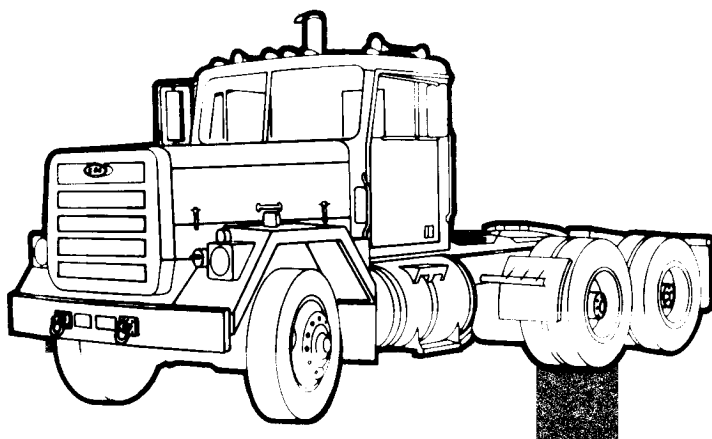


OPERATOR'S MANUAL

TRUCK TRACTOR, LINE HAUL, 50,000 GVWR,
6 X 4, M915 (NSN 2320-01-028-4395)
TRUCK TRACTOR,
LIGHT EQUIPMENT TRANSPORTER (LET),
56,000 GVWR, 6 X 6, W/WINCH, M916 (NSN 2320-01-028-4396)
TRUCK TRACTOR,
MEDIUM EQUIPMENT TRANSPORTER (MET),
75,000 GVWR, 8 X 6, W/WINCH, M920 (NSN 2320-01-028-4397)



TRUCK CHASSIS, 75,000 GVWR,
8 X 6, FOR 20 TON DUMP TRUCK,
M917 (NSN 3805-01-028-4389)
TRUCK CHASSIS, 56,000 GVWR, 6 X 6,
FOR BITUMINOUS DISTRIBUTOR TRUCK,
M918 (NSN 3895-01-028-4390)
TRUCK CHASSIS, 75,000 GVWR, 8 X 6,
FOR CONCRETE-MOBILE® MIXER TRUCK
M919 (NSN 3895-01-028-4391)

This copy is a reprint which includes current
pages from Changes 1 through 6.

HEADQUARTERS
DEPARTMENT OF THE ARMY
MAY 1980

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TRUCK, TRACTOR, LINE HAUL, 50,000 GVWR, 6X4, M915 (NSN 2320-01-028-4395).

TRUCK, TRACTOR, LIGHT EQUIPMENT TRANSPORTER (LET), 56,000 GVWR, 6X6, W/WINCH, M916 (NSN 2320-01-028-4396).

TRUCK, TRACTOR, MEDIUM EQUIPMENT TRANSPORT (MET), 75,000 GVWR, 8X6, W/WINCH, M920 (NSN 2320-01-028-4397).

TRUCK CHASSIS, 75,000 GVWR, 8X6, FOR 20 TON DUMP TRUCK, M917, (NSN 3805-01-028-7389).

TRUCK CHASSIS, 56,000 GVWR, 6X6, FOR BITUMINOUS DISTRIBUTOR TRUCK, M918 (NSN 3895-01-028-4390).

TRUCK CHASSIS, 75,000 GVWR, 8X6, FOR CONCRETE MIXER, M919, (NSN 3895-01-028-4391).

CHANGE

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 7 June 1993

No. 6

OPERATOR'S MANUAL

**TRUCK TRACTOR, LINE HAUL, 50,000 GVWR
6X6, M915 (NSN 2320-01-028-4395)
TRUCK TRACTOR
LIGHT EQUIPMENT TRANSPORTER (LET)
55,000 GVWR 6X6, W/WINCH, M916 (NSN 2320-01-028-4398)
TRUCK TRACTOR
MEDIUM EQUIPMENT TRANSPORTER (MET)
75,000 GVWR, 8X6, W/WINCH, M920 (NSN 2320-01-028-4367)
TRUCK CHASSIS, 75,000 GVWR,
8X6, FOR 20 TON DUMP TRUCK, M917 (NSN 3805-01-028-4389)
TRUCK CHASSIS, 56,000 GVWR, 6X6,
FOR BITUMINOUS DISTRIBUTOR TRUCK,
M918 (NSN 3895-01-028-4360)
TRUCK CHASSIS, 75,000 GVWR, 8X6,
FOR CONCRETE-MOBILE MIXER TRUCK
M919 (NSN 3895-01-028-4391)**

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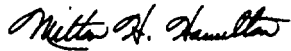
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General, United States Army
Chief of Staff

Official:



MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
04449

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To be distributed in accordance with DA Form 12-38-E (Block 0297) requirements
for TM9-2320-273-10

C H A N G E

NO. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D. C., 5 December 1991

OPERATOR'S MANUAL

**TRUCK TRACTOR, LINE HAUL, 50,000 GVWR
6 X 4, M915 (NSN 2320-01-028-4395)
TRUCK TRACTOR,
LIGHT EQUIPMENT TRANSPORTER (LET),
55,000 GVWR, 6 X 6 W/WINCH, M916 (NSN 2320-01-028-4396)
TRUCK TRACTOR,
MEDIUM EQUIPMENT TRANSPORTER (MET),
75,000 GVWR, 8 X 6, W/WINCH, M920 (NSN 2320-01-028-4397)
TRUCK CHASSIS, 75,000 GVWR,
8 X 6 FOR 20 TON DUMP TRUCK,
M917 (NSN 3805-01-028-4389)
TRUCK CHASSIS, 56,000 GVWR, 6 X 6,
FOR BITUMINOUS DISTRIBUTOR TRUCK,
M918 (NSN 3895-01-028-4390)
TRUCK CHASSIS, 75,000 GVWR, 8 X 6,
FOR CONCRETE-MOBILE MIXER TRUCK
M919 (NSN 3895-01-028-4391)**

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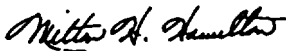
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DEPARTMENT OF THE ARMY

No. 4

Washington, D.C., 28 September 1989

Operator's Manual

**TRUCK TRACTOR, LINE HAUL, 50,000 GVWR
6 X 4, M915 (NSN 2320-01-028-4395)**

**TRUCK TRACTOR,
LIGHT EQUIPMENT TRANSPORTER (LET),
75,000 GVWR, 6X6, W/WINCH, M916 (NSN 2320-01-028-4396)**

**TRUCK TRACTOR,
MEDIUM EQUIPMENT TRANSPORTER (MET),
75,000 GVWR, 8X6, W/WINCH, M920 (NSN 2320-01-028-4397)**

**TRUCK CHASSIS, 75,000 GVWR,
8X6, FOR 20 TON DUMP TRUCK,
M917 (NSN 3805-01-028-4389)**

**TRUCK CHASSIS, 56,000 GVWR, 6X6,
FOR BITUMINOUS DISTRIBUTOR TRUCK,
M918 (NSN 3895-01-028-4390)**

**TRUCK CHASSIS, 75,000 GVWR, 8X6,
FOR CONCRETE-MOBILE MIXER TRUCK
M919 (NSN 3895-01-028-4391)**

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The Adjutant General

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CHANGE
NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 28 Feb 86

OPERATOR'S MANUAL

TRUCK TRACTOR LINE HAUL, 50,000 GVWR, 6x4
M915 (NSN 2320-01-028-4395)

TRUCK TRACTOR, LIGHT EQUIPMENT TRANSPORTER (LET), 56,000 GVWR,
6x6 WITH WINCH M916 (NSN 2320-01-028-4396)

TRUCK TRACTOR, MEDIUM EQUIPMENT TRANSPORTER (MET), 75,000 GVWR,
8x6 WITH WINCH M920 (NSN 2320-01-028-4397)

TRUCK CHASSIS, 75,000 GVWR, 8x6 FOR 20-TON
DUMP TRUCK M917 (NSN 3895-01-028-4389)

TRUCK CHASSIS, 56,000 GVWR, 6x6 FOR
BITUMINOUS DISTRIBUTOR TRUCK M918
(NSN 3895-01-028-4390)

TRUCK CHASSIS, 75,000 GVWR, 8x6 FOR
CONCRETE-MOBILE MIXER TRUCK M919
(NSN 3805-01-028-4391)

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1-13 through 1-16	1-13 through 1-16	2-69 through 2-72	2-69 through 2-72
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3-9 through 3-12	3-9 through 3-12		

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Change }
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HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 20 September 1982

OPERATOR'S MANUAL

TRUCK TRACTOR , LINE HAUL, 50,000 GVWR, 6 X 4, M915 (NSN 23204)1-028-4395)

TRUCK TRACTOR, LIGHT EQUIPMENT TRANSPORTER (LET), 56,000 GVWR, 6 X 6,
W/WINCH, M916 (NSN 2320-01-028-4396)

TRUCK TRACTOR, MEDIUM EQUIPMENT TRANSPORTER (MET), 75,000 GVWR, 8 X 6,
W/WINCH, M920 (NSN 2320-01-028-4397)

TRUCK CHASSIS, 75,000 GVWR, 8 X 6, FOR 20-TON DUMP TRUCK, M917 (NSN 3805-
01-028-4389)

TRUCK CHASSIS, 56,000 GVWR, 6 X 6, FOR BITUMINOUS DISTRIBUTOR TRUCK,
M918 (NSN 3895-01-028-4390)

TRUCK CHASSIS, 75,000 GVWR, 8 X 6, FOR CONCRETE-MOBILE® MIXER TRUCK, M919
(NSN 3895-01-028-4391)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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Washington, DC, 15 February 1982**

OPERATOR'S MANUAL

TRUCK TRACTOR, LINE HAUL, 50,000 GVWR, 6 X 4, M915 (NSN 2320-01-028-4395)

TRUCK TRACTOR, LIGHT EQUIPMENT TRANSPORTER (LET), 56,000 GVWR, 6 X6,
W/WINCH, M916 (NSN 2320-01-028-4396)

TRUCK TRACTOR, MEDIUM EQUIPMENT TRANSPORTER (MET), 75,000 GVWR, 8X6,
W/WINCH, M920 (NSN 2320-01-028-4397)

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01-028-4389)

TRUCK CHASSIS, 56,000 GVWR, 6X6, FOR BITUMINOUS DISTRIBUTOR TRUCK,
M918 (NSN 3895-01 -028-4390)

TRUCK CHASSIS, 75,000 GVWR, 8X6, FOR CONCRETE-MOBILE@ MIXER TRUCK, M919
(NSN 3895-01-028-4391)

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Official:

ROBERT M. JOYCE
Brigadier General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-38,
Operator maintenance requirements for Truck, Tractor, Line
Haul: 6x4, M915, Truck, Tractor, Light Equipment
Transporter: 6X6, M916, Truck Tractor, Medium Equipment
Transporter: 8x6, M920.

WARNING

EXHAUST GASES CAN BE DEADLY

Exhaust gases can produce symptoms of headache, dizziness, loss of muscular control or coma. Permanent brain damage or death can result from severe exposure. You can insure your safety by following these rules:

- **DONT** operate the engine in an enclosed area unless it is properly ventilated.
- **DONT** drive with any of your truck's inspection plates, cover plates, or the hood off unless necessary for maintenance purposes.

If you notice exhaust odors or exposure symptoms, **IMMEDIATELY VENTILATE** the cab. If the symptoms persist, remove the affected personnel and treat them as follows:

- Expose them to fresh air.
- Keep them warm.
- **DON'T PERMIT PHYSICAL EXERCISE.**

If necessary, give artificial respiration.
SEE FM 21-11.

PUSHER AXLE (M917, M919 AND M920)

When the pusher axle is in the up position it freewheels. **DO NOT USE THE PUSHER AXLE AS A STEP.** You can fall and be injured. Always lower the pusher axle when the vehicle is parked.

HEARING PROTECTION

Hearing protection is required during winching operations.

SEAT BELTS

Use of seat belts while operating your vehicle is mandatory as an aid in preventing personal injury in event of an accident.

WARNING

**SNAPPING WINCH CABLES AND SHIFTING LOADS
(M916 AND M920)**

Avoid quick jerking action on cables when operating winch to prevent excessive loading on the cable. Keep personnel not involved in winching away from winch cables and payload. A snapping cable or shifting load can cause serious injury. Stop winching immediately if shifting payload presents a hazard, or if any component fails, and notify Organizational Maintenance.

NUCLEAR BIOLOGICAL AND CHEMICAL

NBC CONTAMINATED FILTERS MUST BE HANDLED USING ADEQUATE PRECAUTIONS (FM 21-40 NBC Nuclear, Biological and Chemical Defense) AND MUST BE DISPOSED OF BY TRAINED PERSONNEL.

HOOD SAFETY LATCH

After raising hood insert the S-shaped safety hook through two matching holes in the prop channels to prevent the hood from falling accidentally.

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 Command, ATTN: AMSTA-CM-S, Warren, MI 48397-5000.

BACKING OPERATIONS

Before backing operations, make sure the backup alarm override switch is in the normal position. DO NOT DISABLE THE ALARM AT TIMES WHEN PERSONNEL OR EQUIPMENT SAFETY MAY BE SACRIFICED AS A RESULT.

Do not permit anyone to stand directly behind your tractor or the semitrailer during the coupling procedure. Failure to follow this warning can result in injury to personnel.

WARNING

SEAT BELTS

Use of seat belts while operating your vehicle is mandatory as an aid in preventing personal injury in event of an accident.

**WINCH HYDRAULIC RESERVOIR
(M916 AND M920)**

Do not remove fill cap when hydraulic fluid is hot. The hydraulic tank is pressurized to 5 psi. Remove the fill cap slowly.

DIESEL FUEL HANDLING

When filling the fuel tanks with diesel fuel be sure the hose nozzle or container contacts the filler tube on the fuel tank to carry off static electricity. **DO NOT SMOKE OR PERMIT ANY OPEN FLAME IN THE AREA OF THE TRUCK WHILE YOU ARE SERVICING THE DIESEL FUEL SYSTEM.** Failure to follow this warning can result in equipment damage or injury to personnel.

SPARE WHEEL AND TIRE (M915 AND M916)

Use caution when raising or lowering the spare wheel and tire. It is very heavy, and if it should fall on a crew member, it could cause serious injury.

JACKING UP THE TRUCK

The hydraulic jack is intended only for lifting the truck, not for supporting the vehicle for performing maintenance. Do not get under the truck after it is raised unless it is properly supported with blocks or jack stands. **FAILURE TO OBSERVE THIS WARNING CAN RESULT IN SERIOUS INJURY.**

HOOD SAFETY LATCH

After raising hood, insert the S-shaped safety hook through two matching holes in the prop channels to prevent the hood from falling accidentally.

WARNING

COOLING FAN

When working in the engine compartment with the engine running, stay clear of the cooling fan. The fan may engage automatically at any time and could cause serious injury.

METHYL ALCOHOL

Methyl alcohol is highly flammable, poisonous, and can be absorbed through your skin. Do not drink or breathe it. If you spill any on your skin, wash it off with water immediately. Keep it away from sparks and flame.

PUSHER AXLE (M917, M919 AND M920)

When the pusher axle is in the up position it freewheels. **DO NOT USE THE PUSHER AXLE AS A STEP.** You can fall and be injured. Always lower the pusher axle when the vehicle is parked.

HEARING PROTECTION

Hearing protection is required during winching operations.

BATTERY GASES

Do not smoke, have open flames or make sparks around the batteries. Battery gases can explode and cause injury.

NUCLEAR, BIOLOGICAL AND CHEMICAL

NBC CONTAMINATED FILTERS MUST BE HANDLED USING ADEQUATE PRECAUTIONS (FM 21-40 NBC Nuclear, Biological and Chemical Defense) AND MUST BE DISPOSED OF BY TRAINED PERSONNEL.

TECHNICAL MANUAL

No. 9-2320-273-10
Change No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 May 1980

OPERATOR'S MANUAL

TRUCK TRACTOR, LINE HAUL, 50,000 GVWR, 6 X 4, M915 (NSN 2320-01-028-4395)

TRUCK TRACTOR, LIGHT EQUIPMENT TRANSPORTER (LET), 56,000 GVWR, 6 X 6,
W/WINCH, M916 (NSN 2320-01-028-4396)

TRUCK TRACTOR, MEDIUM EQUIPMENT TRANSPORTER (MET), 75,000 GVWR, 8 X 6,
W/WINCH, M920 (NSN 2320-01-028-4397)

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01-028-4389)

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M918 (NSN 3895-01-028-4390)

TRUCK CHASSIS, 75,000 GVWR, 8 X 6, FOR CONCRETE-MOBILE® MIXER TRUCK, M919
(NSN 3895-01-028-4391)

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*This manual supersedes Draft TM 9-2320-273-10, 15 June 1979.

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HOW TO USE THIS MANUAL

This manual is designed to help you to operate and maintain the M915 thru M920 vehicles. Listed below are special features which have been included to make it easier to locate and to use the information you need.

- A front cover Table of Contents is provided, giving you a quick reference to chapters and sections that You will be using often.
- Warnings, subject headings, procedural steps, and certain other modules of information are highlighted in bold print or red as a visual aid for you.
- Upper case type is used to emphasize statements of particular importance.

FOLLOW THESE GUIDELINES WHEN YOU USE THIS MANUAL:

- Read all warnings and cautions.
- Within a chapter or section, boxed headings are used to help categorize the material and to assist in finding subjects quickly.
- The driver should read through this manual and become familiar with the content before attempting to operate the truck.

Equipment description herein is non-metric and does not require metric conversion or special tools.

Tactical instructions will include metric units in addition to English units. Clarity of instruction is not impaired.

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 Command, ATTN: AMSTA-CM-S, Warren, MI 48397-6000.

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

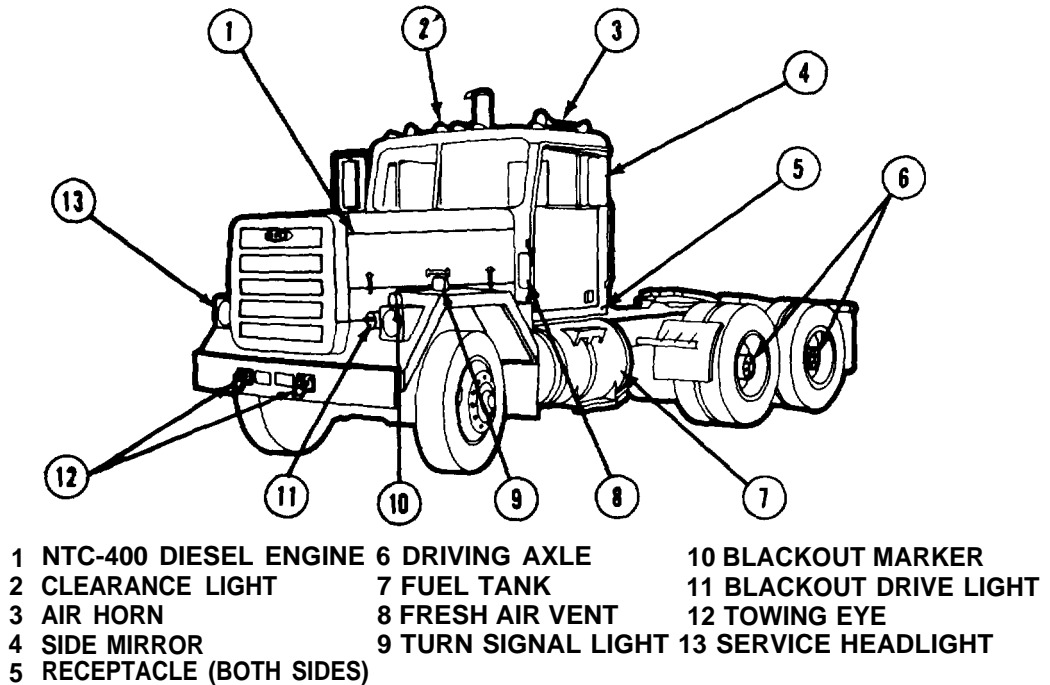


Figure 1-1. M915 - Left Front View.

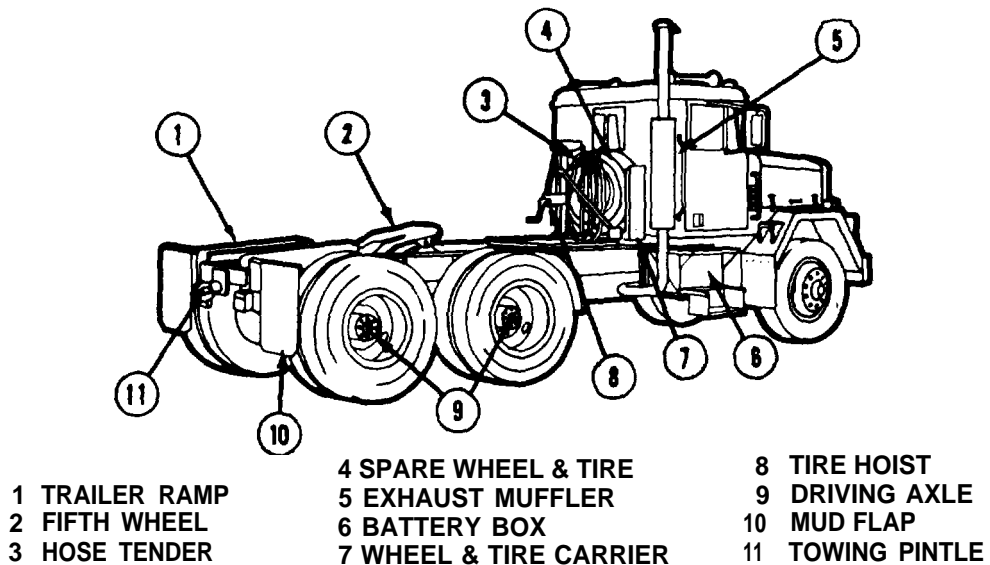


Figure 1-2. M915 - Right Rear View.

TA 073537

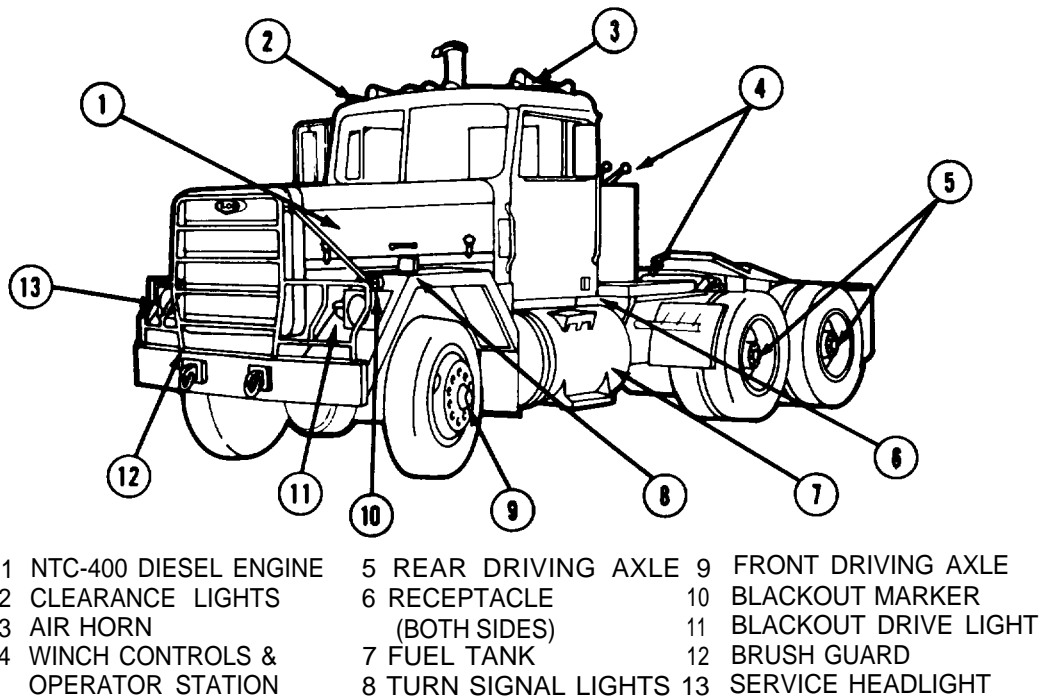


Figure 1-3. M916 - Left Front View.

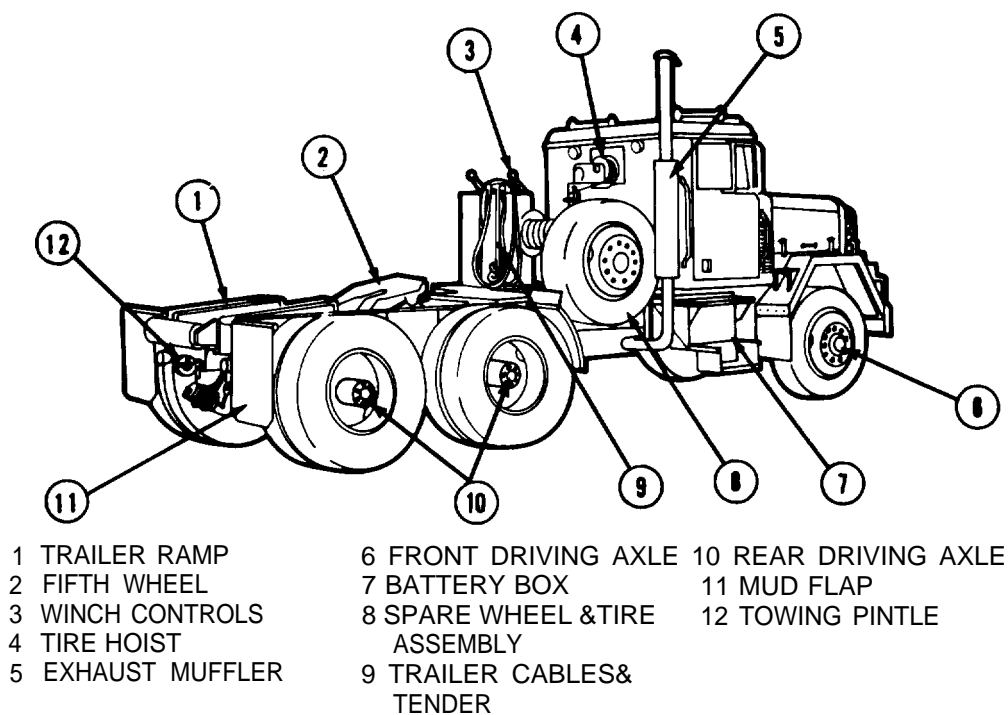


Figure 1-4. M916 - Right Rear View.

TA 073538

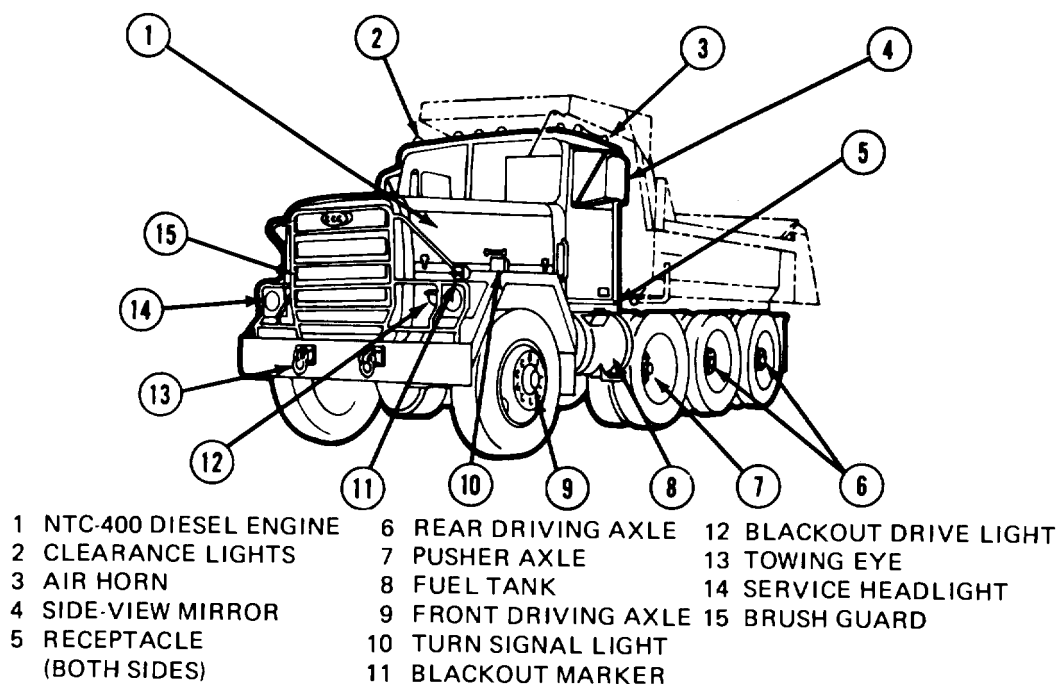


Figure 1-5. M917 - Left Front View.

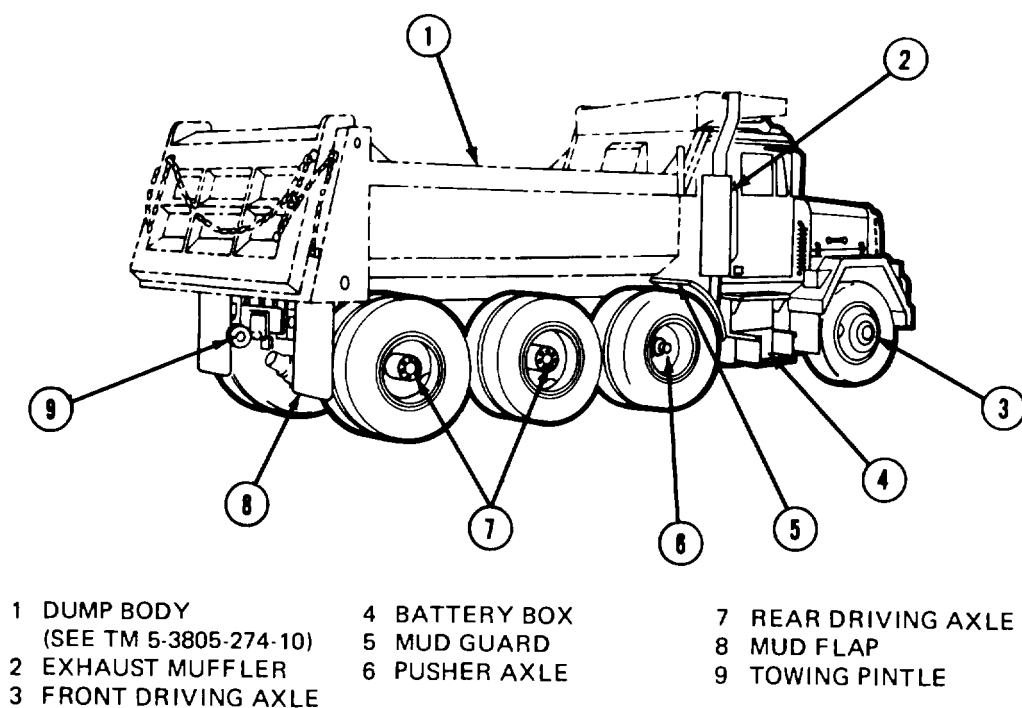
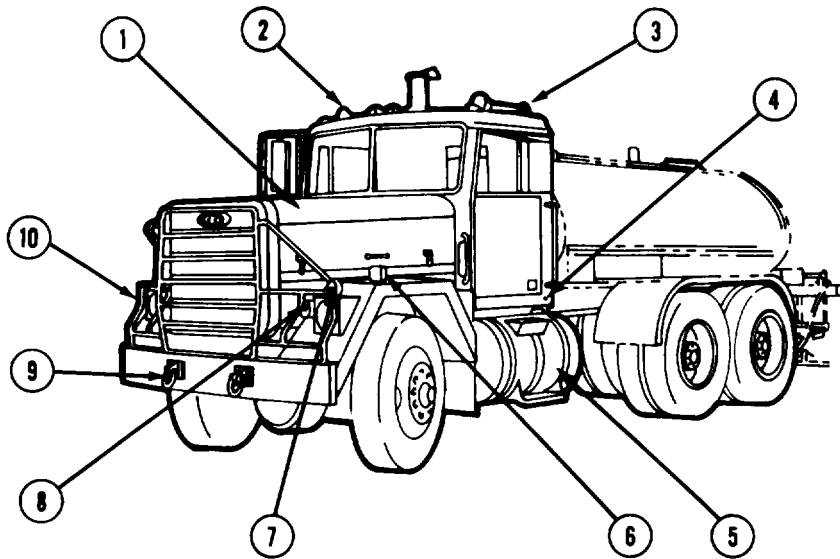


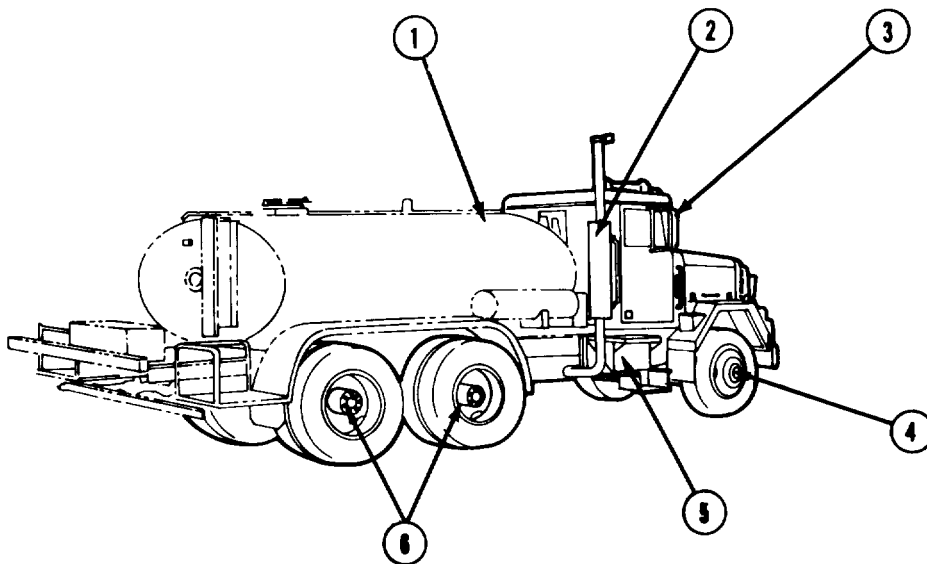
Figure 1-6. M917 - Right Rear View.

TA 073539



- | | | |
|---------------------------|---------------------|------------------------|
| 1 NTC-400 DIESEL ENGINE | 5 FUEL TANK | 8 BLACKOUT DRIVE LIGHT |
| 2 CLEARANCE LIGHT | 6 TURN SIGNAL LIGHT | 9 TOWING EYE |
| 3 AIR HORN | 7 BLACKOUT MARKER | 10 BRUSH GUARD |
| 4 RECEPTACLE (BOTH SIDES) | | |

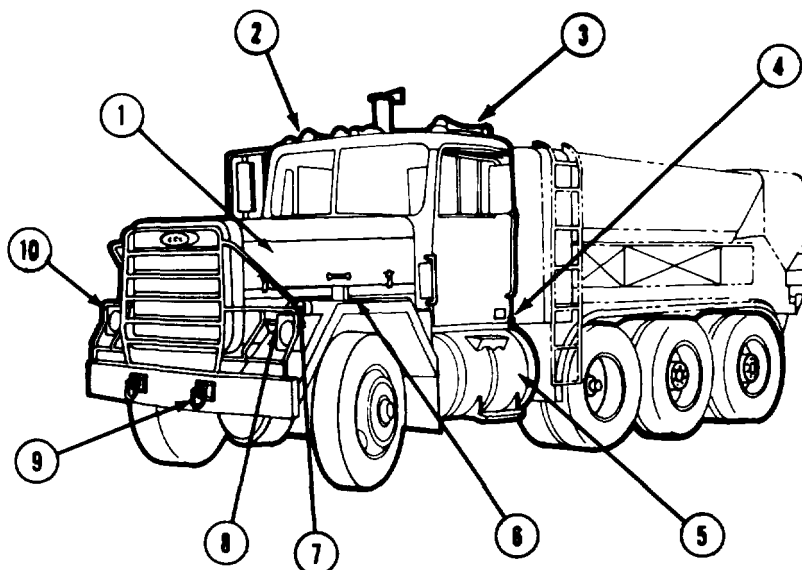
Figure 1-7. M918 – Left Front View.



- | | |
|-----------------------------|----------------------|
| 1 BITUMINOUS DISTRIBUTOR | 4 FRONT DRIVING AXLE |
| BODY (SEE TM 5-3895-371-10) | 5 BATTERY BOX |
| 2 EXHAUST MUFFLER | 6 REAR DRIVING AXLE |
| 3 SIDE-VIEW MIRROR | |

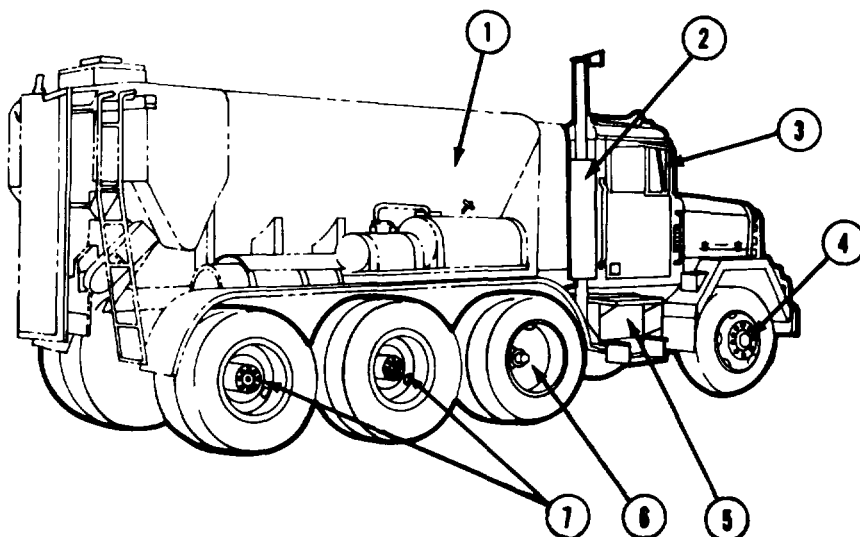
Figure 1-8. M918 - Right Rear View.

TA 073540



- | | | |
|---------------------------|---------------------|------------------------|
| 1 NTC-400 DIESEL ENGINE | 5 FUEL TANK | 8 BLACKOUT DRIVE LIGHT |
| 2 CLEARANCE LIGHT | 6 TURN SIGNAL LIGHT | 9 TOWING EYE |
| 3 AIR HORN | 7 BLACKOUT MARKER | 10 BRUSH GUARD |
| 4 RECEPTACLE (BOTH SIDES) | | |

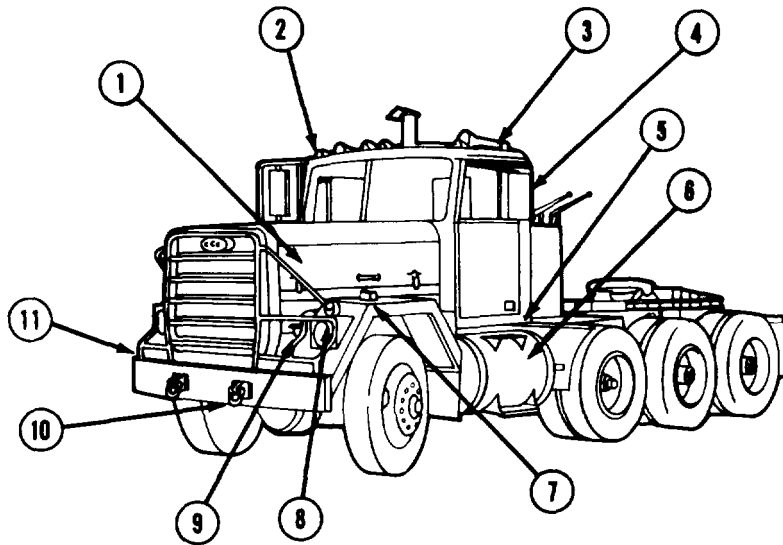
Figure 1-9. M919 – Left Front View.



- | | |
|---|----------------------|
| 1 CONCRETE-MOBILE® MIXER
BODY (SEE TM 5-3895-372-10) | 4 FRONT DRIVING AXLE |
| 2 EXHAUST MUFFLER | 5 BATTERY BOX |
| 3 SIDE-VIEW MIRROR | 6 PUSHER AXLE |
| | 7 REAR DRIVING AXLE |

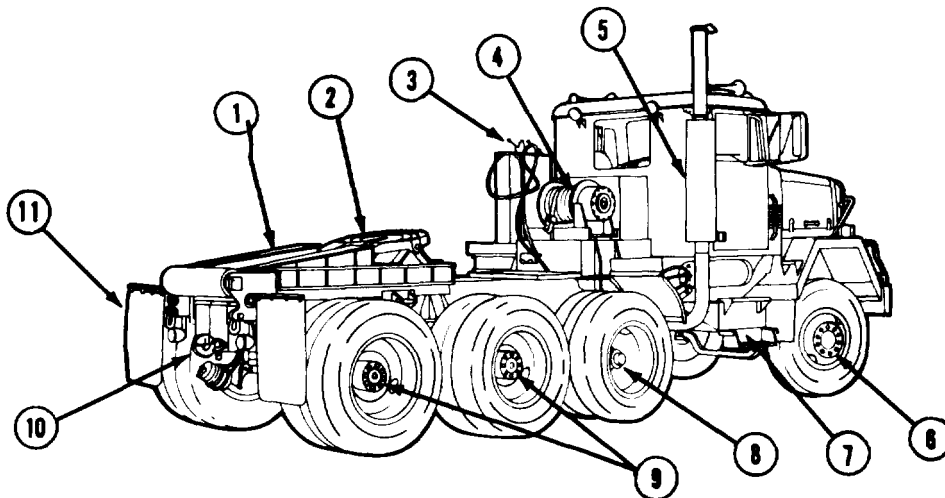
Figure 1-10. M919 – Right Rear View.

TA 073541



- | | | |
|-------------------------|---------------------|------------------------|
| 1 NTC-400 DIESEL ENGINE | 5 RECEPTACLE | 8 BLACKOUT MARKER |
| 2 CLEARANCE LIGHT | (BOTH SIDES) | 9 BLACKOUT DRIVE LIGHT |
| 3 AIR HORN | 6 FUEL TANK | 10 TOWING EYE |
| 4 SIDE-VIEW MIRROR | 7 TURN SIGNAL LIGHT | 11 BRUSH GUARD |

Figure 1-11. M920 – Left Front View.



- | | | |
|------------------|----------------------|---------------------|
| 1 TRAILER RAMP | 5 EXHAUST MUFFLER | 9 REAR DRIVING AXLE |
| 2 FIFTH WHEEL | 6 FRONT DRIVING AXLE | 10 TOWING PINTLE |
| 3 WINCH CONTROLS | 7 BATTERY BOX | 11 MUD GUARD |
| 4 WINCH DRUM | 8 PUSHER AXLE | |

Figure 1-12. M920 – Right Rear View.

TA 073542

1-1. Scope.

This operator's manual is for use in operating and maintaining the M915, M916 and M920 truck tractors and the M917, M918 and M919 truck chassis. These models differ in configuration for the applications shown below:

MODEL	APPLICATION
M915	TOWED LOAD – M-872 Trailer – 30,000 lbs (on the king pin)
M916	TOWED LOAD – M-172A1 Trailer – 25,588 lbs (on the king pin)
M917	DUMP TRUCK – 40,000 lbs payload (12 cubic yards)
M918	BITUMINOUS DISTRIBUTOR – 1500 gal. payload
M919	CONCRETE-MOBILE [®] MIXER – 8 cubic yards payload
M920	TOWED LOAD – M-870 Trailer – 40,000 lbs (on the king pin)

1-2. Maintenance Forms and Records.

Every mission begins and ends with the paperwork. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses. They are a permanent record of the services, repairs, and modifications made on your carrier. They are reports to organizational maintenance and to your commander. And they are a checklist for you when you want to know what is wrong with the carrier after its last use, and whether those faults have been fixed. For the information you need on forms and records, see TM 38-750.

1-3. Reporting Equipment Improvement Recommendations (EIR's).

EIR's can and must be submitted by anyone who is aware of an unsatisfactory condition with the equipment design or use. It is not necessary to show a new design or list a better way to perform a procedure, just simply tell why the design is unfavorable or why a procedure is difficult. See TM 38-750. Mail SF 368 directly to Commander, U.S.

Army Tank-Automotive Materiel Readiness Command, ATTN: DRSTA-MP, Warren, Michigan, 48090. A reply will be furnished to you.

1-4. Warranty Information.

The vehicles are warranted by AM General Corporation in accordance with TB 9-2300-295-15-17 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 Organizational Maintenance shop.

1-5. Nomenclature.

COMMON TERM	OFFICIAL NAME
● Engine coolant	— Antifreeze, ethylene glycol mixture
● Cold Start system	— Ether quick-start system
● Jake brake, Jacobs® brake	— Engine retarder
● Cable	— Wire rope
● Glad Hand	— Quick disconnect coupling

1-6. Abbreviations

C	Centigrade or Celsius
CID	Cubic Inch Displacement
cm	centimeters
EIR's	Equipment Improvement Recommendations
F	Fahrenheit
FWD	Forward
GCWR	Gross Combination Weight Rating
GVW	Gross Vehicle Weight
GVWR	Gross Vehicle Weight Rating
Hp	Horsepower
kg	kilograms
KP	King Pin
kph	kilometers per hour
lbs	pounds
mtr	meters
mph	miles per hour
N/A	Not Applicable
PM	Preventive Maintenance
PMCS	Preventive Maintenance Checks and services

(A) PMCS	After Operation Preventive Maintenance Checks and Services
(B) PMCS	Before Operation Preventive Maintenance Checks and Services
(D) PMCS	During Operation Preventive Maintenance Checks and Services
psi	pounds per square inch
PTO	Power Takeoff
rpm	revolutions per minute
vdc	volts direct current

Section II. EQUIPMENT DESCRIPTION

1-7. Equipment Purposes, Capabilities and Features.

PURPOSE

- The M915 is a line haul truck tractor used to haul semitrailers on Class I good roads only (30,000 pounds on 5th wheel).
- The M916 tractor is used to transport medium weight payloads/semitrailers (up to 40,000 pounds on 5th wheel) on and off roads.
- The M917 truck is a 20-ton dump truck with a hydraulic hoist used to haul 12 cubic yards of aggregate and similar materials on and off road (1 5.2 cubic yards heaped and 19.6 yards with side boards).
- The M918 is a bituminous distributor truck used for spraying liquid asphalt. The M918 can be operated on and off roads.
- The M919 truck is a Concrete-Mobile® mixer truck used to transport up to 8 cubic yards of dry concrete material and mix at construction sites. The M919 can be operated on and off roads.
- The M920 tractor is used to transport heavy payload/semitrailers (up to 40,000 pounds on 5th wheel) on and off roads.

CAPABILITIES AND FEATURES

- All models are capable of operation in temperatures from –25°F (–32°C) to 125°F (52°C) and to –50°F (–45.6°C) with Arctic kit installed.
- While operating on Class I good roads, the M915 tractor can maintain a speed of 55 mph (88.5 kph) on level roads and 25 mph (40.22 kph) while ascending a 3.9 percent grade.
- The M916 tractor and M918 truck can maintain a speed of 55 mph (88.5 kph) while operating on level Class I good roads.
- All models can maintain a speed of 55 mph (88.5 kph) while operating on level Class I good roads.
- The M916 thru M920 can start and climb a 25 percent grade at GCWR in both forward and reverse directions. The M915 can climb a 17 percent grade under the same conditions. All models are capable of operating on side slopes up to 10 percent where adequate traction is available.
- All models can ford water up to 20 inches (61 cm) deep for 5 minutes without damage or requiring maintenance before operations can continue.
- Average cruising ranges at GCWR with a full tank of fuel will vary based on many conditions. On highway use under full power at 2100 rpm with 373 to 400 hp the fuel rate will be 20.5 to 21.4 gallons per hour. Varying loads, prolonged idle such as using the power take off (PTO), off road driving and climatic conditions will affect the rate of fuel consumption.
- Minimum turning diameters, curb to curb, are listed below:

M915	53.5 feet (16.31 m)
M916	80.0 feet (24.4 m)
M917	89.5 feet (27.3 m)
M918	80.0 feet (24.4 m)
M919	89.5 feet (27.3 m)
M920	89.5 feet (27.3 m)

1-8. Performance Data.

Performance data for all models are listed in table 1-1.

1-9. Differences Between Models.

Major differences between models are identified in table 1-2.

Table 1-1. Performance Data

MODEL	ITEM
	DIMENSIONS
	Length (overall, less pintle hook and lifting shackle)
M915	268.50 in. (6.82 m)
M916	294.30 in. (7.48 m)
M917	350.60 in. (8.90 m)
M918	350.60 in. (8.90 m)
M919	374.40 in. (9.51 m)
M920	319.30 in. (8.11 m)
	Width (overall)
ALL	96.75 in. (2.46 m)
	Height
M915	134.63 in. (3.42 m) (over stack – empty)
M916	142.00 in. (3.61 m) (over stack – empty)
M917	141.00 in. (3.6 m) (overall)
M918	142.00 in. (3.61 m) (over stack – empty)
M919	142.00 in. (3.61 m) (over stack – empty)
M920	142.00 in. (3.61 m) (over stack – empty)
	Height (reduced, no load)
M915	114.63 in. (2.91 m) (over horns –empty)
M916	128.00 in. (3.25 m) (over horns – empty)
M917	Not reducible
M918	128.00 in. (3.25 m) (over horns – empty)
M919	128.00 in. (3.25 m) (over horns – empty)
M920	128.00 in. (3.25 m) (over horns – empty)
	Ground Clearance (under rear walking beam bracket) (empty)
M915	10.25 in. (26.03 cm)
M916	11.62 in. (29.51 cm)
M917	12.00 in. (30.48 cm)
M918	11.62 in. (29.51 cm)
M919	12.00 in. (30.48 cm)
M920	11.62 in. (29.51 cm)
	Wheelbase
M915	168.25 in. (4.30 m)
M916	186.00 in. (4.72 m)
M917	211.00 in. (5.36 m)
M918	186.00 in. (4.72 m)
M919	211.00 in. (5.36 m)
M920	211.00 in. (5.36 m)

Table 1-1. Performance Data – Continued

MODEL	ITEM
M915 M916 Thru M920	ANGLE OF APPROACH (LOADED)
	38 degrees
	42 degrees
M915 M916 M917 M918 M919 M920	WEIGHTS
	Curb
	19,630 lbs (8,781 kg)
	27,500 lbs (12,474 kg)
	34,030 lbs (15,459 kg)
	30,280 lbs (14,216 kg)
	37,540 lbs (17,028 kg)
	30,270 lbs (13,730 kg)
	Gross Vehicle Weight Rating
	55,000 lbs (24,941.56 kg)
	56,000 lbs (25,402 kg)
	75,000 lbs (34,019.40 kg)
	56,000 lbs (25,402 kg)
	75,000 lbs (34,019.40 kg)
	75,000 lbs (34,019.40 kg)
	Gross Combination Weight Rating
	105,000 lbs (47,627.16 kg)
	106,000 lbs (48,082 kg)
	N/A
	N/A
	N/A
	130,000 lbs (58,968 kg)
	Front Axle Empty
	9,920 lbs (4,500 kg)
	13,370 lbs (6,065 kg)
	18,670 lbs (8,469 kg)
	11,980 lbs (5,434 kg)
	14,280 lbs (6,477 kg)
	14,700 lbs (6,668 kg)

Table 1-1. Performance Data – Continued

MODEL	ITEM
	Pusher Axle
M915	N/A
M916	N/A
M917	20,000 lbs (9072 kg) (with 40,000 lbs (18,144 kg) on 5th wheel)
M918	N/A
M919	20,000 lbs (9072 kg) (With 35,550 lbs (16,125 kg) payload)
M920	20,000 lbs (9072 kg) (With 44,730 lbs (20,290 kg) on 5th wheel)
	Front Axle Loaded
M915	11,055 lbs (5015 kg) (With 30,000 lbs (13,608 kg) on 5th wheel)
M916	14,570 lbs (6609 kg) (with 38,000 lbs (1 2,700 kg) on 5th wheel)
M917	10,780 lbs (4890 kg) (With 40,000 lbs (18,144 kg) payload)
M918	12,520 lbs (5679 kg) (With 12,000 lbs (5443 kg) payload)
M919	9,210 lbs (4178 kg) (With 35,550 lbs (16,125 kg) payload)
M920	8,870 lbs (4023 kg) (With 44,730 lbs (20,290 kg) on 5th wheel)
	Rear Axle Empty
M915	9,710 lbs (4405 kg)
M916	14,130 lbs (6409 kg)
M917	15,360 lbs (6967 kg)
M918	19,300 lbs (8754 kg)
M919	23,260 lbs (10,551 kg)
M920	15,570 lbs (7063 kg)
	Rear Axle Loaded
M915	37,660 lbs (17,083 kg) (With 30,000 lbs (1 3,608 kg) on 5th wheel)
M916	40,930 lbs (18,566 kg) (With 28,000 lbs (12,700 kg) on 5th wheel)
M917	44,200 lbs (20,049 kg) (With 40,000 lbs (18,144 kg) payload)
M918	30,760 lbs (13,953 kg) (With 12,000 lbs (5443 kg) payload)
M919	43,880 lbs (19,904 kg) (With 35,550 lbs (16,125 kg) payload)
M920	46,010 lbs (20,870 kg) (With 44,730 lbs (20,290 kg) on 5th wheel)
	PERFORMANCE
	Drawbar pull (max) (at 0.7 coefficient)
M915	25,028 lbs (11,262 kg)
M916	45,725 lbs (20,576 kg)
M917	N/A
M918	N/A
M919	N/A
M920	47,403 lbs (21,501 kg)

Table 1-1. Performance Data – Continued

MODEL	ITEM
	Maximum Towed Load
M915	54,000 lbs (24,516 kg) (M872 Trailer – 30,000 lbs K.P.)
M916	78,500 lbs (35,639 kg) (M172A1 Trailer – 25,588 lbs KY.)
M917	N/A
M918	N/A
M919	N/A
M920	99,730 lbs (45,277 kg) (M870 Trailer – 44,730 lbs K.P.)
	Maximum Speed
	Forward (at 2100 rpm – 16th gear)
M915	66.60 mph (107.16 kph)
M916	59 mph (94.93 kph)
M917	59 mph (94.93 kph)
M918	59 mph (94.93 kph)
M919	59 mph (94.93 kph)
M920	59 mph (94.93 kph)
	Minimum Sustained Speed (at 1300 rpm)
M915	2.31 mph (3.72 kph)
M916	
Thru	
M920	2.23 mph (3.59 kph)
	Speed on Grade
ALL	25.00 mph (40.22 kph) (on 3.9% grade)
	Maximum grade (at GCWR)
M915	17%
M916	
Thru	
M920	25%
	Maximum side slope (w/adequate tractive surface)
ALL	10%
	Maximum fording depth
ALL	20.00 in. (50.80 cm)

Table 1-1. Performance Data – Continued

MODEL	ITEM
	CAPACITIES
	Engine Oil (Refill Capacity Includes Filters)
ALL	46.00 qts (43.53 litres)
	Engine Filter (Refill Capacity)
ALL	4 qts (3.78 litres)
	Engine bypass oil filter (Refill Capacity)
ALL	14.00 qts (13.24 litres)
	Cooling System (Refill Capacity)
ALL	65 qts (61.49 litres)
	Fuel 118-gal tank (446.63 litres)
ALL	Usable 110-gal (416.35 litres)
	Power Steering Reservoir
ALL	2 qts (1.89 litres)
	Winch Reservoir
M916 And M920	42 gal (158.97 litres)
	Winch Drum
M916 And M920	5 qts (4.73 litres)
	Front Axle
M915 M916 Thru M920	N/A
	27 pts [12.78 litres)

Table 1-1. Performance Data - continued

MODEL	ITEM
ALL	Transmission oil 5.50 gal (20.82 litres)
ALL	Transfer case 5 qts (4.73 litres)
M915 M916 Thru M920	Rear Axle (fwd/rear) 40/36 pts (18.93/17.03 litres)
	34/28 pts (16.09/13.25 litres)
M915 M916 Thru M920	OPERATING MODE On road On and off road
ALL	OPERATING TEMPERATURES Without additional kits -25°F (-31.7°C to +125°F (51.7°C)
ALL	With arctic kit -50°F (-45.6°C) to +125°F (51.7°C)
ALL	ENGINE Make Cummins
ALL	Model NTC-400

Table 1-1. Performance Data – Continued

MODEL	ITEM
	Type
ALL	4-stroke, in-line diesel
	Cylinders
ALL	6
	Displacement
ALL	855 CID (14 litres)
	Torque (@ 1500 rpm)
ALL	1150 lb-ft (1559.4 N.m)
	Maximum horsepower (@ 2100 rpm)
ALL	400 (298.3 kw)
	Maximum governed speed
ALL	2100 rpm
	Oil filter type
ALL	Full flow, replaceable element
	Quantity
ALL	1
	FUEL SYSTEM
	Type
ALL	Diesel injection
	Tank quantity
ALL	1
	Tank Type
ALL	Cylinder 26 ins (66.04 cm) dia Alum

Table 1-1. Performance Data – Continued

MODE L	ITEM
ALL	Air Cleaner Type Dry element Quantity 1
ALL	COOLING SYSTEM Radiator working pressure 10 psi
ALL	ELECTRICAL SYSTEM Type Basic 12-volt, 24-volt cranking Alternator 12/24 volts, 85/15 amps Circuit breakers Recycling Batteries Maintenance-free Number/volts 4/12 Connection Series-parallel Capacity 950 cold cranking amps @ 0°F (-18°C) @ 24 volts

Table 1-1. Performance Data – Continued

MODEL	ITEM
	TRANSMISSION
	Make
ALL	Caterpillar
	Model
ALL	D-7155 Overdrive
	Type
ALL	16-speed semi -automatic
	Shifter
ALL	Remote air control power shift
	AXLES
	Make
	Front
ALL	Rockwell
	Type
M915 M916 Thru M920	I-Beam FF931
	Hypoid FDS-1807
	Rated Capacity (at ground)
M915 M916 Thru M920	12,000 lbs (5400 kg)
	20,000 lbs (9000 kg)
	Steering angle (maximum)
M915 M916 Thru M920	32 degrees
	28 degrees

Table 1-1. Performance Data – Continued

MODEL	ITEM
ALL M915 M916 Thru M920 M915 M916 Thru M920 M915 M916 Thru M920 ALL ALL M915 M916 Thru M920	Rear Tandem
	Make
	Rockwell
	Type (Rated Capacity)
	SQHP (38,000 lb) (17,100 kg)
	SUHD (55,000 lb) (24,948 kg)
	Ratio
	4.44:1
	6.17:1
	Rated Capacity (tandem)
	38,000 lbs (17,100 kg)
	58,000 lbs (26,100 kg)
	Differential lockup
	Air control
	Lubrication
	Pressure
	Lube capacity (fwd/rear)
	40/36 pts (19/17 litres)
	34/28 pts (16/13.2 litres)

Table 1-1. Performance Data – Continued

MODEL	ITEM
M917 M919 And M920	Pusher Axle Type Rockwell TKND 967-P Rated Capacity 20,000 lbs (9000 kg) Singles/Duals Duals
M916 Thru M920	TRANSFER CASE Make/Type Oshkosh 18,000 Series F-U29 Ratio 1:1
ALL	BRAKE SYSTEM Actuation Air-mechanical Fail-safes (spring brakes) ALL Forward-rear and Rear-rear (4) Pressure range ALL 65–1 25 psi (448–862 kpa)
M915 M916 Thru M920	WHEELS Make Budd No. 47890-3 Budd No. R49210

Table 1-1. Performance Data – Continued

MODEL	ITEM
	Number
M915	11
M916	11
M917	14
M918	10
M919	14
M920	14
	Size (dia x rim width)
M915	20 in. x 8 in. (508 cm x 203 cm)
M916	
Thru	
M920	24 in. x 8 in. (610 cm x 203 cm)
	No. of studs/bolt circle
ALL	10/11.25 in. (10/28.6 cm)
	Stud Size
ALL	1.125 in. (2.86 cm)
	Rated capacity (on highway)
M915	7.280 lbs (3276 kg)
M916	
Thru	
M920	7.430 lbs (3344 kg)
	TIRES (Tactical tires, if used, should replace commercial tires on all drive wheels).
	Type
M915	Bias ply-on highway
M916	
Thru	
M920	Bias ply-on/off highway
	Size
M915	10 in. x 20 in. (254 cm x 508 cm)
M916	
Thru	
M920	11 in. x 24 in. (279 cm x 610 cm)

Table 1-1. Performance Data – Continued

MODEL	ITEM
	Weight (with wheel)
M915	218 lbs. (98.88 kg)
M916	
Thru	
M920	326 lbs. (147.87 kg)
	Rated capacity (single/dual) (on highway)
M915	6040/5300 lbs (2718/2385 kg)
M916	
Thru	
M920	7430/5220 lbs {3344/2934 kg}
	Load Range/ply rating
ALL	G/14
	Air Pressure (maximum cold)
	Front
ALL	100 psi
	Rear
ALL	90 psi
	Pusher axle
M917	
M919	
And	
M920	90 psi
	STEERING
	Type
M915	Ross Integral Power
M916	
Thru	
M920	Ross Integral Power – with assist cylinder
	Actuation
ALL	Hydraulic Power Booster

Table 1-1. Performance Data – Continued

MODEL	ITEM
ALL	Power Steering Pump Eaton B165R
M915 M916 And M920	FIFTH WHEEL Type 36 in. (91.44 cm) dia-single oscillating 36 in. (91.44cm) dia-full (4-way) oscillating Pitch (fwd/aft) M915 M916 And M920 15/10 degrees Kingpin size M915 M916 And M920 2 in. (5.08 cm) 3.5 in. (8.89 cm)
M915 M916 M917 And M920	PINTLE Type Holland No. 760 Rated Capacity
M915 M916 M917 And M920	 30 tons (27.2 metric tons)

Table 1-1. Performance Data – Continued

MODEL	ITEM
	TOWING EYES
	Quantity
M915	2 front, 2 rear
M916	2 front, 2 rear
M917	2 front, 2 rear
M918	2 front
M919	2 front
M920	2 front, 2 rear
	Maximum load capacity, each (up to 45° angle from long. axis)
ALL	60,000 lbs (27,216 kg)
	CAB
	Make
ALL	AM General Corporation
	Type
ALL	2-passenger, all steel, w/butterfly hood
	ACCESSORIES
	Floodlights
M916 And M920	2 fixed
	Arctic kit (optional)
ALL	Stolper Industries, Inc.
	Tool Box
ALL	1 –under passenger seat

Table 1-1. Performance Data – Continued

MODEL	ITEM
M915 M916 M917 M918 M919 M920	Air Horn
	2-top of cab
	2-top of cab
	1-top of cab
	2-top of cab
	2-top of cab
	2-top of cab
ALL	Heater/Defroster
	Fresh Air type

Table 1-2. Configuration Differences Between Models

ITEM	VEHICLE MODEL					
	M915	M916	M917	M918	M919	M920
Driving Front Axle		X	X	X	X	X
Transfer Case		X	X	X	X	X
Pusher Axle			X		X	X
Spare Wheel & Tire Assy	X	X				
Spare Wheel & Tire Hoist	X	X				
Towing Pintle	X	X	X			X
Fifth Wheel	X	X				X
Winch		X				X
Work Lamps		X				X
External Receptacle for Work Lamps	X	X				X
Power Takeoff (PTO)		X	X	X	X	X
Hose Tender & Cable Support	X	X				X
Backup Alarm		X	X	X	X	X
Special Bodies:						
Dump Body			X			
Bituminous Distributor				X		
Concrete-Mobile [®] Mixer					X	
Auxiliary Power Steering Cylinder		X	X	X	X	X
Double Rail Frame		X	X	X	X	X
Front Shock Absorbers	X					
Tires:						
Highway	X					
On/Off Road		X	X	X	X	X

1-10. Military Load Classifications.

Table 1-3 list the military load classifications for all models.

Table 1-3. Military Load Classifications

MODEL	MILITARY LOAD CLASSIFICATION
M915	8
M916	12
M917	50
M918	21
M919	45
M920	14

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

This section shows the location and describes the function and use of controls and indicators you will use in operating the M915 thru M920 vehicles. These instructions apply to all models unless specific models are identified. Separate illustrations and keys are provided for the following groups of controls and indicators:

- | | |
|--|-------------|
| ● Instrument panel | Figure 2-1 |
| ● Cab floor-mounted foot controls | Figure 2-6 |
| ● PTO/pusher axle controls and transmission ratio selector control | Figure 2-7 |
| ● Steering wheel and column-mounted controls | Figure 2-8 |
| ● Operator's seat adjustment controls | Figure 2-9 |
| ● Additional cab controls | Figure 2-10 |
| ● Winch controls (M916 and M920 only) | Figure 2-11 |

YOU SHOULD KNOW THE LOCATION AND UNDERSTAND THE PROPER USE OF EVERY CONTROL AND INDICATOR BEFORE OPERATING YOUR TRUCK. USE THIS SECTION TO LEARN OR TO REFRESH YOUR MEMORY ABOUT EACH OF THE CONTROLS AND INDICATORS YOU WILL BE USING WHILE OPERATING THE TRUCK.

2-1. Instrument Panel Controls and Indicators.

Figure 2-1 shows the entire instrument panel and identifies the major sections by name. A separate figure and key is provided for each individual panel section. (See Figures 2-2 thru 2-5).

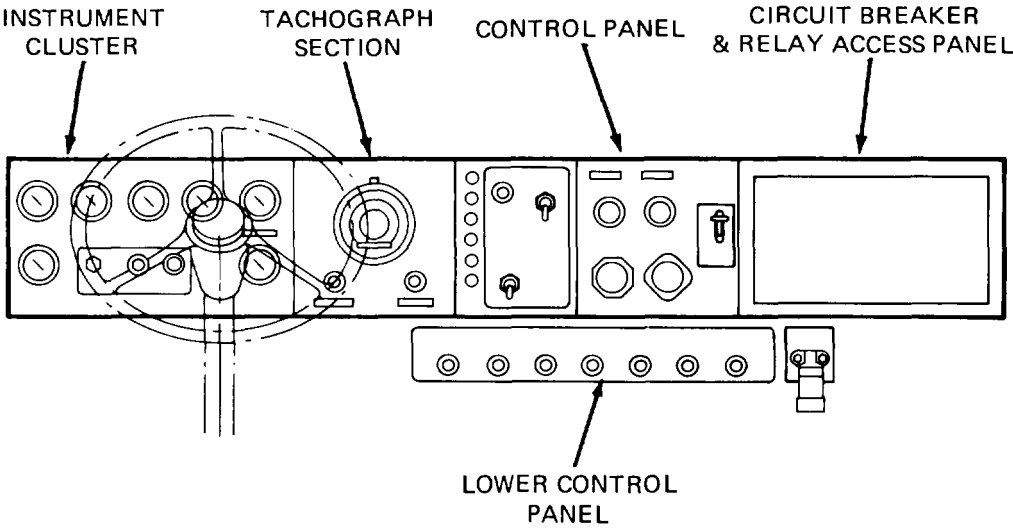


Figure 2-1. Instrument Panel.

INSTRUMENT CLUSTER

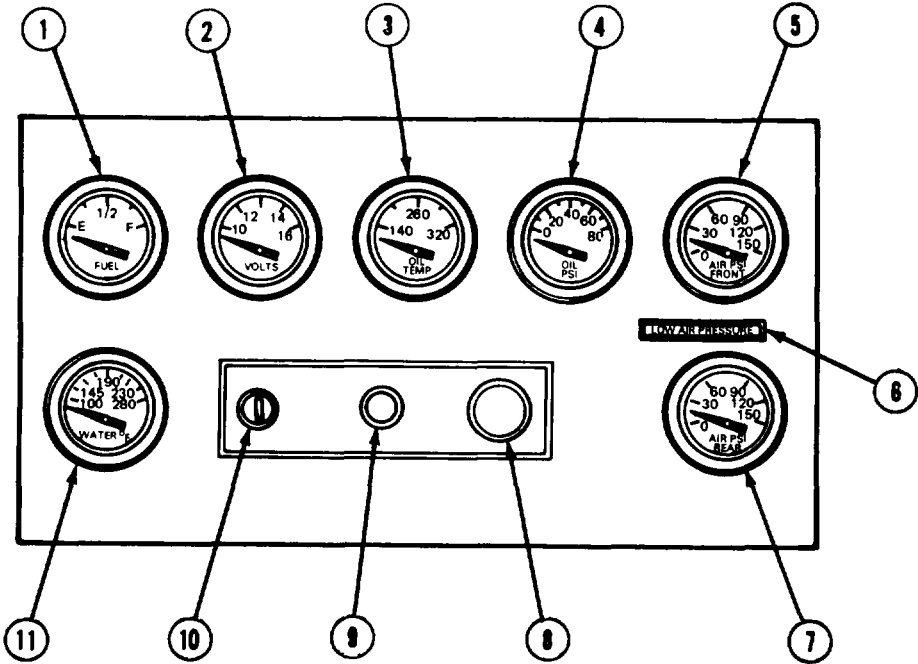


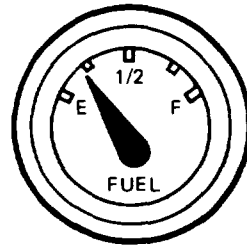
Figure 2-2. Instrument Cluster.

TA 073543

KEY TO INSTRUMENT CLUSTER

1 FUEL SUPPLY GAGE

Indicates the amount of fuel you have when the ENGINE RUN switch is turned to ON.

**2 VOLTMETER**

Indicates rate of battery charge or discharge in volts.

Below 11 volts (Red Area):

Indicates a low battery or possible malfunction. Stop the truck and report the problem to Organizational Maintenance.

Above 15 volts (Red Area):

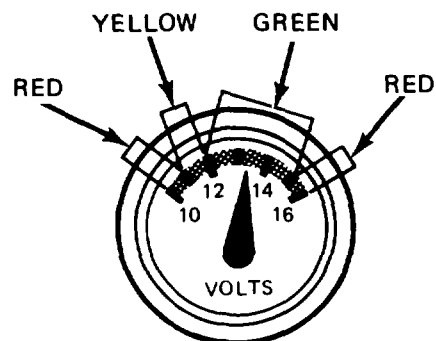
Indicates the batteries are being overcharged due to a malfunction. Report the problem to Organizational Maintenance as soon as possible.

Between 11 and 12 volts (Yellow Area):

Indicates battery is undercharged. Turn off all electrical circuits (if possible) and run engine at highest rpm permitted for the existing conditions. The voltmeter should indicate charge in the green area. If not, report to Organizational Maintenance.

12 to 15 volts (Green Area):

Indicates normal operating range.



TA 233224 ■

Change 3 2-3

KEY TO INSTRUMENT CLUSTER (Continued)	
3	<p>TRANSMISSION OIL TEMPERATURE GAGE</p> <div> </div> <div> <p>If temperature goes above 220°F, stop the truck and notify Organizational Maintenance of the problem.</p> </div> <div> <p>Registers transmission oil temperature in degrees Fahrenheit. Normal operating range is 40°F to 220°F.</p> </div> <div> </div>
4	<p>ENGINE OIL PRESSURE GAGE</p> <div> </div> <div> <p>At 1700-2100 rpm, the minimum engine oil pressure for safe operation is 30 psi. If, in this rpm range, the gage does not show at least 30 psi, stop the engine immediately and investigate the cause.</p> </div> <div> <p>Registers engine oil pressure in pounds per square inch (psi). (Normal range at rated speed (2100 rpm) is 40-75 psi. Range at idle speed is 5-20 psi).</p> </div> <div> </div>
5	<p>AIR PRESSURE GAGE</p> <div> </div> <div> <p>Pressures below the normal operating range indicate a loss in air supply. This will result in a limited number of times the brakes can be applied before losing front wheel brakes.</p> </div> <div> <p>At the first sign of pressure loss, STOP THE TRUCK AND INVESTIGATE THE CAUSE.</p> </div> <div> <p>Registers air pressure (in psi) in the front brake system. Normal operating range is 105-120 psi.</p> </div> <div> </div>

TA 233225

KEY TO INSTRUMENT CLUSTER (Continued)

6 LOW AIR PRESSURE WARNING LIGHT



CAUTION

If this light comes on and buzzer sounds while you are driving, stop immediately and investigate the cause.

LOW AIR PRESSURE

Red warning light will remain on and buzzer will sound when air-system pressure in either section of the dual system is between 64 and 76 psi.

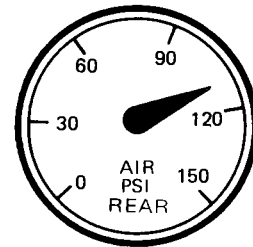
7 AIR PRESSURE GAGE



CAUTION

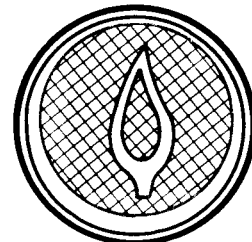
Pressures below the normal operating range indicate a loss in air supply and will result in a limited number of times the brakes can be applied before the emergency brakes are automatically activated. At the first sign of pressure loss STOP THE TRUCK AND INVESTIGATE THE CAUSE.

Registers air pressure (in psi) in the rear brake system. Normal operating range is 105-120 psi.



8 CIGAR LIGHTER

Press to engage heating element. Lighter will disengage automatically when hot.

CIGAR
LIGHTER

TA 073546

KEY TO INSTRUMENT CLUSTER (Continued)

9 ENGINE START BUTTON

CAUTION

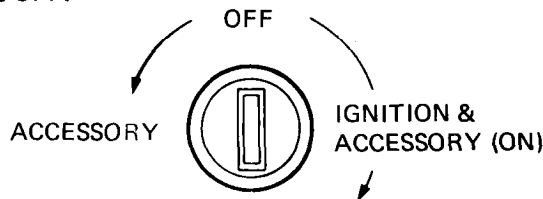
DO NOT press the button for more than 15 seconds at any one time. Allow 2 minute intervals between attempts to start. DO NOT press the button while the engine is running.



Press button to energize starter solenoid. The ENG TEMP light will come on while the button is depressed. Release button when engine starts.

10 ENGINE RUN SWITCH

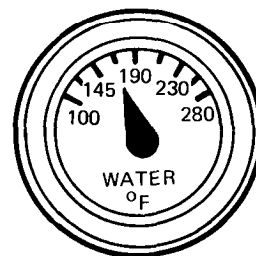
Rotate key to the right to turn this switch to the ON position (low oil pressure warning light, park brake light, and low air warning buzzer and light will come on if air pressure is below 60 psi). After the engine is started and systems become operational, warning light and buzzer will go off. The park brake light will stay on until the park brake is released. Turn the key to the center (vertical) position to turn all systems OFF.



11 ENGINE WATER TEMPERATURE GAGE

CAUTION

If this gage shows temperatures above 225°F, shut off the engine immediately and refer to the troubleshooting procedures. Do not restart engine until coolant temperature is within operating limits.



Registers engine coolant temperature in degrees Fahrenheit (normal range is 165°-195°F).

TACHOGRAPH SECTION OF INSTRUMENT PANEL

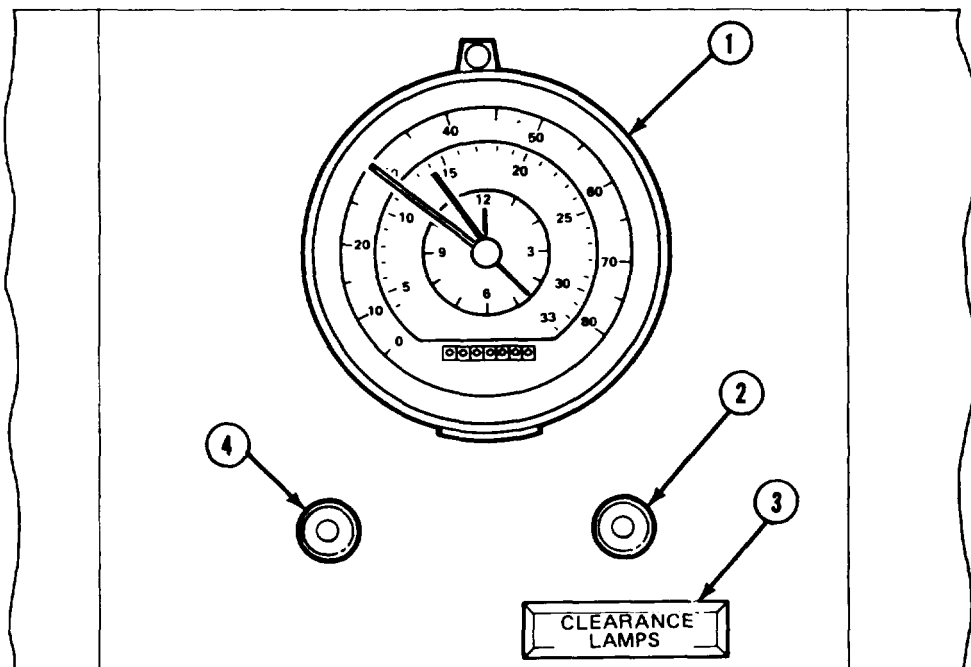






Figure 2-3. Tachograph Section of Instrument Panel.

KEY TO TACHOGRAPH SECTION OF INSTRUMENT PANEL

1	<p>TACHOGRAPH</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0; text-align: center;">CAUTION</div> <p>Do not operate vehicle without a tachograph disk installed.</p> <p>Registers truck ground speed (mph/kph hand), engine speed (rpm hand), and distance traveled (odometer). The other two hands are clock hands. The tachograph records data on a 7-day graph for a permanent record.</p>	
---	--	--

TA 233226

Change 3 2-7

KEY TO TACHOGRAPH SECTION OF INSTRUMENT PANEL (Continued)	
2	<p>CLEARANCE LIGHT PUSHBUTTON</p> <p>Press this button to flash the truck and trailer clearance and marker lights on and off. The CLEARANCE LAMP indicator light (key item 3) will come on when lights are on.</p> 
3	<p>CLEARANCE LIGHT INDICATOR</p> <p>This light will illuminate when the headlamp switch is pulled out to either the first or second position and the clearance light pushbutton is pressed. Intensity of the light may be varied by rotating the headlamp switch knob.</p> 
4	<p>ETHER WICK-START PUSHBUTTON</p> <div style="text-align: center;">  <p>CAUTION</p> </div> <p>Do not use this button without first reading thoroughly the cold weather starting procedure chapter 2, section III, paragraph 2-12.</p> <p>Press and release this button to inject ether for cold weather starting.</p> 

TA 233227 ■

CONTROL PANEL

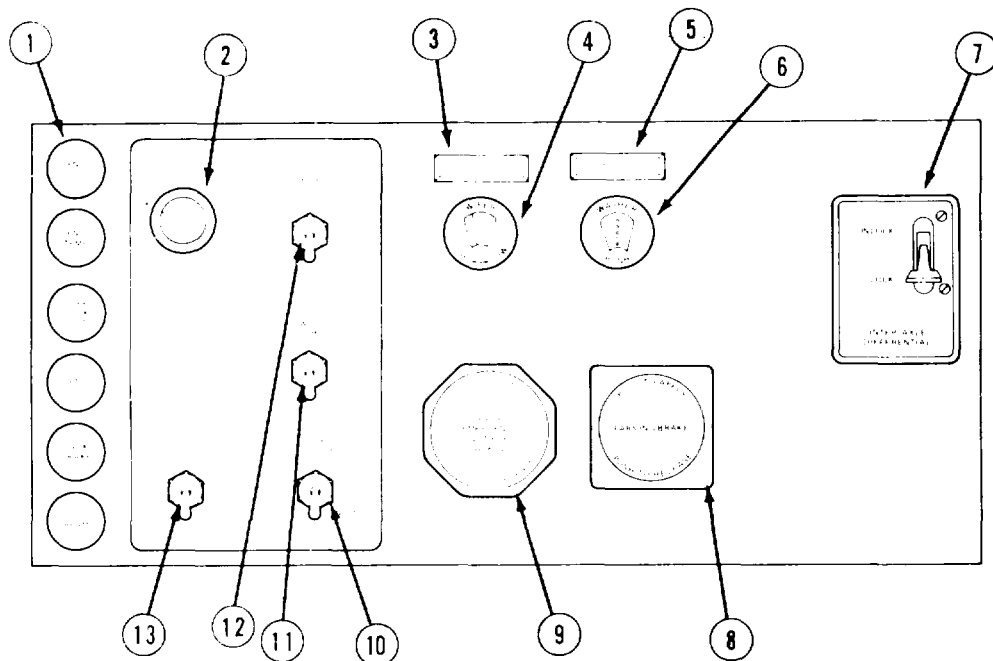


Figure 2-4. Control Panel.

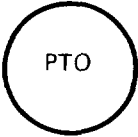


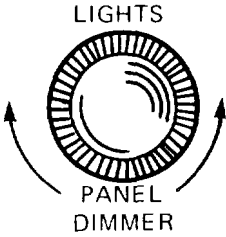



KEY TO CONTROL PANEL	
1	<p>WARNING AND INDICATOR LIGHTS</p> <ul style="list-style-type: none"> ENGINE OIL WARNING LIGHT Red light comes on when engine oil pressure is below engine operating limits. Light comes on when oil pressure drops below 5 psi. ENGINE TEMPERATURE WARNING LIGHT This red light comes on when the engine cooling system temperature is above operating limits. The light comes on when engine temperature exceeds 225°F. DIFFERENTIAL LOCKOUT INDICATOR LIGHT Red light indicates when interaxle differential lockout switch is in LOCK position and driveline locking system is engaged. On models M916 thru M920, the front driving axle is also locked.

ENG OIL

ENG TEMP

DIFF LOCK OUT

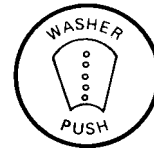
TA 073550

KEY TO CONTROL PANEL (Continued)		
	<ul style="list-style-type: none">● POWER TAKEOFF INDICATOR LIGHT (M916 THRU M920) This red light comes on when the PTO control is engaged.● PARK BRAKE INDICATOR LIGHT The red PARK BRAKE indicator comes on when the park brake control (see item 8) is actuated.● HIGH BEAM INDICATOR LIGHT This blue light comes on when the dimmer switch is set for high beam service lights.	  
2	<p>HEADLIGHT SWITCH KNOB</p> <p>Pull knob halfway out to turn on the marker lights, tail lights, and instrument panel lights, or all the way out to operate headlights, tail lights, marker lights, and instrument panel lights. The switch also turns on clearance lights in either position.</p>	
3	<p>WIPER INDICATOR LIGHT</p> <p>This wiper indicator comes on when you pull out the headlight switch to either the first or second position. The indicator light is white when lighted and can be dimmed by rotating the headlight switch knob. Its purpose is to aid in locating the wiper control at night.</p>	
4	<p>WIPER CONTROL KNOB</p> <p>Pull the knob out to turn on wipers. Rotate the switch knob for H I and LOW operation. Push in the knob to turn the wipers off.</p>	
5	<p>WASHER INDICATOR LIGHT</p> <p>The washer indicator light comes on when you pull out the headlight switch to either the first or second position. The indicator is white when lighted and can be dimmed by rotating the headlight switch knob. Its purpose is to aid in locating the washer control knob at night.</p>	

KEY TO CONTROL PANEL {Continued}

6 WASHER CONTROL KNOB

Press the knob to spray cleaning solvent on the windshield. Release the button to stop spray.



7 DIFFERENTIAL LOCK/UNLOCK CONTROL

CAUTION

Do not place switch in the LOCK position while the truck is moving or any wheel is spinning.

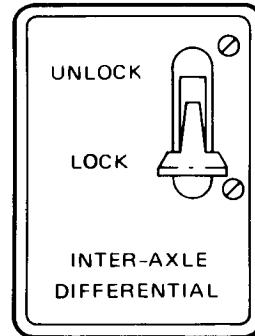
Controls inter-axle differential lockup on all models and also engages the front driving axle on the M916 thru M920.

M915 Only

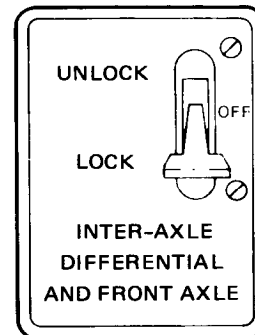
In poor traction conditions (ice, snow, etc.), stop the truck and place switch in the LOCK position to lockup the drive line. When traction is back to normal, place switch in the UN LOCK position while the truck is moving. Use the UN-LOCK position for all normal driving conditions.

M916 thru M920

In poor traction conditions (ice, snow, off road, etc.), stop the truck and place switch in LOCK position to lockup drive line and engage the front driving axle. When conditions are back to normal, let up on accelerator and move switch to the UN-LOCK position momentarily, then place switch in the center (OFF) position for normal driving.



M915 ONLY



M916 THRU M920

NOTE

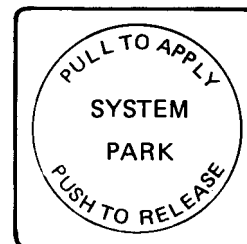
The differential lockout indicator light will come on when the control is in the LOCK position.

8 PARK BRAKE CONTROL





WARNING

Never use the parking brake for normal braking

Pull out to apply parking brakes; push in to release parking brakes.



TA 073552

KEY TO CONTROL PANEL (Continued)	
9	<div><div>TRAILER AIR SUPPLY CONTROL (M915, M916, M917 AND M920)</div><div>Supplies air to trailer air reservoirs. Push in to supply air to (charge) trailer reservoirs; pull out to shut off air to trailer. If tractor air system pressure drops to 60 psi, the trailer air supply protection valve will trip, fully applying trailer spring brakes.</div><div></div></div>
10	<div><div>BACKUP ALARM OVERRIDE (M916 THROUGH M920)</div><div><div>WARNING</div><div>Before backing operations, make sure the backup alarm override switch is in the down position. DO NOT DISABLE THE ALARM AT TIMES WHEN PERSONNEL OR EQUIPMENT SAFETY MAY BE SACRIFICED AS A RESULT.</div><div>Place this switch in the up position to turn off the backup alarm when backing in "Quiet Zones" Return the switch to the down position to activate the alarm circuit.</div></div><div><div>BACKUP ALARM</div><div></div></div></div>
11	<div><div>STATIONARY WORKLAMPS SWITCH (M916 AND M920 ONLY)</div><div>Place this switch in the ON position to turn the work lamps on, and the OFF position to turn them off.</div><div><div>WORK LAMPS</div><div></div></div></div>
12	<div><div>ENGINE RETARDER SELECTION SWITCH</div><div>Selects the number of engine cylinders desired for the braking action. HIGH position provides maximum engine braking (6 cylinders), MED position provides braking on 4 cylinders, and LOW position provides braking on 2 cylinders.</div><div><div>ENGINE RETARDER</div><div></div></div></div>

KEY TO CONTROL PANEL (Continued)

13

BLACKOUT LIGHT SWITCH

CAUTION

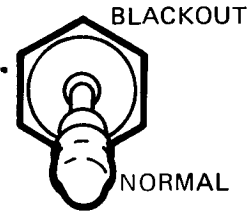
Do not leave the Blackout Light switch in the BLACKOUT position for extended periods without the engine running. Otherwise batteries can run down and cause starting problems.

Pull out and place this switch in the up (BLACKOUT) position and pull out headlight switch to 1st position to turn on front and rear blackout marker lights. Pull headlight switch to the 2nd position to turn on blackout drive light. Blackout brake lights will operate with headlight switch in either position. With the blackout light switch in the up position, the switch automatically locks out all regular service lights and electric horn and backup lights. Return the blackout light switch to the down (NORMAL) position to turn off blackout lights and restore regular lights.

NOTE

Pull the switch lever toward you to move it to either position. This prevents accidental engagement or disengagement of the service lights.

OPERATION



LOWER CONTROL PANELS

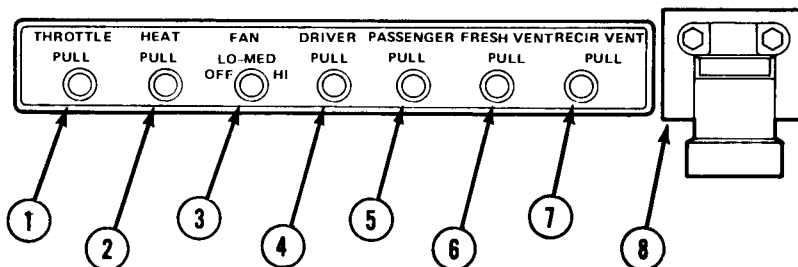
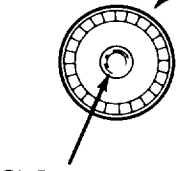
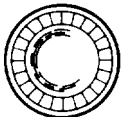

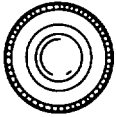
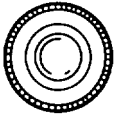




Figure 2-5. Lower Control Panel.

TA 073554

KEY TO LOWER CONTROL PANELS		
1	<p>THROTTLE CONTROL (HAND)</p> <p>Press the center of the button and pull out the control knob until engine speed is appropriate for operating the PTO or maintaining fast idle. Release the button. For fine tuning, turn knob. Press button and push in control to return engine to slow idle.</p>	<p>ADJ. KNOB</p>  <p>PUSH HERE</p>
2	<p>HEAT CONTROL KNOB</p> <p>Pull out to increase heater output temperature ; push in to decrease output temperature.</p>	<p>HEAT PULL</p> 
3	<p>HEATER FAN SPEED SWITCH</p> <p>Rotate right (positions) for LOW, MED, and HIGH fan speeds. Turn full left to turn off.</p>	<p>FAN MED LO OFF HI</p> 
4	<p>HEATER AIR CONTROL (DRIVER)</p> <p>Pull out to divert heater air to the driver's side of the cab. Push in to close vents.</p>	<p>DRIVER PULL</p> 
5	<p>HEATER AIR CONTROL (PASSENGER)</p> <p>Pull out to divert heater air to the passenger's side of the cab. Push in to close vent.</p>	<p>PASSENGER PULL</p> 
6	<p>FRESH AIR VENT</p> <p>Pull out to receive fresh air in the passenger's side of the cab; push in to close the fresh air vent.</p>	<p>FRESH VENT PULL</p> 
7	<p>RECIRCULATION VENT</p> <p>Pull out to circulate cab air through the heater; push in to close the vent.</p>	<p>RECIR VENT PULL</p> 

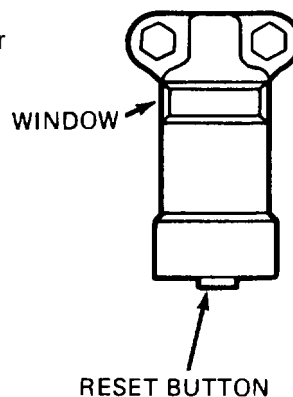
KEY TO LOWER CONTROL PANELS (Continued)

8 AIR FILTER RESTRICTION INDICATOR

When air cleaner air flow is adequate, the window on this indicator will show clear. If the air flow is restricted, the window will show red. After air filter has been cleaned, push reset button to reset filter indicator.

NOTE

Air cleaner maintenance is required when red shows in the window. Notify Organizational Maintenance.



2-2. Cab Floor-mounted Controls and Decontamination Apparatus.

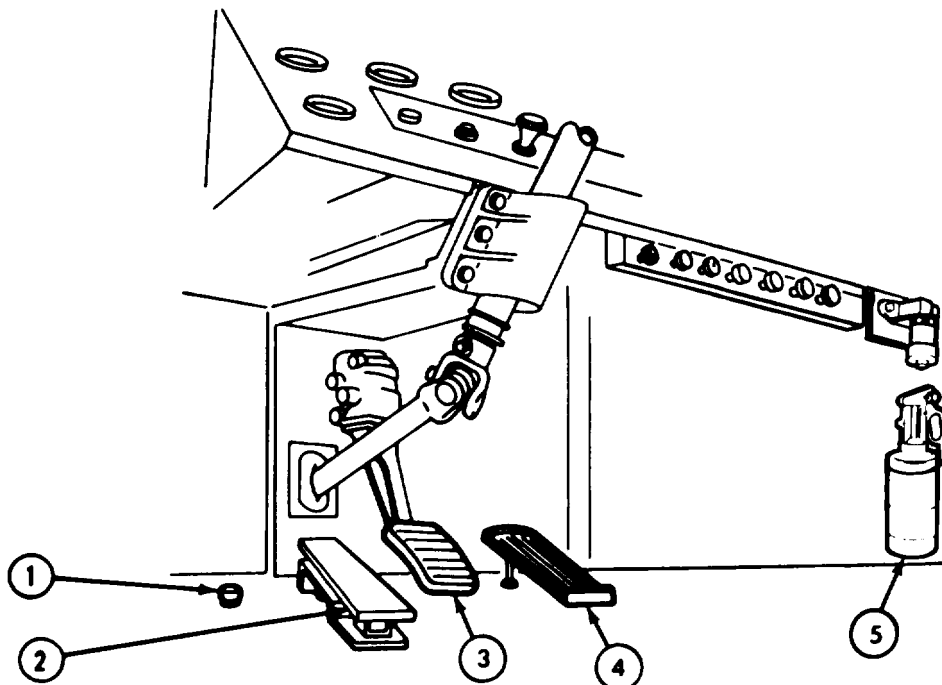


Figure 2-6. Floor-mounted Foot Controls and Decontamination Apparatus. TA 073556

Change 2 2-15

KEY TO FLOOR-MOUNTED FOOT CONTROLS	
1	<p>HEADLIGHT DIMMER SWITCH</p> <p>Push all the way down with your foot and release to switch headlights to high beam. Push all the way down and release again to dim headlights.</p> <p>NOTE</p> <p>High beam indicator will come on when the headlights are working in the high beam position.</p>
2	<p>ENGINE RETARDER FOOT SWITCH</p> <p>Hand Throttle Control must be in completely. Depress foot pedal, which activates the switch to engage engine brake. Release foot pedal to disengage engine brake. The accelerator pedal must be full up before the foot switch will operate. Select the desired braking range using the retarder selection switch.</p>
3	<p>SERVICE BRAKE PEDAL</p> <p>Push down with your foot to apply service brakes on your truck. If your truck is properly coupled to a trailer, the trailer service brakes will also be applied when you use your truck's service brake pedal.</p>
4	<p>ACCELERATOR PEDAL</p> <p>Push down gradually with your foot to start truck moving or to increase engine speed.</p>
5	<p>DECONTAMINATION APPARATUS</p> <p>Remove from bracket, pull ring pin, lift handle until it locks, aim and press top. (Maintenance requirements are in TM 3-4230-204-12&P).</p>

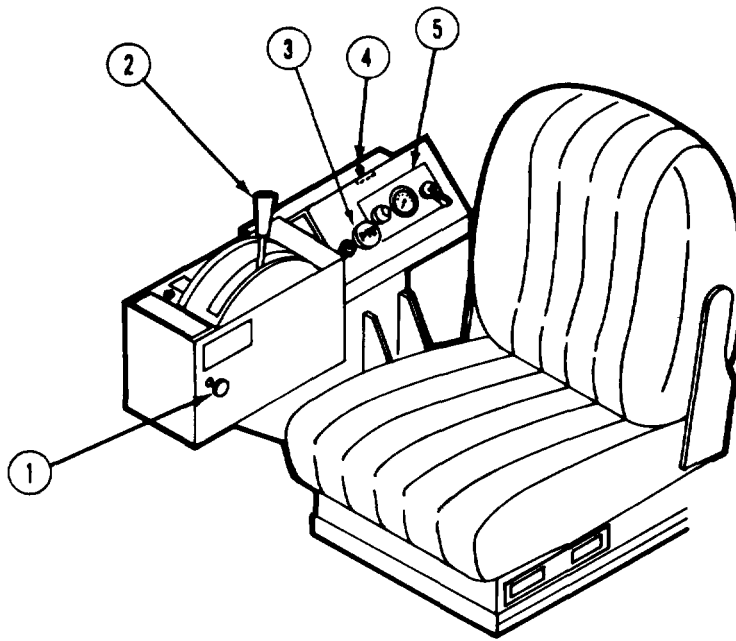


Figure 2-7. PTO/Pusher Axle Controls and Transmission Ratio Selector Control.

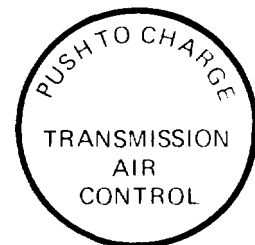
KEY TO PTO (M916/M920) PUSHER AXLE CONTROLS (M917, M919 AND M920) AND TRANSMISSION RATIO SELECTOR CONTROL

- 1 TRANSMISSION AIR CONTROL VALVE

CAUTION

The transmission will neutralize if the vehicle air supply drops below 60 psi.

Push in on this valve to provide the transmission with operating air from vehicle supply. When the vehicle air supply is 80 psi or greater, the charging valve will stay in when released. Pull out on the charging valve to remove air supply; the transmission will neutralize automatically.



TA 073557

KEY TO PTO/PUSHER AXLE CONTROLS AND TRANSMISSION RATIO SELECTOR CONTROL (Continued)

2 TRANSMISSION RATIO SELECTOR

CAUTION

The transmission clutch disengages at engine speeds of 1100 rpm or less causing loss of braking efficiency of the engine as a brake. This condition can damage the transmission clutch if held in low RPM range over 12 seconds. DOWN SHIFTING WITHIN THIS TIME IS MANDATORY.

CAUTION

The drivelines must be disconnected to tow the truck, otherwise the transmission will be damaged.

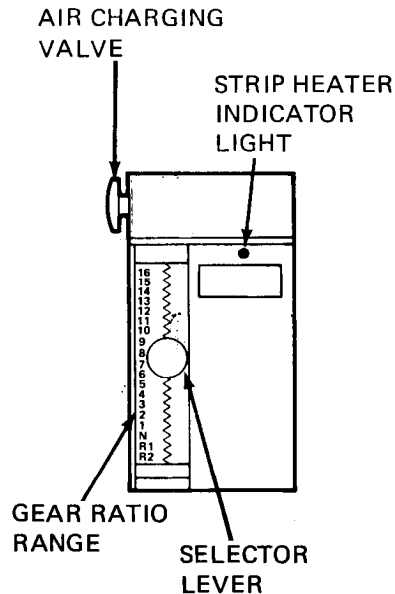
CAUTION

Use the service brakes to hold truck while stopped on a grade. DO NOT USE THE TRANSMISSION TO HOLD THE TRUCK as clutch damage can result.

CAUTION

Do not use the inhibitor override while the truck is in motion.

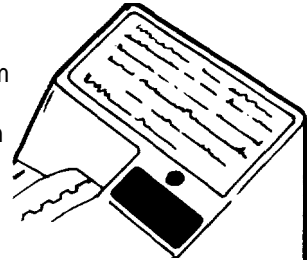
Place the selector lever in NEUTRAL (N) to start the engine. The engine will not start with the selector lever in any other position. Place the selector lever in R1 or R2 to back up. R1 should be used for heavy loads or where a slower reverse speed is required due to congestion or other hazards. Move the selector lever forward or rearward to select the desired gear ratio position. The transmission will remain in the previously selected position until the selector lever is moved into the notch adjacent to the newly selected gear ratio. Progression through the full range of 16 forward gear ratios may be done two steps at a time up to the 11th gear ratio. A built-in inhibitor prevents more than a two-step advance (or one-step advance from 11th to 16th positions). The inhibitor override is provided to allow selection of the proper gear ratio for startup. This is done by pulling upward on the selector lever and may be used only when the truck is at a standstill. Do not use the inhibitor override when the truck is in motion.



KEY TO PTO/PUSHER AXLE CONTROLS AND TRANSMISSION RATIO SELECTOR CONTROL (Continued)

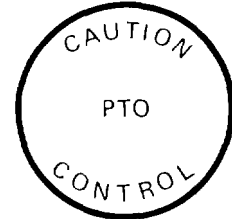
2 TRANSMISSION RATIO SELECTOR (Continued)

The transmission is equipped with strip heaters to warm the transmission during cold weather. The strip heaters are thermostatically controlled for automatic operation at temperatures below 5°F. The indicator light on the console lights when the strip heaters are on. Do not operate the transmission until the indicator light goes off.



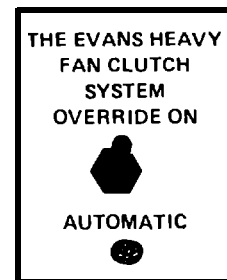
3 POWER TAKEOFF CONTROL (M916 thru M920)

With transmission in 1st gear, pull cable knob to engage power takeoff unit, then place transmission in neutral. Push cable knob to disengage power takeoff unit. When PTO has disengaged the indicator light will go off.



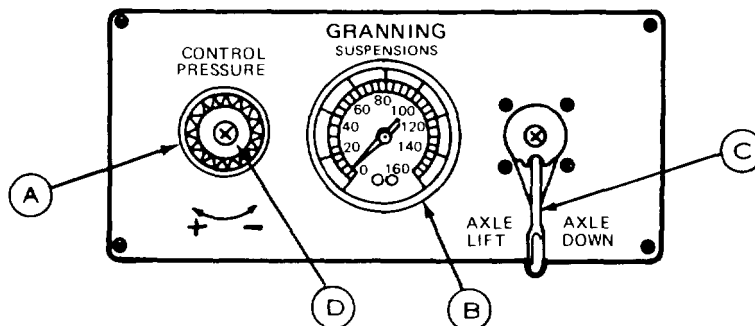
4 FAN CLUTCH ACTUATOR OVERRIDE (M919 ONLY)

The override switch is used during mixing operations of the Concrete-Mobil® mixer to prevent the fan clutch from disengaging. See TM 5-3895-372-10 for specific operation instructions. Place the switch in the OVERRIDE ON position to override the fan clutch actuator and in the AUTOMATIC position for normal fan clutch operation.



5 PUSHER AXLE CONTROLS (M917, M919 and M920)

Use this control panel to lower and raise the pusher axle, and to pressurize the system to adjust the amount of weight carried by the pusher axle.



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KEY TO PTO/PUSHER AXLE CONTROLS AND TRANSMISSION RATIO SELECTOR CONTROL (Continued)

5 PUSHER AXLE CONTROLS (M917, M919 and M920 (Continued))

TO LOWER PUSHER AXLE:

Rotate the CONTROL PRESSURE knob (a) to full counterclockwise to remove pressure from the pusher axle. Pressure gage (b) should indicate 0 psi. Place the pusher axle raise/lower control (c) in the AXLE DOWN position.

TO ADJUST LOAD ON THE PUSHER AXLE:

Rotate the CONTROL PRESSURE knob (a) clockwise (toward +) until the pressure gage (b) indicates the proper pressure setting for the desired load. Tighten the set screw (d) to lock the CONTROL PRESSURE knob (a) at the pressure selected. With setscrew (d) tightened at a particular setting, the CONTROL PRESSURE knob (a) can be closed (toward –) and reset to the previous setting.

CAUTION

Do not rotate the control knob counterclockwise to raise axle. This causes the air to exhaust and allows the bag to fold unevenly which can result in damage to air bags.

TO RAISE THE PUSHER AXLE:

Set the axle raise/lower control at the AXLE LIFT position.

2-3. Steering Wheel and Column-mounted Controls.

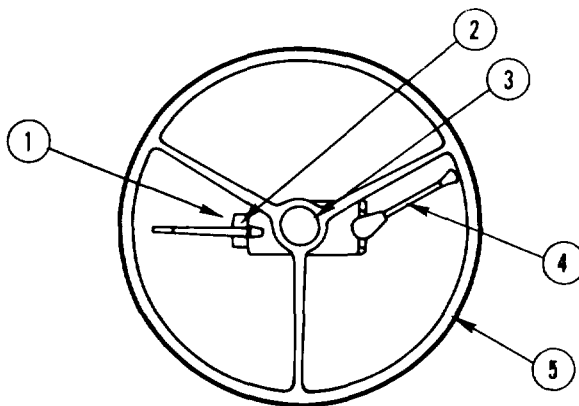


Figure 2-8. Steering Wheel and Column-mounted Controls.

KEY TO STEERING WHEEL AND COLUMN-MOUNTED CONTROLS	
1	<p>HAZARD SWITCH</p> <p>Pull out to turn on emergency flashers. Push turn signal lever up or down and return it to center to turn off emergency flashers.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">WARNING</div> <p>Hazard switch will override brake lights when in use. Use hand signals and exercise extra care when using hazard switch.</p>
2	<p>TURN SIGNAL LEVER</p> <p>Push up to turn on right turn signal. Pull down to turn on left turn signal. Return to center position when turn is completed.</p>
3	<p>HORN BUTTON</p> <p>Push button to sound electric horn.</p>
4	<p>TRAILER BRAKE HAND CONTROL</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">CAUTION</div> <p>After use, always return this control to its OFF position, or trailer brakes will burn up.</p> <p>Pull down to apply trailer brakes only. Use for stopping on slick surfaces and to help keep trailer from jackknifing. It can also be used on grades, when at a standstill. This way the vehicle will not roll backward when removing the right foot from the standard brake over to the accelerator pedal. Be sure to return control to its OFF position (all the way up).</p>
5	<p>STEERING WHEEL</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">CAUTION</div> <p>Do not hold the steering wheel in full steer position for more than 10 seconds as the pump fluid will overheat and could cause equipment damage.</p> <p>Rotate right to turn front wheels to the right. Rotate left to turn front wheels to the left.</p>

2-4. Operator's Seat Adjustment Controls

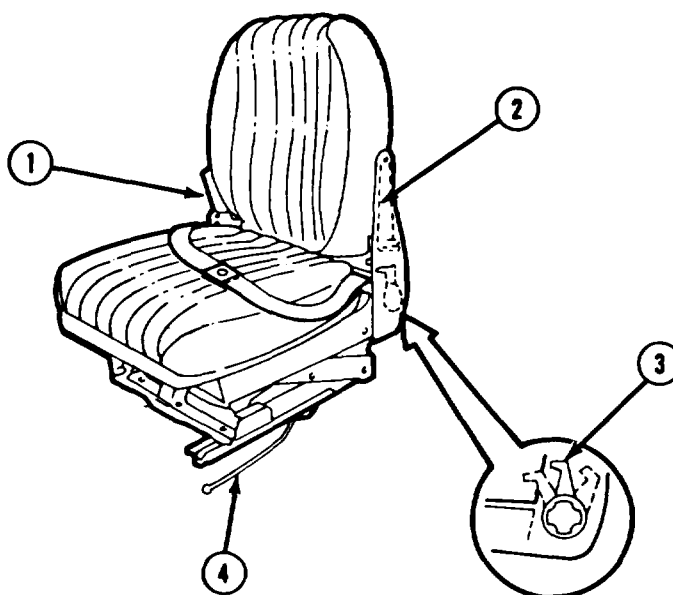
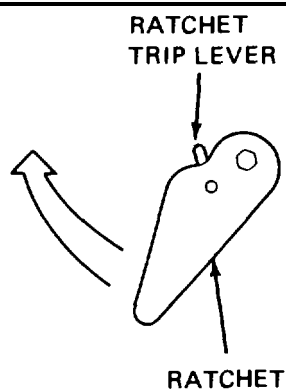


Figure 2-9. Operator's Seat Adjustment Controls.

KEY TO OPERATOR'S SEAT ADJUSTMENT CONTROLS	
1	<p>RIDE LEVEL ADJUSTMENT</p> <p>Use this control to adjust the torsion bar preload for your weight. To increase preload, while seated push ratchet trip lever up and operate the ratchet handle in the up and down direction until the indicator (item 3) is flush with the seat side frame as shown in the inset in Figure 2-9. To lower preload, while seated push ratchet trip lever down and operate ratchet handle in the up and down direction until the indicator indicates proper adjustment.</p>
2	<p>BACKREST ANGLE ADJUSTMENT CONTROL (located inside left frame upright]</p> <p>The backrest may be adjusted to three different angles for personal comfort. Lift up on the backrest and tilt it in the direction desired. When lowered, the backrest will lock in one of three positions.</p>



KEY TO OPERATOR'S SEAT ADJUSTMENT CONTROLS (Continued)**3 RIDE LEVEL INDICATOR (located inside left frame upright)**

This device indicates when the seat preload is adjusted properly for your weight using the ride level adjustment described in item 1 above. The tip of the indicator will be flush with the edge of the frame when the preload is correct as shown in the inset view in Figure 2-9.

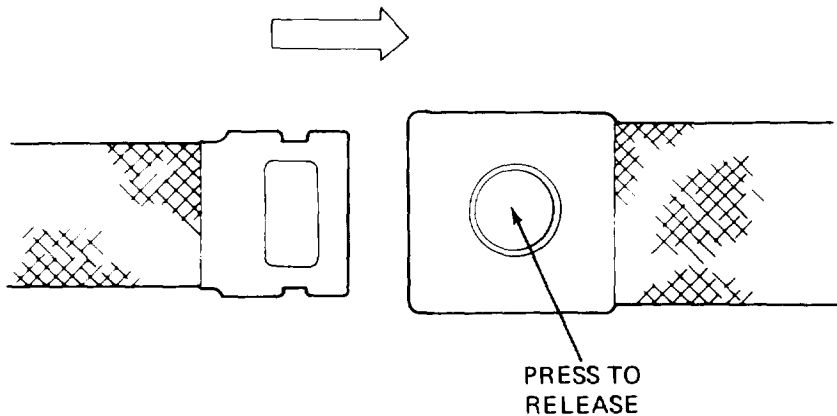
4 FORE AND AFT SEAT ADJUSTMENT CONTROL

Pull out on the lever to move seat forward or backward to adjust for individual leg length. The seat may be moved forward or back approximately six inches.

5 SEAT BELT ADJUSTMENT**WARNING**

Use of seat belts while operating your vehicle is mandatory as an aid in preventing personal injury in event of an accident.

Seat belts should be adjusted for a snug fit with the buckle securely fastened to prevent injury in event of accident. To adjust length of belt for fit, slip the belt through the buckle until it fits snugly with the other end of the seat belt snapped into the buckle. To release press the center of the buckle.



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2-5. Additional Cab Control

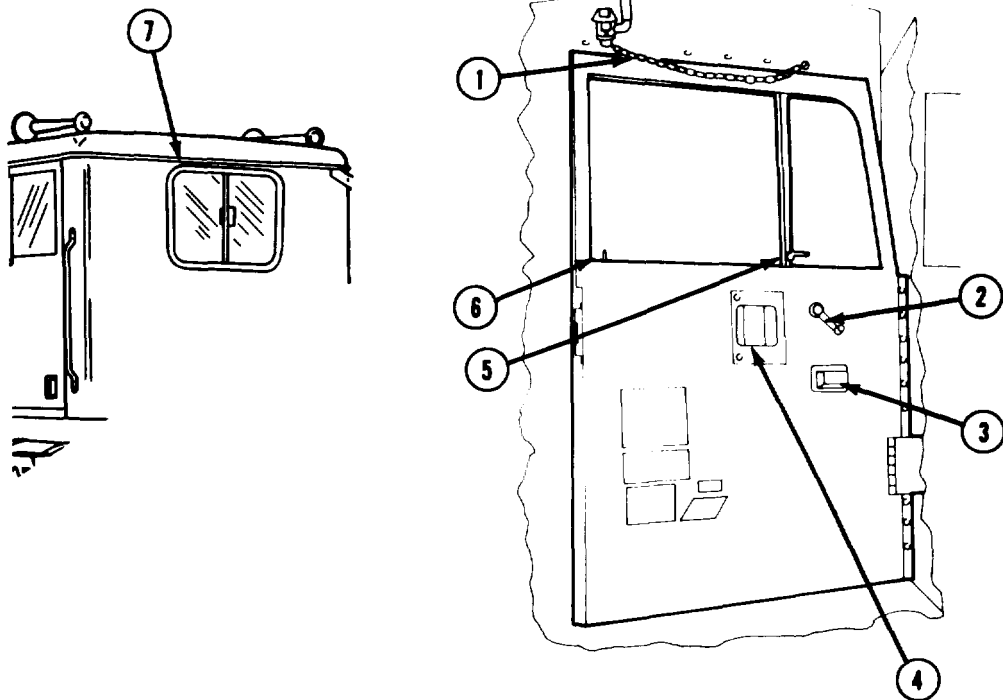


Figure 2-10. Additional Cab Controls,

KEY TO ADDITIONAL CAB CONTROLS	
1	AIR HORN CHAIN Pull downward to sound air horn; release to silence air horn.
2	CAB DOOR WINDOW GLASS REGULATOR HANDLE (one on each door) Rotate left regulator clockwise to lower left window glass, counterclockwise to raise left window glass. Rotate right regulator counterclockwise to lower right window glass, clockwise to raise right window glass.
3	ASH TRAY (on driver's door) Top flips up.
4	CAB DOOR INSIDE HANDLE (one on each door) Pull handle to open cab door from the inside.

KEY TO ADDITIONAL CAB CONTROLS (Continued)

NOTE

Door lock will release when door is opened from inside.

5 CAB VENT WINDOW HANDLE (one on each vent window)

Raise lever to unlock window. Then push outward on handle to open vent window. Pull inward to close vent window.

6 DOOR LOCK KNOBS

Push down to lock doors. Pull up to unlock doors or will unlock automatically when door handle inside is pulled, or the door is unlocked with a key from outside.

7 REAR SLIDING WINDOW (M916 AND M920)

Slide window toward passenger side of cab to open and return to close.

2-6. Winch Controls (M916 and M920).

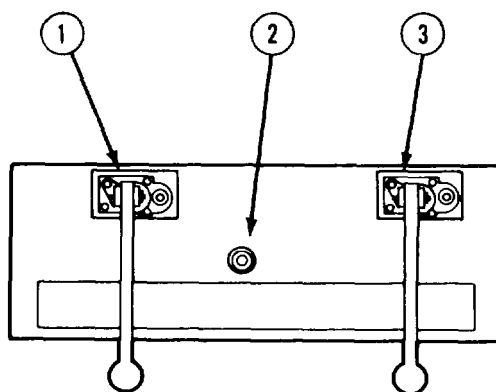


Figure 2-11. Winch Controls.

TA 073564

KEY TO WINCH CONTROLS	
1	<p>AUXILIARY AND SPEED CONTROL</p> <p>CAUTION</p> <p>Do not leave the lever in the auxiliary power (raised position) without the auxiliary system hooked up. This could result in the hydraulic system overheating.</p> <p>Raise this lever to apply auxiliary hydraulic power and return to center or lower position to shut off auxiliary power. Set the lever in the center position for slow winch operation and lower the lever for fast winch operation.</p>
2	<p>THROTTLE CONTROL</p> <p>Pull up on the control knob to increase engine speed (2100 rpm maximum) and push the knob in for slow engine speed.</p>
3	<p>LINE CONTROL</p> <p>Place lever in the STOP (center) position to stop the winch and apply the drum brake. Raise the lever to the LINE OUT position to release the drum brake and allow paying out the line. Lower the lever to the LINE IN position to apply hydraulic power for reeling in the line.</p>

Section II PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-7. Maintenance Forms and Records.

Every mission begins and ends with the paperwork. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses. They are a permanent record of the services, repairs, and modifications made on your vehicle. They are reports to organizational maintenance and to your commander. And they are a checklist for you when you want to know what is wrong with the vehicle after its last use, and whether those faults have been fixed. For the information you need on forms and records, see TM 38-750.

2-8. Preventive Maintenance Checks and Services (see Table 2-1).

- a. Do your before (B) PREVENTIVE MAINTENANCE just before you operate the vehicle. Pay attention to the CAUTIONS and WARNINGS.

- b. Do your during (D) PREVENTIVE MAINTENANCE while you operate the vehicle, and at halts or rest stops.
- c. Do your after (A) PREVENTIVE MAINTENANCE right after operating the vehicle. Pay attention to the CAUTIONS and WARNINGS.
- d. Do your weekly (W) PREVENTIVE MAINTENANCE weekly.
- e. Do your monthly (M) PREVENTIVE MAINTENANCE once a month.
- f. If something doesn't work, troubleshoot it with the instructions in this manual or notify your supervisor.
- g. Always do your PREVENTIVE MAINTENANCE in the same order, so it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry.
- h. If anything looks wrong and you can't fix it, write it on your DA Form 2404. If you find something seriously wrong, report it to organizational maintenance RIGHT NOW.
- i. When you do your PREVENTIVE MAINTENANCE, take along the tools you need to make all the checks. You always need a rag or two.

GENERAL MAINTENANCE PROCEDURES

Keep it clean - Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use drycleaning solvent (SD-2) on all metal surfaces. Use soap and water when you clean rubber or plastic material.

Bolts, nuts and screws - Check them all for obvious looseness, missing, bent or broken condition. You can't try them all with a tool, of course. But look for chipped paint, bare metal, or rust around bolt heads. If you find one you think is loose, tighten it, or report it to organizational maintenance.

Welds - Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to organizational maintenance.

Electric wires and connectors - Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure the wires are in good shape.

Hoses and fluid lines - Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, of course. But a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector tighten it. If something is broken or worn out, report it to organizational maintenance.

Fluid leakage - It is necessary for you to know how fluid leakage affects the status of your vehicle. The following are definitions of the types/classes of leakage an operator or crew member needs to know to be able to determine the status of his/her vehicle. Learn, then be familiar with them and REMEMBER - WHEN IN DOUBT, NOTIFY YOUR SUPERVISOR!

Leakage	Definitions For Crew/Operator PMCS						
<div>CAUTION</div> <p>EQUIPMENT OPERATION IS ALLOWABLE WITH MINOR LEAKAGES (CLASS I OR II). OF COURSE, CONSIDERATION MUST BE GIVEN TO THE FLUID CAPACITY IN THE ITEM/SYSTEM BEING CHECKED/INSPECTED. WHEN IN DOUBT, NOTIFY YOUR SUPERVISOR.</p> <p>WHEN OPERATING WITH CLASS I OR II LEAKS, CONTINUE TO CHECK FLUID LEVELS AS REQUIRED IN YOUR PMCS.</p> <p>CLASS III LEAKS SHOULD BE REPORTED TO YOUR SUPERVISOR OR TO ORGANIZATIONAL MAINTENANCE.</p> <table><tr><td>CLASS I</td><td>Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.</td></tr><tr><td>CLASS II</td><td>Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.</td></tr><tr><td>CLASS III</td><td>Leakage of fluid great enough to form drops that fall from the item being checked/inspected.</td></tr></table>		CLASS I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.	CLASS II	Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.	CLASS III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected.
CLASS I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.						
CLASS II	Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.						
CLASS III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected.						

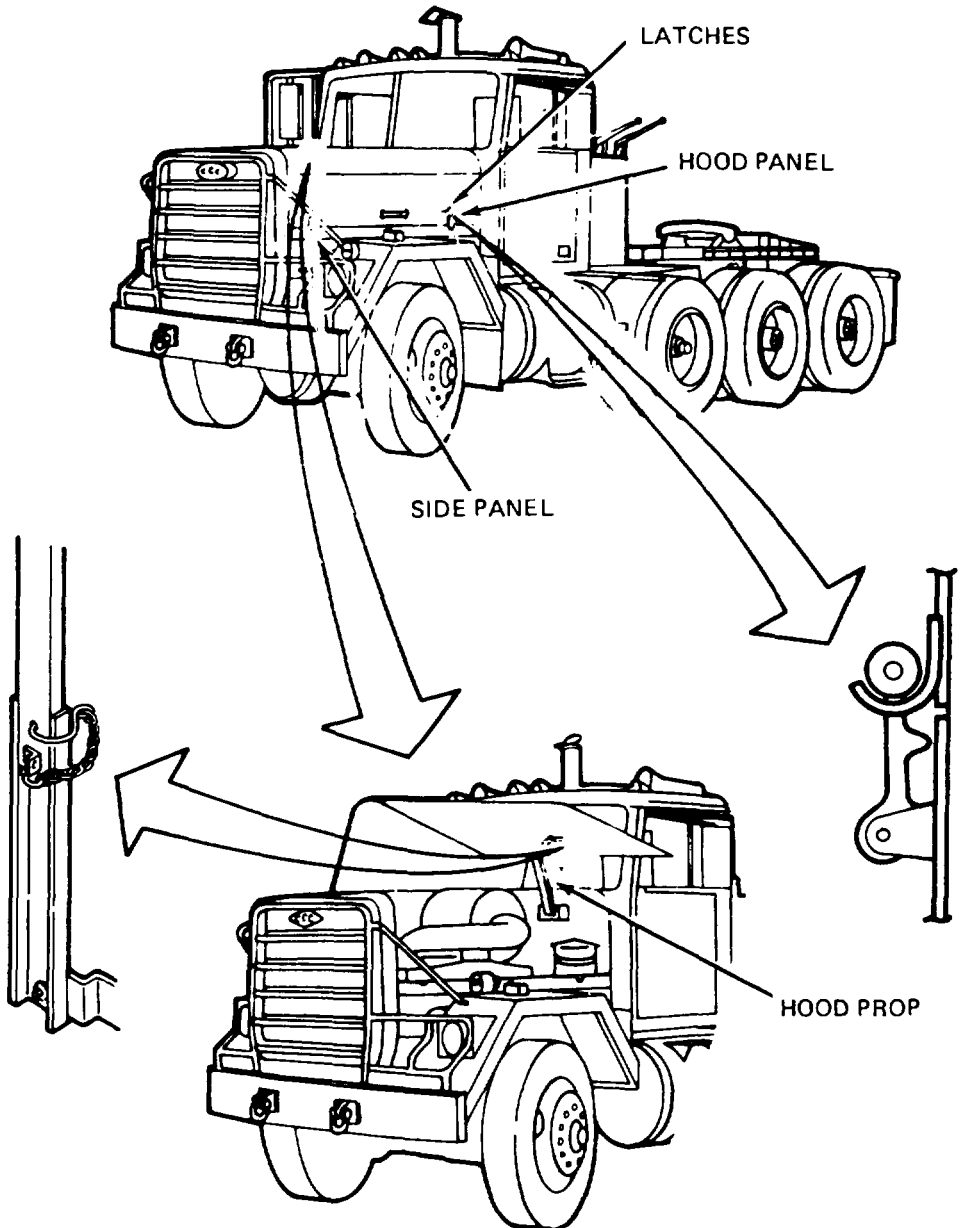
OPENING HOOD

WARNING

After raising the hood, insert the S shaped safety hook through two matching holes in the prop channels to prevent the hood from falling accidentally.

- To perform checks or services on components located in the engine compartment, you will need to raise one or both of the hinged hood panels.
- The right-hand hood side can be raised to perform most of all routine maintenance such as checking or filling the radiator and engine oil. The left-hand side is used for checking power steering fluid, servicing the fuel filter and filling the alcohol evaporator reservoir.

- Raise the hood to the highest point, then slowly lower the hood until the prop locks up. Insert the S shaped safety hook through matching holes in the prop channels.
- To lower the hood; remove the safety hook and stow it in the grommet in the upper channel bracket, raise the hood to its highest position and then slowly lower the hood.



TA 233228 ■

Change 3 2-29

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
			<p><u>WARNING</u></p> <p>Always Remember The CAUTIONS, WARNINGS And NOTES Before Operating This Vehicle And Prior to PMCS.</p> <p>Perform all PMCS checks if:</p> <p>a. You are the assigned driver but have not operated the vehicle since the last weekly inspection.</p> <p>b. You are operating the vehicle for the first time.</p>	

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
1	Before	Exterior Left Front	<u>DRIVER</u> NOTE If leakage is detected, further investigation is needed to determine the location and cause of the leak. Look under tractor for signs of fluid leakage.	Class III leakage of oil, fuel, or coolant is evident.
2	Before	Left Side and Rear of Vehicle	<u>DRIVER</u> a. Look under vehicle for obvious fluid leaks such as oil, water and fuel. NOTE If leakage is detected, further investigation is required to determine location and cause of leak. b. Visually check left side tires. c. Check that mud flaps are in place and intact.	a. Class III leaks are evident. b. Any tire(s) missing or unserviceable.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	Crewmember Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
3	Before	Fifth Wheel and Ramps M915, M916 and M920	<p>DRIVER</p> <p>a. Check that lockjaw pins do not protrude more than 1/16" above surface of top plate, or have any lateral or vertical movement.</p> <p>b. Check for bent, worn, broken or missing parts. Check for vertical and lateral movement of the lockjaw pins.</p> <p>c. Check slide track for damage and free movement of fifth wheel assembly.</p> <p>d. Check the primary and secondary release handles for operation and damage.</p> <p>NOTE</p> <p>Air lines and cylinder are located under fifth wheel top plate.</p> <p>e. Check air lines and air cylinder for damage.</p>	<p>a. Lockjaw pin extends more than 1/16" or has lateral or vertical movement.</p> <p>b. Bent, worn, broken or missing parts.</p> <p>d. Primary or secondary release handles are damaged or do not function.</p> <p>e. Any air leak.</p>

M916-M920
M915

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
4	Before	Air Hoses and Connectors M915, M916 and M920	<u>DRIVER</u> Inspect tractor to trailer air hoses for cracking or damaged connectors. Inspect trailer electrical connectors.	Hose(s) or coupler(s) leaking, damaged or missing.
5	Before	Right Side Tire(s)	<u>DRIVER</u> Visually check tires (including spare) for under-inflation,	Any tire is missing or unserviceable.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
6	Before	Front of Vehicle	<p><u>DRIVER</u></p> <p>Look under vehicle for obvious fluid leaks such as oil, fuel and water.</p> <p>NOTE</p> <p>If leakage is detected, further investigation is needed to determine the location and cause of the leak.</p>	Any Class III leak evident.
7	Before	Wind-shield Wipers/Blades	<p><u>DRIVER</u></p> <p>Check windshield for any cracks that would impair vision. Check wiper arms and blades for damage.</p> <p>NOTE</p> <p>Cracked or broken windshield may violate AR 385-55.</p>	

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

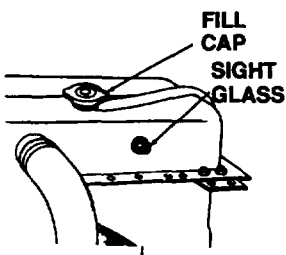
Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
8	Before	Cooling System	<p><u>DRIVER</u></p> <p><u>WARNING</u></p> <ul style="list-style-type: none">• Raise the hood to the highest point, then slowly lower the hood until the prop locks up. Inspect condition of support and brackets. After raising the hood, insert the S-shaped hook through the two matching holes in the prop channel to prevent the hood from accidentally falling. Reverse this procedure to lower the hood.• If engine has been running, let radiator cool before removing cap. Remove cap in two steps. First, place a thick cloth over the cap and slowly rotate cap to its first stop, pause and let pressure escape from cooling system. Then rotate cap further until you can remove it. Failure to follow this procedure can result in serious burns. <p>Check coolant level in radiator sight glass. If level is low, add a mixture of antifreeze and clean water to bring coolant to proper level (check with organizational maintenance for the proper mixture).</p>	Class III leaks evident.
				

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
9	Before	Cab Fire Ex-tin-guisher	<p><u>DRIVER</u></p> <p>a. Check for missing or damaged fire extinguisher under dashboard on driver's side.</p> <p>b. Check gage for proper pressure of about 150 psi (1034 kPa).</p> <p>c. Make sure mounting is secure.</p> <p>d. Check for damaged or missing seal.</p>	<p>a. Fire extinguisher missing or damaged.</p> <p>b. Pressure gage needle in RE-CHARGE area.</p> <p>d. Seal damaged or missing.</p>

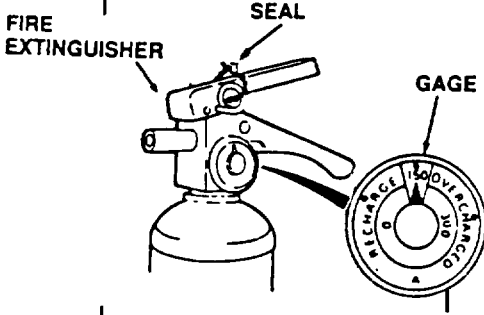


Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
10	Before	Interior of Vehicle	<u>DRIVER</u> Check seat and seat belt for proper adjustment and ability to lock, security of pins and bolts and tears. NOTE Missing, torn or inoperative seat belt may be in violation of AR 385-55.	
11	Before	Controls and Instruments	<u>DRIVER</u> <u>WARNING</u> If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions. NOTE The engine must be running to perform the following checks. a. Start engine. <u>CAUTION</u> A sudden rise in temperature during engine warm up indicates defective cooling system. b. Check air cleaner indicator. If in red, clean filter and reset.	

a. Engine will not start.

b. Air cleaner stays in red.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
11	Before	Controls and Instruments (Continued)	<u>DRIVER</u> c. Check voltmeter needle should be in green area (normal operating range 12 to 15 volts). d. Check transmission oil temperature gage (should read 40° F to 220° F for normal operating range; may not read at low temperature). e. Check air pressure gage (front and rear). Normal range is 90 to 120 psi. Make sure warning light and buzzer is operational. f. Check engine water temperature gage (normal range is 165° - 195° F) with engine warmed up.	c. Readings above or below the green area. d. Oil temperature exceeds 220° F. e. Reads less than 60 psi. Warning light and/or buzzer stays on or not operational. f. Temperature gage reads less than 165° or exceeds 220° F.

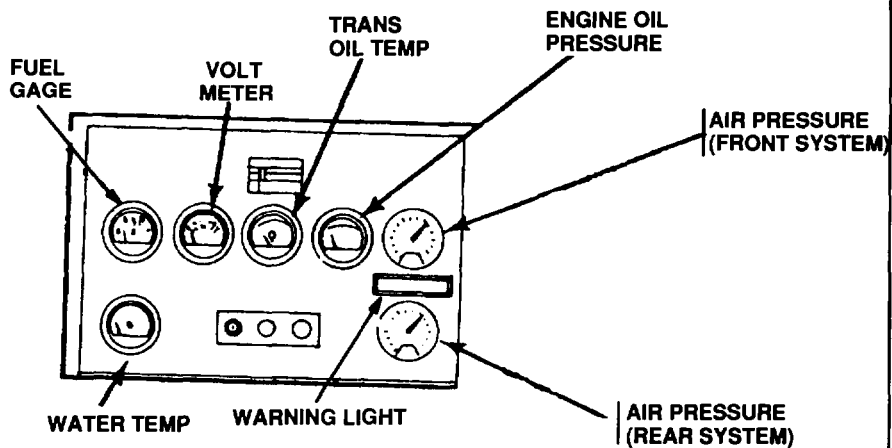


Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
11	Before	Controls and Instruments (Continued)	<u>DRIVER</u> g. Check engine oil pressure gage (normal range at 2100 RPM is 40 to 75 psi. Range at idle is 5-20 psi). h. Check transmission and ratio selector. Shift in all ranges observing unusual stiffness, abnormal operation or binding. i. Check pusher axle controls and gages (M917, M919 and M920). j. Check engine retarder for braking ability. k. Check steering response. l. Listen for leakage in exhaust system. m. Check tachograph rpm needle for proper response to throttle. Check idle speed 580 to 650 rpm. n. Check parking brake; pull out to apply, push in to release. With parking brake applied place transmission in gear. Vehicle should not move. o. Move vehicle 10 feet and check service brakes for pulling, grabbing or other abnormal operation.	g. Reads less than 30 psi at 2100 RPM. h. Transmission or ratio selector inoperative or binding. i. Gage or pusher axle are inoperative. j. Engine retarder is inoperable. k. Steering binds or is unresponsive, l. Pipe, clamp or hardware damaged or missing. m. Tachometer indicates less than 580 rpm or more than 650 rpm at idle. n. Parking brake is inoperative. o. Brakes do not stop vehicle.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	Crewmember Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
12	Before	Air Dryer	<p><u>DRIVER</u></p> <p>Listen for automatic drain valve operation. With engine running, when air pressure reaches 120 psi, a sharp burst of air will be heard at the drain valve each time the compressor unloads.</p>	Automatic drain valve inoperative.

The diagram illustrates the location of the air dryer and automatic drain valve on the vehicle. On the left, a detailed view of the air dryer is shown, with an arrow pointing to the 'AIR DRYER' label and another arrow pointing to the 'AUTOMATIC DRAIN VALVE' at the bottom. On the right, a side view of the vehicle is shown, with an arrow pointing to the 'M916-M920' model and another arrow pointing to the 'M915' model. The air dryer is located on the side of the vehicle, near the front.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	Crewmember Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
12.1	Before	Trailer Brakes	<p>DRIVER</p> <p>NOTE</p> <p>Perform this check with the trailer empty and the trailer loaded after the tractor/trailer are coupled.</p> <p>a. Check for air leaks at the intervehicular connecting hoses, relay valve and air reservoirs.</p> <p>b. Apply trailer brakes only and attempt to move the tractor/trailer combination.</p>	<p>a. Any air leaks are present.</p> <p>b. Brakes fail to hold tractor/trailer combination from moving.</p>
13	During	Steering/Swaying	Check vehicle steering response for unusual free play, binding, wander, or shimmy.	Loose or binding steering action or steering wheel difficult to turn. Steering inoperative.
14	During	Gages	Monitor all gages during operation.	Any gage not functioning properly.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

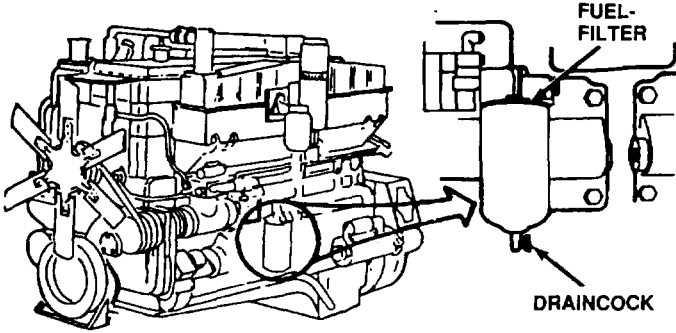
Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
15	After	Fuel Filter	<p><u>DRIVER</u></p> <p>NOTE With engine running, open drain on bottom of filter. Drain fuel into suitable container until fuel runs clear. Close drain securely. Dispose of fuel in accordance with local requirements. Assistant required for safety.</p> <p>Check for leaks or damage.</p> <p>CAUTION If one quart or more of fuel must be drained from fuel filter before fuel is clear, fuel tank and fuel system must be inspected carefully. Report fuel contamination to organizational maintenance.</p>	Class III fuel leakage.
				

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

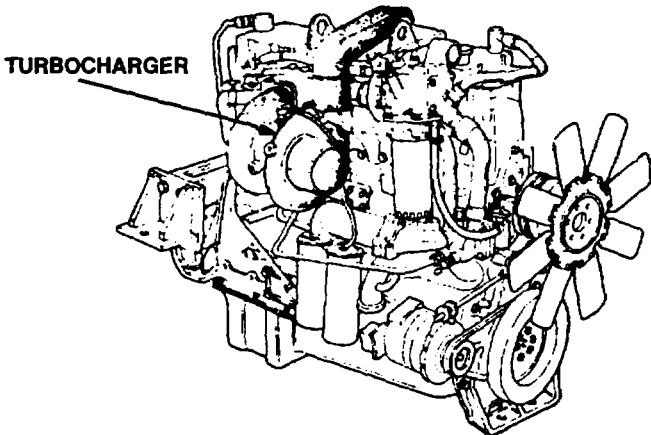
Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
16	After	Turbo-charger	<u>DRIVER</u> When you shut down the engine, listen to the turbocharger for rattling noises.	Unusual or rattling noises or a defective turbocharger.
				
17	After	Exterior of Vehicle (Left Side)	<u>DRIVER</u> Check left side view and spotter mirrors and arms.	

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

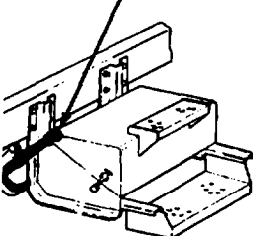
Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
18	After	Trans- mission	<p><u>DRIVER</u></p> <p>Shut off engine and let sit five minutes before checking the oil level. The level should be between the add and full marks on the dipstick. If necessary to service, fill to within 1/4 inch of full mark.</p> <p>TRANSMISSION DIPSTICK</p> 	
19	After	Winch and Winch Reser- voir M916 and M920	<p><u>DRIVER</u></p> <p>Visually inspect winch, reser- voir lines and hoses for leakage and damage.</p> <p>a. Check fluid level. Fluid level should be at full mark on sight</p> <p>b. Check cable for kinks, frays and breaks in wire.</p> <p>c. During operation, check for oil leakage and adequate control response.</p>	<p>Hoses/lines are dam- aged. Class III leaks are evident.</p> <p>b. Winch cable frayed, has kinks that cannot be removed, is broken or missing.</p> <p>c. No control re- sponse. Class III leaks evident.</p>

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember Procedure</u>	Not Fully Mission Capable If:
		Item to Check/Service		
20	After	Left Front, Left Side, Rear and Right Side, Right Front	<u>DRIVER</u> a. Check for obvious damage to vehicle. b. Check under vehicle for signs of leaks. c. Visually check left side tires for under-inflation, cracks, gouges or bulges. Remove all penetrating objects.	a. Any damage that would prevent operation. b. Class III leaks. c. Any tire is missing or unserviceable if there is evidence of cuts, gouges and bulges which would result in tire failure during operation.
21	After	Exterior of Vehicle (Right Side)	<u>DRIVER</u> Check right side view mirror and arm for damage.	

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

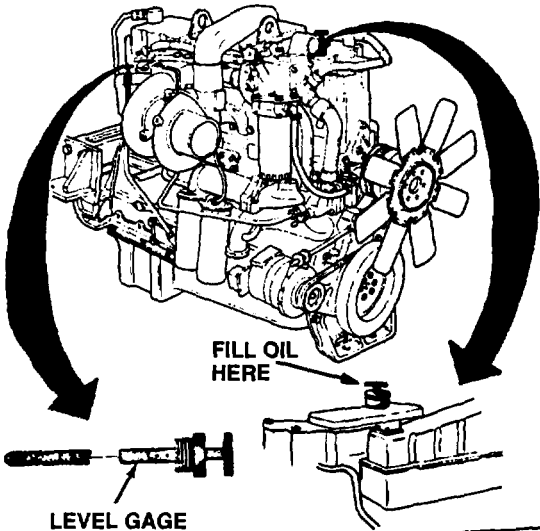
Item No.	Interval	Location	Crewmember Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
22	After	Engine Oil Level	<p><u>DRIVER</u></p> <p><u>WARNING</u></p> <p>The engine must be shut off before performing the following checks.</p> <p>Check the level gage for proper level. The gage should be between the low and high marks. DO NOT OVERFILL.</p>	Engine has used excessive amount of oil (more than one quart in 100 miles).
 <p>The diagram shows a top-down view of an engine. A large curved arrow points from the engine to a detailed view of the oil fill point and level gage. The fill point is labeled 'FILL OIL HERE' with an arrow pointing to it. The level gage is labeled 'LEVEL GAGE' with an arrow pointing to it. The level gage has a handle and a scale with markings.</p>				

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
23	After	Power Train (Engine, Transmission and Transfer)	<u>DRIVER</u> a. Check for fluid leakage and damage.	a. Any Class III leak of oil, fuel or coolant.
		Oil Filters	b. Check for obvious signs of leakage.	b. Any Class III oil leak.
		Radiator	c. Visually check for obvious coolant leakage, damaged or leaking hoses or damaged mounting brackets.	c. Any Class III leak or damaged mounting brackets are evident.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

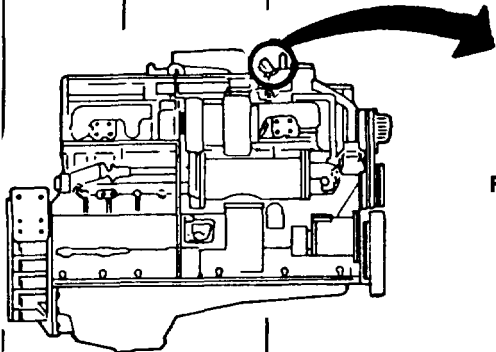
Item No.	Interval	Location	<u>Crewmember Procedure</u>	Not Fully Mission Capable If:
		Item to Check/Service		
24	After	Drive Belts and Fan	<p><u>DRIVER</u></p> <p>a. Check for frayed/cracked belts.</p> <p>b. Check belt adjustment. Deflection should not be more than about 1/2 inch. If belts are loose, notify organizational maintenance</p>	<p>a. Any drive belt is broken, cracked to the belt fiber, has more than one crack (1/8 inch in depth or 50% of belt thickness), has frays more than 2 inches longer or excessive play.</p>

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

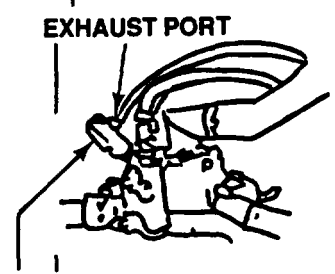
Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
24	After	Drive Belts and Fan Continued	<u>DRIVER</u> c. Check pulley for damage or cracks. (WaterPump) d. Check for any obvious coolant leakage or damage. (Air Compressor) e. Check for obvious signs of oil leakage or damage (oil in air tanks).	c. Any pulley damaged or cracked. d. Any Class III coolant leak or damage is evident. e. Any Class III oil leak or damage is evident.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	Crewmember Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
25	After	Fan Clutch And Actuator	<p><u>DRIVER</u></p> <p><u>WARNING</u> Engine must be off to perform this check.</p> <p>a. Check the fan clutch for damage. Look for loose attaching bolts.</p> <p>b. Inspect hoses for looseness at the fittings and inspect for air leaks, fraying, cracks and abrasions.</p> <p>c. Check fan clutch actuator for signs of leaks and loose hose connections.</p>	<p>a. Damage or loose hardware.</p> <p>b. Air leaks are observed.</p> <p>c. Air leakage from the exhaust port when engine temperature is below 185° F.</p>



The diagram shows a side view of an engine. A circular callout with an arrow points to a component on the right side of the engine, which is the fan clutch actuator.



The diagram shows a close-up of the fan clutch actuator and the exhaust port. The exhaust port is labeled "EXHAUST PORT" and the fan clutch actuator is labeled "FAN CLUTCH ACTUATOR".

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
26	After	Horns	<u>DRIVER</u> Check operation of horns if tactical situation permits. NOTE Operation of vehicles with in-operative horn may violate AR 385-55.	
			<u>DRIVER</u> Check operation of headlights, taillights, turn signals, brake lights and blackout lights. NOTE Operation of vehicle with malfunctioning lights may violate AR 385-55.	
27	After	Lights	<u>DRIVER</u> Check operation of headlights, taillights, turn signals, brake lights and blackout lights. NOTE Operation of vehicle with malfunctioning lights may violate AR 385-55.	
28	After	Air Reservoir	<u>DRIVER</u> Drain air reservoirs completely. Check air lines and reservoirs for leaks and damage. NOTE Vehicles should not have an automatic drain valve. Check vehicle and manually drain tank.	Any leaking or damaged air lines or reservoirs, or oil coming from air tank.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

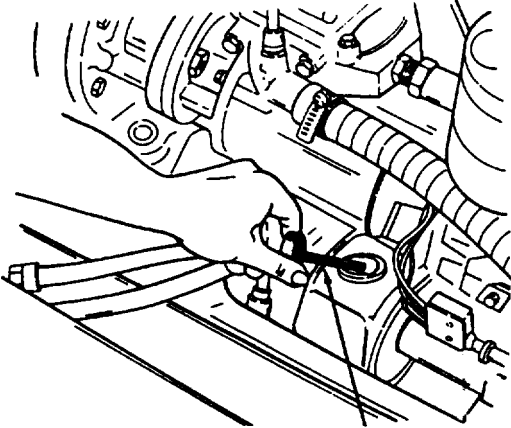
Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
29	Weekly	Steering Pump	<p><u>DRIVER</u></p> <p>CAUTION DO NOT OVERFILL.</p> <p>Check pump for leakage. Inspect pump hoses for deterioration and leaks. Inspect for loose mounting or damage.</p> <p>With fluid hot and engine off, check fluid level in the steering pump for proper level. If level is low, add fluid to bring level to full mark on dipstick.</p>	Any damage to hoses or mounting. Class III leak evident.
			 <p>DIPSTICK AND CAP</p>	

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

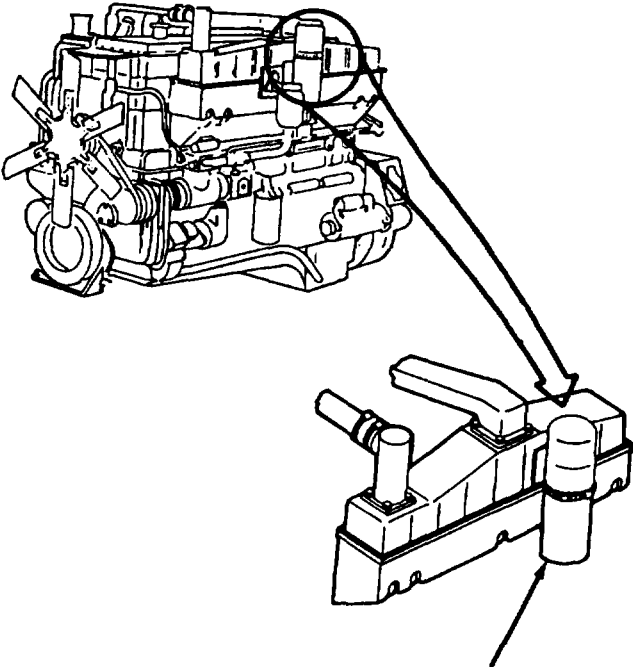
Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
30	Weekly	Ether Quick-Start Assembly	<u>DRIVER</u> Inspect mounting for loose hardware. Check lines, fittings and canister for damage.	Any reservoir damaged or leaking.
 <p>ETHER QUICK START</p>				

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:								
		Item to Check/ Service										
31	Weekly	Tires	<u>DRIVER</u>	Tread worn beyond wear bar.								
			a. Check tire tread depth. Tread should not be worn beyond the level of the wear bar. b. Check for correct air pressure.									
Empty 1/2 Payload Full Payload	M915		M916		M917		M918		M919		M920	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear
	70	50	90	50	95	50	75	50	100	50	100	50
	80	50	90	50	85	60	65	50	90	60	100	50
	95	70	95	90	100	90	80	50	100	90	100	90
32	Weekly	Wheels, Studs and Nuts	Ensure all wheel stud nuts are tight using wheel stud nut wrench and handle.	Any wheel stud is missing or stud nut is loose.								
33	Weekly	Air System	With air system charged and engine off check air lines and fittings for leaks and damage.	Any reservoir or line damaged or leaking.								
34	Weekly	Frame	Visually inspect frame side rails, crossmembers, cab supports and underbody supports for loose or missing bolts and cracked or broken welds.	Loose or broken side rails, cab supports, crossmembers, missing bolts or broken welds.								
35	Weekly	Fuel Tank	Check fuel tank, lines and fittings for leakage.	Class III leakage evident.								

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

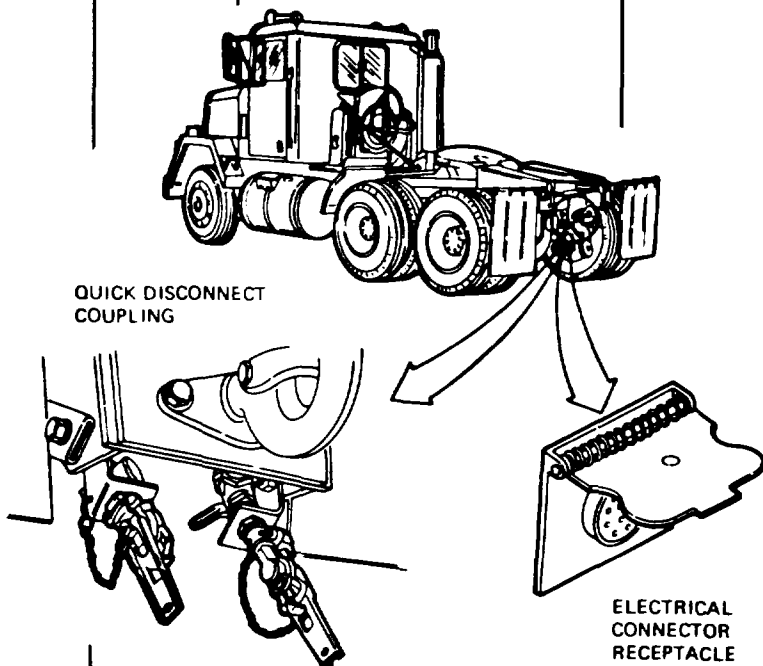
Item No.	Interval	Location	Crewmember Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
36	Weekly	Trailer Couplings	<u>DRIVER</u> a. Check electrical connectors and cable for damage. b. Check trailer air lines for damage (front and rear).	a. Electrical cable missing or damaged. b. Air lines leaking or damaged.
 <p>The diagram shows a side view of a truck. Two arrows point from the rear of the truck to detailed views of the trailer couplings and electrical connectors. The left view shows two 'QUICK DISCONNECT COUPLING' units. The right view shows an 'ELECTRICAL CONNECTOR RECEPTACLE'.</p>				
37	Weekly	Spare Tire Davit	Check spare tire davit for proper operation.	

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

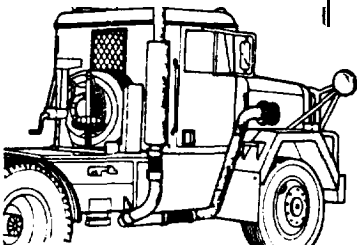
Item No.	interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
38	Weekly	Winch M916& M920	<u>DRIVER</u> Check winch for secure mounting. Check winch frame for cracks.	Air bags do not hold air or leak.
39	Weekly	Pusher Axle Air Bags M917, M919 & M920	Check pusher axle air bags for gouges, cracks, cuts and exposed cord fabric. Check for interference with surrounding structures. Check for oil or diesel fuel on air bag. Clean as required. Air bags may be checked with the pusher axle in the raised or lowered position.	
40	Weekly	Exhaust System	<p><u>WARNING</u></p> <p>Do not touch hot exhaust pipes with bare hands. Severe burns will result.</p> <p>Inspect exhaust stack and muffler for obvious damage and/or leaks and rusted through conditions.</p> <p>NOTE</p> <p>Operation of vehicle with damaged exhaust may violate AR 385-55.</p> 	Pipe, clamp, or hardware damaged or missing.

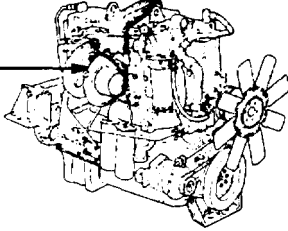
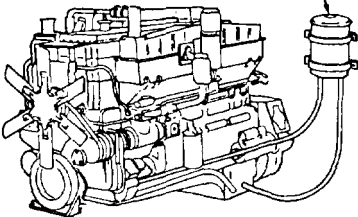
Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
41	Weekly	Batteries	<p><u>DRIVER</u></p> <p><u>WARNING</u></p> <ul style="list-style-type: none"> ● Don't smoke, have open flames, or make sparks around the batteries, especially if the caps are off. Batteries can explode and cause injury or death. ● Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact battery terminal, a direct short may occur resulting in instant heating, damage to equipment and injury to personnel. <p>Check electrolyte level. Electrolyte should be filled to the level/split ring in the battery filler opening (vent). If fluid is low, fill with distilled water to the level ring. Run vehicle at least 15 minutes to charge battery. If fluid is gassing (boiling) notify organizational maintenance.</p>	Battery is unserviceable, missing, leaking, terminals or cables are loose, corroded, or hold downs are not secure.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
42	Weekly	Air Cleaner	<u>DRIVER</u> <u>WARNING</u> If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC Officer or NBC NCO for appropriate handling or disposal instructions. Empty automatic dust unloader.	Dust unloader missing/damaged.
			Check for any rusted through condition or damage that would affect operation of the vehicle.	
			a. Visually inspect the cab mounts for cracks, breaks and damage. <u>UNDER HOOD CHECKS</u> <u>WARNING</u> After raising the hood, insert the s-shaped hook through the two matching holes in the prop channel to prevent the hood from accidentally falling. b. Check door frame, windows, and handles for proper operation.	
43	Weekly	Body		
44	Weekly	Cab		a. Cab mounts or welds cracked or broken.

Table 2-1. Preventive Maintenance Checks and Services for Models M915-M920

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
45	Weekly	Cooling System	<u>DRIVER</u> Check for leaks, damaged fins, loose or damaged hoses, debris or dirt in radiator fins.	Class III leakage evident.
46	Weekly	Turbo-charger	Inspect oil lines and fittings for signs of leaks or damage. Check air intake and exhaust ducts for loose bolts and clamps. Look for signs of hose damage.	Class III leaks evident. Damage to intake or exhaust ducts
<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;">TURBOCHARGER</div>  </div>				
47	Weekly	Oil Bypass Filter	Check lines and fittings for leaks, looseness and damage.	Class III leakage evident.
<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;">OIL BYPASS FILTER</div>  </div>				

Section III. OPERATION UNDER USUAL CONDITIONS

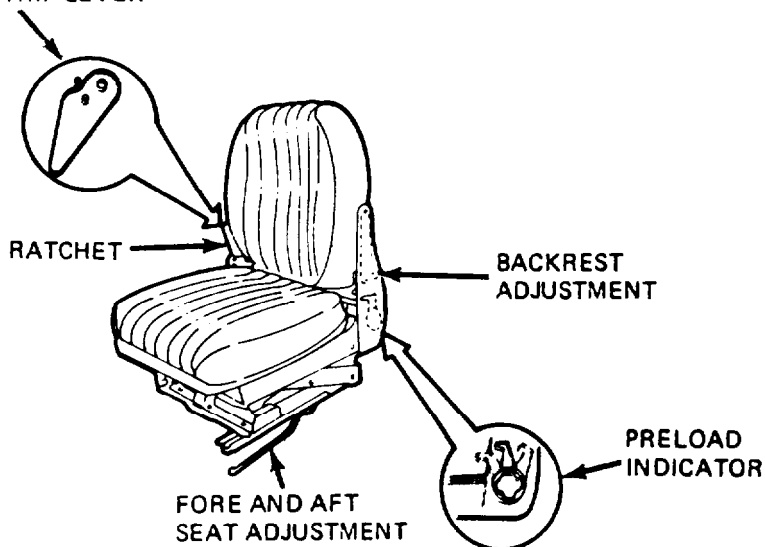
2-9. General.

This section covers the procedures you will normally be using in operating the M915 thru M920 truck end truck tractors. Specific instructions are given for starting and driving the truck, operating its components, and stopping, parking, and shutting down the vehicle. Throughout this section, guidelines are given for adjusting control settings and driving techniques as well as the specific operating procedures so that you will be able to readily respond to different situations when you are operating your truck.

2-10. Assembly and Preparation for Use.

BEFORE YOU OPERATE YOUR TRUCK

- KNOW THE CAPABILITIES OF YOUR TRUCK. DO NOT TRY TO MAKE YOUR TRUCK EXCEED THESE LIMITATIONS.
 - KNOW HOW TO USE THE FEATURES OF YOUR TRUCK IN THE SAFEST AND MOST EFFICIENT WAYS TO ACCOMPLISH YOUR MISSION.
 - KNOW YOUR OPERATOR'S CONTROLS AND INDICATORS BEFORE STARTING AND DRIVING YOUR TRUCK.
- a. PERFORM (B) PMCS.
 - b. While sitting in your seat, adjust it as necessary for comfort and to ensure that all controls are within easy reach.

RATCHET TRIP LEVER

WARNING

Use of seat belts while operating your vehicle is mandatory as an aid in preventing injury in event of an accident.

Ride Level Adjustment. While seated, pull up on the ratchet trip lever and operate the ratchet up and down to increase preload. Push ratchet trip lever down and operate ratchet to decrease preload. The seat will adjust for weights from 130 to 275 pounds. When properly adjusted, the preload indicator will be as shown in the figure, with the tip of the indicator flush with the seat frame.

2. Backrest Angle Adjustment. Lift upon backrest and tilt forward or backward. Lower the backrest so that it engages one of three notched positions.
3. Fore and Aft Seat Adjustment. Pull out on lever (towards door) and move seat forward or backward to adjust for your leg length. Seat may be moved forward or back 6 inches.

2-11. Starting and Warmup (+32°F).

- a. **MAKE SURE YOU APPLY THE PARKING BRAKE.** Pull out to set brake. Push in to release brake.

NOTE

These trucks have a neutral safety switch which prevents the engine from being started if the transmission is in gear.

- b. **PLACE THE TRANSMISSION RATIO SELECTOR IN THE NEUTRAL (N) POSITION.**
- c. **TURN THE ENGINE RUN SWITCH TO THE ON POSITION.** The low air pressure buzzer should sound and the following warning lights should illuminate:
 - **LOW OIL PRESSURE**
 - **LOW AIR PRESSURE**
 - **PARKING BRAKE**
- d. Make sure the PTO (M916 through M920) control is pushed in and the differential lock/unlock control set to UNLOCK for the M915 and the center position for the M916 through M920 (the DIFF LOCK OUT light will be lit if the control is in the LOCK position).
- e. Make sure that all accessories are turned off and that the engine retarder system is disengaged.

C A U T I O N

If the engine fails to start within 15 seconds, release the START button and allow the starting motor to cool for two minutes before you try again to start the engine. Never depress the START button while the starting motor is still running from the previous try. If the engine fails to start after four attempts, refer to Table 3-1, Troubleshooting Procedures. Failure to follow these precautions can result in serious damage to the starting motor.

- f. Press the START button while slightly depressing the accelerator pedal . The engine should start. The engine temperature warning light should illuminate when the starter button is depressed. Do not depress Engine Start button for more than 15 seconds with two minute intervals between crankings.

C A U T I O N

During warmup do not operate the engine above 1000 rpm until normal engine idle speed oil pressure is indicated on the Engine Oil Pressure gage. This allows time for oil circulation to reach the turbocharger and for engine parts to warm up gradually. (Range at idle speed is 5-20 psi.)

- g. After the engine starts, maintain an idle speed of 580 to 650 rpm.

C A U T I O N

If there is no indication of oil pressure after 10 seconds at idle, shut down the engine immediately by turning the key switch to OFF and refer to Table 3-1 for troubleshooting and corrective action. **DO NOT ATTEMPT TO RESTART THE ENGINE UNTIL THE PROBLEM HAS BEEN CORRECTED.**

- h. Simultaneously with step g., observe the oil pressure gage. At low idle speed the gage should indicate 5-20 psi at normal operating temperature.

- i. Observe all instruments for proper indications, Also, observe warning lights for the following:
 - The Low Oil Pressure warning light should go off.
 - The Low Air Pressure warning light and buzzer should go off.
 - The Park Brake warning light should remain on until the Park Brake is released. Don't release the park brake until Low Air Pressure light and buzzer shut off.

2-12. Cold Weather Starting (at temperatures below 32°F).

- a. PERFORM (B) PMCS.
- b. While sitting in your seat, adjust it as necessary for comfort and to ensure that all controls are within easy reach (refer to paragraph 2-10).
- c. MAKE SURE YOU APPLY THE PARKING BRAKE.

NOTE

The engine cannot be started by pushing or towing the truck.

NOTE

The truck has a neutral safety switch which prevents the engine from being started if the transmission is in gear.

- d. PLACE THE TRANSMISSION RATIO SELECTOR IN THE NEUTRAL (N) POSITION.
- e. Make sure all accessories are turned off and the engine retarder system is disengaged.
- f. TURN THE KEY SWITCH TO THE ON POSITION. The low air pressure buzzer should sound and the following lights should illuminate:
 - LOW OIL PRESSURE
 - LOW AIR PRESSURE
 - PARKING BRAKE
 - TRANSMISSION HEATER STRIP INDICATOR LAMP
- g. Make sure the PTO control is set to DISENGAGED.

CAUTION

Never press the ETHER QUICK-START button without cranking the engine. A build up of ether fumes in the intake manifold system can result in combustion in the manifold.

- h. Depress the accelerator slightly while pressing the START button.
- i. Press the ETHER QUICK-START button for 4 to 5 seconds and release to automatically inject a set amount of ether into the intake manifold while cranking the engine. At temperatures below 0° F it may be necessary to repeat steps h. and i.

CAUTION

If the engine fails to start within 15 seconds, release the START button and allow the starting motor to cool for 2 minutes before you try again to start the engine. Never depress the START button while the starting motor is still running from the previous try. If the engine fails to start after four attempts, notify Organizational Maintenance. Failure to follow these precautions can result in serious damage to the starting motor.

CAUTION

During warmup do not operate the engine above 1000 rpm until normal engine idle speed oil pressure is indicated on the Engine Oil Pressure gage. This allows time for oil circulation to reach the turbocharger and for engine ports to warm up gradually. (Range at idle speed is 5-20 psi).

- j. After the engine starts, maintain an idle speed of 580-650 rpm. Set the hand throttle if necessary to maintain a smooth idle speed.

CAUTION

If there is no indication of oil pressure after 10 seconds at idle, shut down the engine immediately by turning the key switch to OFF and refer to Table 3-1 for troubleshooting and corrective action. DO NOT ATTEMPT TO RESTART THE ENGINE UNTIL THE PROBLEM HAS BEEN CORRECTED.

- k. Simultaneously with step i, observe the oil pressure gage. At low idle speed the gage should indicate 5-20 psi at normal operating temperature.
- l. Observe all instruments for proper indications. Also, observe warning lights for the following:
 - The Low Oil Pressure warning light should go off.
 - The Low Air Pressure warning light and buzzer should go off.
 - The Park Brake warning light should remain on until the Park Brake is released. Don't release the park brake until the low air pressure light and buzzer shut off.

2-13. Driving.**NOTE**

Before you start driving make sure:

- The before (B) PMCS procedures have been performed on the vehicle and trailer, if applicable.
- Your seat is adjusted properly.
- The rearview mirrors are adjusted for vision (assistance from another crew member will be helpful).
- You're thoroughly familiar with the following procedure.

PUTTING YOUR TRUCK IN MOTION

- a. Check gages to ensure that the truck is ready for operation:
 - Engine oil pressure is at least 5-20 psi at low idle speed; a cold engine will read higher.
 - Water temperature is 165°F - 195°F.
 - Air pressure is 90- 120 psi. At pressures below 60 psi the brakes will not release. The transmission air charging valve cannot be charged at pressures below 80 psi.
 - The low air pressure warning light and buzzer should go off.
 - Voltmeter should indicate normal (green area on the dial).
 - Fuel gage should indicate that there is sufficient fuel for the intended mission.
 - Transmission oil temperature gage reads 40° F to 220°F.
- b. Turn on lights, as appropriate, for existing conditions.
- c. Depress the transmission Air Control Button. The button will lock in the depressed position as long as truck air pressure is 80 psi or higher. It may be necessary to shift through all gears at engine idle speed several times to eliminate transmission air leaks, particularly in cold weather.

CAUTION

Use of the inhibitor override when the truck is in motion is prohibited. The shift inhibitor override should only be used when the vehicle is at a complete stop.

- d. Select the starting gear ratio using the following as a guide. Pull up on the selector lever to override the inhibitor. Suggested starting gears-level hard surfaces:

Empty to 75,000 lbs GCVW, 6th gear.

75,000 to 105,000 lbs GCVW, 4th gear.

105,000 to 130,000 lbs GCVW, 3rd gear.

CAUTION

Never let your truck coast in neutral. Severe transmission damage can result and engine braking action is not available during a neutral coast.

- e. RELEASE PARKING BRAKE by pushing in on parking brake control.
- f. TO MOVE TRUCK FORWARD, GRADUALLY DEPRESS ACCELERATOR PEDAL.

STARTING OUT ON A GRADE

CAUTION

With transmission engaged, do not operate this vehicle with the engine speed below, 1,200 RPM or above 2,100 RPM. Serious transmission damage will result.

CAUTION

When starting with a load, engine speed must accelerate through 1,200 RPM in three seconds or less, to prevent damage to the front clutch. If RPM does not increase above 1,200 RPM in three seconds, let up off accelerator and shift to a lower gear.

CAUTION

Do not start trucks in gears one, two, or three with fast acceleration. Serious drive line damage will result. However, if it is necessary to start in these lower gears, gradually accelerate when starting as you shift through these gears.

- g. Upshifts can be made at any engine speed above 1,750 RPM .Ease up on accelerator when the shift selector is placed into the detent This will provide a smooth shift
- h. Downshift must always be made when the engine speed is at or below 1.650 RPM Accelerate when the shift selector is placed into the detent.

NOTE

If gear grinding is heard during a shift, immediately move the shift lever to the left and then back into the detent. If the gear grinding persists, stop vehicle immediately and report it to Organizational Maintenance. Do not operate vehicle.

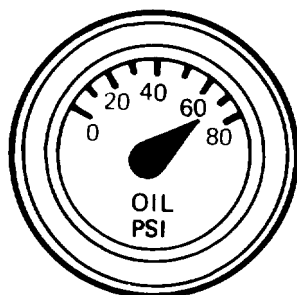
BASIC DRIVING GUIDELINES

- AVOID UNNECESSARY ENGINE IDLING

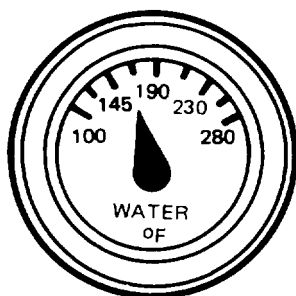
During long engine idling periods, the engine coolant temperature will fall below the normal operating range. The incomplete combustion of fuel in a cold engine will cause crankcase dilution, formation of lacquer or gummy deposits on the valves, pistons, and rings, and rapid accumulation of sludge in the engine. When prolonged engine idling is absolutely necessary, maintain at least 800 rpm.

- FREQUENTLY CHECK GAGES AND INDICATORS

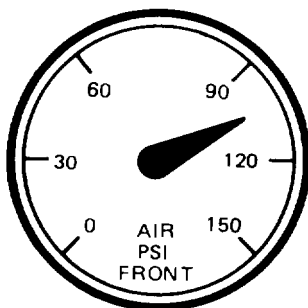
During normal driving conditions, at engine rpm range from 1800-2100 rpm, engine oil pressure should be in a range from 40-75 psi.



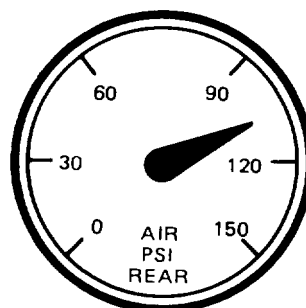
Engine water temperature should be above 140°F at the low end and up to 200°F at the high end (normal water temperature should be from 165° F to 195°F). The air pressure gage should register at least 80 psi. (The low air pressure warning light and buzzer come on at about 70 psi.)



ENGINE WATER
TEMPERATURE



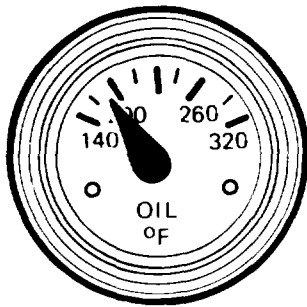
AIR PRESSURE
GAGE-FRONT



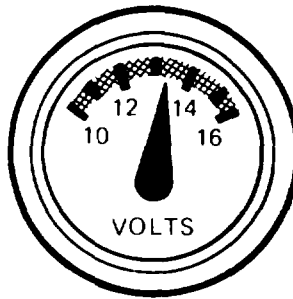
AIR PRESSURE
GAGE-REAR

The transmission oil temperature gage should register normal operating temperature range 40° F to 220° F. Check the battery voltmeter and the fuel gage frequently. Check the rpm readings on the tachograph for the appropriate ranges, as described below.

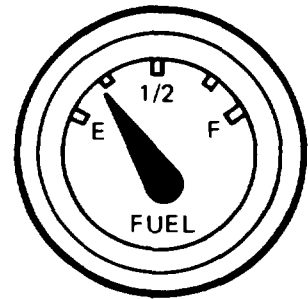
If the gages or indicators show any abnormal conditions, bring the truck to a safe stop, shut down the engine, and investigate the cause of the trouble,



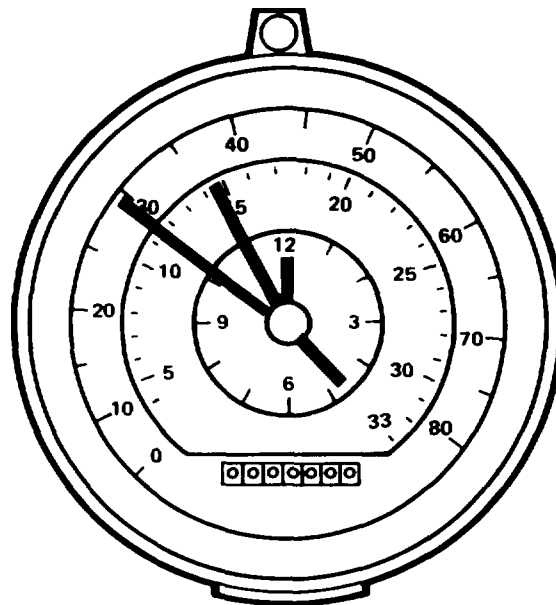
TRANSMISSION
OIL TEMPERATURE
GAGE



VOLTMETER



FUEL GAGE



TACHOGRAPH

- OPTIMUM USE OF ENGINE RPM

CAUTION

The governed speed is 2,100 rpm. If the engine is allowed to exceed governed speeds, serious engine/transmission damage will result. Never allow the engine to exceed this rpm.

It is not necessary to operate the engine at maximum rpm in order to get good performance. The engine will perform efficiently at the low and middle speed ranges and offer a definite fuel advantage at these reduced speeds. Control rpm by tailoring engine speed to the load requirements and the roadspeed desired.

The operator who insists on running in low gear at top rpm when restricted to 25 or 30 miles per hour is wasting fuel and creating noise unnecessarily.

- AVOID OVERSTEERING

CAUTION

The steering wheel should not be held at full steer for more than 10 seconds. Oil overheating, loss of oil from the power steering reservoir, and pump gear damage can result.

Become familiar with the steering characteristics of the truck before attempting maneuvers in limited space.

- DRIVE EFFICIENTLY AND ECONOMICALLY

- a. Driving at Highway Speed:

When driving conditions permit, maintain the legal highway speed in a gear that permits running the engine below governed speed. This is the engine's cruising range and it affords better fuel economy than higher engine speeds. Recommended normal highway cruising range is 1,800 to 1,900 rpm.

Operate in the economy range at full throttle if you are satisfied with the way the vehicle performs. However, there are times when hilly terrain, high winds or other conditions make it impractical to operate without reserve power. Such conditions are better met if the truck is operated in a lower gear with reserve power available for changes in terrain, wind, etc.

b. Driving in the City:

CAUTION

Engine rpm should be not less than 1,500 rpm for city driving.

Operate the truck in a high gear at reduced engine rpm to maintain the lawful speed. By reducing engine speed you are conserving fuel and lowering the noise level of the vehicle. Also when slowing down for towns and other posted speed zones along your highway route, remain in your running gear and reduce engine rpm. Avoid downshifting until you are ready to return the truck to highway speed. Recommended rpm range, depending on gear selection, must not be less than 1,500 rpm for city driving.

c. Hauling Up Hill:

The engine works hardest when moving a loaded truck up a grade. The proper use of gears will shorten time on hills and minimize the amount of shifting.

As you start uphill, depress the accelerator pedal all the way down and keep it there as the truck moves up the grade. If there is enough power to maintain a satisfactory rpm, remain in that gear for the entire grade.

If the hill causes a steady decline in engine rpm, downshift when engine rpm is at or below 1650 rpm. Continue to downshift in this manner until engine rpm can be maintained. ■

By remaining in each gear until arriving at the next lower shift point, your truck will top the grade in the best possible time on less fuel and fewer shifts.

d. Using the Engine as a Braking Force:

CAUTION

Do not use engine retarder in first, second or third gears except when descending steep grades. Never allow engine speed to drop below 1200 rpm with the engine retarder applied. Serious transmission damage will result. Do not engage the engine retarder when shifting or when the transmission is in neutral.

Your truck is equipped with an retarder system which enables the engine to act as a brake. The engine retarder should be used for descending grades, in city traffic or in any situation where slowing is required but excessive use of the service brakes is not desirable. The engine retarder is most effective between 1750-2000 rpm. An example of this is wet or icy pavement. The following procedures should be applied when appropriate:

1. Place the engine retarder switch on the instrument panel in the high position. If less engine retarding is needed, place the engine switch to the next lower position.
2. Keep the truck in a gear that will allow you to maintain 1,750-2,000 rpm. This will provide maximum engine braking effect.
3. The engine retarder is very effective on ice, snow or slick roads by selecting a higher than normal gear for the road speed. This will reduce rpm and provide lower engine braking. But first try selecting a lower setting with the ENGINE RETARDER switch. Engagement of differential lockup may also be helpful on slick surfaces (refer to instructions on using the Interaxle Differential lockup system).

WARNING

Failure to follow the following downhill driving procedures may cause you to lose vehicle control and result in severe injury or death to personnel.

- e. Downhill Braking:
 1. Proper downhill procedure is to select a gear which will allow the engine with the engine retarder applied to control truck speed with the engine rpm at or below 2,000 rpm and service brakes not applied. This means as you approach a downgrade, progressively select a gear when combined with the engine retarder will allow you to maintain an engine speed of 1,750-2,000 rpm.
 2. As engine speed exceeds 2,000 rpm, use one positive application of the service brakes to slow the engine speed to 1,650 rpm, release engine retarder, downshift one gear and reapply engine retarder. Repeat this procedure until engine speed can be maintained between 1,750-2,000 rpm.
 3. In the event engine overspeeds (above 2,100 RPM), make one positive firm application of the service brakes to slow vehicle speed.
 4. In the event transmission overspeeds (above 2,300 RPM) and total transmission disengagement, perform the following
 - (a) Release engine retarder
 - (b) Upshift
 - (c) Make one positive application of the service brakes to slow vehicle speed and regain control of the vehicle.
 5. If the transmission totally disengages from the engine due to a shift being made with the engine retarder applied and engine speed has returned to low idle free wheeling, accelerate the engine to re-engage transmission
 6. If you experience a total loss of braking due to heat build-up

- (a) Apply engine retarder (place switch in high mode).
- (b) Upshift as engine speed approaches 2,100 RPM. Prior to each upshift, release engine retarder.
- (c) In 16th gear, continue to apply engine retarder, and maintain directional control of vehicle.

CAUTION

Excessive use of the service brake to control downhill speed will result in loss of braking power because of heat build-up.

REVIEW OF DRIVING GUIDELINES

- a. After prolonged engine idle or after using the PTO (M916 through M920), run the engine up to full rpm momentarily to clean engine.
- b. The most practical engine rpm cruising speed for the highway is one that permits the legal roadspeed and also fuel economy. The recommended cruising range for the highway is 1,800 to 1,900 rpm.
- c. In the city and other reduced speed zones, match engine speed to the lower load requirement to conserve fuel and lower vehicle noise level. Select a gear that permits operating in the range of not less than 1,500 rpm.
- d. When downshifting for power on a grade, wait for your shift points before making the shift. You will save both time and fuel if you do. If you maintain a satisfactory engine rpm on a grade in your cruising gear, it is not necessary to downshift at all.
- e. Do not overspeed the engine. Never allow the engine to be pushed above governed rpm when rolling down a grade.
- f. Progressive downshifting and use of the engine retarder, when starting down a grade from the top of a hill, will provide better control around curves and turns and will save brakes.

USING TRAILER BRAKE HAND CONTROL

CAUTION

After use, always return the trailer brake hand control to its off position (all the way up), or the trailer brakes will burn up.

Use the trailer brake hand control to help avoid jackknifing. This control will apply the trailer brakes only. To apply the trailer brakes, pull down on the control. Be sure to return the control to its off position (all the way up) when you have finished using it.

USING THE INTERAXLE DIFFERENTIAL LOCKUP

CAUTION

Do not operate the truck on hard surfaces any longer than necessary with the differential lockup engaged. Otherwise driveline windup can occur which can damage the differential.

Interaxle differential lockup provides additional traction by applying full torque to both rear axles. On M916 through M920 models, the front driving axle is also engaged. This feature should be used any time tractive conditions are poor, e.g., rainy or icy pavement. For M916 through M920 models, it should also be used in off-road operations.

The Differential Lock/Unlock control is located on the instrument panel to the right of the driver. Use the following instructions to engage and disengage the system.

Engage (All Models)

1. Pull to the side of the road and stop the truck.
2. Place the Differential Lock/Unlock control in the LOCK position.
3. Observe that the Differential Lockout indicator light comes on. The truck is now ready for operation.

Disengage

M915 Only

1. Remove your foot from the accelerator pedal.
2. Place the Differential Lock/Unlock control in the UNLOCK position.

3. Observe that the Differential Lockup indicator light goes off. The system is now disengaged.

M916 through M920

1. Remove your foot from the accelerator pedal.
2. Place the Differential Lock/Unlock control in the UN LOCK position momentarily and observe that the Differential Lockup indicator light goes off.
3. Place the Differential Lock/Unlock control in the center (unmarked) position. **DO NOT OPERATE THE TRUCK IF THE INDICATOR LIGHT STAYS ON**

NOTE

On all models, if the Differential Lockup indicator light does not go off it may be necessary to back up slowly, go forward again, and repeat until the light goes off.

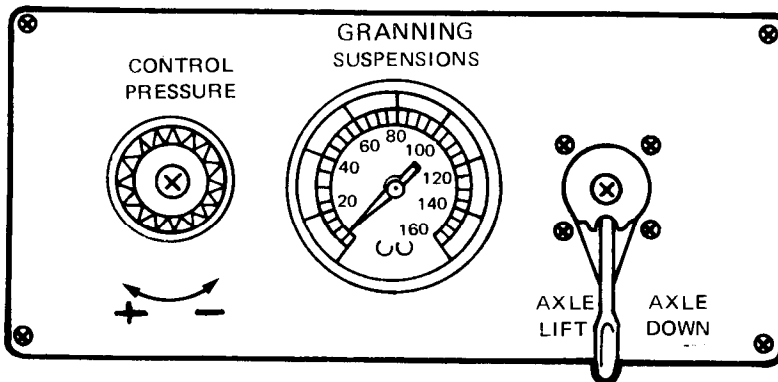
USING PUSHER AXLE

WARNING

When the pusher axle is in the up position it freewheels. **DO NOT USE THE PUSHER AXLE AS A STEP.** You can fall and be injured.

- WHEN YOU OPERATE THE M917, M919 and M920 WITH A PAYLOAD ON A HIGHWAY, USE (lower) PUSHER AXLE IN ORDER TO COMPLY WITH LOCAL REQUIREMENTS REGARDING MAXIMUM ALLOWABLE LOAD PER AXLE.
- TO LOWER PUSHER AXLE:

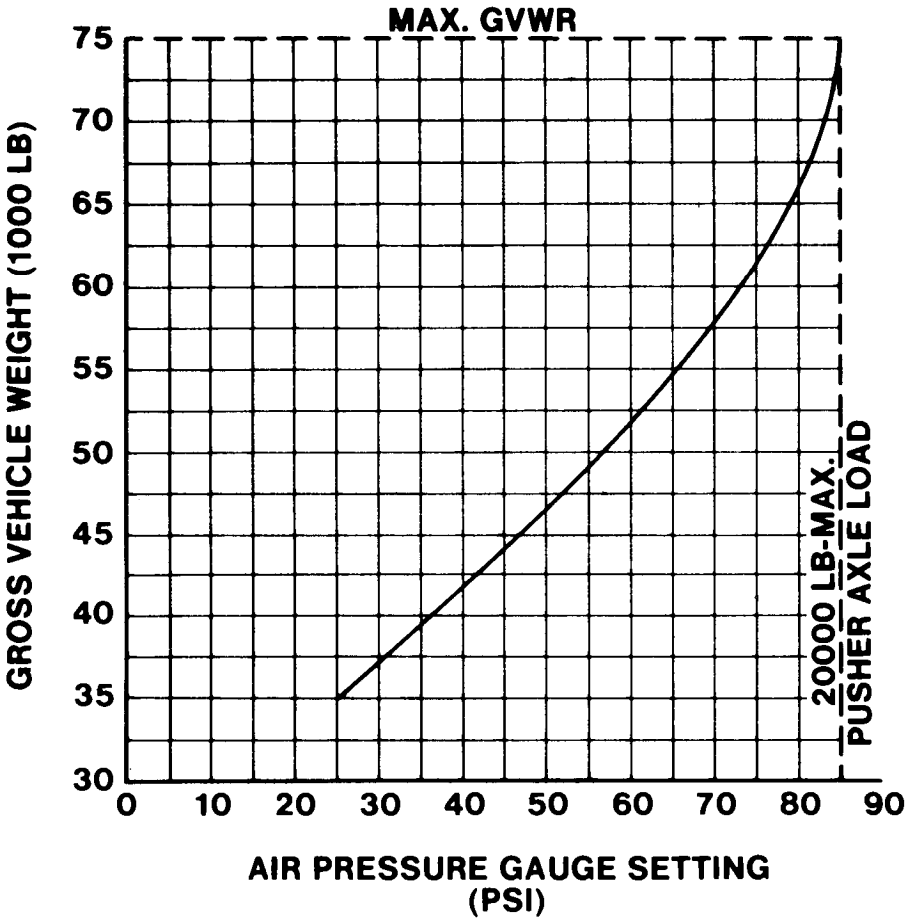
Rotate the CONTROL PRESSURE knob to full left to remove pressure from the pusher axle. The pressure gage should indicate 0 psi. Place the pusher axle raise/lower control in the AXLE DOWN position.



CAUTION

Do not use pusher axle during off-highway operations.

**M917 - M919
PUSHER AXLE AIR BAG PRESSURE
REQ'D FOR EQUAL LOAD DISTRIBUTION
OF REAR AXLES**



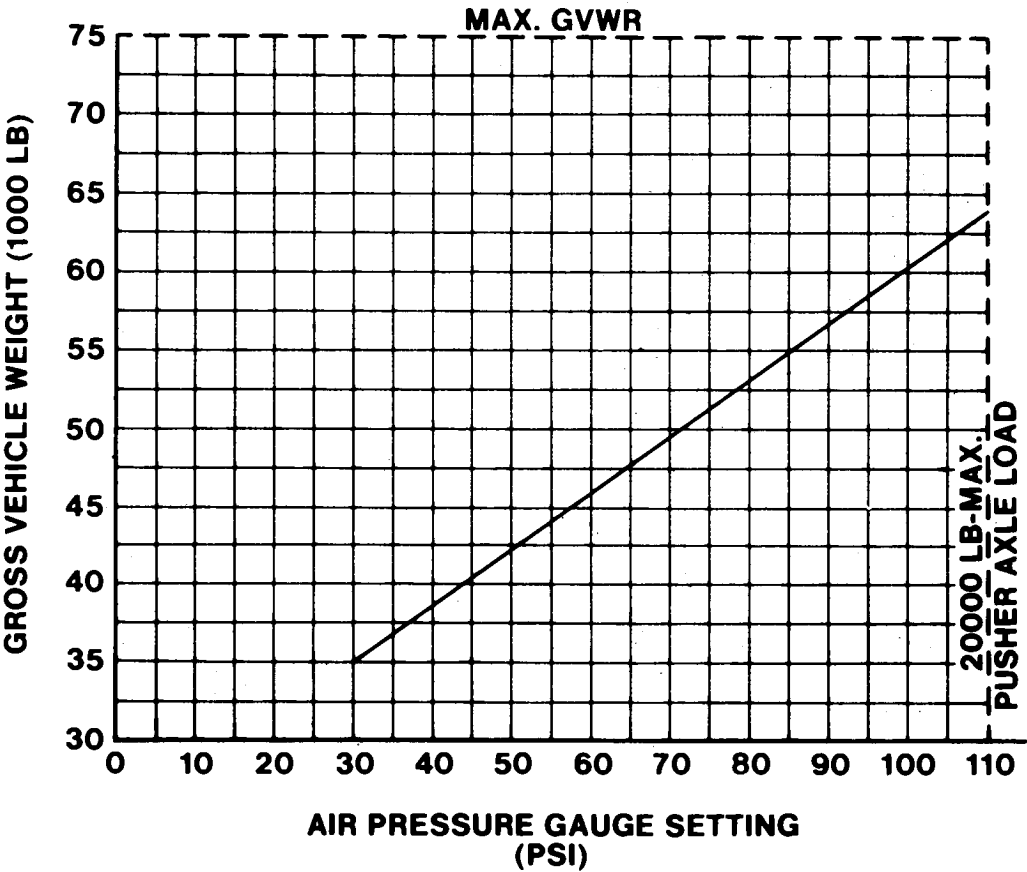
P.N. M-B162-20025 NO REV.

TA 233242 ■

CAUTION

Do not use pusher axle during off-highway operations.

M 9 2 0
PUSHER AXLE AIR BAG PRESSURE
REQ'D FOR EQUAL LOAD DISTRIBUTION
OF REAR AXLES



P.N. M-162-20026 NO REV.

TA 233243 ■

● TO ADJUST LOAD ON THE PUSHER AXLE:

Rotate the CONTROL PRESSURE knob right (toward +) until the pressure gage indicates the proper pressure setting for the desired load. Refer to the pusher axle calibration chart located in the glove compartment. Tighten the setscrew, in the center of the knob, to lock the CONTROL PRESSURE knob at the pressure selected. With the setscrew tightened at a particular setting, the CONTROL PRESSURE knob can be closed (toward –) and reset to the previous setting.

● TO RAISE THE PUSHER AXLE:

Set the axle raise/lower control at the AXLE LIFT position. This should be done when turning sharp corners to shorten the turning radius and avoid dragging the tires. This can be done with the vehicle in motion.

2-14. Stopping the Truck and Shutting Down the Engine.

CAUTION

Before shutting down the engine, idle it at reduced speed (550-650 rpm) at no-load for 3 minutes to allow turbo-charger to slow down. Cooling down time will depend on how hard the engine has been worked.

- a. LIFT YOUR FOOT OFF ACCELERATOR PEDAL and let reduction in engine rpm and downshifting of transmission help to slow truck.
- b. APPLY SERVICE BRAKES to bring truck to a normal, complete stop.
- c. When truck is completely stopped, SHIFT TRANSMISSION TO NEUTRAL AND APPLY PARKING BRAKES.
- d. TURN OFF ENGINE RUN SWITCH.

2-15. Parking.

CAUTION

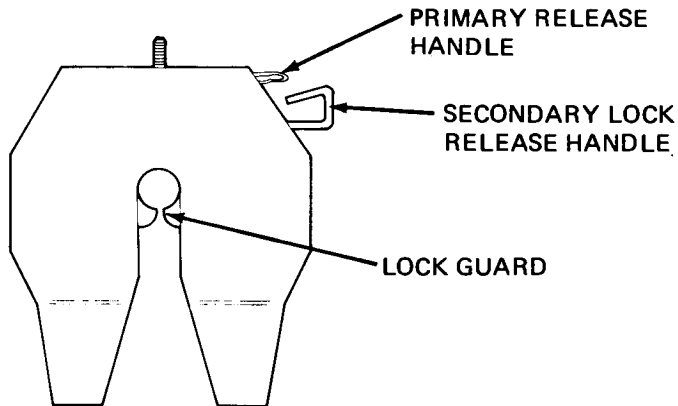
Do not park your truck on a steep grade. Even though the parking brake holding capability exceeds federal safety standards, it is never good practice to park a heavy truck on a steep slope.

- a. Stop truck.
- b. Pull PARKING BRAKE control knob

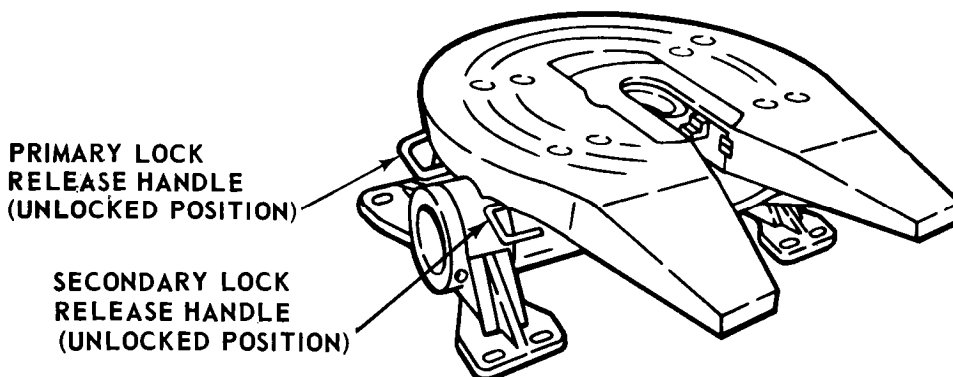
- c. If truck is parked on normal surfaces, parking brakes will provide sufficient holding force.

2-16. Fifth Wheel

The M915 line haul tractor is equipped with a 36-inch fore and aft oscillating fifth wheel for use with a 2-inch kingpin. The single oscillating fifth wheel will pitch 15 degrees forward and 10 degrees aft. It is rated at 40,000 lbs. (18,144 kg) vertical load and 150,000 lbs. (68,000 kg) drawbar pull. There are two manual kingpin lock release handles on the right side of the fifth wheel as shown below. The primary release handle must be pulled first before releasing the secondary handle to uncouple the trailer.



The M916 and M920 equipment transporter tractors are equipped with a 36 inch four-way oscillating fifth wheel for use with a 3.5 inch kingpin. It is rated at 70,000 lbs. (31,752 Kg) vertical load and 200,000 lbs. (90,720 Kg) drawbar pull. There are two manual kingpin lock release handles on the left side of the fifth wheel as shown below. The secondary release handle must be pulled first before releasing the primary handle.



2-17. Coupling and Uncoupling.

WARNING

Do not permit anyone to stand directly behind your tractor or the semitrailer during the coupling procedure. Failure to follow this warning can result in injury to personnel.

CAUTION

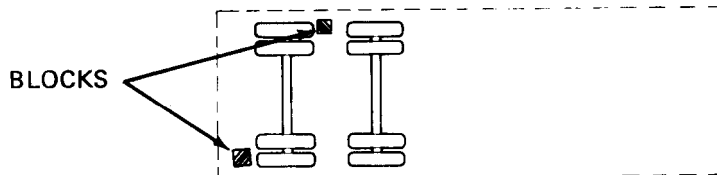
Proper use of chock blocks will prevent damage to equipment. Use chock blocks in the manner described in the note below.

NOTE

On semitrailers equipped with chock blocks, block the wheels as follows.

COUPLING

Remove chock blocks from their brackets and place them firmly behind the wheels on both sides of the semitrailer. On level ground, wheels of one axle should be blocked; if one side is blocked at the tire's front, the opposite side should be blocked at the tire's rear.



UNCOUPLING

Place chock blocks firmly behind wheels on both sides of the semitrailer when parking uphill. Place blocks in front of wheels on a downgrade. On level ground wheels should be blocked on one side in front and one side in rear.

TA 073584

Checkout your equipment as follows before backing under the semitrailer.

- a. Visually check the fifth wheel for cracked, damaged, or missing parts
- b. Check mountings for good condition and mounting bolts for tightness.
- c. Check that all moving parts and top of fifth wheel are properly lubricated.
- d. On the M915, check the lock guard for proper operation. Have it replaced if it is damaged or missing.
- e. On the M916 and M920, make sure the secondary lock release handle is pulled all the way out. The fifth wheel will lock with the primary lock release handle in either position.
- f. Be sure that the fifth wheel ramps are down level with, or slightly below the angle of the pickup ramps.
- g. Prepare the semitrailer for coupling. Adjust the trailer height so that the fifth wheel picks up the trailer on the fifth wheel ramps.

BACKING TOWARD THE SEMITRAILER

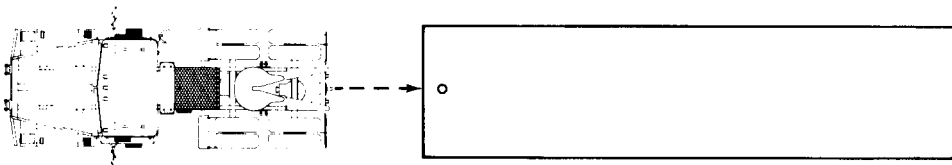
CAUTION

Be careful not to run the kingpin up the fifth wheel ramps as this can damage the kingpin and/or the fifth

CAUTION

Make a visual check of the coupling. Do not take for granted that you have a secure coupling.

- a. Make sure your tractor is aligned straight in front of the semitrailer.



**PROPER ALINEMENT WITH
SEMI-TRAILER**

- b. Slowly back your truck under the semitrailer gooseneck so that the gooseneck slides up the guide ramps with the semitrailer kingpin centered as closely as possible in the throat of the fifth wheel.
- c. Make sure you have picked up the semitrailer with the fifth wheel ramps. If the kingpin comes in too high, it will not engage in the fifth wheel correctly.
- d. When you have correctly picked up the semitrailer in the fifth wheel ramps, stop backing.

NOTE

Stopping at this point helps to prevent hitting too hard in coupling.

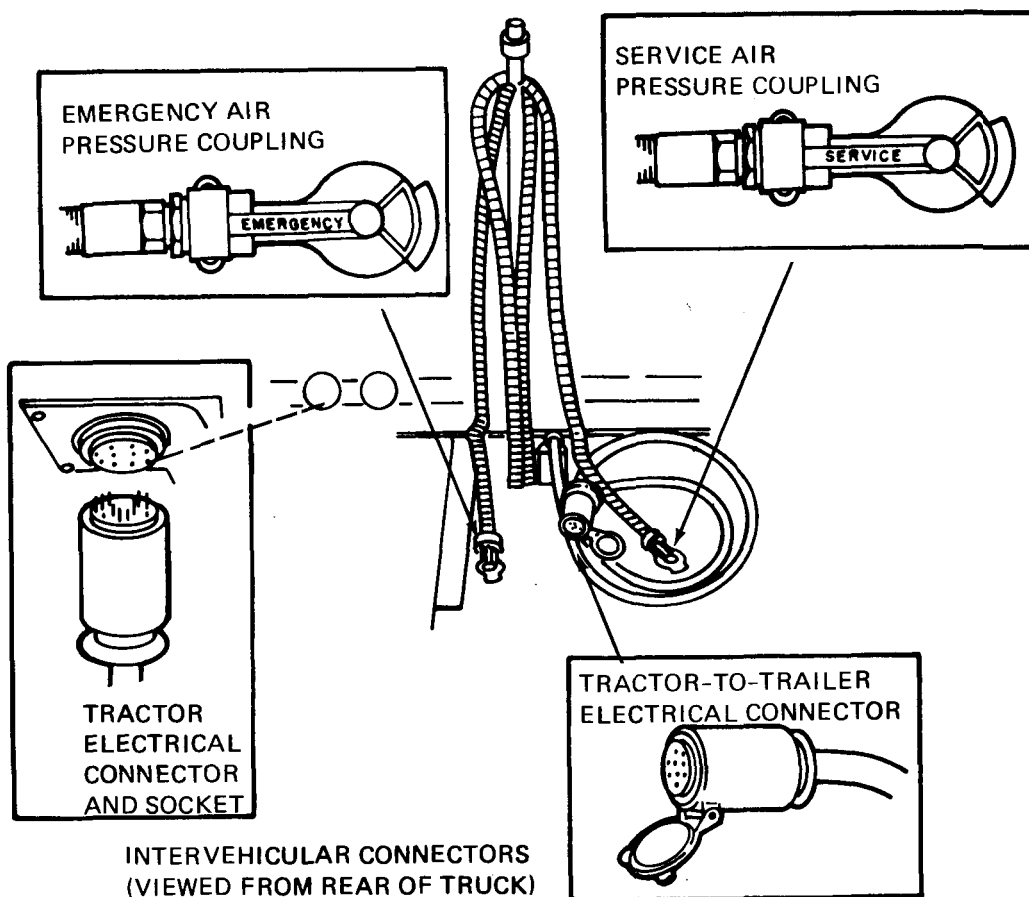
- e. Connect air hoses and light cables then push in on the trailer supply control knob and set the trailer hand brake.
- f. Back up slowly until the fifth wheel locks firmly to the kingpin. Release the parking brake and pull against the load with the hand brake set. This will apply pressure against the kingpin and provide a test to insure a secure coupling.
- g. Verify that the lock release handles are in.
- h. The kingpin must be in the locks. You should not be able to see daylight between the upper fifth wheel plate of the semitrailer and the fifth wheel.
- i. Be sure the kingpin is not hooked over the front of the fifth wheel.
- j. Lift and secure the semitrailer landing gear.

MAKING SEMITRAILER CONNECTIONS

NOTE

One 12-volt light cable and one 24-volt light cable are stored in the tool box under the passenger seat.

- a. Connect the service and emergency air hoses and the appropriate electrical cable (12v or 24v).



- b. Check operation of semitrailer lights.
- c. Check operation of semitrailer brakes using the hand control in the cab.
- d. Check all tires.
- e. Make sure that the air supply is adequate before you start out.



CAUTION

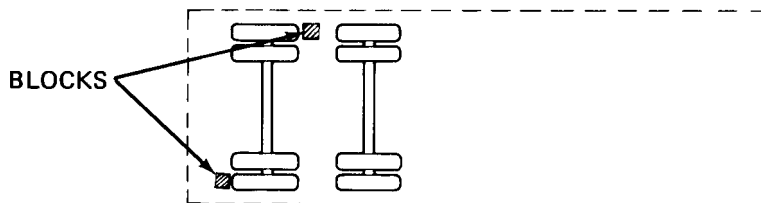
Proper use of chock blocks will prevent damage to equipment. Use chock blocks in the manner described in the note below.

NOTE

On semitrailers equipped with chock blocks, block the wheels as follows.

COUPLING

Remove chock blocks from their brackets and place them firmly behind the wheels on both sides of the semitrailer. On level ground, wheels of one axle should be blocked; if one side is blocked at the tire's front, the opposite side should be blocked at the tire's rear.



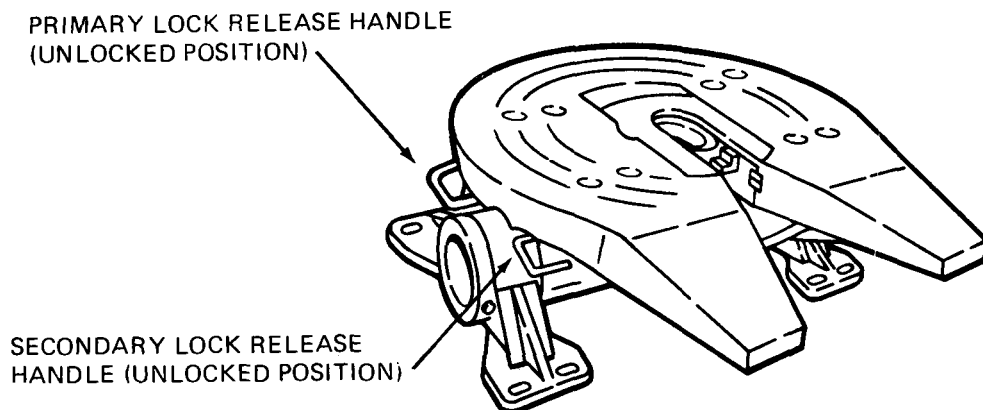
UNCOUPLING

Place chock blocks firmly behind wheels on both sides of the semitrailer when parking uphill. Place blocks in front of wheels on a downgrade. On level ground wheels should be blocked on one side in front and one side in rear.

- a. Pull out the trailer air supply valve.
- b. Apply the parking brakes, verifying that the parking brake indicator light comes on. This will keep your tractor from running out from under the semitrailer when you unlock the fifth wheel.
- c. Lower the semitrailer landing gear.

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- d. Set the trailer hand brake. Disconnect and secure the trailer air hoses and light cable.
- e. On the M915, unlock the fifth wheel by first pulling the primary release handle out and lifting up to engage the catch. Then pull the secondary release handle out.
- f. Slowly pull the truck forward until the semitrailer is supported by the semitrailer landing gear.
- g. On the M916 and M920, unlock the fifth wheel by first pulling the secondary lock release handle out and raising it so that its catch hooks on the fifth wheel housing. Then pull the primary lock release handle out and hook it in the unlocked position the same as the secondary lock handle.

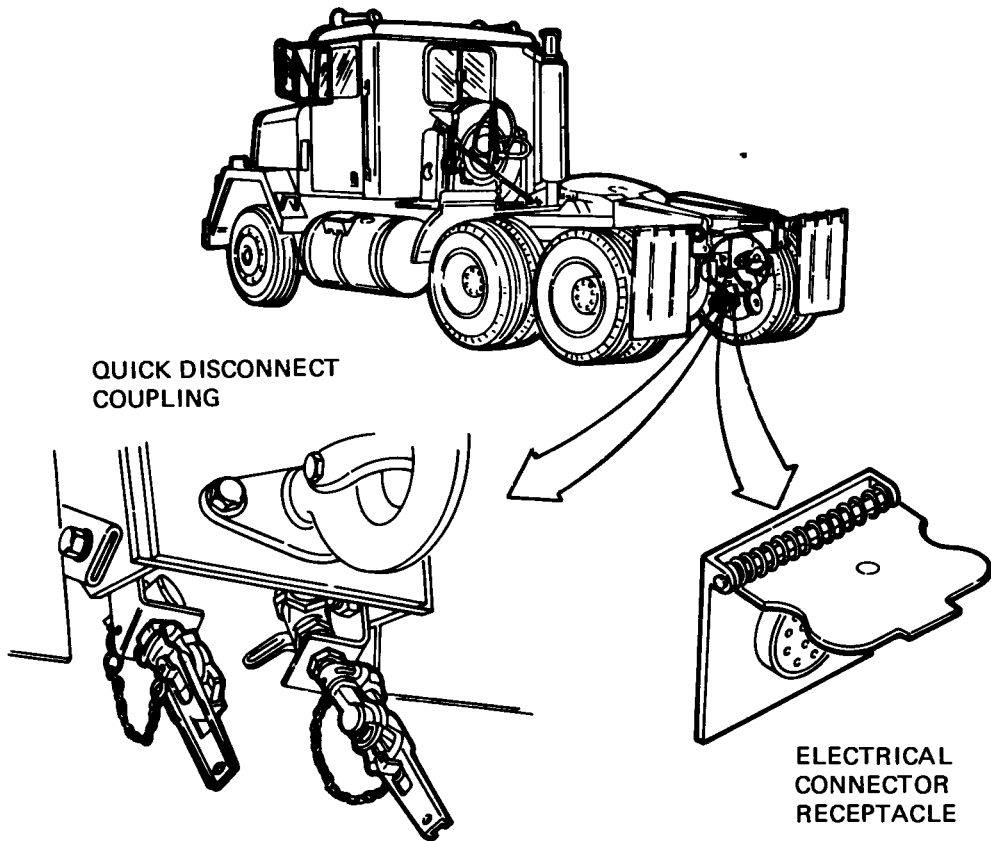


- h. Have a crew member observe semitrailer kingpin to make sure it clears properly during separation of the vehicles. Make sure the kingpin will clear the rear frame crossmember when you pull the tractor forward.
- i. Pull your tractor slowly forward allowing the semitrailer gooseneck and kingpin to slide down the fifth wheel and ramps until the semitrailer landing gear touches the ground.

PINTLE TOWING

Trailer Connections (M915, M916, M917 and M920)

1. Attach trailer to the pintle hook.
2. Connect the intervehicular electric cable from receptacle on rear of truck to the trailer.
3. Connect air hoses from quick disconnect couplings ("glad hands") at rear of truck to trailer.



WARNING

Failure to completely turn ON or OFF the air cutoff cocks will cause the loss of brakes on the trailer or truck.

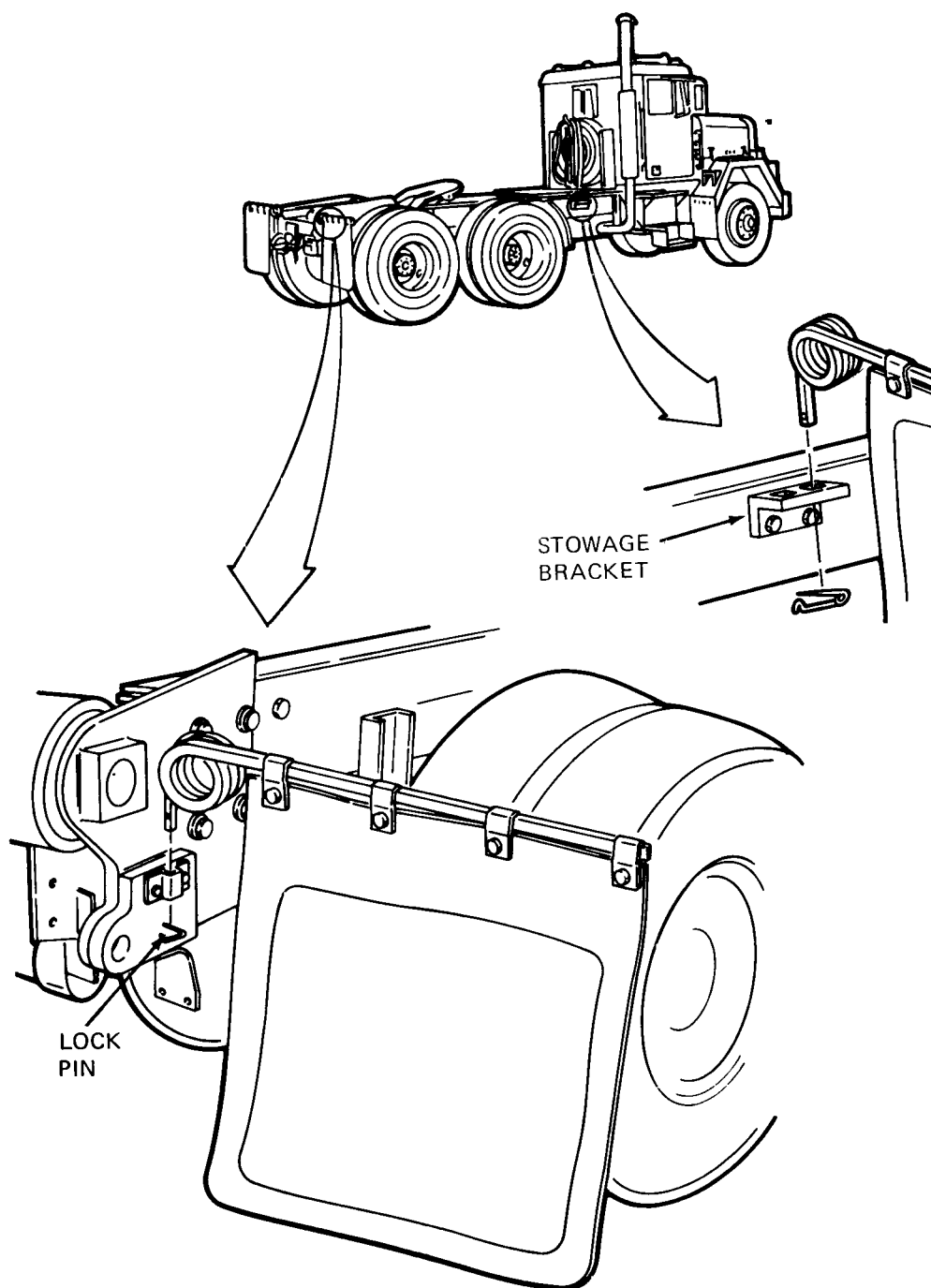
Mud Flap Stowage

If you are using a M915 to tow a M127 trailer, you must remove the rear mud flaps from their normal location and stow them in brackets provided.

1. Remove the lock pin.
2. Remove the mud flap by pulling up. You may have to tap upward on the spring with a hammer or similar tool.
3. Insert the mud flap in the stowage bracket.
4. Insert lock pin.
5. When towing operations are complete reinstall the mud flaps in normal position.

TA 233244 ■

Change 3 2-69



TA 073590

2-18. Loading (M916 and M920 Only).**PREPARATION FOR LOADING**

- Align your tractor and semitrailer as close as possible to the front of the payload equipment.
- Place the transmission ratio selector in neutral (N).
- Apply the parking brakes.
- Prepare the semitrailer for loading.

NOTE

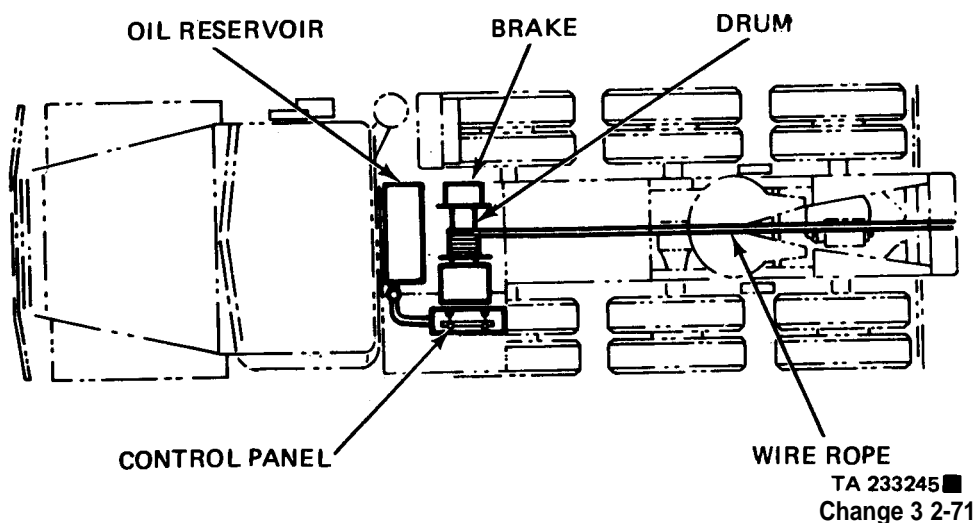
Loading procedures will vary depending on the size and type of equipment to be transported.

WARNING

Hearing protection is required during winding operations.

WINCH

The M916 and M920 are each equipped with a full hydraulic winch mounted on the frame behind the cab as shown below. The winch has a fail-safe spring-loaded brake which will automatically set any time the winch control valve is in neutral or in case of power failure (hydraulic pressure drops to less than 200 psi). The winch operates at 2100 psi hydraulic pressure from a dual pump which is driven by a power takeoff on the transmission. The rated capacity of the winch is 45,000 lbs (20,250 kg).



WINCH CONTROLS

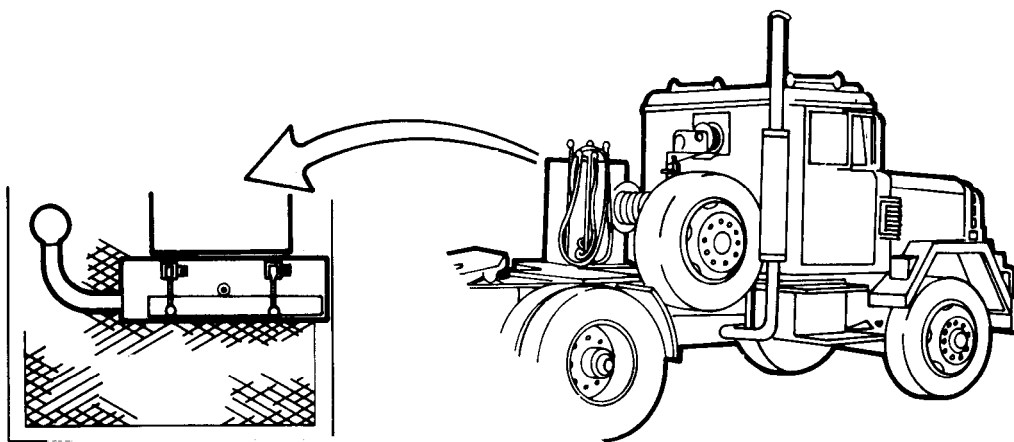
WARNING |

Always wear heavy gloves when you handle the winch wire rope. Never allow the cable to run through your hands as broken wires can cause painful injuries.

CAUTION

Never operate the winch with less than four turns of wire rope on the drum. When taking up the wire rope onto the drum be sure the coils are tight and close together.

The winch operator's station is located on the left side of the tractor behind the cab. The operator stands on the platform provided and operates the winch using the controls on the top of the panel.

**NOTE**

The winch speed is normal in low speed. High speed is recommended for paying line out or taking up slack only.

OPERATING WINCHES AT TEMPERATURES BELOW -25°F (-32°C)**CAUTION**

Avoid winching operations that cause sudden shock loads.
At extremely cold temperatures, metals become brittle
and sudden shock loads can cause equipment damage.

- a. After the winch has been serviced by Organizational Maintenance and before operating the winch, warm up the hydraulic system by engaging the PTO and operating the tractor at fast idle for 30 minutes.
- b. When you have warmed up the hydraulic system, operate the winch in no-load condition by paying out about 100 feet of the wire rope at low speed. Then take up the wire rope at low speed. Winch should now be ready for normal operation.

ENGAGING THE WINCH POWER TAKEOFF**CAUTION**

The winch is not to be used for moving or lifting people.
Do not shift the transmission with the power takeoff
(PTO) engaged. The gears stop during shifting, which
could cause excessive loading of power takeoff.

CAUTION

Keep engine speed above 1100 rpm after engaging PTO or
damage to the clutch could result.

- a. Place the transmission ratio selector in neutral (N).
- b. Operate the engine at low idle and set the parking brakes.
- c. Move the ratio selector to 1st speed and pull the PTO knob to engage the PTO. Then return the ratio selector back to neutral (N).
- d. At the winch control panel, increase the engine speed to the desired speed ABOVE 1100 RPM. Normal operation is 2100 rpm.

OPERATING THE WINCH



Do not pull up on control no. 2. This position is for operating equipment that is not used on the M915 series vehicles.

CAUTION

Observe the drum to ensure that the wire rope is not completely paid out. Never operate the winch with less than four turns of line on the drum.

N O T E

The rated winch pull is set by limiting the hydraulic system relief valve pressure to a maximum of 2100 psi which provides 45,000 lb (20,250 kg) pull on the bare drum. As the winch drum is loaded with line, the effective line pull is reduced. The line pull per cable layer with 7/8-inch wire rope is:

1st layer 45,000 lb (20,250 kg)

2nd layer 39,265 lb (17,810 kg)

3rd layer 34,775 lb (15,773 kg)

4th layer 31,210 lb (14,156 kg)

5th layer 28,310 lb (12,841 kg)

- a. Lower pusher axle.
- b. Have a crew member disconnect the wire rope clevis from its anchor.
- c. Pull up on winch control lever no. 2 to the middle position
- d. To pay out the line, pull up and hold the winch control lever no. 1 in the full up position. The winch will unwind in low speed. Have your crew member walk the end of the wire rope out.

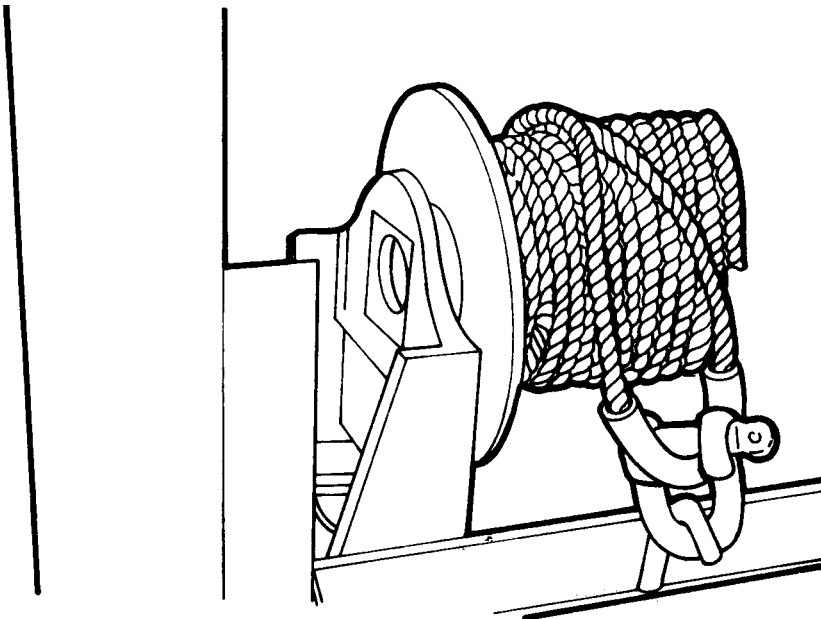
NOTE

High speed winch operation is recommended for paying out line or taking up slack only.

- e. To run the winch in high speed, push down and hold winch control lever no. 2. This will double the winch speed.
- f. When the desired amount of line has been paid out, stop the winch by releasing both control levers.

SECURING WINCH WIRE ROPE

- a. Direct a crew member to disconnect the wire rope from the payload.
- b. With crew member pulling on the wire rope to keep it fairly taut, start rewinding the drum by pushing down on winch control lever no. 1.
- c. Check that the wire rope winds neatly onto the drum without tangling, kinking, twisting or overlapping. Make sure that the coils on the drum are tight and close together.
- d. Direct crew member to signal when enough slack has been taken up to anchor the clevis.
- e. Have the crew member anchor the line clevis.



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NORMAL SHUTDOWN OF THE WINCH PTO

- a. Release the winch controls. Push in winch throttle control.
- b. Reduce the engine rpm using the throttle control at the winch station.
- c. Move the PTO control to the disengage position.

2-19. Operation of Auxiliary Equipment.

TOWING PINTLE

- a. To open pintle:

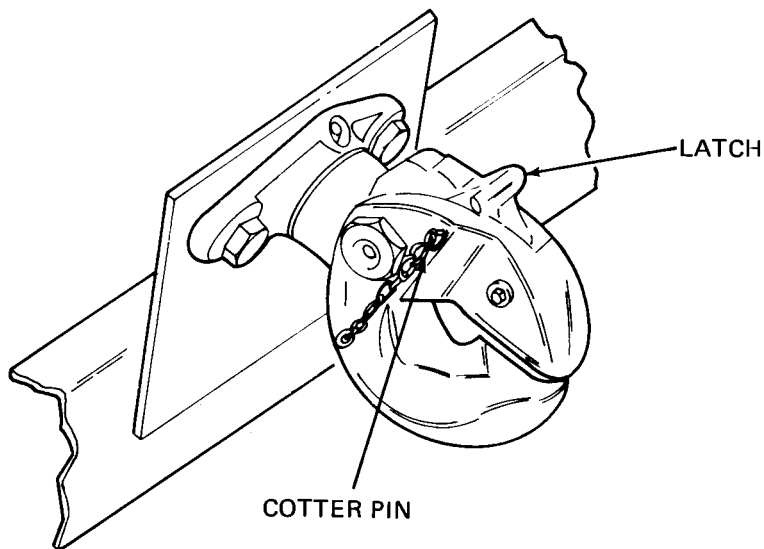
Remove cotter pin.

Engage latch and lock in open position.

- b. To close and secure pintle:

Push lock down. Latch will engage in closed position.

Insert cotter pin to secure lock.

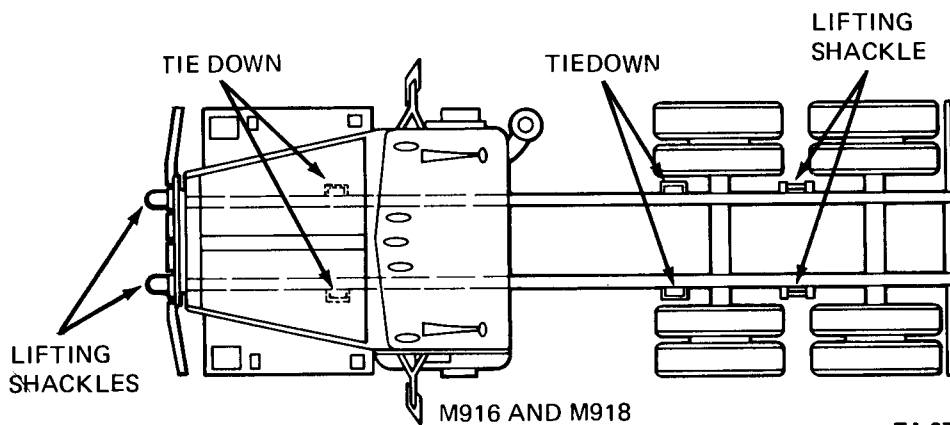
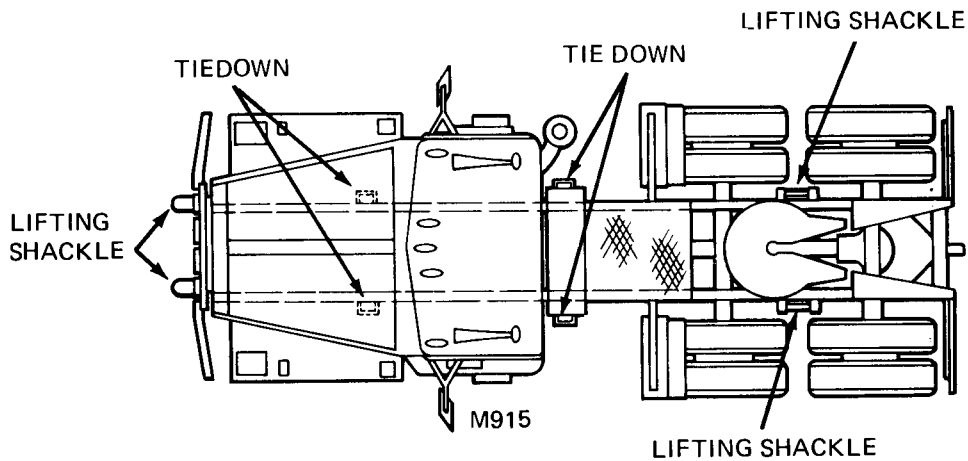


TIE DOWNS AND LIFTING SHACKLES

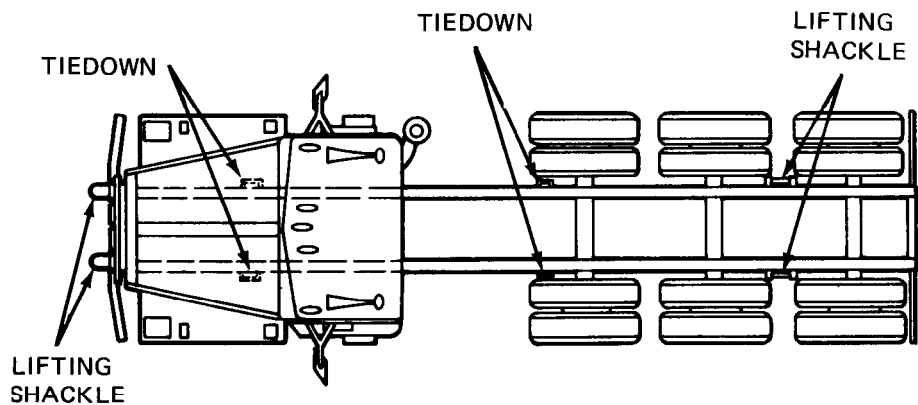
WARNING

Improper use of lifting equipment and attachment of cables to the truck can result in serious personnel injury and equipment damage. OBSERVE ALL STANDARD RULES OF SAFETY.

- a. To lift the truck by crane or other means, attach a lifting sling of suitable strength to designated lifting shackles. Lift the truck slowly and have observers watch for any signs of cable failure, unusual load shifts and obstructions.
- b. During air or sea transport, secure the truck by attaching cables to the designated tie down points.



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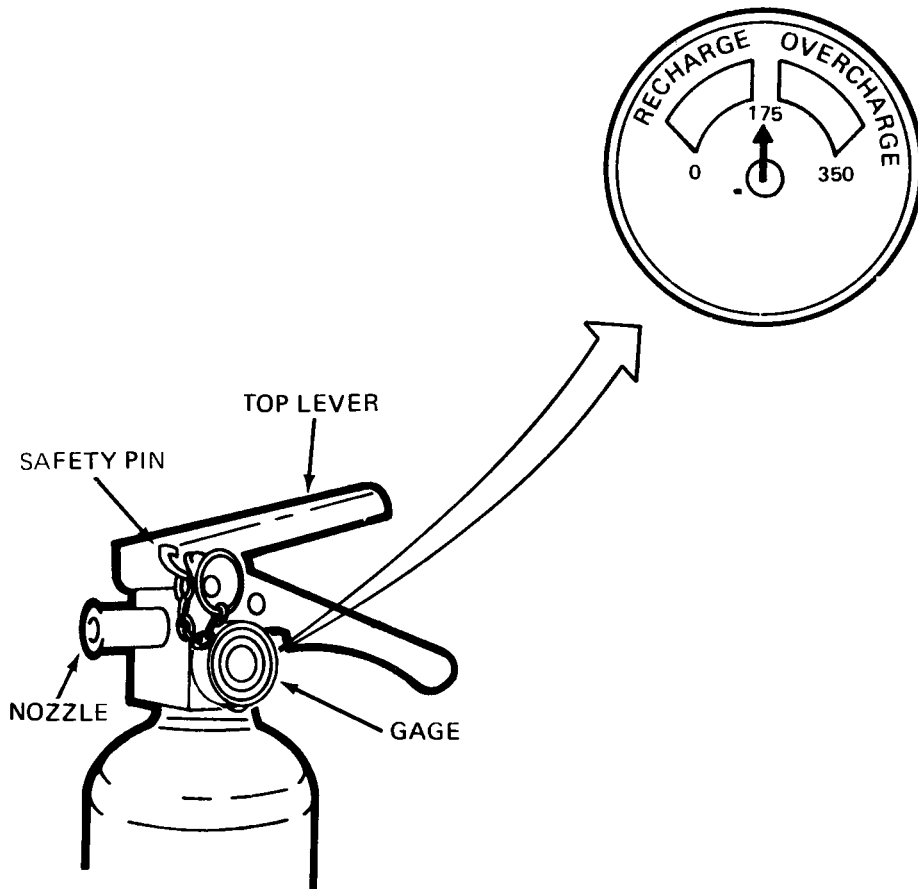


M917, M919 AND M920

PORTABLE FIRE EXTINGUISHERS

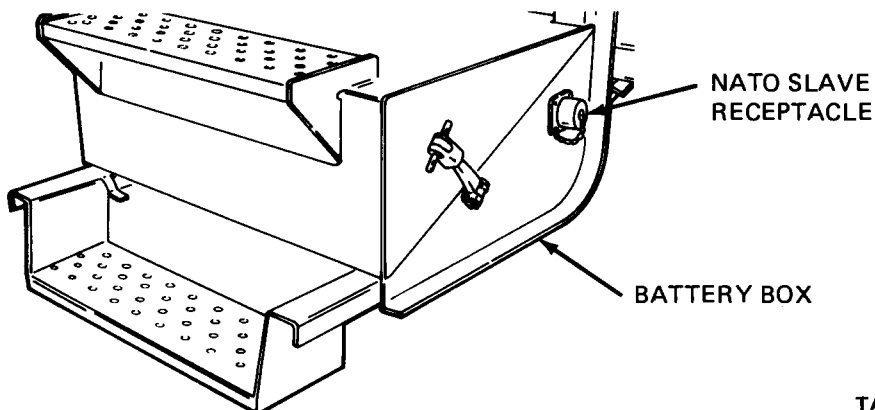
To operate:

- a. Remove from bracket located at the rear of tool box between passenger seat and console.
- b. Hold extinguisher upright. Point nozzle toward base of fire and pull safety pin.
- c. Press top lever, discharging chemical at base of fire. Use a side-to-side motion.
- d. After using fire extinguisher, notify Organizational Maintenance that you need a replacement for the used extinguisher.



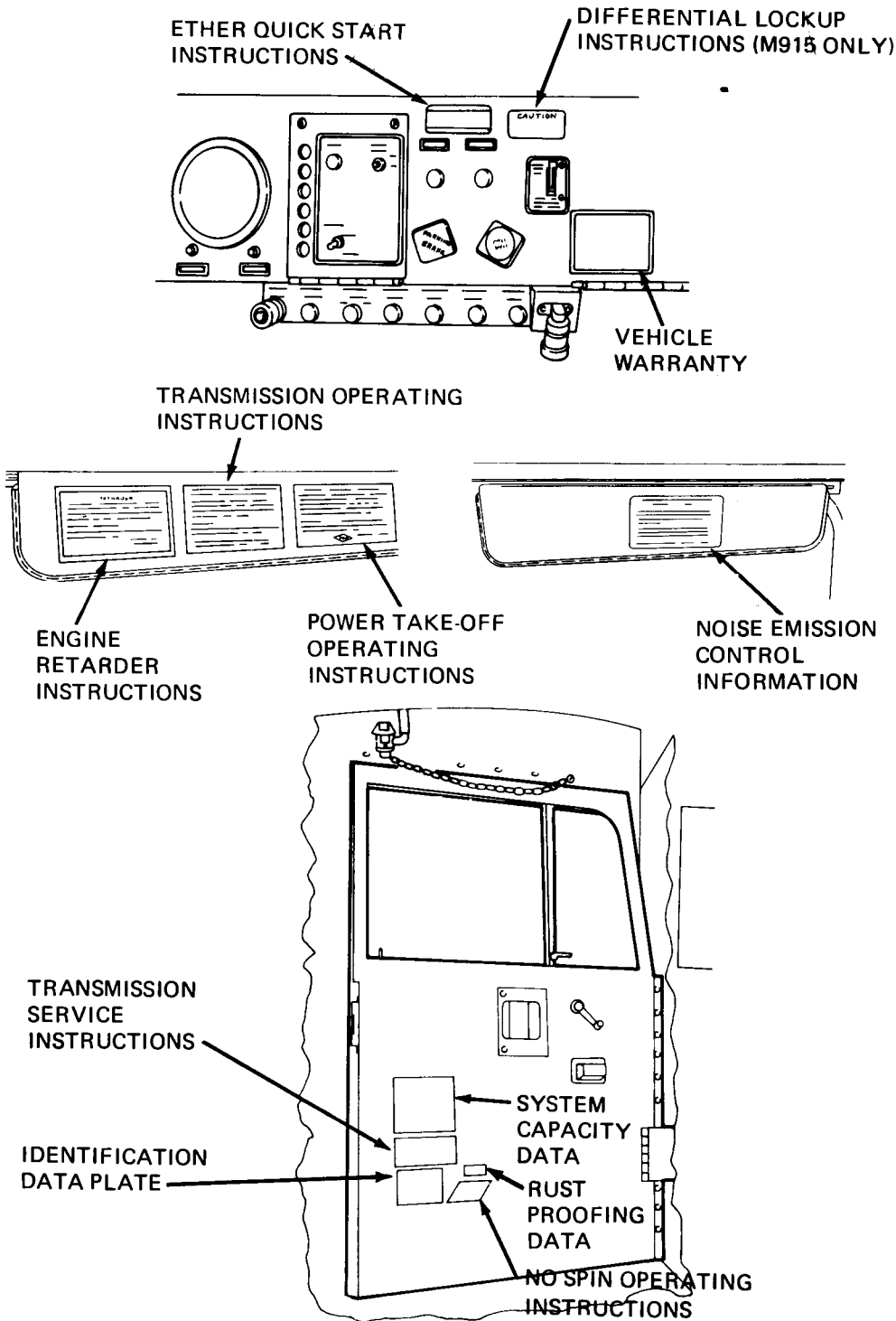
NATO SLAVE RECEPTACLE

The NATO slave receptacle is mounted on the side of the battery box toward the front of the truck. This receptacle is used primarily as a cable connection for jump starting your truck or another truck.

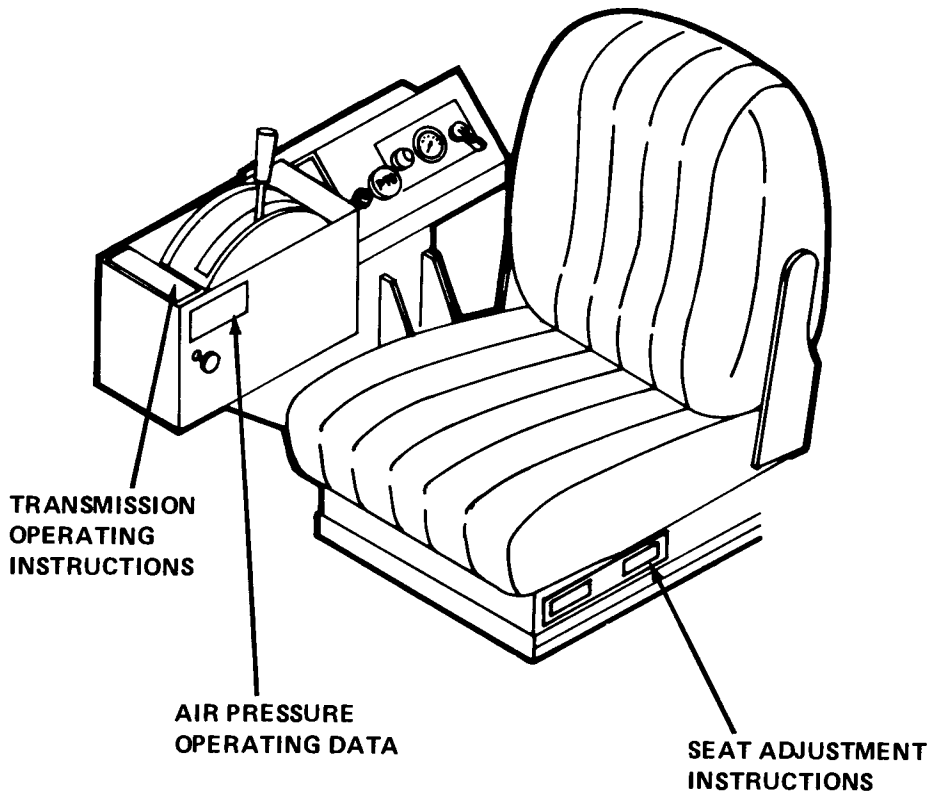


2-20. Decals, Data Plates and Instruction Plates.

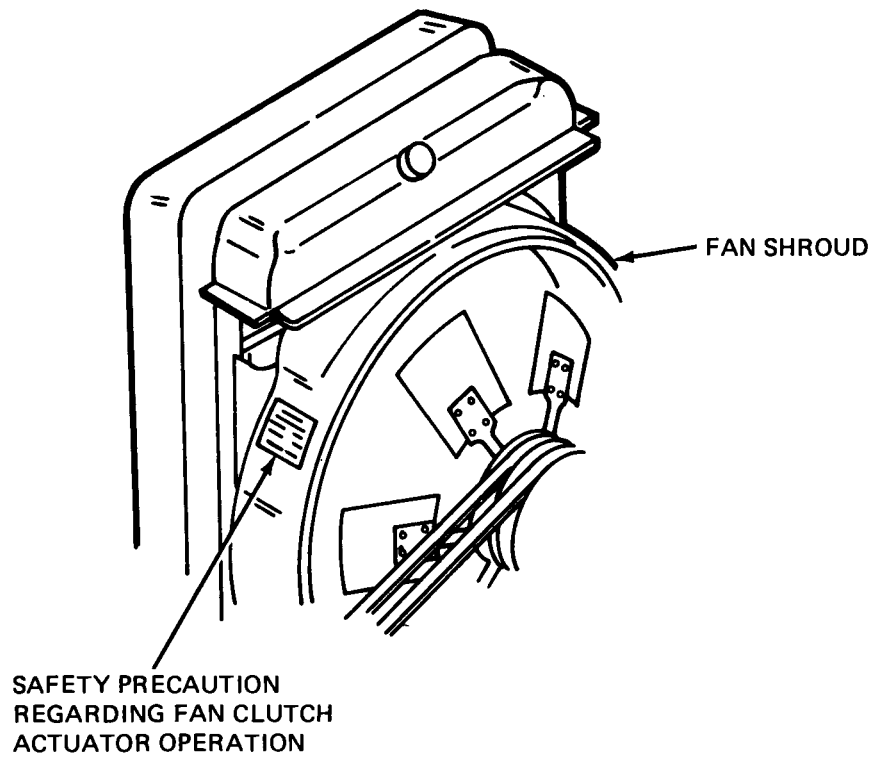
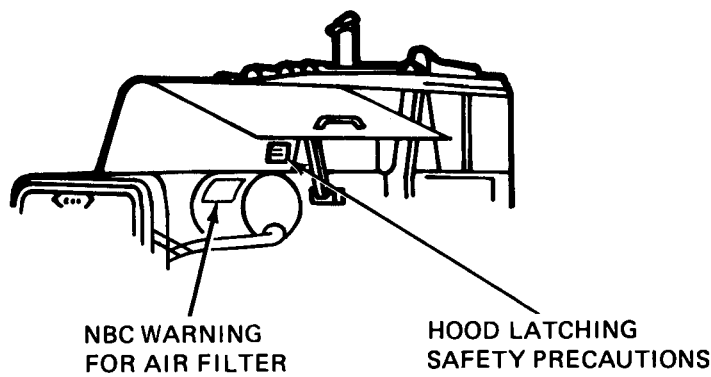
a. Cab Interior.

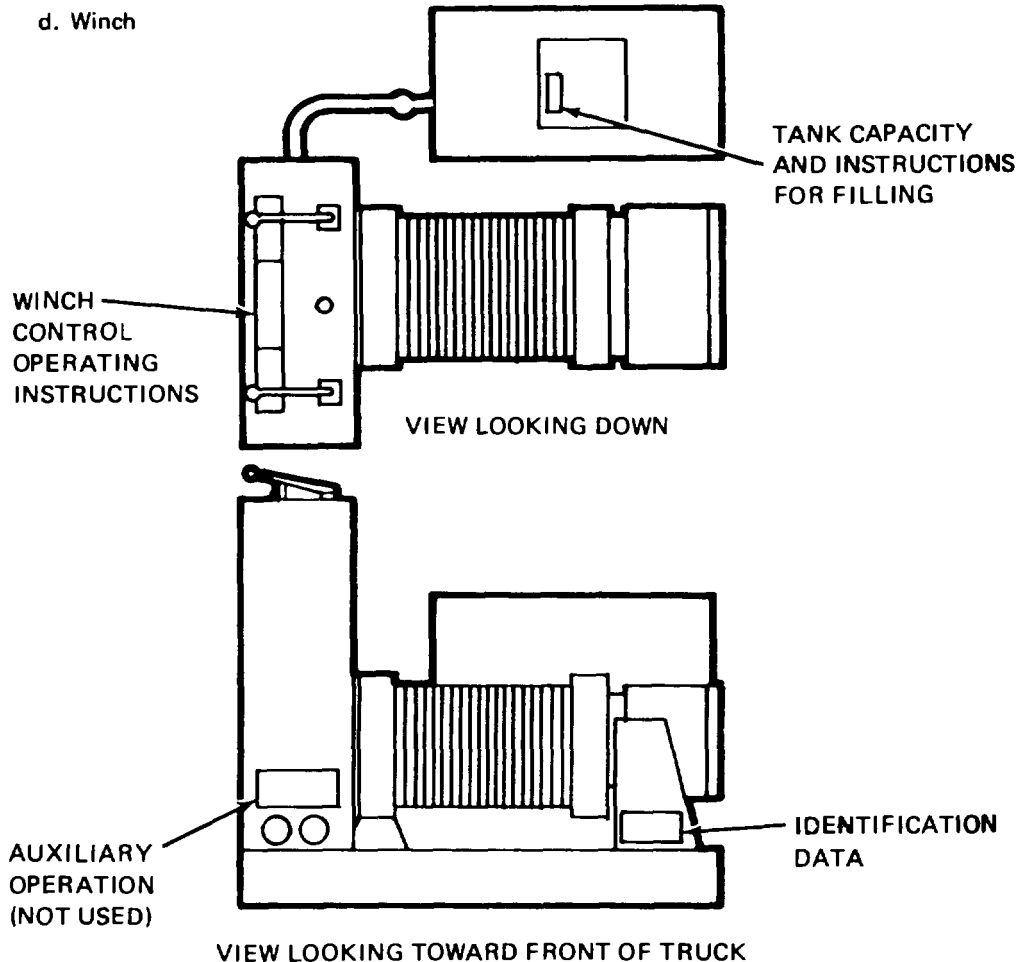


b. Transmission Ratio Selector and Driver's Seat



c. Engine Compartment





Section IV. OPERATION UNDER UNUSUAL CONDITIONS

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 Command, ATTN AMSTA-CM-S, Warren, MI 48397-5000.

This section covers many of the unusual conditions you may have to deal with while operating the M915 through M920 trucks. YOU SHOULD BECOME FAMILIAR WITH THIS SECTION AND WITH THE REFERENCED PUBLICATIONS. TM 21-300 CONTAINS IMPORTANT INFORMATION ON DRIVER SELECTION AND TRAINING. TM 21-305 PROVIDES BASIC INSTRUCTION FOR OPERATORS OF WHEELED VEHICLES. You should use the material in these manuals along with the guidelines in this section to help you to better operate the M915 through M920 under unusual conditions.

2-21. Extreme Cold Weather.

The M915 thru M920, like other vehicles, need special attention and care during periods of extreme cold weather. Remember that in extreme cold:

- Lubricants thicken.
- Batteries may lose power or freeze.
- Electrical insulation can crack causing short circuits.
- Fuel may not combine properly with air to form the necessary mixture for starting the engine.
- Metals and other materials may become hard or brittle.
- The cooling system requires adequate protection from extreme cold.
- Fuels, lubricants, and antifreeze compounds require special storage, handling, and use.

You should READ AND BECOME FAMILIAR WITH THE MATERIAL IN THE FOLLOWING PUBLICATIONS. They cover information you will need to know for operating a vehicle in extreme cold.

- TB 750651
- TM 9-207
- TM 750-254
- FM 31-70
- FM 31-71
- FM 31-72

The transmission is equipped with strip heaters to warm the transmission during cold weather. The strip heaters are thermostatically controlled for automatic operation at temperatures below 5°F. The indicator light on the console lights when the strip heaters are on. Do not operate the transmission until the indicator light goes off.

When you operate the M915 thru M920 trucks in extreme cold, keep in mind the problems characteristic of operation in cold weather, and make sure your truck is adequately prepared and protected for the existing weather conditions. Follow these guidelines when you operate the M915 thru M920 in conditions of extreme cold:

WINTERIZATION KIT

All trucks assigned to Arctic regions are equipped with a winterization kit which protects the truck systems from freeze damage and enables easier starting. The kit consists of:

- Engine coolant heater (thermostatically controlled)

- Transmission heater (immersion type)
- Engine oil heater (immersion type – thermostatically controlled)
- Battery heater (coil type – thermostatically controlled)

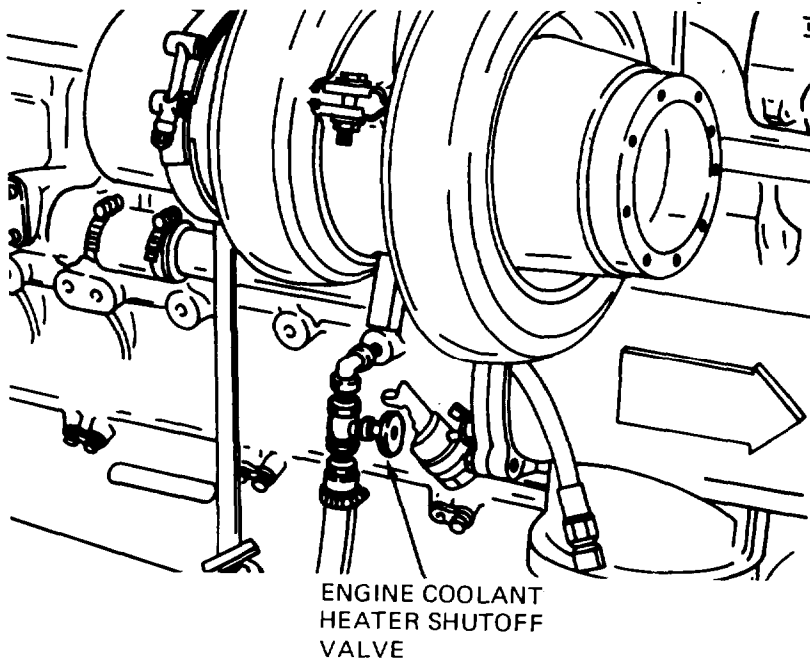
Any standard 110-volt ac (45 amp capacity) electrical outlet will provide the necessary power to operate the winterization system. A 25-foot auxiliary cable is provided to connect the outlet to the truck receptacle. The auxiliary cable contains a ground wire which grounds the system to the ac source ground when it is connected. Each heater is turned on by a circuit breaker located in the waterproof circuit breaker box next to the receptacle. The heaters then function automatically until the system is turned off.

To Turn on the System:

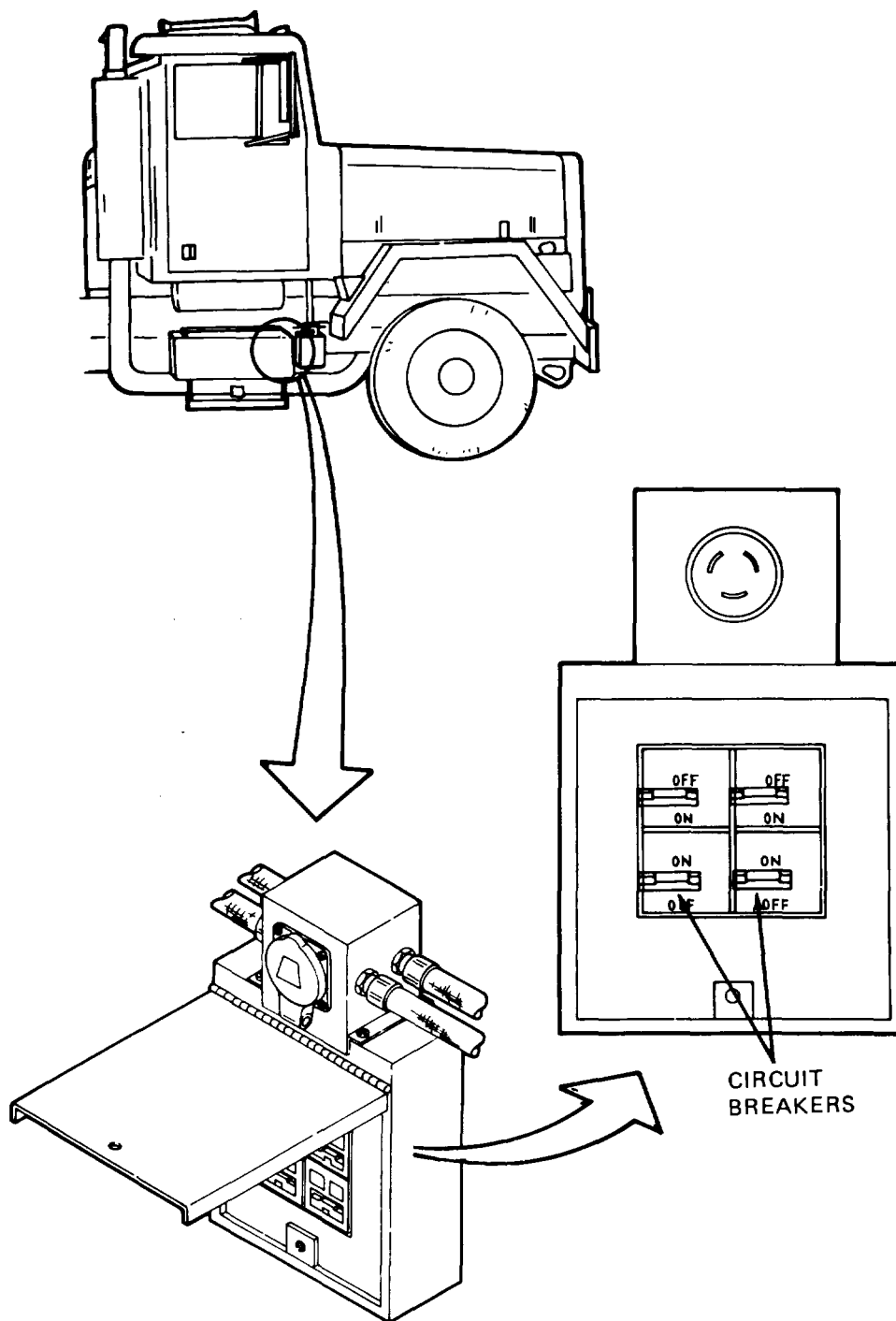
1. Park within 25 feet of a 110-volt ac electrical outlet when low temperatures are expected and you do not intend to drive the truck again while it is still warm.
2. Make sure the valve in the coolant line from the lower connection in the engine block to the heater is open.

NOTE

The engine coolant heater shutoff valve may be left open when heater is not being used.



3. Make sure the four circuit breakers are placed in the OFF position.



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4. Connect the auxiliary power cable to the ac outlet and to the truck receptacle,

NOTE

Do not attempt to use extension cords in conjunction with the cable unless their wire size is sufficient to carry 40 amps of current.

5. Place the four circuit breakers in the ON position.

To Turn off the System:

1. Place the four circuit breakers in the OFF position.
2. Disconnect and stow the 25-foot auxiliary power cable.

STARTING OUT

- Be careful when you first start your truck. USE YOUR COLD WEATHER STARTING PROCEDURE (paragraph 2-12), AND GIVE THE ENGINE TIME TO REACH AN OPERATING TEMPERATURE RANGE OF 120° TO 140°F.
- START DRIVING VERY SLOWLY, WITH TRANSMISSION IN FIRST OR SECOND GEAR. Be alert for the possibilities that TIRES MAY BE FROZEN TO THE GROUND, frozen in the shape of flat spots, or that one or more BRAKE SHOES MAY BE FROZEN and require preheating (notify Organizational Maintenance, if necessary).
- DRIVE VERY SLOWLY FOR ABOUT 100 YARDS, being careful not to let the engine stall. By starting out slowly and carefully you will be able to detect any initial problems caused by the cold weather, and your truck's fluids and components will have a little extra warmup time.

PARKING

- If you shut down your truck for a short period, PARK IN A SHELTERED AREA OUT OF THE WIND. If there is no shelter available, park so that truck does not face into the wind.
- IF YOU PARK YOUR TRUCK FOR A LONG SHUTDOWN PERIOD, TRY TO PARK ON HIGH GROUND, AND USE PLANKS OR BRUSH TO MAKE A RAISED AND RELATIVELY DRY SURFACE FOR THE TRUCK'S TIRES IN CASE WEATHER CONDITIONS WORSEN. KEEP THE TIRES OUT OF SNOW, WATER, ICE, AND MUD, IF POSSIBLE.
- CLEAN YOUR TRUCK OF SNOW, ICE, AND MUD as soon as possible after shutdown.

- IF YOUR TRUCK WILL BE PARKED FOR A LONG PERIOD OF TIME during cold weather, have Organizational Maintenance personnel REMOVE BATTERIES AND STORE THEM IN A WARM PLACE. Fill fuel tanks to guard against condensation. Drain any accumulated water from air reservoirs and fuel filter.
- MAKE SURE TIRES ARE PROPERLY INFLATED.
- Have Organizational Maintenance personnel CHECK AND SERVICE THE COOLING SYSTEM to make sure your truck is adequately protected against extreme cold. Make sure that transmission is in neutral and that the truck's tires are blocked before you leave the area.

POWER STEERING

The power steering system incorporates a cooler designed to reduce power steering fluid temperatures during normal or unusually warm conditions. In extremely cold weather, the cooler becomes restrictive and must be by-passed to prevent over pressure and possible rupture of the cooler. NOTIFY ORGANIZATIONAL MAINTENANCE TO PERFORM THIS MAINTENANCE WHEN 0°F TEMPERATURE OR BELOW IS EXPECTED.

2-22. Extreme Hot Weather.

During very hot weather you must watch for and guard against your truck overheating. You may have to alter your driving procedures, remembering that the following types of operation can cause the truck to overheat:

- Continuous high speeds.
- Long, hard Pulls.
- Continuous use of low gears on steep grades or in soft terrain.

WHEN YOU OPERATE THE TRUCK IN EXTREME HOT WEATHER

- Check water temperature gage and STOP YOUR TRUCK IF YOU NOTE ANY UNUSUALLY HIGH TEMPERATURE READING. Let the truck cool down.
- CHECK THE COOLING SYSTEM, AIR CLEANER, ENGINE OIL LEVEL, AND RADIATOR FINS FREQUENTLY. PERFORM NECESSARY SERVICES AND NOTIFY ORGANIZATIONAL MAINTENANCE OF ANY UNUSUAL GAGE READINGS OR OTHER PROBLEMS.
- SHORTEN DIFFERENTIAL OIL CHANGE INTERVAL, REFER TO LO 9-2320-273-12.

PROTECTING YOUR TRUCK WHEN YOU PARK IT

- PARK YOUR TRUCK UNDER COVER, IF POSSIBLE. This will help protect it against the effects of sun, sand, and dust. IF NO SHELTER IS AVAILABLE, COVER TRUCK WITH TARPAULINS. If You don't have enough tarps to cover the entire truck, ARRANGE TARPS AROUND ENGINE COMPARTMENT AND OVER RADIATOR to keep out sand and dust. COVER WINDOW GLASS to protect against sandblasting.
- CHECK TIRES and make sure all tires are inflated to proper pressures.
- CHECK FREQUENTLY FOR RUST AND FUNGUS GROWTH, both of which are common problems in hot, humid weather. CLEAN AND LUBRICATE YOUR TRUCK to help prevent deterioration.

2-23. Unusual Terrain.

BECOME FAMILIAR WITH THE PROCEDURES IN FM 21-305 for driving on unusual terrain. USE THESE PROCEDURES ALONG WITH THE FOLLOWING GUIDELINES WHEN YOU OPERATE THE M916 thru M920 OFF THE ROAD.

NOTE

The M915 is not designed or intended for off-road use. However, if you should find the adverse conditions described in this paragraph unavoidable, the recommended procedures given should be applied.

CAUTION

Do not use pusher axle during off-highway operations,

- RELIEVE THE AIR PRESSURE LOAD ON THE PUSHER AXLE AND RAISE THE PUSHER AXLE (M917, M919, M920). This will increase traction by shifting weight to the driving axles.
- In areas WHERE THE GROUND SURFACE PROVIDES POOR TRACTION, MOVE THE DIFFERENTIAL LOCK/UNLOCK CONTROL LEVER TO THE LOCK POSITION (See instructions in paragraph 2-13).
- When you engage the locking system, driving axles receive equal torque.
- Use the differential lock/unlock control as needed for better traction. Disengage differential lockup when conditions are back to normal. For instructions on operating the inter-axle differential lockup system refer to paragraph 2-13.

WOODS AND ROCKY TERRAIN

- MAKE SURE YOUR TRUCK CAN CLEAR ANY GROUND OBSTRUCTIONS LIKE STUMPS OR ROCKS BEFORE YOU DRIVE OVER THEM. Such objects can damage components underneath the truck. Try to avoid low hanging limbs which might cause damage.
- If you must drive over very rocky terrain, BE SURE YOU HAVE A SPARE WHEEL AND TIRE (M915 and M916), if possible, since there will be a greater chance of tire punctures.

MUD OR OTHER SOFT SURFACES

- Before you enter mud or other soft surfaces, check the conditions, and SELECT THE TRANSMISSION GEAR RANGE THAT YOU JUDGE APPROPRIATE TO GET YOUR TRUCK THROUGH the area. Enter the soft area at a medium speed for the gear range you have selected.
- MAINTAIN A STEADY PRESSURE ON ACCELERATOR PEDAL to keep your truck rolling until you reach solid ground again. Do not accelerate to the point of spinning the wheels.
- IF YOUR TRUCK GETS STUCK, TRY TO PULLOUT SLOWLY IN A LOW GEAR. YOU MAY HAVE TO PLACE BOARDS, BRUSH OR SIMILAR MATERIALS UNDER TIRES TO PROVIDE TRACTION.
- IF YOUR TRUCK IS NOT COUPLED TO A TRAILER, YOU MAY BE ABLE TO USE THE WINCH TO HELP PULL THE TRUCK OUT. Attach winch cables to another vehicle or another heavy, solid object that will not move under the load you will be putting on it.

SAND

If you operate the M915 thru M920 in sand:

- MAINTAIN STEADY, EVEN MOVEMENT WITH THE TRANSMISSION IN LOWER GEAR RANGES. Try to keep your truck rolling without straining the engine and power train.
- If you get stuck, ADJUST TIRE PRESSURE to gain additional traction. Reduce pressure in the front tires to 50 psi and reduce pressure in the rear tires to 45 psi. After you have the truck out, inflate all tires to normal pressure.
- IF THE TRUCK BOGS DOWN even though you have reduced tire pressure, PLACE BOARDS, BRUSH, CANVAS, OR SIMILAR MATERIALS UNDER AND IN FRONT OF TIRES AFTER SHOVELING A CLEAR PATH AHEAD OF EACH TIRE. This should provide better traction.

- IF THESE EFFORTS FAIL and it becomes evident that you cannot free the truck under its own power, USE THE WINCH, if possible (M916 and M920), OR HAVE ANOTHER VEHICLE TOW YOUR TRUCK OUT.
- WHENEVER YOU OPERATE THE M915 thru M920 IN SANDY OR DUSTY AREAS, YOU SHOULD:
 1. MAKE SURE EACH TIRE HAS A VALVE CAP.
 2. CHECK ENGINE AND TRANSMISSION TEMPERATURE AND ENGINE OIL PRESSURE FREQUENTLY.
 3. IF YOUR TRUCK OVERHEATS, STOP AND FIND OUT WHY. Service or notify Organizational Maintenance, if necessary.
 4. Make sure engine oil filler tube and transmission fluid filler tube are cleared before you remove the dipsticks to check fluids. CLEAN ACCUMULATIONS OF SAND AND DIRT FROM AROUND ANY FLUID FILLER LOCATIONS BEFORE YOU CHECK OR ADD FLUIDS.
 5. CLEAN SPOUTS OF FUEL CONTAINERS AND AREAS AROUND FILLER CAPS ON FUEL TANKS BEFORE YOU ADD FUEL. UNDER EXTREME SANDY OR DUSTY CONDITIONS, FILTER FUEL WHEN YOU FILL TANKS.
 6. WHEN YOU PARK THE TRUCK OVERNIGHT OR FOR ANY EXTENDED PERIOD in cold temperature, PARK SO THAT REAR OF TRUCK FACES TOWARD THE WIND, IF POSSIBLE, OR COVER THE RADIATOR AND ALL WINDOW GLASS WITH CANVAS,

SNOW AND ICE

If you have to operate the M915 thru M920 in snow or on icy surfaces, follow the guidelines below:

DRIVING:

- ACCELERATE SLOWLY to avoid spinning the tires.
- DRIVE AT SLOWER SPEEDS.
- GIVE SIGNALS SOONER.
- PUMP BRAKES TO GIVE EARLY WARNING OF INTENTION TO STOP. This will also help to avoid skidding.
- MAINTAIN DOUBLE THE NORMAL DISTANCE FROM THE VEHICLE AHEAD.
- KEEP WINDSHIELDS, WINDOWS, MIRRORS, HEADLIGHTS, STOPLIGHTS, AND BODY LIGHTS CLEAN AND FREE OF SNOW AND ICE. Use the defroster to help keep glass free of snow and ice.

- DESCEND MODERATE GRADES IN THE GEAR YOU WOULD NORMALLY USE TO ASCEND THE SAME GRADE. ON STEEP OR VERY SLIPPERY GRADES, LOCK DIFFERENTIAL, USE AT LEAST ONE GEAR LOWER AND ACTIVATE ENGINE RETARDING SYSTEM.
- After driving through slush or water, drive slowly and test the brakes. Keep driving slowly, maintaining moderate pressure on the service brake pedal to create a slight drag. When you are sure that your brakes are dried out and operating smopproperly, resume normal speed.
- If you come to a difficult stretch of road, stop and inspect it carefully before driving on it. SELECT THE TRANSMISSION GEAR RANGE THAT YOU FEEL IS MOST LIKELY TO GET YOU OVER THAT STRETCH OF ROAD AND LOCK DIFFERENTIAL.
- If tires start spinning, back up and try again. If necessary, try rocking out by locking the differential, shifting to a forward gear, accelerating lightly, and shifting into reverse when your truck's forward motion stops. Repeat this alternate shifting and acceleration until your truck can use the momentum created by the rocking motion to rock out of the slippery area. Make every effort not to spin tires.

STOPPING:

- EASE UP ON ACCELERATOR, leaving truck in gear.
- APPLY BRAKES INTERMITTENTLY AND LIGHTLY, using engine brake to full advantage for braking effect.
- Always AVOID SUDDEN BRAKING on slick roads; this can cause your truck to skid.

PARKING:

- IF YOU HAVE TO PARK THE TRUCK ON AN ICY, SLUSHY, WET OR MUDDY SURFACE, PLACE BOARDS, BRUSH OR OTHER MATERIAL THAT WILL PROVIDE TRACTION UNDERNEATH TIRES. This will guard against tires freezing to the ground or becoming pocketed in ice, and will provide some traction when your truck is started and moving again.
- Instead of setting parking brake, BLOCK TIRES AND LEAVE TRANSMISSION IN NEUTRAL.

2-24. Fording.

BEFORE FORDING

Before you attempt fording with the M915 thru M920 trucks, check the bottom surface condition of the water body. Make sure the bottom surface is hard enough that you can ford without exceeding the maximum fording depth of 20 inches for the M915 thru M920. If the bottom surface is too soft, do not attempt fording. Ford to the maximum depth for short periods or short distances only.

- MAKE SURE ENGINE IS OPERATING PROPERLY before entering water.
- LUBRICATE UNPAINTED SURFACES to guard against rust and deterioration.
- ENGAGE DRIVE LINE LOCKING SYSTEM. Move differential lock/unlock control to the LOCK position.

DURING FORDING

- PUT TRANSMISSION IN A LOW GEAR. ENTER WATER SLOWLY.
- FORD AT SPEEDS OF 3-4 MPH.
- WHEN YOUR TRUCK EMERGES FROM WATER, APPLY BRAKES A FEW TIMES TO HELP DRY OUT BRAKE LININGS. Make sure brakes are working properly before driving truck at normal speeds.

AFTER FORDING

N O T E

**All models can ford up to 20 inches for five minutes
without maintenance for vehicle to continue operation**

During fording, water may enter your truck or its components. This water may have contaminated the fluid systems, You must make sure that any accumulated water is removed from your truck before it has a chance to cause damage to any systems, surfaces or equipment of the truck. As soon as possible after fording, CHECK YOUR TRUCK USING THE FOLLOWING GUIDELINES:

- LET THE ENGINE RUN FOR AWHILE to drive out any accumulated water.
- DRAIN OR DRY ANY AREAS ON YOUR TRUCK WHERE WATER HAS ACCUMULATED.
- CHECK EACH FLUID SYSTEM IN YOUR TRUCK for evidence of water contamination. If you find water in one or more fluid systems, notify Organizational Maintenance to drain, flush, and refill the contaminated system.
- REFER TO LO 9-2320-273-12. Notify Organizational Maintenance that an after-fording lubrication is needed.
- If necessary, NOTIFY ORGANIZATIONAL MAINTENANCE OF ANY SERVICE OR REPAIRS YOUR TRUCK NEEDS before you return it to normal use. (Refer to after-fording maintenance procedures in chapter 3).

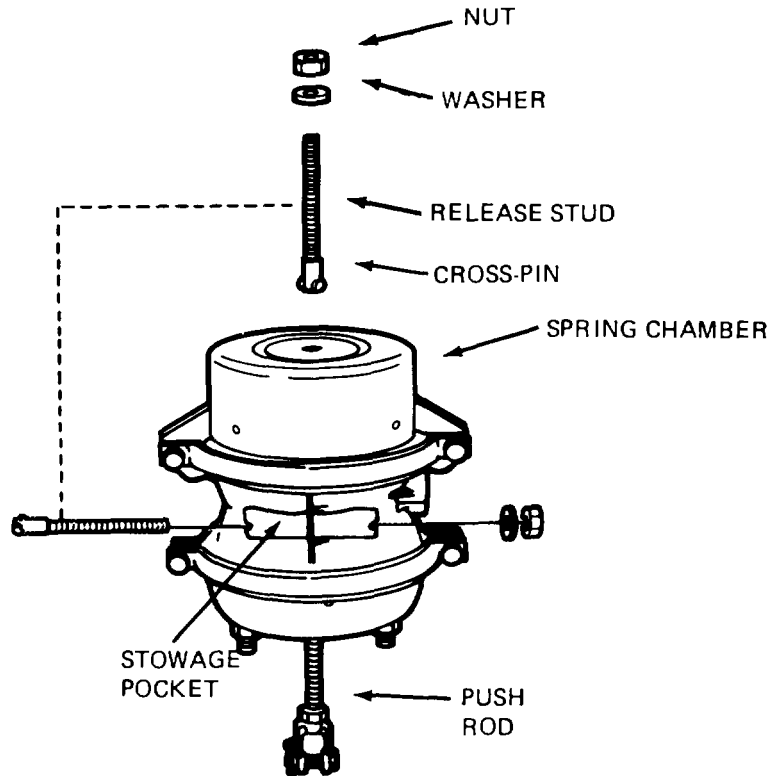
2-25. Manually Compressing the Spring Brake Power Springs.**WARNING**

**Block the wheels to keep truck from moving when
the brakes are released.**

In the event of an air system pressure loss, spring brake units on the tandem rear axles will apply the rear brakes. If the truck must be moved and there is not enough air system pressure to compress the power spring in the spring brake chambers and release the brakes, you will have to do this manually. The truck has four spring brakes.

To compress the power spring in each unit:

1. Remove the nut, washer and release stud from the stowage pocket.
2. Remove cap (dust cover) from spring chamber.
3. Insert the cross-pin end of the release stud into the opening (under the cap) in the spring chamber.



4. After the release stud has been inserted far enough to engage the pressure plate, turn the release stud 1/4 turn to lock the cross-pin into the pressure plate.
5. Install the washer and nut (used in stowage) on the release stud.
6. Tighten nut until 2½-2¾ inches of the release stud remains above the nut. Spring brake is then fully caged.

N O T E

While tightening, observe that the push rod retracts. This indicates that the pressure plate has been properly engaged.

2-26. Manually Releasing (Resetting) the Spring Brake Power Springs.

If the power springs in the spring brake chambers have been compressed, they should be reset before the truck is returned to service.

To reset the spring brakes:

1. Remove the nut and washer from the release stud.

2. Remove the release stud from the spring chamber.
3. Replace cap over the hole in the spring chamber.
4. Insert release stud in the stowage pocket and install the washer and nut.

2-27. Towing the M915 thru M920 Trucks.

C A U T I O N

**The drivelines must be disconnected to tow the truck,
otherwise the transmission will be damaged.**

If the truck must be towed for any reason notify Organizational Maintenance to send a wrecker or tow vehicle and a TM 9-2320-273-20 maintenance manual and tools needed to drop the main prop shaft. Refer to FM 21-305 for general guidelines on vehicle recovery and use of warning kits and signals. FM 21-305, FM 20-22 AND THE FOLLOWING PROCEDURES PROVIDE INSTRUCTIONS FOR TOWING.

C A U T I O N

Before towing the vehicle, the differential lock/unlock control must be placed in the disengaged position; UN-LOCK position for the M915 and the center (unmarked) position for the M916 thru M920 (see paragraph 2-13). This applies to all of the towing configurations identified in the following paragraphs.

a. All Axles on Ground.

When towing with front axle and rear tandem on the ground, it is necessary to place the differential lock/unlock control in "unlock" position to disconnect the drive to the front axle (M916 thru M920) and disconnect the universal joint on the rear of the intermediate propeller shaft (at the input to the forward rear axle) and tie it up to the vehicle undercarriage. Remove the propeller shaft and stow it securely on the vehicle.

b. Front Axle Lifted Off the Ground

When the front axle is lifted off the ground by a wrecker and towed, it is necessary to disconnect the universal joints on the intermediate propeller shaft. Remove the propeller shaft and stow it securely on the vehicle.

N O T E

The purpose in disconnecting and tying up this shaft is to prevent drive to the transfer case which would damage the transmission output side without the benefit of oil pressure lubrication which is provided from the engine driven input side.

c. Rear Tandem Lifted Off the Ground

When the rear tandem axles are lifted off the ground by a wrecker and towed, it is necessary to disconnect the universal joint at the front of the front propeller shaft (at the input to the front axle) and tie it up to the vehicle undercarriage.

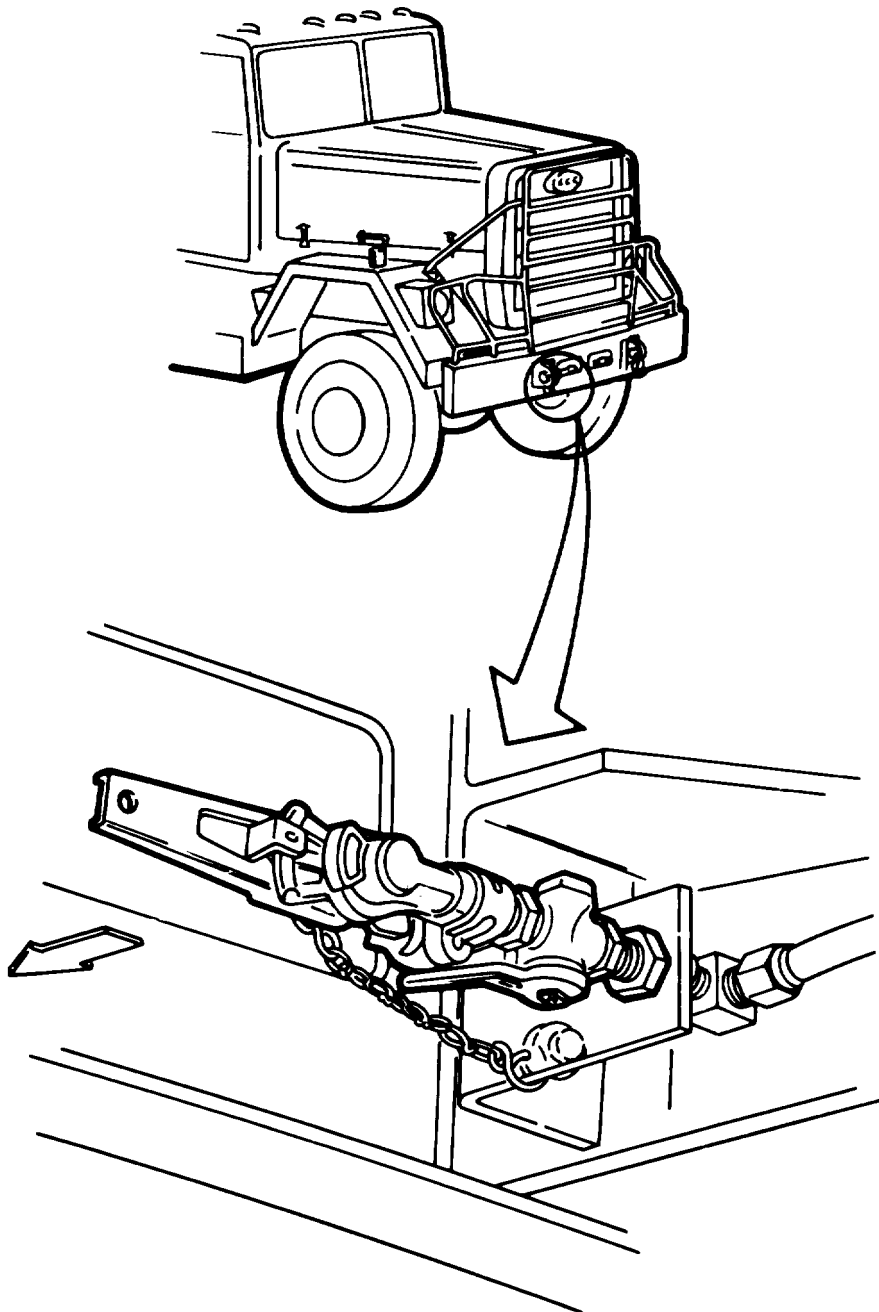
N O T E

The purpose of this (as stated above) is to prevent damage to the transmission.

d. Towing Short Distances

It is permissible to tow the M916 thru M920 vehicles very short distances (up to 1/2 mile) at very low speeds (up to 10 mph) without disconnecting the driveline at all.

- e. **INSTALL MEDIUM DUTY TOWBAR (NSN 2540-00-378-2012)** at pintle of towing vehicle and at towing eyes of truck tractor. **MAKE SURE TOWING DEVICE IS LONG ENOUGH TO** allow for complete turning radius.
- f. To maintain a supply of air for brake operation, connect air pressure hoses between the truck and the towing vehicle. Quick disconnect couplings are provided in the bumper for this purpose.
- g. **PLACE TRANSMISSION IN NEUTRAL, RELEASE PARKING BRAKES,** and turn on appropriate lights.
- h. **TOWING VEHICLE SPEED SHOULD BE RESTRICTED TO A MAXIMUM OF 15 MPH ON PRIMARY ROADS AND 8 MPH ON SECONDARY ROADS.** For cross-country towing, all tires should be on ground.



QUICK DISCONNECT
COUPLINGS

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CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I LUBRICATION INSTRUCTIONS

For complete information on your responsibilities in lubricating the M915, M916, M920 Truck Tractors, and Chassis for the M917, M918, M919, REFER TO THE LUBRICATION INSTRUCTIONS IN LO 9-2320-273-12. The lube order will show you the lubrication points and will tell you the proper intervals for lubricating each point.

Section II TROUBLESHOOTING PROCEDURES

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Overheats.	3-7
Will not develop full power	3-9
Low or no engine oil pressure	3-9
Excessive oil consumption	3-9
Excessive exhaust smoke	3-9
Truck coasts while using engine retarder	3-10

STEERING

Hard steering, shimmy or wandering	3-10
Hard to steer	3-11
Slow or intermittent	3-11

TRANSMISSION

Foamy fluid on dipstick.	3-11
Shifts slowly or erratically	3-11
Overheats	3-11
Leaks fluid at breather	3-12

WHEELS, TIRES, AND HUBS

Wheel wobbles	3-12
Truck wanders or pulls to one side	3-12
Tires worn unevenly or excessively	3-14

PUSHER AXLE

Will not come up	3-13
Will not go down	3-13
Will not maintain load reaction	3-14

PTO

Does not engage	3-14
Indicator light stays on	3-14

WINCH

- Drum will not operate 3-I5
- Unusually noisy when operating.. . . . 3-I5

The table lists the common malfunctions which you may find during the operation or maintenance of the M915, M916, and M920 Truck, Tractor, and M917, M918, and M919 Truck Chassis or its components. You should perform the tests or inspections, and corrective actions, in the order listed.

The manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. IF A MALFUNCTION IS NOT LISTED OR IS NOT CORRECTED BY LISTED CORRECTIVE ACTIONS, FILL OUT A DA FORM 2404 AND NOTIFY YOUR SUPERVISOR (OR ORGANIZATIONAL MAINTENANCE).

Table 3-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
AIR SYSTEM AND BRAKES		
1. AIR RESERVOIR PRESSURE LOW (WARNING LIGHT AND BUZZER ARE ON).		
	Step 1. Check that all air reservoir draincocks are closed.	Close all draincocks.
	Step 2. If tractor is not coupled to a trailer, check that trailer air supply control is pulled out (OFF).	Pull trailer air supply control out.
	Step 3. Check for possible air leaks at air reservoirs, hoses, fittings, and at inter vehicular air hose connections.	Notify Organizational Maintenance of any leaks.
	Step 4. If tractor is coupled to semitrailer, and your tests and inspections of truck do not reveal any trouble with truck air system, troubleshoot semitrailer.	If your tests, inspections, and corrective actions for both tractor and semitrailer do not solve the low air pressure problem, notify Organizational Maintenance.
2. AIR SYSTEM LOSES PRESSURE DURING TRUCK OPERATION OR LOW AIR PRESSURE WARNING LIGHT AND BUZZER COME ON DURING TRUCK OPERATION.		
	Step 1. Make sure that trailer air supply control is pulled out, operate engine until warning light and buzzer go off, and release parking brake. Stop engine and note reservoir pressure. Fully depress and hold service brake pedal for 2 minutes. Have crew member check for leaks. Reservoir pressure loss during 2-minute period should not exceed 5 psi.	Close any open reservoir drains; make sure that trailer air supply control is pulled out. if you find any other leaks, notify Organizational Maintenance.
	Step 2. If pressure loss in test above does not exceed 5 psi in 2 minutes, push in trailer air supply control to charge semitrailer air reservoirs and repeat the test procedure. Have crew member check semitrailer for leaks. Pressure loss should not exceed 5 psi in 2 minutes.	Note any semitrailer air leaks. If reservoir pressure loss exceeds 5 psi in 2 minutes, troubleshoot the semitrailer.

Table 3-1. Troubleshooting - Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. TRAILER BRAKES WILL NOT APPLY WHEN BRAKE PEDAL IS USED OR HAND CONTROL ON STEERING COLUMN IS USED.		<p>Check to make sure that both intervehicular air hoses are connected securely to semitrailer connections.</p> <p>Connect air hoses securely to semitrailer. Charge trailer air system by pushing in trailer air supply control. If trouble continues, notify Organizational Maintenance.</p>
4. TRAILER BRAKES WILL NOT RELEASE.	Step 1. Check to make sure that trailer brake hand control is in OFF position.	Move control to OFF position.
	Step 2. Check to make sure that trailer air supply control is pushed in (charging position).	If necessary, push in trailer air supply control.
	Step 3. Check to make sure that both intervehicular air hoses (service to service and emergency to emergency) are securely connected between tractor and semitrailer.	If necessary, connect hoses securely.
	Step 4. Check for obvious leaks in tractor air system (reservoirs, lines, intervehicular hoses).	If you find any leaks in tractor air system, notify Organizational Maintenance. If you find no evidence of leaks or damage in truck components, troubleshoot semitrailer.
	DRIVELINE LOCKING SYSTEM	
	5. DRIVELINE WILL NOT DISENGAGE (INDICATOR LIGHT STAYS ON) WHEN DIFFERENTIAL LOCK/UNLOCK CONTROL IS MOVED TO THE UNLOCK POSITION.	
		<p>Step 1. Make sure you have given system time to disengage.</p> <p>Leave LOCK/UNLOCK control in UNLOCK position and wait for light to go off.</p>

Table 3-1. Troubleshooting - Continued

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
<p>Step 2. If LOCK indicator light stays on after you have given system time to disengage, excessive driveline windup may have occurred. Back up slowly, and check to see whether LOCK indicator light goes off. If indicator light remains on, notify Organizational Maintenance.</p>
<p>ELECTRICAL SYSTEM</p>
<p>6. ONE OR MORE OF THE LIGHTING SYSTEMS NOT WORKING.</p>
<p>Step 1. Check to make sure appropriate switch(es) are in the ON position and blackout switch is in NORMAL position. if tractor is coupled to semi-trailer and problem is with semitrailer lighting system, check to make sure that intervehicular cable is connected securely between tractor and semitrailer. Put appropriate switch(es) in the ON position. If necessary, securely connect intervehicular cable.</p> <p>Step 2. Troubleshoot semitrailer. If your tests, inspections, and corrective actions fail to solve problem, notify Organizational Maintenance.</p>
<p>ENGINE</p>
<p>7. ENGINE FAILS TO CRANK WHEN STARTER BUTTON IS DEPRESSED.</p>
<p>Step 1. Check to make sure the engine run key switch is in the ON (right) position. Move switch to ON position.</p> <p>Step 2. Check to make sure transmission ratio selector lever is in NEUTRAL (N) position. Move selector lever to N.</p> <p>Step 3. Inspect for dirty, loose or broken battery cables. Clean dirty cables. Tighten loose connections at batteries, ground, and starter. If cables are broken, notify Organizational Maintenance.</p>

Table 3-1. Troubleshooting - Continued

<p>MALFUNCTION</p> <p>TEST OR INSPECTION</p> <p>CORRECTIVE ACTION</p>
<p>Step 4. Engine still fails to crank. Notify Organizational Maintenance.</p> <p>Step 5. Check battery indicators, they should be green. If they are dark or yellow, notify Organizational Maintenance.</p> <p>8. ENGINE CRANKS BUT FAILS TO START.</p> <p>Step 1. Check to make sure fuel tank has fuel. Fill fuel tanks, if required.</p> <p>Step 2. Check air filter restriction gage. If gage indicates restriction (registers red instead of clear), notify Organizational Maintenance.</p> <p>Step 3. Check to make sure You are using ether starting aid (cold start) correctly (if temperature is below 32°F). Follow the proper cold weather starting procedures using ether starting aid.</p> <p>9. ENGINE STARTS, BUT MISFIRES OR RUNS ROUGHLY AFTER PROPER WARMUP PERIOD.</p> <p>Refer to Step 2 under Malfunction 8.</p> <p>10. ENGINE DOES NOT IDLE PROPERLY.</p> <p>If idle is uneven, or if engine dies after starting, refer to Steps 2 and 3 under Malfunction 8.</p>

Table 3-1. Troubleshooting - Continued

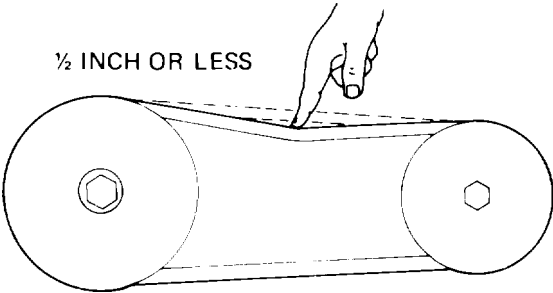
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
11. ENGINE COOLANT TEMPERATURE GAGE INDICATES ENGINE IS OVERHEATING (TEMPERATURE EXCEEDS 210°F).		
<p style="text-align: center;">WARNING</p>		
<p>Let radiator cool before removing cap. Remove radiator cap in two steps. First, place a thick cloth over the cap and slowly rotate cap left to its first stop; pause, and let pressure escape from cooling system. Then rotate cap farther left until you can remove it. Failure to follow this procedure can result in serious burns.</p>		
<p>Step 1. Check coolant level in radiator. Sight glass should be full. Add coolant to fill radiator to proper level.</p>		
<p>Step 2. Check for leaks in system. If you find leaks, notify Organizational Maintenance.</p>		
<p>Step 3. Check to make sure radiator cooling fins are free of mud, ice, snow or debris.</p>		
<p>Remove any material clogging radiator. Shine flashlight through engine side and note light at radiator. Make sure cooling fins are not clogged.</p>		
<p>Step 4. Check cooling fan drive belts for looseness.</p>		
<p>½ INCH OR LESS</p>		
		
<p>If belts are loose, notify Organizational Maintenance.</p>		

Table 3-1. Troubleshooting - Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	<p>Step 5. Check to make sure engine oil is at proper level on dipstick. Add oil, if necessary.</p> <p>Step 6. Check to make sure transmission fluid is at proper level on dipstick. Check transmission oil temperature gage. Add fluid, if necessary.</p>	
12. ENGINE DOES NOT DEVELOP FULL POWER.	<p>Step 1. Check to make sure PTO is disengaged. Disengage PTO.</p> <p>Step 2. Refer to Step 2 in Malfunction 8.</p>	
13. LOW OR NO ENGINE OIL PRESSURE (ENGINE OIL PRESSURE GAGE SHOULD REGISTER OIL PRESSURE WITHIN 10 TO 15 SECONDS AFTER ENGINE STARTS),	<p>Check engine oil level. Add oil to maintain proper level. If this does not solve oil pressure problems, notify Organizational Maintenance.</p>	
14. EXCESSIVE ENGINE OIL CONSUMPTION.	<p>Inspect engine for loose oil lines or leaks. Notify Organizational Maintenance of any leaks.</p>	
15. EXCESSIVE EXHAUST SMOKE (AT NORMAL ENGINE OPERATING RANGE OF 160°F-185°F).	<p>Step 1. Check air cleaner restriction indicator. If indicator shows red, notify Organizational Maintenance.</p> <p>Step 2. Open fuel tank filler caps and check for obvious fuel contamination. If fuel is so contaminated that you can see dirt or other foreign matter, or if you can smell fuel notify Organizational Maintenance.</p>	

Table 3-1. Troubleshooting - Continued

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****6. WHILE USING THE ENGINE RETARDER, THE TRUCK BEGINS TO COAST OR FREE-WHEEL.**

- Step 1. Check to make sure the engine retarder system is engaged.
Press down on the engine retarder foot pedal and take your foot completely off the accelerator pedal.
- Step 2. Depress accelerator pedal to overcome free-wheeling.
Notify Organizational Maintenance.

STEERING**7. HARD STEERING, SHIMMY OR WANDERING.**

- Step 1. Check to make sure tires are properly inflated.

	M915		M916		M917		M918		M919		M920	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Empty	75	50	90	50	95	50	75	50	100	50	100	50
1/2 Payload	60	50	90	50	85	60	65	50	90	60	100	50
Full Payload	95	70	95	90	100	90	80	50	100	90	100	90

- Step 2. Check for worn, loose or damaged parts of front axle or suspension.
Check steering linkage, wheels, and truck frame.
If you find any problems, notify Organizational Maintenance.
- Step 3. Check for loose lug nuts.
Tighten lug nuts and notify Organizational Maintenance to have lug nuts torqued.
- Step 4. Check for loose or damaged shock absorbers (M915 only).
Notify Organizational Maintenance of loose or damaged shock absorbers.
- Step 5. Check power steering fluid reservoir for proper fluid level.
Add fluid if necessary.

Table 3-1. Troubleshooting - Continued

MALFUNCTION	TEST FOR INSPECTION	CORRECTIVE ACTION
18. TRUCK STEERING SLOW TO RESPOND OR INTERMITTENT.	<p>Step 1. Check power steering fluid reservoir for proper fluid level. Add fluid if necessary.</p> <p>Step 2. Check for proper operation of power steering. With truck standing still, turn wheels from stop to stop and hold against each stop for 5 seconds. Repeat this several times. If steering problem continues, notify Organizational Maintenance.</p>	
		TRANSMISSION
19. FOAMY FLUID ON TRANSMISSION DIPSTICK.	<p>Check level on dipstick with engine off and truck on level ground. If fluid level is above FULL mark on dipstick, notify Organizational Maintenance.</p>	
20. SLOW OR ERRATIC TRANSMISSION CLUTCH ENGAGEMENT.	<p>Check dipstick to make sure fluid is at proper level. With truck on level ground and engine off, add fluid, as required, to maintain proper level. If fluid is sufficient, notify Organizational Maintenance.</p>	
21. TRANSMISSION FLUID TEMPERATURE GAGE INDICATES FLUID IS OVERHEATING DURING NORMAL OPERATION. NORMAL OPERATING TEMPERATURE RANGE IS 190°F-265°F.	<p>Step 1. Check transmission fluid level on dipstick. Add fluid, if necessary.</p> <p>Step 2. Check dipstick for evidence of foamy fluid. Refer to Malfunction 19.</p> <p>Step 3. Check dipstick for evidence of discoloration that could indicate water/antifreeze in fluid. If there is discoloration of fluid, notify Organizational Maintenance.</p>	

Table 3-1. Troubleshooting - Continued

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****22. FLUID LEAKING FROM TRANSMISSION BREATHER.**

Check for evidence of foamy fluid on transmission dipstick.
Refer to Malfunction 19.

WHEELS, TIRES AND HUBS**23. WHEEL WOBBLES.**

- Step 1. Check wheel for loose or missing lug nuts.
Tighten loose nuts; notify Organizational Maintenance to torque nuts properly. If any lug is broken or missing, notify Organizational Maintenance.
- Step 2. Check to see if wheel is bent.
If wheel is bent, change wheel and tire assembly. Notify Organizational Maintenance that a replacement is needed.
- Step 3. Check for loose, worn or damaged components.
Notify Organizational Maintenance of any suspension problems.

24. TRUCK WANDERS OR PULLS TO ONE SIDE ON LEVEL PAVEMENT.

NOTE: Check tire pressure when tires are cold.

Step 1. Check tire pressure.

	M915		M916		M917		M918		M919		M920	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Empty	75	50	90	50	95	50	75	50	100	50	100	50
1/2 Payload	80	50	90	50	85	60	65	50	90	60	100	50
Full Payload	95	70	95	90	100	90	80	50	100	90	100	90

- Step 2. Check to make sure that all tires are of the proper size and type.
If tires are not properly matched, and if more than one tire is involved, notify Organizational Maintenance. If only one tire is improper and the spare tire is of the correct size and type, replace improper wheel and tire assembly with the spare and notify Organizational Maintenance that a replacement is needed.
- Step 3. Check for loose or damaged steering gear/linkage.
If you find evidence of any problems, notify Organizational Maintenance.

Table 3-1. Troubleshooting - Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
25. TIRES WORN UNEVENLY OR EXCESSIVELY.	<p>Step 1. Check cold tire pressures. Inflate or deflate tires to proper pressure.</p> <p>Step 2. Inspect for bent wheel rims. If a rim is bent, replace that wheel and tire assembly.</p> <p>Step 3. Check for loose wheel; worn, loose or damaged suspension components. Tighten nuts on loose wheel; notify Organizational Maintenance to properly torque wheel. Also, notify Organizational Maintenance of any suspension damage.</p>	PUSHER AXLE
26. PUSHER AXLE WILL NOT COME UP.	<p>Step 1. Check to make sure that air system pressure is sufficient (low pressure warning light and buzzer are both off). Let air pressure build up until warning light and buzzer go off.</p> <p>Step 2. Check to make sure that raise/lower control is at the AXLE LIFT position. Move pusher axle raise/lower controls to proper position for raising axle.</p> <p>Step 3. Check for air leaks in the area of hoses and check for cracks or holes in the air bags, Notify Organizational Maintenance.</p>	
27. PUSHER AXLE WILL NOT GO DOWN,	<p>Step 1. Check to make sure that air system pressure is sufficient (low air pressure warning light and buzzer are both off). Let air pressure build up until warning light and buzzer go off.</p> <p>Step 2. Check to make sure that raise/lower control is set at the AXLE DOWN position. Set raise/lower control to AXLE DOWN position.</p> <p>Step 3. Check for air leaks in the area of hoses and check for cracks or holes in the air bags. Notify Organizational Maintenance.</p>	

Table 3-1. Troubleshooting-Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
28. PUSHER AXLE WILL NOT MAINTAIN LOAD REACTION.		
<p>Step 1. Check to make sure that air system pressure is sufficient (low air pressure warning light and buzzer are both off). Let air pressure build up until warning light and buzzer go off.</p> <p>Step 2. Check to make sure that air control pressure adjuster is turned fully to the right. Turn air control pressure adjuster fully to the right.</p> <p>Step 3. Check for air leaks in the area of hoses and check for cracks or holes in the air bags. Notify Organizational Maintenance.</p>		
PTO		
29. PTO DOES NOT ENGAGE.		
<p>Check to make sure that PTO control is in the ENGAGE position reference 1100 rpm and shift cycle. Move PTO control to the ENGAGE position. If PTO still does not engage, notify Organizational Maintenance.</p>		
<p>NOTE: MAKE SURE that cable is connected to the PTO in case it becomes loose from road vibrations.</p>		
30. PTO INDICATOR LIGHT STAYS ON EVEN THOUGH THE PTO CONTROL KNOB IS PUSHED COMPLETELY IN.		
<p>Check the throttle control on the winch control console to determine that it has been pushed down. Push the winch throttle control all the way down.</p>		

Table 3-1. Troubleshooting - Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p style="text-align: center;">WINCH</p> <p>31. WINCH DRUM WILL NOT OPERATE.</p> <p style="text-align: center;">WARNING</p> <p>Do not remove fill cap when hydraulic fluid is hot. The hydraulic tank is pressurized to 5 psi. Remove the cap slowly.</p> <p>Step 1. Check to make sure that PTO control is engaged and that the engine throttle on the winch control console is pulled out back for maximum rpm.</p> <p style="padding-left: 40px;">Place all controls in proper positions.</p> <p>Step 2. Check hydraulic fluid reservoir level.</p> <p style="padding-left: 40px;">Add fluid, if necessary. If winch still fails to operate properly, notify Organizational Maintenance.</p> <p>32. WINCH UNUSUALLY NOISY WHEN OPERATING.</p> <p style="text-align: center;">WARNING</p> <p>Always wear heavy gloves when you handle winch cables. Never let the cable run through your hands; frayed cables can cut you. Never operate the winch with less than four turns of the cable on the drum. Keep cable coils tight and close together on the drum while winching.</p>		

Table 3-1. Troubleshooting - Continued

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
Check to make sure that cable is not twisted, tangled or causing drum to bind. Pay out or take up cable, as necessary, to straighten it. If winch is still unusually noisy when operating, notify Organizational Maintenance.

Section III. MAINTENANCE PROCEDURES

3-1. Cleaning Your Truck.**EXTERIOR**

- Never wipe off dirt when truck is dry.
- Never wash truck in direct sunlight or if the truck exterior is hot to touch.
- Wash your truck often using cold or warm water (never use hot water or any strong detergent). Do not use abrasives to remove mud and dirt from your truck.
- While cleaning truck, look closely for evidence of rust or corrosion, bare metal or other exterior damage. If you find any problems, notify Organizational Maintenance to treat affected areas.

INTERIOR

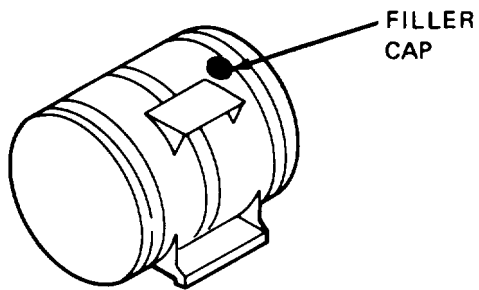
- Remove loose dust and dirt from cab Interior components.
- Clean upholstery and seatbelts using a mild solution of warm water and soap (never use solvents or abrasives). Wipe dry all areas that you have washed.

3-2. Fuel Tanks.**WARNING**

When filling the fuel tanks with diesel fuel be sure the hose nozzle or container contacts the filler tube on the fuel tank to carry off static electricity. Do not smoke or permit any open flame in the area of the truck while you are servicing the diesel fuel system. Failure to follow this warning can result in equipment damage or injury to personnel.

FILLING

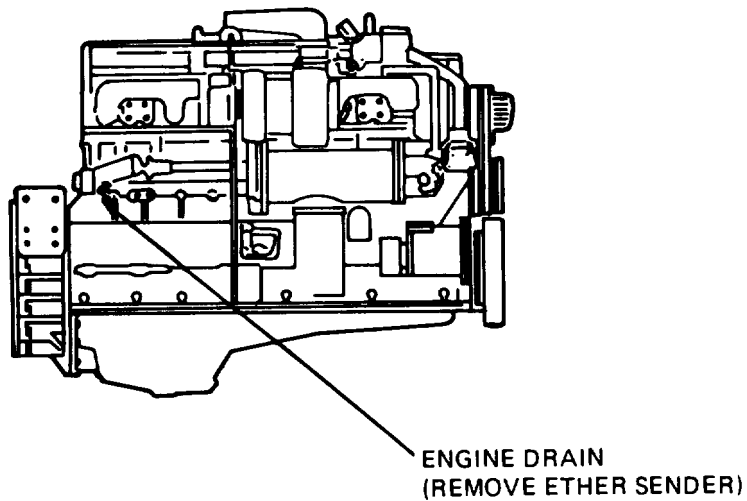
- a. SHUT DOWN ENGINE.
- b. WIPE OFF DIRT AROUND FILLER CAP AND OPENING.
- c. REMOVE CAP.
- d. FILL TANK.
- e. INSTALL FILLER CAP.



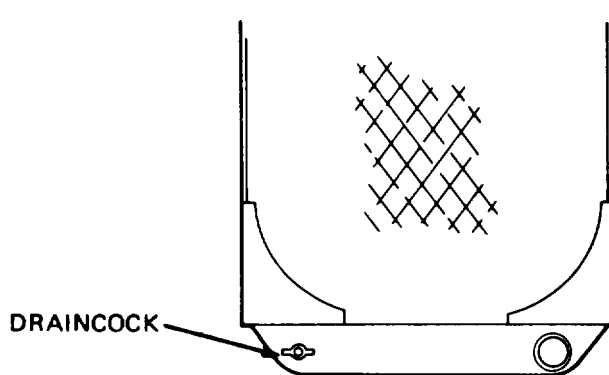
3-3. Cooling System.

DRAIN LOCATIONS

- Engine has one drain on the right side

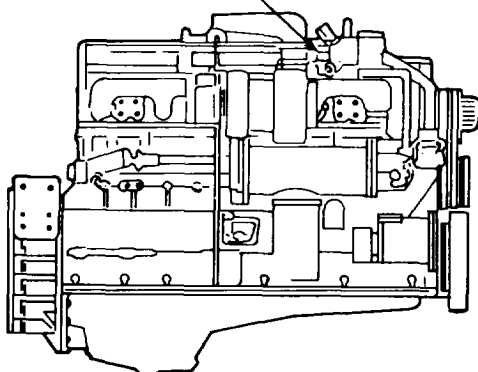


- Radiator draincock is on bottom front of radiator.



- Air vents are located on thermostat housing and on upper front of oil cooler.

COOLING SYSTEM
AIR VENT



FILLING EMPTY SYSTEM

Fill the system with a mixture of clean water and ethylene glycol base permanent type anti-freeze (Check with Organizational Maintenance for the proper mixture of water and anti-freeze).

- CLOSE ENGINE BLOCK AND RADIATOR DRAINCOCKS AND OPEN COOLING SYSTEM AIR VENT.
- POUR COOLANT INTO RADIATOR FILLER NECK UNTIL SIGHT GLASS IS FULL.
- START ENGINE AND ALLOW IT TO REACH NORMAL OPERATING TEMPERATURE (165°F–195°F).
- RECHECK COOLANT LEVEL.
- PUT ON RADIATOR CAP.
- CHECK FOR LEAKS.

ADDING COOLANT TO PARTLY FILLED SYSTEM

W A R N I N G

Let radiator cool before removing cap. Remove radiator cap in two steps. First, place a thick cloth over the cap and slowly rotate cap left to its first stop; pause, and let pressure escape from cooling system. Then rotate cap farther left until you can remove it. Failure to follow this procedure can result in serious burns.

- a. REMOVE RADIATOR CAP.
- b. OPEN COOLING SYSTEM AIR VENT.
- c. ADD COOLANT.
- d. PUT ON RADIATOR CAP.
- e. CHECK FOR LEAKS.

FAN CLUTCH LOCKUP PROCEDURE

WARNING

LET RADIATOR COOL BEFORE PERFORMING THESE TASKS. TOUCHING HOT ENGINE COMPONENTS MAY RESULT IN SERIOUS BURNS.

1. Using crescent wrench remove bolt from fan adjusting bracket located on right front side of engine
2. Manually rotate fan until the hole in the fan outer driven member aligns with any one of the three holes in the fan pulley.
3. Insert bolt in aligned hole and tighten with crescent wrench

3-4. Changing a Wheel and Tire Assembly.

GENERAL

WARNING

Use caution when lifting or handling a wheel and tire assembly. It is very heavy and could cause injury if improperly lifted or if it should fall on you.

- a. In case of a flat on any model, stop the truck where there will be no hazard to other traffic or to the crew member changing the tire. Notify Organizational Maintenance as soon as possible so the tire can be repaired and returned to service.
- b. A spare wheel and tire assembly is provided on the M915 and M916 trucks. On these models a tire hoist is provided to raise and lower the spare wheel and tire assembly from the stowed position.
- c. On models M917, M919 and M920, no spare is provided. Should you have a flat, use one of the pusher axle wheel and tire assemblies as a spare.
- d. If you have a flat on the rear of the M918, reduce speed as much as practical and report to Organizational Maintenance as soon as possible. If you have a flat on one of the front tires of the M918, exchange the flat tire with one of the outside rear duals.
- e. When changing tires, do not substitute type or size tire unless all tires on the truck can be converted. Keep all tires the same.

USING THE SPARE TIRE HOIST AND RACK (M915 AND M916)**WARNING**

When lowering the spare, the brake disk will get hot. DO NOT TOUCH IT. You can get burned

WARNING

When paying out cable from the tire hoist, LEAVE FOUR FULL TURNS OF CABLE ON THE HOIST DRUM. Otherwise, a load on the cable could pull it loose from the drum and cause injury to personnel.

CAUTION

If the brake disk starts smoking or shows other signs of overheating, stop operation and allow 15 minutes for brake to cool.

a. Remove the Spare Wheel and Tire.

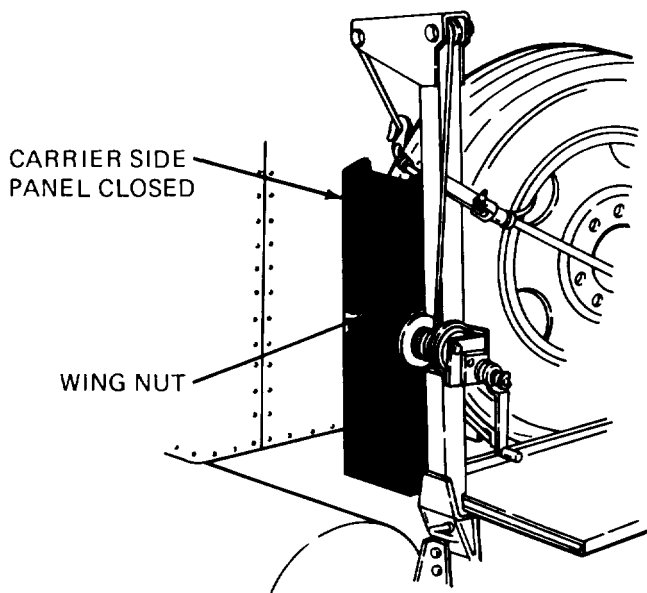
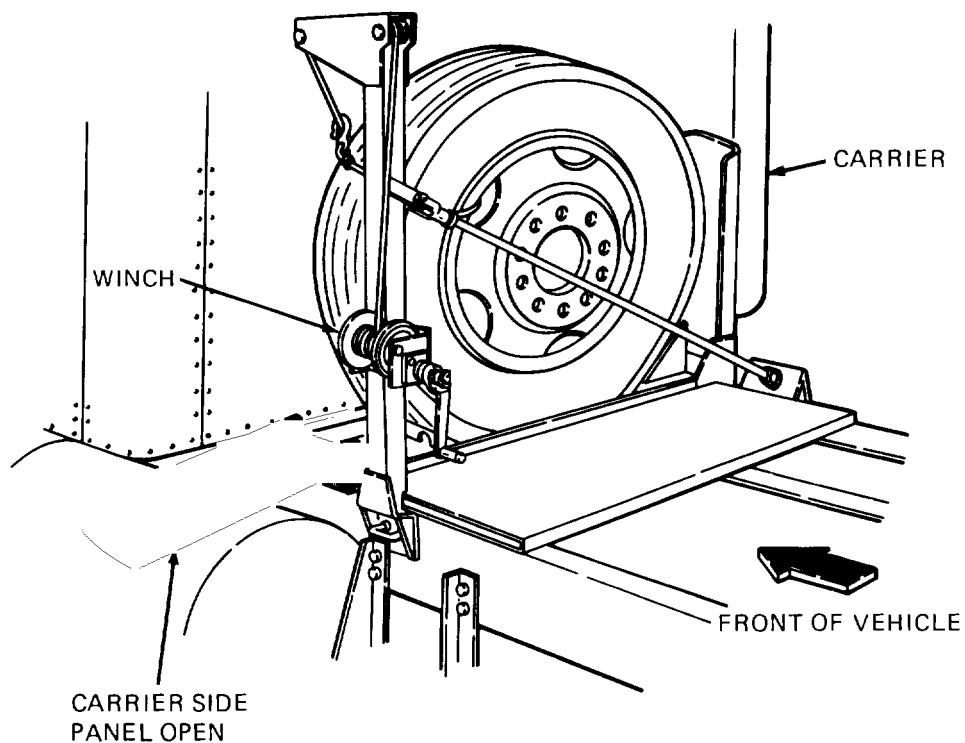
1. With the spare still mounted on the tire hoist rack (M916) or in the tire carrier (M915), run the end of the cable through a wheel opening, wrap it around the tire and secure the snap back to the cable.

NOTE

The winch automatically brakes when pressure is taken off the handle regardless of which direction it is being turned.

If slack is needed to secure the cable around the wheel and tire, you must pull on the cable and turn the handle in the counterclockwise (lower) direction at the same time. Do not pay out more cable than is needed.

2. Remove tractor to trailer electrical cable at tractor (M915).
3. Remove spare from the tire carrier (M915) by removing the wing nut and lowering the carrier side panel. The spare can then be lifted on the side panel and moved out far enough to clear the truck for lowering.



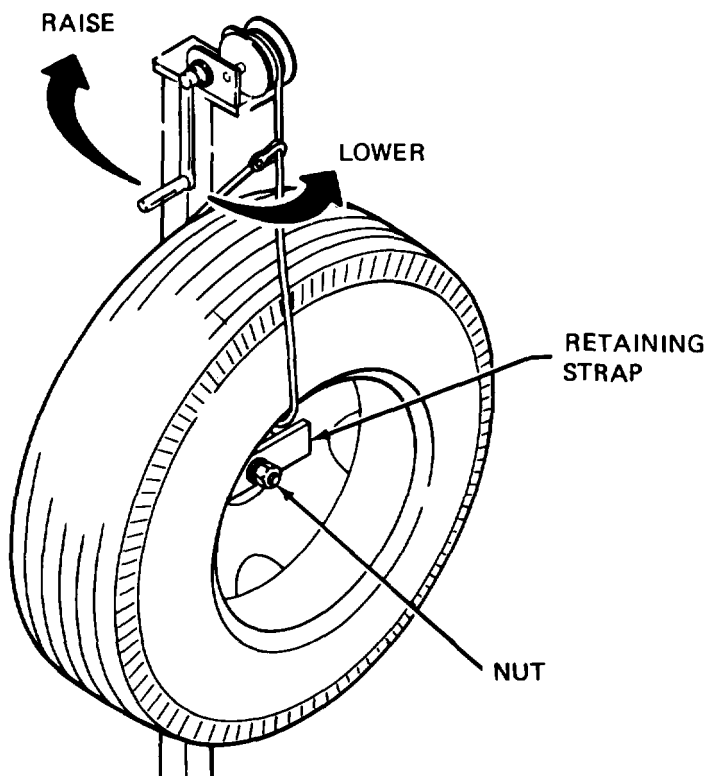
4. Remove spare from tire hoist and rack (M916) by removing the nut (using the lug wrench) and the retaining strap. The spare can be pushed off the rack and lowered to the ground.
5. Take up slack in the cable by turning the handle in the clockwise (raise) direction.
6. Turn the handle counterclockwise to lower the spare. To stop the winch at any point, turn the handle in the clockwise (raise) direction until you hear two clicks from the internal ratchet then release the handle. The brake will automatically engage.

NOTE

Do not continue turning handle counterclockwise (lower) if cable is not paying out, otherwise handle will unscrew and the winch will become inoperative.

NOTE

If your hand should slip off the handle while lowering the spare, the brake will automatically engage.



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Change 3 3-23

7. When the wheel and tire assembly is on the ground, detach the cable and leave it -
payed out in readiness for lifting the flat.
- b. Secure the flat tire and wheel in the stowed position.
 1. Secure the hoist cable to the wheel and tire assembly by inserting the hook through an opening in the wheel, wrapping the cable around the tire, and attaching the hook to the cable (see step a. 1.).
 2. To raise the wheel and tire assembly, turn the hoist crank clockwise (raise). You will hear a clicking sound made by the internal ratchet. If you stop turning the handle or if your hand should slip off the handle, the brake will apply automatically and hold the load.
 3. On the M915, raise the tire and wheel assembly high enough to clear the lowered carrier side panel. Push it toward the center of the carrier, raise the side panel and secure with the wing nut. Connect electrical cable at tractor.
 4. On the M916, turn the wheel so the back side is facing outward and raise the tire and wheel assembly. When the wheel and tire assembly is aligned with the tire rack, press the wheel against the rack so that the round plate on the rack fits inside the wheel hub opening. While maintaining pressure against the tire, install retaining strap and nut. Tighten the nut with the lug wrench.
 5. After the tire and wheel has been secured, the cable may be slightly loose but should remain attached to the wheel.
6. Crank handle must be in the 6 o'clock position when not in use to avoid interference with trailer.

JACKING PROCEDURES

WARNING

The hydraulic jack is intended only for lifting the truck, not for supporting the vehicle for performing maintenance. Do not get under the truck after it is raised unless it is properly supported with blocks or jack stands. Failure to observe this warning can result in serious injury.

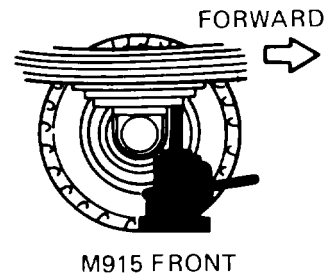
Instructions for Operating the Jack:

1. TO RAISE JACK RAM, use slotted handle to rotate RELEASE VALVE in jack base FIRMLY TO THE RIGHT.
2. Insert handle in socket and PUMP THE HANDLE TO RAISE JACK RAM.
3. TO LOWER JACK RAM, ROTATE RELEASE VALVE SLOWLY TO THE LEFT.

Jack Placement:

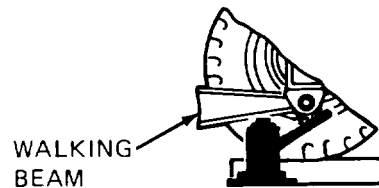
M915 Front -12 Ton Jack

1. Place the jack so the jack ram is under the first small spring leaf just forward of the axle.
2. Raise the jack ram until the tire clears the ground.



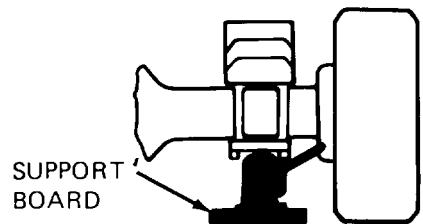
M915 Rear - 12 Ton Jack

1. Place the jack under the walking beam inboard of the walking beam trunnion support.
2. Raise the jack ram until both duals clear the ground.



M916 Thru M920 Front - 20 Ton Jack

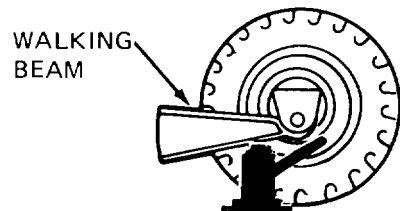
1. Place the jack on the support board and position the jack ram under the front spring mounting pad.
2. Raise the jack ram until the tire clears the ground.



M916 THRU M920 – FRONT

M916 Thru M920 Rear - 20 Ton Jack

1. Place the jack under the walking beam inboard of the walking beam trunnion support.
2. Raise the jack ram until both duals clear the ground.



M916 THRU M920 – REAR

TA 073613

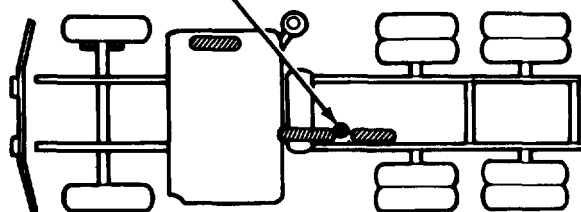
WHEEL REMOVAL AND INSTALLATION

1. CHECK TO MAKE SURE THAT TIRE TO BE INSTALLED HAS PROPER AIR PRESSURE.

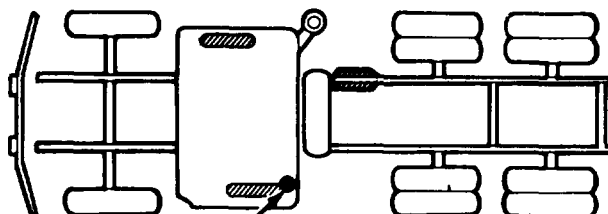
	M915		M916		M917		M918		M919		M920	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Empty	75	50	90	50	95	50	75	50	100	50	100	50
1/2 Payload	80	50	90	50	65	60	65	50	90	60	100	50
Full Payload	95	70	95	90	100	90	80	50	100	90	100	90

If necessary, put air in tires using the pneumatic hose which is stowed in the tool box. A quick-disconnect fitting is provided at the rear of the secondary air reservoir for this purpose.

QUICK-DISCONNECT

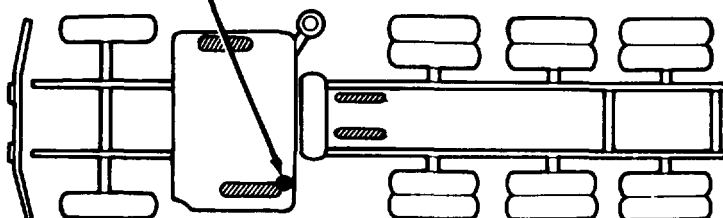


M915, M918



M916

QUICK-DISCONNECT



2. HAVE SPARE WHEEL AND TIRE ASSEMBLY READY FOR QUICK INSTALLATION.
3. CHECK TO MAKE SURE THAT TRUCK WILL NOT ROLL WHEN AXLE IS RAISED.
If necessary, block tires to prevent truck from rolling.

N O T E

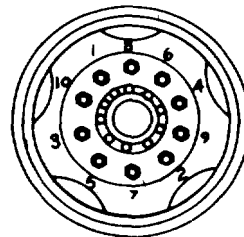
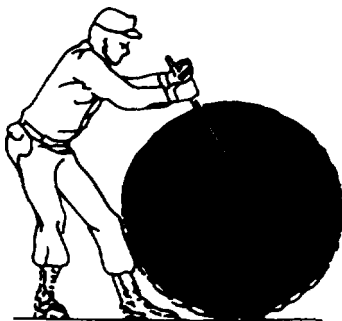
All wheel nuts on hubs on the left side of the truck have left-hand threads (rotate nuts to the right to loosen, to the left to tighten). All wheel nuts on hubs on the right side of the truck have right-hand threads (rotate nuts left to loosen, right to tighten).

4. BREAK LOOSE ALL NUTS OF WHEEL TO BE REMOVED.

N O T E

To remove a pusher axle wheel for use as a spare, lower the axle before attempting to break nuts loose otherwise the wheel will spin.

5. POSITION THE JACK AS INSTRUCTED IN THE JACKING PROCEDURE, THEN RAISE THE AXLE UNTIL THE TIRE CLEARS THE GROUND.
6. REMOVE NUTS FROM WHEEL AND REMOVE OUTER WHEEL AND TIRE ASSEMBLY FROM HUB. INNER DUAL WHEEL AND TIRE ASSEMBLY ON A REAR AXLE CAN NOW BE REMOVED IF REQUIRED.
7. MOUNT SPARE WHEEL AND TIRE ASSEMBLY ON HUB AND INSTALL NUTS. (IF INSTALLING INNER DUAL WHEEL AND TIRE ASSEMBLY, MOUNT IT ON HUB FIRST, THEN MOUNT OUTER WHEEL AND TIRE ASSEMBLY ON HUB AND INSTALL NUTS.) RUN NUTS UP SNUGLY BUT DO NOT COMPLETE TIGHTENING AT THIS TIME.
8. LOWER TRUCK. ALTERNATELY TIGHTEN NUTS AS SHOWN. You will not be able to overtighten the nuts due to the size bolts and length of the wrench handle. Notify Organizational Maintenance to properly torque the nuts.
9. STOW HYDRAULIC JACK IN TOOL COMPARTMENT UNDER PASSENGER SEAT.



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3-5. Batteries.

Four 12-volt batteries connected in series-parallel supply the 12-volt electrical system of the M915 thru M920 and provide 24 volts for the starter motor. Check the batteries as described below.

NOTE

Always check to make sure that the batteries are connected as shown in the illustration (series-parallel). Failure to connect batteries correctly can result in severe damage to the truck's electrical system.

● **CABLES, CONNECTIONS**

Check all cables. Make sure they are in good condition. Check connections at terminals. Make sure they are secure. Also make sure cable clamps, terminals, and battery tops are clean.

● **CASES**

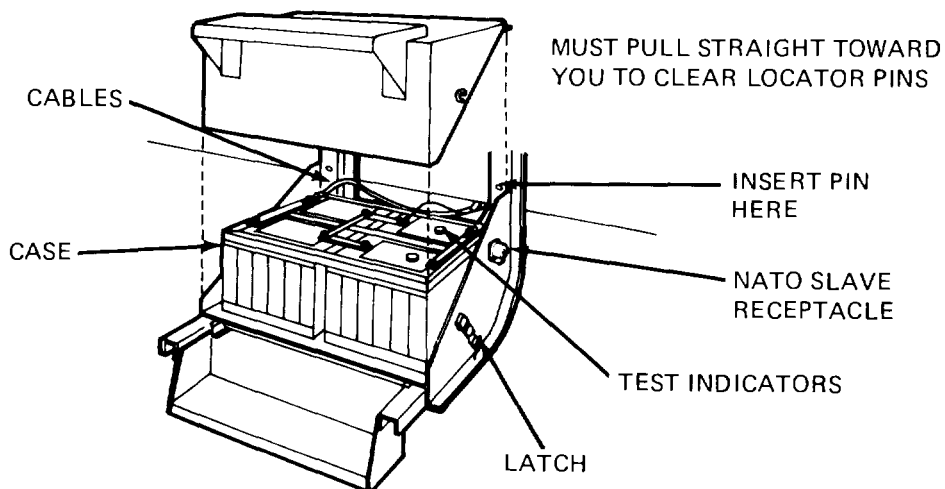
Check battery cases. Make sure none is leaking. If you find leakage, notify Organizational Maintenance. Clean all affected areas.

● **TEST INDICATORS**

Check test indicators for green color. If any is completely dark or shows a yellow color, notify Organizational Maintenance.

● **LATCHES**

Unfasten to remove battery box cover. Fasten to secure cover to box.



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Section IV. MAINTENANCE UNDER UNUSUAL CONDITIONS

3-6. EXTREME COLD WEATHER.**BASIC GUIDELINES**

- In extreme cold weather, it is essential that your truck be in top condition, or it will be very difficult to get the truck started (if it is in poor condition, it may not start at all). Always make sure that You have carefully performed your PMCS, and be sure to report any problems to Organizational Maintenance.
- Always give the engine extra time to reach its operating temperature range of 165°–195°F and the transmission strip heater enough time to bring the control body up to operating temperature.
- For detailed guidance on antifreeze protection, lubrication, electrical system, service, and other maintenance requirements for extreme cold weather operation, refer to TM 9-207.

3-7 EXTREME HOT OR HUMID WEATER.**HOT WEATHER**

- Check the engine coolant level frequently; make sure that you maintain coolant at proper level. Check cooling system (radiator, hoses, lines) for possible leaks, and notify Organizational Maintenance of any problems.
- Check tires frequently to make sure that each tire is inflated to the proper pressure (but be very careful not to overinflate tires). Wait until tires are cool before you adjust their pressures.

HUMID WEATHER

- Hot,damp weather can cause your truck's materials to deteriorate. Watch for evidence of corrosion and rust on metals, and for mildew, mold or fungus growth on fabrics. Clean affected areas carefully and, if necessary, notify Organizational Maintenance of any needed repairs.

3-8. AFTER FORDING**CHECKING AND CLEANING YOUR TRUCK**

- Always check for sand and mud after you have forded water with the M915 thru M920. Thoroughly clean the truck. If the fording depth was 21 inches or more, notify Organizational Maintenance and request after-fording maintenance for your truck.

- If your truck has been operated in salt water, let the exterior dry, then check it for evidence of salt accumulation. Use a clean, damp cloth to immediately remove all salt accumulation.
- If the fording depth was 21 inches or more, notify Organizational Maintenance that your truck needs after-fording maintenance and that you were operating your truck in salt water.

3-9. After Operating on Unusual Terrain.

CHECKING AND CLEANING YOUR TRUCK

- After operating your truck in mud, clean all accumulated mud from your truck. Check and clean radiator if mud is stuck in cooling fins.
- If you have been operating in sandy or dusty areas, frequently check the air cleaner, radiator cooling fins, and all fluids in your truck's systems. If You find sand or dirt in any fluid, notify Organizational Maintenance. Any time you have operated your truck in sandy or dusty areas, notify Organizational Maintenance that your truck needs special servicing because of operation in sand or dust.

APPENDIX A

REFERENCES

A-1. Publication Indexes.

The following index should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this technical manual.

Consolidated Index of Army Publications
and Forms DA Pam 310-1

A-2. Forms.

The following forms pertain to this material. (Refer to DA Pamphlet 810-1 for index of blank forms.)

Standard Form 46, U.S. Government Motor Vehicle Operator's Identification Card.
standard Form 91, Operator's Report of Motor Vehicle Accident
Recommended Changes to DA Publications and Blank Forma (DA Form 2028)
Refer to TM 38-750, The Army Maintenance Management Systems (TAMMS), for instructions on the use of maintenance forms pertaining to this material.

A-3. Other Publications.

The following publications contain information pertinent to the major item of material end associated equipment.

a. Operating Vehicle.

Army Motor Transport Units and Operations FM 55-30
Manual for The Wheeled Vehicle Driver FM 21-305

b. Maintenance and Repair.

Organizational Maintenance for M915, M916, M920
Truck Tractors and Chassis for M917, M918, and M919 TM 9-2320-273-20
organizational Maintenance Repair Parts end Special Tools
List for M915, M916, M920 Truck Tractor and Chassis
for M917, M918, and M919 TM 9-2320-273-20P

Lubrication Order for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919	LO 9-2320-273-12
Direct and General Support Repair Parts and Special Tools List For M915, M916, M920 Truck Tractors and Chasis for M917, M918, and M919	TM 9-2320-273-34P
Organizational Care, Maintenance and Repair of Pneumatic Tires and Inner Tubes	TM 9-2610-200-20
Description, Use, Bonding Techniques, and Properties of Adhesives	TB ORD 1032
Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materiels Including Chemicals . . .	TM 9-247
Metal Body Repair and Related Operations	FM 43-2
Welding Theory and Application	TM 9-237
Painting Instructions for Field Use	TM 43-0139
Inspection, Care, and Maintenance of Anti friction Bearings	TM 9-214
Use of Antifreeze Solutions and Cleaning Compounds in Engine Cabling Systems	TB 750-651
Cooling Systems: Tactical Vehicles.	TM 750-254
Direct and General Support Maintenance Manual and Repair Parts and Special Tools List for Diesel Engine in M915, M916, M920 Truck Tractor, and Chassis for M917, M918 and M919	TM9-2815-222-34&P
Direct Support and General Support Maintenance Manual for M915, M916, M920 Truck Tractors, and Chassis for M917, M918 and M919.	TM 9-2320-273-34
 c. Cold Weather Operation and Maintenance.	
Basic Cold Weather Manual	FM 31-70
Northern Operations	FM 31-71
 d. Decontamination.	
Chemical, Biological, and Radiological (CBR) Decontamination	TM 3-220
NBC (Nuclear, Biological and Chemical) Defense. . . , . . .	FM 21-40
 a. Truck Bodies.	
Lubrication Order for M917 Truck Body	LO 5-3805 -274-12
Lubrication Order for M918 Bituminous Distributor Truck Body	LO 5-3895-371-12
Lubrication Order for M919 Concrete Mobile Mixer Truck Body	LO 5-3895-372-12
Operator Manual for M917 Truck Body	TM 5-3805-274-10
Operator Manual for M918 Bituminous Distributor Truck Body.	TM 5-3895-371-10
Operator Manual for M919 Concrete Mobile Mixer Truck Body.	TM 5-3895-372-10

Organizational, Direct Support and General Support Maintenance Manual for M917 Truck Body	TM 5-3805-274-24 & P
Organizational, Direct Support and General Support Maintenance Manual for M918 Bituminous Distributor Truck Body	TM 5-3895 -371-24 &P
Organizational Maintenance Manual for M919 Concrete Mobile Mixer Truck Body	TM 5-3895 -372-20
Direct Support and General Support Maintenance Manual for M919 Concrete Mobile Mixer Truck Body	TM 5-3895-372-34
Organizational Repair Parts and Special Tools List for M919 Concrete Mobile Mixer Truck Body	TM 5-3895-372-20P
Direct Support and General Support Repair Parts and Special Tools List for M919 Concrete Mobile Mixer Truck Body	TM 5-3895-372-34P

f. General.

Principles of Automotive Vehicles	TM 9-8000
Camouflage	FM 5-20
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use	TM 750-244-6
Administrative Storage of Equipment	TM 740-90-1

APPENDIX B

COMPONENTS OF END ITEM LIST

SECTION I. INTRODUCTION

B-1. Scope.

This appendix lists integral components of and basic issue items for the M915, M916, M920 Truck Tractors and Chassis for M917, M918 and M919 to help you inventory items required for safe and efficient operation.

B-2. General.

This Components of End Item List is divided into the following sections:

- a. Section II, Integral Components of the End Item.
(None Authorized)

- b. Section III, Basic Issue Items. These are the minimum essential items required to place the M915 through M920 Trucks in operation, to operate them and to perform emergency repairs. Although shipped separately packed, they must accompany the M915 through M920 Trucks during operation and whenever they are transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns.

- a. Illustration. This column is divided as follows:

- (1) Figure Number. Indicates the figure number of the illustration on which the item is shown.

- (2) Item Number. The number used to identify item called out in the illustration.

- b. National Stock Number. Indicates the national stock number assigned to the item which will be used for requisitioning.

- c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the federal item name and, if required, a minimum description to identify the item.

a. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. The applicable model numbers are included to help you identify which component items are used on the different models.

<u>Code</u>	<u>Used On</u>
U21	Model M915
U22	Model M916
U23	Model M917
U24	Model M918
U25	Model M919
U26	Model M920

g. Quantity Required (Qty Req'd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date; such as for shipment to another site.

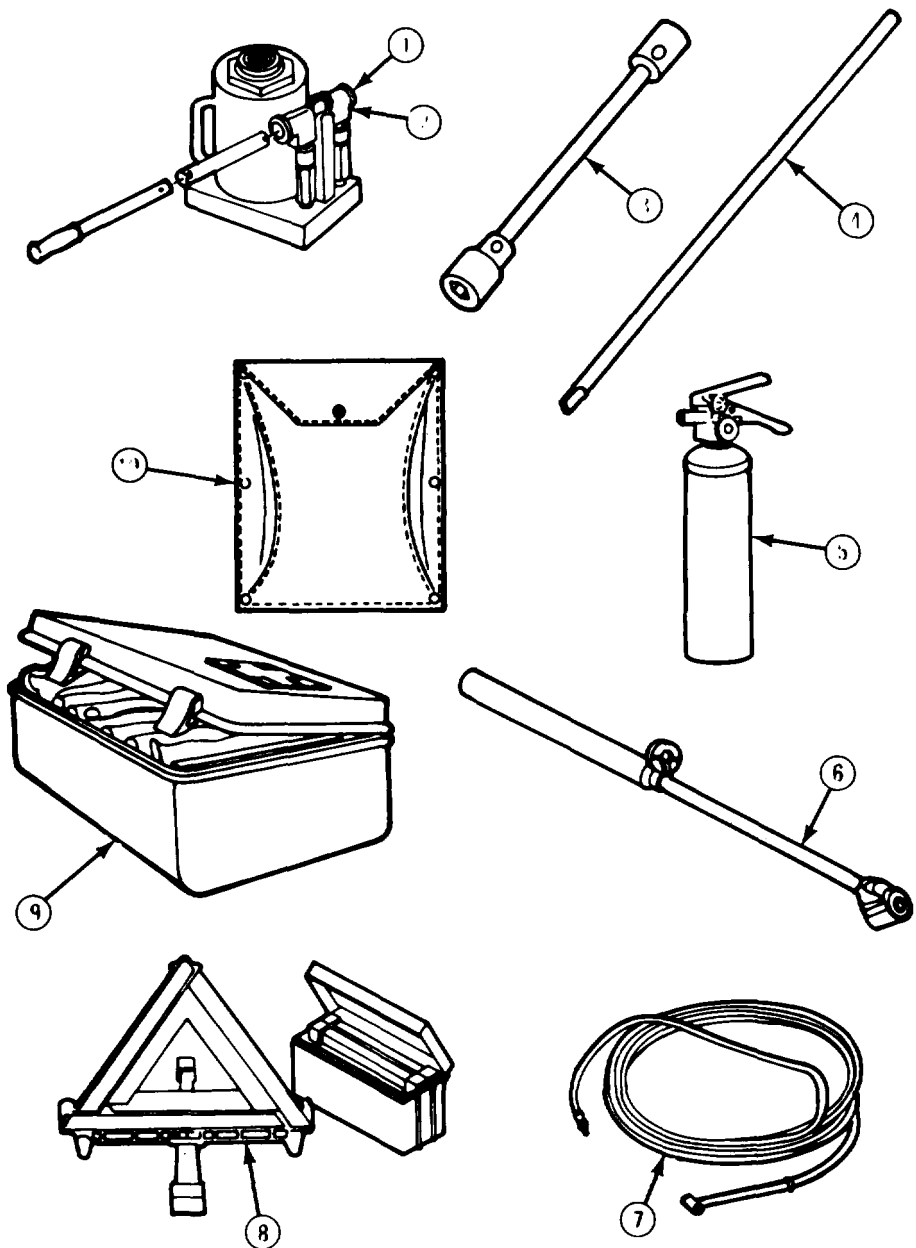
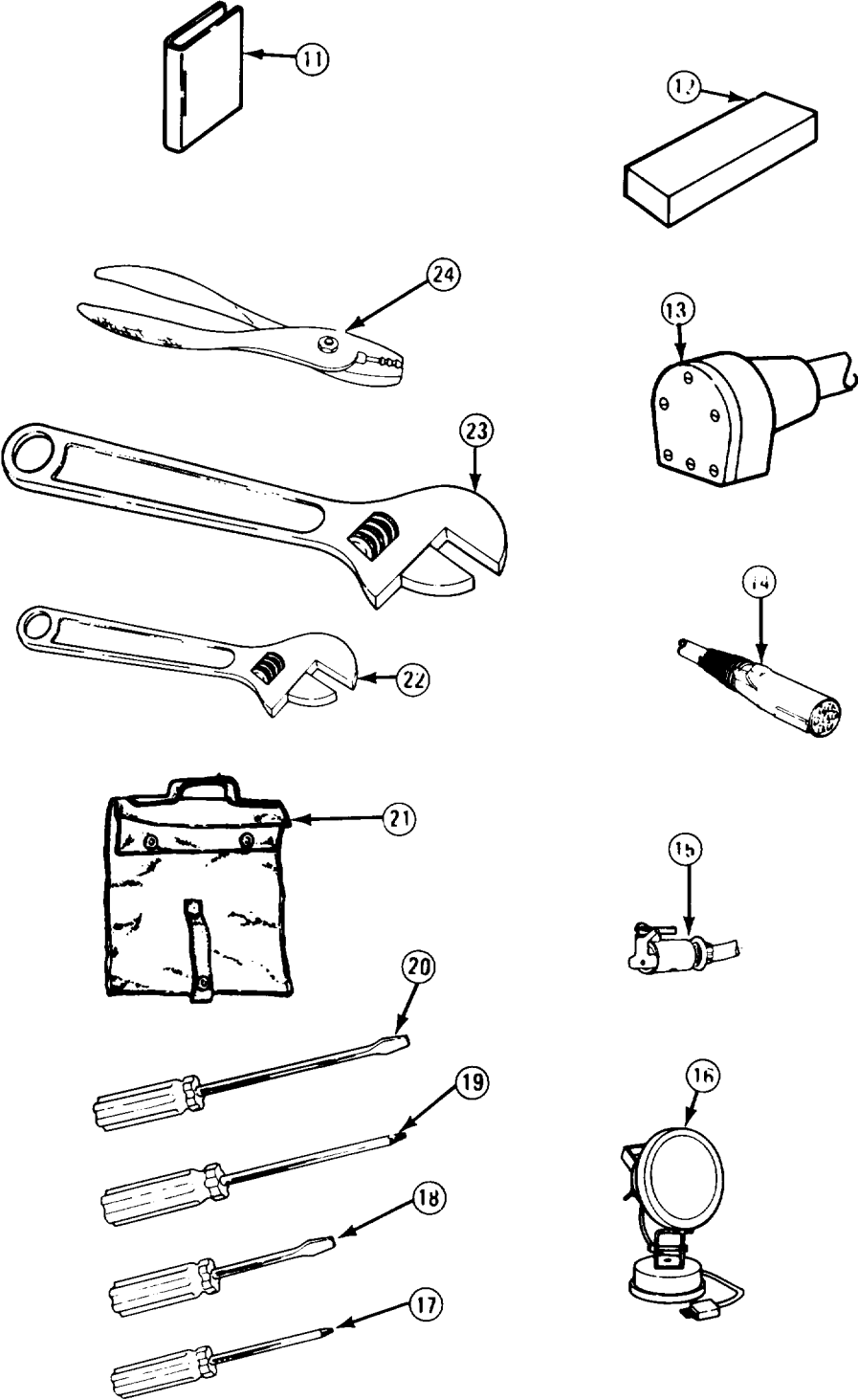


Figure B-1. Basic Issue Items (Sheet 1 of 3)

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Change 3 B-3



Section III. BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8) QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.	NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	QTY REQD	RCVD	DATE	DATE	DATE
B1	1	5120-00- 224-7330	D120 (04720)	Jack, Hyd 12 Ton	Tool Compt.	U21	1				
	2	5120 00- 188 1788	MS16283 5 (96906)	Jack, Hyd 20 Ton	Tool Compt.	U22 Thru U26	1				
B1	3	5120-00- 316-9217	41-W- 3838-40 (19207)	Lug Wrench	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	4	5120 01- 084 3298	967556 (34623)	Handle, Wrench	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	5	4210-00- 775-0127	7015266 19207	Fire Extinguisher	Rear of Tool Box	U21 Thru 26	1				
B1	6	4910 01- 003 9599	7974576 -1 (19207)	Tire Pressure Gage (10-120 psi)	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	7	4720 00- 328 5422	11624422 7 (19207)	Hose, Pneu- matic, Tire Inflator, 40 Ft. Long, Quick Dis- Connect	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	8	9905 01- 090 9819	950 34623	Triangles, Folding - Reflective	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	9	6545-00- 922-1200	11677011 (19207)	First Aid Kit, Gen. Purpose	On Front of Tool Box	U21 Thru U26	1				
B1	10	2540 00- 670 2459	7961712 (19207)	Bag, Pamphlet	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	11	7510-00- 889-3494	43986 1 (72094)	Binder, Loose Leaf	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	12	5510-00- 491-0307	CPR-103 023-2 (19207)	Board, Jack Support	Tool Compt. (Under Pass. Seat)	U22 Thru U26	1				
B1	13	6150 01- 022 6004	11682336 1 (19207)	Kit, Power Cable	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	14	2920 01- 148-6944	5995102 (34623)	Cable Assy., Tractor, Trlr. 12 Ft. 12 Volt 7 Pin. Recept.	Tool Compt. (Under Pass. Seat)	U21, U22 & U26	1				

Section III. BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)			
(a) FIGURE NO.	(b) ITEM NO.	NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	QTY REQD	QUANTITY			
								RCVD	DATE	DATE	DATE
B1	15	2590 01 082 3172	MA365- 20000 (34623)	Harness Assy. Intervehicular 12 Ft. 24 Volt	Tool Compt. (Under Pass. Seat)	U21, U22 & U26	1				
B1	16	6220 01- 091 8016	MA191A- 20001 (34623)	Lamp, Work Portable	Tool Compt. (Under Pass. Seat)	U22 & U26	1				
B1	17	5120 00- 234 8913	11655777 12 (19207)	Screwdriver, Cross Tip, Tip Sy No. 2, Blade 4 In.	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	18	5120 00- 222 8852	225498 (77948)	Screwdriver, Flat Tip, Flared Tip, Blade 4 In.	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	19	5120 00- 237-6985	SSD8 (55719)	Screwdriver, Flat Tip, Plastic Handle, Rd. Blade 3/8 In. Wide Tip, 8 In. Long	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	20	5120 00- 224-7375	RGP84 (55719)	Screwdriver, Cross Tip, Phillips, Plastic Handle, 8 In. Long	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	21	2540 00- 670-2459	7961712 (19207)	Bag, Cotton Duck, 10 X 20 X/Flap	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	22	5120 00- 240-5328	TL4760 (80063)	Wrench, Open End, Adjustable Type 8 In. Long	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	23	5120 00- 264 3796	116557 (19207)	Wrench, Open End, Adjustable Type 0- 1.322, 12 In. Long	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				
B1	24	5120 00- 223 7397	5214421 (19207)	Pliers, Slip Joint, Str. Nose, 8 In. Long	Tool Compt. (Under Pass. Seat)	U21 Thru U26	1				

APPENDIX C**ADDITIONAL AUTHORIZATION LIST**

Section I. INTRODUCTION

C-1. Scope.

This appendix lists additional items you are authorized for the support of the M915, M916, M920 Truck Tractors and Chassis for M917, M918, and M919.

C-2. General.

This list identifies items that do not have to accompany the M916, M916 and M920 Truck Tractors and Chassis for M917, M918, and M919 and that do not have to be turned in with them. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. Explanation of Listing.

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. If item required differs for different models of this equipment, the model is shown under the "Usable on" heading in the description column. These codes are identified as:

<u>Code</u>	<u>Used On</u>
U21	Model M915
U22	Model M916
U23	Model M917
U24	Model M918
U25	Model M919
U26	Model M920

Section II. ADDITIONAL AUTHORIZATION LIST XM915 SERIES TRUCKS – (TROOP INSTALLED)

(1)	(2)	(3)	(4)
NATIONAL STOCK NUMBER	DESCRIPTION PART NO. & FSCM NOMENCLATURE USABLE ON	U/M	QTY AUTH
511 O-00-293-2336	6159925 (19207) AX: SGL-Bit 4-16-HD-WT 36.5 in. to 36.5 in. lg.	EA	1
561 o-00491 -0307	CPR-103023-2 (19207) Block: Hydraulic Jack Support, Wood, 4x8x9 in.	EA	1
5510-00-491-0306	CPR-103023-1 (19207) Block: Hydraulic Jack Support, Wood, 7x8x9 in.	EA	1
2540-00-933-6935	MS 500055-23 1190x24 Tire,	PR	2
2540-00.933-9034	MS500055-16 (96906) Chains: Tire	PA	2
5120-00-288-6574	NN-H-93 (81348) Handle: Mattock-Pick, 36.5 in. to 36.5 in. lg.	EA	1
5120-00-243-2395	11677022 (19207) Mattock: Pick Type, 5 lb, W/Q Handle	EA	1
5120-00-293-3336	GGG-S-326 (81348) Shovel: Hand RD-PT, D-HDL, Short Size 2	EA	1
2540-W-378-201 2	6383802 (19207) Tow bar, medium duty Composed of:	EA	1
5340-00-545-2337	8724449 (19207) Clevis	EA	2
5315-00-539-9174	10929861 (19207) Pin	EA	2
531 S-00-3504326	5213744 (192071) Pin, locking	EA	2
4720-00-740-9662	7409662 (19207) Hose, air connection	EA	2
4230-00-720-I 618	MI L-D-51 048 (81349) MI 1 Decontamination Unit W/Mounting Bracket and Hardware	EA	1
	5995270 (34623) Beacon Kit, 12V	EA	1
	BATTERY TERMINALS		
5940-00-823-1662	MS 91164-I (96906) Adapter	EA	8
5940905496581	MS 75004-I (96906) Terminal lug	EA	4
5940-00-549-6583	MS 75004-2 (96906) Terminal lug	EA	4
2920-00-738-6272	10942521 (19207) Cover, battery	EA	8

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. Scope.

This appendix lists expendable supplies and materials you will need to operate and maintain the M915, M916, M920 Truck Tractors and Chassis for M917, M918 and M919. Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. Explanation of Columns.

a. Column 1 - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, Item 5, Appendix D").

b. Column 2 - Level. This column identifies the lowest level of maintenance that requires the listed item.

C – Operator/Crew

O – Organizational Maintenance

F – Direct Support Maintenance

H — General Support Maintenance

c. Column 3 - National Stock Number. This is the national stock number assigned to the item; use it to request or requisition the item.

d. Column 4- Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5- Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	9150-00-065-0029 9150-00-935-1017 9150-00-190-0904 9150-00-190-0905 9150-00-190-0907	Grease, Automotive and Artillery GAA (MIL-G-10924) 2-1/4 oz tube 14 oz cartridge 1 lb can 5 lb can 35 lb can	 oz oz lb lb lb
2	c	9150-00-234-5197 9150-00-261-7891	Oil, Lubricating, Exposed Gear, CW (VV-L-751) 5 lb can 35 lb pail	 lb lb
3	0	Replacement 9150-01-035-5390 9150-01-035-5391 9150-00-261-7904 9150-00-257-5440 9150-00-257-5443	Oil, Lubricating, Gear, Subzero, GOS (MIL-L-10324) MIL-L-2105C (75 w) 1 qt can 5 gal drum 55 gal drum	 1 qt 1 gal qt gal gal
4	C	9150-00-189-6727 9150-00-186-6668 9150-00-191-2772	Oil, Lubricating, OE/ HDO 10 (MIL-L-2104) 1 qt can 5 gal drum 55 gal drum, 18 gage	 qt gal gal
5	C	9150-00-265-9433 9150-00-265-9435 9150-00-189-6729 9150-00-265-9437	Oil, Lubricating, OE/ HDO 30 1 qt can 5 gal drum 55 gal drum, 16 gage 56 gal drum, 18 gage	 qt gal gal gal
6	C	9150-00-188-9864 9150-00-188-9865 9150-00-188-9866	Oil, Lubricating, OE/ HDO 50 (MIL-L-21041) 1 qt can 5 gal drum 55 gal drum, 16 gage	 qt gal gal

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
7	0		Fluid, Hydraulic, Petroleum Base, Perservative (MI L-H-6083)	
8	0	9150-W-402-4478 9150-00-402-2372 9150-00-491-7197	Oil, Lubricating OEA ICE, Subzero (MIL-L-46167) U/I 1 qt can 6 gal drum 55 gal drum, 16 gage	qt gal gal
9	0		Lubricant, Gear, Universal (MIL-L-2106)	
10	0		Fluid, Hydraulic, Non- Petroleum Base, Auto- motive (HB) (VV-B-680) U/I	
		9150-190-0932 9150-231-9071	1 pt can 1 gal can	pt gal
11	0		Fluid, Hydraulic, Non- Petroleum Base, Auto- motive (Artic Type) (MIL-H-13910) U/I	
		9150-252-6375	1 gal can	gal
12	C		Oil, Fuel, Diesel DF-1 Winter (VV-F-800)	
		9140902885286 9140-00-286-5287 9140-00-286-5288 9140-00-286-5289	Bulk 5 gal can 56 gal drum, 16 gage 55 gal drum, 18 gage	gal gal gal gal
13	C		Oil, Fuel, Diesel DF-2 Regular (VV-F-800)	
		9140-00-286-5294 9140-00-286-5295 9140-00-286-5296 9140-00-286-5297	Bulk 5 gal can 55 gal drum, 16 gage 55gal drum, 18gage	gal gal gal gal

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) N A T I O N A L STOCK NUMBER	(4) DESCRIPTION	(5) U/M
			MISCELLANEOUS	
			Solvent, Dry Cleaning, SD (P-D-680)	
		6850-00-664-5685	1 qt can	qt
		6850-00-281-I 985	1 gal can	gal
		6850-00-I 81-7929	Antifreeze, Permanent,	55 gal
		6850-00-181-7933	Glycol, Inhibited	5 gal
		6850-00-181-7929	(MIL-A-46153)	1 gal
	C		Cleaning Compound, Windshield'	
		6850-00-926-2275	Windshield Washer	pt
		9150-00-698-2382	Dexron II (24617)	1 qt
		9150-00-657-4959	Dexron II (24617)	5 gal
		9150-00-577-5844	80W/90W	5 gal
		8040-00-902-387 1	Teflon	302
		8040-00-865-8991	Tef lon	10.5
				12 oz
		8030-00-252-3391	MIL-S-45180 TYPE 2 Silicone Sealant	1102

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To be distributed in accordance with DA Form 12-38, Operator maintenance requirements for Truck, Tractor, Line Haul: 6x4, M915, Truck, Tractor, Light Equipment Transporter: 6x6, M916, Truck Tractor, Medium Equipment Transporter: 8x6, M920, Truck Chassis: 20 Ton Dump, 8x6, M917, Truck Chassis: Bitem Distrib, 6x6, M918, Truck Chassis: Concrete Mobile, 8x6, M919.

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TEAR ALI

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

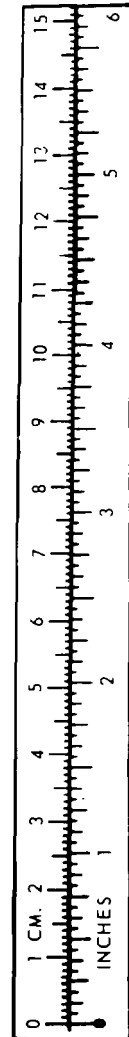
TEMPERATURE

$5\text{ }^{\circ}\text{F} - 32 = ^{\circ}\text{C}$
 212^o Fahrenheit is equivalent to 100^o Celsius
 90^o Fahrenheit is equivalent to 32.2^o Celsius
 32^o Fahrenheit is equivalent to 0^o Celsius
 $9\text{ }^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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