WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel.

⚠️ DANGER

This helmet provides LIMITED protection to the head, it will not protect the wearer against all possible hazards. Some conditions can exceed the helmet’s capacity to provide protection and result in serious head, brain, spinal, or other injury including paralysis or death.

⚠️ WARNING

- All seven (7) helmet pads must be worn during airborne operations and other high-risk operations such as air assault and rappelling/ mountaineering.

- The hardware (p-clamp, ladder lock, screw, and nut) inside the helmet--where the chinstrap retention system webbing attaches to the helmet shell--must be covered by padding during airborne and other high risk operations such as air assault and rappelling/ mountaineering. The oblong/oval pad must be placed flush with the rim (edge) of the helmet and completely cover the hardware--See illustration Pad Placement over Hardware (Front) and Pad Placement over Hardware (Rear).

- In order to maximize ventilation, reduction of NO MORE THAN 2 pads is authorized in non-risk situations.

- If you experience fit problems, tightness/looseness, or helmet profile is too high or too low refer to Sizing and Fitting Troubleshooting guidelines.
• When donning the helmet for the first time in a cold environment, it may be necessary to wear the helmet for a few minutes or otherwise to warm the pads, such as by placing in pockets, so that the pads will conform to the shape of your head. As the pads warm up and conform to the shape of your head, it may be necessary to retighten the chinstrap retention system.

• If you pull too tightly on any strap during steps 3 and 4 (See Chapter 2 Operator Instructions Donning and Removing)—or if you don’t position helmet on head and hold in place with one hand on top of helmet for initial adjustment as instructed in Step 2-- the helmet may become uncomfortable and tilted on your head and chin cup may become un-centered.

• For first aid treatments, refer to FM 21-11.

---

**WARNING**

• This helmet is NOT designed to provide protection from objects that contact the helmet surface within one inch of the edge of the helmet shell.

• This is not a DOT Fed Motor Vehicle Std. 218 approved helmet. Do not use for protection in or on a motorcycle.

• Inspect the helmet before and after EACH use (as defined in Chapter 3) following the inspection instructions. Do not alter the helmet or attach any item not defined in this manual.

• If no NVG front bracket is used - and the helmet has a hole for the front bracket - plug hole with 8-32 x 3/8 long screw and post.

Failure to follow these warnings can result in serious personal injury or death.

Follow all warnings and instructions provided with this helmet. For replacement instructions, contact MSA.
TECHNICAL MANUAL
OPERATOR’S MANUAL FOR
ADVANCED COMBAT HELMET (ACH)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, MSA Corporate Headquarters, P.O. Box 426, Pittsburgh, PA 15230 USA or call MSA Customer Service at 1-866-672-1001 or email: military.cs@msanet.com

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HOW TO USE THIS MANUAL

OVERVIEW

This manual contains operating instructions and maintenance procedures for the Advanced Combat Helmet (ACH).

This manual is divided into the following major sections:

**Front Cover.** Provides information about the equipment covered by the TM.

**Warning Summary.** Provides a summary of all warnings that apply throughout the manual.

**Table of Contents.** Lists chapters and work packages in order of appearance.

**Chapter 1, Description and Theory of Operation.** Provides descriptions, equipment data, and theory of operation information.

**Chapter 2, Operator Instructions.** Provides sizing information, donning information, and operating instructions in both usual and unusual conditions.

**Chapter 3, Maintenance Procedures.** Provides cleaning and repair instructions and maintenance procedures.

**Chapter 4, Supporting Information.** Provides reference information, P/N, NSN & descriptions.
NAVIGATION

This TM is broken down by chapters. All of the chapters contained within the TM are listed in the table of contents in the order they appear by chapters. The chapter name is listed in the table of contents. The page numbers appear at the bottom of each page.

OPERATION AND MAINTENANCE

Before you use the Operator’s Manual for Advanced Combat Helmet (ACH), familiarize yourself with the assembly and fitting instructions and the operating instructions (Chapter 2). Perform maintenance procedures (Chapter 3) on a regular basis. Always follow the WARNINGS and CAUTIONS.
SCOPE
This manual covers the basic fitting, & care use instructions for the Advanced Combat Helmet (ACH), hereafter referred to as the ACH or the helmet.

MOST CURRENT VERSION OF THIS MANUAL
The most current version of this manual may be found at http://www.MSAnet.com

LIST OF ABBREVIATIONS/ACRONYMS

Advanced Combat Helmet (ACH)
Manual Revision (rev)
Night Vision Goggles (NVG)
Preventive Maintenance Checks and Service (PMCS)
CHAPTER 1
DESCRIPTION AND THEORY OF OPERATION
FOR
ADVANCED COMBAT HELMET (ACH)
ADVANCED COMBAT HELMET
EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The ACH is a helmet system that provides ballistic and impact protection. This system is compatible with the current night vision devices (NVG’s), communications packages, and nuclear, biological, and chemical (NBC) defense equipment and body armor.

- The ACH provides ballistic protection within the full spectrum of operational environments.

- The ACH allows maximum sensory and situational awareness for the operator. This includes an unobstructed field of view and increased ambient hearing capabilities.

- The ACH’s chinstrap retention system and pad suspension system provides unsurpassed balance, stability, and comfort. This system provides for proper size, fit, and ventilation.

- The ACH’s pad suspension system provides impact protection throughout all operational scenarios, including static-line airborne operations.
DESCRIPTION OF MAJOR COMPONENTS

The Advanced Combat Helmet is made up of the following major components, which are illustrated below:

- helmet shell
- pad suspension system
- chinstrap retention system with hardware
- helmet cover
- eyewear retention strap

Major Components
Pad Suspension System
Pad Set (7 pads)
Chin Strap Retention System with Hardware
Hardware

Elastic Band

Screw

Nut

P-Clamp

Ladder Lock
The communications flap is used to store cables from the headset that is sometimes used with the helmet.

**Helmet Cover**
Eyewear Retention Strap
The following are used in certain operations:

chemical protective cover
helmet band
ADVANCED COMBAT HELMET
THEORY OF OPERATION

This work package discusses theory of operation and protective qualities of the ACH.

This ACH is designed to provide the Soldier with ballistic and impact protection. It is compatible with night vision, communications, and Nuclear Biological and Chemical (NBC) equipment. The ACH weighs approximately slightly less than 3 lbs for the size small, 3 lbs for the size medium, 3.25 lbs for the size large, and slightly more than 3.6 lbs for the extra large.

The edge cut of the shell has been reduced when compared to the Helmet, Ground Troops and Parachutists. This enables better situational awareness through improved field of vision and hearing.

The shell provides ballistic protection. The pads act as a suspension system providing sizing and fitting. In conjunction with the shell, the pad suspension system provides impact protection. In conjunction with the chinstrap retention system, the pad suspension system provides stability.

The chinstrap retention system is a four-point design, attaching to the shell at four locations. In conjunction with the pad suspension system, it provides improved stability.
CHAPTER 2
OPERATOR INSTRUCTIONS
FOR
ADVANCED COMBAT HELMET (ACH)
This work package provides instructions for choosing the proper size ACH.

**ACH Shell Sizing**

**Head Measuring Procedure**

Use tape measure and caliper to make the following measurements. See Expendable and Durable Items List in the back of this manual, for appropriate NSNs.

**Step 1.** Subject must be seated in upright position.

**Step 2.** Measure head length. Measurement is best made with a caliper. If caliper is not available, an approximate measurement can be made using a tape measure aligned with the front and back of head as shown. Record size measured.

![Diagram showing head measurement](image-url)
Step 3. Measure head width. Measurement is best made with a caliper. If no caliper is available, an approximate measurement can be made using a tape measure aligned with each side of head as shown. Record size measured.

Arrows denote the proper alignment of the caliper or tape measure.

Step 4. Measure head circumference. Record size measured.

Subject sits erect with head level. Measure circumference by passing tape measure just above the bony eyebrow ridges of the forehead and above both ears. The tape measure must be pulled tight.
Step 5. Using the chart below, select the helmet size based on the largest of the 3 measurements. This is the proper shell size for the soldier measured.

**NOTE**

If any measurement falls on the dividing line between sizes, select the larger size.

### Head/Shell Sizing Chart

<table>
<thead>
<tr>
<th>Helmet Shell</th>
<th>Head Length</th>
<th>Head Breadth (Width)</th>
<th>Head Circumference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Helmet Shell</td>
<td>Up to 7-1/4 inches (184mm)</td>
<td>Up to 6-1/2 inches (162mm)</td>
<td>Up to 21-1/4 inches (538mm)</td>
</tr>
<tr>
<td>Medium Helmet Shell</td>
<td>From 7-1/4 inches (184mm) up to 7-3/4 inches (198mm)</td>
<td>Up to 6-1/2 inches (162mm)</td>
<td>From 21-1/4 inches (538mm) up to 22-1/2 inches (573mm)</td>
</tr>
<tr>
<td>Large Helmet Shell</td>
<td>From 7-3/4 inches (198mm) up to 8-1/4 inches (210mm)</td>
<td>Up to 6-1/2 inches (162mm)</td>
<td>From 22-1/2 inches (573mm) up to 23-1/2 inches (597mm)</td>
</tr>
<tr>
<td>Extra-Large Helmet Shell</td>
<td>8-1/4 inches (210 mm) and over</td>
<td>6-1/2 inches (162 mm) and over</td>
<td>23-1/2 inches (597mm) and over</td>
</tr>
</tbody>
</table>
ACH Pad Sizing

Two size pads are available—size 6 (3/4 inch thick) and size 8 (1 inch thick).

To select pad size:

1. Assemble helmet in standard pad configuration (see Pad Configuration section). If other equipment is to be used with the helmet, such as headset/microphone, evaluate size with that equipment (if possible).

2. Try on helmet and evaluate fit. Proper fit is achieved when the helmet does not sit too high (crown pad does not contact head or too much of the forehead is exposed) or too low (too low on brow or not compatible with eyewear, etc.) and is not too tight or too loose (see Sizing and Fitting troubleshooting section). Shake head rapidly from side to side to check for stability. Helmet should not rotate from side to side when head is shaken. While evaluating fit, be sure to have the chinstrap retention system cinched down.

3. The ACH should fit so that the front rim is not more than 1/2” above the eyebrows. A properly sized and fitted ACH will sit level on the Soldier’s head (side to side), with the lower edge of the front rim being level to the ground or slightly inclined with respect to the ground. While looking upward by moving only the eyes, the Soldier can test for proper fit by observing that the edge of the rim is just in view. All ACH’s should be fitted with the thinner size 6 crown pad (3/4” thick) in the top of the helmet. The Soldier should feel the crown pad touch the top of his head. Fit can be adjusted by adjusting the pad positions inside the helmet, tightening the retentions straps, or exchanging the helmet shell for a larger size. A quick evaluation of the height of the ACH can be made by looking at the height of the ACH relative to the ear canal openings. The bottom of the ACH should come to the top of the Soldier’s ear canal opening.
PAD CONFIGURATIONS

This work package provides instructions for different pad configurations.

Standard Pad Configuration

- All seven (7) pads are worn when first trying on the helmet for sizing and fitting and for airborne and other high-risk operations (see configuration for airborne operations in for additional information).

Horizontal pad direction (4 each)

Vertical pad (4 each) direction

Front of helmet

2 ea Trapezoidal Pads (one front and one back)

Standard Pad Configuration
Alternate Pad Configurations

Alternate pad configurations are allowed to obtain a better fit or more comfort.

• Pads can be placed in vertical or horizontal directions (as shown in illustrations) or a combination or at an angle between horizontal and vertical (diagonal).

• Pads should be placed around the inside of the helmet to provide optimum comfort and stability.

• It is best to cover hardware with pads in all situations. However, hardware MUST be covered with pads in high-risk situations, for example air assault and rappelling/mountaineering.

The previous illustration shows the standard pad configuration. For reasons of clarity only, the illustration shows pads in either horizontal or vertical positions but not in diagonal positions. However, the pads can be placed diagonally, at any angle.
PAD SUSPENSION ADJUSTMENT

This work package provides information about the adjusting the pad suspension system. This unique suspension system is fully adjustable. The system has the following requirements and restrictions:

⚠️ WARNING

The hardware (p-clamp, ladder lock, screw, and nut) inside the helmet—where the chinstrap retention system webbing attaches to the helmet shell—must be covered by padding during airborne and other high risk operations such as air assault and rappelling/mountaineering. The oblong/oval pad must be placed flush with the rim (edge) of the helmet and completely cover the hardware—See illustration Pad Placement over Hardware (Front) and Pad Placement over Hardware (Rear). Failure to observe this precaution could result in serious injury or death to personnel because a hard-point contact the wearer’s head.

For more detail on the hardware configuration see figure on page 54.
WARNING

All seven (7) helmet pads must be worn during airborne operations and other high-risk operations such as air assault and rappelling/mountaineering. Failure to observe this precaution could result in serious injury or death because all seven (7) pads provide maximum impact protection.

If you experience fit problems, tightness/looseness, or helmet profile is too high or too low refer to Sizing and Fitting Troubleshooting guidelines.

Note: When donning the helmet for the first time in a cold environment, it may be necessary to wear the helmet for a few minutes or otherwise to warm the pads, such as by placing in pockets, so that the pads will conform to the shape of your head. Hardware rim (edge) of helmet trapezoidal pad oblong/oval pad. As the pads warm up and conform to the shape of your head, it may be necessary to retighten the chinstrap retention system.
Note: If you experience hot spots or discomfort, try rearranging the pad system to accommodate a more comfortable fit. If discomfort persists, try resizing your shell (See Sizing and Fitting Instructions, or Sizing and Fitting Troubleshooting, later in this manual.)

The direction of the side oblong/oval pads may be changed to maximize comfort. These pads may be routed vertically from bolt to crown. This configuration maximizes airflow for better temperature regulation. These pads may be routed horizontally to make a seal around the user’s head. This configuration is better suited for cold weather environments. (See Pad Configurations in the previous section.)
SIZING AND FITTING TROUBLESHOOTING

This work package provides sizing and fitting troubleshooting techniques.

1. If helmet is too tight:
   - Try arranging side pads in a horizontal configuration or diagonal direction (see configuration illustrations in the previous section.
   - Try re-positioning the front and rear pad.
   - If rearranging the pads does not alleviate the tightness try the next smaller (thinner) pad size.
   - If this does not alleviate the tightness try the next larger shell.

![Helmet too tight](image)
2. If too loose  (Shake head from side to side while eyes are closed. If helmet slides on head, it is too loose.)

- Try tightening the chinstrap retention system.
- Rearrange side pads in an alternate direction (horizontal, vertical or diagonal).
- Try a larger (thicker) pad set.
- Increase the number of pads in the helmet.
- Select the next smaller shell size.

Helmet too loose
3. If too high: (i.e., too much forehead exposed, crown and does not touch top of head, or wearer does not see edge of rim):

- Try smaller (thinner) sized pad set.

- Try rearranging pads (horizontal, vertical or diagonal—see pad configuration illustrations in the previous section.)

- Try a larger shell size.

**Note:** It is extremely important that the helmet not be sized and fitted to sit too high on the head. Here are some things to look for:

If too much of forehead is exposed (approximately more than 1/2 inch above eyebrow), then the helmet is too high.

Helmet too high (too much forehead exposed)
The edge of the helmet shall cover at or slightly above the ear canal.
- If crown pad does not touch the head (wearer cannot feel pad), then helmet may be too high.

Helmet too high (Crown pad not touching head)
• When fitting, have subject look upward by moving eyes, but without moving head. If subject cannot see rim of helmet, helmet may be too high.
4. If too low: (i.e. helmet too low on brow, helmet not compatible with eyewear, or has other similar compatibility issues)

   - Try larger (thicker) pad set.

   - Try rearranging pads (horizontal, vertical or diagonal—see pad configuration illustrations in diagonal the previous section.)

   - Try a smaller helmet shell.

Helmet too low

rim interferes with vision and eyewear
DONNING AND REMOVING

This section provides instructions for donning and removing the helmet, including adjusting the chinstrap to optimize fit and comfort.

⚠️ WARNING

Ensure that all the helmet adjustment mechanisms are properly adjusted for a snug, secure fit at all times when the helmet is worn. Failure to do so can result in an unstable helmet that will reduce protection to the soldier.

Donning: To don (put on) the helmet:

**Step 1.** Check number and placement of pads-- (see pad configuration in the previous section).

**Step 2.** Prior to donning helmet, loosen all adjustment straps (2 ladder-locks in front, 2 ladder-locks in back and the nape pad). Unbuckle chinstrap buckle.

Chin Strap Retention System with Hardware
Step 3. Position helmet on head and buckle chinstrap. Hold helmet in place with one hand on top of helmet for initial adjustment.

Note: If you pull too tightly on any strap during Steps 4 and 5—or if you don’t position helmet on head and hold in place with one hand on top of helmet for initial adjustment as instructed in Step 3—the helmet may become uncomfortable and tilted on your head and chin cup may become un-centered.

Step 4. Partially tighten 2 back adjustment straps (one side at a time).
Step 5. Partially tighten 2 front adjustment straps (one side at a time).

Step 6. With both hands, fully tighten front and back adjustment straps.
Step 7. The nape pad can be slid up and down along the rear legs of the chinstrap. It can be positioned according to personal comfort. When tightened (see figure below) against the nape by pulling on end of webbing, the nape pad adds additional stability to the helmet such as when wearing NVGs. Keep the nape pad away from the ladder-locks while adjusting the chinstrap to prevent jamming.

Removing: To remove the helmet:

To doff the helmet, press the sides of the center section of the buckle on the chinstrap retention system inward. Once the buckle releases, remove the helmet. To just loosen the chinstrap, push up on the ladder-lock.
REMOVING AND REPLACING CHINSTRAP RETENTION SYSTEM

This work package provides instructions for replacing the ACH’s chinstrap retention system.

1. Slide the elastic band down.

2. Unthread the chinstrap retention system webbing from the ladder-lock.

3. Lay the helmet on its crown with the front of the helmet away from you (the chinstrap buckle is oriented on right side of helmet.) Drape the replacement chinstrap retention system over the helmet with the nape-strap pad facing down on the back/rear of the helmet (see Chinstrap Retention Orientation illustration on the next page.)

4. Insert and thread the four legs of the chinstrap into their corresponding ladder locks. (See Routing of Chinstrap Retention System Webbing through Ladder Lock illustration on the next page). Take care to ensure that webbing is not twisted.

5. Slide elastic band over loose ends of webbing.

Chinstrap Retention System with Hardware

Note: Use only authorized MSA replacement straps with an MSA logo on an MSA helmet.
Routing of Chinstrap Webbing through Ladder Lock
ATTACHING HELMET COVER

This work package provides instructions for attaching the camouflage helmet cover to your ACH.

There are three covers available for the ACH: a reversible woodland/desert cover, non-reversible white (Arctic) cover & a non-reversible universal camouflage cover.

1. Remove the suspension pads from the inside of the helmet shell.

2. Remove the chinstrap retention system webbing (See previous section). LEAVE THE HARDWARE (P-CLAMPS AND LADDER LOCKS) ATTACHED TO THE SHELL.

3. Select the camouflage pattern to be worn and orient the cover so that the desired pattern is on the outside if using the reversible cover.

4. Helmet covers without communications flaps will be aligned by the front of the helmet cover to the front of the helmet. The front of the helmet cover has a single 1-1/4” long button hole aligned in the front to back direction. Helmet covers with communications flaps will be aligned with the communications flap towards the rear of the helmet.
5. Pull the cover over the back and sides of helmet shell.

6. Thread each ladder-lock through the corresponding buttonhole in the cover.

7. Pull the cover retaining tabs down and attach tabs to hook disks inside helmet shell. Ensure tight smooth fit of cover by pulling the retaining tabs until tight.

8. Place suspension pads back into shell. (See Pad Configuration section, page 25).

9. Replace chinstrap for retention system webbing.
FRONT BRACKET ASSEMBLY KIT INSTALLATION

This work package provides instructions for installing the front bracket assembly kit on the ACH.

1. Make sure that the front bracket assembly kit has all the components. You should have a front bracket assembly, a screw, and a threaded post (see illustration below). See Chapter 4 Associated and Repair Items List, for appropriate NSN.

2. Install the helmet cover on your helmet. See previous section for attaching helmet cover instructions.

Front Bracket Assembly Kit Contents
3. Place the front bracket assembly on the helmet over the helmet cover. Line up the hole in the front bracket assembly, the front buttonhole in the cover, and the hole in the helmet shell (see “Front Bracket Assembly Position on Helmet” illustration on the next page.) It may be necessary to move the cover around to line up the buttonhole in the cover.

4. Insert the screw through the front bracket assembly, cover, and into shell from the outside of the helmet. Insert the threaded post from inside the helmet. Start to tighten the screw and post (see “Front Bracket Assembly Positioned on Helmet” illustration on the next page.)

5. Before completely tightening the screw, ensure that the cleat of front bracket assembly is tight against the rim of the helmet (see “Front Bracket Assembly Positioned on Helmet” on the next page). Push the bracket up so that the cleat is tight against the rim (edge) of the helmet while tightening the screw and post using a screwdriver or coin. It may be helpful to have another person assist with this step.

⚠️ CAUTION

DO NOT overtighten the screw or the front bracket assembly may break.
Screw located on the outside of the helmet and inserted thru front bracket assembly and helmet cover into hole in the shell.

Helmet cover

Post located on the inside of helmet and inserted into hole in the shell.

Ensure cleat of front bracket assembly is tight against rim (edge) of helmet.

Rim (edge) of helmet under cover.

Front Bracket Assembly Positioned on Helmet
EYEWEAR RETENTION STRAP INSTALLATION INSTRUCTIONS

1. Remove the rear pads.

2. If the helmet cover is installed, unfasten the rear cover retaining tabs to expose the two rear nuts.

3. Remove the rear screw and position an eyewear retention strap over the hole with the snap socket and stud facing away from the helmet. (See Eyewear Retention Strap and Screw Assembly illustration on the next page.)

4. Insert the screw through the eyewear retention straps hole into the helmet. Ensure the helmet cover caught between the eyewear retention strap and screw (it must be free to cover the screw).

5. Align the p-clamp and nut on the screw and tighten. (See Chapter 3 which shows screw and nut installation, for replacing the hardware.)

6. Repeat these steps for the second eyewear retention strap.

7. Secure the cover retaining tabs and reinstall the new pads.
Eyewear Retentions Strap and Screw Assembly

snap (stud)

nut

snap (socket)

screw

hole in helmet shell

hole in eyewear retention strap

p-clamp
Helmet with Eyewear Retention Strap Installed
The rear trapezoidal pad must be placed flush with the rim (edge) of the helmet for airborne operations. If you experience helmet rotation during airborne operations the rear trapezoidal pad can be placed so that it extends 1/2” beyond the rim of the helmet. Placement of the rear trapezoidal pad flush or beyond the rim (edge) of the helmet prevents the hard shell from hitting your neck. (See Pad Placement over Hardware (Front) and Pad Placement over Hardware (Rear) illustrations.)

1. Reposition the rear trapezoidal pad flush with the rim (edge) of the helmet.

2. Reposition the oblong pads (4 each) to cover the chinstrap retention system hardware. See illustrations on the following page.

3. If fore-aft rotation is experienced during airborne operations, then the rear trapezoidal pad may be positioned a 1/2 inch beyond the rim (edge) of the helmet.
Pad Placement over Hardware (Front)

Oblong/oval pad

Hardware

Pad Placement over Hardware (Rear)

Oblong/oval pad covers hardware (4 places)

Oblong/oval pad (4 pads)

Trapezoidal pad (2 pads)

Hardware (4 places)
CHAPTER 3
MAINTENANCE PROCEDURES FOR ADVANCED COMBAT HELMET
REPLACING THE HARDWARE

This work package provides instructions for replacing the ACH’s hardware (ladder lock, p-clamp, screw, or nut).

NOTE

To replace hardware, use a standard flathead screwdriver. If this tool is unavailable, a coin may be used.

1. Remove the chinstrap retention system as described in previous chapter.

2. Remove the screw with a standard flathead screwdriver and lift the ladder lock and p-clamp out. It may be necessary to use pliers or wrench to hold or turn the inside nut.

3. Replace the necessary portion (ladder-lock or p-clamp). Replace screw and nut. Tighten the screw.

4. Inspect the screws to ensure tightness. If loosening persists, use the sealing compound (thread-locking compound) (See Expendable and Durable Items List in the back of this manual.) Follow directions on container.
Hardware
REPLACING THE PAD SUSPENSION

This work package provides information on replacing the pad suspension.

Replacing Pad Suspension

NOTE

On one side the pads are covered with a loop material. On the other side, the pads are covered by moisture-wicking fabric. ONLY THE LOOP SIDE OF THE PAD WILL ATTACH TO THE HOOK DISKS ON THE HELMET SHELL. Press the pad against the hook disks. The loop side of the pad is green.

1. Pull the individual pads off the inner helmet hook disks.

2. Reattach suspension pads as needed. (see Pad Configurations and Pad Suspension Adjustment sections.)

CAUTION

If the pads do not have the MSA logo, replace complete pad set with an authorized pad set from MSA. Do not mix different types of pads.
CLEANING INSTRUCTIONS

This work package provides instructions for cleaning the ACH.

Helmet Shell

1. Clean with mild soap and water. Use a soft brush or cloth.

2. Allow to air dry.

A small brush is useful in removing dirt from the hook disks on the inside of the shell.

Chinstrap, Helmet Cover, and Pad Suspension

1. Clean with mild soap and water. Wash by hand or in machine in the gentle cycle, cold water.

2. Allow to air dry. DO NOT MACHINE DRY.

Keeping the hook and loop clean will help to maintain its ability to stick together.
PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Introduction

General

Preventive maintenance checks and services (PMCS) are performed to keep the ACH in operating condition. The checks are used to find, correct, and report problems. The operator is to do the PMCS tasks shown in PMCS Table 1. PMCS is to be done before, during, and after use of the ACH.

Before you use the ACH, perform PMCS.

During use of the ACH, periodically perform PMCS.

After you have used the ACH, perform PMCS.

PMCS Column Description

ITEM – The order the PMCS should be performed and a reference number for maintenance forms. INTERVAL – Tells when the check should be performed. ITEM TO BE CHECKED OR SERVICED – Tells which items to perform the PMCS procedure on. PROCEDURE – Tells the procedure to perform. If item cannot be repaired, it must be replaced. EQUIPMENT NOT READY IF – Tells what conditions render the ACH unfit to perform the mission.
Table 1. Preventive Maintenance Checks and Services - BEFORE USE

<table>
<thead>
<tr>
<th>ITEM TO BE CHECKED OR SERVICED</th>
<th>PROCEDURE</th>
<th>EQUIPMENT NOT READY/AVAILABLE IF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinstrap Retention System</td>
<td>Check for: 1) Cuts, frays or other damage or loose or damaged stitching in the web-</td>
<td>Chinstrap webbing has cuts, frays, or other damage.</td>
</tr>
<tr>
<td></td>
<td>bing. If webbing is frayed more than 1/2&quot; or has a discernable cut, or loose or damaged stitching, replace.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Cracked, worn, or damaged hardware (pclamp, ladderlock, nut, screw) and buckle. Replace.</td>
<td>Hardware or buckle is cracked, worn, or damaged.</td>
</tr>
<tr>
<td></td>
<td>3) Loose screws. Tighten screws or refer to higher level maintenance if loose.</td>
<td>Screws loose.</td>
</tr>
</tbody>
</table>
| Pads | 1) Cuts, tears or other damage to outer fabric or inner foam. If pads are torn or cut exposing the inner padding, replace.  
   2) Check pads for compressibility. Pads in service should resist compression the same as new pads when squeezed with hands. If pads are torn or cut exposing the inner padding material, or if pads have lost compressibility, replace. | Pads torn, cut or otherwise damaged. |
| Shell | 1) Gouges, scrapes, cracks, delamination or other damage to shell. If gouges, scrapes, or damage extends below the surface (below the paint), replace.  
   2) Loose or damaged edging. Replace.  
   3) Loose or damaged hook disks. Replace. | Gouges, scrapes, cracks, delamination or other damage extends below the surface (below the paint).  
   Edging is excessively loose or damaged.  
   Hook disks are damaged such that they will not securely hold the pads in place. |
<table>
<thead>
<tr>
<th>Component</th>
<th>DURING USE</th>
<th>AFTER USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>Cuts, frays or other damage to the fabric or cut or frayed stitching. Replace.</td>
<td>Excessive cuts, frays, or other damage to the fabric or cut or frayed stitching.</td>
</tr>
<tr>
<td>Chinstrap Retention System</td>
<td>Inspect for damaged components (see Item 1)</td>
<td>Chinstrap components are damaged.</td>
</tr>
</tbody>
</table>

**Table 2. Preventive Maintenance Checks and Services - DURING USE**

**Table 3. Preventive Maintenance Checks and Services - AFTER USE**

<table>
<thead>
<tr>
<th>Component</th>
<th>DURING USE</th>
<th>AFTER USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinstrap Retention System, Hardware, Pads, Shell</td>
<td>Perform all PMCS steps in Items 1-4 after use.</td>
<td>See above.</td>
</tr>
</tbody>
</table>
CHAPTER 4

SUPPORTING INFORMATION

FOR

ADVANCED COMBAT HELMET (ACH)
REFERENCES

This work package lists related field manuals, forms, technical manuals, and miscellaneous publications.

FIELD MANUALS

FM 3-5  Tactics of Chemical Warfare
FM 21-11  First Aid for Soldiers
FM 3-21.220  Static Line Parachuting Techniques and Training

FORMS

DA Form 2028  Recommended changes to Publications and Blank Forms
SF 368  Product Quality Deficiency Report

TECHNICAL MANUALS

TM 10-8400-203-23  Unit and Direct Support Maintenance Manual for General Repair Procedures for Individual Equipment

TM 11-5855-262-10-2  Night Vision Goggles AN/PVS-7B (NSN 5855-01-228-0937) (EIC: LPS) and AN/PVS-7D (NSN 5855-01-422-54) (EIC: N/A) (TO 12S10-2PVS7-11; TM 09500A-10/1A; NAVSEA SW215-AT

TM 11-5855-306-10  Monocular Night Vision Device AN/PVS-14 (NSN 5855-01-432-0524) (EIC: N/A) (TM 10271A-10/1)
# ACH HELMET PARTS LIST

**CAGEC (Commercial and Government Entity Code)**

CAGEC — Murrysville      55799  
CAGEC — Newport           INEL7

## Table 1: ACH Parts List

<table>
<thead>
<tr>
<th>MSA Part Number</th>
<th>National Stock Number</th>
<th>Description, CAGEC, and Part Number</th>
<th>U/I</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8470-01-476-2605</td>
<td>Strap, Chin Retention size M/L</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8470-01-519-4200</td>
<td>Strap, Chin Retention, size XL</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td>160003A</td>
<td>8470-01-476-5643</td>
<td>Pad, Suspension System, ACH</td>
<td>set</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(set of size 6 pads)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>160004A</td>
<td>8470-01-476-5648</td>
<td>Pad, Suspension System, ACH</td>
<td>set</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(set of size 8 pads)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSA Part Number</td>
<td>National Stock Number</td>
<td>Description</td>
<td>U/I</td>
<td>QTY</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>300236A</td>
<td>8415-01-521-8806</td>
<td>Nonreversible Cover ACH (univ camo pattern) with communication flap size, S/M</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8415-01-515-4662</td>
<td>Cover, Helmet, Reversible, woodland/desert, with communication flap, size S/M</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>10055698</td>
<td>8415-01-515-4663</td>
<td>Cover, Helmet, Reversible, woodland/desert with communication flap, size L/XL</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8415-01-521-8808</td>
<td>Nonreversible Cover ACH (univ camo pattern) with communication flap size, L/XL</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8415-01-515-4286</td>
<td>Cover, Helmet, Non-reversible, white, with communication flap, size S/M</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>MSA Part Number</td>
<td>National Stock Number</td>
<td>Description</td>
<td>U/I</td>
<td>QTY</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>8415-01-515-4288</td>
<td>8415-01-515-4288</td>
<td>Cover, Helmet, Non-reversible, white, with communication flap, size L/XL</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>8415-01-521-8357</td>
<td>8415-01-521-8357</td>
<td>Cover, Helmet, Non-reversible (univ camo pattern) without communication flap, size S/M</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>8415-01-515-4671</td>
<td>8415-01-515-4671</td>
<td>Cover, Helmet, Reversible, woodland/desert, without communication flap, size S/M</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>8415-01-515-4674</td>
<td>8415-01-515-4674</td>
<td>Cover, Helmet, Reversible, woodland/desert, without communication flap, size L/XL</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>8415-01-521-8360</td>
<td>8415-01-521-8360</td>
<td>Cover, Helmet, Non-reversible (univ camo pattern) without communication flap, size L/XL</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>MSA Part Number</td>
<td>National Stock Number</td>
<td>Description, U/I</td>
<td>QTY</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>8415-01-515-4289</td>
<td>5340-01-509-1467</td>
<td>Cover, Helmet, Non-reversible white, without communication flap, size S/M ea</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8415-01-515-4290</td>
<td>5340-01-509-1467</td>
<td>Cover, Helmet, Non-reversible, white, without communication flap, size L/XL ea</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8470-01-487-1605</td>
<td>8415-01-509-1467</td>
<td>Strap, Eyewear, Retention, green (483) ea</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5340-01-509-1467</td>
<td>8470-01-506-6625</td>
<td>Bracket, Lever (NVG Front Bracket Assembly) Kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10054781</td>
<td>8470-01-506-6625</td>
<td>Clamp, P, Helmet, Advanced Combat box of 50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101014A</td>
<td>8470-01-506-6742</td>
<td>Fastener Tape, Hook (Hook Disks) roll of 500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8415-01-521-8802</td>
<td>8415-01-521-8802</td>
<td>Strap, Eyewear, Retention, Foliage Green 504 ea</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MSA Part Number</td>
<td>NSN</td>
<td>Nomenclature</td>
<td>U/I</td>
<td>Qty.</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>300647A</td>
<td>8470-01-506-6373</td>
<td>Helmet, Advanced Combat (green with one NVG mounting hole, size medium shell, size 8 pads)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>300189A</td>
<td>8470-01-506-6375</td>
<td>Helmet, Advanced Combat (green with one NVG mounting hole, size large shell size 6 pads)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>300648A</td>
<td>8470-01-506-6377</td>
<td>Helmet, Advanced Combat (green with one NVG mounting hole, size large shell size 8 pads)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>10050873</td>
<td>8470-01-513-6411</td>
<td>Helmet, Advanced Combat (green with one NVG mounting hole, size extra large shell size 6 pads)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>10050874</td>
<td>8470-01-513-6414</td>
<td>Helmet, Advanced Combat (green with one NVG mounting hole, size extra large shell size 8 pads)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>301059A</td>
<td>8470-01-506-6721</td>
<td>Helmet, Parts Kit includes 9 sets of size 6 pads, (1) set of size 8 pads, (400) fastener tapes (hook disks), (10) chinstrap retention systems, (10) mounting screw set, and (10) reversible covers.</td>
<td>Kit</td>
<td></td>
</tr>
<tr>
<td>153006A</td>
<td>8470-01-506-6451</td>
<td>Ladder Lock, Helmet, Advanced Combat</td>
<td>box of 50</td>
<td></td>
</tr>
<tr>
<td>150005A</td>
<td>8470-01-506-6503</td>
<td>Mounting Screw, Helmet, Advanced Combat</td>
<td>box of 50</td>
<td></td>
</tr>
<tr>
<td>150006A</td>
<td>8470-01-506-6488</td>
<td>Nut, Helmet, Advanced Combat</td>
<td>box of 50</td>
<td></td>
</tr>
<tr>
<td>8470-01-529-6329</td>
<td></td>
<td>Helmet, Advanced Combat (foliage green with one NVG hole, size medium shell size 6 pads)</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td>8470-01-529-6344</td>
<td></td>
<td>Helmet, Advanced Combat (foliage green with one NVG hole, size large shell size 6 pads)</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td>MSA Part Number</td>
<td>NSN</td>
<td>Nomenclature</td>
<td>U/I</td>
<td>Qty.</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>8470-01-529-6365</td>
<td>Helmet, Advanced Combat (foliage green with one NVG hole, size extra large shell size 6 pads)</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td>160012A</td>
<td>8470-01-506-6626</td>
<td>Pad, Helmet, Advanced Combat (circular crown pad, size 6)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>160013A</td>
<td>8470-01-506-6627</td>
<td>Pad, Helmet, Advanced Combat (circular crown pad, size 8)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>160010A</td>
<td>8470-01-506-6454</td>
<td>Pad, Helmet, Advanced Combat (oblong/oval pad, size 6)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>160011A</td>
<td>8470-01-506-6456</td>
<td>Pad, Helmet, Advanced Combat (oblong/oval pad, size 8)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>160014A</td>
<td>8470-01-506-6851</td>
<td>Pad, Helmet, Advanced Combat (trapezoidal pad, size 6)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td>160015A</td>
<td>8470-01-506-6855</td>
<td>Pad, Helmet, Advanced Combat (trapezoidal pad, size 8)</td>
<td>ea.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8470-01-144-5367</td>
<td>Post, Helmet (for attaching NVG Front Bracket Assembly)</td>
<td>box of 50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5305-00-182-9265</td>
<td>Screw, Machine (8-32x 3/8 in long) for plugging front NVG hole</td>
<td>hd</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8470-01-476-5631</td>
<td>Screw Set, Mounting includes (4) p-clamps, (4) ladder-locks, (4) bolts, (4) nuts MSA #300107A</td>
<td>set</td>
<td></td>
</tr>
<tr>
<td>10054157</td>
<td>8470-01-519-4200</td>
<td>Strap, Chin, Retention, size XL (green 483)</td>
<td>ea</td>
<td></td>
</tr>
<tr>
<td>300031A</td>
<td>8470-01-487-1605</td>
<td>Strap, Eyewear Retention (green 483)</td>
<td>pr</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8470-01-476-2605</td>
<td>Strap, Chin, Retention, size M/L Green 483</td>
<td>ea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8470-01-521-8319</td>
<td>Strap, Chin, Retention, size M/L Foliage Green 504</td>
<td>ea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8470-01-521-8320</td>
<td>Strap, Chin, Retention, size XL Foliage Green 504</td>
<td>ea</td>
<td></td>
</tr>
</tbody>
</table>
**EXPENDABLE AND DURABLE ITEMS LIST**

**Table 2. Expendable and Durable Items List**

<table>
<thead>
<tr>
<th>(1) ITEM #</th>
<th>(2) LEVEL</th>
<th>(3) NATIONAL STOCK NUMBER</th>
<th>(4) ITEM NAME, DESCRIPTION, CAGEC, PART NUMBER</th>
<th>(5) U/I</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>5210-01-434-9493</td>
<td>Caliper</td>
<td>ea</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Cloth</td>
<td></td>
<td>ea</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>8315-00-782-3520</td>
<td>Measuring tape</td>
<td>ea</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Mild Soap</td>
<td>ea</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>Soft Brush</td>
<td>ea</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>8030-01-104-5392</td>
<td>Sealing Compound</td>
<td>bx</td>
</tr>
</tbody>
</table>
RECORD OF HIT

OPERATOR RECORD OF HIT

Name: ____________________________

Rank: ____________________________ Serial #: ____________________________

Unit: ____________________________

Phone: ____________________________

HELMET Size: ____________________________ Date of Issue: _ _/ _/ _

Duty Being Performed When Hit: ____________________________

__________________________________________

Hit Caused by (circle): Fragmentation (Mine, Grenade, Booby Trap Artillery, Other)

Date of Hit: _ _/ _/ _

Estimated range from point of detonation: ____________________________

Location of Hit(s) on Advanced Combat Helmet: 

__________________________________________

__________________________________________

Continued to Perform Mission (circle one)?: Yes  No

Was Personal Injury Sustained (circle one)?: Yes  No

Description of Injury: ____________________________
Mail Record of Hit to postal address or responses to electronic mail address:

Postal Address:

Commander
U.S. Army Soldier and Biological Chemical Command
ATTN: AMSRD-NSC-IP-A Kansas Street Natick, MA 01760

Electronic Mail Address:

http://www.sbccom.army.mil/feedback/index.htm

Mailing Address
Defense Technologies
MSA
1100 Cranberry Woods Drive
Cranberry Township, PA 16066 USA

Electronic Mailing Address
military.cs@msanet.com