ARMY TM 9-1025-211-20&P
MARINE CORPS TM 08198A-20&P/2

SUPERSEDES COPY DATED JUNE 20, 1980

TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL

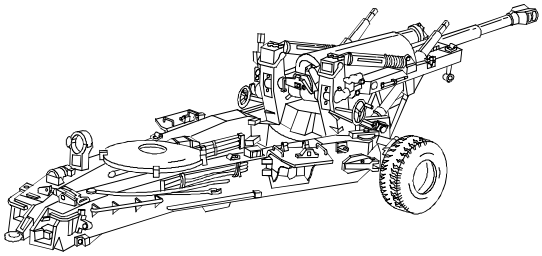
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

FOR

HOWITZER, MEDIUM, TOWED:

155-MM, M198

(1025-01-026-6648) (EIC:3EL)



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HEADQUARTERS, DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. MARINE CORPS
MAY 1991

Technical Manuals
No. 9-1025-211-20&P*
No. 08198A-20&P/2*

HEADQUARTERS
DEPARTMENT OF THE ARMY
U.S. MARINE CORPS
Washington D.C., 1 May 1991

UNIT MAINTENANCE MANUAL

FOR
HOWITZER, MEDIUM, TOWED: 155-MM, M198
(1025-01-026-6648)

Current as of 1 August 2000 for Appendix C

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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HOW TO USE THIS MANUAL

GENERAL

a. All references in the manual are to pages or to another manual.

b. In most illustrations for the maintenance procedures, the howitzer is shown with the ballistic shields removed (for clarity).

c. In illustrations for fire control equipment maintenance, the equipment is shown removed from the howitzer.

d. Whenever the male gender is mentioned (i.e., crewman, repairman) in the manual, it also pertains to females.

e. This manual covers both modified and unmodified information for repair of the howitzer. Procedures for unmodified howitzers are first, followed by modified information.

INDEXES

a. Front Cover Index. A page reference index of often used portions of the manual.

b. Table of Contents. Lists in order all chapters and their sections, appendixes, and alphabetical index and gives page references to where they begin.

c. Official Names, Nomenclature and Designations. Throughout this manual, most items are referred to by their official nomenclatures. On page 1-2, the items referred to by their common names are listed alphabetically, followed by their official nomenclature.

d. Chapter Indexes. Lists each section contained in the chapter and a page reference to the first page of the section.

e. Section Indexes. Lists each paragraph contained in the section and a page reference to the first page of the paragraph.

f. Symptom Index. This quick guide to troubleshooting lists common malfunctions in alphabetical order with a page reference to the troubleshooting table where a test or inspection and corrective action are provided.

g. Alphabetical Index. At the back of the book, tells you where in the manual to find a particular subject.

MAINTENANCE PROCEDURES

There are two maintenance chapters. Chapter 2 contains unit maintenance instructions and is divided into nine individual maintenance sections covering the cannon, recoil mechanism, carriage, and fire control equipment. Chapter 3 covers instructions for auxiliary equipment maintenance. Each maintenance section contains detailed procedures for the maintenance tasks.

a. Initial Setup. Is a list of everything needed in order to do the maintenance tasks:

HOW TO USE THIS MANUAL (cont)

MAINTENANCE PROCEDURES (cont)

(1) Special Tools – Lists tools that are not found in the Artillery Mechanic's Tool Kit.

(2) Materials/Parts – Lists 100 percent replaceable parts.

(3) Personnel Required – Lists the number of personnel needed if more than one.

(4) References – Lists other publications containing necessary information.

(5) Equipment Conditions – Lists conditions to be met before starting the procedures. The reference on the left of the condition is a page reference to instructions for setting up the condition.

b. Step-By-Step Procedures. Are illustrated procedures for maintenance authorized in the MAC. For replacement of parts, see appendix C.

c. Also included in chapter 2 are procedures for:

(1) Service upon receipt of the equipment.

(2) Preventive maintenance checks and services.

(3) Troubleshooting.

REPAIR PARTS AND SPECIAL TOOLS LIST

a. Repair Parts and Special Tools. Designed for unit maintenance repair and general use are listed in appendix C.

b. Parts List. Is composed of functional groups, and follows MAC order. Parts in each group are listed in figure and item number sequence.

c. Illustrations. With the exception of fire control, are identical to those published in TM 9-1025-211-34P. Only illustrations and item numbers with repair parts authorized for unit maintenance are in this manual.

CHAPTER 1
INTRODUCTION

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Section I. GENERAL INFORMATION

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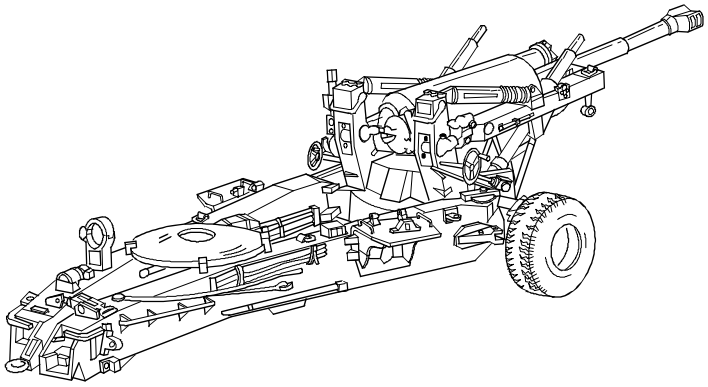

1-1. SCOPE

a. Type of Manual. Unit maintenance manual.

b. Model Number and Equipment Name. Howitzer, Medium, Towed: 155-mm, M198.

c. Purpose of Equipment. To provide artillery fire in support of ground-gaining troops.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS). Marine Corps users refer to TM 4700-15/1, Equipment Record Procedures.

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

For a description of methods and procedures used in the destruction of materiel to prevent enemy use, refer to TM 750-244-7. For complete details on the use of demolition materials and methods of priming and detonating demolition charges, refer to FM 5-25.

1-4. PREPARATION FOR STORAGE OR SHIPMENT

Refer to page 2-170.

1-5. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS

This listing includes the nomenclature cross-references used in this manual.

Common Name	Official Nomenclature
Bearing seat	Ball socket seat
Bleed cock	Drain cock
Clevis assembly	Shackle
Dipstick	Liquid gage rod-cap
Firing pin retainer	Lock pin
Handbrakes	Left and right manual brake assemblies
Oil	Hydraulic fluid

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your M198 howitzer needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at ATTN: AMSTA-AR-QAW-C, TACOM-ARDEC, 1 Rock Island Arsenal, Rock Island, IL 61299-7300. FAX: Commercial (309) 782-6653, DSN 793-6653. E-mail: qawqdrs@ria.army.mil. Marine Corps users submit a Product Quality Deficiency Report (SF 368) in accordance with MCO 4855.10, Product Quality Deficiency Report and TM 4700-15/1, Equipment Record Procedures to: Commander General, ATTN: (Code 822-2), Marine Corps Logistics Base, 814 Radford Blvd, Albany, GA 31704-1128. We'll send you a reply.

1-6.1. REPORT OF DISCREPANCY (ROD) FOR MARINE CORPS USERS

If your M198 howitzer has been damaged during shipment, if the shipment is incomplete, if incorrect spare/repair parts are received, or if an incorrect quantity is received, submit a Report of Discrepancy (ROD), SF 364. Refer to MCO 4430.3.

1-6.2. EQUIPMENT IMPROVEMENT RECOMMENDATION FOR MARINE CORPS USERS

If your M198 howitzer needs improvement which relates directly to savings in manhours, materials, supplies, equipment, money, or to increased effectiveness in carrying out the programs or missions of your command, Marine Corps units refer to MCO 1650.17, Beneficial Suggestion Awards Program.

1-7. CORROSION PREVENTION AND CONTROL (CPC)

a. Corrosion prevention and control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will assure that the information is identified as a CPC problem. Submit the form to: ATTN: AMSTA-AR-QAW-C, TACOM-ARDEC, 1 Rock Island Arsenal, Rock Island, IL 61299-7300. FAX: Commercial (309) 782-6653, DSN 793-6653. E-mail: qawqdrs@ria.army.mil. Marine Corps users submit Product Quality Deficiency Report to: Commanding General, ATTN: (Code 822-2), Marine Corps Logistics Base, 814 Radford Blvd., Albany, GA 31704-1128.

Section II. EQUIPMENT DESCRIPTION AND DATA

Section Index

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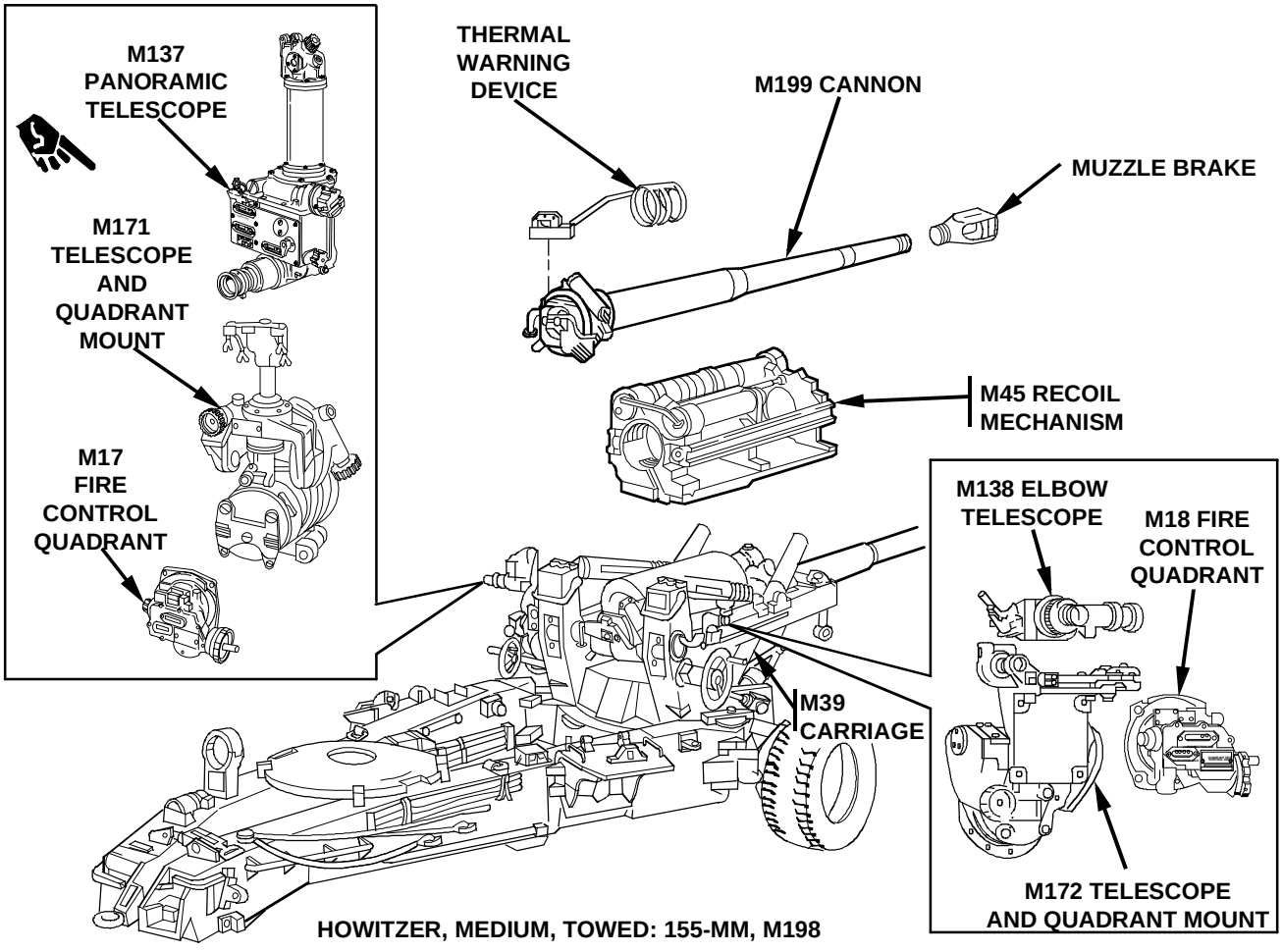
1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

a. The purpose of the M198 howitzer is to provide general support in the field artillery for the light division by providing both nuclear and non-nuclear firing.

b. The howitzer is a medium weight, low profile, split trail, extended range weapon. It may be displaced rapidly and has a 6400-mil speed shift. The howitzer may be towed by a vehicle or airlifted by a CH47D helicopter. The carriage has retractable wheels. The top carriage assembly can be rotated 180 degrees to decrease the overall length for shipment or storage.

c. The fire control equipment is operated by a gunner on the left side controlling direction (deflection) adjustments and an assistant gunner on the right side controlling elevation settings. It can also be operated by a gunner on the left side controlling both elevation and direction (deflection) settings. All light vials, reticles, and counters on the fire control and accessory equipment are radioactively illuminated.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

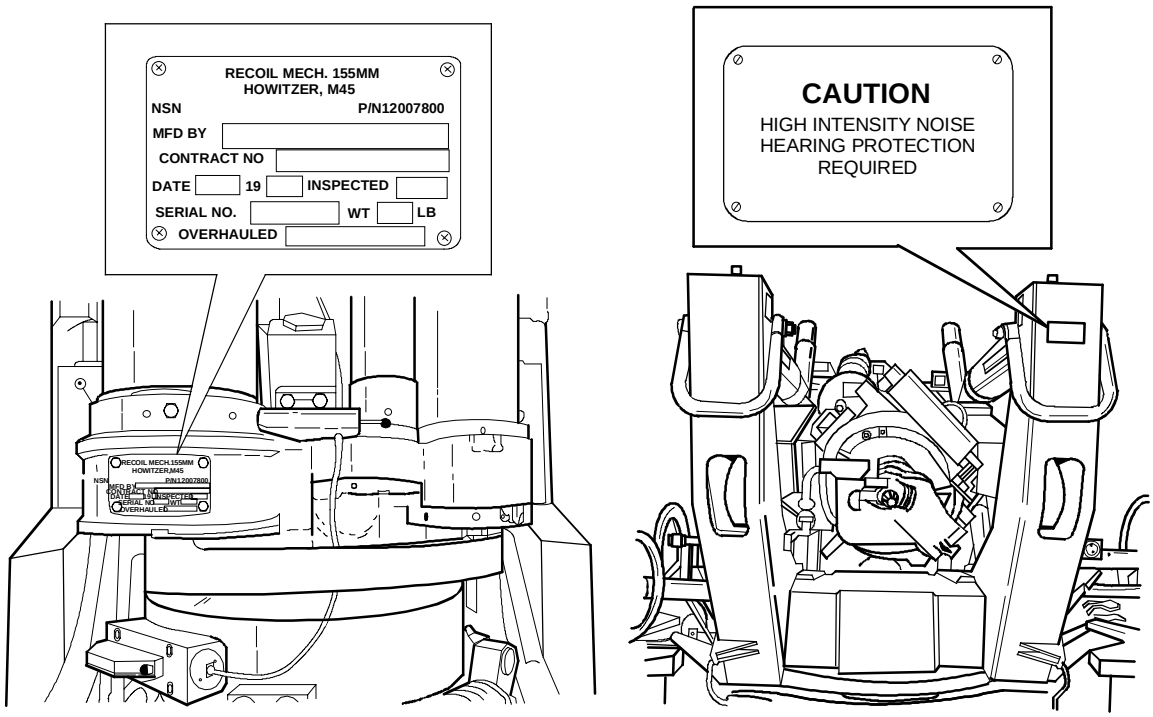


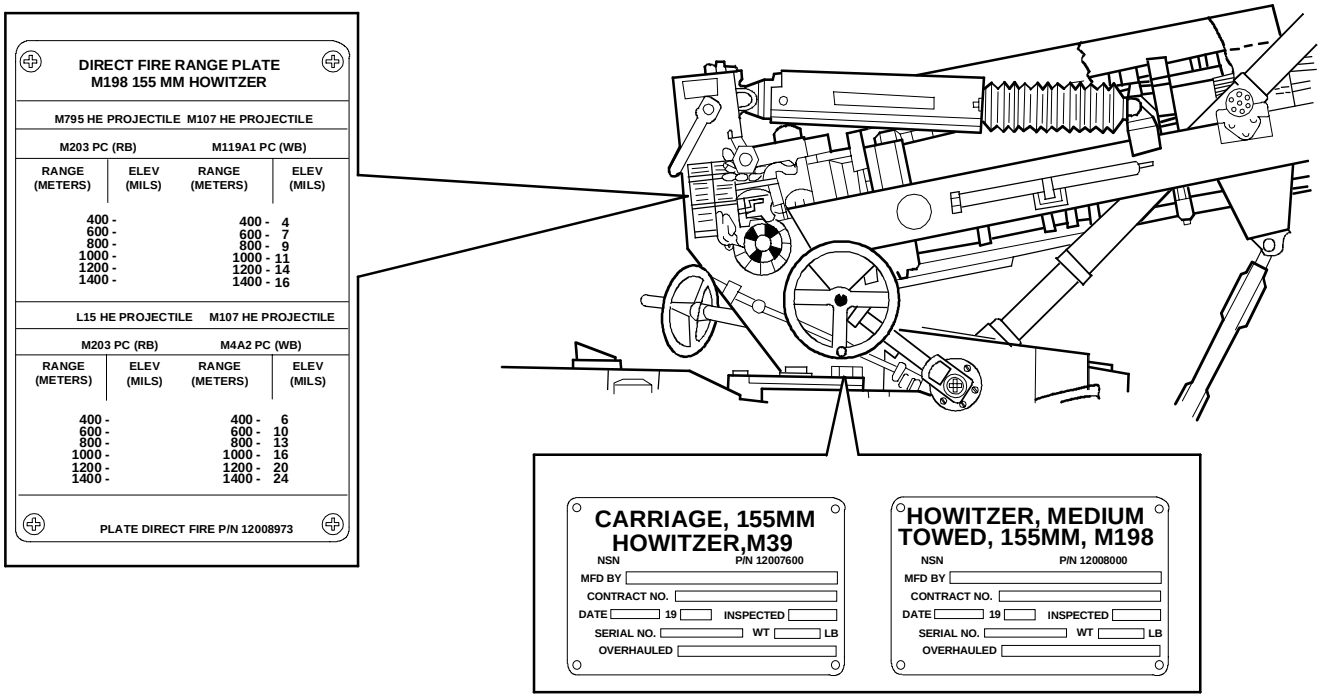
HOWITZER, MEDIUM, TOWED: 155-MM, M198

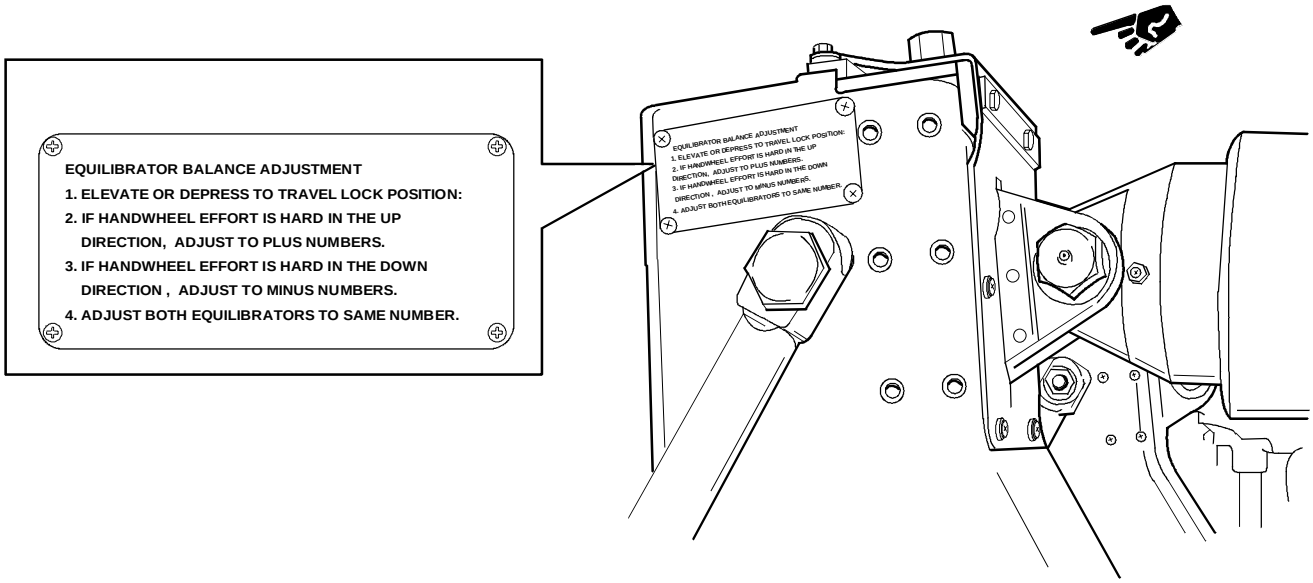
1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (cont)

a. For a detailed description of major components, see page 1-13.

b. Data Plates. Refer to the following illustrations for location of data plates on the M198 howitzer and fire control equipment.






EQUILIBRATOR BALANCE ADJUSTMENT
1. ELEVATE OR DEPRESS TO TRAVEL LOCK POSITION:
2. IF HANDWHEEL EFFORT IS HARD IN THE UP DIRECTION, ADJUST TO PLUS NUMBERS.
3. IF HANDWHEEL EFFORT IS HARD IN THE DOWN DIRECTION , ADJUST TO MINUS NUMBERS.
4. ADJUST BOTH EQUILIBRATORS TO SAME NUMBER.
EQUILIBRATOR BALANCE ADJUSTMENT
1. ELEVATE OR DEPRESS TO TRAVEL LOCK POSITION:
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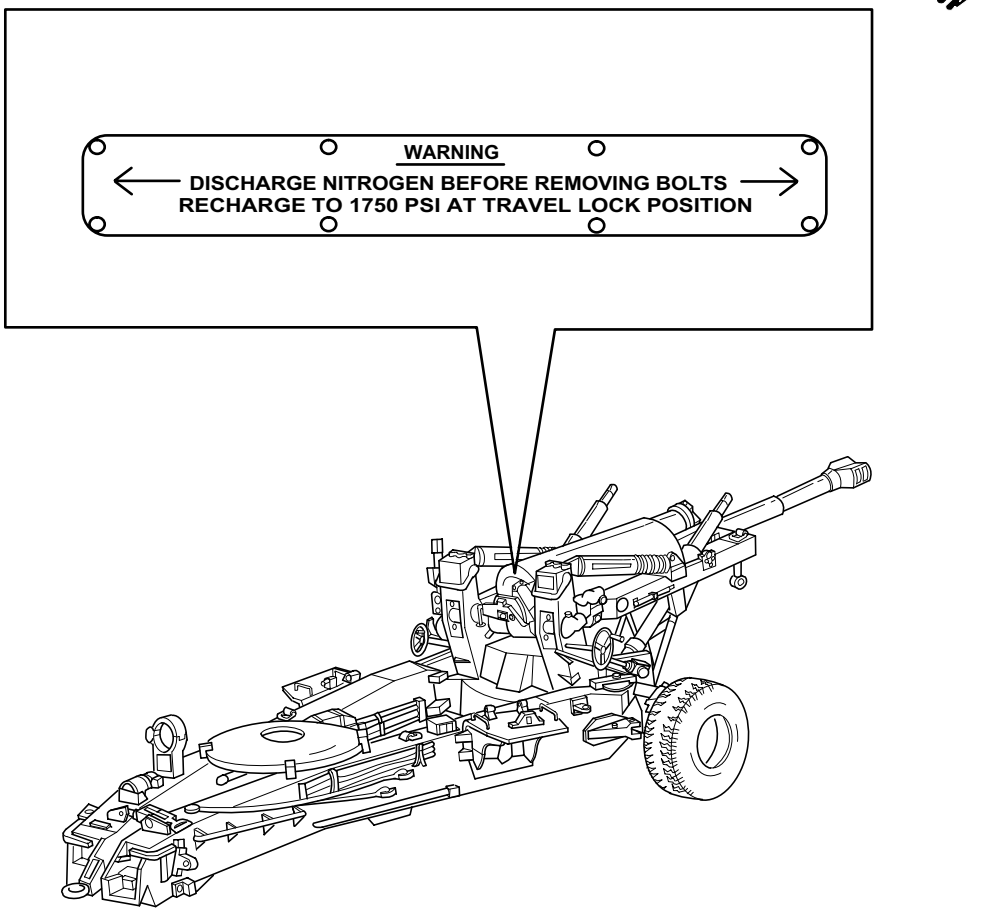
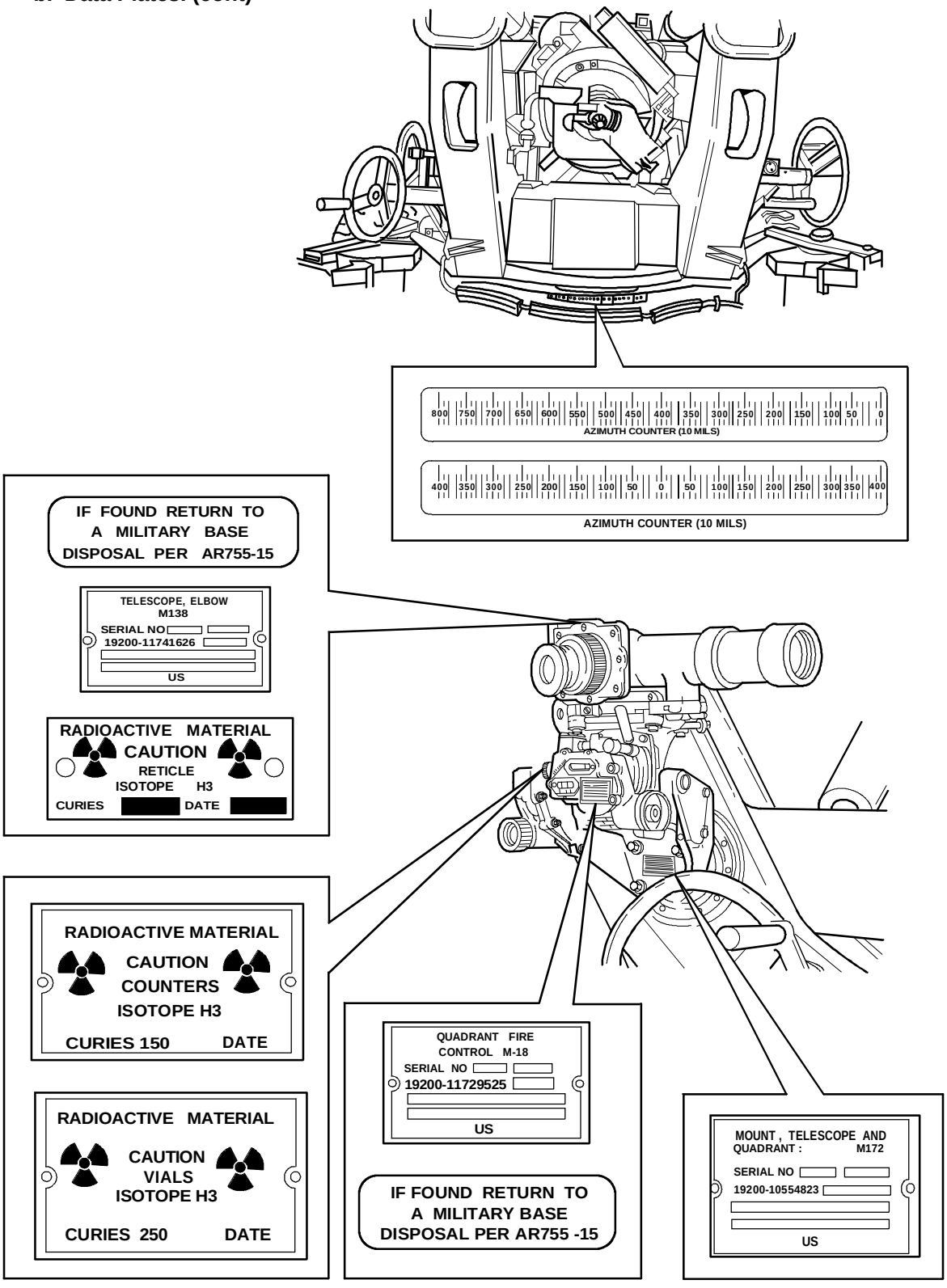
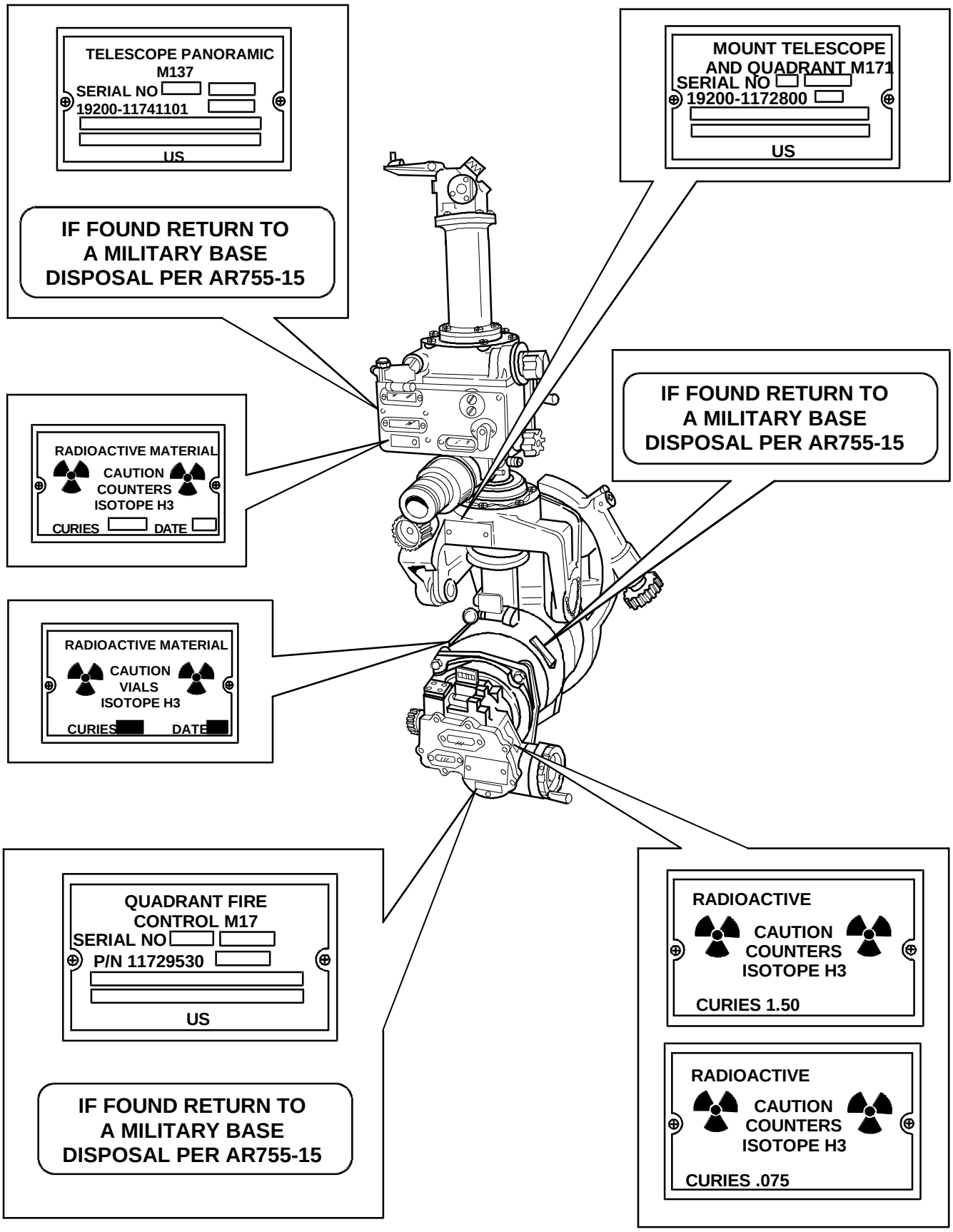

WARNING
DISCHARGE NITROGEN BEFORE REMOVING BOLTS
RECHARGE TO 1750 PSI AT TRAVEL LOCK POSITION

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (cont)

b. Data Plates. (cont)




TELESCOPE PANORAMIC M137
SERIAL NO
19200-11741101
US
IF FOUND RETURN TO A MILITARY BASE DISPOSAL PER AR755-15
MOUNT TELESCOPE AND QUADRANT M171
SERIAL NO
19200-1172800
US
RADIOACTIVE MATERIAL
CAUTION
COUNTERS
ISOTOPE H3
CURIES
DATE
IF FOUND RETURN TO A MILITARY BASE DISPOSAL PER AR755-15
RADIOACTIVE MATERIAL
CAUTION
VIALS
ISOTOPE H3
CURIES
DATE
QUADRANT FIRE CONTROL M17
SERIAL NO
P/N 11729530
US
IF FOUND RETURN TO A MILITARY BASE DISPOSAL PER AR755-15
RADIOACTIVE
CAUTION
COUNTERS
ISOTOPE H3
CURIES 1.50
RADIOACTIVE
CAUTION
COUNTERS
ISOTOPE H3
CURIES .075

1-10. MODIFICATION AND SYSTEM IMPROVEMENT PACKAGE

NOTE

This manual covers both modified and unmodified M198 howitzers. Illustrations and procedures are for the modified howitzer, unless procedures for both modified and unmodified components or assemblies are required for clarity. Procedures that are for the modified howitzer and do not pertain to the unmodified howitzer can be ignored.

All US Army M198 howitzers are scheduled to be equipped with a system improvement package (MWO 9-1025-211-50-3). This MWO will effect the M39 carriage assembly only. The following is a brief description of the MWO and areas effected.

a. Top Carriage Assembly:

(1) Equilibrators: Warnings on ballistic shields telling repairmen that nitrogen pressure must be bled to zero PSI before performing maintenance.

(2) Equilibrator adjustment screw: Improved adjustment screw components, makes adjustment of equilibrators easier and adds a cover to keep debris from the screw and slide area.

(3) Adjustment scales and pointers: Moved to inside of top carriage uprights, eliminate entanglement of camouflage nets.

(4) Top carriage: Self contained automatic traverse lock, easier to engage and eliminates damage to hydraulic brake line.

(5) Deleted.

(6) Universal joint bellows: Help contain lubricants where they belong.

(7) Cradle assembly: Gussets welded to travel lock area to strengthen the travel lock struts.

b. Bottom Carriage Assembly:

(1) Suspension: New axle bushings to help eliminate excessive friction while raising the howitzer to the towed position.

(2) Firing base plate: New lock mechanism, easier to lock base plate in position.

(3) Hydraulic brake system: Brake precheck system, more efficient way to check brake condition prior to towing howitzers.

(4) Snorkel breather system: Connects power booster to trail to eliminate water intake into the power booster during fording operations.

(5) New drain cock: Provides crew easier access to bleed pressure in the emergency tank.

(6) Covers and standoffs for brake lines and brake hose assembly hookup diagram: Provided to help keep howitzer brake system operable.