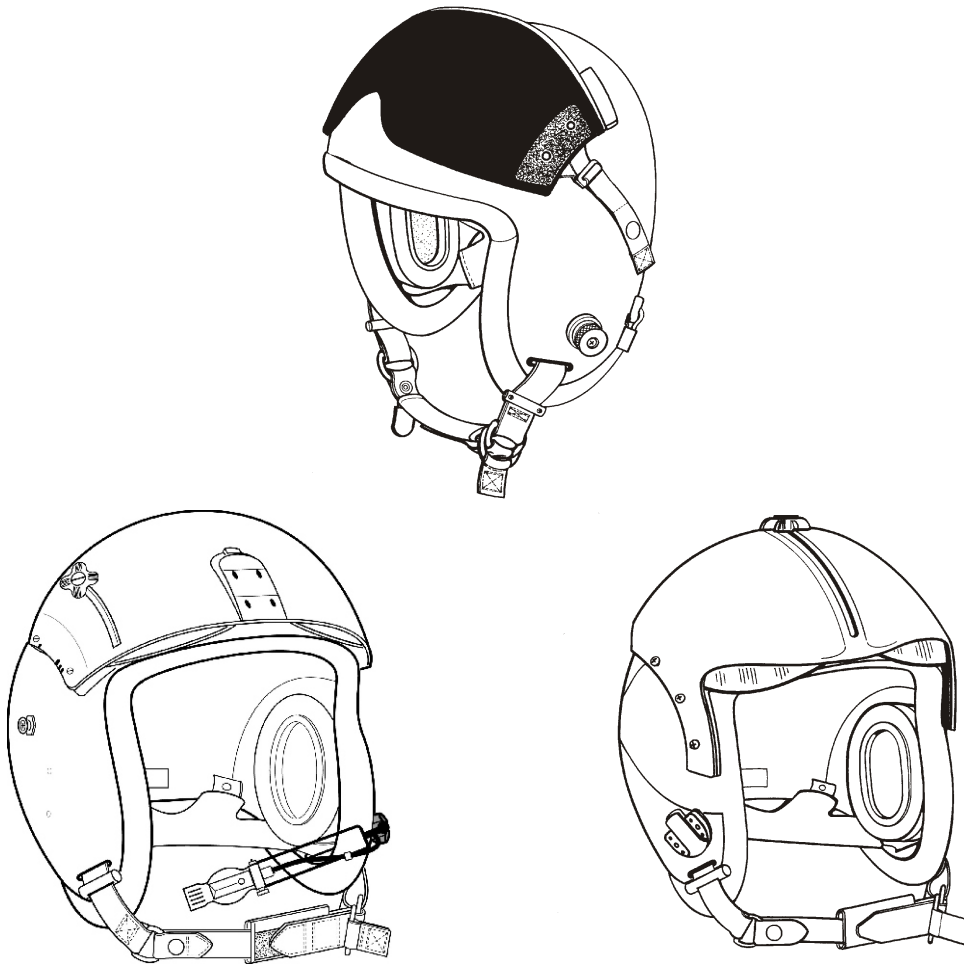


**OPERATION AND MAINTENANCE INSTRUCTIONS
WITH ILLUSTRATED PARTS LIST**

HGU-84/P COMMERCIAL HELMET ASSEMBLY



**GENTEX CORPORATION
CARBONDALE, PA
JUNE 2001**

CONTENTS

CHAPTER 1: INTRODUCTION AND GENERAL INFORMATION

1-1 INTRODUCTION	1-1
1-2 SCOPE	1-1
1-3 SYSTEM DESCRIPTION.	1-1
1-3.1 HELMET ASSEMBLY.	1-1
1-3.2 HELMET SHELL ASSEMBLY	1-2
1-3.3 THERMOPLASTIC LINER ASSEMBLY (TPL®) ASSEMBLY	1-2
1-3.4 EARCUP ASSEMBLIES	1-3
1-3.5 INTEGRATED CHIN/NAPE ASSEMBLY	1-3
1-3.6 EEK-4 SINGLE VISOR ASSEMBLY	1-4
1-3.7 DUAL VISOR ASSEMBLY WITH QUICK DISCONNECT	1-4
1-3.8. LIGHTWEIGHT VISORS	1-4

CHAPTER 2: PREPARATION FOR USE

2-1 SIZING	2-1
2-2 HELMET FITTING	2-2
2-3 FITTING OF TPL ASSEMBLY	2-5
2-4 FITTING OF OPTIONAL BAYONET RECEIVER ASSEMBLY	2-9
2-5 INSTALLATION OF LIGHTWEIGHT VISORS	2-12
2-6 ANVIS MOUNT MODIFICATION (DUAL VISOR ASSEMBLY)	2-13

CHAPTER 3: MAINTENANCE

3-1 GENERAL.	3-1
3-2 INSPECTION	3-1
3-2.1 Preflight/Postflight Inspection.	3-1
3-2.2 Calendar Inspection.	3-1
3-2.3 Visual Inspection	3-2

CONTENTS (Continued)

3-3 CLEANING	3-3
3-4 SERVICING THE HELMET.	3-4
3-4.1 INSPECTION UPON RECEIPT.	3-4
3-4.2 REPLACEMENT OF COMPONENTS	3-5
3-4.2.1 Replacement of TPL Cover or Layer Assembly.	3-6
3-4.2.2 Replacement of Earcup Assembly or Earphone	3-7
3-4.2.3 Replacement of Earphone Holder	3-9
3-4.2.4 Replacement of Earseal	3-10
3-4.2.5 Replacement of Chin/Nape Strap Assembly	3-11
3-4.2.6 Replacement of Chin Strap and Chin Pad.	3-13
3-4.2.7 Replacement of Nape Strap Clamp	3-14
3-4.2.8 Replacement of Boom Swivel Assembly	3-14
3-4.2.9 Replacement of Optional Bayonet Receiver Assembly	3-16
3-4.2.10 Replacement of Energy-Absorbing Liner.	3-18
3-4.2.11 Replacement of Dual Visor Assembly	3-20
3-4.2.12 Replacement of Single Visor Assembly	3-22
3-4.2.13 Replacement of Visor Lock Assembly	3-24
3-4.2.14 Replacement of Single Visor Lens	3-25
3-4.2.15 Replacement of Lightweight Visor.	3-26
3-4.2.16 Replacement of Visor Snap	3-27

CHAPTER 4: ILLUSTRATED PARTS BREAKDOWN

4-1 GENERAL	4-1
4-2 COMPONENTS OF IPB	4-1
4-2.1 Figure and Index Number Column	4-1
4-2.2 Part Number Column	4-1
4-2.3 Description Column.	4-1
4-2.4 Units Per Assembly Column	4-1
4-2.5 Usable on Code Column	4-1

CHAPTER 1

INTRODUCTION AND GENERAL INFORMATION

1-1 INTRODUCTION

The HGU-84/P Commercial Helmet Assembly is designed to provide eye, ear, and head protection when properly assembled and fitted to the aircrew member. It has a light-weight helmet shell constructed of graphite, ballistic nylon, fiberglass, and epoxy resin. The helmet assembly, available in four sizes (medium, large, X-large, and X-large wide), is form-fitted. Its stability is enhanced by an integrated chin/nape strap assembly. The helmet assembly also houses the headset communications and allows for the use of clear or sunshade visor assemblies. The helmet is designed to permit the use of the MBU-17/P oxygen mask if required.

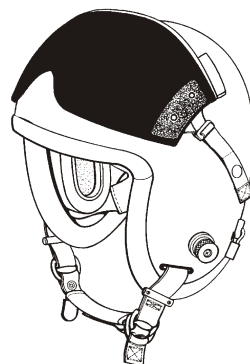
1-2 SCOPE

This manual contains a description of the HGU-84/P Commercial Helmet Assembly as well as the sizing, fitting, and maintenance instructions required to outfit aircrew members successfully and to maintain the equipment properly.

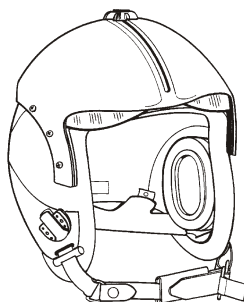
1-3 SYSTEM DESCRIPTION

1-3.1 HELMET ASSEMBLY

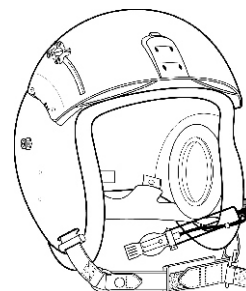
The aircraft helmet assembly is available with one of the following visor configurations: (1) a pair of lightweight visors, (2) a single visor assembly, or (3) a dual visor assembly with a quick-disconnect for night vision goggles. These configurations are shown in Figure 1-1. A chin/nape strap assembly and a thermoplastic liner assembly are added to the helmet shell assembly for a better fit and increased stability.



HELMET WITH LIGHTWEIGHT VISORS



**HELMET WITH
SINGLE VISOR ASSEMBLY**



**HELMET WITH
DUAL VISOR ASSEMBLY
(QUICK DISCONNECT)**

Figure 1-1. HGU-84/P Commercial Helmet Assembly

1-3.2 HELMET SHELL ASSEMBLY (Figure 1-2)

The helmet shell assembly is intended to provide head protection during in-flight buffeting and emergencies such as ejection, bailout, or crash landings. It has a polystyrene energy-absorbing liner and a fitted leather edgeroll installed. Earshell pile fasteners on each side of the helmet interior help hold earcups in place. A boom swivel on the left side (as worn) of the helmet shell allows for the mounting of a boom/microphone assembly. Optional bayonet receivers (not shown) can be installed to hold an oxygen mask.

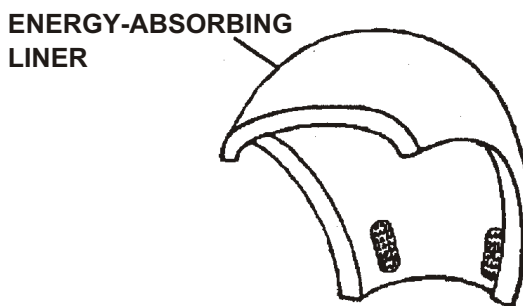
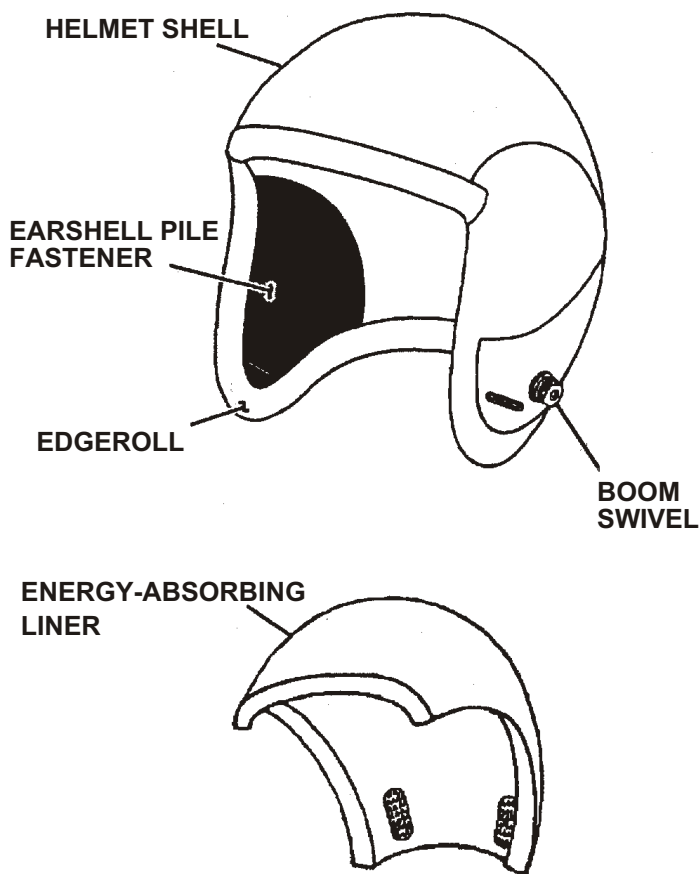


Figure 1-2. Helmet Shell Assembly

1-3.3 THERMOPLASTIC LINER (TPL®) ASSEMBLY (Figure 1-3)

The TPL assembly, used in conjunction with the energy-absorbing liner installed in the helmet shell assembly, provides helmet stability and comfort. The TPL assembly consists of preformed plastic layers and a washable cloth cover, which are held together by double-sided tape. If necessary, the TPL assembly can be custom-fitted to the aircrew member's head. The TPL assembly comes in three sizes: medium, large, and extra large.

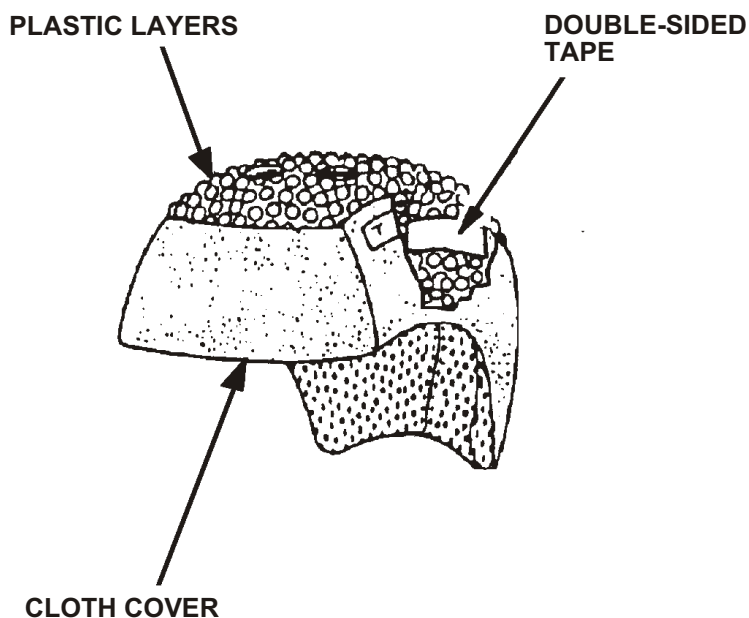


Figure 1-3. TPL Assembly

TPL® is a registered trademark of GENTEX Corporation.

1-3.4 EARCUP ASSEMBLIES

(Figure 1-4)

The earcup assemblies provide sound attenuation and are compatible with H-87B/U and H-143 earphones. These assemblies are attached via hook fasteners to the pile fasteners installed inside the helmet shell. A raised-ring earseal on each earcup optimizes comfort and sound attenuation. Earcup fitting pads can be placed between earcup and fitting shell if needed to optimize the fit to the aircrew member's head. The pads can be cut to any size or shape.

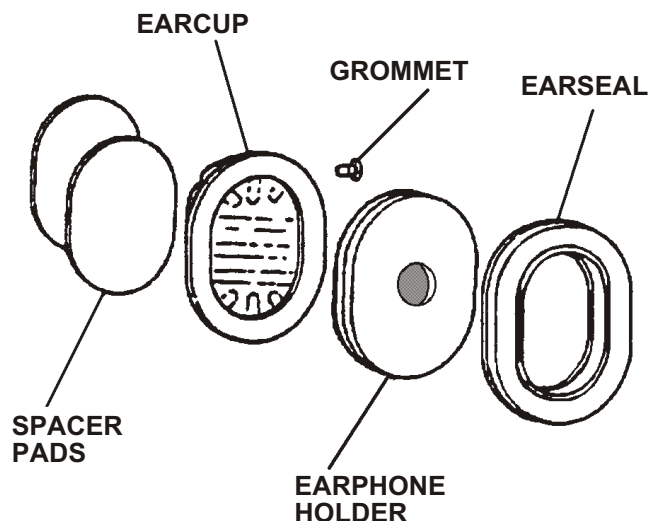


Figure 1-4. Earcup Assembly

1-3.5 INTEGRATED CHIN/NAPE ASSEMBLY (Figure 1-5)

The integrated chin/nape assembly is adjusted via the chinstrap, which simultaneously adjusts the cross straps at the nape strap area. This provides a snug, comfortable fit with maximum helmet stability. Clamp assemblies on the nape straps allow adjustment of the nape area without added strain on the chin strap. The nylon webbing nape straps feature a leather-covered pad for comfort. A spacer pad can be added behind the nape pad for increased snugness. The nylon webbing chin strap is reinforced with aramid tape on the inside. A snap tab on the right side (as worn) of the chin strap allows for fastening and unfastening without the need for repeated lacing through the D-rings on the left side (as worn). The chin strap features a chinpad with a pile fastener tab. A hook fastener on the end of the chin strap fastens to the pile tab to minimize slippage.

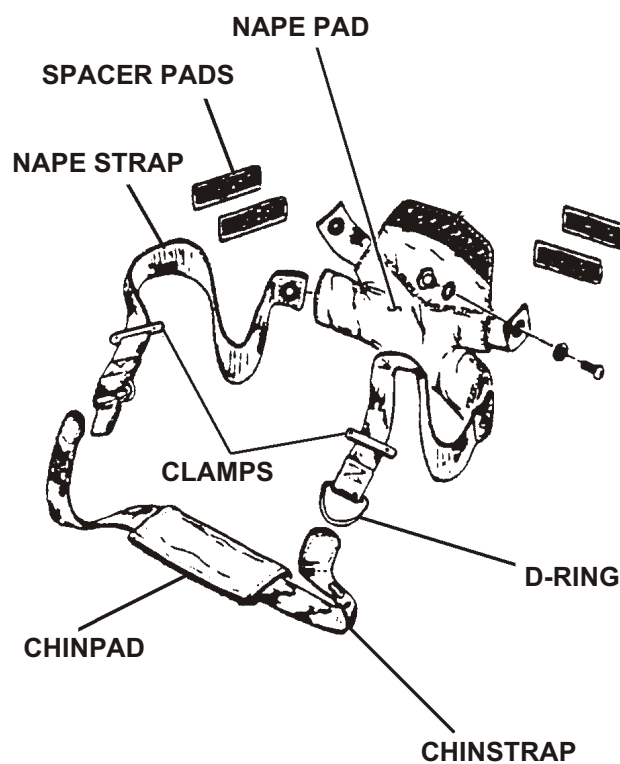


Figure 1-5. Integrated Chin/Nape Assembly

1-3.6 EEK-4 SINGLE VISOR ASSEMBLY (Figure 1-6)

The EEK-4 is a single-lens helmet visor assembly. When installed, the EEK-4 provides face and eye protection from impact, projectile penetration, sun glare, dust, windblast, and fire. Each assembly comes with interchangeable clear and neutral gray (sunshade) lenses. The installed visor is operated by a center lock mechanism.

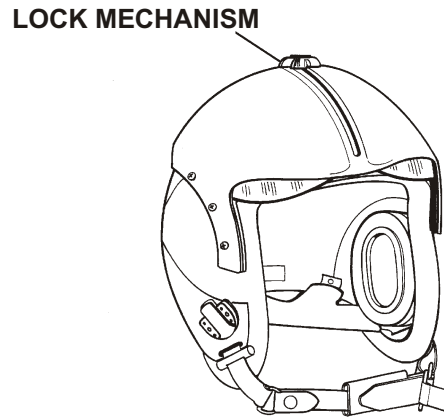


Figure 1-6. EEK-4 Single Visor Assembly

1-3.7 DUAL VISOR ASSEMBLY WITH QUICK DISCONNECT (Figure 1-7)

The dual visor assembly has a clear lens and a neutral gray (sunshade) lens. The outer lens is operated via a rotating lock. The inner lens is operated via an actuating knob. The center of the housing has a quick disconnect for ANVIS night vision goggles. Before you can use the quick disconnect, you must attach the ANVIS modification kit to the ANVIS mount. This procedure begins on Page 2-13.

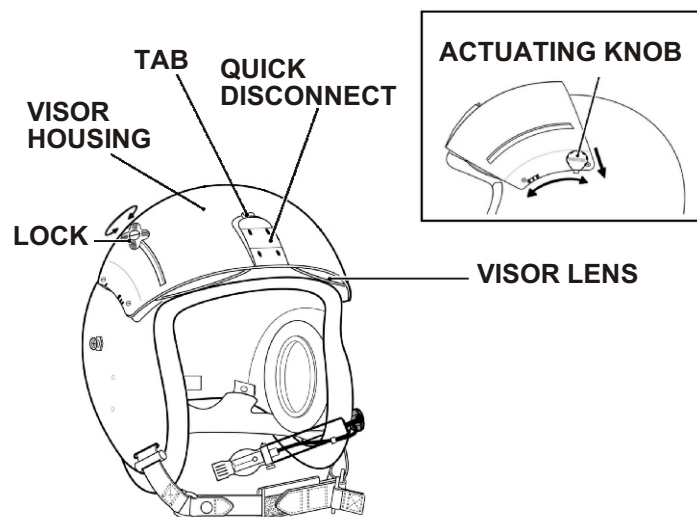


Figure 1-7. Dual Visor Assembly With Quick Disconnect

1-3.8 LIGHTWEIGHT VISORS (Figure 1-8)

The lightweight visors protect the eyes. They are attached and removed via snap fasteners. Included are a clear visor and a neutral gray (sunshade) visor, both of which are trimmed to accommodate the MBU-12/P oxygen mask. Bump stops attached to the helmet shell hold the raised visor in place. A lens cover can be added to protect the raised visor.

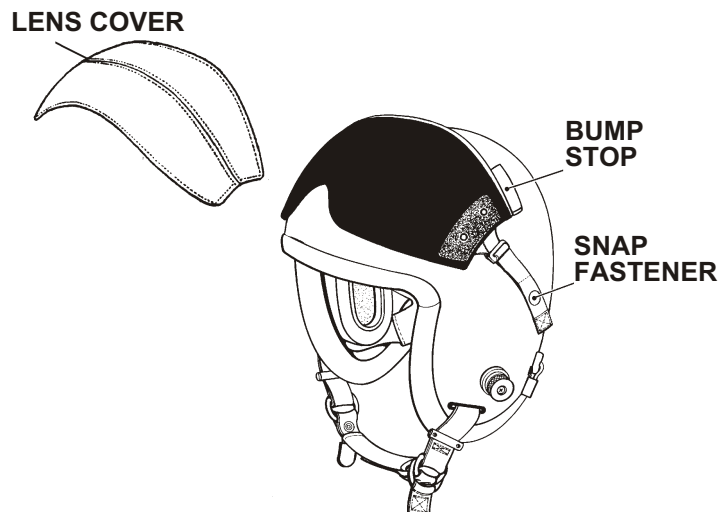


Figure 1-8. Snap-On Visors

CHAPTER 2

PREPARATION FOR USE

2-1 SIZING

To select the proper size helmet shell assembly for the aircrew member, proceed as follows:

NOTE

Ideally, aircrew members will wear the same size helmets as in previous designations. However, if a good fit is not possible, additional sizing procedures may be required.

1. If helmets are available, aircrew member should trial-fit to determine correct size to be ordered. If helmets are not available, measure the circumference of the head with a tape measure as shown in Figure 2-1. Refer to Table 2-1 as a guide for sizing.



Figure 2-1. Head Circumference for Helmet Sizing

NOTE

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

2. Once the correct size has been determined, requisition the helmet shell assembly through normal supply channels.

Table 2.1. HELMET SHELL ASSEMBLY SIZING GUIDE

CIRCUMFERENCE (INCHES/MILLIMETERS)	SHELL AND LINER SIZE REQUIRED
Less than 21-1/2 in. (546 mm.)	Medium
21-1/2 to 22-1/2 in. (546 to 571 mm)	Large
22-1/2 to 23-1/2 in. (571 to 596 mm) or more	X-Large
23-1/2 in. (596 mm) or more	X-Large Wide

2-2. HELMET FITTING

1. Place the TPL in the helmet, ensuring that the holes in the TPL plastic layers are positioned toward the front of the helmet.

NOTE

The TPL should seat down against, and align with, the front edge of the energy-absorbing liner.

2. Have the aircrew member don the helmet as follows:

CAUTION

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

- a. Grasp the helmet with thumbs hooked in the earcups, and spread the helmet slightly.
 - b. Place the front edge of the helmet against the forehead.
 - c. Rotate the helmet toward the rear and down onto the head. Ensure that the edgeroll is positioned just out of the aircrew member's line of sight as the aircrew member looks upward.
3. Check earcup position, ensuring that the earseals completely surround the ears.
 4. Check earseal compression.

For optimum sound attenuation, earseals should be compressed to about half of their original thickness. If necessary, adjust compression by adding earcup spacer pads.

NOTE

The earcup spacer pads can be installed whole or trimmed to any size or shape needed for optimum earseal compression. Figure 2-2 shows several examples.

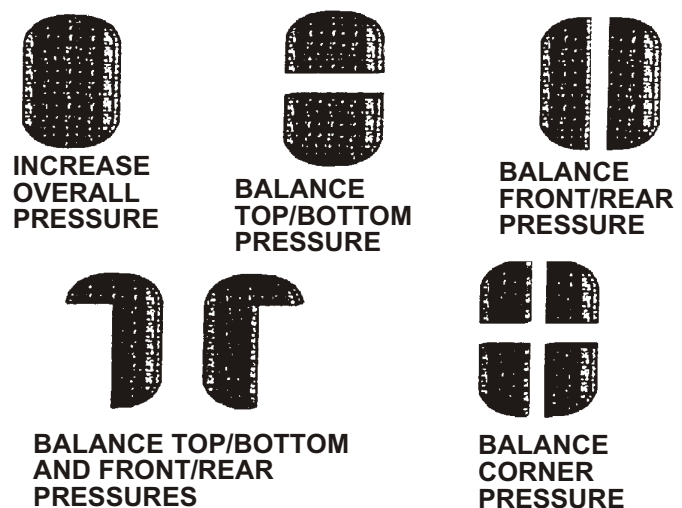


Figure 2-2. Earcup Spacer Pad Trims

5. Loosen the chinstrap clamp screws, and slide the clamps (Figure 2-3) down as far as possible on the chinstrap. Adjust the nape straps for a snug fit. Slide the clamps to hold the adjusted straps in place, and tighten the screws.

6. If you cannot achieve a snug fit by adjusting the nape strap clamps, install spacer pads (supplied with the helmet) as needed between the nape pad and the TPL.

7. If not already done, insert the end of the chinstrap (Figure 2-4) through the D-ring on the right side (as worn) and fasten the snap.

8. Have the aircrew member fasten the chinstrap as follows (Figure 2-4):

- a. Feed the end of the chinstrap through the D-rings on the left side of the helmet (as worn).
- b. Split the D-rings, and loop the end of the chinstrap through the inner D-ring.
- c. Tighten the chinstrap to the desired tension. Thereafter, fasten and unfasten the chinstrap via the snap on the right side (as worn) of the helmet.

9. Slide the chinpad (Figure 2-4) to the center of the chinstrap. Using needle and thread, tack the chinpad in place to prevent slippage.

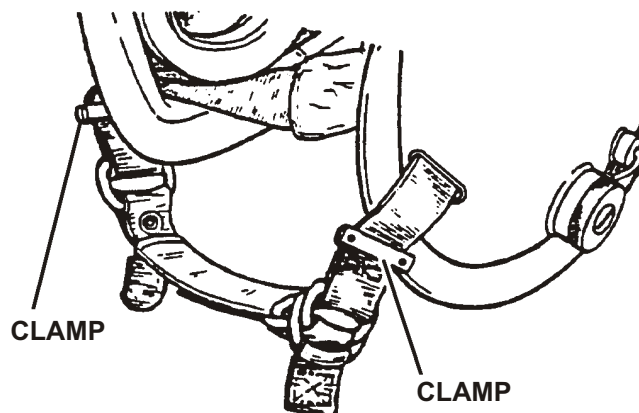


Figure 2-3. Chinstrap Clamps

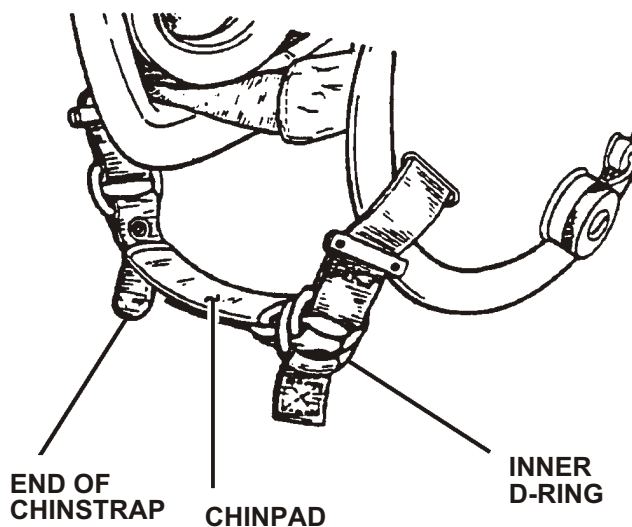


Figure 2-4. Fastening Chinstrap

WARNING

Ensure that the chinstrap is fastened at all times when the helmet is worn. Failure to do so will result in a loss of helmet stability and may cause injury or death.

10. Attach the end of the chinstrap to the chinpad by engaging the hook fastener on the chinstrap to the pile fastener on the chinpad.

11. To check visor operation, raise and lower the visor or visors as follows (Figure 2-5):

Dual visor assembly: **For the outer visor**, rotate the visor lock counterclockwise until the visor can be moved. Raise or lower the visor by sliding the lock up or down. Secure the visor in the desired position by rotating the lock clockwise until it can no longer be rotated. **For the inner visor**, unlock the visor by pushing the knob outward. Raise or lower the visor by sliding the visor while holding the knob in the outward position. Lock the visor in the desired position by releasing the knob.

Single visor assembly: Rotate the visor lock counterclockwise until the visor can be moved. Raise or lower the visor by sliding the lock up or down. Secure the visor in the desired position by rotating the lock clockwise until it can no longer be rotated.

Lightweight visor (with snaps): If the visor is not already installed, install it as specified in paragraph 2-5. Grasp the visor in the middle to raise or lower it. Adjust the straps as needed by sliding the buckles.

12. After the aircrew member has worn the helmet for about 30 minutes, have him or her evaluate the fit. If no pressure points exist and the helmet appears to fit properly, have the aircrew member remove the helmet. Mark the helmet with the aircrew member's identity and store it properly. If the helmet does not fit properly, have the aircrew member remove the helmet. Remove the TPL and follow the custom-fitting procedure (Paragraph 2-3).

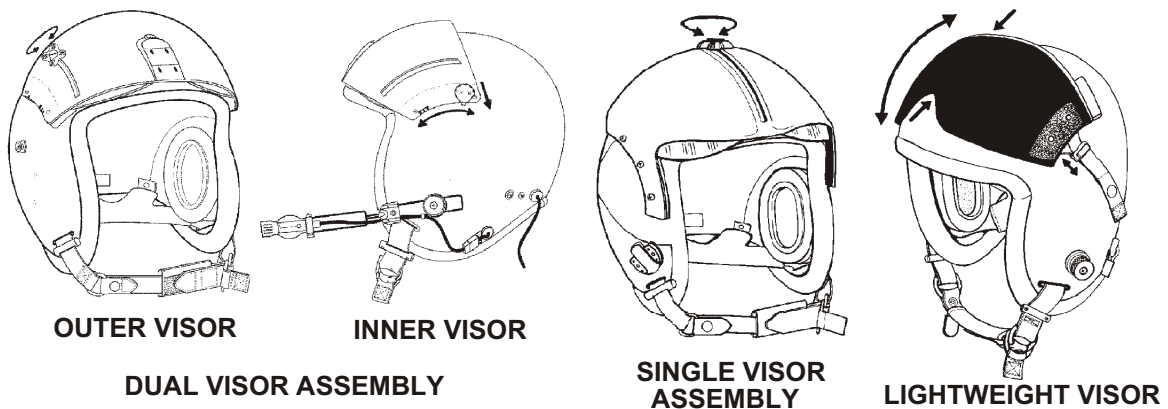


Figure 2-5. Visor Operation

2-3. FITTING OF TPL ASSEMBLY

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
4	Fastener tape, hook, pressure sensitive	85B7027
As required	Tape, double coated, vinyl, approximately 1 x 2 inches (25 x 50 mm)	No. 419 (3M) or equivalent

To fit the TPL assembly in the helmet shell assembly, proceed as follows:

1. If four 1 x 2-inch (25 x 50-mm) pressure-sensitive hook fastener tabs are not present on inside surface of energy-absorbing liner, installation is required. Install two tabs vertically on the front of the energy-absorbing liner, and two tabs in the rear approximately 1-1/2 inches (38 mm) left and right from the center and approximately 1/4 inch (6.3 mm) from the bottom edges.

2. Ensure the TPL cover assembly is secured to the TPL preformed layer assembly with two approximately 1 x 2-inch (25 x 50-mm) pieces of double-sided tape (one on each side) as shown in Figure 2-6.

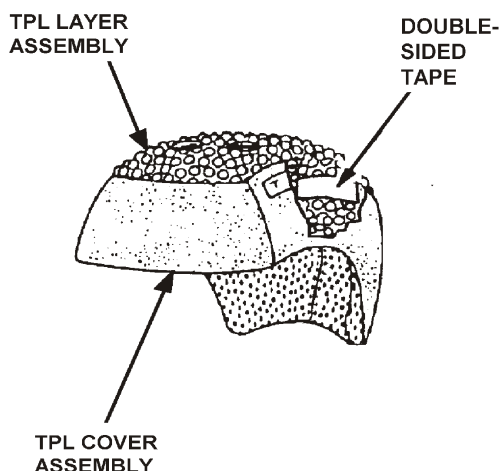


Figure 2-6. Cover Assembly Secured to Layer Assembly

3. Referring to Figure 2-7, install the TPL into the helmet by squeezing the TPL sides together to clear the earcups and ensuring that large holes in the TPL assembly (wide end) are toward the front of the helmet assembly.

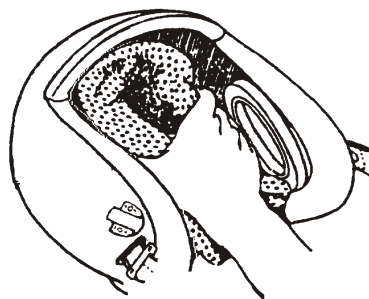


Figure 2-7. Installing TPL

4. Check the installed TPL to ensure that the front edge of the TPL is aligned with the front edge of the energy-absorbing liner inside the helmet, and that the TPL assembly is centered in the helmet.

5. Have the aircrew member don the helmet with the installed TPL by placing the front edgeroll on the forehead and rotating the helmet assembly rearward down onto the head. For proper eye offset, have the aircrew member rotate the helmet assembly forward to the position on forehead that will allow him or her to see the front edgeroll of the helmet assembly while looking upward.
6. Readjust the earcup assembly inside the helmet assembly as necessary.
7. Adjust the chin/nape strap assembly, without disturbing the eye offset. The nape strap pad should fit snugly against the nape area of the aircrew member's head.
8. Ensure that the helmet assembly fits properly without hot spots or pressure points on the aircrew member's head. **In extreme cases involving large sizes, removal of TPL layers may be required for proper fitting. If so, proceed as follows:**
 - a. Remove TPL assembly from helmet assembly.

WARNING

The helmet must always contain at least two plastic layers. Having fewer than two layers will reduce helmet stability, which could obstruct vision and reduce bump protection.

- b. Remove layers from the TPL assembly one at a time, beginning with the layer closest to the head. Check for proper fit after each plastic layer is removed. **The helmet must always contain at least two plastic layers.**
9. After following the procedures listed above, if a safe, stable fit cannot be obtained, then the TPL may be heat-softened and reshaped to aircrew member's head. To reshape the TPL, proceed as follows:
 - a. Set oven rack to the lowest position and heat oven to 200° 5°F (93.3 2.8°C). Place thermometer on the rack in a position where it may be observed throughout the entire heating process.
 - b. Thoroughly instruct the aircrew member on the fitting procedures, emphasizing those to be accomplished by the aircrew member.
 - c. Remove the TPL assembly from the helmet. Remove the cloth cover. Replace the removed layers in the order in which they were removed. After the layers have been reassembled, pass a heated soldering pencil through all five layers at the original attachment point. Reinstall the cloth cover.

CAUTION

Do not attempt to heat the TPL in a toaster oven, as permanent damage to the liner will result.

Do not attempt to heat the TPL in a microwave oven, or damage to the oven may result.

Check oven temperature every two to three minutes to avoid overheating; otherwise, the plastic layers may melt. Do not leave the TPL unattended while heating.

- d. After 15 minutes, ensure the oven is stabilized at the pre-set temperature and place the TPL onto the center of the oven rack with the fabric side down. Set timing device for 10 minutes.

NOTE

Heating characteristics of ovens vary. This should be taken into account during the TPL heating process. The time stated above is for reference only and is not a rule.

- e. For easy positioning of the heated liner into the helmet, place masking tape over the rear hook fastener tapes.

WARNING

The TPL plastic layers will be hot when you remove the TPL from the oven. Handle only the fabric-covered portion to avoid burning your hands.

- f. Remove the TPL from the oven, touching only the fabric-covered portion. Squeeze in the sides of the TPL in order to clear the earcup assemblies, and insert the heated liner into the helmet with the wide end toward the front of the helmet.

NOTE

Steps g and h are to be performed by the aircrew member assisted by the maintenance technician, and should be accomplished within 30 seconds of removal of the heated liner from the oven.

- g. With the TPL centered in the helmet, have the aircrew member hook thumbs over the edgeroll, spread helmet slightly, place front of helmet against brow, and rotate the helmet rearward and down onto the head. The maintenance technician should hold the rear portion of the TPL tightly against the energy-absorbing liner during donning to ensure the TPL does not bunch up in the rear.
- h. Have the aircrew member interlock fingers on top of helmet and pull down until ears are centered in the earcup assemblies and eye offset is correct. (See Step 5.) Maintain this pressure for 5 minutes.
- i. Release downward pressure at the end of 5 minutes and check helmet fit. If required, steps a through j may be repeated until a satisfactory fit is achieved.
- j. Once a satisfactory fit is achieved, have the aircrew member doff the helmet. Lift the rear portion of the TPL away from the energy-absorbing liner and remove masking tape from the hook fastener tapes.

CAUTION

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

NOTE

The TPL cover can be laundered or dry-cleaned. Replacement of the double-sided tape that attaches the TPL layer assembly to the TPL cover assembly should be accomplished after each laundering.

2-4. FITTING OF OPTIONAL BAYONET RECEIVER ASSEMBLY

Materials Required

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Bayonet Receiver Assembly	93A8514
As required	Adhesive	MIL-A-5540 NSN 8040-00-515-2245

CAUTION

Before drilling holes in the helmet shell, ensure that the TPL assembly and chin/nape strap assembly are properly fitted and adjusted to the aircrew member's head. (Fitting instructions are in paragraph 2-2.) Location/alignment of the bayonet receiver assembly is critical, since the bayonet receivers are not adjustable.

1. Have the aircrew member don the properly fitted helmet.
2. Insert each oxygen mask bayonet into a jaw receiver to the third locking position. The projections on the jaw receiver should be positioned toward the tip of the bayonet.
3. Referring to Figure 2-8, have the aircrew member hold the properly adjusted oxygen mask against his/her face.

NOTE

Ensure that the oxygen mask straps have equal tension.

Ensure that the jaw receivers are placed no closer than 1/2 inch (12.7 mm) from the edge of the helmet shell.

4. Hold each jaw receiver firmly against the helmet, ensuring that each offset bayonet is flush with and parallel to the edgeroll. Use a lead pencil to trace the outline of each jaw receiver assembly onto the helmet. Do not use marker or grease pencil.



Figure 2-8. Positioning Oxygen Mask

5. While holding only the bayonet receiver spacers against the helmet at the marked positions, use a lead pencil as shown in Figure 2-9 to mark the screw holes onto the helmet shell.

CAUTION

When drilling holes in the helmet shell, hold the drill perpendicular to the shell to prevent damage to the shell.

6. Remove the earcup assembly on one side. Referring to Figure 2-10, pull back the earcup pile fastener fabric inside the helmet shell on the same side. Using a #25 drill bit, drill the marked hole locations. Repeat for the other side.

NOTE

You may apply a small amount of general-purpose wood glue to each screw before you add the lock washer and backplate.

You should fit each spacer against the riveted side of the jaw receiver.

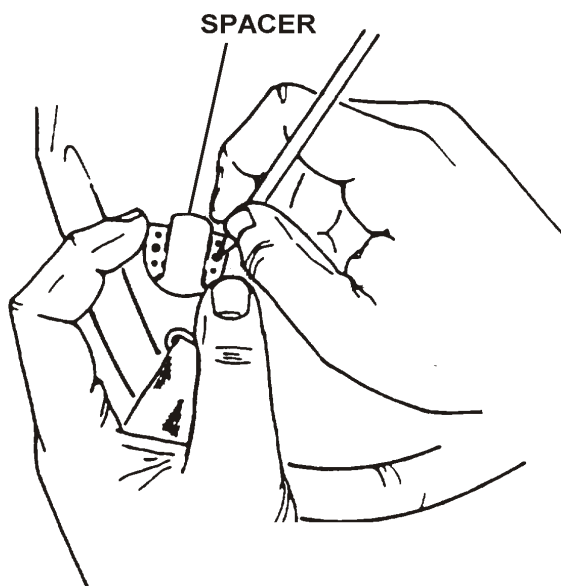


Figure 2-9. Marking Screw Holes

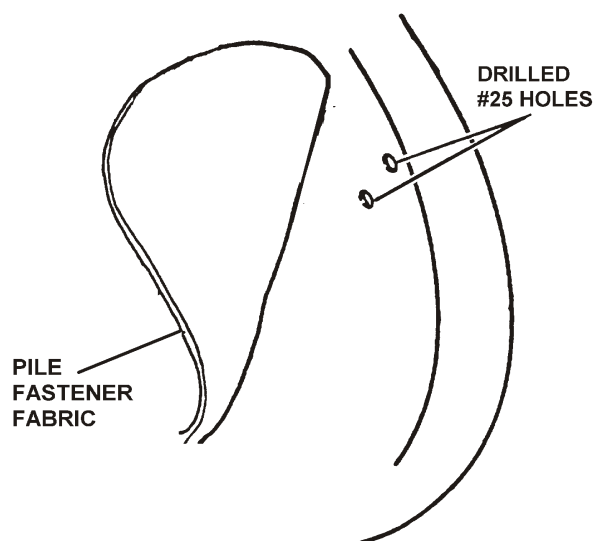


Figure 2-10. Earcup Pile Fastener Pulled Back

7. Hold the pile fastener fabric away from the helmet shell. Referring to Figure 2-11, insert screws with lock washers through the backplate and the inside of the helmet shell. Attach the spacers and receivers to the outside of the helmet shell. Ensure that the jaw receiver projections point to the rear of the helmet.
8. Tighten all screws so that the jaw receivers and spacers are firmly attached to the helmet.
9. Cement the earcup pile fastener fabric to the inside of the helmet shell. Cut an "X" pattern into the fabric across each screw head to facilitate inspection and tightening.
10. Reinstall the earcup assembly.

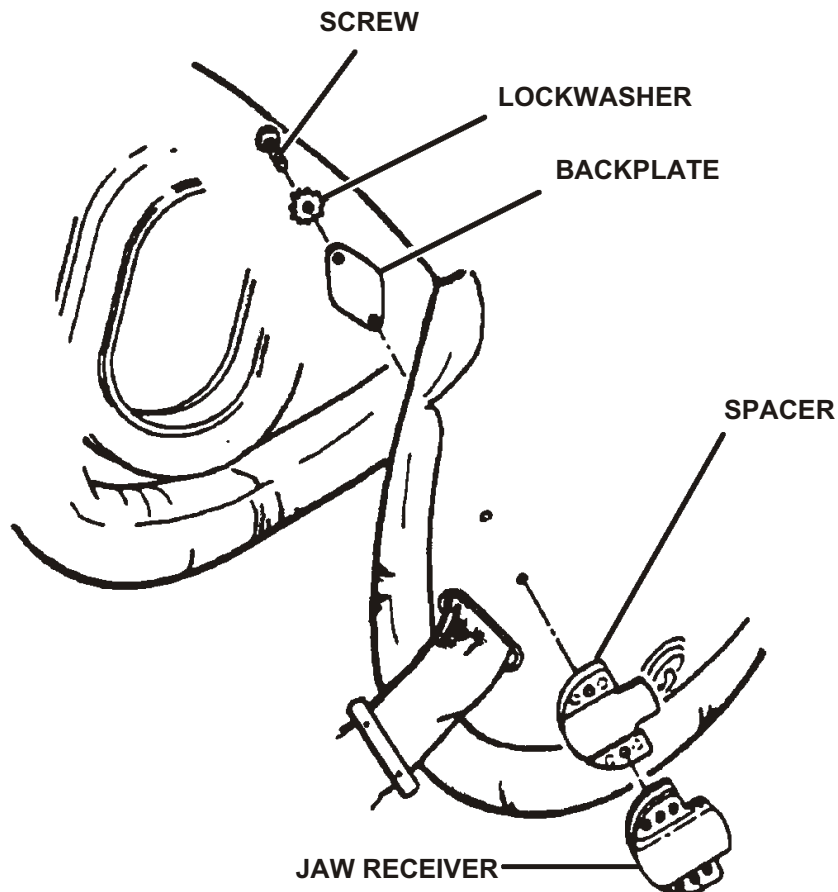


Figure 2-11. Bayonet Receiver Assembly

2-5. INSTALLATION OF LIGHTWEIGHT VISORS

Materials Required

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Lightweight visor, clear	81D5189-3
1	Lightweight visor, neutral gray	81D5189-4
1	Visor cover	82C5701

1. Remove the tissue paper from the visor bags. Open the visor bags, and remove the visors.
2. Referring to Figure 2-12, install the clear or neutral visor by stretching the end of the strap slightly past the helmet snap and fastening the visor snap to the helmet snap *from front to back*. Repeat for the other side.

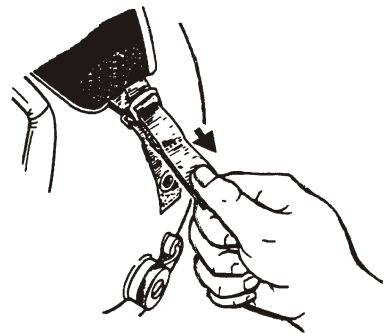


Figure 2-12. Installing Visor

3. Adjust the visor straps as desired by sliding the buckles.
4. Referring to Figure 2-13, install the visor cover by attaching the hook fastener on the inside of the visor cover to the pile fastener on the outer visor on both sides.

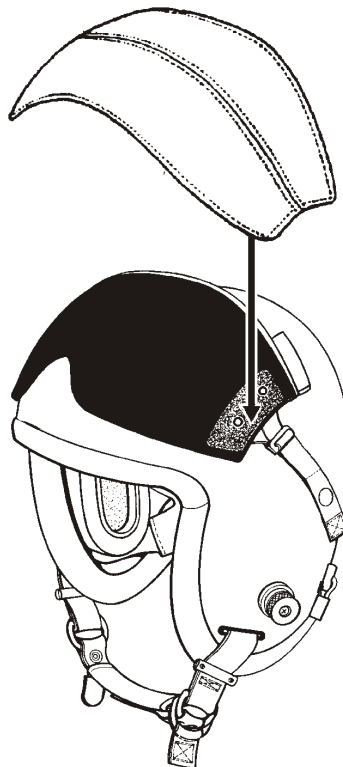


Figure 2-13. Installing Visor Cover

2-6. ANVIS MOUNT MODIFICATION (DUAL VISOR ASSEMBLY)

Before the ANVIS NVG can be installed, the ANVIS mount must be modified and a cable clip attached. The ANVIS modification kit contains four screws for the rear of the mount, a cable clip and attaching screw, and pile fastener for ANVIS battery pack attachment to the helmet. Referring to Figure 2-14, perform the modification as follows :

1. Remove the nut from the right side (as worn) of the ANVIS mount, and place the strain relief clamp over the end of the screw threads.
2. Place the wires under the clamp arm, and replace the nut over the clamp and screw threads. Tighten the nut until secure.
3. Position the backing plate on the rear of the mount so that the screw holes are aligned and the plate is flush with the top and bottom of the rear of the mount. Ensure that the wires extending from the rear of the mount are aligned in the slots in the mount to prevent crushing of the wires.
4. Applying a small amount of thread locking adhesive to the threads of each locating pin, secure the backing plate to the mount with the pins. Ensure that the two pins with the longer tapered heads are installed in the two top holes. Tighten the pins until secure, but do not over-tighten them.
5. Remove the backing from the hook fastener. Wrap the hook fastener around the cable connector until the ends meet as shown in Figure 2-14.

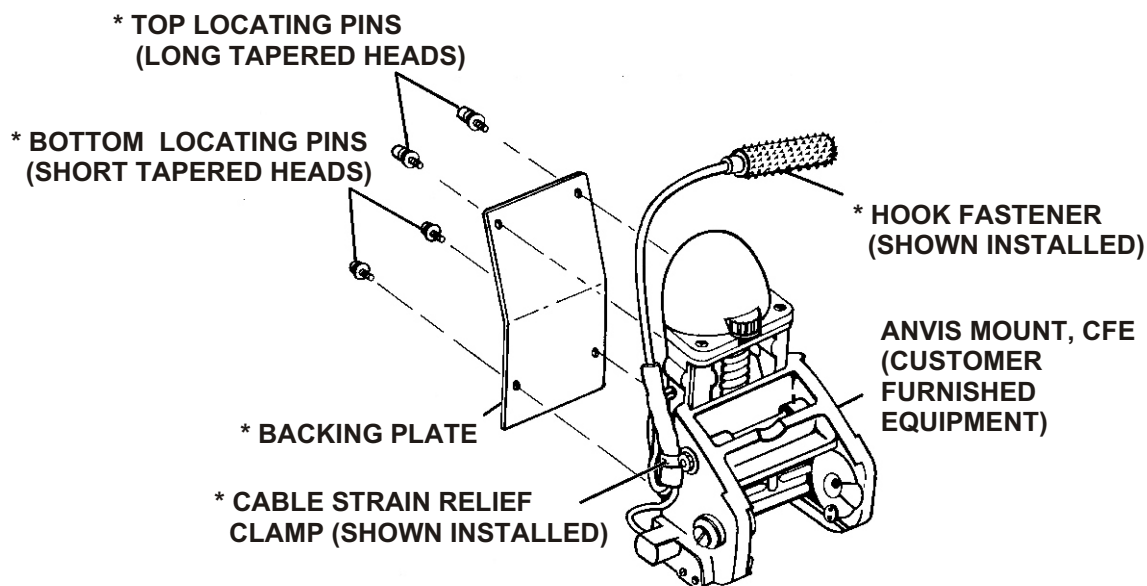


Figure 2-14. ANVIS Modification Kit (*P/N 90A7946-6)

6. Align the locating pins with the slots in the mounting platform on the helmet. Insert the pins into the slots and pull the mount down until it clicks into place as shown in Figure 2-15. Attach the hook fastener on the connector to the pile fastener (not provided) on visor the housing.
7. Attach pressure-sensitive pile fastener to the center rear of the helmet for the ANVIS battery pack as shown in Figure 2-15.
8. To remove the mount from the helmet, depress the release tab on top of the mounting platform and lift the mount up and away.

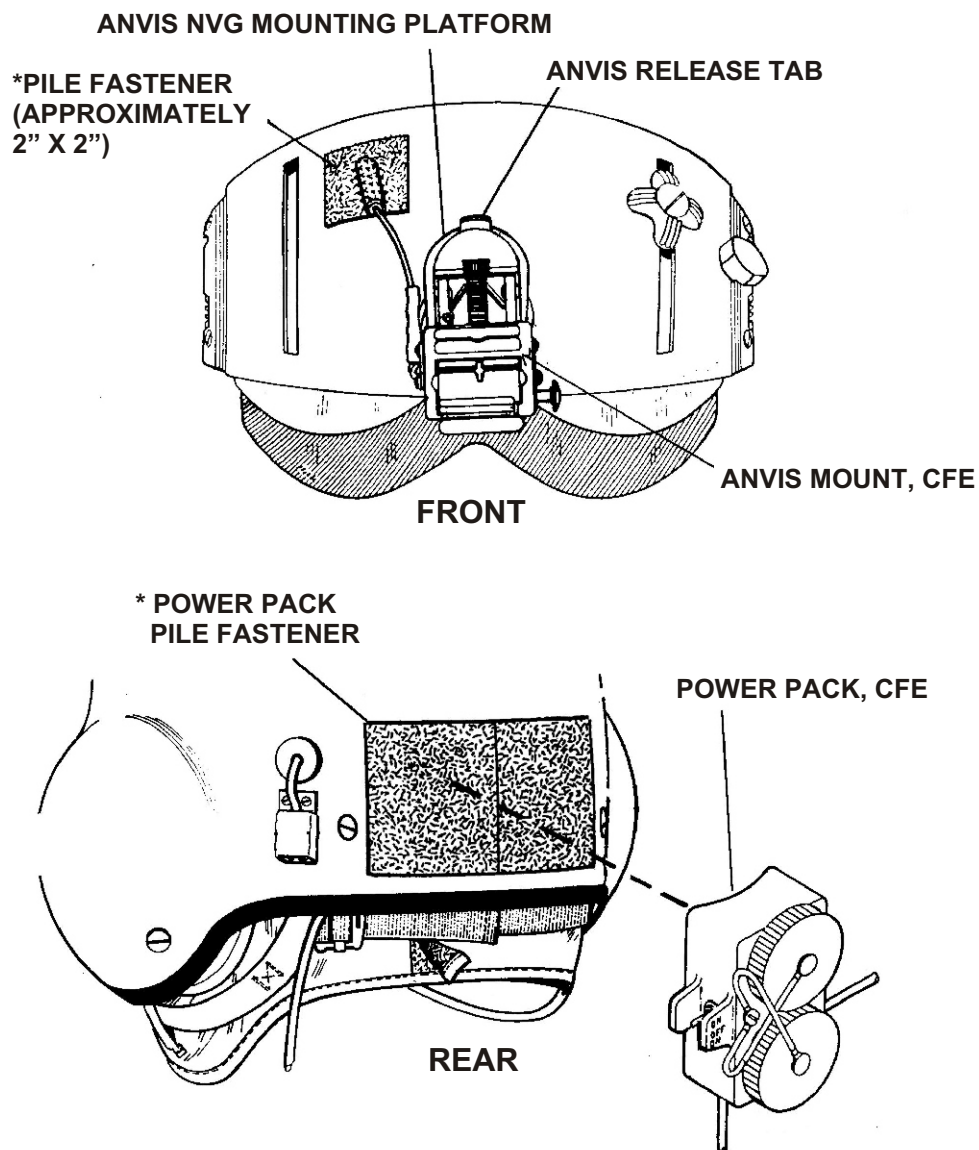


Figure 2-15. ANVIS Kit Installation (*P/N 90A7946-5)

CHAPTER 3

MAINTENANCE

3-1 GENERAL

For optimum performance, the HGU-84/P helmet assembly must be used and maintained properly. Repairs or other maintenance required shall be performed upon issue and at least every 90 days thereafter.

3-2 INSPECTION

3-2.1 Preflight/Postflight Inspection

The Preflight and Postflight Inspection is a visual inspection performed by the aircrew member before/after each flight. The aircrew member will check the general overall condition of the helmet assembly. Refer to paragraph 3-2.2.

NOTE

Defects or questionable areas noted during this inspection shall be referred to the proper maintenance activity for required corrective action.

3-2.2 Calendar Inspection

The Calendar Inspection shall be conducted every 90 days and shall consist of a visual inspection and a thorough cleaning of the helmet.

3-2.3 Visual Inspection

To visually inspect the helmet assembly, proceed as follows :

1. Inspect chin/nape strap assembly for loose or broken stitching, snap fastener retention, and fraying.
2. Inspect helmet shell assembly for splits, cracks, chips, and delamination.
3. Inspect visor assembly components for cracks, splits, and chips; inspect lenses for scratches and cracks.
4. Inspect edgeroll for rips, tears, splits, or loosening from helmet shell.
5. Inspect communication cables and cordsets for cut, split, or abraded insulation.
6. Inspect earcups for proper installation in earpads.
7. Inspect earpads for pliability.
8. Inspect all hardware for damage and security of attachment. Tighten or replace as necessary.
9. Inspect oxygen mask receivers for proper function and retention to helmet shell assembly.

NOTE

Defects determined from this inspection shall be referred to the proper maintenance activity for required corrective action.

3-3 CLEANING

To clean the various parts of this helmet assembly, proceed as follows:

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
As required	Detergent, laundry	Commercial
As required	Plastic polish	P-P-560 TY1 NIIN 00-935-3794 or equivalent
As required	Cloth, lint-free	MIL-C-85043 NIIN 00-165-7195P or equivalent

1. *Helmet Shell.* Clean helmet shell as follows:
 - a. Wash helmet shell using a mild detergent and a lint-free cloth dampened with water. Mild abrasive scouring powder may be used to remove stains or scuff marks.
 - b. Wipe helmet shell assembly clean using a water-dampened cloth to remove detergents.
2. *Chin/Nape Strap Assembly and Fitting Pads.* Clean chin/nape strap assembly and fitting pads as follows:
 - a. Lightly sponge with a mild solution of detergent and water.
 - b. Wipe with a damp, lint-free cloth.
3. *TPL Assembly.* Clean TPL assembly as follows:
 - a. Remove cover assembly from TPL assembly.
 - b. Clean cover assembly by hand washing with a mild solution of detergent and water.
 - c. Thoroughly rinse in clear water and air dry.
 - d. Apply new double-sided tape to cover assembly, and reassemble TPL assembly.

4. *Skull Cap*. Laundering of skull cap is responsibility of aircrew member.

CAUTION

Handle visors by edges only.

Avoid scratching visors with rings, watches, buckles, and other metal or glass objects.

Do not spray or splash cleaner directly onto visor or submerge visor in any liquid.

5. *Visor Assemblies*. Clean visor assemblies with a soft, lint-free cloth dampened with a 70 percent isopropyl alcohol solution or equal.

3-4. SERVICING THE HELMET

3-4.1 INSPECTION UPON RECEIPT

Once the basic helmet shell assembly and components are received, carefully inspect the shipping containers for evidence of damage. 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), and notify the proper authority.

3-4.2 REPLACEMENT OF COMPONENTS

Order of Assembly. Refer to Table 3-1 for components and order of assembly.

NOTE

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

Table 3-1. HGU-84/P Assembly of Components

ORDER OF ASSEMBLY	COMPONENT / ASSEMBLY TO BE REPLACED	PARAGRAPH REFERENCE
1	Replacement of TPL Cover or Layer Assembly	3-4.2.1
2	Replacement of Earcup Assembly	3-4.2.2
3	Replacement of Earphone Holder	3-4.2.3
4	Replacement of Earseal	3-4.2.4
5	Replacement of Chin/Nape Strap Assembly	3-4.2.5
6	Replacement of Chin Strap and Chinpad	3-4.2.6
7	Replacement of Nape Strap Clamp	3-4.2.7
8	Replacement of Boom Swivel Assembly	3-4.2.8
9	Replacement of Bayonet Receiver Assembly	3-4.2.9
10	Replacement of Energy-Absorbing Liner	3-4.2.10
11	Replacement of Dual Visor Assembly	3-4.2.11
12	Replacement of Single Visor Assembly	3-4.2.12
13	Replacement of Visor Lock Assembly	3-4.2.13
14	Replacement of Single Visor Lens	3-4.2.14
15	Replacement of Outer Lightweight Visor	3-4.2.15
16	Replacement of Inner Lightweight Visor	3-4.2.16
17	Replacement of Visor Snap	3-4.2.17

3-4.2.1 Replacement of TPL Cover or Layer Assembly

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Cover assembly, medium or	85D7088-1
1	Cover assembly, large or	85D7088-2
1	Cover assembly, X-large or	85D7088-3
1	Layer assembly, medium or	85D7518-1
1	Layer assembly, large or	85D7518-2
1	Layer assembly, X-large	85D7518-3
As required	Tape, double-coated, vinyl, 1 x 2 inches (25 x 50 mm (approximately))	No. 419 (3M) or equivalent

1. Remove TPL from helmet shell assembly.
2. Separate TPL cover assembly from layer assembly.
3. Discard defective assembly.
4. Remove any double-sided tape from serviceable component.
5. Referring to Figure 3-1, install new double-sided tape on layer assembly.
6. Insert the layer assembly into the cover assembly. The end of the layer assembly with the large holes is inserted into the wide end of the cover assembly.
7. Secure the cover and layer assemblies together with the double-sided tape.
8. Replace TPL in the helmet shell assembly with the wide end positioned toward the front of the helmet.

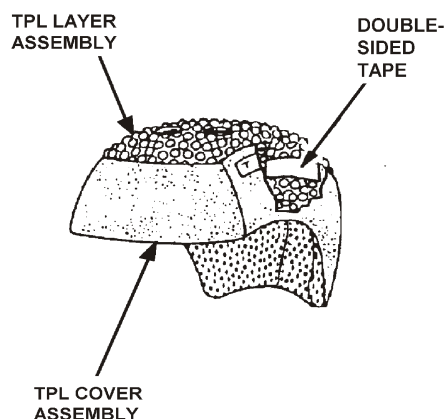


Figure 3-1. TPL Assembly

3-4.2.2 Replacement of Earcup Assembly or Earphone

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Earcup assembly	90C7885
1	or Earphone	76A3242

To replace an earcup or earphone, proceed as follows:

1. Remove the earcup assembly from the pile fastener on the inside of the helmet shell.
2. Referring to Figure 3-2, remove the earseal by carefully stretching it away from the lip of the earcup shell.
3. Remove the earphone holder from the earcup shell and the earphone from the earphone holder.
4. Referring to Figure 3-3, loosen the two setscrews attaching the earphone leads to the earphone; remove the cable from the earphone.
5. Remove the cable and grommet from the earcup.

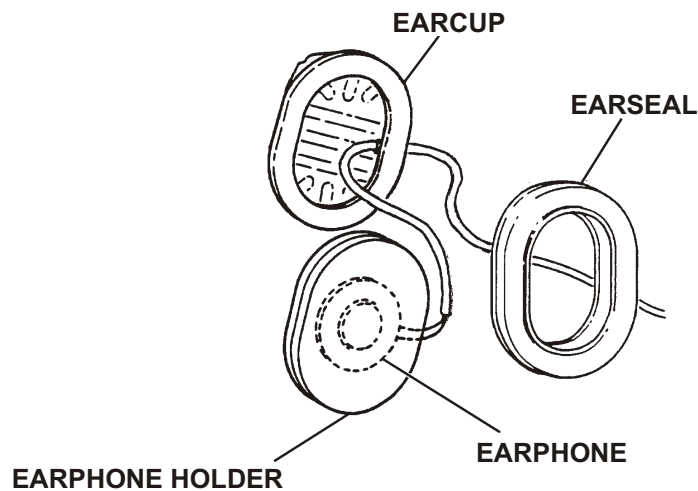


Figure 3-2. Earcup, Earseal, and Earphone Holder

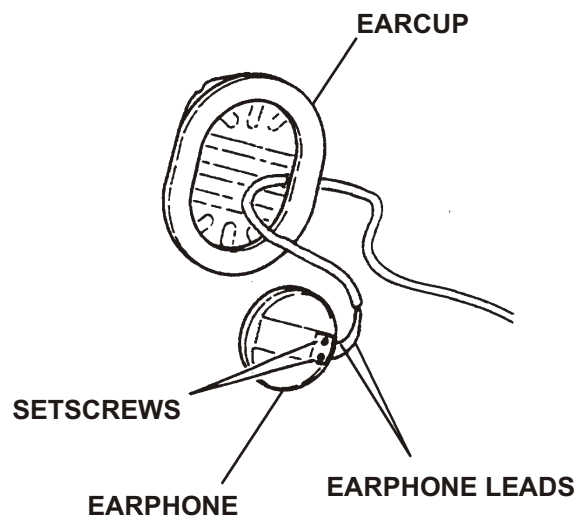


Figure 3-3. Earphone Removed from Earcup

6. Replace the earcup shell or earphone as applicable.
7. Referring to Figure 3-4, install the earphone leads and grommet into the hole of the earcup. Secure the grommet.
8. Insert the earphone leads into the earphone and tighten the setscrews.

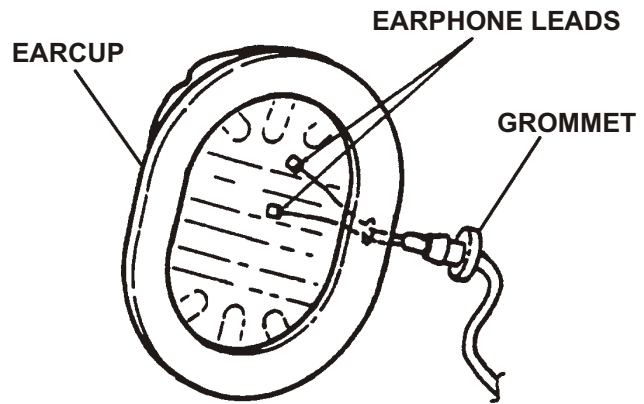


Figure 3-4. Earphone Leads Inserted into Earcup

9. Insert the earphone into the earphone holder.
10. With the slot opening positioned toward the earcup grommet, insert the earphone holder with the enclosed earphone into the helmet shell. Smooth the earphone holder inside the earcup to eliminate bunching.

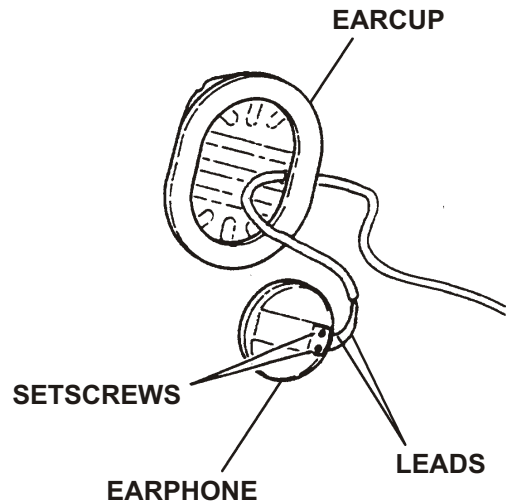


Figure 3-5. Earphone, Leads, and Setscrews

11. Reinstall the earseal by carefully stretching it over the lip of the earcup shell.
12. Reattach the earcup assembly to the pile fastener on the inside of the helmet shell.
13. Check the earseal compression. If necessary, install earcup spacer pads in accordance with Paragraph 2-2.

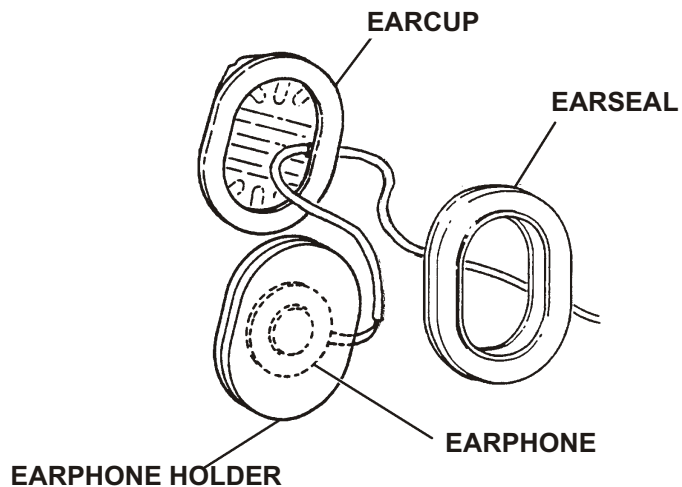


Figure 3-6. Earcup, Earphone Holder, and Earseal

3-4.2.3 Replacement of Earphone Holder

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Earphone Holder	79C4401-1

To replace an earphone holder, proceed as follows:

1. Remove the earcup assembly from the pile fastener on the inside of the helmet shell.
2. Referring to Figure 3-7, remove the earseal by carefully stretching it away from the lip of the earcup shell.
3. Remove the earphone holder from the earcup shell and the earphone from the earphone holder.
4. Replace the earphone holder.
5. Insert the earphone into the replacement earphone holder.
6. With the slot opening positioned toward the earcup grommet, insert the earphone holder with the enclosed earphone into the helmet shell. Smooth the earphone holder inside the earcup to eliminate bunching.
7. Reinstall the earseal by carefully stretching it over the lip of the earcup shell.
8. Reattach the earcup assembly to the pile fastener on the inside of the helmet shell.
9. Check the earseal compression. If necessary, install earcup spacer pads in accordance with Paragraph 2-2.

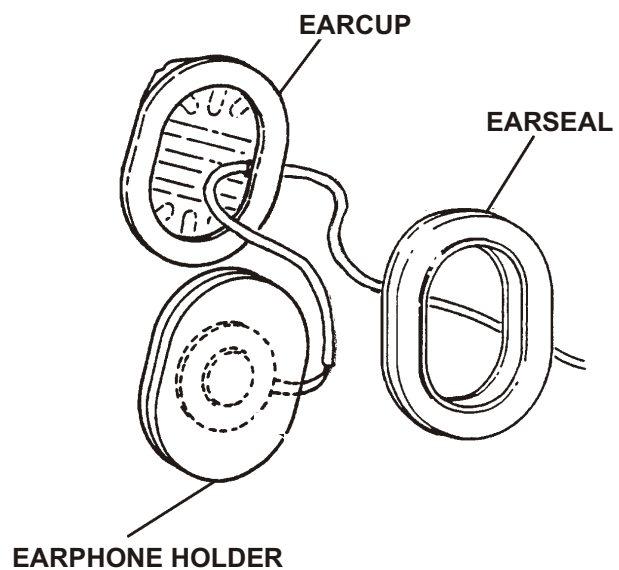


Figure 3-7. Earseal, Earphone Holder, and Earphone

3-4.2.4 Replacement of Earseal

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Earseal	88C7589

To replace an earseal, proceed as follows:

1. Remove the earcup assembly from the pile fastener on the inside of the helmet shell.
2. Referring to Figure 3-8, remove the earseal by carefully stretching it away from the lip of the earcup shell.
3. Replace the earseal.
4. Install the earseal by carefully stretching it over the lip of the earcup shell.
5. Reattach the earcup assembly to the pile fastener on the inside of the helmet shell.
6. Check the earseal compression. If necessary, install earcup spacer pads in accordance with Paragraph 2-2.

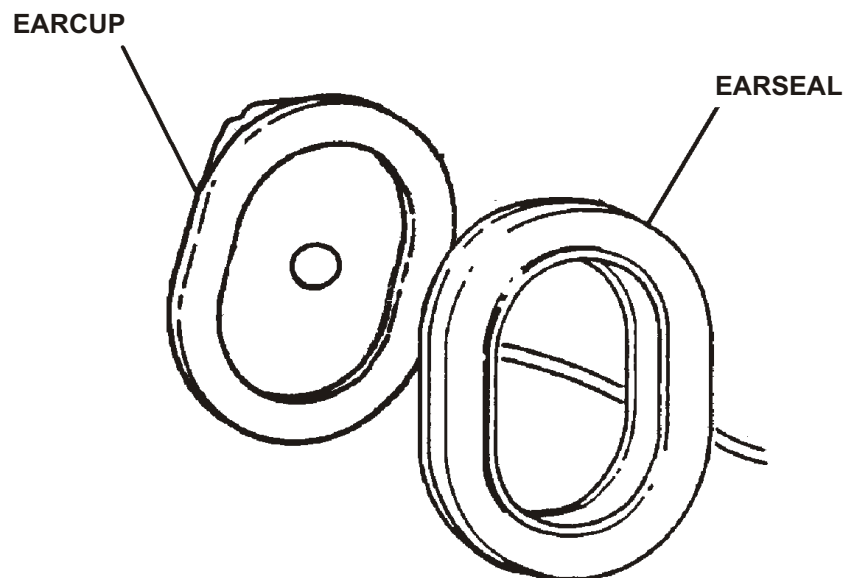


Figure 3-8. Earseal

3-4.2.5 Replacement of Chin/Nape Strap Assembly

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Chin/Nape Strap Assembly, Medium, or	90C7864-1
1	Chin/Nape Strap Assembly, Large, or	90C7864-2
1	Chin/Nape Strap Assembly, X-Large, or	90C7864-3
1	Chin/Nape Strap Assembly, X-Large Wide, or	90C7864-4
1	Nape pad, Medium, or	90D7865-1
1	Nape pad, Large, or	90D7865-2
1	Nape pad, X-Large, or	90D7865-3
1	Nape pad, X-Large Wide, or	90D7865-4

1. Remove chin/nape strap assembly as follows:
 - a. Unlace the chinstrap from the double D-rings.
 - b. Unsnap the other end of the chinstrap from the single D-ring.
 - c. Remove both earcup assemblies from the helmet.
 - d. Remove the TPL from the helmet.
 - e. If replacing the nape straps, remove the clamps from the nape straps and set aside.
 - f. Remove the screws, washers, and T-nuts fastening the nape straps to the left and right rear of the helmet shell.

NOTE

Retain the hardware removed in Step f for reinstallation.

Note how the straps are laced through the nape pad before disassembly.

- g. Remove the nape straps from the nape pad.
- h. Withdraw the nape straps through the slots in the helmet shell.
- i. Discard defective chin/nape strap assembly component(s). Retain serviceable components for re-assembly.

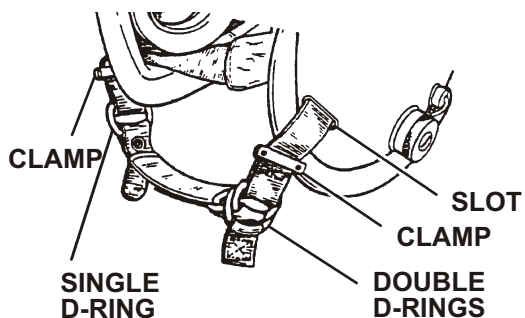


Figure 3-9. D-Rings

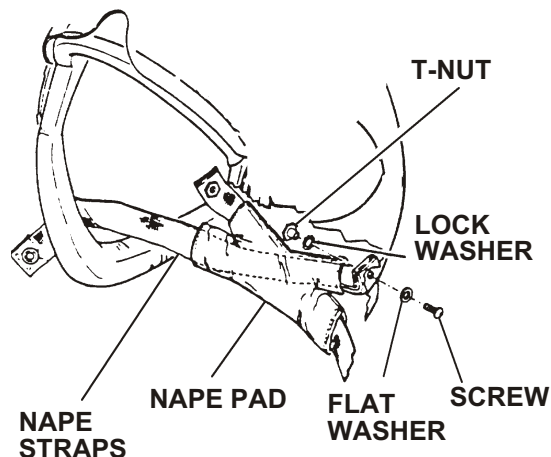


Figure 3-10. Chin/Nape Disassembly

2. Replace chin/nape strap assembly as follows:

- a. Lace the single D-ring nape strap through the right-hand or left-hand (as worn) helmet slot depending on aircrew member preference.

NOTE

The hook strip at the top of the nape pad should face the inside of the helmet shell.

- b. Pass the single D-ring nape strap through the nape pad from lower right to upper left (if installed on right) or from lower left to upper right (if installed on left).

NOTE

A hook made from a coat hanger may make it easier to pull the straps through the nape pad.

- c. Lace the double D-ring nape strap through the right-hand or left-hand (as worn) helmet slot depending on aircrew member preference.

- d. Pass the double D-ring nape strap through the nape pad from lower right to upper left (if installed on right) or from lower left to upper right (if installed on left).

NOTE

Before installing the nape strap screw, apply RTV glue to the first two threads of each screw.

- e. Install the screws, lock washers, flat washers, and T-nuts (removed in Step 1f) to fasten the nape straps to the helmet.
- f. If the clamp assemblies were removed from the nape straps, reinstall them.
- g. Insert the snap end of the chinstrap through the single D-ring and snap it into place.
- h. Lace the chinstrap through the double D-ring.
- i. Reinstall the TPL and the earcups.
- j. Have aircrew member don helmet; check fit.

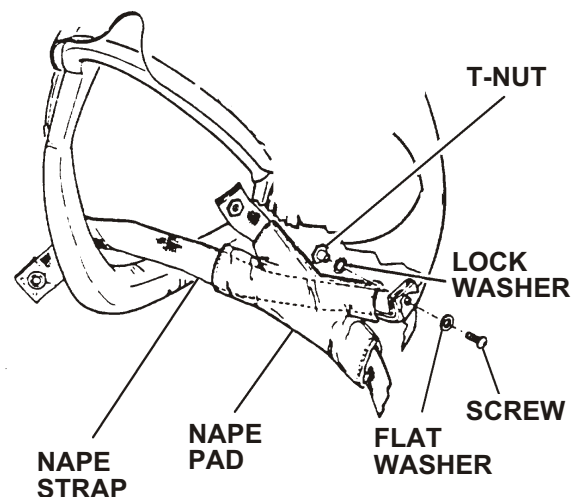


Figure 3-11. Chin/Nape Assembly

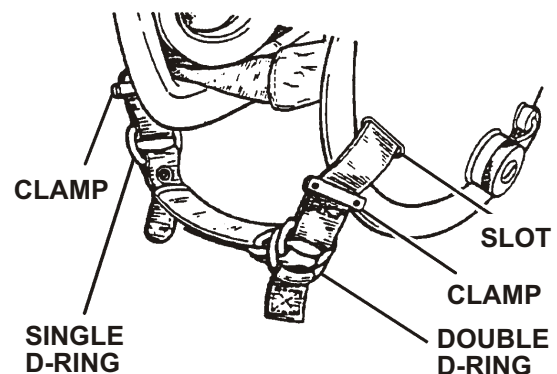


Figure 3-12. D-Rings

3-4.2.6 Replacement of Chin Strap and Chin Pad

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Chin strap assembly	90B7868 (Medium, large, and X-large) or 90B7868-1 (X-large wide)
1	Chin pad, black	91C8076-2

1. Disassemble the chin strap assembly and chin pad as follows:

- a. Unlace the chinstrap from the double D-rings.
- b. Unsnap the other end of the chinstrap from the single D-ring.
- c. If the chinpad is tacked to the chinstrap, cut the tacking.
- d. Slide chin pad off chin strap.
- e. Discard unserviceable components.

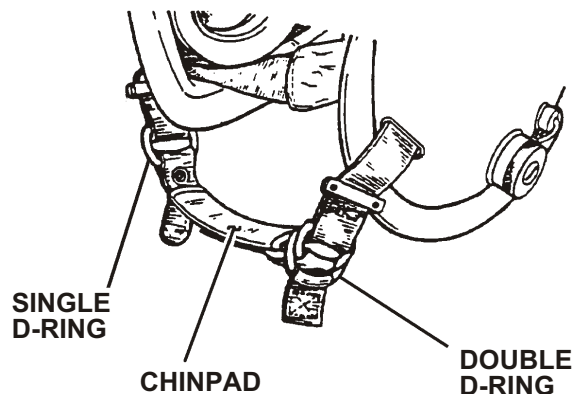


Figure 3-13. Chinstrap and Chinpad

2. Reassemble the chin strap assembly or chin pad as follows:

NOTE

When reinstalling the chinpad, ensure that its pile side will face outward when the helmet is worn.

- a. Slide the chinpad onto the chinstrap.
- b. Insert the snap end of the chinstrap through the single D-ring and snap it into place.
- c. Lace the chinstrap through the double D-rings.
- d. Tack the chinpad into place with needle and thread.

3-4.2.7 Replacement of Nape Strap Clamp

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
2	Clamp	93B8471

1. Remove the screws attaching the clamp to the nape strap; remove the clamp.
2. Attach the nape strap to the clamp at the desired position.
3. Reattach the screws to the clamp.

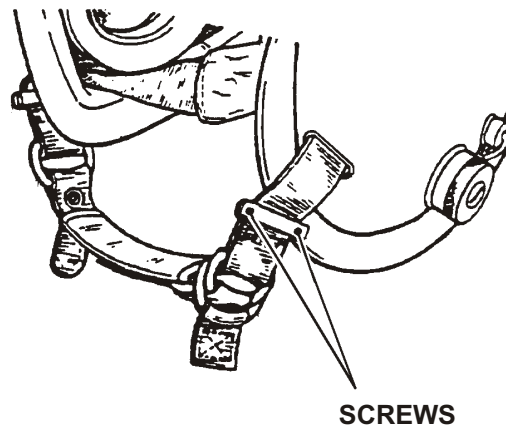


Figure 3-14. Clamp

3-4.2.8 Replacement of Boom Swivel Assembly

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Boom Swivel	78A4047
1	Adhesive	MIL-A-5540

1. On the side of the helmet to which the boom swivel assembly is mounted, pull the earcup away from the pile fastener on the inside.
2. Pull the pile fastener back to expose the screw attaching the boom swivel assembly to the helmet.
3. Remove the screw and washer from the inside of the helmet shell.
4. Gently pry the flat washer from the shaft of the swivel assembly.

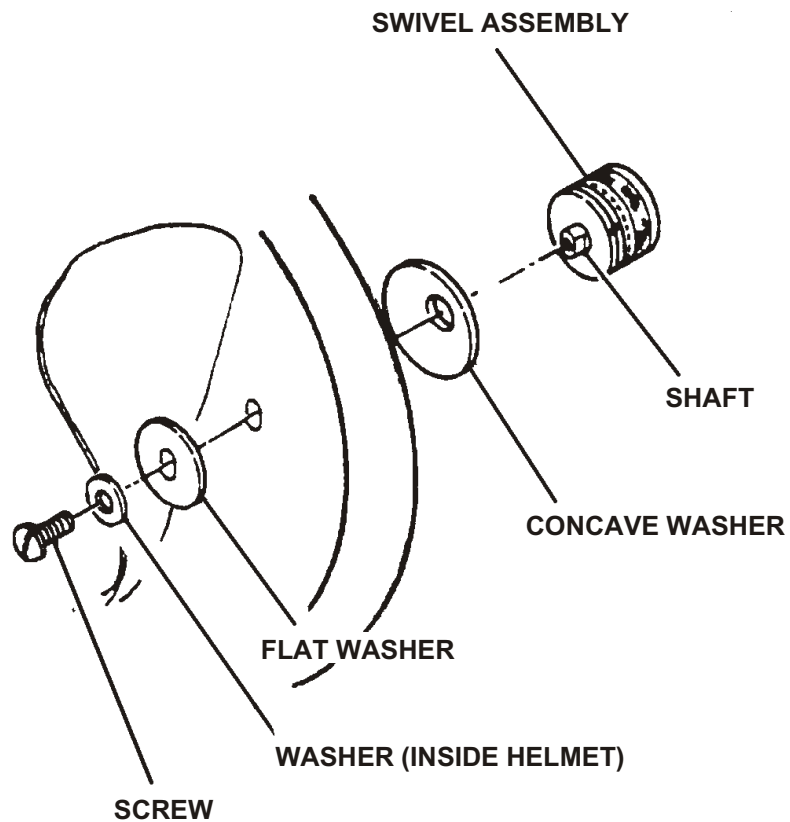


Figure 3-15. Boom Swivel Assembly

5. Install the replacement swivel assembly with the cupped side of the concave washer against the outside of the helmet shell.
6. Using adhesive MIL-A-5540, reattach the pile fastener to the helmet shell.
7. Reinstall the earcup.
8. Check earseal compression and helmet fit in accordance with paragraph 2-2.

3-4.2.9 Replacement Of Optional Bayonet Receiver Assembly

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Bayonet Receiver Assembly	93A8514
As required	Adhesive	MIL-A-5540

1. Remove bayonet receiver assembly as follows:
 - a. Remove the earcup from the side of the helmet where the bayonet receiver is to be replaced.
 - b. Pull pile fastener fabric inside helmet shell assembly away from area where earcup assembly was removed.
 - c. Remove the screws (located inside the helmet shell assembly) that attach the bayonet receiver assembly to the helmet shell assembly.
 - d. Discard defective bayonet receiver assembly.

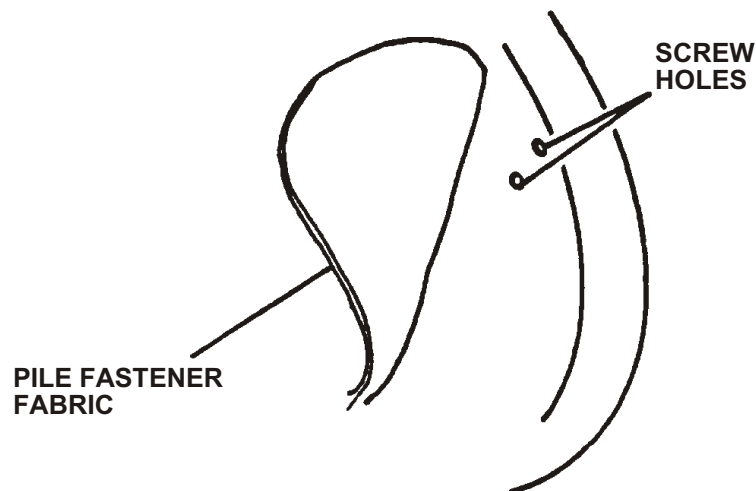


Figure 3-16. Pile Fastener Fabric

2. Replace bayonet receiver assembly as follows:

NOTE

Each spacer should be fitted against riveted side of jaw receiver.

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

- a. Hold pile fabric fastener away from the interior helmet shell assembly. Referring to Figure 3-17, insert screws with lock washers through the backplate from the inside of the helmet shell assembly. Attach jaw receiver and spacer to outside of the helmet shell assembly. Ensure that projections on jaw receiver are pointing toward the rear of the helmet shell assembly.
- b. Tighten all screws so that jaw receivers and spacers are firmly attached to helmet shell assembly.
- c. Cement pile fastener fabric to interior of helmet shell assembly. Cut an "X" pattern in pile fastener fabric, across the screw heads, to facilitate inspection/tightening.

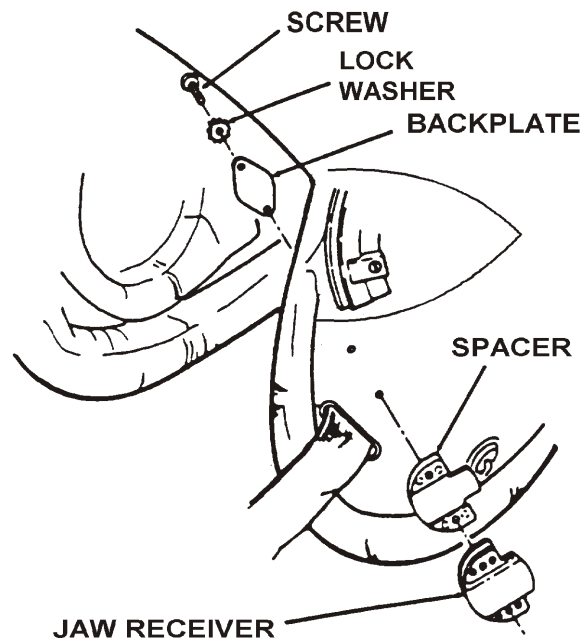


Figure 3-17. Bayonet Receiver Assembly

3-4.2.10 Replacement of Energy-Absorbing Liner.

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Energy-absorbing liner (medium) or	90D7860
1	Energy-absorbing liner (large) or	90D7861
1	Energy-absorbing liner (extra large) or	90D7862
1	Energy-absorbing liner (extra large wide)	90D7863

1. Remove the energy-absorbing liner.

NOTE

Removal of the energy-absorbing liner requires considerable care and effort to avoid damage to the liner.

- a. Invert helmet and remove TPL to expose the energy-absorbing liner.
- b. Detach the right and left earcup assemblies from the pile fastener tape in helmet shell earcup cavity and position clear of work area.
- c. Remove the panhead screws, flat washers, lock washers and T-nuts securing the chin/nape strap to the rear of the helmet shell.
- d. With the helmet inverted on the work surface, position helmet brow area closest to the technician and insert a thin, flexible metal spatula or a 12-inch x 1-inch (305mm x 25mm) metal rule between the inner surface of the helmet shell and the energy-absorbing liner at the center rear.

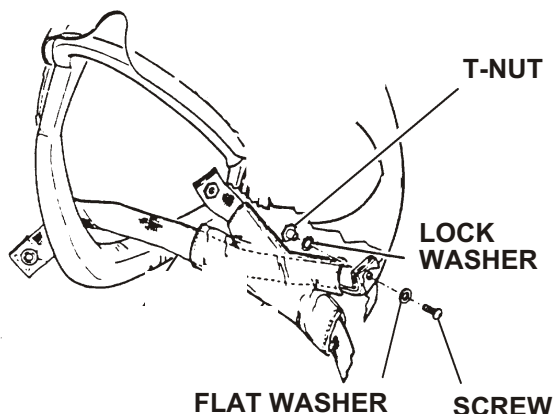


Figure 3-18. Chin/Nape Assembly

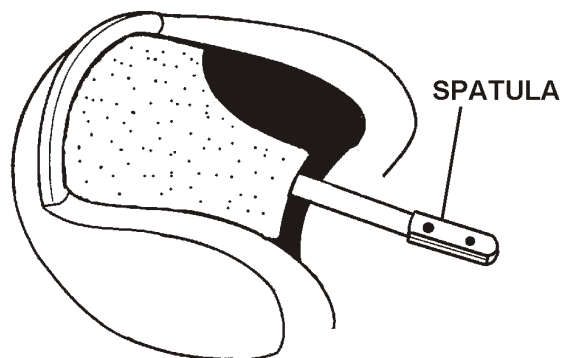


Figure 3-19. Use of Spatula

- e. Gently pry inward and upward on the energy-absorbing liner to obtain sufficient clearance to permit grasping the liner with the free hand.
- f. Maintain upward pressure and continue to withdraw the liner from the interior of the helmet shell. Rotate the liner 90 degrees to the right or left to clear the helmet earcup cavities.

2. Install the replacement liner.

NOTE

Prior to installing the replacement liner, ensure all attaching hardware for visor configuration which will be covered by liner is in place.

- a. Rotate the liner 90 degrees and place into helmet shell.
 - b. Reverse rotation and place the front edge of the energy-absorbing liner firmly against the inside surface of the front helmet shell edgeroll. Ensure that the liner is centered within the helmet.
 - c. Press the rear portion of the liner into place, ensuring that the rear edgeroll is not pinched or curled under the liner.
 - d. On inside surface of the energy-absorbing liner, install front and rear hook fastener tapes. All four fasteners should be vertically installed approximately 1-1/2 inches (39mm) to the left and right of the liner centerline and approximately 1/4 inch (8mm) from the edge to avoid pressure points.
3. Ensure that the chin/nape straps have remained routed through the nape pad and no twists are present.
4. Reconnect the nape pad and chin/nape strap grommets to the rear attachment points by reinstalling the panhead screws, flat washers, lock washers and flanged nuts.
5. Attach the earcup assemblies to the pile fastener tape in the helmet shell earcup cavities and route the communications cord for the right earcup between the energy-absorbing liner and the rear edgeroll as required.
6. Reattach the TPL to the energy-absorbing liner.
7. Have aircrew member don helmet; check fit in accordance with Paragraph 2-2.

3-4.2.11 Replacement of Dual Visor Assembly

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Dual visor assembly	

Remove and replace the dual visor assembly as follows:

NOTE

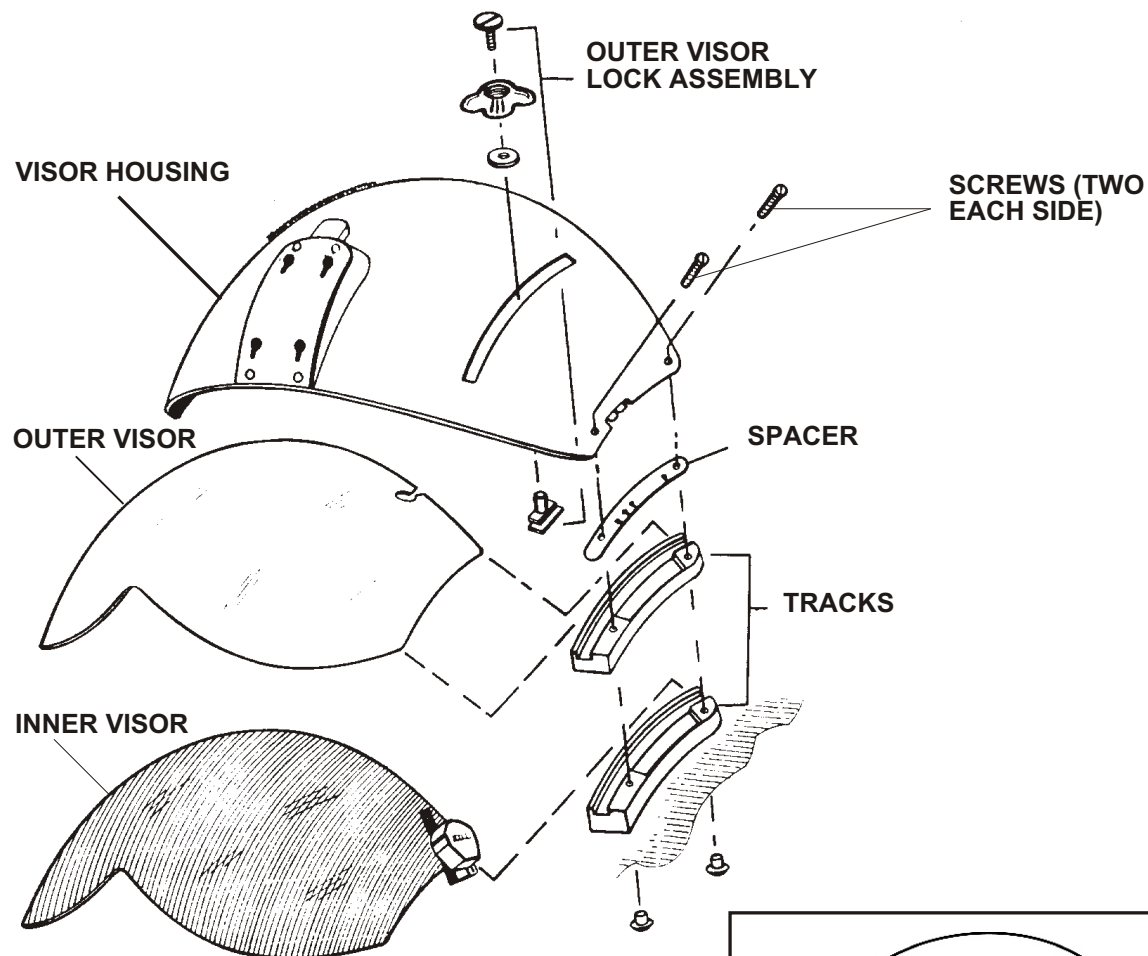
The dual visor assembly is held together and attached to the helmet with four screws; two on each side. Removal of these screws allows any or all of the components (visors, tracks, housing, etc.) to be replaced (see Figure 4-9).

1. Remove four screws (two screws each side) from dual visor assembly and carefully remove assembly from helmet.

NOTE

Prior to disassembling the dual visor assembly, note the order and alignment of the components to ensure proper assembly (see Figure 3-20).

2. Lift visor housing off assembly to expose spacers, tracks, and visors.
3. Replace visor or housing as required and assemble components for installation.
4. Place assembly on helmet and attach using four screws removed in step 1. Tighten screws securely but do not over-tighten.



NOTE: In the exploded view above, the visor lock is shown on the left side (as worn). The lock is normally installed on the right side as shown in this inset.

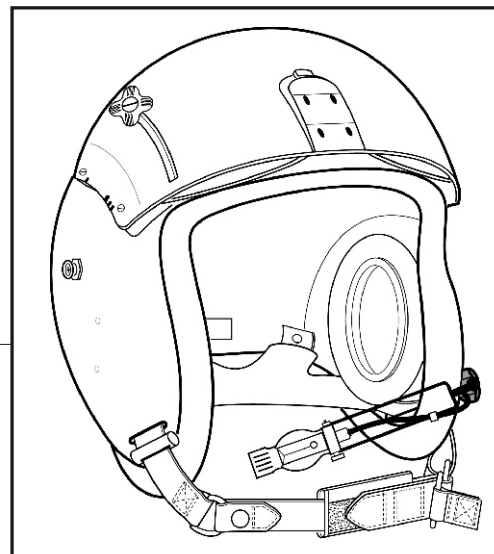


Figure 3-20. Dual Visor Assembly

3-4.2.12 Replacement of Single Visor Assembly

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Single visor assembly, EEK-4, medium or	85B7024-1
1	Single visor assembly, EEK-4, large or	85B7024-2
1	Single visor assembly, EEK-4, X-large (extra large)	85B7024-3

NOTE

When disassembling the dual visor assembly, note the order of parts; you will assemble the dual visor in the same manner.

1. Rotate the visor lock assembly a quarter turn so that the visor key will clear the visor cutout and the housing slot; lift the lock assembly away from the visor assembly.
2. Slide the visor out of the tracks.
3. Remove the six screws (three on each side) attaching the dual visor housing, tracks, and spacers to the helmet.

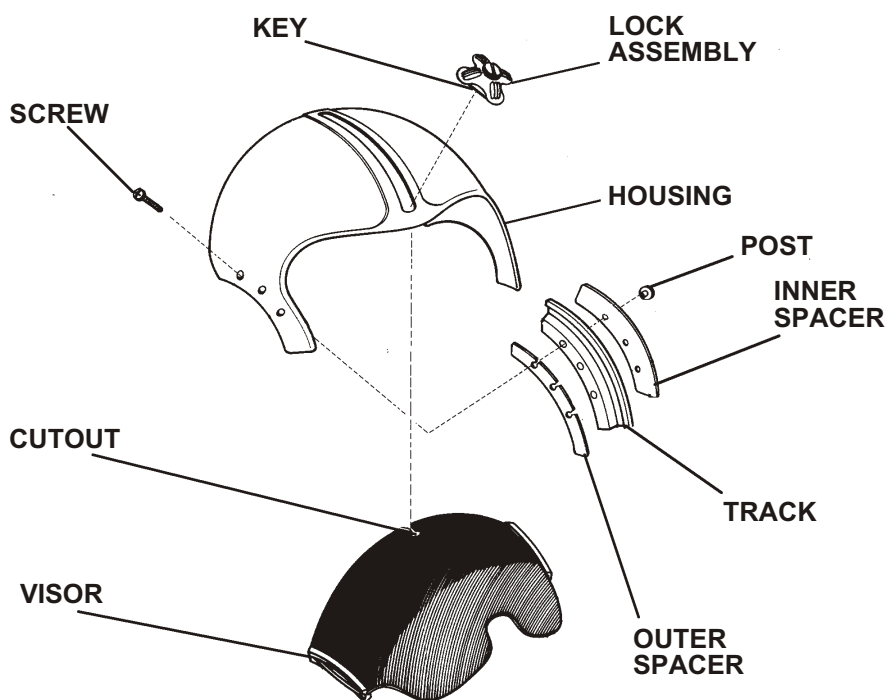


Figure 3-22. Single Visor Assembly

4. Disassemble the housing, tracks, and spacers.

NOTE

Six posts (three on each side) exist inside the helmet shell. If these need to be replaced, remove the energy-absorbing liner as described in Paragraph 3-4.2.9 to access them.

5. Discard defective parts; retain serviceable parts; obtain replacement parts as necessary.

NOTE

If you removed the posts, install the new ones; then reinstall the energy-absorbing liner and TPL as described in Paragraph 3-4.2.9.

6. Reassemble the spacers, tracks, and housing without the visor; align them over the posts protruding upward from the helmet. Re-attach these parts to the helmet shell with the six screws.

7. Slide the visor into the tracks. Align the visor lock over the housing slot; insert the key lengthwise into the slot and into the visor cutout; rotate the visor lock a quarter turn.

8. Raise and lower the visor to test for proper operation. If the visor does not move freely, loosen the screws, hold the visor housing at the sides, and move the housing side to side as required until the visor operates smoothly. Tighten the screws.

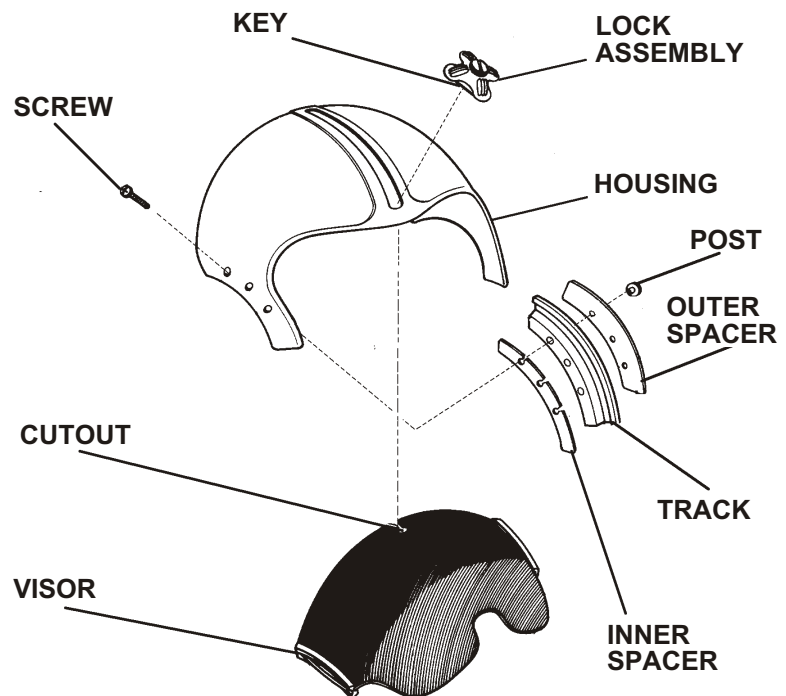


Figure 3-23. Single Visor Assembly

3-4.2.13 Replacement of Visor Lock Assembly

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Visor lock assembly	75A3127

1. Rotate the visor lock assembly a quarter turn so that the visor key will clear the visor cutout and the housing slot; lift the lock assembly away from the visor assembly.
2. Align the replacement visor lock assembly over the housing slot; insert the key lengthwise into the slot and into the visor cutout; rotate the visor lock assembly a quarter turn.

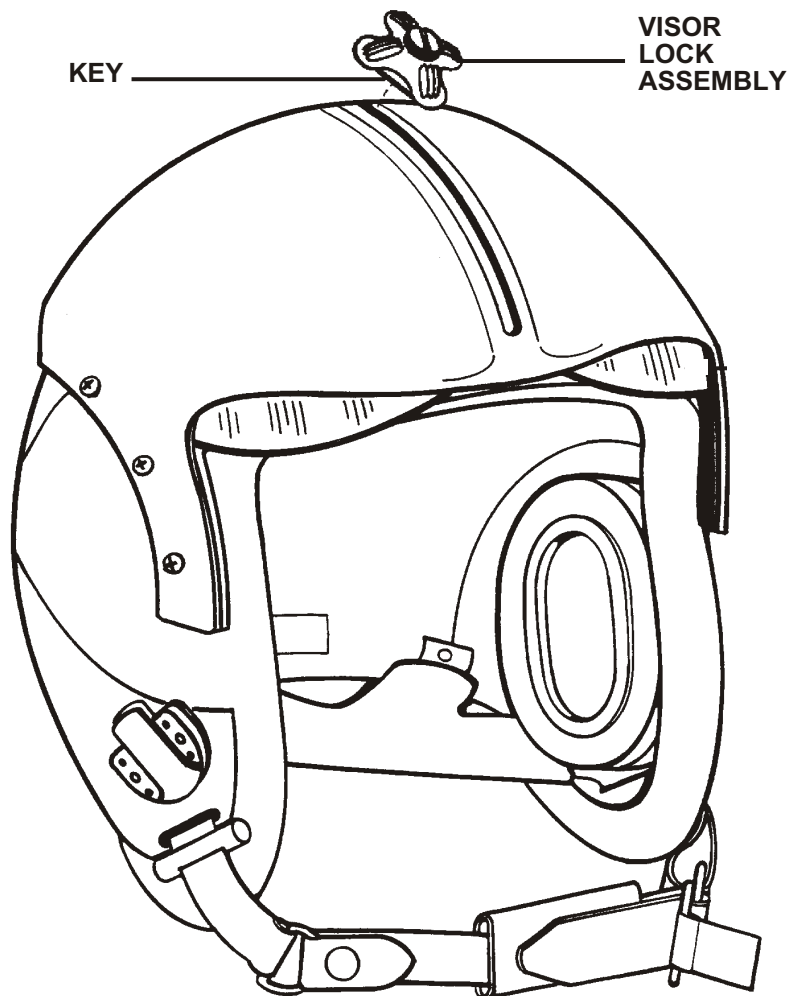


Figure 3-24. Visor Lock Assembly

3-4.2.14 Replacement of Single Visor Lens

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Visor, Neutral, Medium or	79D4405-1
1	Visor, Neutral, Large or	79D4406-1
1	Visor, Clear, Medium or	79D4405-2
1	Visor, Clear, Large	79D4406-2

1. Rotate the visor lock assembly a quarter turn so that the visor key will clear the visor cutout and the housing slot; lift the lock assembly away from the visor assembly.
2. Slide the visor out of the tracks.
3. Slide the replacement visor into the tracks.
4. Align the visor lock assembly over the housing slot; insert the key lengthwise into the slot and into the visor cutout; rotate the visor lock assembly a quarter turn.

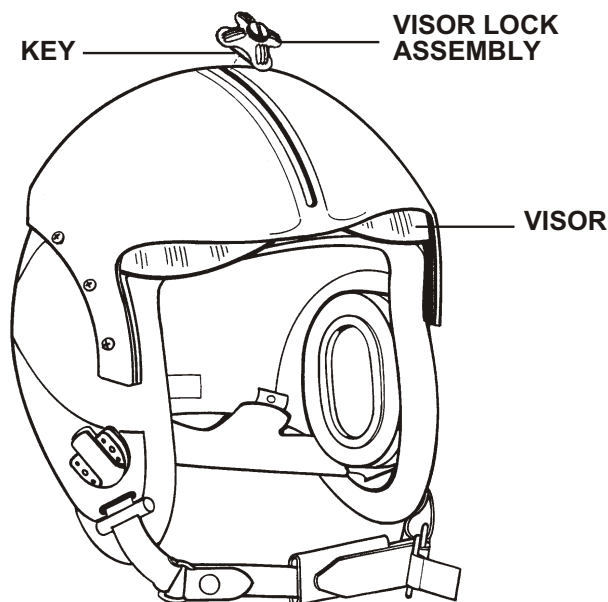


Figure 3-24. Visor Lock Assembly and Visor

3-4.2.15 Replacement of Lightweight Visor

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Lightweight Visor, Neutral or Lightweight Visor, Clear	

CAUTION

Avoid scratching the visor with objects such as rings, watches, buckles, tools, or bench surfaces.

Do not damage the visor by bending or flexing it.

1. Firmly grasp the visor strap at the tab.
2. Pull the strap away from the helmet.
3. Repeat for the other strap.
4. Referring to Figure 3-25, install the new visor by fastening the visor snap to the inner visor snap *from front to back*. Repeat for the other side.

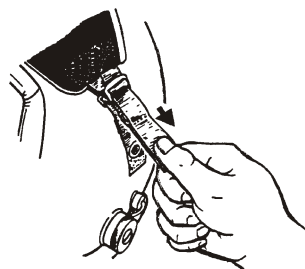


Figure 3-25. Replacment of Outer Lightweight Visor

5. Adjust visor straps as desired by sliding the buckles.
6. Referring to Figure 3-26, install the cover by attaching the hook fastener on the inside of the cover to the pile fastener on the visor.

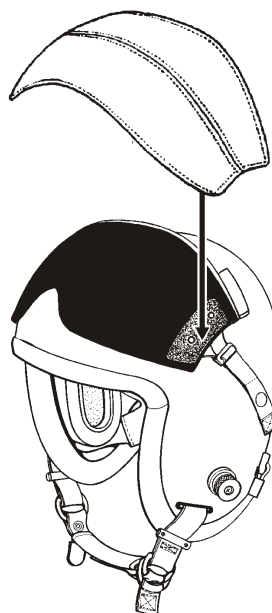


Figure 3-26. Installation of Visor Cover

3-4.2.16 Replacement of Visor Snap

MATERIALS REQUIRED

QUANTITY	DESCRIPTION	REFERENCE NUMBER
1	Snap Fastener	MS27983-3

1. Unsnap the visor from the helmet in accordance with Paragraph 3-4.2.15, steps 1 and 2.
2. On the side of the helmet where the snap fastener is to be replaced, remove the earcup assembly.
3. Remove the hardware attaching the snap fastener to the helmet shell.

NOTE

Before reinstalling screws, apply a small amount of RTV to the ends of each screw.

4. Install the replacement snap fastener with the hardware removed previously.
5. Reinstall the earcup.
6. Reinstall the visors in accordance with Paragraph 3-4.2.15, steps 3-6.
7. Check helmet fit in accordance with Paragraph 2-2.

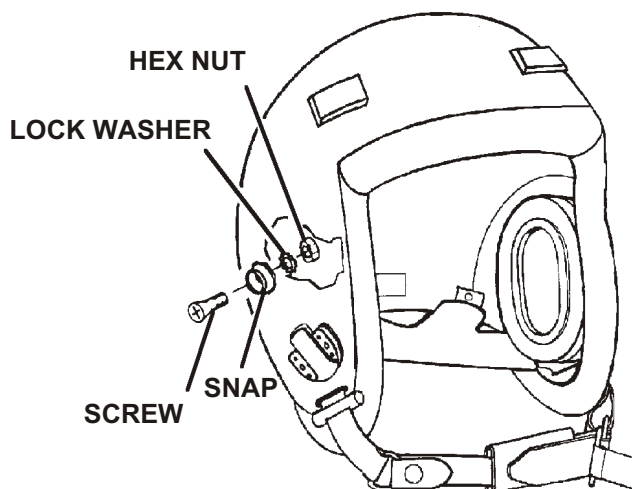


Figure 3-29. Snap Fastener Removal/Installation

CHAPTER 4

ILLUSTRATED PARTS BREAKDOWN

4-1 GENERAL

The Illustrated Parts Breakdown (IPB) lists and illustrates the procurable parts of the HGU-84/P Commercial Helmet. The IPB is intended for use in the identification, procurement, storing, and issuing of replacement parts. It also illustrates relationships of parts to assemblies. Replacement, operation, and maintenance of these helmets shall only be performed by authorized personnel using the instructions set forth in the preceding sections of this manual.

4-2 COMPONENTS OF IPB

The IPB contains illustrations and parts lists for each major assembly. These views and accompanying lists show how the major assemblies are disassembled into subassemblies and detail parts. Each item illustrated is numbered for identification. Each illustration is accompanied by a parts list providing a part number, description, and quantity for each item. The list is arranged in disassembly order. Subassemblies are indented with bullets () under main assemblies to show relationships.

4-2.1 Figure and Index Number Column

In the Figure and Index number column, the first number (for example "4-1" on Page 3) indicates the number of the associated illustration. All other numbers, which are preceded by hyphens (for example, -1, -2, and so forth), correspond to index numbers (numbered callouts) on the associated illustration.

4-2.2 Part Number Column

The Part Number column contains the contractor's part number. If the part number is controlled by a specification, the specification number appears in the Description Column.

4-2.3 Description Column

The Description column lists the item named plus those modifiers necessary to identify the item. When a separate exploded view is used to show the detail parts of an assembly or subassembly, the Description Column contains an appropriate figure cross reference in parentheses following the description.

4-2.4 Units Per Assembly Column

This column shows the quantity of an item required in the next higher assembly. The abbreviation REF indicates that the part is referenced in the parts list of the next higher assembly. The abbreviation AR indicates the quantity is "As Required."

4-2.5 Usable On Code Column

Usable On Codes are utilized to indicate part usage. Where no code is entered, the part is used on all configurations. The codes are as follows:

CONFIGURATION	CODE (Size)
Helmet with Dual Visor Assembly	A (Medium) B (Large) C (X-Large) J (X-Large Wide)
Helmet with Single Visor Assembly	D (Medium) E (Large) F (X-Large) J (X-Large Wide)
Helmet with Lightweight (Snap) Visors	G (Medium) H (Large) I (X-Large)

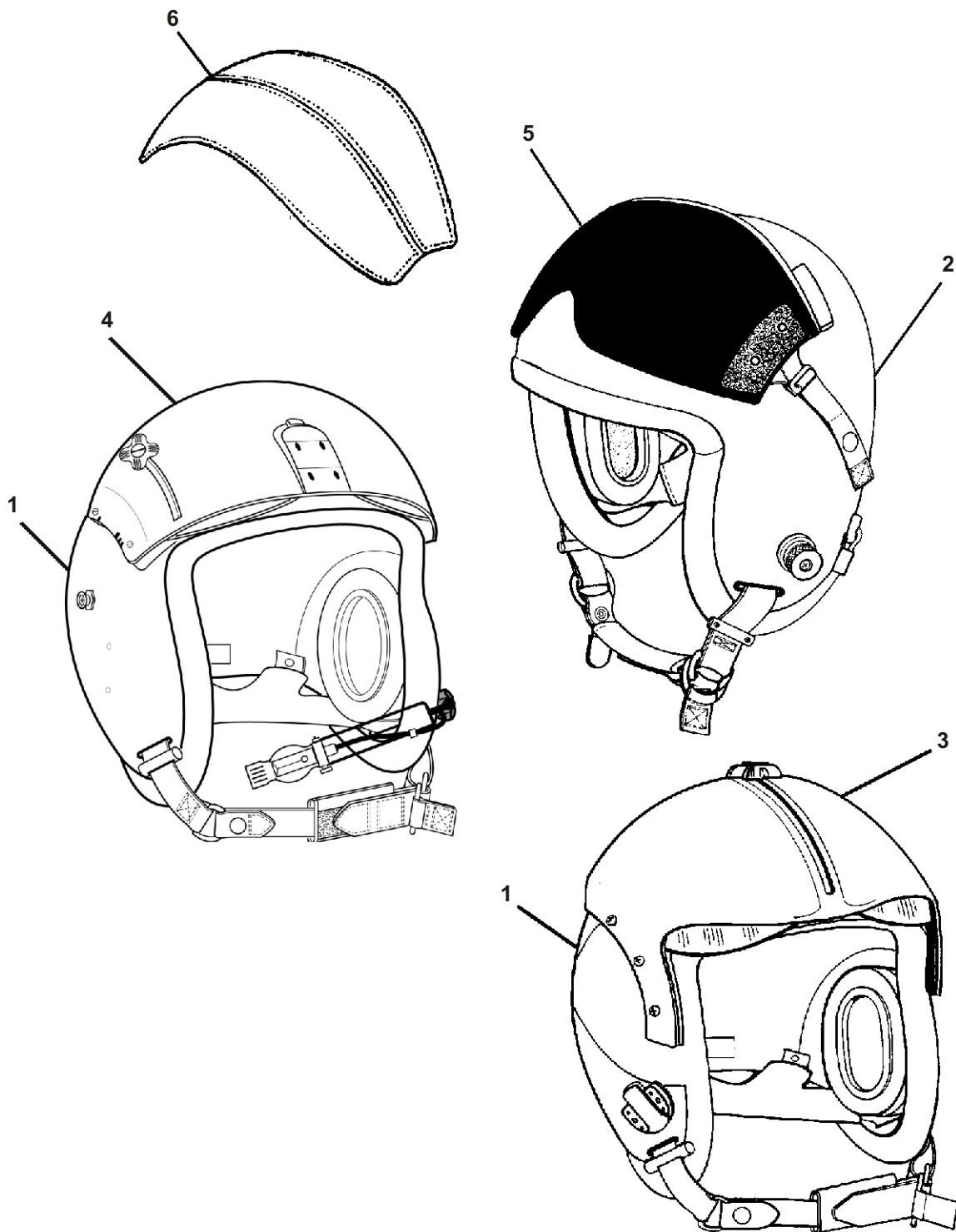


Figure 4-1. HGU-84/P Commercial Helmet Assembly

Table 4-1. HGU-84/P Helmet Assembly

FIGURE/ INDEX NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
4-1	HGU-84/P COMMERCIAL HELMET ASSY, White, Medium, with Single Visor Assembly	REF	A
	HGU-84/P COMMERCIAL HELMET ASSY, White, Large, with Single Visor Assembly	REF	B
	HGU-84/P COMMERCIAL HELMET ASSY, White, X-Large, with Single Visor Assembly	REF	C
	HGU-84/P COMMERCIAL HELMET ASSY, White, Medium, with Dual Visor Assembly	REF	D
	HGU-84/P COMMERCIAL HELMET ASSY, White, Large, with Dual Visor Assembly	REF	E
	HGU-84/P COMMERCIAL HELMET ASSY, White, X-Large, with Dual Visor Assembly	REF	F
	HGU-84/P COMMERCIAL HELMET ASSY, Gray, Medium, with Lightweight Visors	REF	G
	HGU-84/P COMMERCIAL HELMET ASSY, Gray, Large, with Lightweight Visors	REF	H
	HGU-84/P COMMERCIAL HELMET ASSY, Gray, X-Large, with Lightweight Visors	REF	I
-1	• HELMET SHELL ASSY, White, Medium (See Figure 4-2 for breakdown)	1	A, D
	• HELMET SHELL ASSY, White, Large (See Figure 4-2 for breakdown)	1	B, E
	• HELMET SHELL ASSY, White, X-Large (See Figure 4-2 for breakdown)	1	C, F
	• HELMET SHELL ASSY, White, X-Large Wide (See Figure 4-2 for breakdown)	1	J
-2	• HELMET SHELL, Gray, Medium (See Figure 4-2 for related parts)	1	G
	• HELMET SHELL, Gray, Large (See Figure 4-2 for related parts)	1	H
	• HELMET SHELL, Gray, X-Large (See Figure 4-2 for related parts)	1	I
-3	• SINGLE VISOR ASSEMBLY, EEK-4, Medium (See Figure 4-6 for breakdown) *	1	A
	• SINGLE VISOR ASSEMBLY, EEK-4, Large (See Figure 4-6 for breakdown)*	1	B
	• SINGLE VISOR ASSEMBLY, EEK-4, X-Large (See Figure 4-6 for breakdown)*	1	C
-4	• DUAL VISOR ASSEMBLY, Medium (See Figure 4-7 for breakdown)*	1	D
	• DUAL VISOR ASSEMBLY, Large (See Figure 4-7 for breakdown)*	1	E
	• DUAL VISOR ASSEMBLY, X-Large (See Figure 4-7 for breakdown)*	1	F
	• LIGHTWEIGHT VISOR ASSEMBLY, MBU-12/P Trim, Clear (Not shown)	1	G, H, I, J
-5	• LIGHTWEIGHT VISOR ASSEMBLY, MBU-12/P Trim, Neutral Gray	1	G, H, I, J
-6	• VISOR COVER, Gray Leather	1	G, H, I, J

* Other configurations available. Contact Gentex Corporation for more information.

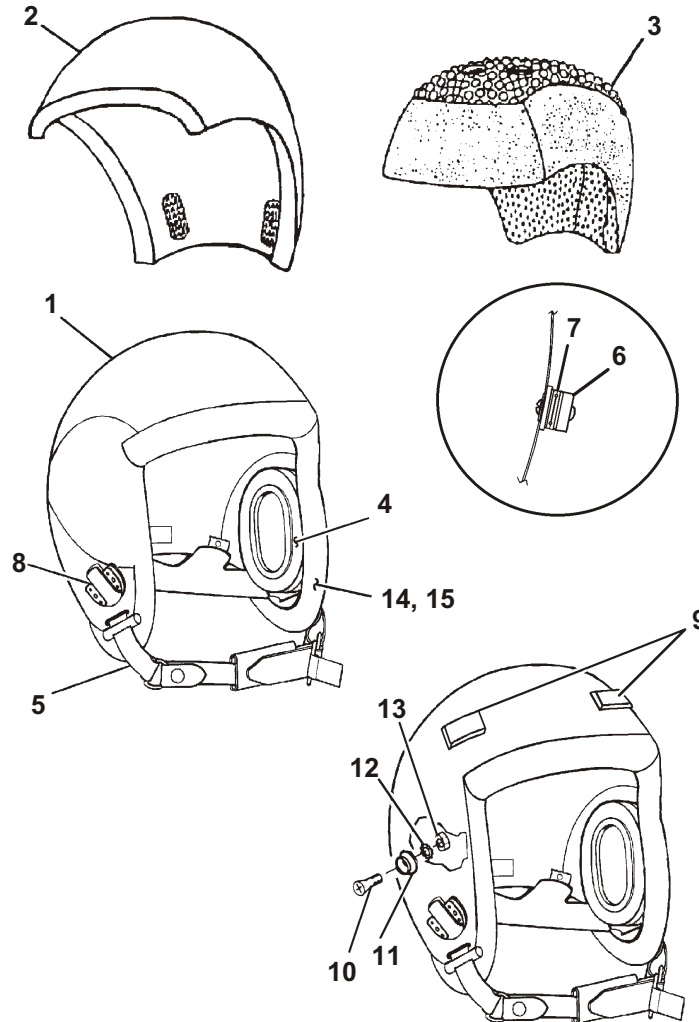


Figure 4-2. Helmet Shell Assembly

Table 4-2. Helmet Shell Assembly

FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
4-2	**	HELMET SHELL ASSY, Medium	REF	A, D
	**	HELMET SHELL ASSY, Large	REF	B, E
	**	HELMET SHELL ASSY, X-Large	REF	C, F
	**	HELMET SHELL ASSY, X-Large Wide	REF	
	**	HELMET SHELL, Medium (Not available as an assembly)	REF	G
	**	HELMET SHELL, Large (Not available as an assembly)	REF	H
	**	HELMET SHELL, X-Large (Not available as an assembly)	REF	I
	**	HELMET SHELL, X-Large Wide (Not available as an assembly)		

(Continued)

FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
-1		• HELMET SHELL, Medium, White	1	A, D
		• HELMET SHELL, Large, White	1	B, E
		• HELMET SHELL, X-Large, White	1	C, F
		• HELMET SHELL, X-Large Wide, White		
-2	90D7860	• ENERGY ABSORBING LINER, Medium	1	A, D, G
	90D7861	• ENERGY ABSORBING LINER, Large	1	B, E, H
	90D7862	• ENERGY ABSORBING LINER, X-Large	1	C, F, I
	90D7863	• ENERGY ABSORBING LINER, X-Large Wide	1	
-3	85D7087-1P	• THERMOPLASTIC LINER (TPL) ASSY, Medium (See Figure 4-3 for breakdown)	1	A, D, G
	85D7087-2P	• THERMOPLASTIC LINER (TPL) ASSY, Large (See Figure 4-3 for breakdown)	1	B, E, H
	85D7087-3P	• THERMOPLASTIC LINER (TPL) ASSY, X-Large (See Figure 4-3 for breakdown)	1	C, F, I
	85D7087-30P	• THERMOPLASTIC LINER (TPL) ASSY, X-Large Wide (See Figure 4-3 for breakdown)	1	
-4	90C7885	• EARCUP ASSY (See Figure 4-4 for breakdown)	1	
-5	90C7864-1	• CHIN/NAPE STRAP ASSY, Medium (See Figure 4-5 for breakdown)	1	A, D, G
	90C7864-2	• CHIN/NAPE STRAP ASSY, Large (See Figure 4-5 for breakdown)	1	B, E, H
	90C7864-3	• CHIN/NAPE STRAP ASSY, X-Large (See Figure 4-5 for breakdown)	1	C, F, I
	90C7864-4	• CHIN/NAPE STRAP ASSY, X-Large Wide (See Figure 4-5 for breakdown)		
-6	78A4047	• SWIVEL ASSEMBLY, Microphone Boom	1	
-7	69A2142	• WASHER, Swivel Assembly	1	
-8	93A8514	• BAYONET RECEIVER ASSEMBLY (Optional)	1	
-9	85C7028-1	• BUMP STOP	2	G, H, I
	92A8241	• TRUSS-HEAD SCREW, Low Profile (Not Shown)	4	G, H, I
-10	MS27983-3	• SNAP FASTENER STUD, Style 4	2	G, H, I
-11	MS51959-28B	• FLAT-HEAD SCREW, 6-32 X 1/4, Black	2	G, H, I
-12	MS35335-58	• EXTERNAL TOOTH LOCKWASHER, #6, Black	2	G, H, I
-13	MS35649-264B	• HEX NUT, 6-32, Black	2	G, H, I
-14	87B7481	• EDGEROLL FOAM	1	
-15	92D8240M	• EDGEROLL LEATHER SET, Medium, Black	1	A, D, G
	92D8240L	• EDGEROLL LEATHER SET, Large, Black	1	B, E, H
	92D8240XL	• EDGEROLL LEATHER SET, X-Large, Black	1	C, F, I
	90C7968M	• EARSHELL PILE FASTENER SET, Medium (Not Shown)	1	A, D, G
	90C7968L	• EARSHELL PILE FASTENER SET, Large (Not Shown)	1	B, E, H
	90C7968XL	• EARSHELL PILE FASTENER SET, X-Large (Not Shown)	1	C, F, I
	91B8150	• EDGE BEADING, 4-1/2-inch cut length (Not Shown)	2	

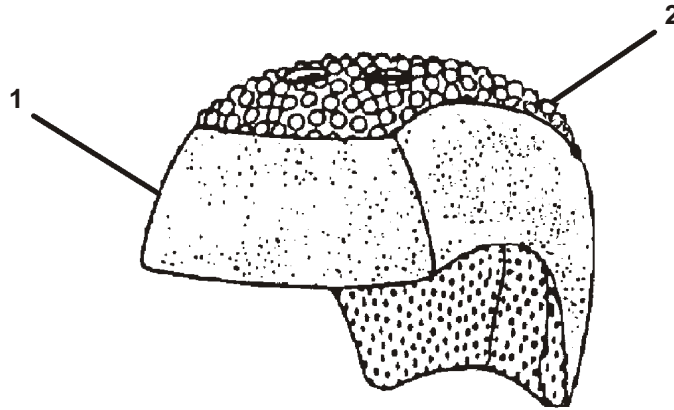


Figure 4-3. TPL

Table 4-3. TPL

FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
4-3	85D7087-1P	THERMOPLASTIC LINER ASSY, Medium	REF	A, D, G
	85D7087-2P	THERMOPLASTIC LINER ASSY, Large	REF	B, E, H
	85D7087-3P	THERMOPLASTIC LINER ASSY, X-Large	REF	C, F, I
-1	85D7088-1	• COVER ASSEMBLY, Medium	1	A, D, G
	85D7088-2	• COVER ASSEMBLY, Large	1	B, E, H
	85D7088-3	• COVER ASSEMBLY, X-Large	1	C, F, I
-2	88D7518-1	• LAYER ASSEMBLY, Medium	1	A, D, G
	88D7518-2	• LAYER ASSEMBLY, Large	1	B, E, H
	88D7518-3	• LAYER ASSEMBLY, X-Large	1	C, F, I

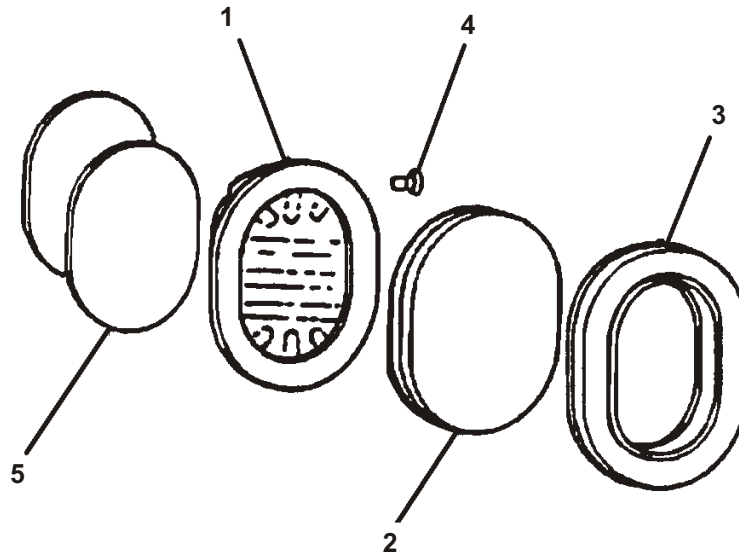


Figure 4-4. Earcup Assembly

Table 4-4. Earcup Assembly

FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
4-4	90C7885	• EARCUP ASSEMBLY	REF	
	90C7886-1	• EARCUP, Left-hand (Not Shown)	1	
-1	90C7886-2	• EARCUP, Right-hand	1	
-2	79C4401-1	• EARPHONE HOLDER	2	
-3	88C7589	• EARSEAL	2	
-4	67A1809-2	• GROMMET	2	
-5	79C4416-40	• FITTING PAD SET	1	

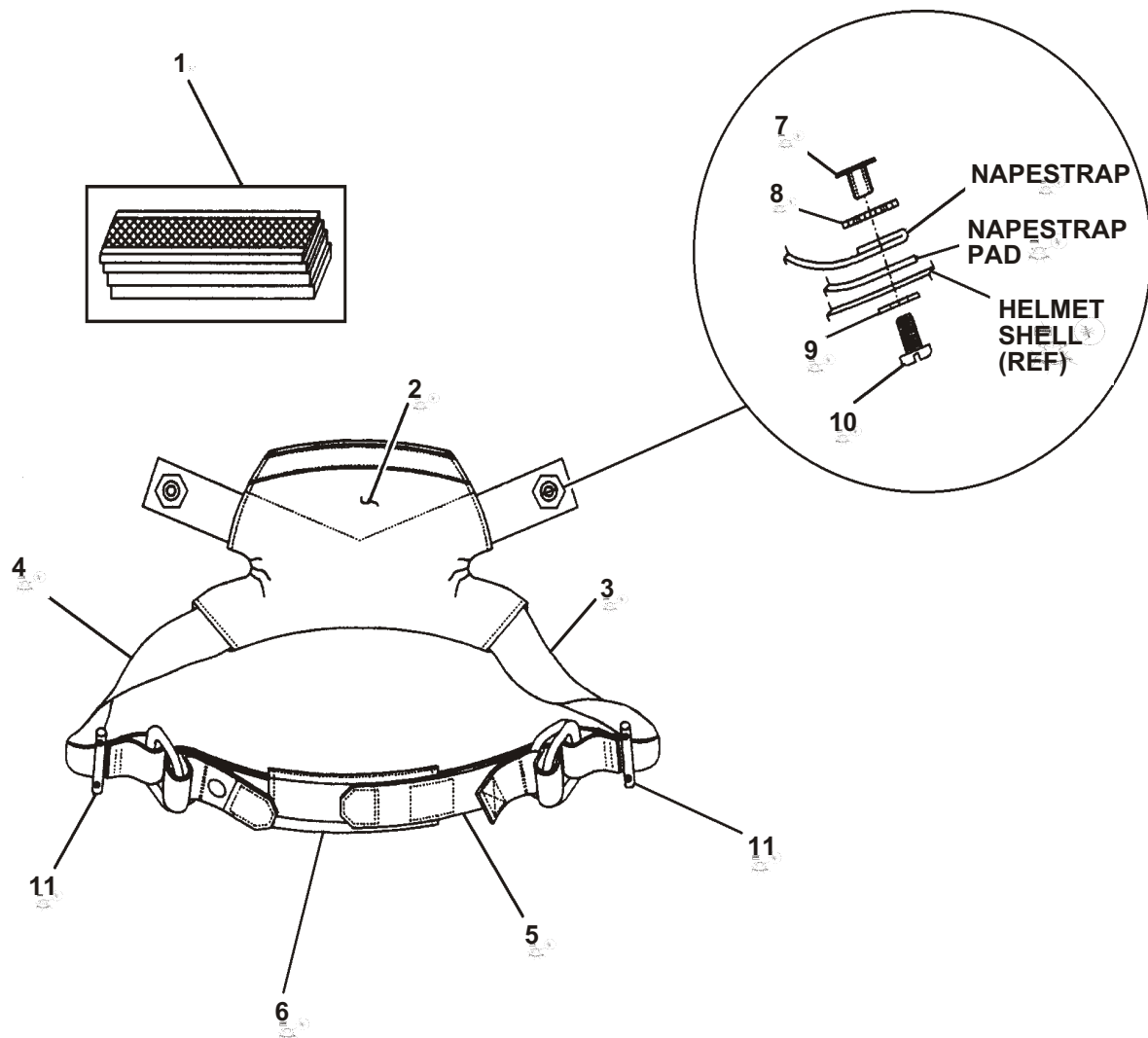


Figure 4-5. Chin/Nape Strap Assembly

Table 4-5. Chin/Nape Strap Assembly

FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
4-5	90C7864-1	CHIN/NAPE STRAP ASSY, Medium	REF	A, D, G
	90C7864-2	CHIN/NAPE STRAP ASSY, Large	REF	B, E, H
	90C7864-3	CHIN/NAPE STRAP ASSY, X-Large	REF	C, F, I
	90C7864-4	CHIN/NAPE STRAP ASSY, X-Large Wide	REF	C, F, I
-1	90B7872	• NAPE SPACER PAD KIT	1	
-2	90D7865-1	• NAPE STRAP PAD, Black, Medium	1	A, D, G
	90D7865-2	• NAPE STRAP PAD, Black, Large	1	B, E, H
	90D7865-3	• NAPE STRAP PAD, Black, X-Large	1	C, F, I
	90D7865-4	• NAPE STRAP PAD, Black, X-Large Wide	1	C, F, I
-3	90B7866-1	• NAPE STRAP (Double D-ring), Medium	1	A, D, G
	90B7866-2	• NAPE STRAP (Double D-ring), Large/ X-Large	1	B, C, E, F, H, I
	90B7866-3	• NAPE STRAP (Double D-ring), X-Large Wide	1	C, F, I
-4	90B7867	• NAPE STRAP (Single D-ring)	1	
	90B7867-1	• NAPE STRAP (Single D-ring), X-Large Wide	1	C, F, I
-5	90B7868	• CHIN STRAP ASSY	1	
	90B7868-1	• CHIN STRAP ASSY, X-Large Wide	1	C, F, I
-6	91C8076-2	• CHIN PAD, BLACK	1	
-7	765AS245-2	• T-NUT, 10-32	2	
-8	MS35335-34	• WASHER, LOCK, EXTERNAL TOOTH, #10	2	
-9	AN960-XC416	• WASHER, FLAT, #10, BLACK	2	
-10	MS51958-61B	• SCREW, MACHINE, PAN-HEAD, CROSS-REC., CRES., 10-32 X 3/8	2	
-11	93B8471	• CLAMP ASSEMBLY	2	

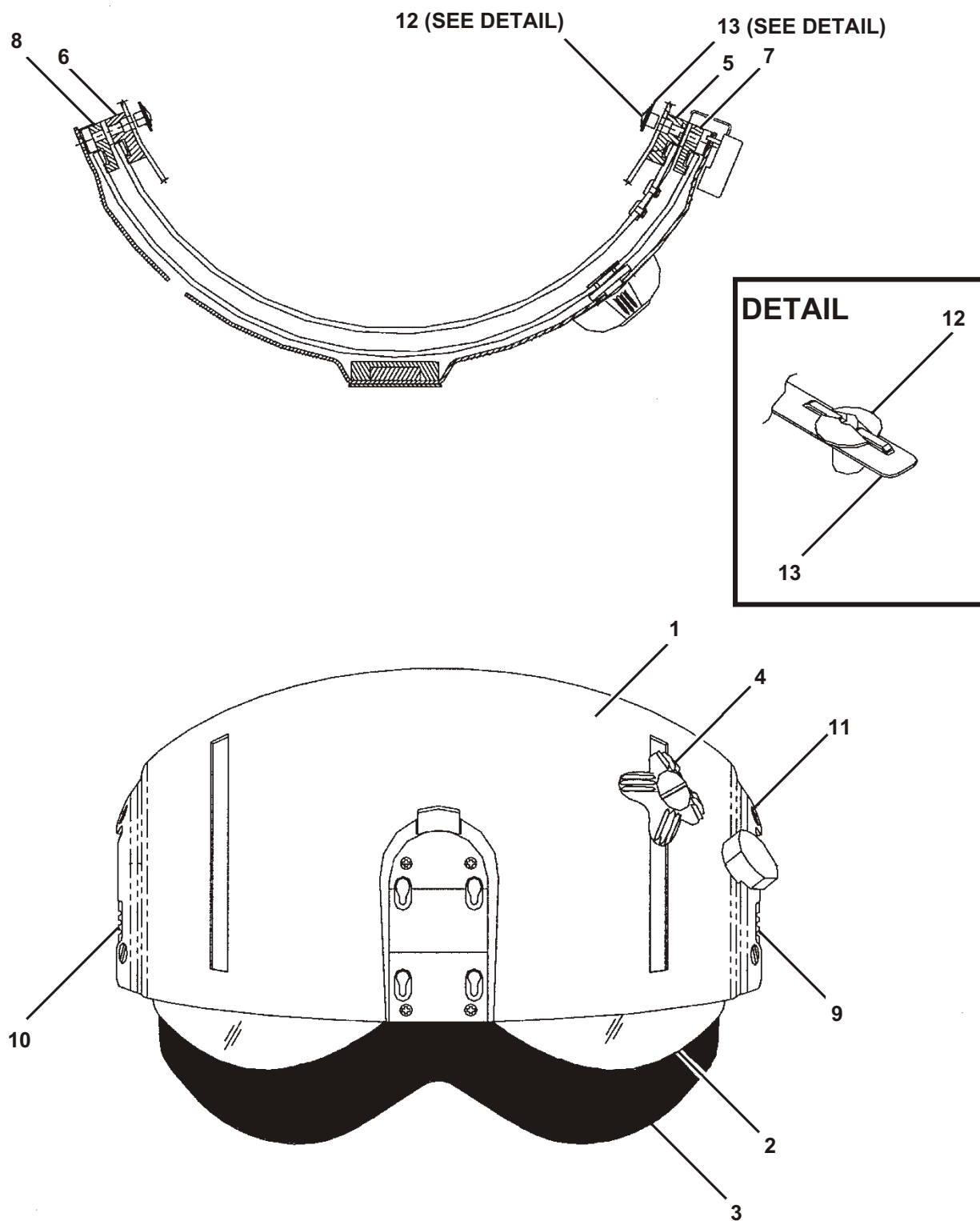


Figure 4-6. Dual Visor Assembly with Quick Disconnect

Table 4-6. Dual Visor Assembly with Quick Disconnect

FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
-1	79D4604	• VISOR HOUSING, White (shown) *	1	
-2	90D7932-2	• VISOR LENS, Clear, Outer **	1	
-3	90D7933-3	• VISOR LENS, Neutral, Inner **	1	
-4	74A2857-1	• VISOR LOCK ASSEMBLY, Black	1	
-5	90D7934-1	• LOWER TRACK, Left Hand	1	
-6	90D7934-2	• LOWER TRACK, Right Hand	1	
-7	90C7935-1	• UPPER TRACK, Left Hand	1	
-8	90C7935-2	• UPPER TRACK, Right Hand	1	
-9	90C8029-1	• DETENT SPACER, Left Hand	1	
-10	90C8029-2	• DETENT SPACER, Right Hand	1	
-11	75A3096-49	• SCREW, Bind Head, 5-40 x 7/8"	4	
-12	69A2094	• POST, 5-40	4	
-13	91B8210	• POST RETAINER	2	
	90A7946-6	• ANVIS MODIFICATION KIT (Not shown)	1	

*** Other colors available; contact Gentex Corporation for more information.**

**** Other configurations available; contact Gentex Corporation for more information.**

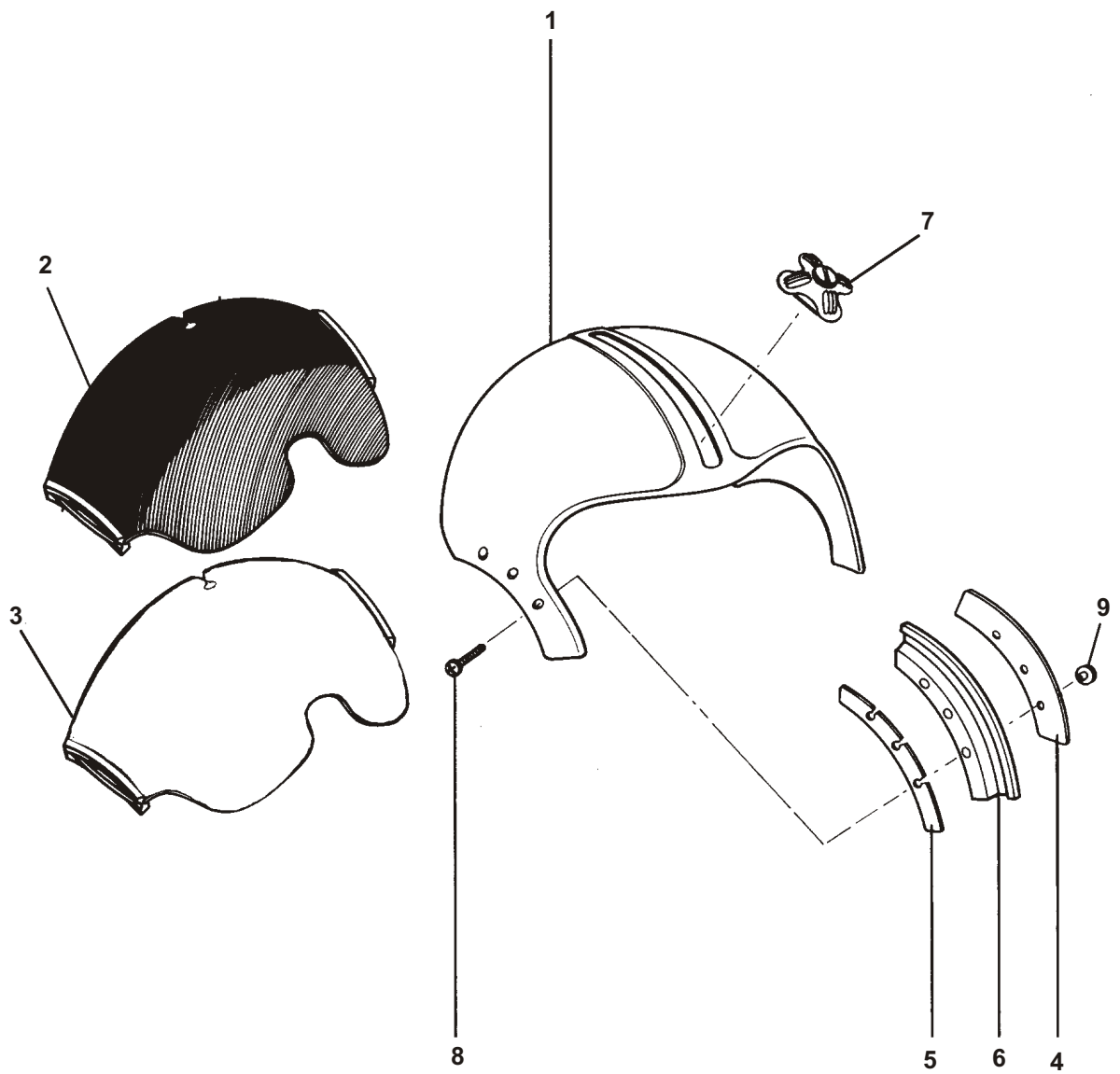


Figure 4-7. Single Visor Assembly

Table 4-7. Single Visor Assembly

FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY	USABLE ON CODE
4-7	85B7024-1	• SINGLE VISOR ASSEMBLY, EEK-4, Medium	REF	D
	85B7024-2	• SINGLE VISOR ASSEMBLY, EEK-4, Large	REF	E
	85B7024-3	• SINGLE VISOR ASSEMBLY, EEK-4, X-Large	REF	F
-1	79D4628	• VISOR HOUSING, Medium *	1	D
	79D4629	• VISOR HOUSING, Large *	1	E
	82D5798	• VISOR HOUSING, X-Large *	1	F
-2	79D4405-1	• VISOR LENS, Neutral, Medium **	1	D
	79D4406-1	• VISOR LENS, Neutral, Large **	1	E, F
-3	79D4405-2	• VISOR LENS, Clear, Medium (Optional)	1	D
	79D4406-2	• VISOR LENS, Clear, Large (Optional)	1	E, F
-4	79B4397-1	• SPACER, Inner, Medium	2	D
	79B4399-1	• SPACER, Inner, Large	2	E, F
-5	79B4398-1	• SPACER, Outer, Medium	2	D
	79B4400-1	• SPACER, Outer, Large	2	E, F
-6	63D1072-1	• TRACK, Medium	2	D
	63D1073-1	• TRACK, Large	2	E, F
-7	75A3127	• VISOR LOCK ASSEMBLY	1	
-8	76A3438-3	• SCREW	6	
-9	80B4863	• T-NUT	6	

* Other colors available; contact Gentex Corporation for more information.

** Other configurations available; contact Gentex Corporation for more information.

