

TECHNICAL MANUAL
OPERATOR'S MANUAL
FOR
TRUCK, 5-TON, 6X6, M939,
M939A1, AND M939A2
SERIES TRUCKS (DIESEL)
TRUCK, CARGO: 5-TON, 6X6 DROPSIDE, M923
(2320-1-050-2084) (EIC: BRY); M923A1 (2320-01-
206-4087) (EIC:
BSS); M923A2 (2320-01-230-0307) (EIC: BS7);
M925 (2320-01-047-8769) (EIC: BRT); M925A1
(2320-01-206-4088) (EIC:
BST); M925A2 (2320-01-230-0308) (EIC: BS8);
TRUCK, CARGO: 5-TON, 6X6 XLWB, M927
(2320-01047-8771) (EIC: BRV); M927A1 (2320-
01-206-4089), (EIC: BSW); M927A2 (2320-01-230-
0309) (EIC: BS9); M928 (2320-01-047-8770) (EIC:
BRU); M928A1 (2320-01-206-4090) (EIC: BSX);
M928A2 (2320-01-230-0310) (EIC: BTM);
TRUCK, DUMP: 5-TON, 6X6, M929 (2320-0147-
8756)
(EIC: BTH); M929A1 (2320-01-206-4079) (EIC:
BSY);
M929A2 (2320-01-230-0305) (EIC: BTN); M930
(2320-01-047-8755) (EIC: BTG); M930A1 (2320-
01-206-4080), (EIC: BSZ); M930A2 (2320-01-230-
0306) (EIC: BTO);
TRUCK, TRACTOR: 5-TON, 6X6, M931 (2320-01-
047-8753)
(EIC: BTE); M931A1 (2320-01-206-4077) (EIC:
BS2);
M931A2 (2320-01-230-0302) (EIC: BTP); M932
(2320-01-047-8752) (EIC: BTD); M932A1 (2320-
01-205-2684) (EIC: BS5); M932A2 (2320-01-230-
0303) (EIC: BTQ);
TRUCK, VAN, EXPANSIBLE: 5-TON, 6X6, M934
(2320-01-047-8750) (EIC: BTB); M934A1 (2320-
01-205-2682) (EIC: BS4); M934A2 (2320-01-230-
0300) (EIC: BTR);
TRUCK, MEDIUM WRECKER: 5-TON, 6X6, M936
(2320-01-047-8754) (EIC: BTF); M936A1 (2320-
01-206-4078) (EIC:
BS6); M936A2 (2320-01-230-0304) (EIC: BTT).

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

REPORTING OF 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, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander. U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-IM-OPIT, Warren, Michigan 48397-5000. A reply will be furnished to you.

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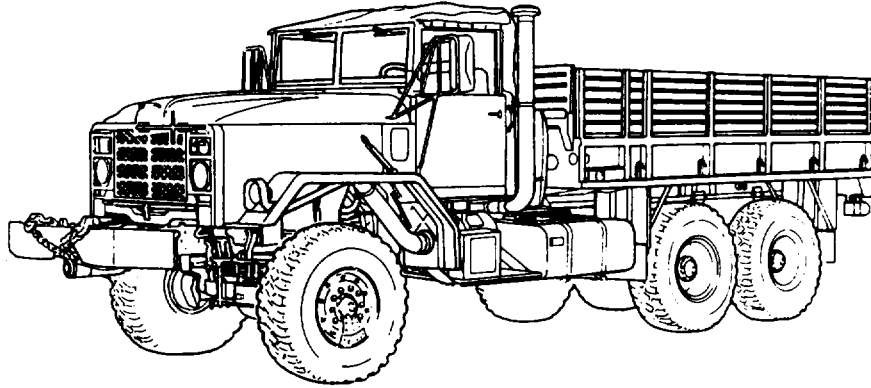
HOW TO USE THIS MANUAL

1. The information contained in this manual can be accessed in several ways.
 - a. If you know what area you are looking for, use the front cover index. Find the appropriate box and match it to the blackened pages on the side of the book, or use the page number listed in the box.
 - b. If you are looking for a specific paragraph, refer to the index at the back of the manual.
2. This manual consists of:
 - a. Chapter 1, Introduction - provides information for completing forms and records, gives a familiarization of equipment, and a functional and physical description of major equipment.
 - b. Chapter 2, Operating Instructions - provides information needed to use or operate the vehicle.
 - c. Chapter 3, Maintenance Instructions - provides information covering lubrication, troubleshooting, and corrective maintenance.
3. Types of notations
 - a. Warnings are posted immediately prior to text covering any area that would present a situation that may result in injury or death. Compliance is mandatory.
 - b. Cautions will be found on the same page and preceding the text covering any area that would present a situation that may result in damage to equipment.
 - c. Notes will precede text covering an area with the intent to alter normal procedures for unique situations or equipment, or point out areas of special concern.
4. Appendices have been provided to:
 - a. Basic Issue Items (BII) list - specify the minimum essential items to place and maintain the M939, M939A1, and M939A2 (M939/A/A2) series vehicles in operation, and are maintained with the vehicle.
 - b. Additional Authorization List (AAL) - specify items not shipped with vehicles, but are authorized for support of the M939A1/A2 series vehicles.
 - c. Expendable/Durable Supplies and Materials List - specify expendable/durable supplies and materials you will need to operate and maintain M939/A1/A2 series vehicles.

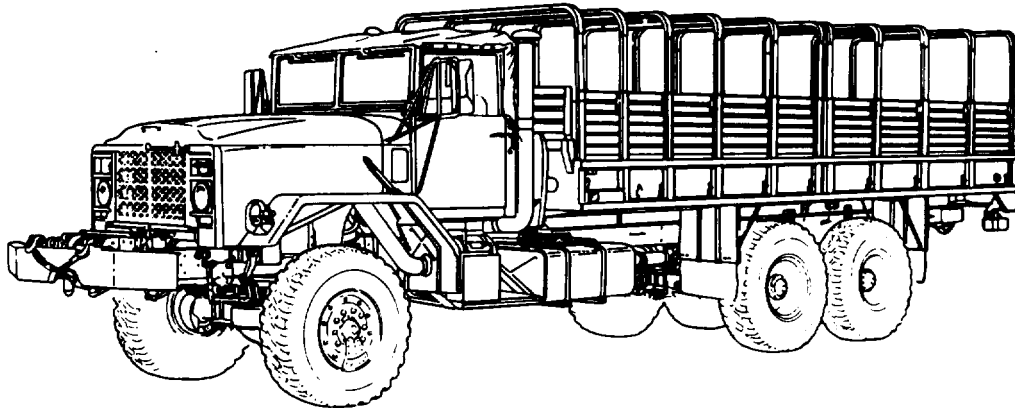
**CHAPTER 1
INTRODUCTION**

- Section I General Information (page 1-1)
- Section II Equipment Description and Data (page 1-8)
- Section III Principles of Operation (page 1-27)

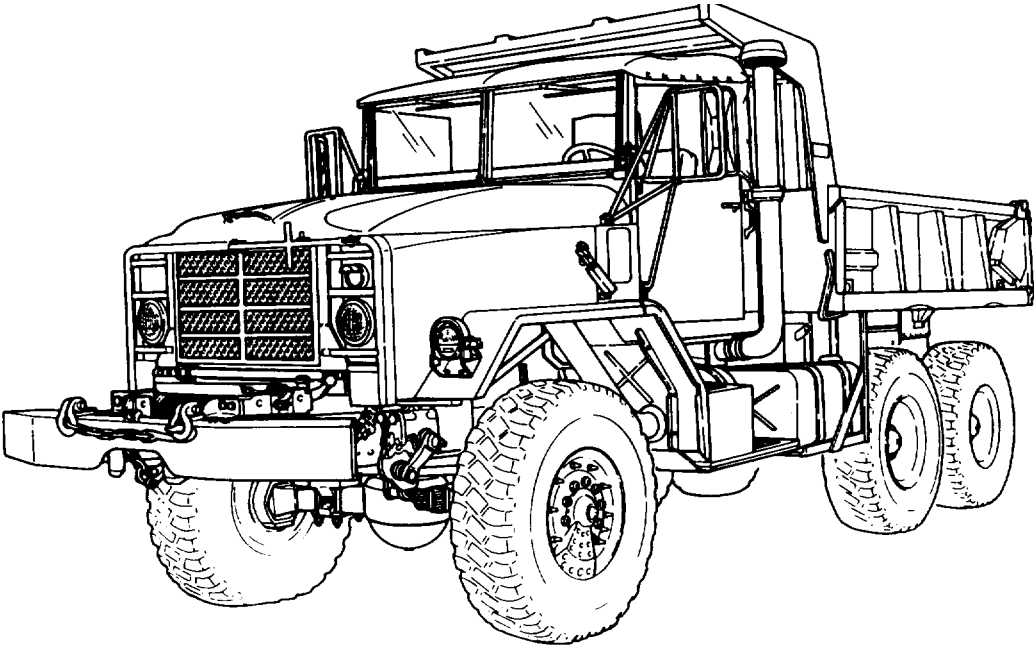
Section I. GENERAL INFORMATION



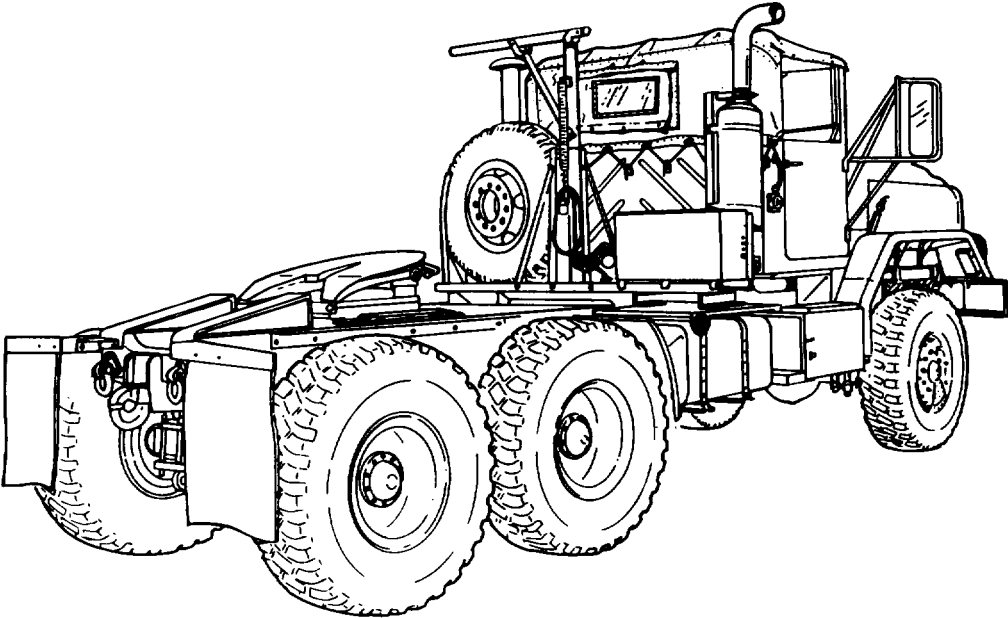
M923A2 AND M925A2



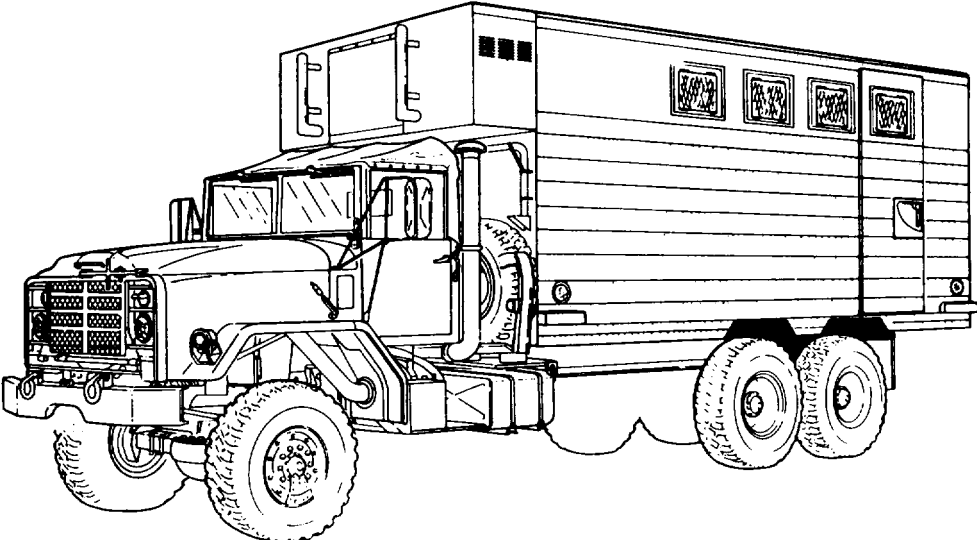
M927A2 AND M928A2



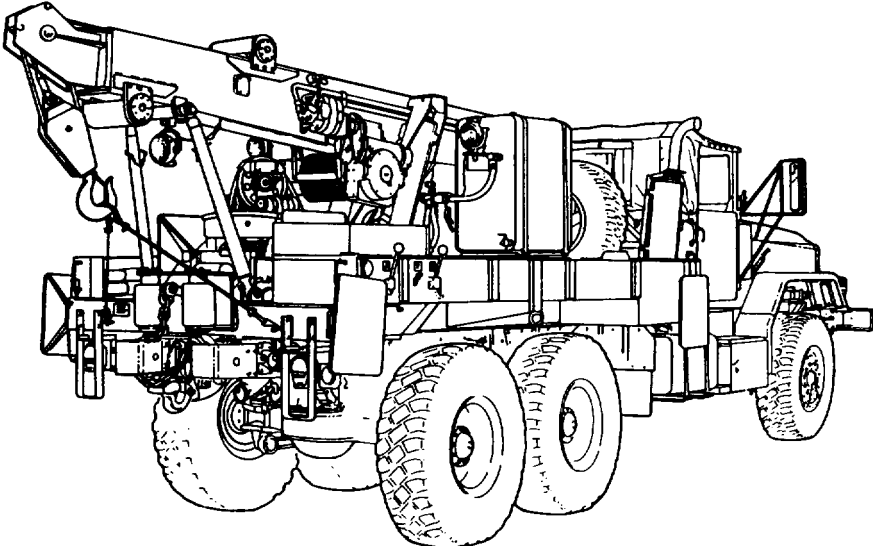
M929A2 AND M930A2



M931A2 AND M932A2



M934A2



M936A2

1-1. SCOPE

- a. This operator's manual contains instructions for operating and servicing the following M939/A1/A2 series vehicles:
 - (1) M923/A1/A2, Cargo Truck, WO/W (Dropside)
 - (2) M925/A1/A2, Cargo Truck, W/W (Dropside)
 - (3) M927/A1/A2, Cargo Truck, WO/W (XLWB)
 - (4) M928/A1/A2, Cargo Truck, W/W (XLWB)
 - (5) M929/A1/A2, Dump Truck, WO/W
 - (6) M930/A1/A2, Dump Truck, W/W
 - (7) M931/A1/A2, Tractor Truck, WO/W
 - (8) M932/A1/A2, Tractor Truck, W/W
 - (9) M934/A1/A2, Expansive Van, WO/W
 - (10) M936/A1/A2, Medium Wrecker, W/W
- b. Vehicles' purpose.
 - (1) The M923/A1/A2, M925/A1/A2, M927/A1/A2, and M928/A1/A2 series cargo trucks provide transportation of personnel or equipment over a variety of terrain and climate conditions.
 - (2) The M929/A1/A2 and M930/A1/A2 series dump trucks are used to transport various materials over a variety of terrains. Each vehicle can be equipped with troop seat, and tarpaulin and bow kits for troop transport operations.
 - (3) The M931/A1/A2 and M932/A1/A2 series tractor trucks are equipped with a fifth wheel used to haul a semitrailer over a variety of terrain.
 - (4) The M934/A1/A2 series expansive vans are designed to transport electronic base stations over a variety of terrain.
 - (5) The M936/A1/A2 series wreckers are designed for recovery of disabled or mired vehicles, and perform crane operation.
- c. The material presented here provides operators with information and procedures needed to provide the safest and most efficient operation and servicing of these vehicles. This information includes:
 - (1) Vehicle limitations.
 - (2) The function of controls.
 - (3) Operation instructions for vehicle.
 - (4) Cautions and warnings to operators regarding safety to personnel and equipment.
 - (5) Operator maintenance checks and services.
 - (6) Troubleshooting procedures to be followed by operator if the vehicle malfunctions.
 - (7) Operator forms and records.

1-2. MAINTENANCE FORMS

a. Vehicle Maintenance Forms and Records. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in the maintenance management update.

b. Hand Receipt Manual This manual has a companion document with a TM number followed by -HR (which stands for Hand Receipt). The TM 9-2320-272-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in chapter 3, AR 310-2:

The U.S. Army Adjutant General Publications Center
2800 Eastern Blvd.
Baltimore, MD 21220

1-3. CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Preventive 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 problems can be corrected and improvements can be made to prevent problems in the future items.

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 Standard Form 368, Product Quality Deficiency Report. Use of key words such as "corrosion", "rust", "deterioration", or a "cracking" will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA Pam 738-750.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Procedures for destruction of Army materiel to prevent enemy use can be found in TM 750-244-6.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If the design of your vehicle needs improvement, let us know. If your vehicle is in proper operating condition and there are problems with vehicle or equipment performance, send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. It is not necessary to show a new design or a better way to perform a procedure. Just let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at:

Commander, U.S. Army Tank-automotive and Armaments Command, ATTN:
AMSTA-IM-MMAA, Warren, Michigan 48397-5000. We'll send you a reply.

1-6. WARRANTY INFORMATION

The Cummins engine (model NHC 250) used in M939/A1 series vehicles and Allison transmission (model MT-654 CR) used in all models are warranted in accordance with TB 9 2300-29515/1. The Cummins engine (model 6CTA8.3) used in the M939A2 series vehicles is warranted in accordance with TB 9-2300-358-24. The warranty starts on the date, found in Block 23, DA Form 2408-9, in the logbook. Report all defects in material or workmanship to your supervisor, who will take appropriate action through your unit maintenance shop.

1-7. NOMENCLATURE CROSS-REFERENCE LIST

The following is an alphabetical list of commonly used military terms that appear in this manual. This list is cross-referenced to commonly understood terms used in everyday speech that mean the same thing.

Engine Coolant.....	antifreeze/water
Exhaust Stack	tailpipe
Failsafe Unit.....	warning buzzer
Fording	crossing through water
Grade.....	steepness of hill
Hydraulics.....	operated by oil pressure
Inclement Weather	bad weather (rain, snow, high winds)
Indicators	gauges, warning lights, etc.
Mired.....	stuck in mud or snow
Operation.....	task
Operator	driver
Slaving.....	jump starting
Splash Shields.....	mud flaps
Transport	to carry
Turning Radius	distance needed to make a U-turn
Usual Conditions	good roads, good weather

1-8. LIST OF ABBREVIATIONS

All abbreviations that appear in this manual are listed below.

AAL.....	Additional Authorization List
AC.....	Alternating Current
BII	Basic Issue Items
B.O.	blackout
BRT	bright
CC	cross-country
°C.....	degree Celsius
cm.....	centimeter
Contd.....	continued
CPC	Corrosion Prevention Control
CTIS	Central Tire Inflation System
cu f	cubic feet
CW	chain (and) wire rope (lubricating oil)
DA.....	Department of Army
DC	Direct Current
DFA	diesel fuel (arctic)

1-8. LIST OF ABBREVIATIONS (Contd)

drvy.....	drive
EIR.....	Equipment Improvement Recommendation
emer.....	emergency
°F.....	degree Fahrenheit
ft.....	feetfoot
g.....	gram
GAA.....	grease, automotive, and artillery
gal.....	gallon
GO.....	gear oil
GOS.....	gear oil (sub-zero)
Hwy.....	highway
in.....	inch
kg.....	kilogram
km.....	kilometer
km/h.....	kilometers per hour
kPa.....	kilopascal
l.....	liter
lb.....	pound
lb-ft.....	pound-feet
1ig.....	long
LO.....	Lubrication Order
m.....	meter
MAC.....	Maintenance Allocation Chart
mi.....	mile
mpg.....	miles per gallon
mph.....	miles per hour
N.m.....	Newton meter
NBC.....	Nuclear, Biological, or Chemical
NSN.....	National Stock Number
OE/HDO.....	oil, engine/heavy duty oil
OEA.....	oil, engine (arctic)
oz.....	ounce
para.....	paragraph
pg.....	page
PMCS.....	Preventive Maintenance Checks and Services
pr.....	pair
psi.....	pounds per square inch
pt.....	pint
PTO.....	power takeoff
qt.....	quart
rpm.....	revolutions (turns) per minute
TM.....	technical manual
w/hlg.....	with hydraulic liftgate
w/o.....	without
wo/w.....	without winch
w.....	with
w/w.....	with winch
xlwb.....	extra long wheelbase
yd.....	yard

1-9. GLOSSARY

The following list shows definitions of military terms that appear in this manual. Other terms in this manual are defined in the paragraph where they first appear.

Angle of Approach - Angle between front tires and front bumper

Angle of Departure - Angle between rear tires and rear bumper

Fording - Crossing through water

Grade - Steepness of terrain

Hydraulic - Operated by oil pressure

Operator - Driver of vehicle

Tarpaulin - Canvas cover

Slaving - Jump starting

6X6 - Each vehicle has six axle ends and all six are capable of driving

Torque - Measurable force or power required to do work

Torqued - Requirement for a specified force to be applied to ensure proper seating or seal

Section II. EQUIPMENT DESCRIPTION AND DATA**1-10. EQUIPMENT DESCRIPTION INDEX**

PARA. NO.	TITLE	PAGE NO.
1-11.	Equipment Characteristics, Capabilities, and Features	1-9
1-12.	Location and Description of Major Components	1-10
1-13.	Differences Between Models	1-14
1-14.	Equipment Data	1-16

1-11. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

- a. The 5-ton, 6x6, M939, M939A1, and M939A2 series vehicles are designed for use on all types of roads, highways, and cross-country terrain. These vehicles also operate in extreme temperatures such as arctic weather conditions.
- b. The M939 series vehicles are an improved version of the M809 series. The improvements make M939 series vehicles more reliable and easier to operate. The major improvements are:

WARNING

This vehicle has been designed to operate safely and efficiently within the limits specified in this TM. Operation beyond these limits is prohibited IAW AR 70-1 without written approval from the Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMCPEO-CM-S, Warren, MI 48397-5000.

- (1) Automatic Transmission
- (2) Improved Power Steering System
- (3) Complete Airbrake System
- (4) Improved Cooling System
- (5) Improved Electrical System
- (6) Three-Crew Member Cab
- (7) Tilt Hood
- (8) Hydraulically Powered Front Winch

c. The M939 series vehicles use 11:00 x R20 tires and have rear tandem duals, while the M939A1 and M939A2 series vehicles use 14:00 x R20 super sized tires and rear tandem singles. The mounted tires and spare on each vehicle are non-directional in design and use.

d. The M939 and M939A1 series vehicles employ the Cummings (NHC 250) 250 horsepower engine, while the M939A2 series vehicles use a smaller, turbocharged Cummings (6CTA8.3) 240 horsepower engine. The M939A2 series vehicles additionally have the Central Tires Inflation System (CTIS) which allows for greater tactical mobility.

e. All M939/A1/A2 series vehicles utilize the same automatic transmission, are equipped with a spare tire mount at the rear of the cab, have removable canvas cab tops, and are supplied with pintle hooks and air connections used for towing.

f. The 5-ton load limit rating of M939/A1/A2 series vehicles does not mean these vehicles are limited to 5-ton payloads. A vehicle rating only indicates the maximum amount of cargo weight the vehicle axles and frame can withstand when operating under the worst cross-country conditions.

1- 2. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

a This paragraph contains information regarding the major components that make up the specific models of the M939, M939A1, and M939A2 series vehicles.

These are:

- (1) Chassis
- (2) Cab
- (3) Body
- (4) Engine
- (5) Fuel Tank

b. Chassis Types:

- (1) M927/A1/A2, M928/A1/A2, and M934/A1/A2 model vehicles utilize the 215 in. (546.1 cm) Extra Long Wheelbase (XLWB) chassis. This facilitates transporting of large and awkward loads.
- (2) M923/A1/A2, M925/A1/A2, and M936/A1/A2 model vehicles utilize the 179 in. (454.7 cm) wheelbase.
- (3) M929/A1/A2, M930/A1/A2, M931/A1/A2, and M932/A1/A2 model vehicles utilize the 167 in. (424.2 cm) wheelbase.

c. Cab Assembly: all models use the same cab assembly even though minor changes are made to accommodate options for specific models.

d. Body Assembly:

- (1) M923/A1/A2 and M925/A1/A2 model vehicles use the same cargo body.

(2) M927/A1/A2 and M928/A1/A2 model vehicles use the same extended cargo body.

(3) M929/A1/A2 and M930/A1/A2 model vehicles use the dump body.

(4) M931/A1/A2 and M932/A1/A2 model vehicles use the fifth wheel approach plate and check plate.

(5) M934 and M939/A1/A2 model vehicles use the van body.

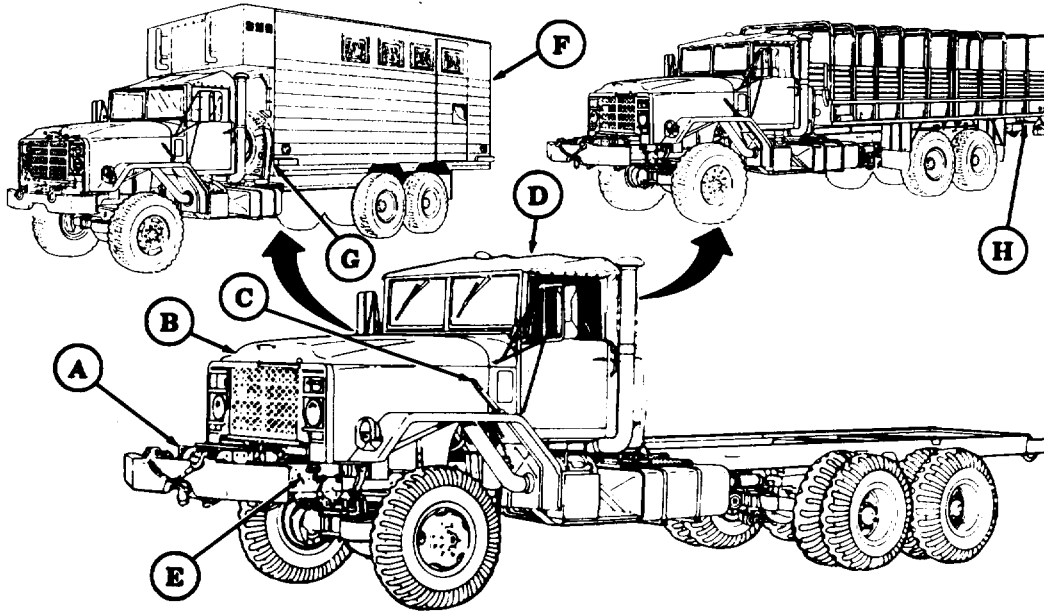
(6) M936 and M939/A1/A2 model vehicles use the crane and body assembly.

e. Engine Type: All M939/A1 series vehicles employ the Cummins - NHC 250 engine, while M939A2 series vehicles use the Cummings - 6CTA8.3 engine.

f. Fuel Tank Types:

- (1) Initial issue tanks used on M939/A1 series vehicles are top fill, but replacement tanks may be substituted with M939A2 series vehicle side fill fuel.
- (2) Fuel tank quantities and capacities differ between models. Refer to table 1-6 for specific information on your model.

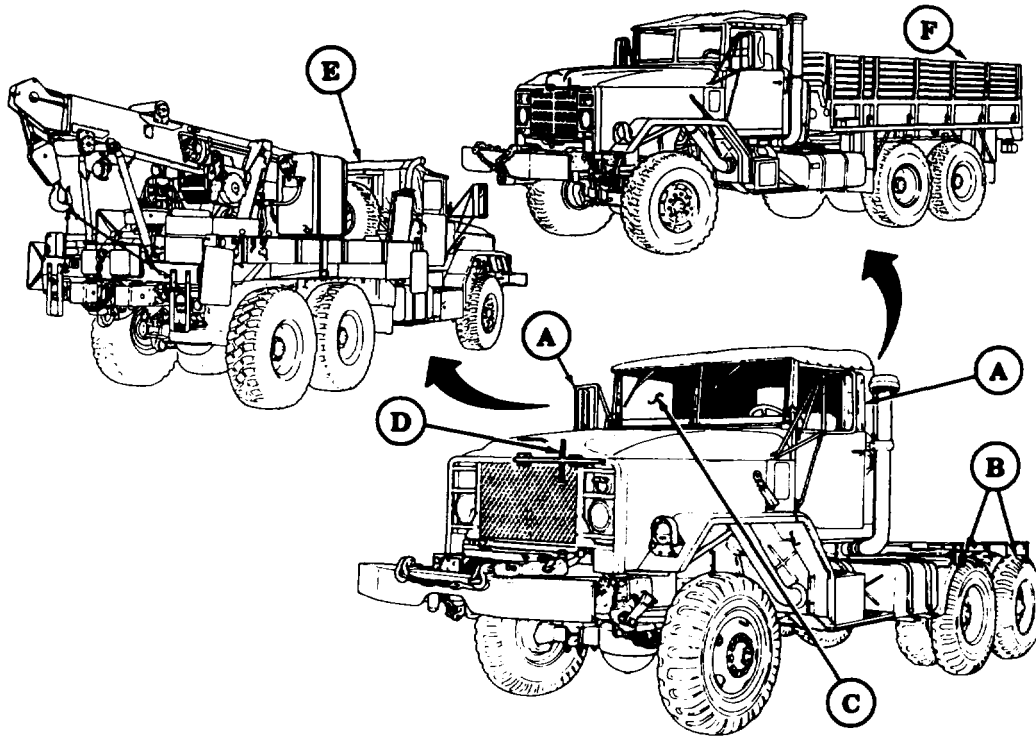
1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)



215 IN. (546.1 CM) EXTRA LONG WHEELBASE (XLWB) CHASSIS

- (A) **FRONT WINCH** - Used on M925/A1/A2, M928/A1/A2, M930/A1/A2, M932/A1/A2, and M936/A1A2 model vehicles to recover mired vehicles and in conjunction with A-frame kit for lifting operations.
- (B) **TILT HOOD** - Tilts forward and can be locked open to gain access to engine components.
- (C) **HOOD LATCHES** - Hold hood down when closed.
- (D) **CANVAS CAB ROOF** - Can be folded down to reduce overall height and facilitate use of machine gun mount kit.
- (E) **WINCH FRAME EXTENSION** - Used on winch models to extend frame for mounting of winch.
- (F) **EXPANSIBLE VAN BODY** - Is designed with hardware and electrical attachments to facilitate electronic equipment operation or maintenance.
- (G) **SPARE TIRE DAVIT** - Used on M934A1/A2 series vehicles for lifting and lowering spare tire. M934 models use a lifting eye located above spare tire.
- (H) **EXT'ENDED LONG CARGO BODY** - Is a fixed side bed designed to carry large awkward loads which will not fit in standard beds.

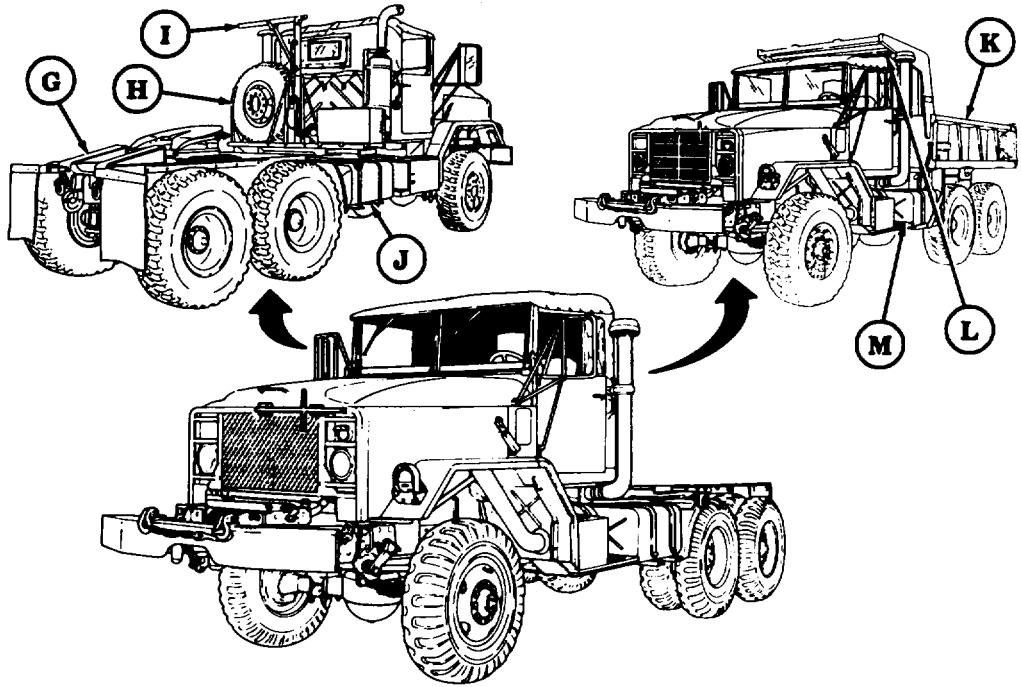
1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)



179 IN. (454.7 CM) WHEELBASE CHASSIS

- (A) **REAR VIEW MIRROR** - Provides wide angle rear view of both right and left side, and rear sides of vehicle.
- (B) **REAR BOGIE** - Consists of two axles on M939/A1/A2 series vehicles. M939 series vehicles utilize 11:00R20 tires (four per axle), and M939A1/A2 series vehicles utilize 14:00R20 tires (two per axle).
- (C) **FOLDDOWN WINDSHIELD** - Allows for reduction in overall height of vehicle.
- (D) **HOOD TILTING HANDLE AND LATCH** - Used to pull on top front of hood to tilt and latch it in a secure position.
- (E) **CRANE AND BODY ASSEMBLY** - Used on M936/A/A2 model vehicles. Used for recovering disabled and mired vehicles, and lifting operations.
- (F) **DROPSIDE CARGO BODY** - Provides unobstructed access to side for loading with fork lift (M923A1/A2 and M925/A1/A2 model vehicles).

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)



167 IN. (424.2 CM) WHEELBASE CHASSIS

- (G) **FIFTH WHEEL APPROACH PLATE AND DECK PLATE** - Used on M93VA/A2 and M932/A1/A2 model vehicles. Provides mechanical connection between semitractor and semitrailer.
- (H) **SPARE TIRE AND MOUNTING BRACKET** - Provides storage location for spare tire.
- (I) **SPARE TIRE DAVIT** - Used for lifting and lowering tire. Use on M923/A1/A2, M925/A1/A2, M927/A1/A2, M928/A1/A2, M931/A1/A2, and M932/A1/A2 model vehicles.
- (J) **FUEL TANK** - Second tank for vehicles equipped with dual tank capacity.
- (K) **DUMP BODY** - Used on M929/A1/A2 and M930/A1/A2 model vehicles for carrying various loads over different terrains.
- (L) **SPARE TIRE LIFTING EYE** - Used for lifting and lowering spare tire on M929/A/A2 and M930/A1/A2 model vehicles.
- (M) **FUEL TANK** - Used on all vehicles for storage of fuel.