

UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
Training Command
PSC Box 20041
Camp Lejeune, North Carolina 28542-0041

AOM 6103

STUDENT OUTLINE

OPERATOR'S MANUAL AND LUBRICATION ORDER

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given TM 9-2320-280-10, LO 9-2320-280-12, and scenario identifying required M998 vehicle first echelon maintenance services, use the publications provided to locate instructions required to perform first echelon maintenance services, per information contained in the references provided. (6.1.2)

2. Enabling Learning Objectives: Given TM 9-2320-280-10, LO 9-2320-280-12, and scenario identifying required M998 vehicle first echelon maintenance services, per information contained therein, use the publications provided to locate:
 - a. beginning page number in the technical manual for use of the operator's controls, (6.1.2a)

 - b. maintenance functions performed on a M998 Series vehicle during preventive maintenance checks and services, (6.1.2b)

 - c. page number in the technical manual that provides additional maintenance steps taken by the operator when the M998 Series vehicle is operated in extremely cold weather, (6.1.2c)

 - d. interval at which a specific maintenance function is performed, (6.1.2d)

 - e. abbreviation of a lubricant used in a component of a M998 Series vehicle, (6.1.2e)

 - f. the lubricant used when operating in an expected temperature range, and (6.1.2f)

g. the lubrication interval for a component of a M998 Series vehicle.
(6.1.2g)

OUTLINE

1. TECHNICAL MANUAL NUMBERING SYSTEM

a. Different manual numbers are sometimes assigned by different branches of service that use the same manual. We will talk about the Army numbering system first because that is the number most people use when referring to a technical manual.

b. Army Numbering System

(1) Digit 9, indicates ordnance material and the Army considers tactical vehicles as such.

(2) Twenty-three-twenty, is a federal supply classification number and designates a wheeled vehicle.

(3) Two eighty, is a manual designator for a specific series of vehicles, in this case the M998 series.

(4) The end number, 10, specifies what echelon or echelons of maintenance the manual covers. Ten represents first echelon only.

2. OPERATOR'S MANUAL

a. Table of Contents. Page i is the beginning page for the table of contents which provides chapter, section, and page number for information located within the TM.

b. Chapter One

(1) Chapter one of the TM contains general information relative to the vehicle.

(2) This chapter also contains drawings of vehicles, provides a general description and tabulated data, such as dimensions and capacities.

c. Chapter Two. Chapter two outlines complete operating instructions and contains information pertaining to various conditions.

(1) It contains description, location and use of the operator's controls and indicators.

(2) It also contains preventive maintenance checks and services that must be performed by the operator.

(3) Within this chapter are procedures for operating the vehicle under normal conditions.

(4) Also covered here are precautions taken by the operator when driving under unusual conditions and instructions for fording.

d. Chapter Three. Chapter three contains instructions on what the operator must do to keep the vehicle operational.

(1) It includes references to the lubrication order that applies to the vehicle and maintenance that must be performed by the operator.

(2) It provides information on how to find out what is wrong with the vehicle if it is not operating correctly. This is known as troubleshooting. The manual provides a listing of what troubles might occur, what could cause the troubles, and what should be done to correct troubles.

(3) This chapter explains procedures that should be followed to correct minor vehicle malfunctions that an operator may encounter while on a trip.

(4) It also provides additional maintenance steps that must be taken by the operator when the vehicle is operated in extremely hot or cold weather, desert or sandy conditions, humid areas, and very dry climates.

e. Appendix

(1) Appendix A lists all forms and manuals for use with the vehicle.

(2) Appendix B lists components of the end item and basic issue items.

(3) Appendix C lists additional items authorized for support of the vehicle.

(4) Appendix D lists expendable/durable supplies and materials needed to operate and maintain the vehicle.

(5) Appendix E shows the location for storage of material required to be carried on the vehicle.

(6) Appendix F shows on-vehicle equipment loading plan for the series vehicle.

f. The last part of the manual is an alphabetical index which lists paragraph and page numbers for vehicle information.

g. To ensure vehicles are ready for operation, a series of sequential preventive maintenance checks and services (PMCS) are performed. As you can see, Table 2-1 consists of five columns.

(1) Column one provides item numbers for recording results of PMCS. Item number one is for the left front side exterior of the vehicle and item number two is for left side tires.

(2) The interval column informs us when PMCS should be performed.

(a) "Before" PMCS must be performed prior to placing a vehicle, or its components, in operation.

(b) "During" PMCS will be performed while the vehicle and/or its components are in operation.

(c) "After" PMCS are performed upon completion of a mission.

(d) "Weekly" PMCS are performed once every seven days.

(e) "Monthly" PMCS are performed once every thirty days.

(3) Location and item to check/service column lists the item to be inspected.

(4) Crew member procedure column lists the procedures for inspecting an item.

(5) Equipment is not fully mission capable if: This column provides information relative to the serviceability of the vehicle and provides conditions that would render the vehicle unserviceable.

3. LUBRICATION ORDER

a. The lubrication order serves as a guide and provides information relative to lubrication and servicing each type of vehicle. A lubrication order (LO) or lubrication instruction (LI) is provided with each item of equipment. Like the technical manual, each is assigned either an Army or Marine Corps number.

b. Card 9 of 13 of the lubrication order contains a key, providing abbreviations and codes. This key is divided into four main columns.

(1) The lubricants column provides abbreviations and noun name of lubricants and lists the using components of the lubricant.

(a) The first abbreviation is OE/HDO for lubricating oil, internal combustion engine.

(b) The next abbreviation is GO, for lubricating oil, gear, multipurpose. Notice that the geared hub and differential assemblies use this lubricant.

(2) The capacity column provides lubricant capacities for the vehicle components.

(3) Expected temperature column lists expected temperature ranges and lubricant that is used when operating in a specified temperature.

(4) Intervals column lists by symbols the lubrication interval for each vehicle component. Symbols represent the following intervals:

(a) An item that is lubricated and checked daily by the operator is identified by the letter D.

(b) The letter W indicates the item is lubricated on a weekly basis.

(c) A service that is performed monthly has a designator of M.

(d) Symbol 3/S indicates the components should be lubricated every 3,000 miles or six months, whichever occurs first.

(e) Symbol 6/A for annual, identifies a component that is lubricated every 6,000 miles or twelve months, whichever comes first.

(f) Symbol 12/B indicates a service that is performed every 12,000 miles or twenty-four months. This is a biennial service.

c. Lubrication diagrams on cards 3 of 13 through 5 of 13 are drawings of the vehicle and undercarriage depicting components that require lubrication.

(1) Listed beside each component is the lubrication abbreviation and interval symbol.

(2) A solid arrow designates the component to be lubricated.

(3) An arrow with dotted lines indicates lubrication is applied to both sides of the vehicle.

(4) Lubrication entries followed by (LV) have localized views showing appropriate lubrication points. Localized views begin on card 6.

(5) Information listed below the name of the component may refer to one of the notes located elsewhere in the lubrication order.

(6) These notes provide detailed information relative to servicing of a component.

REFERENCES:

TM 9-2320-280-10

LO 9-2320-280-12