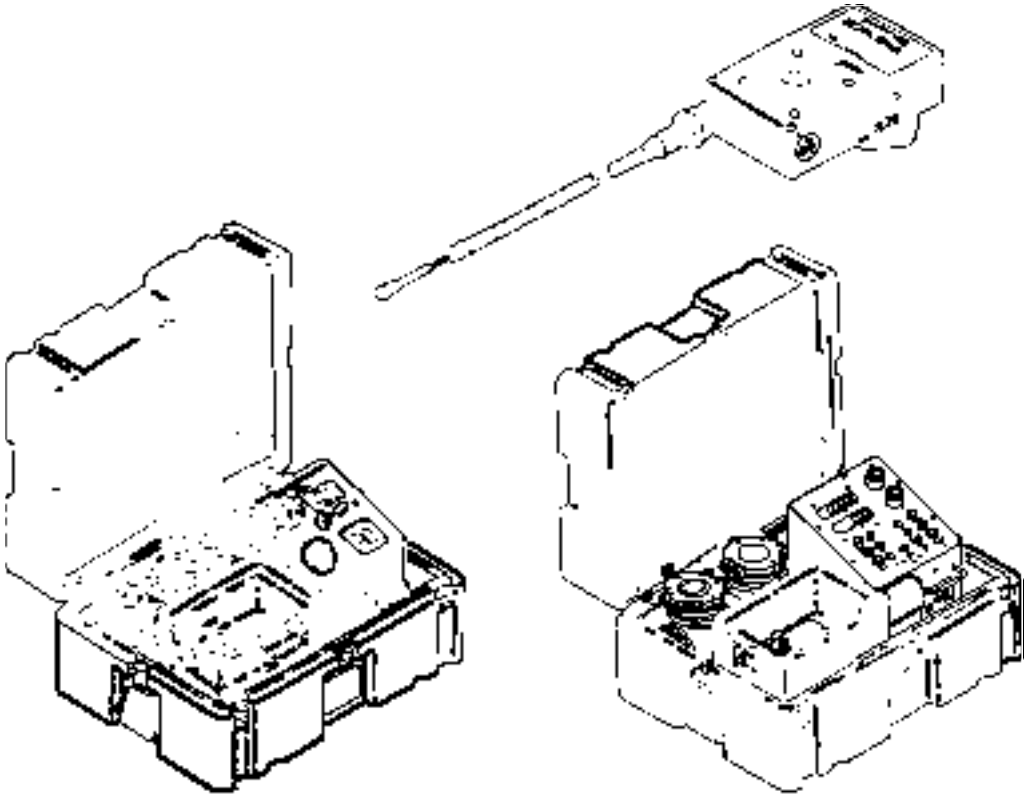
*TM 10-1670-305-23&P
AIRFORCE T.O. 14D2-11-1
NAVSEA SS400-AY-MMO-010
MARINE CORPS TM 1670-23&P

TECHNICAL MANUAL

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)

AUTOMATIC RIPCORD RELEASE, AR2, MODEL 451
NSN 1670-01-369-7914
TEST CHAMBER ASSEMBLY, AR2, MODEL 452
NSN 1670-01-370-0752
ELECTRONIC TEST CHAMBER ASSEMBLY, AR2, MODEL 453
NSN 1670-01-468-9471



DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

*This manual supersedes TM 10-1670-305-13&P, dated 30 JUNE 1995

HEADQUARTERS, DEPARTMENT OF THE ARMY

21 JUNE 2000

PCN 182 019003 00

***TM 10-1670-305-23&P**
AIR FORCE T.O. 14D2-11-1
NAVSEA SS400-AY-MMO-010
MARINE CORPS TM 1670-23&P

HEADQUARTERS, DEPARTMENTS OF
THE ARMY, NAVY, & AIR FORCE
WASHINGTON, D.C., 21 June 2000

TECHNICAL MANUAL

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)

AUTOMATIC RIPCORD RELEASE, AR2, MODEL 451
NSN 1670-01-369-7914
TEST CHAMBER ASSEMBLY, AR2, MODEL 452
NSN 1670-01-370-0752
ELECTRONIC TEST CHAMBER ASSEMBLY, AR2, MODEL 453
NSN 1670-01-468-9471

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.

ARMY - Mail DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual, direct to: COMMANDER, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-RIM-L (N), 15 Kansas Street, Natick, MA 01760-5018. You may also send in your recommended changes via electronic mail directly to <amssbriml@natick.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

AIR FORCE – Reports by U.S. Air Force units should be submitted on AFTO Form 22, Technical Order Publication Improvement Report, and forwarded to the address prescribed above for the Army. An informational copy of the prepared AFTO Form 22 shall be furnished to SA-ALC/LDEAM, Kelly AFB, TX 78241-6421.

NAVY – Submit NAVSEA Form 4160/1 (REV 2-99) to Commander, NSDSA Code 5E30, NAVSURFCENDIV, 4363 Missile Way, Port Hueneme CA 93043-4307. A reply will be sent to you.

MARINE CORPS – Submit NAVMC Form 10772 to Commander, Life Cycle Management Center (Code 826), 814 Radford Blvd., Albany, GA 31704-0320. A reply will be sent to you.

*This manual supersedes TM 10-1670-305-13&P, dated 30 June 1995

TABLE OF CONTENTS

WP Sequence No.

WARNING SUMMARY

CHAPTER 1 – INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

General Information 0001 00
Automatic Ripcord Release, Model 451, Equipment Description and Data 0002 00
Test Chamber Assembly, Equipment Description and Data 0003 00
Automatic Ripcord Release, Model 451, Theory of Operation 0004 00
Test Chamber Assembly, Theory of Operation 0005 00
Supporting Data for Repair Parts, Special Tools, TMDE, and Support Equipment 0006 00

CHAPTER 2 – OPERATING INSTRUCTIONS

Description and Use of Controls and Indicators 0007 00
Automatic Ripcord Release, Model 451, Operation Under Usual Conditions 0008 00
Test Chamber Assembly, Model 452, Operation Under Usual Conditions 0009 00
Electronic Test Chamber Assembly, Model 453, Operation Under Usual Conditions 0010 00
Test Chamber Assembly, Model 452, Operation Under Unusual Conditions 0011 00
Electronic Test Chamber Assembly, Model 453, Operation Under Unusual Conditions 0012 00

CHAPTER 3 – TROUBLESHOOTING PROCEDURES

Troubleshooting Procedures, General Information 0013 00
Troubleshooting Procedures 0014 00
Troubleshooting Procedures 0015 00

CHAPTER 4 – UNIT MAINTENANCE INSTRUCTIONS

Service Upon Receipt 0016 00
Preliminary Checks and Adjustments 0017 00
Preventive Maintenance Checks and Service (PMCS) 0018 00
Power Cable Assembly, Main/Reserve, Unit Maintenance 0019 00
Automatic Ripcord Release, AR2, Jump/Off Switch Maintenance 0020 00
Test Chamber Assembly, Model 452, Unit Maintenance 0021 00
Electronic Test Chamber Assembly, Model 453, Unit Maintenance 0022 00
Preparation for Storage or Shipment 0023 00

CHAPTER 5 – DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Test Chamber Assembly, Model 452, Direct Support Maintenance 0024 00
Electronic Test Chamber Assembly, Model 453, Direct Support Maintenance 0025 00

CHAPTER 6 – SUPPORTING INFORMATION

References 0026 00
Maintenance Allocation Chart (MAC) 0027 00
Maintenance Allocation Chart (MAC) 0028 00
Repair Parts List and Special Tool List (RPSTL) 0029 00
Automatic Ripcord Release, Model 451, Repair Parts List 0030 00
Test Chamber Assembly, Model 452, Repair Parts List 0031 00
Electronic Test Chamber Assembly, Model 453, Repair Parts List 0032 00

National Stock Number Index 0033 00
Part Number Index 0034 00
Components of End Items (COEI) and Basic Issue Items (BII) Introduction 0035 00
Automatic Ripcord Release, Model 451, Components of End Items (COEI) and Basic Issue Items (BII) 0036 00
Test Chamber Assembly, Model 452, Components of End Items (COEI) and Basic Issue Items (BII) 0037 00
Electronic Test Chamber Assembly, Model 453, Components of End Items (COEI) and Basic Issue Items (BII) 0038 00
Additional Authorization List (AAL) Introduction 0039 00
Expendable and Durable Items List Introduction 0040 00
Tool Identification List 0041 00
AR2 Maintenance Log 0042 00
Index ..... Index 1

HOW TO USE THIS MANUAL

In this manual, primary chapters appear in upper case/capital letters; work packages are presented in numeric sequence, e.g., 0001 00; paragraphs within work packages are not numbered and are presented in a titles format. For a first level paragraph title all upper case/capital letter, e.g., INTRODUCTION, the next subordinate paragraph title will have the first letter of the first word and of each principle word all upper case/capital letters, e.g., How to Use This Manual. The location of additional material that must be referenced is clearly marked. Figures supporting maintenance procedures/text are located as close as possible to their references.

FRONT MATTER. Front matter consists of front cover, warning summary, title block, table of contents, and how to use this manual page.

CHAPTER 1 – INTRODUCTION. Chapter 1 contains general information, equipment description, and theory of operation.

CHAPTER 2 – OPERATING PROCEDURES. Chapter 2 contains a description and use of controls and indicators, operating procedures under usual conditions and operating procedures under unusual conditions.

CHAPTER 3 - TROUBLESHOOTING PROCEDURES. Chapter 3 contains troubleshooting procedures authorized at unit level.

CHAPTER 4 – UNIT MAINTENANCE INSTRUCTIONS. Chapter 4 provides procedures for service upon receipt, preliminary checks and adjustments, preventive maintenance checks and services (PMCS), maintenance procedures authorized at unit level, and preparation for storage or shipment.

CHAPTER 5 – DIRECT SUPPORT MAINTENANCE INSTRUCTIONS. Chapter 5 provides maintenance procedures authorized at direct support level.

CHAPTER 6 – SUPPORTING INFORMATION. Chapter 6 contains references, maintenance allocation chart (MAC), expendable and durable items list, tool identification list, illustrated list of manufactured items, torque limits, mandatory replacement parts list, and wiring diagrams.

REAR MATTER – Rear matter consists of alphabetical index, DA Form 2028, authentication page, and back cover

CHAPTER 1

INTRODUCTORY INFORMATION
WITH
THEORY OF OPERATION
FOR
AUTOMATIC RIPCORD RELEASE, AR2, MODEL 451
TEST CHAMBER ASSEMBLY, AR2, MODEL 452
ELECTRONIC TEST CHAMBER ASSEMBLY, AR2, MODEL 453

GENERAL INFORMATION 0001 00

SCOPE

Type of Manual: Operators Unit and Direct Support Maintenance Manual (including Repair Parts and Special Tool List).

Model Numbers and Equipment names: Automatic Record Release, AR2, Model 451
Test Chamber Assembly, AR2, Model 452
Electronic Test Chamber Assembly, AR2, Model 453

Purpose of Equipment: The Automatic Ripcord Release. Model 451 (hereinafter referred to as AR2) automatically pulls the ripcord pins on a free falling parachute at a predetermined altitude. The Test Chamber Assembly, Model 452 and the Electronic Test Chamber Assembly, Model 453 are designed to test the AR2.

Maintainer Qualifications:

A maintainer must be certified by the USA QMC & S at Ft. Lee, VA in order to maintain the Automatic Ripcord Release, AR2, Model 451, Test Chamber Assembly, AR2, Model 452, and Electronic Test Chamber Assembly, AR2, Model 453.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed in DA PAM 738-750. The Army Maintenance Management System (TAMMS) and DA PAM 738-751, The Army Maintenance Management System-Aircraft (TAMMLS-A).

Reports of Packaging and Handling Deficiencies. Fill out and forward a Supply Discrepancy Report (SDR) , formerly known as a Report of Discrepancy (ROD) Standard Form 364 (SF 364) as prescribed in AR 735-11-2/DLAR 4140.55/SECNAVINST 4355.73A/AFR 400-54/MCO 4430.3J.

Discrepancy in Shipment Report (DSR). Fill out and forward Discrepancy in Shipment Report (DSR) Standard Form 361 (SF361) as prescribed in AR 55-38/NAVUSPINST 4610.33C/AFR 75-18, MCO P4610.19./DLAR 4500.15.

Marine Corps Users-Marine Corps Forms and maintenance procedures used for equipment maintenance and reporting discrepancy/deficiencies are contained in TM 4700-15/1. Marine Corps organizations will use their local SOP and TM 4700-15/1 in performance of maintenance, record keeping, and reports on this equipment.

For Product Quality Deficiency Reports (PQDR), Marine Corps users shall submit a Standard Form 368 (SF 368) in accordance with MCO 4855.10 to Life Cycle Management Center, ATTN: Product Support Section 822, 814 Radford Blvd., Albany, GA 31704-0320. A reply will be sent to you.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

You can help improve this manual. If you find a mistake or if you know of a way to improve the procedures, let us know.

ARMY - Mail DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, U.S. Army Soldier

AUTOMATIC RIPCORD RELEASE, MODEL 451 **0002 00**
EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES

CHARACTERISTICS

Senses rate-of-fall and altitude above mean sea level (MSL) (not above ground level (AGL).

Altitude dial is graduated to permit settings from 500 feet to 25,000 feet.

AR2 actuates when it falls through a preselected altitude at a fall rate of 80 ft/sec or greater.

CAPABILITIES AND FEATURES

Automatically removes ripcord pins on the parachute at a predetermined altitude.

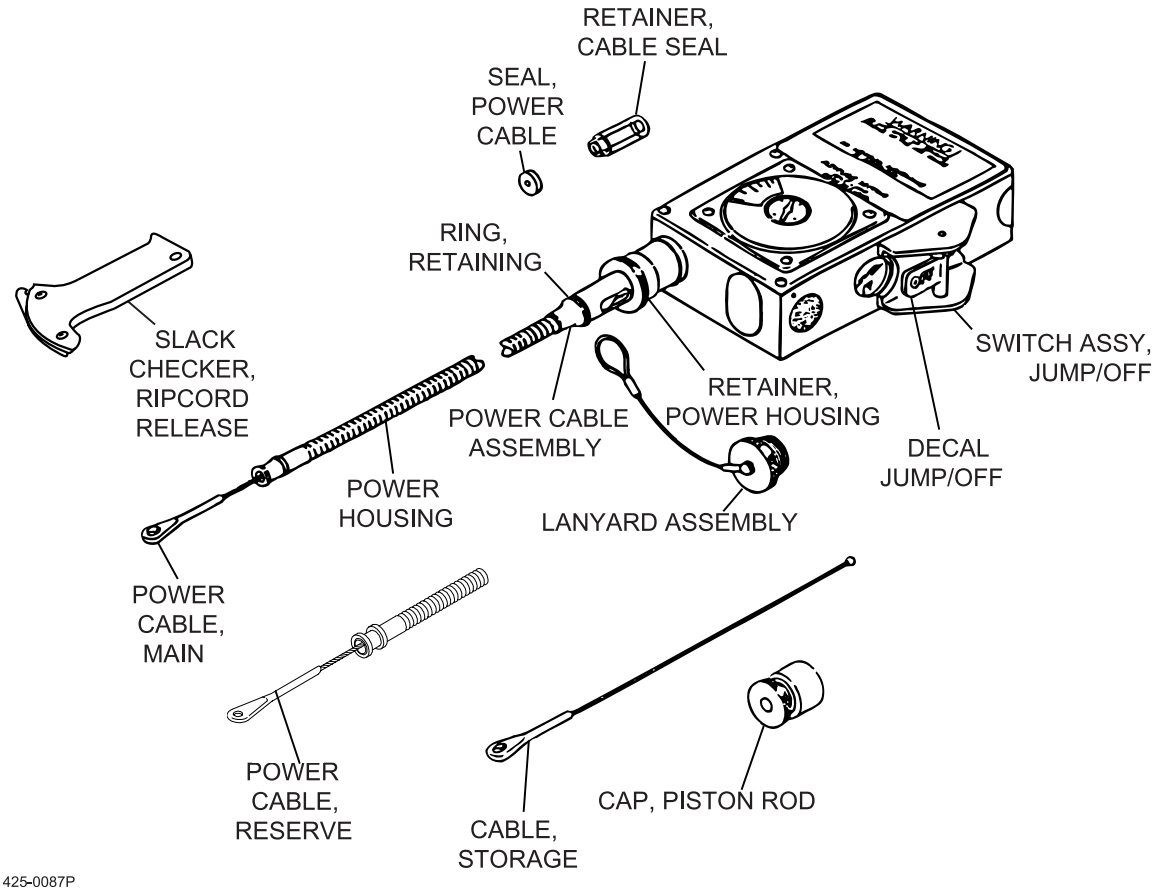
Designed to remove ripcord pins on the reserve parachute but can be used with main parachute.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The AR2 basically consists of an aneroid with associated mechanism, rate-of-fall sensing chamber, and a spring-loaded power cable. All components except the power cable and its flexible conduit are contained in a housing. The housing provides all required chamber, passages and mounting pads for each component. An altitude setting dial and JUMP/OFF switch are mounted on the housing. The power cables end in a fixed eye, which connects to the parachute ripcord pin. A lanyard assembly is attached to the power cable to protect the open end of the power housing when detached from the AR2.

AUTOMATIC RIPCORD RELEASE, MODEL 451 **0002 00**
EQUIPMENT DESCRIPTION AND DATA - CONT

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONT



AUTOMATIC RIPCORD RELEASE, MODEL 451 **0002 00**
EQUIPMENT DESCRIPTION AND DATA

DIFFERENCES BETWEEN MODELS

Upgraded units are marked ECP-8/ECP-13 on service record decal.

EQUIPMENT DESCRIPTION	ALTITUDE DIAL INCREMENTS	LEAK CHECK INDICATOR	OVERTRAVEL SWITCH PIN
Original Issue	500 feet	6,000 feet	N/A
ECP-8/ECP-13 Upgrade	250 Feet	10,000 feet	X

EQUIPMENT DATA

Operational Data

Operating Range (altitude)	1,500 (feet) to 25,000 (feet) above MSL
Accuracy	± 300(feet) less than 10,000 feet above MSL ± 500 feet at 10,000 feet or more above MSL

NOTE

Cable measurements are from center of ball to farthest distance inside the eye hole.

Power Cable, Main	33.12 in. long
Power Cable, Reserve	26.19 in. long
Storage Cable	7.25 in. long

Environmental Conditions

Operational	
Altitude	1,000 (feet) to 35,000 (feet) above MSL
Temperature	-60°F (-51°C) to +122°F (+50°C)
Storage	
Altitude	-1,000 (feet) to 30,000 (feet) above MSL
Temperature	+41°F (+5°C) to +122°F (+50°C)

Physical Characteristics

Dimensions	1.6 in. H x 5.2 in. W x 3.1 in. D
Weight	1.9 lbs (without power cable)