

***TM 9-2320-273-10**

TECHNICAL MANUAL

OPERATOR'S MANUAL FOR

**TRUCK, TRACTOR, LINE HAUL, 6X4
M915 (NSN 2320-01-028-4395) (EIC B4A)**

M915P1 (NSN 2320-01-525-7451) (EIC BAY)

**TRUCK, TRACTOR, LINE HAUL, 6X4
M915A1 (NSN 2320-01-125-2640) (EIC B4B)**

M915A1P1 (NSN 2320-01-525-7444) (EIC BAZ)

**LIGHT EQUIPMENT TRANSPORTER (LET), 6X6, W/WINCH
M916 (NSN 2320-01-028-4396) (EIC B4C)**

M916P1 (NSN 2320-01-531-2626) (EIC BFS)

**TRUCK CHASSIS, 8X6, FOR 20 TON DUMP TRUCK
M917 (NSN 3805-01-028-4389) (EIC EZZ)**

M917P1 (NSN 3805-01-531-2623) (EIC BFX)

**TRUCK CHASSIS, 6X6, FOR BITUMINOUS
DISTRIBUTOR TRUCK,**

M918 (NSN 3895-01-028-4390) (EIC EXC)

**TRUCK CHASSIS, 8X6, FOR CONCRETE-MOBILE®
MIXER TRUCK,**

M919 (NSN 3895-01-028-4391) (EIC EXD)

**MEDIUM EQUIPMENT TRANSPORTER (MET), 8X6, W/WINCH
M920 (NSN 2320-01-028-4397) (EIC B4D)**

M920P1 (NSN 2320-01-531-2638) (EIC BG2)

*TM 9-2320-273-10 dated 12 OCTOBER 2012 supersedes TM 9-2320-273-10 dated 15 MAY 1980, TM 9-2320-283-10 dated 15 MAY 2006, LO 9-2320-273-12 dated 14 JANUARY 1983, TB 9-2320-273-13&P-1 dated 1 JUNE 2006, and TB 9-2320-273-13&P-2 dated 31 MARCH 2008, including all changes.

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

**HEADQUARTERS, DEPARTMENT OF THE ARMY
14 DECEMBER 2012**

WARNING SUMMARY

FIRST AID DATA

For information on first aid, refer to FM 4-25.11. Seek medical attention in the event of an injury.

WARNING

EXHAUST GASES CAN KILL

Carbon monoxide is a colorless, odorless, deadly poison which, when breathed, deprives the body of oxygen and causes suffocation. Exposure to air containing carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, and coma. Permanent brain damage or death to personnel may result from severe exposure. Carbon monoxide occurs in exhaust fumes of internal combustion engines.

Carbon monoxide may become dangerously concentrated under conditions of inadequate ventilation. The following precautions must be observed to ensure safety of personnel.

1. DO NOT operate vehicle in an enclosed area without proper ventilation.
2. BE ALERT for exhaust poisoning symptoms:
 - a. Headache
 - b. Dizziness
 - c. Sleepiness
 - d. Loss of muscular control
3. If you see another person with exhaust poisoning symptoms:
 - a. Remove person from area.
 - b. Expose to fresh air.
 - c. Keep person warm.
 - d. DO NOT permit physical exercise.
 - e. Administer Cardiopulmonary Resuscitation (CPR), if necessary.
 - f. Notify a medic.
4. BE AWARE. The field protective mask for Chemical, Biological, Radiological, and Nuclear (CBRN) protection WILL NOT protect you from carbon monoxide poisoning.

* For artificial respiration procedures, refer to FM 4-25.11.

The Best Defense Against Carbon Monoxide Poisoning Is Good Ventilation!

WARNING SUMMARY - CONTINUED

This warning summary contains information on first aid, general safety warnings, and hazardous materials warnings found in the body of this manual that must be understood and applied during operation and maintenance of this equipment. Failure to observe these warnings could result in serious injury or death to personnel. Seek medical attention in the event of an injury.

WARNING DESCRIPTIONS

This vehicle has been designed to operate safely and efficiently within the limits specified in the TM in accordance with (IAW) AR 70-1. Operation beyond these limits without written approval from the Commander, U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-CG, Warren, MI 48397-5000, is prohibited. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

Operators must know the location and understand the proper use of all controls and indicators before operating the tractor. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Operating tractor with air pressure below the normal operating range indicates a loss in air supply and will limit the number of times the brakes can be applied before losing front wheel brakes. Failure to stop tractor and allow air pressure to build up may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

If low pressure warning lamp illuminates and buzzer sounds while driving tractor, stop immediately and investigate the cause. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Operating tractor with air pressure below the normal operating range indicates a loss in air supply and will limit the number of times the brakes can be applied before the forward-rear axle emergency park/spring brakes are automatically activated. Failure to stop tractor and allow air pressure to build up may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Before backing operations, ensure the backup alarm override switch is in the down position. Do not disable the alarm when personnel or equipment safety may be sacrificed as a result. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Never use the parking brake in place of the service brake for stopping the tractor. Sudden lockup of spring brakes may result in loss of control of tractor and possible damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED

WARNING DESCRIPTIONS - CONTINUED

Do not attempt to check and reset circuit breakers while driving the tractor. Always pull safely to side of road first. If tractor cannot be safely operated due to a circuit breaker that cannot be reset, do not attempt to operate tractor. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

Hazard switch will override brake lights when in use. Use hand signals and exercise extra care when using hazard switch. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Operators must know how to use the controls and indicators before starting and driving the vehicle. In addition, operators must know the capabilities and limitations of the vehicle and be able to use the features of the vehicle in the safest and most efficient way to accomplish their mission. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

The driver and passenger must wear seatbelts during vehicle operation. Ensure seatbelts are fastened and properly adjusted before placing vehicle in motion. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

The driver and companion seatbelts must be connected and adjusted for proper fit prior to placing the vehicle in motion. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Seatbelt must be completely extended from nonlocking retractor device. All excess webbing must then be adjusted at the buckle. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Do not start engine with parking brake control pushed in (released). The vehicle could roll in either direction once brake system reaches operating pressure and spring brakes release. Always pull out parking brake control prior to starting engine or damage to equipment and possible injury or death to personnel may result. Seek medical attention in the event of an injury.

On M915 and M915A1 vehicles, cab controlled fifth wheel control lever must be in the LOCK position when a trailer is connected to the tractor fifth wheel. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

To prevent fifth wheel movement during transit, ensure cab mounted sliding fifth wheel control lever is in LOCK position before moving vehicle. Follow procedure to verify fifth wheel control lever is locked in position when tractor is coupled to trailer, and never move fifth wheel control lever to UNLOCK position during transit. Failure to comply may result in loss of control, damage to equipment, and possible injury or death to personnel. Seek medical attention in the event of an injury.

Do not operate vehicle with low tire pressure on wet smooth roads at high speeds. Doing so may result in loss of control, damage to equipment, and possible injury or death to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED

WARNING DESCRIPTIONS - CONTINUED

Never allow vehicle to coast in neutral (N) position. Engine braking action is not available when transmission is out of gear, and damage to equipment and possible injury or death to personnel may result. Seek medical attention in the event of an injury.

Center of gravity is higher on vehicles equipped with Crew Protection Kit. Always use slower speeds when driving vehicle. DO NOT operate vehicle on steep hills or inclines. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Visibility is reduced on vehicles equipped with Crew Protection Kit. Always use a ground guide when maneuvering vehicle near obstacles. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Vehicles equipped with Crew Protection Kit have different door handles and latching hardware. Exercise caution when opening and closing armor doors to not allow clothing or equipment to catch on door hardware. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

DO NOT park vehicles equipped with Crew Protection Kit on a hill or incline. The parking brake may have insufficient braking capacity to hold vehicle due to increased vehicle weight. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Do not use engine retarder on slippery road surfaces. Using engine retarder on wet, icy, or snow covered roads may result in loss of vehicle control. Failure to comply may result in damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.

Failure to comply to downhill driving procedures may cause loss of vehicle control and result in injury or death to personnel. Seek medical attention in the event of an injury.

Excessive use of the service brake to control downhill speed will result in loss of braking power due to heat build up. Failure to comply may result in severe injury or death to personnel. Seek medical attention in the event of an injury.

The engine brake loses its effectiveness to control speed of tractor when tractor is pushed by additional weight of trailer on downhill grades. Failure to downshift transmission to lower gear range and use service brakes to keep tractor and engine speeds under control may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Never downshift to a gear range lower than the tractor road speed on slippery pavement. Sudden increase in engine rpm may cause drive wheels to lose traction with pavement and result in loss of control of tractor or jackknifing of trailer. Failure to comply may result in damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.

Do not use the pusher axle as a step when in the raised position. When pusher axle wheels are off the ground, it freewheels. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED

WARNING DESCRIPTIONS - CONTINUED

Never park tractor on a steep grade. It is never good practice to park a heavy truck on a steep slope even when parking brake holding capability exceeds federal safety standards. Failure to comply may result in tractor moving unexpectedly, damage to equipment, and injury or death to personnel. Seek medical attention in the event of an injury.

All personnel must stand clear of tractor and trailer during coupling operations. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

To avoid unintentional fifth wheel movement during tractor operation, always ensure fifth wheel control is in the LOCK position before placing tractor in normal operation. Failure to comply may result in damage to equipment and serious injury or death to personnel. Seek medical attention in the event of an injury.

Never move fifth wheel control to the UNLOCK position during normal tractor operation. Failure to comply may result in loss of control, damage to equipment, and serious injury or death to personnel. Seek medical attention in the event of an injury.

Ensure no one is standing behind tractor or trailer during the coupling procedure. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

Ensure the kingpin couples with the fifth wheel. Failure to comply may result in damage to equipment, and possible injury or death to personnel. Seek medical attention in the event of an injury.

Hearing protection is required during winching operations. Failure to comply may result in damage to hearing. Seek medical attention in the event of an injury.

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 Field Maintenance. Seek medical attention in the event of an injury.

Always wear heavy gloves when handling the winch wire rope. Never allow the cable to run through your hands as broken wires can cause painful injuries. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Improper use of lifting equipment and attachment of cables to tractor may result in injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

Lifting sling must have a weight capacity greater than the weight of the vehicle. Refer to specified vehicle weight in Equipment Description and Data (WP 0003). Failure to comply may result in injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

Ensure lifting area is clear of all non-essential personnel prior to lifting and no personnel enters during lifting operation. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED**WARNING DESCRIPTIONS - CONTINUED**

Chock wheels to keep vehicle from moving before brakes are released. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

Hearing protection is required for personnel when engine is running for an extended period of time and personnel are close to vehicle. Noise levels produced by vehicle may exceed 85 dB. Long-term exposure to this noise level may cause hearing loss. Seek medical attention in the event of an injury.

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 further left until you can remove it. Failure to comply may result in serious burns. Seek medical attention in the event of an injury.

Carbon monoxide is a colorless, odorless, deadly poison which, when breathed, deprives the body of oxygen and causes suffocation. Exposure to air containing carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, and coma. Permanent brain damage or death to personnel may result from severe exposure. Carbon monoxide occurs in exhaust fumes of internal combustion engines.

Carbon monoxide may become dangerously concentrated under conditions of inadequate ventilation. Refer to page a of Warning Summary for further precautions that must be observed to ensure safety of personnel.

Do not remove fill cap when hydraulic oil is hot. The hydraulic tank is pressurized to 5 psi (35 kPa). Remove fill cap slowly. Failure to comply may result in severe injury to personnel. Seek medical attention in the event of an injury.

Observe all warnings, cautions, and notes while performing Preventive Maintenance Checks and Services (PMCS). Failure to comply may result in injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

After raising engine compartment hood, ensure S-shaped safety hook is properly inserted through two matching holes in prop channel to prevent hood from accidentally falling. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

While performing PMCS with engine running, wear approved hearing protection. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

When working in engine compartment with engine running, keep clear of cooling fan. The fan can engage at any time and serious injury to personnel may result. Seek medical attention in the event of an injury.

The engine must be shut off before performing PMCS steps 34 through 44. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Engine must be off to check the fan clutch and actuator. Failure to comply may result in severe injury or death to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED

WARNING DESCRIPTIONS - CONTINUED

During normal operation the exhaust pipe and muffler will become very hot. Exercise caution not to make body contact or touch hot exhaust components with bare hands. Failure to comply may result in severe burns to personnel. Seek medical attention in the event of an injury.

Remove all jewelry such as rings, bracelets, and identification tags. If jewelry comes in contact with battery terminals, a direct short can occur resulting in instant heating of jewelry or tools and damage to electrical system. Failure to comply may result in damage to equipment and injury to personnel. Seek medical attention in the event of an injury.

Exercise caution when raising or lowering spare wheel and tire assembly. All personnel must stand clear during lifting operations. Should wheel and tire assembly fall over or drop from lift, serious injury to personnel may result. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Stay clear of wheel when checking tire air pressure and inflating tire. Injury or death to personnel may result from exploding wheel components. Seek medical attention in the event of an injury.

Do not touch hot clutch disc when raising or lowering spare wheel and tire assembly winch brake. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Ensure winch cable drum has a minimum of four full turns of cable prior to lifting spare wheel and tire assembly. Failure to comply may result in cable pulling off cable drum and injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

Ensure wheel and tire assembly does not suddenly drop from truck by guiding it down between fuel tank and fender. Failure to comply could cause winch cable to snap and injury to personnel or damage to equipment may result. Seek medical attention in the event of an injury.

The vehicle's hydraulic jack is intended only for lifting and is not a safe support for performing maintenance. Do not get under vehicle unless it is properly supported by jack stands or wood blocks. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Ensure parking brake is released and chocks are placed behind tires at opposite end of vehicle to be raised prior to jacking operations. Do not place chocks in front of tires at opposite end of vehicle to be raised. If vehicle is not free to roll during jacking operations, it may topple jack. Move chocks tight against tires after jacking and set parking brake. Failure to comply may result in injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

Check to make sure that the batteries are connected as shown in figure 1. Failure to comply may result in injury to personnel and/or damage to equipment. Seek medical attention in the event of an injury.

Let radiator cool before performing this task. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED

WARNING DESCRIPTIONS - CONTINUED

Winch system retains some pressure even when not in use. Wear goggles/face shield when opening winch reservoir. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

HAZARDOUS MATERIALS DESCRIPTIONS

Leaking or spilled lubrication material called out in this work package may cause a slip and fall hazard. When draining lubrication material, clean any leaking or spilled lubrication material immediately using suitable absorbent materials. Dispose of contaminated cloths, rags, or cleaning materials in accordance with local procedures and plans. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

When fueling vehicle, ensure pump nozzle contacts the filling tube on top of the fuel tank to carry off static electricity. Do not smoke or have open flame in fueling area. Failure to comply may result in injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

Do not smoke, have open flame, or make sparks when performing battery maintenance. Batteries may explode causing severe injury to personnel. Failure to comply may result in injury to personnel and/or damage to equipment. Seek medical attention in the event of an injury.

Do not perform fuel filter/water separator draining while smoking or near fire, flames, or sparks. Fuel may ignite causing injury or death to personnel and/or damage to equipment. Seek medical attention in the event of an injury.

Leaking or spilled coolant may cause a slip and fall hazard. When draining cooling system, clean any leaking or spilled coolant immediately using suitable absorbent materials. Dispose of contaminated cloths, rags, or cleaning materials in accordance with local procedures and plans. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Accidental or intentional introduction of liquid contaminants into the environment is a violation of state, federal, and military regulations. Refer to Army POL (WP 0001) for information concerning storage, use, and disposal of these liquids. Failure to comply may result in damage to environment and health of personnel. Seek medical attention in the event of an injury.

Contact with any lubrication material called out in this work package may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. **DO NOT** have food or drink in the vicinity. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED

HAZARDOUS MATERIALS DESCRIPTIONS - CONTINUED

Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to personnel if acid contacts eyes or skin. Seek medical attention in the event of an injury.

Contact with sealing compound may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

If Chemical, Biological, Radiological, and Nuclear (CBRN) exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your CBRN Officer or CBRN NCO for appropriate handling or disposal procedures. CBRN contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel. Wear eye protection when removing A/C air filter. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Contact with cleaning solvent may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Contact with fire extinguisher chemicals may cause skin irritation. Use caution while discharging chemicals. Do not spray on or at any personnel. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

WARNING SUMMARY - CONTINUED

HAZARDOUS MATERIALS DESCRIPTIONS - CONTINUED

Cleaning solvent is combustible. DO NOT use or store near heat, sparks, flame, or other ignition sources. Use mechanical ventilation whenever product is used in a confined space, heated above ambient temperatures, or agitated. Keep container sealed when not in use. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Hot coolant is under pressure. Be careful when removing coolant filler cap or inspecting cooling system. Engine cooling system is under pressure and may cause severe injury to personnel. Seek medical attention in the event of an injury.

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. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: This manual supersedes TM 9-2320-273-10 dated 15 MAY 1980, TM 9-2320-283-10 dated 15 MAY 2006, LO 9-2320-273-12 dated 14 JANUARY 1983, TB 9-2320-273-13&P-1 dated 1 JUNE 2006, and TB 9-2320-273-13&P-2 dated 31 MARCH 2008, including all changes. Zero in the “Change No.” column indicates an original page or work package.

Date of issue for the original manual is:

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**TOTAL NUMBER OF PAGES FOR FRONT AND REAR
MATTER IS 44 AND TOTAL NUMBER OF WORK
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WASHINGTON, D.C., 14 DECEMBER 2012

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet on the TACOM Unique Logistics Support Applications (TULSA) Web site. The Internet address is <https://tulsa.tacom.army.mil>. Access to all applications requires CAC authentication, and you must complete the Access Request form the first time you use it. The DA Form 2028 is located under the TULSA Applications on the left-hand navigation bar. Fill out the form and click on SUBMIT. Using this form on the TULSA Web site will enable us to respond more quickly to your comments and to better manage the DA Form 2028 program. You may also mail, e-mail, or fax your comments or DA Form 2028 directly to the U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP/TECH PUBS, MS 727, 6501 E. 11 Mile Road, Warren, MI 48397-5000. The e-mail address is tacomlcmc.daform2028@us.army.mil. The fax number is DSN 786-1856 or Commercial (586) 282-1856. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

ABOUT YOUR MANUAL

Equipment operators must familiarize themselves with the format and use of this Technical Manual (TM) prior to operating equipment or performing routine maintenance. Learning how to use this manual will enable personnel to quickly locate information, gain proper knowledge of the equipment, and shorten the time necessary to complete the required procedure. Features of this TM are:

Work Package Format - This TM is organized in work package (WP) format. Each WP is an individual, stand-alone unit of information identified by a four-digit sequence number. WPs are positioned within the TM in sequential order (i.e., 0001, 0002, 0003, etc.) and each WP is page numbered consecutively after the sequence number at the bottom of each page (i.e., 0001-1, 0001-2, 0001-3, etc.). A WP may contain as many as thirty pages.

Text Design - A Table of Contents (TOC) is located in the front matter section of the TM. WP titles and sequence numbers are listed in the TOC in sequential order. WPs are organized into chapters based on subject and chapters are listed in the TOC. Chapter title pages are positioned sequentially within the manual. In addition to the TOC and chapter title pages, a separate subject index is located in the back of the TM. The subject index is organized in alphabetical order with WP sequence and page numbers provided. Each WP contains identification information which includes the following:

1. **Maintenance level(s)** - This identifies what maintenance level(s) can perform the task.
2. **WP title** - This identifies the name and title of the procedure and where applicable, the title of the subtasks within the WP.
3. **Effectivity notice** - This is only listed when a WP does not apply to all configurations or models of the equipment, in which case only the model(s) that apply are listed.
4. **Initial setup** - Initial setup requirements may be listed after the WP identification information above. The Initial Setup contains a list of all tools, materials/parts, authorized personnel, reference information, and equipment conditions that must be performed first. Special environment conditions and any other specific information required to perform and complete the task may also be included.

Use of Text and Illustrations - WP text may be presented as general information written in paragraphs, a single task having numbered steps, or two or more subtasks each containing separate information (e.g., removal, inspection, installation). Where steps are used, they must be followed in the order which they are numbered. When illustrations are used, they are located after the text to which they apply on facing two-page modules and are identified in the text by figure and item numbers. Each illustration has a figure number and title beneath it and may contain item numbers with arrows pointing to each part called out in the corresponding text. Illustration callouts are numbered sequentially starting at the 11 o'clock position and continuing clockwise around the illustration. Tables and figures are numbered sequentially within each WP.

HOW TO USE THIS MANUAL - CONTINUED

Abbreviations and acronyms are only spelled out within the text the first time they appear in the manual. A list of all abbreviations and acronyms used in this TM is provided in General Information, WP 0001.

HOW TO USE YOUR MANUAL

The format of this manual is designed to make accessing information quick and easy. The following example is intended as a guide and should be reviewed and put to memory before attempting to use this manual. If you have any questions after reviewing the following example, don't hesitate to ask your supervisor.

PROBLEM: You observe while leaving the motor pool that the semi-trailer brakes will not apply when the vehicle service brake is used or trailer brake hand control on steering column is used.

SOLUTION: You must find information on the vehicle brake system in the operator's manual, review the operating procedures, and if necessary, perform the appropriate troubleshooting tasks to solve the problem.

1. Refer to the TOC to determine what chapter and WP contains information on brake system operation. If there is not an obvious WP title that indicates the specific information on brakes, you may locate the information more quickly by using the subject index. After reviewing the TOC and/or subject index, you determine that Chapter 2, Operation Under Usual Conditions, WP 0006, and Chapter 4, Troubleshooting Procedures, WP 0023, contain the information you desire.
2. Go to WP 0006 and review the operating procedures pertaining to coupling and stopping semi-trailer. Then go to WP 0022 and look through the list of malfunctions in the Troubleshooting Master Index until you identify the malfunction that most accurately fits the problem.
3. Go to WP 0023-10, Trailer Brakes Will Not Apply When Brake Pedal Is Used or Hand Control on Steering Column is Used, and follow the steps listed. As you perform the procedure you discover that one of the inter-vehicular air hoses is leaking due to a damaged pressure coupling. Now you must notify Field Maintenance as instructed.
4. When maintenance is allocated at the operator's level, you must perform and complete all instructions as outlined.

CHAPTER 1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION

**OPERATOR MAINTENANCE
GENERAL INFORMATION**

SCOPE

This Technical Manual (TM) contains operator level instructions for the operation and servicing of M915, M915A1, M916, M917, M918, M919, and M920 trucks and M915P1, M915A1P1, M916P1, M917P1, and M920P1 trucks equipped with Crew Protection and Air Conditioning Kits. Operating instructions include safety requirements, description of equipment, use of controls, and operation under usual and unusual conditions. Servicing instructions include operator level Preventive Maintenance Checks and Services (PMCS), lubrication, maintenance procedures, and troubleshooting as allocated by the Maintenance Allocation Chart (MAC). Replacement and repair of components are allocated for field level or higher maintenance, and are subsequently not authorized at the operator's level nor included in this manual.

Type of Manual - Operator/crew

Model Number and Equipment Name -

M915, M915A1, M916, M917, M918, M919, and M920 Truck, Tractor, Truck Chassis, and Light and Medium Equipment Transporters.

M915P1, M915A1P1, M916P1, M917P1, and M920P1 Truck, Tractor, Truck Chassis, and Light and Medium Equipment Transporters.

Purpose of Equipment:

1. The M915 is a line haul truck tractor used to haul semi-trailers on Class I good roads only (30,000 lb (13,608 kg) on 5th wheel).
2. The M916 tractor is used to transport medium weight payloads/semi-trailers (up to 40,000 lb (18,144 kg) on 5th wheel) on and off roads.
3. 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 (15.2 cubic yards heaped and 19.6 yards with side boards).
4. The M918 is a bituminous distributor truck used for spraying liquid asphalt. The M918 can be operated on and off roads.
5. 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.
6. The M920 tractor is used to transport heavy payload/semi-trailers (up to 40,000 lb on 5th wheel) on and off roads.
7. The M915A1 is a line haul truck tractor used to haul semi-trailers for over the road use (30,000 lb (13,608 kg) on 5th wheel).
8. The M915P1, M915A1P1, M916P1, M917P1, and M920P1 is a standard truck equipped with an armored cab and air conditioning for improved ballistic protection and climate control of cab.

Special Inclusions - Operation and operator maintenance procedures for vehicle-equipped options are covered in this TM.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual; DA PAM 738-751, Functional Users Manual for The Army Maintenance Management Systems - Aviation (TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your vehicle needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance.

All non-Aviation/Missile EIRs and PQDRs must be submitted through the Product Data Reporting and Evaluation Program (PDREP) Web site. The PDREP site is: <https://www.pdrep.csd.disa.mil/>.

If you do not have Internet access, you may submit your information using an SF 368 (Product Quality Deficiency Report). You can send your SF 368 using email, regular mail, or fax using the addresses/fax numbers specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

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

Corrosion specifically occurs with metals. It is an electrochemical process that causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases, or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking.

Plastics, composites, and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking.

SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

ARMY PETROLEUM, OIL, AND LUBRICANTS (POL)

Proper disposal of hazardous waste material is vital to protecting the environment and providing a safe work environment. Materials such as batteries, oils, and antifreeze must be disposed of in a safe and efficient manner.

DO NOT overfill any fluid reservoir. If a fluid starts to flow out of reservoir, stop IMMEDIATELY to avoid spillage. Immediately clean up spilled fluid before proceeding with any task.

Refer to local procedures and plans for preventing and responding to fluid spills or leaks. Comply with local regulations when disposing of clean up material and fluids.

The following references are provided as a means to ensure that proper disposal methods are followed:

- Waste Disposal Instructions (MEIS/MIDI CD ROM)
- National Environmental Policy Act of 1969 (NEPA)
- Clean Air Act (CAA)
- Resource Conservation and Recovery Act (RCRA)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Emergency Planning and Community Right to Know Act (EPCRA)
- Toxic Substances Control Act (TSCA)
- Occupational Safety and Health Act (OSHA)

The disposal of Army Petroleum, Oil, and Lubricants (POL) products are affected by some of the above regulations. State regulations also may apply to POL. If you are unsure of which legislation affects you, contact state and local agencies for regulations regarding proper disposal of Army POL.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Procedures for destruction of army materiel to prevent enemy use can be found in TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE - CONTINUED**PREPARATION FOR STORAGE OR SHIPMENT**

Storage and shipment instructions are located in TM 9-2320-273-23, Preparation for Storage or Shipment, and in TM 746-10, Marking, Packaging and Shipment of Supplies, and Equipment: General Packaging Instructions for Field Use.

NOMENCLATURE CROSS REFERENCE LIST

The following is a list of official nomenclature used in this manual and the corresponding unofficial nomenclature (common names or jargon terms) used in the field.

OFFICIAL TM NOMENCLATURE	UNOFFICIAL NOMENCLATURE
Antifreeze, ethylene glycol mixture	Engine coolant
Ether quick-start system	Cold start system
Engine retarder	Engine brake, Jake brake, Jacobs brake
Wire rope	Cable
Quick disconnect coupling	Gladhand
Air hose tender	Pogo stick

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviations and acronyms appearing in this manual are defined in the paragraph from where they first appear, after which only the abbreviation or acronym is used. The following is a quick-reference list of all abbreviations and acronyms and their corresponding word or compound term used in this manual.

@ - at	dB - Decibel
° - Degrees	DIA - Diameter
- - Minus, negative	EA - Each
% - Percent	EIR - Equipment Improvement Recommendation
+ - Plus, positive	etc. - etcetera
°C - Degrees Celsius (e.g., 0° C)	F - Fahrenheit
°F - Degrees Fahrenheit (e.g., 32° F)	FAX - facsimile
ac - alternating current	FM - Field Manual
A/C - Air Conditioner	FMVSR - Federal Motor Vehicle Safety Regulation
AAL - Additional Authorization List	ft - foot, feet
ABS - Anti-Lock Brake System	GAA - Grease, Artillery, and Automotive
AR - Army Regulation	gal. - gallon(s)
ATF - Automatic Transmission Fluid	GVW - Gross Vehicle Weight
BII - Basic Issue Item	GVWR - Gross Vehicle Weight Rating
BK - Bulk	hp - horsepower
CAGEC - Commercial and Government Entity Code	HR - Hand Receipt
CBRN - Chemical, Biological, Radiological, and Nuclear	IAW - In Accordance With
cfm - cubic feet per minute	ID - Identification
cm - centimeter	in. - inch
cm ³ - cubic centimeter	k - kilo, thousand
CID - Cubic Inch Displacement	kg - kilogram
COEI - Components of End Item	km - kilometer
CPC - Corrosion Prevention and Control	kPa - kilopascal
CTA - Common Table of Allowance	kph - kilometers per hour
DA - Department of the Army	L - Liter(s)
DA PAM - Department of the Army-Pamphlet	lb - pound(s)

LIST OF ABBREVIATIONS/ACRONYMS - CONTINUED

lb-ft - pound-feet	psi - pounds per square inch
lb-in. - pound-inch	pt - pint
LPM - Liters Per Minute	qt - quart
m - meter	qty - quantity
MAC - Maintenance Allocation Chart	Recm. - Recommended
mi - mile	Rqr. - Required
ml - milliliter	rpm - revolutions per minute
MLC - Military Load Classification	SF - Standard Form
mm - millimeter	SI - Supply Instruction
mpg - miles per gallon	TAMMS - The Army Maintenance Management System
mph - miles per hour	TAMMS-A - The Army Maintenance Management System - Aviation
N•m - Newton-meter	TB - Technical Bulletin
N/A - Not Applicable	TM - Technical Manual
NATO - North Atlantic Treaty Organization	TOC - Table of Contents
NCO - Noncommissioned Officer	TULSA - TACOM Unique Logistics Support Applications
NSN - National Stock Number	U/I - Unit of Issue
OEA - Oil Engine Arctic	UV - Ultraviolet
oz - ounce	w/ - with
PAM - Pamphlet	w/o - without
PMCS - Preventive Maintenance Checks and Services	WP - Work Package
PQDR - Product Quality Deficiency Report	

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
EQUIPMENT DESCRIPTION**

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES**WARNING**

This vehicle has been designed to operate safely and efficiently within the limits specified in the TM in accordance with (IAW) AR 70-1. Operation beyond these limits without written approval from the Commander, U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-CG, Warren, MI 48397-5000, is prohibited. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

If the vehicles are equipped with crew protection kit, vehicles will be heavier than usual and weight increases will change vehicle handling characteristics. Refer to Operation Under Usual Conditions, WP 0006.

M915 AND M915A1

Capabilities of the M915 and M915A1 tractors are:

1. The M915 and M915A1 are capable of carrying maximum loads of 30,000 lb (13,608 kg) on the fifth wheels, and have a towing capacity from its rear pintle of 50,000 lb (22,680 kg). The M915 and M915A1 have a maximum Gross Vehicle Weight Rating (GVWR) of 50,000 lb (22,680 kg) and a Gross Combination Weight Rating (GCWR) of 105,000 lb (47,627 kg).
2. While operating on Class I roads, the M915 and M915A1 can maintain speeds of 55 mph on level roads. The M915 can maintain 25 mph while ascending a 3.9 percent grade at GCWR, and the M915A1 can maintain 25 mph while ascending a 3 percent grade at GCWR. They are capable of climbing a 17 percent grade at GCWR in both forward and reverse directions, and can operate on side slopes up to 10 percent where adequate traction is available. In addition, the M915A1 can ford hard-bottom water crossings up to 20 in. (50.8 cm) in depth for 5 minutes without damage or requiring maintenance before further operation.
3. Average cruising ranges at GCWR with a full tank of fuel (118 gal. (447 L)) vary based on driving habits, climate, and road conditions. For example, during highway operation under full power at 2,100 rpm, the fuel rate is 20.5–21.4 gal. (77.6–81.0 L) per hour. Traveling at an average of 40 mph at GCWR results in a 300-mile operating range on a full tank.
4. The M915 and M915A1 are capable of operating in temperatures from -25 to 125° F (-32 to 52° C) and can operate to -50° F (-46° C) with arctic engine and personnel heater kits installed.

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES - CONTINUED**M916**

Capabilities of the M916 tractor are:

1. The M916 is capable of carrying a maximum load of 78,500 lb (35,607 kg) on its fifth wheel, and has a towing capacity from its rear pintle of 50,000 lb (22,680 kg). The M916 has a maximum Gross Vehicle Weight Rating (GVWR) of 56,000 lb (25,401 kg) and a Gross Combination Weight Rating (GCWR) of 106,000 lb (48,081 kg).
2. The M916 can start and climb a 25 percent grade at GCWR in both forward and reverse directions.
3. The M916 is capable of operating on side slopes up to 10 percent where adequate traction is available.
4. The M916 is capable of operating in temperatures from -25 to 125° F (-32 to 52° C) and can operate to -50° F (-46° C) with arctic engine and personnel heater kits installed.

M917

The M917 dump truck body provides the capability of hauling and dumping, or spreading heavy loads of hot asphalt, aggregate, dirt, and similar materials. The M917 vehicle chassis has off-road capabilities providing a variety of terrain in which the dump truck can operate. The body contains a sealed hydraulic system for raising and lowering the bed. The hydraulic system is powered by the vehicle chassis PTO unit. The tailgate can be adjusted for dumping the load or for controlled spreading while the vehicle is moving. For additional information, refer to TM 5-3805-274-13&P.

M918

The M918 is a bituminous distributor truck used for spraying liquid asphalt. The M918 can be operated on and off roads. The M918 consists of an E. D. Etnyre & Company Bituminous Distributor, Model D 63 storage tank with a low pressure heating system, hydraulic powered pumping unit, and an adjustable spray bar for distributing bituminous material. For additional information, refer to TM 5-3895-371-10.

M919

The M919 Concrete-Mobile® mixer unit is a combination materials transporter and concrete mixing plant. The mixer carries sufficient unmixed material to produce fresh concrete in any quantity up to 8 cubic yards (6.12 cubic meters). The concrete is mixed on-site and the unit has been precisely calibrated so mixes produced meet or exceed American Concrete Institute and American Association of State Highway and Transportation Officials standards for design strength. The unit can be used on an intermittent or continuous basis. However, continuous operation is dependent on the availability of raw material at the site. Some control settings for mix operations vary from truck to truck and site to site. For additional information, refer to TM 5-3895-372-10.

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES - CONTINUED**M920**

Capabilities of the M920 tractor are:

1. The M920 is capable of carrying a maximum load of 99,730 lb (45,237 kg) on its fifth wheel, and has a towing capacity from its rear pintle of 75,000 lb (34,019 kg). The M920 has a maximum Gross Vehicle Weight Rating (GVWR) of 75,000 lb (34,019 kg) and a Gross Combination Weight Rating (GCWR) of 130,000 lb (58,967 kg).
2. The M920 can start and climb a 25 percent grade at GCWR in both forward and reverse directions.
3. The M920 is capable of operating on side slopes up to 10 percent where adequate traction is available.
4. The M920 is capable of operating in temperatures from -25 to 125° F (-32 to 52° C) and can operate to -50° F (-46° C) with arctic engine and personnel heater kits installed.

AIR CONDITIONING KIT (IF EQUIPPED)

Capabilities of the Air Conditioning Kit:

1. The Air Conditioning Kit provides the M915P1, M915A1P1, M916P1, M917P1, and M920P1 with cooling of the vehicle cab.
2. The Air Conditioning Kit consists of a compressor, condenser, receiver/dryer, evaporator assembly, switch box, hoses, and electrical harness.

CREW PROTECTION KIT (IF EQUIPPED)

Capabilities of the Crew Protection Kit:

1. The Crew Protection Kit provides the M915P1, M915A1P1, M916P1, M917P1, and M920P1 with improved armor protection for vehicle occupants.
2. The Crew Protection Kit consists of armor panels installed on the cab floor, firewall, roof, rear of cab, driver side, passenger side, door assemblies, windshield frame, ballistic glass, and an escape hatch.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS**M915**

ENGINE - Cummins NTC-400 diesel engine used to power vehicle.

CLEARANCE MARKER LIGHTS - There are five amber lights mounted on cab top used to mark vehicle cab. Lights are controlled by the headlamp switch.

AIR HORN - A single horn is mounted on cab top on driver side and is air operated.

SIDE VIEW MIRRORS - There is an adjustable side view mirror mounted on each cab door used to view the area to the left and right of the vehicle and trailer when coupled.

NATO SLAVE RECEPTACLE - The NATO slave receptacle is located on both sides of the cab, allowing vehicle to be jump started using another vehicle when the batteries are low.

DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as the driving axles of the vehicle.

FUEL TANK - The fuel tank is located on the left frame rail below the cab driver door. The fuel tank supports the driver steps for entering the cab, which are welded to the side of the tank.

FRESH AIR VENTS - There is a cab air vent on each side of the cab cowl. The vent is opened and closed from inside the cab by a hand-operated lever.

TURN SIGNAL LIGHTS - There is a turn signal light mounted on the top of each front fender. The turn signal light has an amber lens facing the front of the vehicle and a red lens facing the rear. This light also functions as a marker light.

BLACKOUT MARKER LIGHT - There is a light mounted above the service headlight on each front fender for blackout lighting only.

BLACKOUT DRIVE LIGHT - A single light is mounted adjacent to the headlight on the left front fender for blackout lighting only.

TOWING EYES AND SHACKLES - There are two towing eyes with removable shackles mounted on the front bumper and frame front support brackets.

SERVICE HEADLIGHTS - There is a combination high/low sealed beam headlight mounted on each front fender for service lighting as required.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

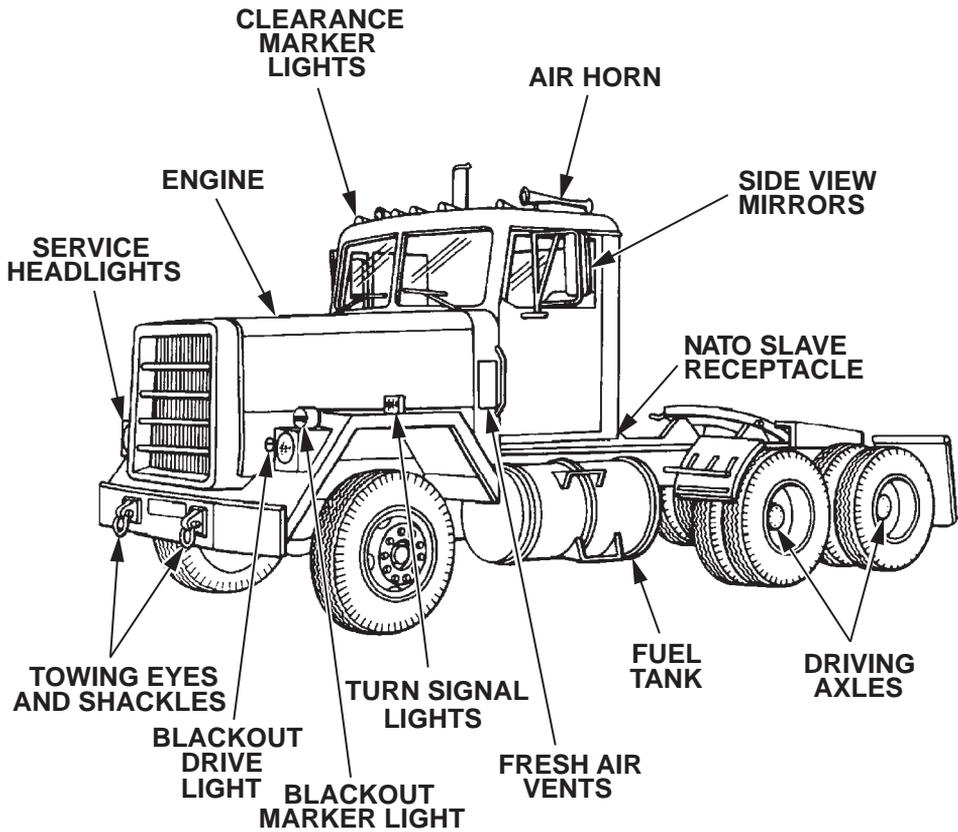


Figure 1. M915 Left Front View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M915**

TRAILER RAMPS - There are two steel ramps mounted on the frame rails adjacent to the fifth wheel. The trailer ramps help with alignment during coupling, and prevent the trailer from contacting the vehicle frame or fifth wheel too low during coupling.

FIFTH WHEEL - A fifth wheel is mounted on the vehicle frame over the tandem rear axles. Kingpin lock is air-actuated by a control lever in the cab.

SPARE TIRE HOIST - The spare tire hoist is for lifting the spare tire on and off the carrier.

AIR HOSE TENDER - The air hose tender is located in front of the spare tire carrier and supports a coiled air hose for connecting to the trailer.

SPARE TIRE CARRIER - The spare tire carrier, located directly behind the cab on the vehicle frame, is a steel frame structure that holds the spare wheel and tire assembly.

EXHAUST STACK AND MUFFLER - The exhaust system stack and muffler, located and supported by the right rear corner of the cab, routes engine exhaust above the cab.

BATTERY BOX - The battery box is located on the right frame rail below the cab passenger door. The battery box contains four batteries and two steps for entering the cab.

SPARE TIRE RACK - The spare tire rack is mounted to the left frame rail next to the spare tire carrier. The rack assembly supports the hoist for lifting the spare tire on and off the carrier.

DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as the driving axles of the vehicle.

MUD FLAPS - There is a mud flap mounted on each front fender and at the back of the truck behind the rear tires.

TOWING PINTLE - The towing pintle, located at the center of the frame rear crossmember, is provided for interface with trailers requiring a pintle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

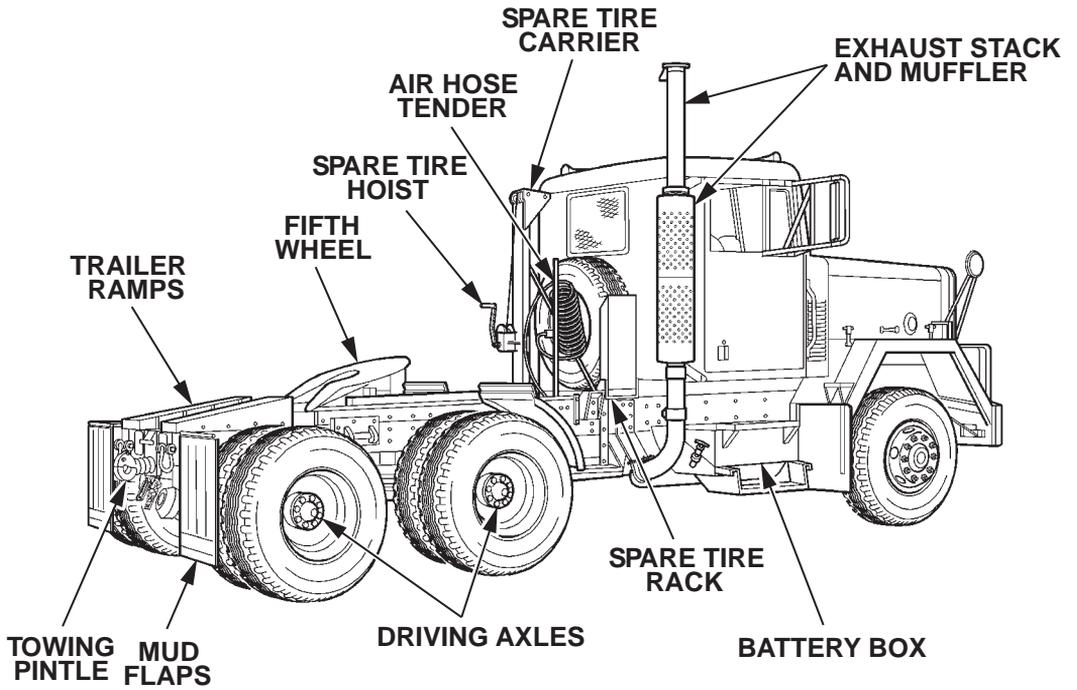


Figure 2. M915 Right Rear View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M916**

BRUSH GUARD - There is a steel brush guard mounted on the front of the vehicle designed to protect the grille/headlight area.

ENGINE - Cummins NTC-400 diesel engine used to power vehicle.

CLEARANCE MARKER LIGHTS - There are five amber lights mounted on the cab top used to mark the vehicle cab. The lights are controlled by the headlamp switch.

AIR HORN - A single horn is mounted on the cab top on the driver side and is air operated.

WINCH CONTROLS AND OPERATOR STATION - Winch and controls used to pull out stuck vehicles and for pulling trailers onto vehicle fifth wheel.

REAR DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as the driving axles of the vehicle.

NATO SLAVE RECEPTACLE - The NATO slave receptacle is located on both sides of the cab, allowing vehicle to be jump started using another vehicle when the batteries are low.

FUEL TANK - The fuel tank is located on the left frame rail below the cab driver door. The fuel tank supports the driver steps for entering the cab, which are welded to the side of the tank.

TURN SIGNAL LIGHTS - There is a turn signal light mounted on the top of each front fender. The turn signal light has an amber lens facing the front of the vehicle and a red lens facing the rear. This light also functions as a marker light.

FRONT DRIVING AXLE - The front axle is mounted to the front suspension assembly and is a steering axle and driving axle.

BLACKOUT MARKER LIGHT - There is a light mounted above the service headlight on each front fender for blackout lighting only.

SERVICE HEADLIGHTS - There is a combination high/low sealed beam headlight mounted on each front fender for service lighting as required.

BLACKOUT DRIVE LIGHT - A single light is mounted adjacent to the headlight on the left front fender for blackout lighting only.

TOWING EYES AND SHACKLES - There are two towing eyes with removable shackles mounted on the front bumper and frame front support brackets.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

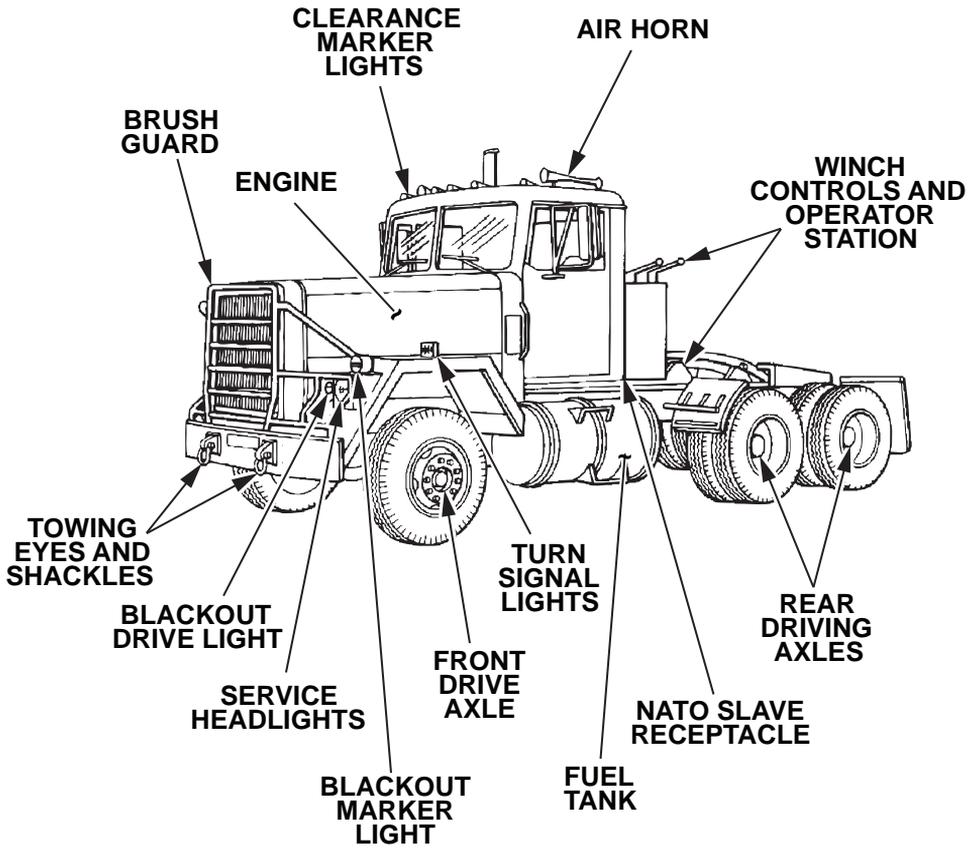


Figure 3. M916 Left Front View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M916**

TRAILER RAMPS - There are two steel ramps mounted on the frame rails adjacent to the fifth wheel. The trailer ramps help with alignment during coupling and prevent the trailer from contacting the vehicle frame or fifth wheel too low during coupling.

FIFTH WHEEL - A fifth wheel is mounted on the vehicle frame over the tandem rear axles. Kingpin lock is air-actuated by a control lever in the cab.

WINCH CONTROLS - Controls used to operate the winch.

SPARE TIRE HOIST - The spare tire hoist for lifting the spare tire on and off the carrier.

EXHAUST STACK AND MUFFLER - The exhaust system stack and muffler, located and supported by the right rear corner of the cab, routes engine exhaust above the cab.

FRONT DRIVING AXLE - The front axle, mounted to the front suspension assembly and is a steering axle and driving axle.

BATTERY BOX - The battery box is located on the right frame rail below the cab passenger door. The battery box contains four batteries and two steps for entering the cab.

SPARE TIRE CARRIER - The spare tire carrier, located directly behind the cab on the vehicle frame, is a steel frame structure that holds the spare wheel and tire assembly.

AIR HOSE TENDER - The air hose tender is located in front of the spare tire carrier and supports a coiled air hose for connecting to the trailer.

DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as the driving axles of the vehicle .

MUD FLAPS - There is a mud flap mounted on each front fender and at the back of the truck behind the rear tires.

TOWING PINTLE - The towing pintle, located at the center of the frame rear crossmember, is provided for interface with trailers requiring a pintle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

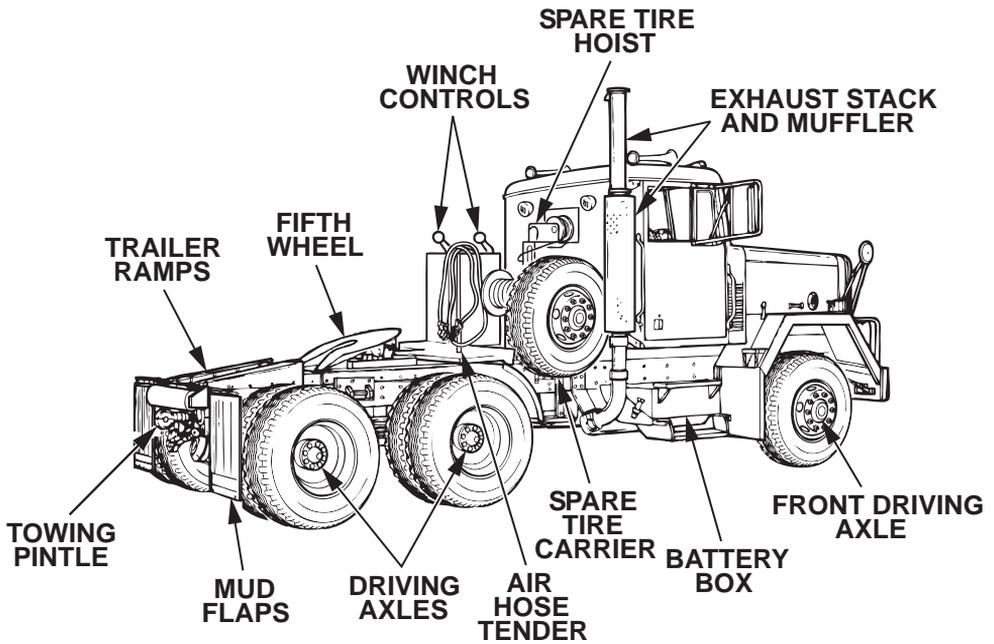


Figure 4. M916 Right Rear View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M917**

BRUSH GUARD - There is a steel brush guard mounted on the front of the vehicle designed to protect the grille/headlight area.

ENGINE - Cummins NTC-400 diesel engine used to power vehicle.

CLEARANCE MARKER LIGHTS - There are five amber lights mounted on the cab top used to mark the vehicle cab. The lights are controlled by the headlamp switch.

AIR HORN - A single horn is mounted on the cab top on the driver side and is air operated.

SIDE VIEW MIRRORS - There is an adjustable side view mirror mounted on each cab door used to view the area to the left and right of the vehicle and trailer when coupled.

NATO SLAVE RECEPTACLE - The NATO slave receptacle is located on both sides of the cab, allowing vehicle to be jump started using another vehicle when the batteries are low.

REAR DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as the driving axles of the vehicle.

PUSHER AXLE - The pusher axle is a non-driving axle located directly in front of the driving axle.

FUEL TANK - The fuel tank is located on the left frame rail below the cab driver door. The fuel tank supports the driver steps for entering the cab, which are welded to the side of the tank.

TURN SIGNAL LIGHTS - There is a turn signal light mounted on the top of each front fender. The turn signal light has an amber lens facing the front of the vehicle and a red lens facing the rear. This light also functions as a marker light.

BLACKOUT MARKER LIGHT - There is a light mounted above the service headlight on each front fender for blackout lighting only.

BLACKOUT DRIVE LIGHT - A single light is mounted adjacent to the headlight on the left front fender for blackout lighting only.

TOWING EYES AND SHACKLES - There are two towing eyes with removable shackles mounted on the front bumper and frame front support brackets.

SERVICE HEADLIGHTS - There is a combination high/low sealed beam headlight mounted on each front fender for service lighting as required.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

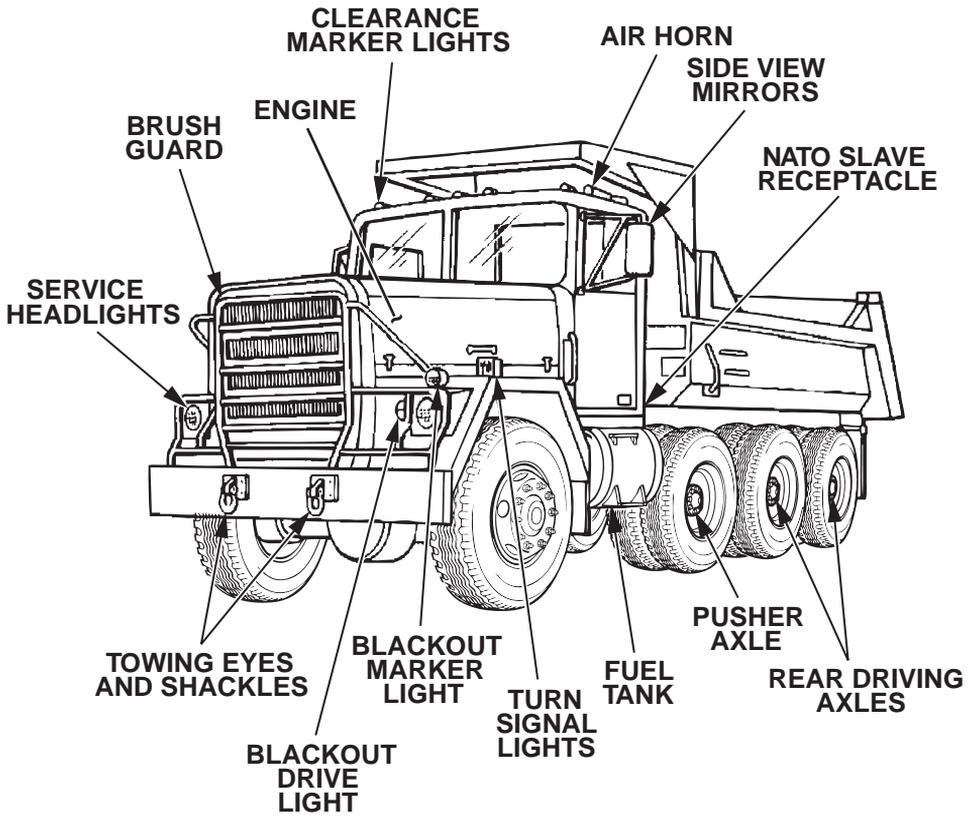


Figure 5. M917 Left Front View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M917**

DUMP BODY - The dump truck body provides the capability of hauling and dumping, or spreading heavy loads of hot asphalt, aggregate, dirt, and similar materials. The dump body contains a sealed hydraulic system for raising and lowering the dump bed. For additional information, refer to TM 5-3805-274-13&P.

EXHAUST STACK AND MUFFLER - The exhaust system stack and muffler, located and supported by the right rear corner of the cab, routes engine exhaust above the cab.

FRONT DRIVING AXLE - The front axle, mounted to the front suspension assembly and is a steering axle and driving axle.

BATTERY BOX - The battery box is located on the right frame rail below the cab passenger door. The battery box contains four batteries and two steps for entering the cab.

MUD GUARD - The mud guard is located in front of the pusher axle tires to limit mud being thrown off tires and onto vehicle.

PUSHER AXLE - The pusher axle is a non-driving axle located directly in front of the driving axle.

REAR DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as driving axles of the vehicle.

MUD FLAPS - There is a mud flap mounted on each front fender and at the back of the truck behind the rear tires.

TOWING PINTLE - The towing pintle, located at the center of the frame rear crossmember, is provided for interface with trailers requiring a pintle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

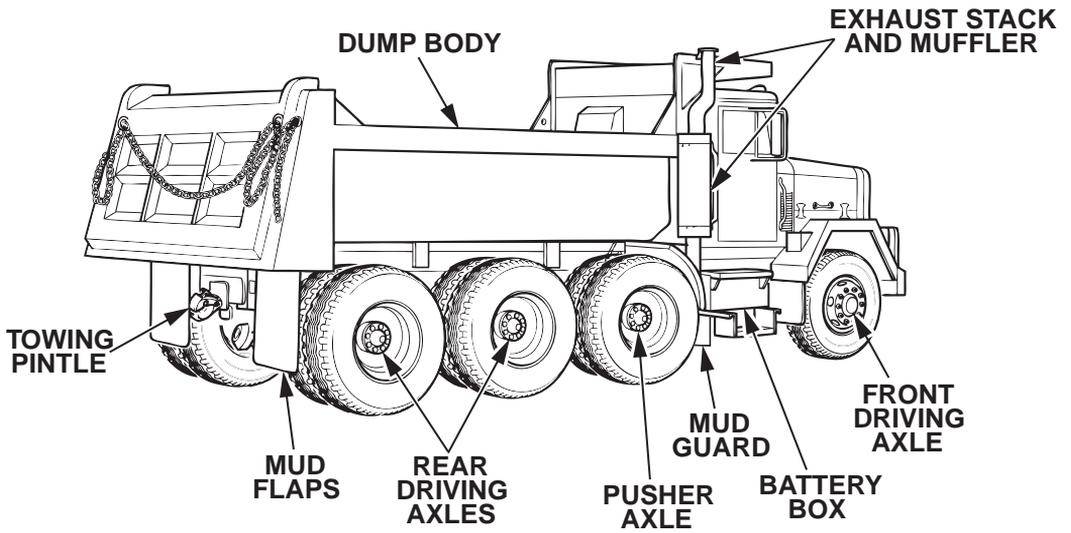


Figure 6. M917 Right Rear View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M918**

BRUSH GUARD - There is a steel brush guard mounted on the front of the vehicle designed to protect the grille/headlight area.

ENGINE - Cummins NTC-400 diesel engine used to power vehicle.

CLEARANCE MARKER LIGHTS - There are five amber lights mounted on the cab top used to mark the vehicle cab. The lights are controlled by the headlamp switch.

AIR HORN - A single horn is mounted on the cab top on the driver side and is air operated.

NATO SLAVE RECEPTACLE - The NATO slave receptacle is located on both sides of the cab, allowing vehicle to be jump started using another vehicle when the batteries are low.

FUEL TANK - The fuel tank is located on the left frame rail below cab driver door. The fuel tank supports the driver steps for entering the cab, which are welded to the side of the tank.

TURN SIGNAL LIGHTS - There is a turn signal light mounted on top of each front fender. The turn signal light has an amber lens facing the front of the vehicle and a red lens facing the rear. This light also functions as a marker light.

BLACKOUT MARKER LIGHT - There is a light mounted above the service headlight on each front fender for blackout lighting only.

BLACKOUT DRIVE LIGHT - A single light is mounted adjacent to the headlight on the left front fender for blackout lighting only.

TOWING EYES AND SHACKLES - There are two towing eyes with removable shackles mounted on the front bumper and frame front support brackets.

SERVICE HEADLIGHTS - There is a combination high/low sealed beam headlight mounted on each front fender for service lighting as required.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

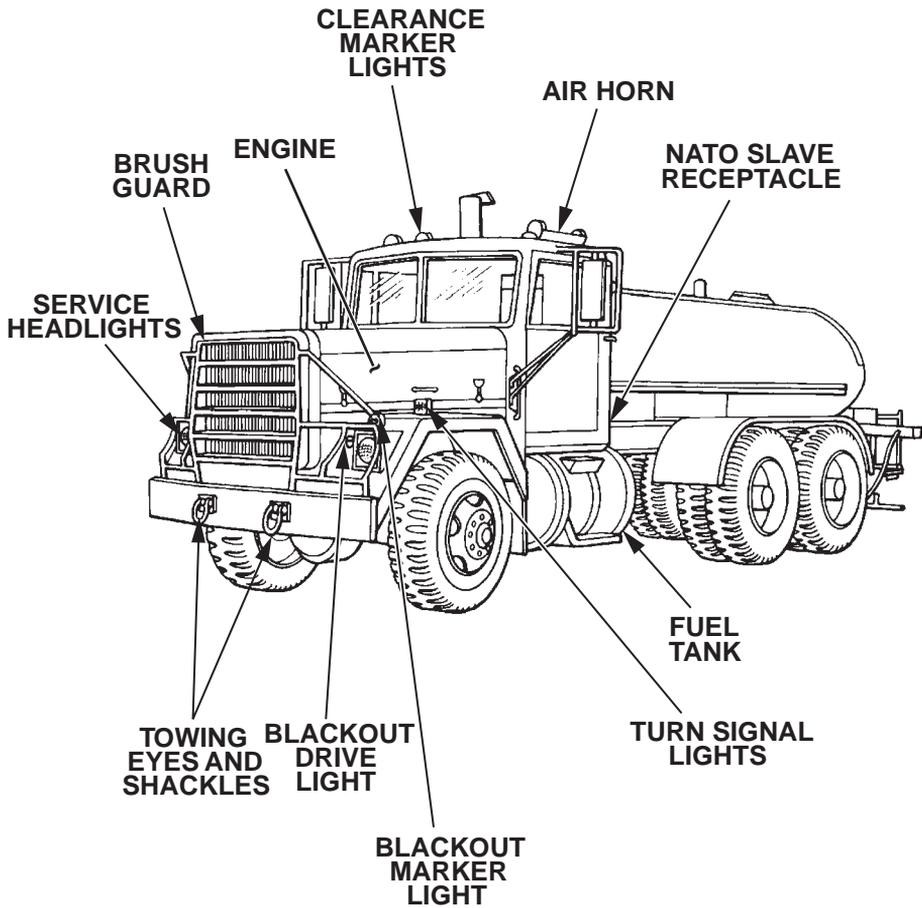


Figure 7. M918 Left Front View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M918**

BITUMINOUS DISTRIBUTOR BODY - The bituminous distributor body is used for spraying liquid asphalt. The bituminous distributor body consists of a storage tank with a low pressure heating system, hydraulic powered pumping unit, and an adjustable spray bar for distributing bituminous material. For additional information, refer to TM 5-3895-371-10.

EXHAUST STACK AND MUFFLER - The exhaust system stack and muffler, located and supported by the right rear corner of the cab, routes engine exhaust above the cab.

SIDE VIEW MIRRORS - There is an adjustable side view mirror mounted on each cab door used to view the area to the left and right of the vehicle.

FRONT DRIVING AXLE - The front axle, mounted to the front suspension assembly and is a steering axle and driving axle.

BATTERY BOX - The battery box is located on the right frame rail below the cab passenger door. The battery box contains four batteries and two steps for entering the cab.

REAR DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as the driving axles of the vehicle.

MUD FLAPS - There is a mud flap mounted on each front fender and at the back of the truck behind the rear tires.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

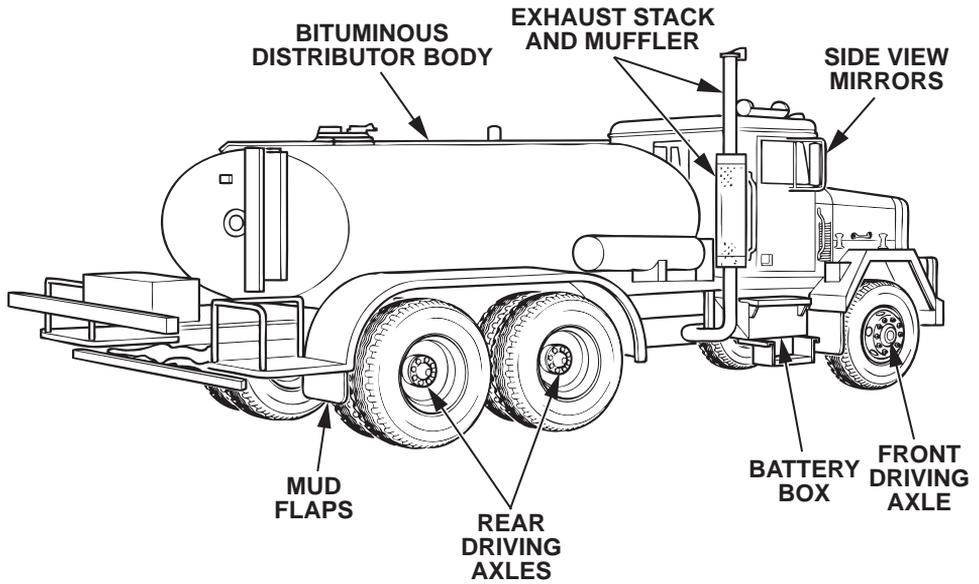


Figure 8. M918 Right Rear View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M919**

ENGINE - Cummins NTC-400 diesel engine used to power vehicle.

CLEARANCE MARKER LIGHTS - There are five amber lights mounted on the cab top used to mark the vehicle cab. Lights are controlled by the headlamp switch.

AIR HORN - A single horn is mounted on the cab top on the driver side and is air operated.

NATO SLAVE RECEPTACLE - The NATO slave receptacle is located on both sides of the cab, allowing vehicle to be jump started using another vehicle when the batteries are low.

FUEL TANK - The fuel tank is located on the left frame rail below the cab driver door. The fuel tank supports the driver steps for entering the cab, which are welded to the side of the tank.

TURN SIGNAL LIGHTS - There is a turn signal light mounted on top of each front fender. The turn signal light has an amber lens facing the front of the vehicle and a red lens facing the rear. This light also functions as a marker light.

BLACKOUT MARKER LIGHT - There is a light mounted above the service headlight on each front fender for blackout lighting only.

BLACKOUT DRIVE LIGHT - A single light is mounted adjacent to the headlight on the left front fender for blackout lighting only.

TOWING EYES AND SHACKLES - There are two towing eyes with removable shackles mounted on the front bumper and frame front support brackets.

BRUSH GUARD - There is a steel brush guard mounted on the front of the vehicle designed to protect the grille/headlight area.

SERVICE HEADLIGHTS - There is a combination high/low sealed beam headlight mounted on each front fender for service lighting as required.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

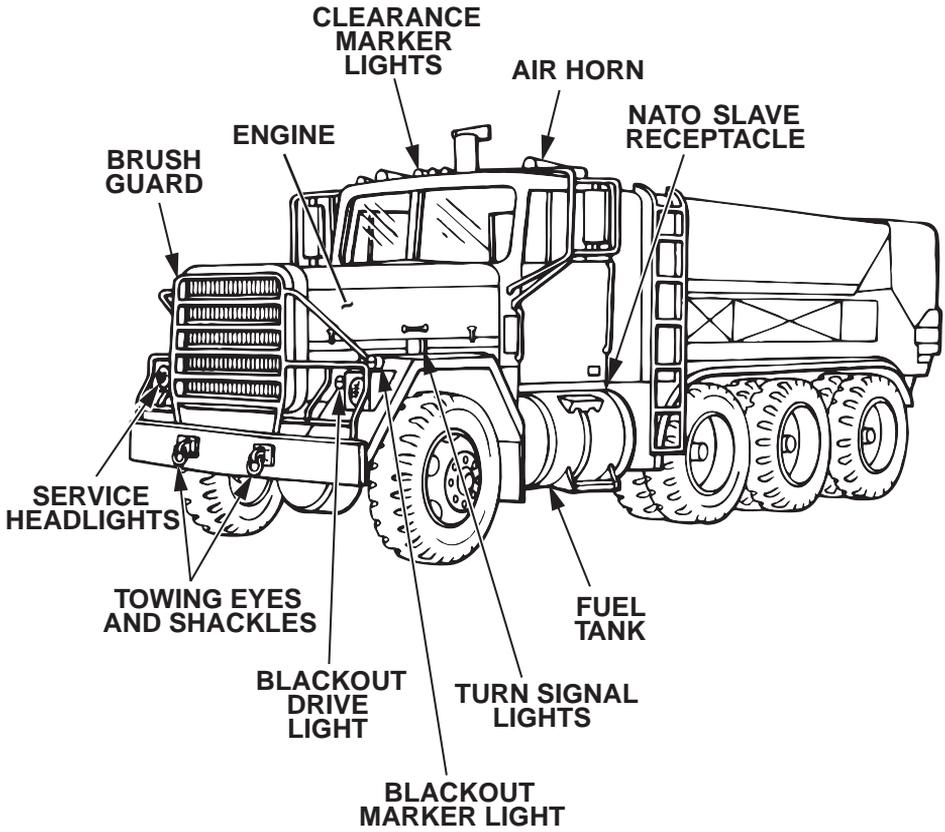


Figure 9. M919 Left Front View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M919**

CONCRETE MIXER BODY - The M919 Concrete-Mobile® mixer unit is a combination materials transporter and concrete mixing plant. The mixer carries sufficient unmixed material to produce fresh concrete in any quantity up to 8 cubic yards (6.12 cubic meters). The concrete is mixed at the site and since the unit has been precisely calibrated, mixes can be produced that meet or exceed American Concrete Institute and American Association of State Highway and Transportation Officials standards for design strength. For additional information, refer to TM 5-3895-372-10.

EXHAUST STACK AND MUFFLER - The exhaust system stack and muffler, located and supported by the right rear corner of the cab, routes engine exhaust above the cab.

SIDE VIEW MIRRORS - There is an adjustable side view mirror mounted on each cab door used to view the area to the left and right of the vehicle.

FRONT DRIVING AXLE - The front axle, mounted to the front suspension assembly, is a steering axle and driving axle.

MUD FLAPS - There is a mud flap mounted on each front fender.

BATTERY BOX - The battery box is located on the right frame rail below the cab passenger door. The battery box contains four batteries and two steps for entering the cab.

PUSHER AXLE - The pusher axle is a non-driving axle located directly in front of the driving axle.

REAR DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as driving axles of the vehicle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

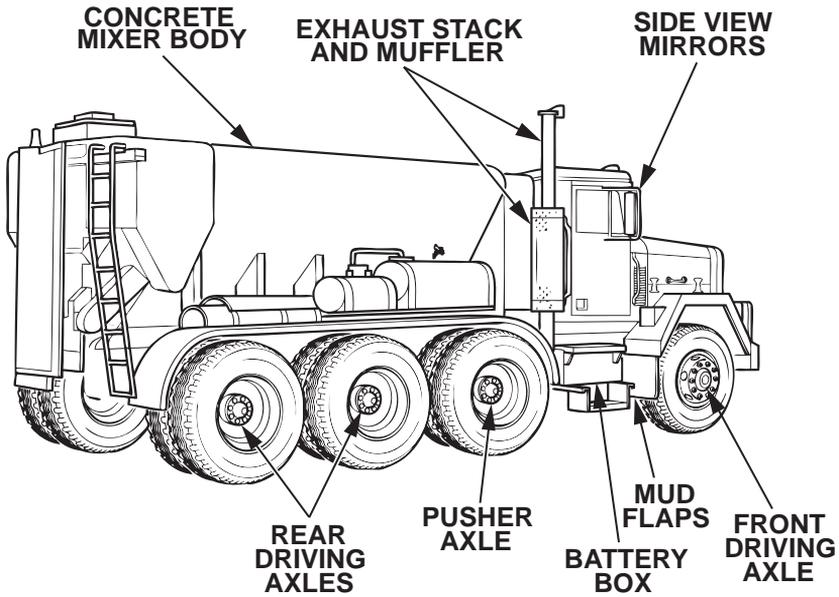


Figure 10. M919 Right Rear View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M920**

ENGINE - Cummins NTC-400 diesel engine used to power vehicle.

CLEARANCE MARKER LIGHTS - There are five amber lights mounted on the cab top used to mark the vehicle cab. The lights are controlled by the headlamp switch.

AIR HORN - A single horn is mounted on the cab top on the driver side and is air operated.

SIDE VIEW MIRRORS - There is an adjustable side view mirror mounted on each cab door used to view the area to the left and right of the vehicle and trailer when coupled.

NATO SLAVE RECEPTACLE - The NATO slave receptacle is located on both sides of the cab, allowing vehicle to be jump started using another vehicle when the batteries are low.

FUEL TANK - The fuel tank is located on the left frame rail below the cab driver door. The fuel tank supports the driver steps for entering the cab, which are welded to the side of the tank.

TURN SIGNAL LIGHTS - There is a turn signal light mounted on top of each front fender. The turn signal light has an amber lens facing the front of the vehicle and a red lens facing the rear. This light also functions as a marker light.

BLACKOUT MARKER LIGHT - There is a light mounted above the service headlight on each front fender for blackout lighting only.

BLACKOUT DRIVE LIGHT - A single light is mounted adjacent to the headlight on the left front fender for blackout lighting only.

TOWING EYES AND SHACKLES - There are two towing eyes with removable shackles mounted on the front bumper and frame front support brackets.

BRUSH GUARD - There is a steel brush guard mounted on the front of the vehicle designed to protect the grille/headlight area.

SERVICE HEADLIGHTS - There is a combination high/low sealed beam headlight mounted on each front fender for service lighting as required.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

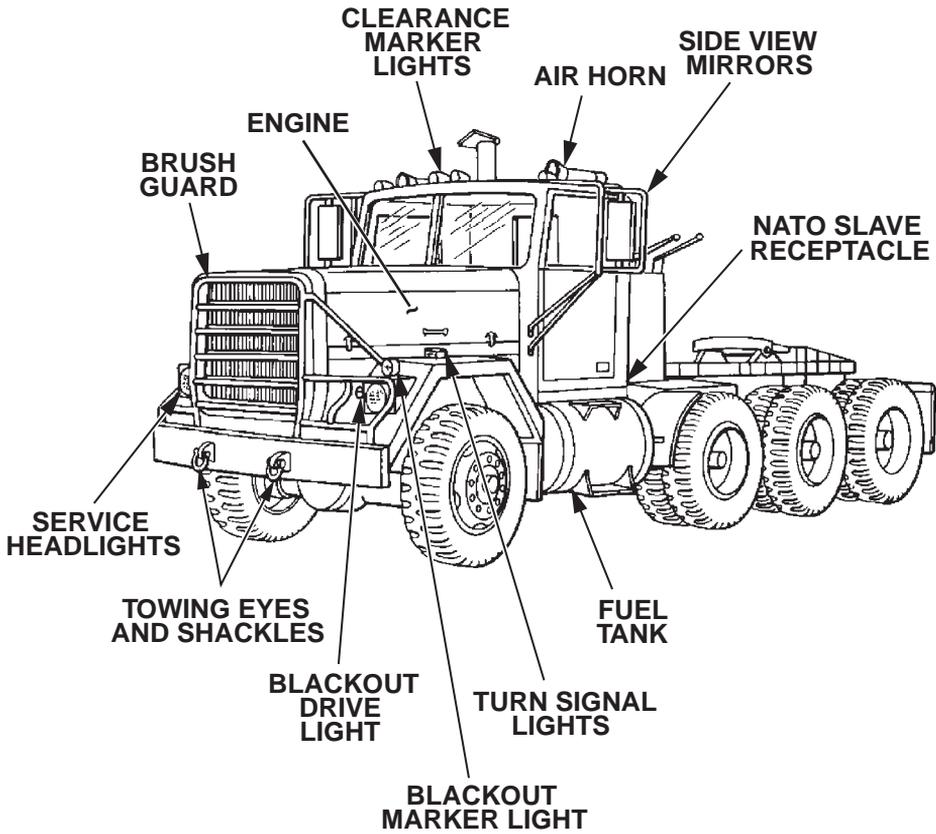


Figure 11. M920 Left Front View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M920**

TRAILER RAMPS - There are two steel ramps mounted on the frame rails adjacent to the fifth wheel. The trailer ramps help with alignment during coupling, and prevent the trailer from contacting the vehicle frame or fifth wheel too low during coupling.

FIFTH WHEEL - A fifth wheel is mounted on the vehicle frame over the tandem rear axles. Kingpin lock is air-actuated by a control lever in the cab.

WINCH CONTROLS - Controls used to operate the winch.

WINCH - Used to pull out stuck vehicles and for pulling trailers onto vehicle fifth wheel.

EXHAUST STACK AND MUFFLER - The exhaust system stack and muffler, located and supported by the right rear corner of the cab, routes engine exhaust above the cab.

FRONT DRIVING AXLE - The front axle, mounted to the front suspension assembly, is a steering axle and driving axle.

BATTERY BOX - The battery box is located on the right frame rail below the cab passenger door. The battery box contains four batteries and two steps for entering the cab.

PUSHER AXLE - The pusher axle is a non-driving axle located directly in front of the driving axle.

REAR DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as driving axles of the vehicle.

MUD FLAPS - There is a mud flap mounted on each front fender and at the back of the truck behind the rear tires.

TOWING PINTLE - The towing pintle, located at the center of the frame rear crossmember, is provided for interface with trailers requiring a pintle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

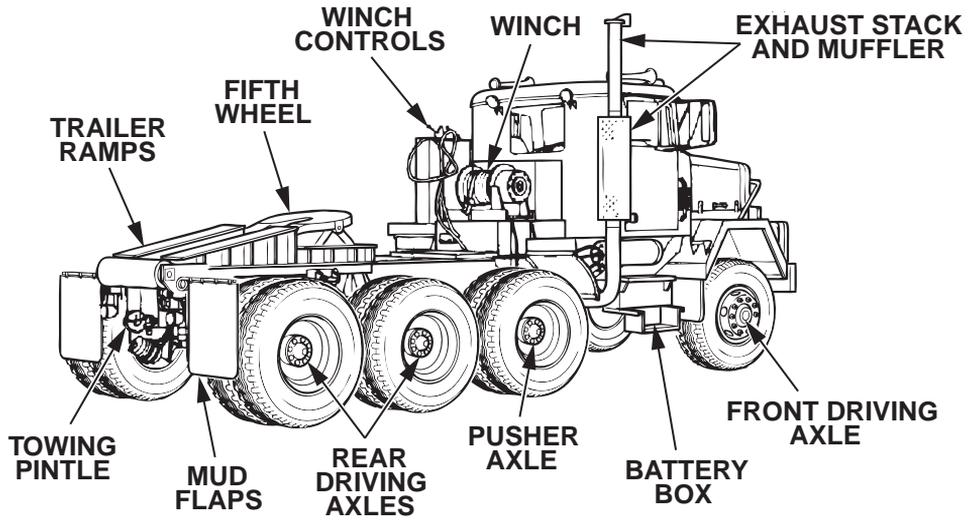


Figure 12. M920 Right Rear View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M915A1**

FRONT SPOTTER MIRRORS - There is an adjustable convex mirror mounted on each front fender. The left mirror is intended to provide a view of the area directly in front of the vehicle, and the right mirror is intended to provide a view of the lower right side of the vehicle.

BRUSH GUARD - There is a steel brush guard mounted on the front of the vehicle designed to protect grille/headlight area.

ENGINE - Cummins NTC-400 BIG CAM III diesel engine used to power vehicle.

CLEARANCE MARKER LIGHTS - There are five amber lights mounted on the cab top used to mark the vehicle cab. Lights are controlled by the headlamp switch.

AIR HORN - A single horn is mounted on the driver side cab top and is air operated.

SIDE VIEW MIRRORS - There is an adjustable side view mirror mounted on each cab door used to view the area to the left and right of the vehicle and trailer when coupled.

WORK LAMP RECEPTACLE - There is a small receptacle with a removable rubber dust cap on each side of the cab at the bottom outside corner adjacent to the door handle. The receptacle is provided as a power supply for the 12 Volt work lamp.

DRIVING AXLES - The forward-rear and rear-rear axles are mounted to the rear suspension assembly and function as driving axles of the vehicle.

SPRING BRAKE CHAMBERS - An air chamber, located at each wheel end on the rear tandem axles, mechanically operates the rear brakes by releasing when air pressure is raised and applying when air pressure is released.

FUEL TANK - The fuel tank is located on the left frame rail below the cab driver door. The fuel tank supports the driver steps for entering the cab, which are welded to the side of the tank.

FRESH AIR VENTS - There is a cab air vent on each side of the cab cowl. The vent is opened and closed from inside the cab by a hand-operated lever.

FRONT AXLE - The front axle, mounted to the front suspension, is a nondriving front axle.

TURN SIGNAL LIGHTS - There is a turn signal light mounted on top of each front fender. The turn signal light has an amber lens facing the front of the vehicle and a red lens facing the rear. This light also functions as a marker light.

BLACKOUT MARKER LIGHT - There is a light mounted above the service headlight on each front fender for blackout lighting only.

SERVICE HEADLIGHTS - There is a combination high/low sealed beam headlight mounted on each front fender for service lighting as required.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

BLACKOUT DRIVE LIGHT - A single light is mounted adjacent to the headlight on the left front fender for blackout lighting only.

TOWING EYES AND SHACKLES - There are two towing eyes with removable shackles mounted on the front bumper and frame front support brackets.

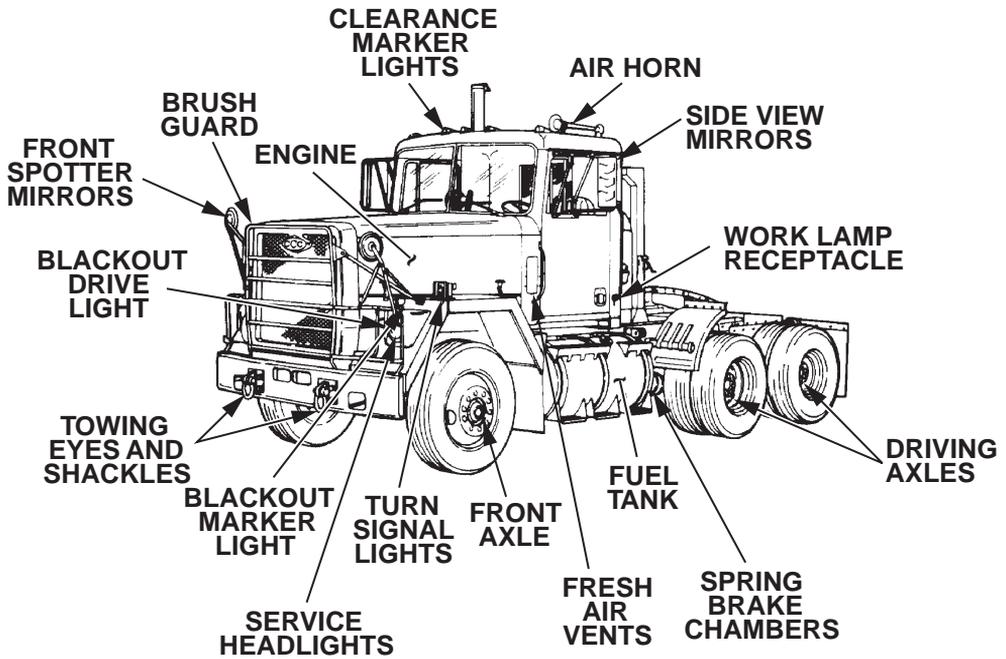


Figure 13. M915A1 Left Front View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**M915A1**

TRAILER RAMPS - There are two steel ramps mounted on the frame rails adjacent to the fifth wheel. The trailer ramps help with alignment during coupling, and prevent the trailer from contacting the vehicle frame or fifth wheel too low during coupling.

CAB CONTROLLED FIFTH WHEEL - A fifth wheel is mounted on the vehicle frame over the tandem rear axles. Kingpin lock is air-actuated by a control lever in the cab.

SPARE TIRE HOIST AND RACK ASSEMBLY - The spare tire rack is mounted to the left frame rail next to the spare tire carrier. The rack assembly supports the hoist for lifting the spare tire on and off the carrier.

CAB SLIDING REAR WINDOW AND STONE SHIELD - There is a sliding window protected by a steel grid located on the back panel of the vehicle cab.

EXHAUST STACK AND MUFFLER - The exhaust system stack and muffler, located and supported by the right rear corner of the cab, routes engine exhaust above the cab.

FRONT WHEEL MUD FLAP - There is a mud flap mounted on each front fender.

BATTERY BOX AND NATO SLAVE RECEPTACLE - The battery box is located on the right frame rail below the cab passenger door. The battery box contains four batteries, a NATO slave receptacle, and two steps for entering the cab.

SPARE TIRE CARRIER - The spare tire carrier, located directly behind the cab on the vehicle frame, is a steel frame structure that holds the spare wheel and tire assembly.

AIR HOSE TENDER - The air hose tender is located in front of the spare tire carrier and supports a coiled air hose for connecting to the trailer.

REAR WHEEL MUD FLAPS - There is a mud flap mounted behind each wheel on the rear-rear axle.

BLACKOUT TAIL AND STOPLAMPS - There is a tail lamp located below the rear towing eye on the left and right frame rail that contains the bulbs for blackout tail and stoplamps.

SERVICE TAIL AND STOPLAMPS - There is a tail lamp mounted below the frame rear crossmember at each side of the towing pintle. The service tail lamp provides tail, turn signal, and stop lighting. A separate single-filament bulb functions as the backup lamp.

REAR AIR LINE COUPLINGS - There are two air line quick-disconnect couplings located at the rear of the vehicle below the towing pintle.

TOWING PINTLE - The towing pintle, located at the center of the frame rear crossmember, is provided for interface with trailers requiring a pintle.

REAR TOWING EYES AND SHACKLES - There is a towing eye mounted on the side of each frame rail adjacent to the towing pintle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

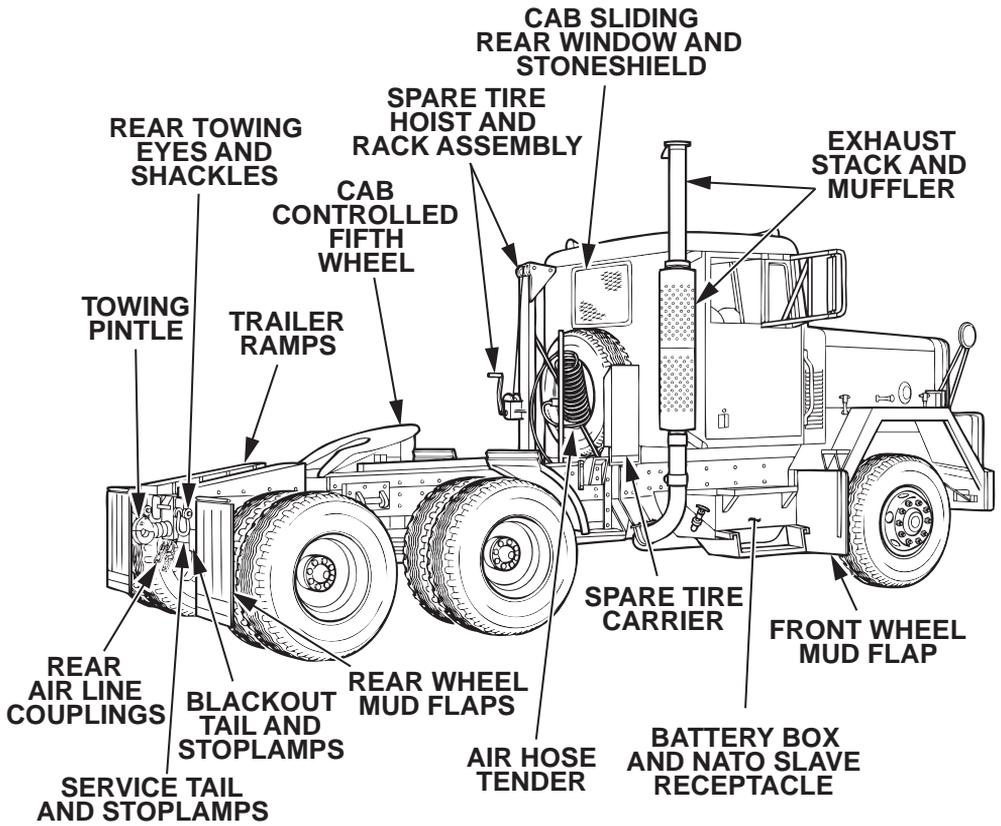


Figure 14. M915A1 Right Rear View.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**AIR CONDITIONING KIT (IF EQUIPPED)**

CONDENSER - Located on the roof of the cab, it is a part of the A/C system where heat dissipation occurs. Inside the condenser, refrigerant gas is cooled and condensed into liquid form and then delivered back to other parts of the system, where it is expanded into a cool gaseous form to cool the cab.

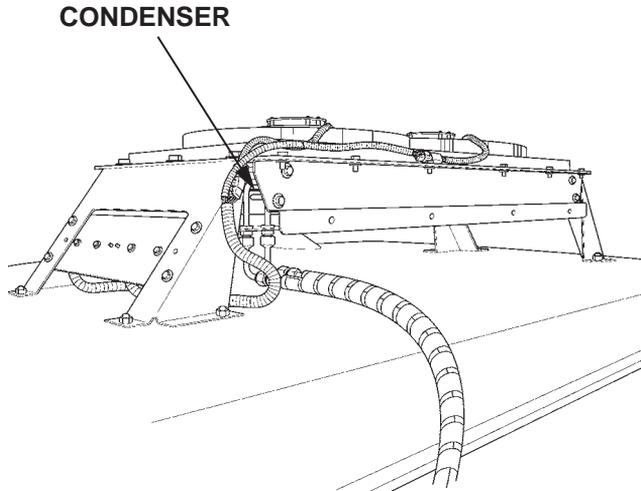


Figure 15. A/C Condenser.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

SWITCH BOX - Located to the left of the evaporator assembly, it features an ON/OFF switch and HIGH/LOW fan speed switch.

EVAPORATOR ASSEMBLY - The unit mounted below the lower control panel, it functions to remove heat and humidity from the cab by providing cooled air passing through it when the fan is operated.

A/C FILTER - Located below the evaporator assembly, it filters the air passing through the evaporator and out the cold air vents.

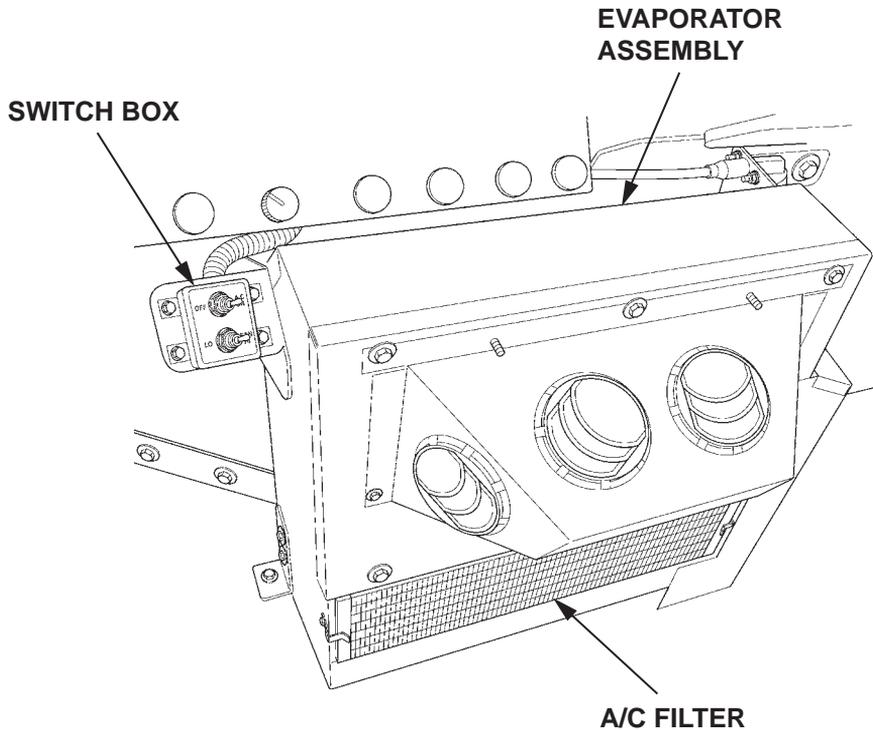


Figure 16. A/C Evaporator Components.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

A/C ELECTRICAL HARNESS - The electrical harness that powers the A/C system, which includes the magnetic clutch on the compressor and blower fan in the evaporator assembly.

A/C HOSES - The plumbing that routes refrigerant between the compressor, evaporator, condenser, and receiver/dryer.

A/C COMPRESSOR - Is a belt-driven pump, located on the engine, that circulates refrigerant through the A/C system to cool the passenger compartment.

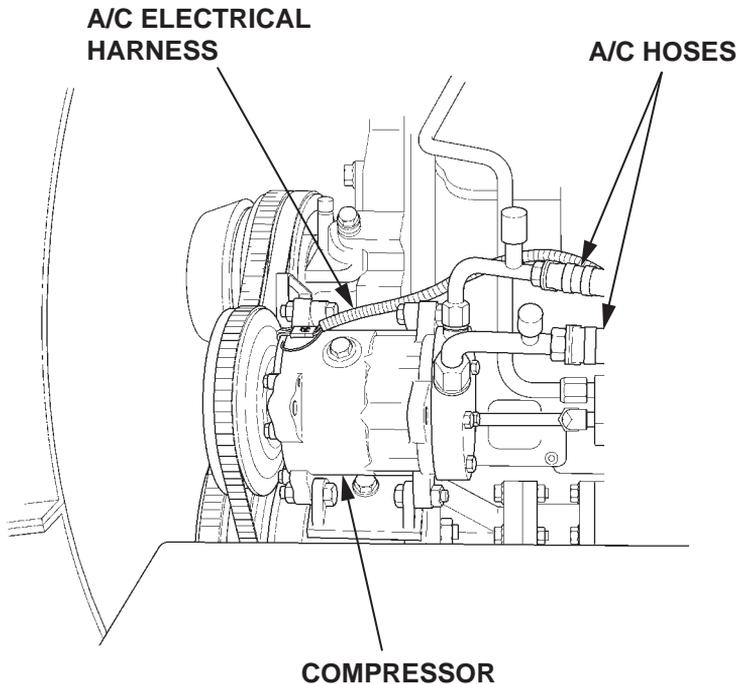


Figure 17. A/C Compressor.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

A/C RECEIVER/DRYER - Located on vehicle frame, it stores compressor oil and refrigerant until needed by the A/C system, contains a filter that traps debris, and contains a desiccant that absorbs moisture.

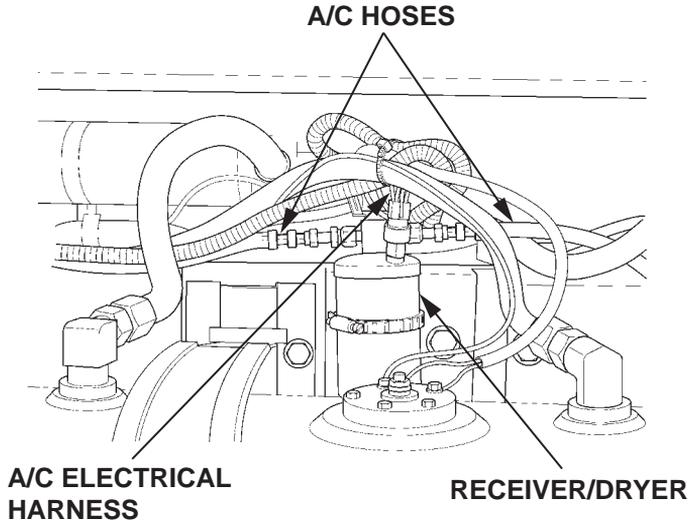


Figure 18. A/C Receiver/Dryer.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED**CREW PROTECTION KIT (IF EQUIPPED)**

WINDSHIELD ARMOR FRAME AND BALLISTIC GLASS - Located in front of cab above instrument panel, it provides armor protection for the windshield area of the cab.

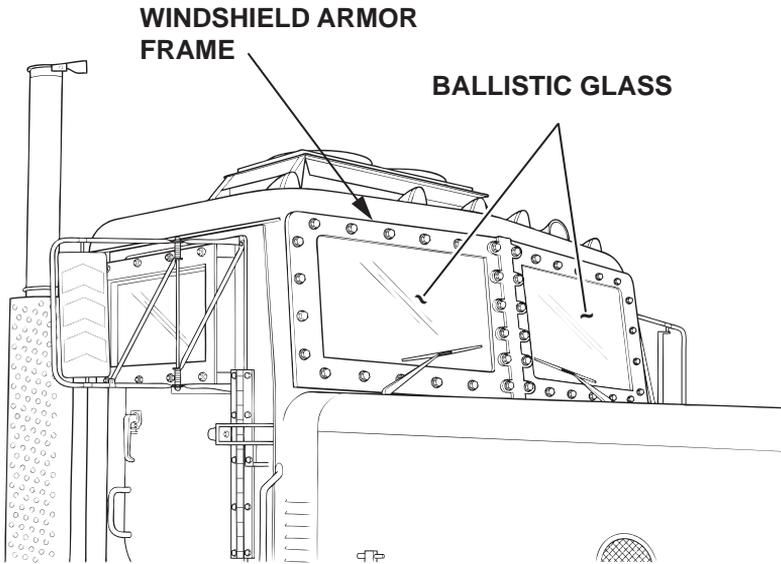


Figure 19. Windshield Armor Frame and Ballistic Glass.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

ROOF ARMOR - Armor plate mounted on roof of vehicle cab.

REAR ARMOR - The armor plate located on rear of cab.

ESCAPE HATCH - Located on rear of cab in place of rear window, it provides an emergency exit for vehicle occupants.

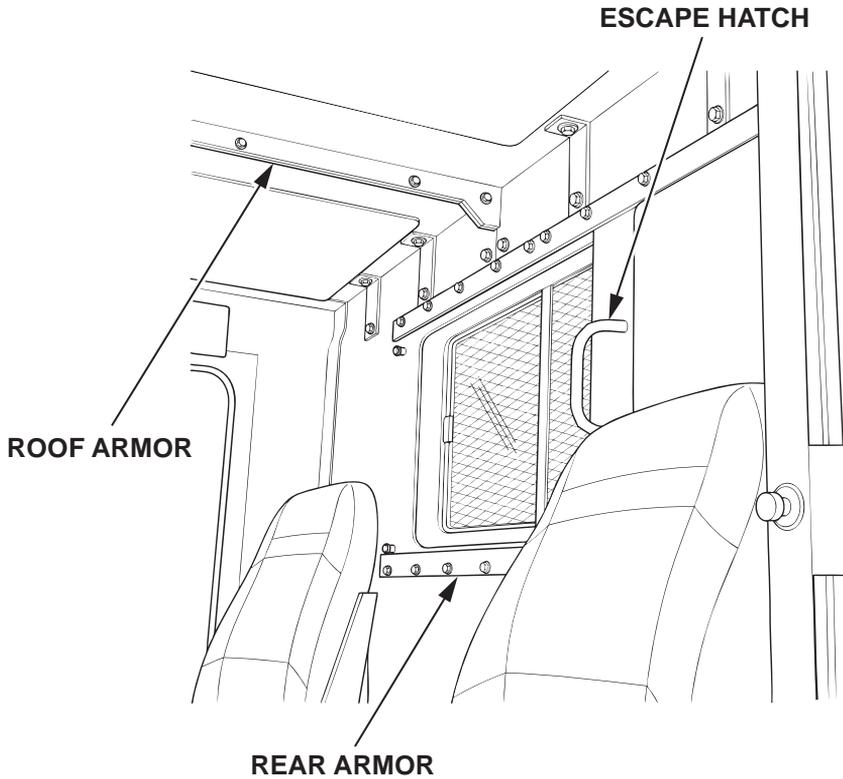


Figure 20. Roof Armor, Rear Armor, and Escape Hatch.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

ARMOR DOOR ASSEMBLY - Located on each side of cab, the armored door with ballistic glass provides armor protection for vehicle occupants.

GLOVE BOX ARMOR - The armor plate mounted in front of glove box and access panel on passenger side of cab.

FIREWALL ARMOR, RIGHT HAND - The armor plate mounted on firewall in front of driver side of cab.

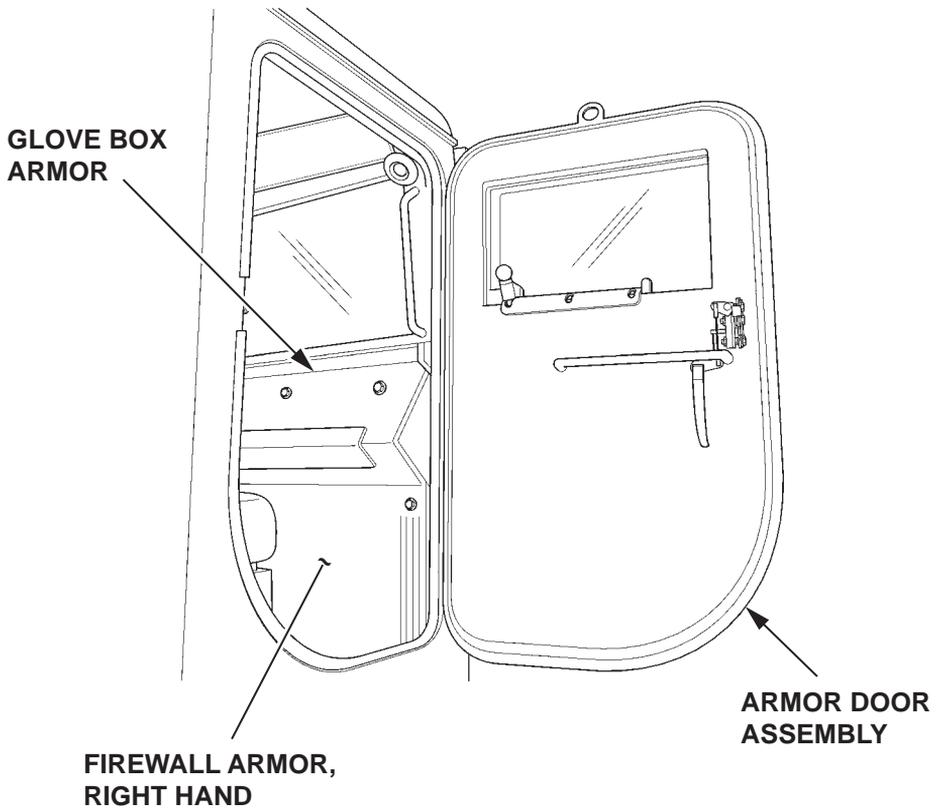


Figure 21. Armor Door Assembly.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

FIREWALL ARMOR, CENTER - The armor plate mounted in front of firewall.

FLOOR ARMOR - The armor plate mounted on floor of cab, it provides armor protection for the floor area of the cab.

FIREWALL ARMOR, LEFT HAND - The armor plate mounted on firewall in front of the driver side of cab.

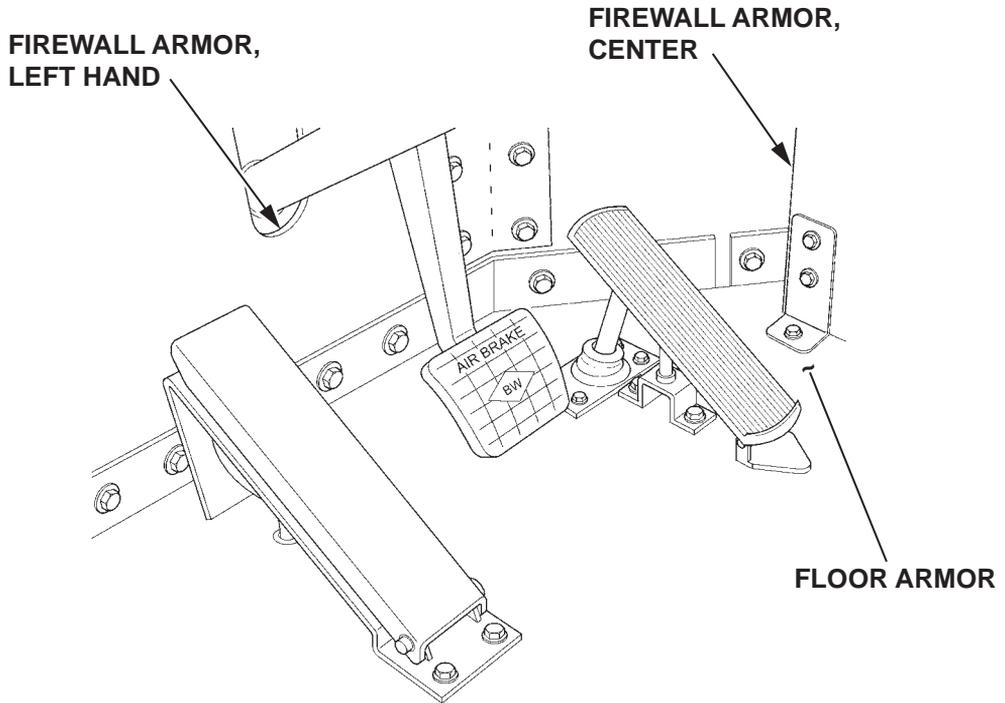


Figure 22. Interior Armor.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
EQUIPMENT DATA**

DIFFERENCE BETWEEN MODELS

Table 1. Differences Between Models.

ITEM	M915A1	M915A1P1	M915	M915P1	M916	M916P1	M917	M917P1	M918	M919	M920	M920P1
Driving Front Axle					X	X	X	X	X	X	X	X
Transfer Case					X	X	X	X	X	X	X	X
Pusher Axle							X	X		X	X	X
Spare Wheel and Tire Assembly	X	X	X	X	X	X						
Spare Wheel and Tire Hoist	X	X	X	X	X	X						
Towing Pintle	X	X	X	X	X	X	X	X			X	X
Fifth Wheel	X	X	X	X	X	X					X	X
Winch					X	X					X	X
Work Lamps					X	X					X	X
External Receptacle for Work Lamps	X	X	X	X	X	X						
Power Take-Off (PTO)					X	X	X	X	X	X	X	X
Hose Tender and Cable Support	X	X	X	X	X	X						
Backup Alarm					X	X	X	X	X	X	X	X
Special Bodies:												
Dump Body							X	X				
Bituminous Distributor									X			
Concrete-Mobile® Mixer										X		
Auxiliary Power Steering Cylinder					X	X	X	X	X	X	X	X
Double Rail Frame					X	X	X	X	X	X	X	X
Front Shock Absorbers	X	X	X	X								
Tires:												
Highway On/Off Road	X	X	X	X	X	X	X	X	X	X	X	X
Crew Protection Kit		X		X		X		X				X
Air Conditioning Kit		X		X		X		X				X

EQUIPMENT DATA

NOTE

Refer to the following for specific equipment data.

WEIGHTS

Curb weight

M915A1	19,720 lb (8945 kg)
M915	19,630 lb (8781 kg)
M916	27,500 lb (12,474 kg)
M917	34,030 lb (15,459 kg)
M918	30,280 lb (14,216 kg)
M919	37,540 lb (17,028 kg)
M920	30,270 lb (13,730 kg)

Gross Vehicle Weight Rating (GVWR)

M915A1	50,000 lb (22,680 kg)*
M915	50,000 lb (22,680 kg)*
M916	56,000 lb (25,402 kg)
M917	75,000 lb (34,019 kg)
M918	56,000 lb (25,402 kg)
M919	75,000 lb (34,019 kg)
M920	75,000 lb (34,019 kg)

Gross Combination Weight Rating (GCWR)

M915A1	105,000 lb (47,627 kg)
M915	105,000 lb (47,627 kg)
M916	106,000 lb (48,082 kg)
M917	N/A
M918	N/A
M919	N/A
M920	130,000 lb (58,968 kg)

Front Axle Empty

M915A1	9,730 lb (4,414 kg)
M915	9,920 lb (4,500 kg)
M916	13,370 lb (6,065 kg)
M917	18,670 lb (8,469 kg)
M918	11,980 lb (5,434 kg)
M919	14,280 lb (6,477 kg)
M920	14,700 lb (6,668 kg)

WEIGHTS - CONTINUED

Pusher Axle

M915A1	N/A
M915	N/A
M916	N/A
M917	20,000 lb (9,072 kg) (with 40,000 lb (18,144 kg) on 5th wheel)
M918	N/A
M919	20,000 lb (9,072 kg) (with 35,550 lb (16,125 kg) payload)
M920	20,000 lb (9,072 kg) (with 44,730 lb (20,290 kg) on 5th wheel)

Front Axle Loaded

M915A1	11,580 lb (5,253 kg)
M915	11,055 lb (5,015 kg) (with 30,000 lb (13,608 kg) on 5th wheel)
M916	14,570 lb (6,609 kg) (with 38,000 lb (12,700 kg) on 5th wheel)
M917	10,780 lb (4,890 kg) (with 40,000 lb (18,144 kg) payload)
M918	12,520 lb (5,679 kg) (with 12,000 lb (5,443 kg) payload)
M919	9,210 lb (4,178 kg) (with 35,500 lb (16,125 kg) payload)
M920	8,870 lb (4,023 kg) (with 44,730 lb (20,290 kg) on 5th wheel)

Front Axle Loaded Capacity

M915A1	13,000 lb (5,897 kg)
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Rear Axles Empty

M915A1	9,100 lb (4,128 kg)
M915	9,710 lb (4,405 kg)
M916	14,130 lb (6,409 kg)
M917	15,360 lb (6,967 kg)
M918	19,300 lb (8,754 kg)
M919	23,260 lb (10,551 kg)
M920	15,570 lb (7,063 kg)

Rear Axles Loaded

M915A1	36,540 lb (16,574 kg)
M915	37,660 lb (17,083 kg) (with 30,000 lb (13,608 kg) on 5th wheel)
M916	40,930 lb (18,566 kg) (with 28,000 lb (12,700 kg) on 5th wheel)
M917	44,200 lb (20,049 kg) (with 40,000 lb (18,144 kg) payload)
M918	30,760 lb (13,953 kg) (with 12,000 lb (5,443 kg) payload)
M919	43,880 lb (19,904 kg) (with 35,500 lb (16,125 kg) payload)
M920	46,010 lb (20,870 kg) (with 44,730 lb (20,290 kg) on 5th wheel)

Rear Axles Combined Rated Capacity

M915A1	40,000 lb (18,144 kg)
--------------	-----------------------

*Tire load limit to 50,000 lb (22,680 kg) GVW

DIMENSIONS

Length Overall Chassis (Less Pintle Hook and Lifting Shackles)

M915A1	21.8 ft (6.70 m)
M915	22.4 ft (6.83 m)
M916	24.5 ft (7.50 m)
M917	29.2 ft (8.91 m)
M918	29.2 ft (8.91 m)
M919	31.2 ft (9.52 m)
M920	26.6 ft (8.11 m)

Length w/M872 Trailer

M915A1	54.9 ft (16.75 m)
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Width (Including Mirrors)

All	10.3 ft (3.14 m)
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Width (Mirrors Folded)

M915A1	8 ft (2.44 m)
M915 through M920	8.75 ft (2.70 m)

Height (Over Exhaust Stack, Empty)

M915A1	11.8 ft (3.60 m)
M915	11.2 ft (3.42 m)
M916	11.8 ft (3.60 m)
M917	11.8 ft (3.60 m)
M918	11.8 ft (3.60 m)
M919	11.8 ft (3.60 m)
M920	11.8 ft (3.60 m)

Height (Reduced, Over Horns, Empty)

M915A1	9.6 ft (2.93 m)
M915	10.7 ft (3.26 m)
M916	10.7 ft (3.26 m)
M917	Not Reducible
M918	10.7 ft (3.26 m)
M919	10.7 ft (3.26 m)
M920	10.7 ft (3.26 m)

Wheelbase

M915A1	167.00 in. (424.2 cm)
M915	168.25 in. (427.4 cm)
M916	186.00 in. (472.4 cm)
M917	211.00 in. (535.9 cm)
M918	186.00 in. (472.4 cm)
M919	211.00 in. (535.9 cm)
M920	211.00 in. (535.9 cm)

DIMENSIONS - CONTINUED

Minimum Ground Clearance (Under Rear Walking Beam Bracket) (Empty)

M915A1	10 in. (25.4 cm)
M915	10.25 in. (26.0 cm)
M916	11.62 in. (29.5 cm)
M917	12.00 in. (30.5 cm)
M918	11.62 in. (29.5 cm)
M919	12.00 in. (30.5 cm)
M920	11.62 in. (29.5 cm)

Shipping Cube, Minimum

M915A1	1,674 cu ft (47.4 cu m)
--------------	-------------------------

CAPACITIES

Engine Oil (Including Filters)

M915A1	44 qt (41.6 l)
M915 through M920	46 qt (43.53 l)

Engine Filters (Refill Capacity)

M915A1	4.8 qt (4.5 l)
M915 through M920	4 qt (3.78 l)

Engine Bypass Filter (Refill Capacity)

M915A1	N/A
M915 through M920	14 qt (13.24 l)

Cooling System (Refill Capacity)

M915A1	17.3 gal (65.5 l)
M915 through M920	16.25 qt (61.49 l)

Fuel Tank

Maximum	118 gal (446.63 l)
---------------	--------------------

Usable Capacity

M915A1	112 gal (423.9 l)
M915 through M920	110 gal (416.3 l)

Power Steering Reservoir

All	2 qt (1.9 l)
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Transmission Oil

M915A1	8 gal (30.3 l)
M915 through M920	5.5 gal (20.82 l)

Transfer Case

M915A1	N/A
M915	N/A
M916 through M920	5 qt (4.73 l)

CAPACITIES - CONTINUED

Rear Axles (Forward/Rear)

M915A1	40/36 pt (18.93/17.03 l)
M915	40/36 pt (18.93/17.03 l)
M916 through M920	34/28 pt (16.09/13.25 l)

Winch Reservoir

M916 and M920	42 gal. (158.97 l)
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Winch Drum

M916 and M920	5 qt (4.73 l)
---------------------	---------------

Front Axle

M915A1	N/A
M915	N/A
M916 through M920	27 pt (12.78 l)

PERFORMANCE

Operating Mode and Drive

M915A1	On-road, 6x4
M915	On-road, 6x4
M916	On and Off road, 6x6
M917	On and Off road, 8x6
M918	On and Off road, 6x6
M919	On and Off road, 8x6
M920	On and Off road, 8x6

Operating Temperatures

Without additional kits	-25° F (-31.7° C) to +125° F (51.7° C)
With arctic kit	-50° F (-45.6° C) to +125° F (51.7° C)

Drawbar pull (maximum at 0.7 coefficient)

M915A1	20,541 lb (9,317 kg)
M915	25,028 lb (11,262 kg)
M916	45,725 lb (20,576 kg)
M917	N/A
M918	N/A
M919	N/A
M920	47,403 lb (21,501 kg)

Maximum Towed Load (w/M872 Trailer – 28,400 lb (12,882.2 kg))

M915A1	54,000 lb (24,494 kg)
M915	54,000 lb (24,494 kg)

Maximum Towed Load (w/M870 Trailer – 40,000 lb (18,144 kg))

M916 and M920	60,000 lb (27,216 kg)
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PERFORMANCE - CONTINUED

Maximum Forward Speed (@ 2100 rpm in top gear)	
M915A1	58 mph (93.3 kph)
M915	66.60 mph (107.16 kph)
M916 through M920	59 mph (94.93 kph)
Maximum Sustained Speed	
M915A1 (@800/1200 rpm)	1.5/2 mph (2.4/3.2 kph)
M915 (@1300 rpm)	2.31 mph (3.72 kph)
M916 through M920	2.23 mph (3.59 kph)
Speed on Grade (on 3.9% grade)	25.00 mph (40.22 kph)
Maximum Grade at GCWR	
M915A1	19%
M915	17%
M916 through M920	25%
Angle of Approach (Loaded)	
M915A1	38°
M915	38°
M916 through M920	42°
Maximum Side Slope (w/ adequate tractive surface)	10%
Maximum Fording Depth	20.00 in. (50.80 cm)

DRIVELINE CHASSIS AND CAB**Engine**

Make and Model

M915A1	Cummins, NTC-400 Big Cam III
M915 through M920	Cummins, NTC-400

Type 4-stroke, Turbocharged, In-line Diesel

Cylinders 6

Displacement 855 CID (14 l)

Compression Ratio 14.0:1

Torque (Gross @ 1300 rpm)

M915A1 (Gross @ 1300 rpm)	1,250 lb-ft (1695 N•m)
M915 through M920 (Gross @ 1500 rpm)	1,150 lb-ft (1559 N•m)

Maximum horsepower

M915A1 (@ 1300 rpm)	400 HP (298 kw)
M915 through M920 (@ 2100 rpm)	400 HP (298 kw)

Maximum Governed Speed

M915A1 (Load)	2,100 rpm
M915A1 (No Load)	2,460 rpm
M915 through M920	2,100 rpm

DRIVELINE CHASSIS AND CAB - CONTINUED

Oil Filter Quantity and Type

M915A1 2, Engine mounted, On-Replacement Elements

M915 through M920 1, Full Flow, Replaceable Element

Engine Retarder (Internal with Engine) Jacobs, Model 30

Fuel System

Type Diesel Injection

Fuel Tank (Quantity and Type) 1, 26-in. (66-cm) Diameter Cylinder, Aluminum

Air Cleaner (Quantity and Type) 1, Dry Element

Cooling System

Type Radiator, Pressurized

Working Pressure

M915 through M920 10 psi (0.7 bar)

M915A1 9 psi (0.6 bar)

Transmission and Torque Converter

Make

M915A1 Allison

M915 through M920 Caterpillar

Model

M915A1 (transmission) HT 754CRD

M915A1 (torque converter) TC 498, lock-up type

M915 through M920 D-7155 Overdrive

Type

M915A1 5-speed, Fully Automatic

M915 through M920 16-speed Semi Automatic

Shifter Remote Control Cables

Electrical System

Type Basic 12V, 24V Cranking

Alternator 12/24V, 85/15 amps

Circuit Breakers Re-settable, Recycling for Headlamps

Batteries Maintenance-free

Quantity and Type. 4, Maintenance Free

Volts. 12 Volts Each

Connection. Series/Parallel

Capacity. 950 Cold Cranking Amps @ 0° F (-18° C) @ 24 Volts

Axles

Make

M915A1 Eaton

M915 through M920 Rockwell

DRIVELINE CHASSIS AND CAB - CONTINUED

Front Axle Type and Model

M915A1	I-Beam, EFA 13F3
M915	I-Beam FF931
M916 through M920	Hypoid, FDS-1807

Rear Axle Type and Model

M915A1 Forward-Rear	Tandem, DS-401P
M915A1 Rear-Rear	Tandem, RS-401
M915	Tandem, SQHP
M916 through M920	Tandem, SUHD

Pusher Axle Model

M917, M919, and M920	TKND 967-P
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Capacity at Ground

M915A1 Front	13,000 lb (5,897 kg)
M915 Front	12,000 lb (5,400 kg)
M916 through M920 Front	20,000 lb (9,000 kg)
M915A1 Forward-Rear and Rear-Rear	40,000 lb (18,144 kg)
M915 Forward-Rear and Rear-Rear	38,000 lb (17,100 kg)
M916 through M920 Forward-Rear and Rear-Rear	58,000 lb (26,100 kg)
M917, M919, and M920 Pusher Axle	20,000 lb (9,000 kg)

Steering Angle (Front)

M915A1	40°
M915	32°
M916 through M920	28°

Gear Ratio

M915A1	4.33:1
M915	4.44:1
M916 through M920	6.17:1

Differential Lockup Air Controlled

Lubrication Pressure

Transfer Case (M916 through M920)

Make and Model Oshkosh 18,000 Series F-U29

Ratio 1:1

Steering

Gear and Type Ross, Integral Power

M915A1 and M915 Ross, Integral Power

M916 and M920 Ross, Integral Power With Assist Cylinder

Power Steering Pump and Type Eaton B165R, Gear Driven

Actuation Hydraulic Power Booster

Steering Gear Ratio 20.4:1

DRIVELINE CHASSIS AND CAB - CONTINUED

Turning Radius

M915A1 and M915	53.5 ft (16.3 m)
M916 and M918	80 ft (24.4 m)
M917, M919, and M920	89.5 ft (27.3 m)

Wheels

Make and Model

M915A1	Firestone, 27404
M915	Budd No. 47890-3
M916 through M920	Budd No. R49210

Quantity

M915A1	11
M915	11
M916	11
M917	14
M918	10
M919	14
M920	14

Size (Diameter x Width)

M915A1	22.5 x 8.25 in. (57.2 x 21 cm)
M915	20 x 8 in. (50.8 x 20.3 cm)
M916 through M920	24 x 8 in. (61 x 20.3 cm)

Studs and Diameter of Bolt Circle 10 per wheel, 11.25 in. (285.8 mm) diameter

Stud Size 1.125 in. (28.6 mm)

Rated Capacity

M915A1	7,000 lb (3,157.2 kg)
M915	7,280 lb (3,276 kg)
M916 through M920	7,430 lb (3,344 kg)

Tires*

Type

M915A1	Radial Ply, Tubeless, On-Road
M915	Bias Ply, On-Road
M916 through M920	Bias Ply, On/Off Road

Size

M915A1	11R22.5, 11 x 22.5 in. (27.9 x 57.2 cm)
M915	10 x 20 in. (25.4 x 50.8 cm)
M916 through M920	11 x 24 in. (27.9 x 61 cm)

DRIVELINE CHASSIS AND CAB - CONTINUED

Weight, with Wheel

M915A1	208 lb (94.3 kg)
M915	218 lb (98.88 kg)
M916 through M920	326 lb (147.87 kg)

Rated Capacity, On-Road

M915A1 and M915, Single	6,040 lb (2,739.7 kg)
M915A1 and M915, Dual	5,300 lb (2,404.1 kg)
M916 through M920, Single	7,430 lb (3,370 kg)
M916 through M920, Dual	5,220 lb (2,367.8 kg)

Load Range/Ply Rating

M915A1	G/14
M915	N/A
M916 through M920	N/A

* Tactical tires, if used, should replace on road tires at all drive wheels.

Tire Air Pressure

M915A1

Front (Maximum Cold Pressure)	105 psi (724 kPa)
Rear (Maximum Cold Pressure)	95 psi (655 kPa)

M915

Front, Empty (Maximum Cold Pressure)	75 psi (517 kPa)
Front, 1/2 Payload (Maximum Cold Pressure)	80 psi (552 kPa)
Front, Full Payload (Maximum Cold Pressure)	95 psi (655 kPa)
Rear, Empty (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, 1/2 Payload (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, Full Payload (Maximum Cold Pressure)	70 psi (483 kPa)

M916

Front, Empty (Maximum Cold Pressure)	90 psi (621 kPa)
Front, 1/2 Payload (Maximum Cold Pressure)	90 psi (621 kPa)
Front, Full Payload (Maximum Cold Pressure)	95 psi (655 kPa)
Rear, Empty (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, 1/2 Payload (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, Full Payload (Maximum Cold Pressure)	90 psi (621 kPa)

M917

Front, Empty (Maximum Cold Pressure)	95 psi (655 kPa)
Front, 1/2 Payload (Maximum Cold Pressure)	65 psi (448 kPa)
Front, Full Payload (Maximum Cold Pressure)	100 psi (689 kPa)
Rear, Empty (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, 1/2 Payload (Maximum Cold Pressure)	60 psi (414 kPa)
Rear, Full Payload (Maximum Cold Pressure)	90 psi (621 kPa)

DRIVELINE CHASSIS AND CAB - CONTINUED

M918

Front, Empty (Maximum Cold Pressure)	75 psi (517 kPa)
Front, 1/2 Payload (Maximum Cold Pressure)	65 psi (448 kPa)
Front, Full Payload (Maximum Cold Pressure)	80 psi (552 kPa)
Rear, Empty (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, 1/2 Payload (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, Full Payload (Maximum Cold Pressure)	50 psi (345 kPa)

M919

Front, Empty (Maximum Cold Pressure)	100 psi (689 kPa)
Front, 1/2 Payload (Maximum Cold Pressure)	90 psi (621 kPa)
Front, Full Payload (Maximum Cold Pressure)	100 psi (689 kPa)
Rear, Empty (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, 1/2 Payload (Maximum Cold Pressure)	60 psi (414 kPa)
Rear, Full Payload (Maximum Cold Pressure)	90 psi (621 kPa)

M920

Front, Empty (Maximum Cold Pressure)	100 psi (689 kPa)
Front, 1/2 Payload (Maximum Cold Pressure)	100 psi (689 kPa)
Front, Full Payload (Maximum Cold Pressure)	100 psi (689 kPa)
Rear, Empty (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, 1/2 Payload (Maximum Cold Pressure)	50 psi (345 kPa)
Rear, Full Payload (Maximum Cold Pressure)	90 psi (621 kPa)

Brake System

Actuating Air Mechanical (S-Cam)

Fail Safe (Spring Brakes)

M915A1 Forward-Rear (2)

M915 through M920 Forward-Rear and Rear-Rear (4)

Pressure Range

M915A1 65-150 psi (448-1034 kPa)

M915 through M920 65-125 psi (448-862 kPa)

Fifth Wheel

Type

M915A1 Cab Controlled, Air Lock, Sliding, 12 in. (305 mm)

M915 36 in. (91.4 cm) Diameter Single Oscillating

M916 through M920 36 in. (91.4 cm) Diameter Full 4-Way Oscillating

Height

M915 Unloaded 53 in. (135 cm), Loaded 50 in. (127 cm)

M916 through M920 Loaded 64 in. (163 cm)

DRIVELINE CHASSIS AND CAB - CONTINUED

Rated Capacity

Vertical	40,000 lb (18,144 kg)
Drawbar	150,000 lb (68,039 kg)
Plate Diameter/Oscillation.	36 in. (91.4 cm) diameter
Kingpin Size.	2 in. (50.8 mm)
M915A1 and M915 through M919	2 in. (50.8 mm)
M920	3.5 in. (88.9 mm)
Pitch (Front/Rear)	15/10°

Pintle

Make and Model Holland, No. 760

Rated Capacity

M915A1	25 tons (22.7 metric tons)
M915 through M920	30 tons (27.2 metric tons)

Towing Eyes

Quantity

M915A1	2 Front, 2 Rear
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 up to 45° angle from long axis (each) 60,000 lb (27,216 kg)

Cab

Make AM General

Type 2 Passenger, All Steel, with Butterfly Hood

ACCESSORIES

Floodlights

M915, M916, and M920 2 Fixed

Arctic Heater Kit, Engine (Optional)

M915, M915A1, M916, and M920 Fuel Fired

Arctic Heater Kit, Personnel (Optional)

M915, M915A1, M916, and M920 Fuel Fired

Tool Box 1 Under Passenger Seat and Center of Cab

ACCESSORIES - CONTINUED

Air Horn

M915A1	1, Top of Cab
M915	2, Top of Cab
M916	2, Top of Cab
M917	1, Top of Cab
M918	2, Top of Cab
M919	2, Top of Cab
M920	2, Top of Cab

Heater/Defroster Fresh Air Type, Standard

MILITARY LOAD CLASSIFICATION (MLC)

Vehicle Without Trailer

M915A1	8
M915	8
M916	12
M917	50
M918	21
M919	45
M920	14

Vehicle With Trailer, Unloaded/Loaded

M915A1	
M871	14/35
M872	14/46
M1062	11/34
M967	13/29
M969	14/30

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
THEORY OF OPERATION**

INTRODUCTION

This work package (WP) describes how components of the vehicle work and is provided to give the operator a basic knowledge of the vehicle prior to its use. A description of each functional system is provided below.

POWER TRAIN FUNCTION

The power train is the mechanism by which power is transmitted from the engine to the drive wheels. The power train is mounted to a channel type frame, and together they make up the chassis. The vehicle power train consists of a diesel engine and automatic transmission connected to two rear tandem axles. The engine and transmission transmit power to the forward-rear axle through a transfer case (if equipped) and a propeller shaft. An inter-axle propeller shaft connects the forward-rear axle to the rear-rear axle. The front axle of the M915 and M915A1 is a non-driving axle as indicated by its 6 x 4 drive designation. The front axle of the M916 through M920 is a driving front axle indicated by the 8 x 6 or 6 x 6 drive designations. The front driving axle is driven by a propeller shaft from the transfer case. The M917, M919, and M920 are equipped with pusher axles located in front of the rear driving tandem axles. The pusher axles are non-driving axles used to help distribute the weight of loads carried on the vehicle across three axles instead of two. The pusher axles are connected to the chassis by swing arms and air bags. The pusher axle is raised and lowered using the pusher axle controls in the cab to adjust the amount of weight carried by the pusher axle.

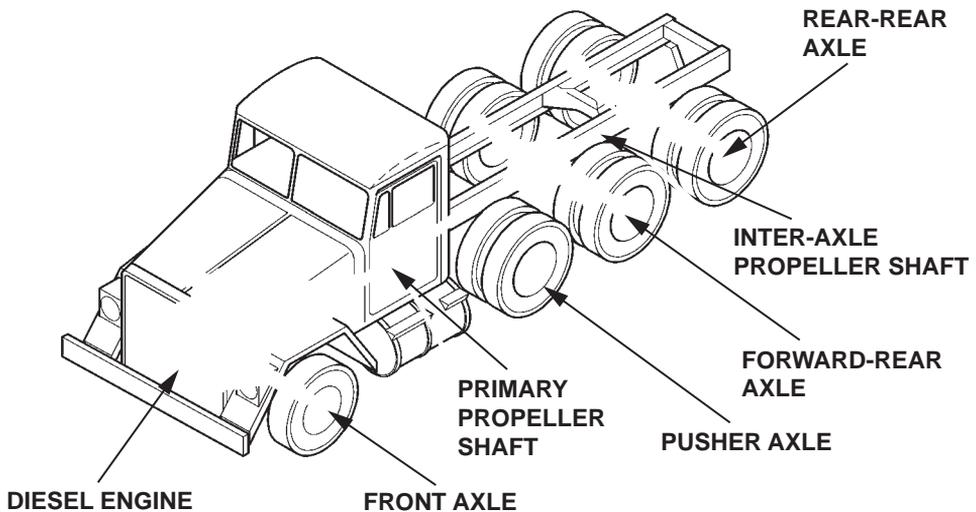


Figure 1. Power Train.

POWER TRAIN FUNCTION - CONTINUED

Front and tandem rear axles are connected to the chassis by separate suspension systems. The front suspension consists of two leaf spring assemblies and shock absorbers connected to the front axle beam or driving axle and the vehicle frame. The tandem rear axle suspension features two equalizer beams connecting the forward-rear and rear-rear axles so both are sprung by a single leaf spring assembly at each side of the vehicle frame. In addition, a torque rod assembly is connected to the tandem rear axles and frame rear suspension crossmember to limit the amount of axle housing rotation when power is transmitted to the ground.

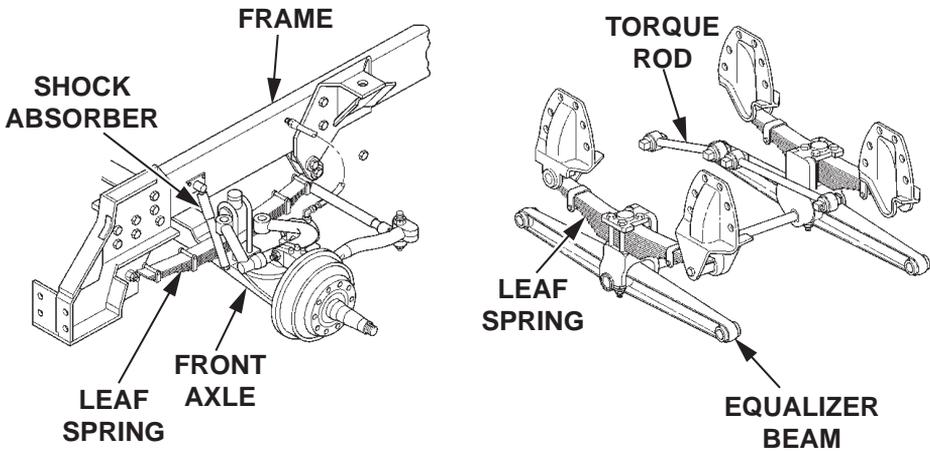


Figure 2. Front and Rear Suspension.

ENGINE AND TRANSMISSION FUNCTION

The vehicles are equipped with a Cummins NTC-400 engine. It is an in-line, six-cylinder, four-stroke, four-cycle, turbocharged diesel. The engine powers the drive wheels as well as the following accessories:

- Exhaust-driven turbocharger
- Belt-driven water pump
- Belt-driven cooling fan
- Belt-driven alternator
- Gear-driven air compressor
- Gear-driven fuel injector pump
- Gear-driven power steering pump
- Gear-driven engine oil pump

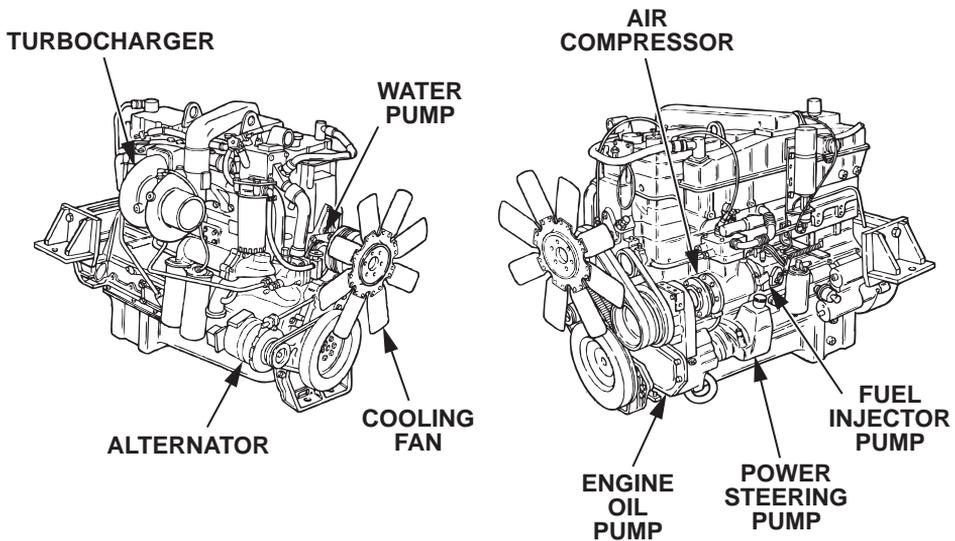


Figure 3. Engine and Accessories.

ENGINE AND TRANSMISSION FUNCTION - CONTINUED

The M915 through M920 vehicles use Caterpillar Model D-7155 Overdrive 16-Speed semi-automatic transmissions with remote air control power shift. Gear selection is accomplished through a manual control lever mounted on a control tower in the cab. The manual control lever is connected to the transmission by air hose using operating air from vehicle air supply. The transmission will not operate unless the transmission air control valve is pushed in to provide transmission with operating air from vehicle air supply.

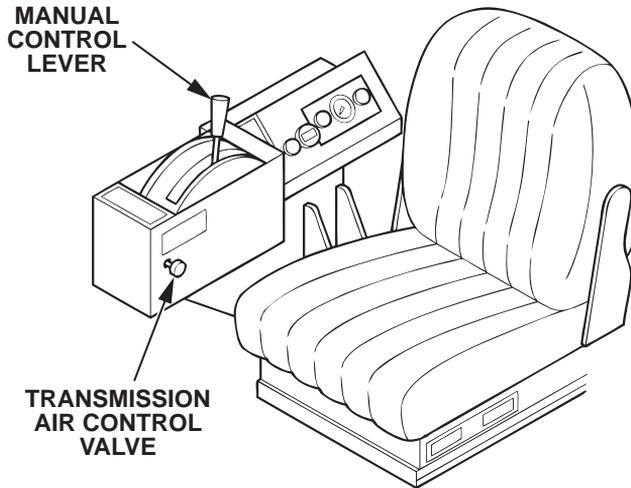


Figure 4. M915 through M920 Transmission Controls.

ENGINE AND TRANSMISSION FUNCTION - CONTINUED

The M915A1 vehicles use the Allison HT 754CRD transmission, a fully automatic, 5-speed type. Gear selection is accomplished through a remote control cable connecting a range selector lever on the side of the transmission to a manual control lever mounted on a control tower in the cab. During normal driving operation, shifting is controlled automatically by the transmission modulator control, which determines the transmission gear range setting from the position of the engine fuel control lever on the fuel injector pump. The transmission drives the speedometer through a gear and cable.

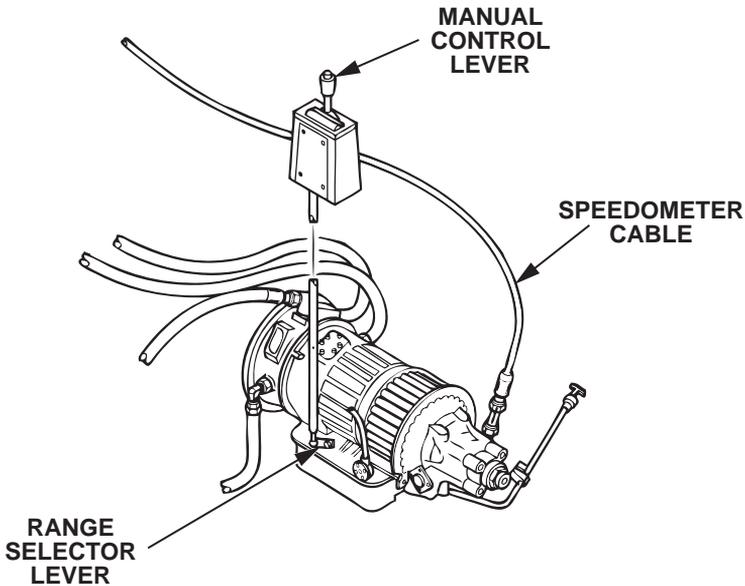


Figure 5. M915A1 Transmission Controls.

FUEL SYSTEM FUNCTION

The vehicle fuel system consists of a fuel injection pump driven off the air compressor which is driven by the engine accessory drive. The fuel injection pump has a built-in governor that meters fuel through a screen filter, solenoid shutoff valve, and into the injectors.

CREW PROTECTION KIT FUNCTION

The Crew Protection Armor Kit consists of two armored doors, roof armor, windshield ballistic glass, floor armor, firewall armor, rear cab armor panels, and an armored emergency exit. The floor armor consists of three panels and is installed under the seat and operator floor controls. The door armor assembly consists of an armored door, hinge, sliding ballistic glass, and armored frame that is mounted to the existing door opening. The rear armor consists of two panels and rests on the floor armor.

CREW PROTECTION KIT FUNCTION - CONTINUED

The roof armor consists of two panels that are supported by door frames, rear armor, and a center support. The windshield and side windows are constructed of ballistic glass. The remaining armor panels are fastened to the vehicle using attachment brackets and Grade 8 attachment hardware.

AIR CONDITIONING KIT FUNCTION

Air Conditioning Kit is installed on an armored vehicle to control the temperature inside the cab. A belt-driven compressor is installed on the engine, a condenser is installed on the cab roof, an evaporator assembly is installed on the interior of the cab, and a receiver/dryer is installed on the outside of the cab. Refrigerant is transferred to each of these components through O-ring sealed hoses. Electrical power is tied into the existing electrical system on the vehicle. The entire system is controlled by an A/C ON/OFF switch and fan speed LOW/MEDIUM/HI switch inside the cab.

END OF WORK PACKAGE

CHAPTER 2

OPERATOR INSTRUCTIONS

**OPERATOR MAINTENANCE
DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS**

INTRODUCTION

WARNING

Operators must know the location and understand the proper use of all controls and indicators before operating the tractor. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Prior to operating the vehicle, become familiar with the location, function, and use of all controls and indicators. This work package (WP) describes each control or indicator by name and function. Illustrations are provided to aid in identifying each control and indicator.

CONTROLS AND INDICATORS

Refer to the following tables for information on controls and indicators.

Table 1. Instrument Panel Controls and Indicators.

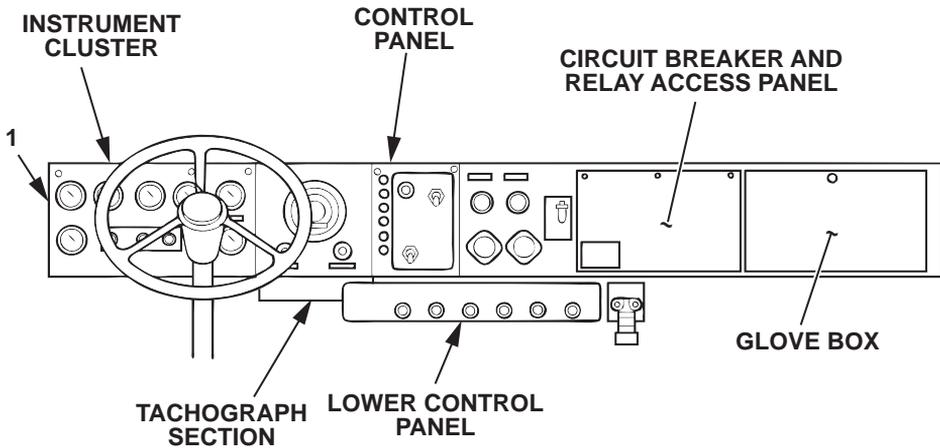


Figure 1. Instrument Panel Controls and Indicators.

Key	Control/Indicator	Function
1.	Instrument Panel	The Instrument Panel is located below the cowl and windshield, and supports the instrument cluster, tachograph, control panel, lower control panel, circuit breaker and relay access panel, and glove box.

Table 2. Instrument Cluster and Gauges.

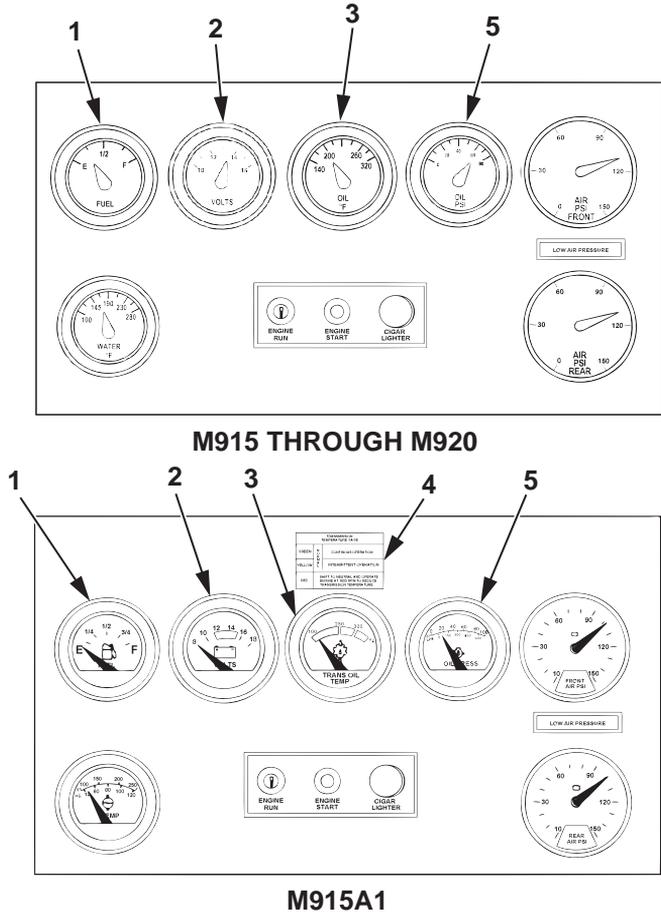


Figure 2. Instrument Cluster and Gauges.

Key	Control/Indicator	Function
1.	Fuel Gauge	This gauge indicates the amount of fuel in the fuel tank when the ENGINE RUN switch is in the ON position.
2.	Voltmeter	<p>The VOLTS meter indicates battery voltage from 8–18 Volts. The normal operating range is 12–15 Volts.</p> <p>Below 11 Volts (Red Area on Voltmeter): Indicates a low battery or possible malfunction. Stop truck and report problem to Field Maintenance.</p> <p>Above 15 Volts (Red Area on Voltmeter): Indicates batteries are being overcharged due to a malfunction. Report problem to Field Maintenance.</p>

Table 2. Instrument Cluster and Gauges - Continued.

Key	Control/Indicator	Function
		Between 11 and 12 Volts (Yellow Area on Voltmeter): Indicates battery is undercharged. Turn off all electrical circuits (if possible) and run engine at highest rpm permitted for the existing conditions. Voltmeter should indicate charge in green area. Report problem to Field Maintenance.
		12 to 15 Volts (Green Area on Voltmeter): Indicates normal operating range.
3.	Transmission Oil Temperature Gauge	This gauge indicates temperature of transmission oil in degrees Fahrenheit and Centigrade. The normal operating range is 100–250° F (38–121° C).
4.	Transmission Oil Temperature Gauge Decal (M915A1 Only)	<p style="text-align: center;"><u>CAUTION</u></p> <p>If transmission oil temperature rises to the red zone, 300° F (149° C), stop tractor in a safe place, shift to NEUTRAL position, and operate engine at 1,500 rpm until gauge indicator is in normal operating temperature. If temperature cannot be lowered to normal operating temperature, below 300° F (149° C), after operating in neutral for 3 minutes, shut down engine and notify Field Maintenance. Continued operation at excessive temperatures will cause damage to transmission.</p> <p>This decal, located on the instrument cluster directly above the TRANS OIL TEMP gauge, is a quick reference for the three color-coded operating ranges on the transmission oil temperature gauge.</p>
5.	Oil Pressure Gauge	<p style="text-align: center;"><u>CAUTION</u></p> <p>The minimum engine oil pressure at 1,700–2,100 rpm is 30 psi (207 kPa) for safe engine operation. At idle, the minimum safe engine oil pressure is 10 psi (69 kPa). If engine oil pressure is below minimum levels, shut down engine immediately and investigate cause. Failure to comply may result in damage to equipment.</p> <p>This gauge indicates engine oil pressure with engine running. At 2,100 rpm rated engine speed, the normal oil pressure range is 35–50 psi (241–345 kPa). At idle, minimum oil pressure limit is 10 psi (69 kPa).</p>

Table 3. Instrument Cluster, Gauges, and Indicator.

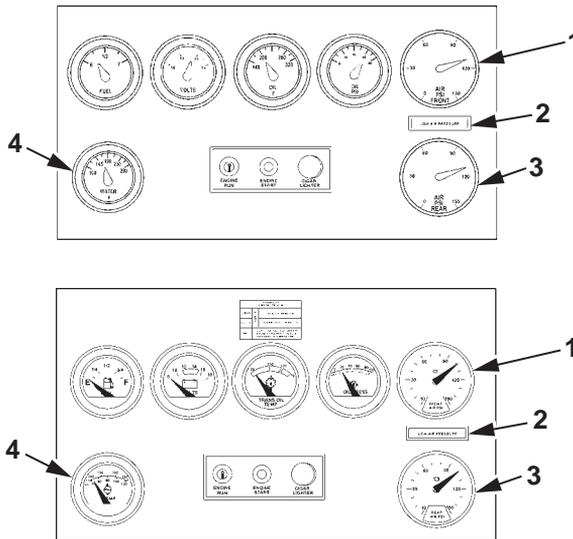


Figure 3. Instrument Cluster, Gauges, and Indicator.

Key	Control/Indicator	Function
1.	FRONT AIR PSI Gauge	<p><u>WARNING</u></p> <p>Operating tractor with air pressure below the normal operating range indicates a loss in air supply and will limit the number of times the brakes can be applied before losing front wheel brakes. Failure to stop tractor and allow air pressure to build up may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.</p> <p>This gauge registers the amount of air pressure in the front brake system. Normal operating range is 105–140 psi (724–965 kPa) for M915A1 or 105–120 psi (724–827 kPa) for M915 through M920 vehicles.</p>

Table 3. Instrument Cluster, Gauges, and Indicator - Continued.

Key	Control/Indicator	Function
2.	LOW AIR PRESSURE Indicator	<p style="text-align: center;"><u>WARNING</u></p> <p>If low pressure warning lamp illuminates and buzzer sounds while driving tractor, stop immediately and investigate the cause. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.</p> <p>This indicator illuminates red when either the front or rear air system pressure is between 64–76 psi (441–524 kPa) and below. The low air pressure buzzer will sound at the same time the LOW AIR PRESSURE indicator comes on.</p>
3.	REAR AIR PSI Gauge	<p style="text-align: center;"><u>WARNING</u></p> <p>Operating tractor with air pressure below the normal operating range indicates a loss in air supply and will limit the number of times the brakes can be applied before the forward-rear axle emergency park/spring brakes are automatically activated. Failure to stop tractor and allow air pressure to build up may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.</p> <p>This gauge registers the amount of air pressure in the rear brake system. Normal operating range is 105–140 psi (724–965 kPa) for M915A1 or 105–120 psi (724–827 kPa) for M915 through M920 vehicles.</p>
4.	Engine Coolant Temperature Gauge	<p style="text-align: center;"><u>CAUTION</u></p> <p>Do not operate vehicle if coolant temperature rises above 220° F (104° C) or engine overheating will occur. Shut down engine and do not start until coolant temperature is in normal range. If problem persists, notify Field Maintenance. Failure to comply may result in damage to equipment.</p> <p>The TEMP gauge (M915A1) or WATER gauge (M915 through M920) indicates engine coolant temperature in degrees Fahrenheit and Centigrade. The normal operating range is 180–200° F (82–93° C) for M915A1 and 165–195° F (74–91° C) for M915 through M920 vehicles.</p>

Table 4. Engine Run Switch, Start Button, and Cigar Lighter/Utility Plug.

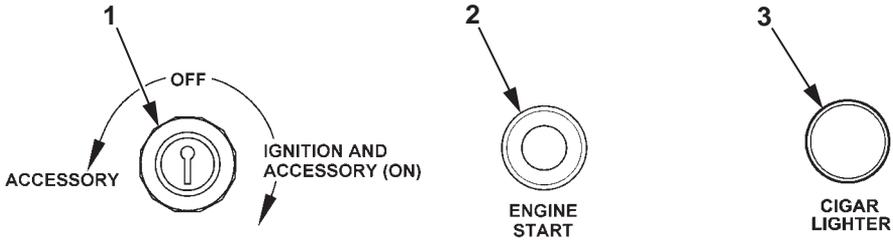


Figure 4. Engine Run Switch, Start Button, and Cigar Lighter/Utility Plug.

Key	Control/Indicator	Function
1.	ENGINE RUN Switch	The ENGINE RUN switch is a three-position, key operated switch. To operate switch, insert key and turn switch to ON position. In the ON position, power to the ignition and accessories is connected; the low oil pressure and parking brake warning lamps will illuminate, and if air system pressures are below 60 psi (414 kPa), the low air pressure lamp and warning buzzer will come on. After starting engine and with all systems operational, the low oil pressure lamp, low air pressure lamp, and warning buzzer will go off. The parking brake warning lamp will remain on until the brake is released. The engine run switch is used to shut down the engine and disconnect power to all accessories by turning switch to OFF position.
2.	ENGINE START Button	<p style="text-align: center;"><u>CAUTION</u></p> <p>Do not depress and hold engine start button for more than 15 seconds at a time. Allow two minute intervals between cranking engine for starter motor to cool. Once engine is running, do not depress start button. Failure to comply may result in damage to equipment.</p> <p>The ENGINE START button is operated by depressing and holding the button down until the engine starts. Release button once engine starts.</p>
3.	CIGAR LIGHTER/Utility Plug	The utility plug, located on the instrument cluster adjacent to the ENGINE START button, is used as a 12V power source for accessories.

Table 5. Tachograph.

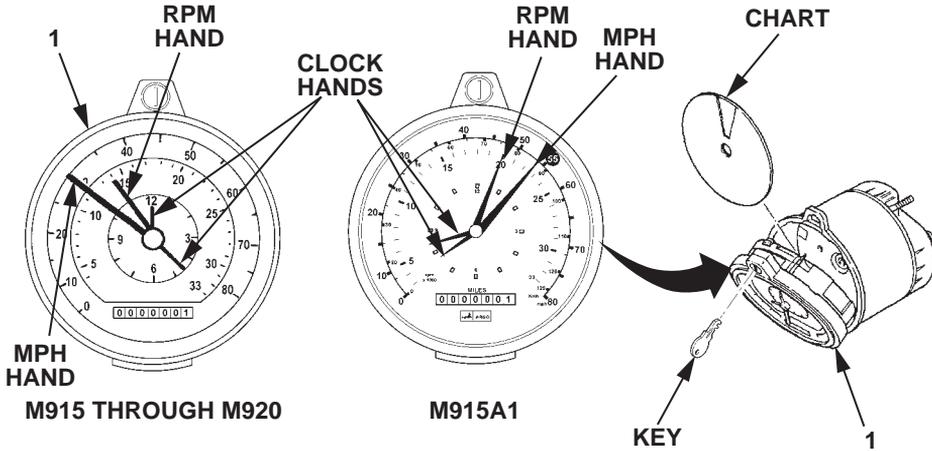


Figure 5. Tachograph.

Key	Control/Indicator	Function
1.	Tachograph	The Tachograph, located on the instrument panel to the right of the instrument cluster, indicates and records the following data on a 7-day graph chart: Ground speed is indicated by the mph hand. Engine speed is indicated by the rpm hand. Distance traveled is indicated in miles on the odometer. Hours and minutes are indicated by analog clock hands.

CAUTION

Do not operate tractor without tachograph chart installed or damage to tachograph will result.

The chart is replaced by opening the front of the tachograph. Insert key in bezel lock and turn key counterclockwise until tachograph can be opened. Swing tachograph down to its horizontal position and remove and replace the chart. Ensure new chart is seated prior to closing.

Table 6. Ether Quick-Start and Clearance Lamps Buttons and Indicators.

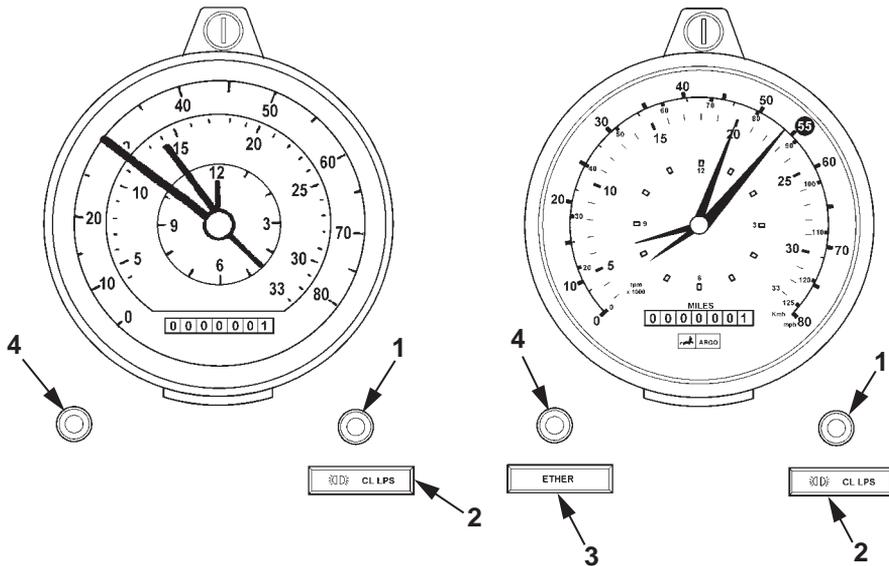


Figure 6. Ether Quick-Start and Clearance Lamps Buttons and Indicators.

Key	Control/Indicator	Function
1.	Clearance Lamp Button	This button is depressed to flash the tractor and trailer clearance and marker lamps on and off.
2.	CL LPS (Clearance Lamps) Indicator	This indicator is designed to aid the operator in locating the clearance lamps button. This indicator will illuminate when the LIGHTS switch is pulled out to the first and second positions, and its brightness can be adjusted by rotating the LIGHTS switch knob.
3.	ETHER Indicator (M915A1 Only)	The ETHER indicator is designed to aid the operator in locating the ether quick-start push button. This indicator will illuminate when the LIGHTS switch is pulled out to the first and second positions, and its brightness can be adjusted by rotating the LIGHTS switch knob.
4.	Ether Quick-Start Button	This button is depressed to inject ether in the engine intake manifold for cold weather starting. Depress and release switch button to operate.

Table 7. Control Panel Indicators.

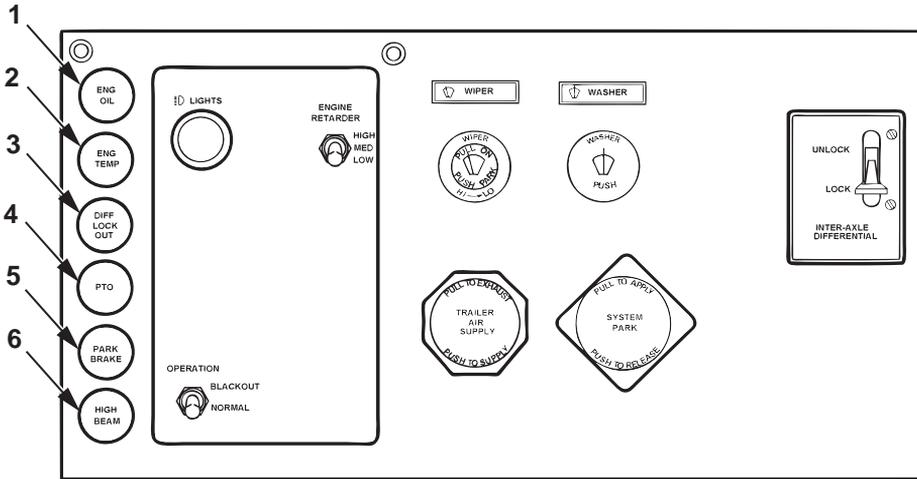


Figure 7. Control Panel Indicators.

Key	Control/Indicator	Function
1.	ENG OIL Indicator	This indicator illuminates red when engine oil pressure is below 10 psi (69 kPa) for M915A1 or 5 psi (34 kPa) for M915 through M920 vehicles, the minimum operating limit.
2.	ENG TEMP Indicator	This indicator illuminates red when engine coolant temperature exceeds 220° F (104° C) for M915A1 or 225° F (107° C) for M915 through M920 vehicles, the maximum operating limit.
3.	DIFF LOCK OUT Indicator	This indicator illuminates red when the INTERAXLE DIFFERENTIAL control is placed in the LOCK position and inter-axle differentials are engaged. On M916–M920 the front driving axle is also locked.
4.	PTO Indicator (M916 through M920)	This red light comes on when the PTO control is engaged.
5.	PARK BRAKE Indicator	This indicator illuminates red when SYSTEM PARK control knob is pulled out.
6.	HIGH BEAM Indicator	The HIGH BEAM indicator illuminates blue when the cab floor-mounted headlamp dimmer switch is depressed for high beam operation.

Table 8. Lights and Engine Retarder Switch.

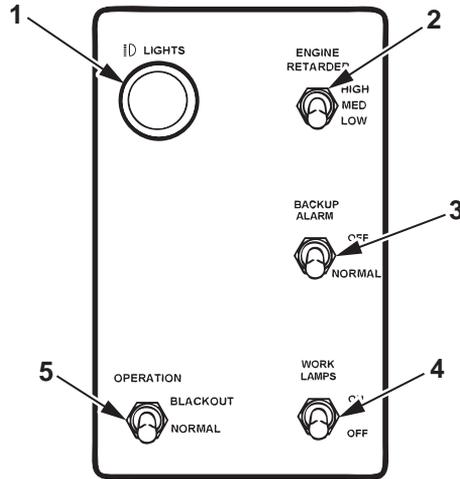


Figure 8. Lights and Engine Retarder Switch.

Key	Control/Indicator	Function
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1. LIGHTS Switch

CAUTION

Do not operate service lamps for extended periods of time with engine off. Failure to comply may prevent engine from starting due to run down batteries.

The LIGHTS switch is a combination switch and rheostat that controls all tractor service lamps. Pulling the LIGHTS switch knob out to the first position turns on the marker/turn signal lamps, service tail and stop lamps, clearance lamps, and instrument panel lamps. Pulling the LIGHT switch knob out to the second position turns on the service head lamps in addition to the same lamps operated in the first position. Turning the LIGHTS switch knob when in the first or second position will dim or brighten the instrument panel lights.

2. ENGINE RETARDER Switch

This switch is located on the control panel to the right of the LIGHTS switch and controls the number of engine cylinders activated when the engine retarder foot switch is depressed. The HIGH position designates all 6 cylinders for maximum engine braking, MED position designates 4 cylinders, and LOW position provides 2 cylinders for minimum engine braking.

Table 8. Lights and Engine Retarder Switch - Continued.

Key	Control/Indicator	Function
		<u>WARNING</u>
		Before backing operations, ensure the backup alarm override switch is in the down position. Do not disable the alarm when personnel or equipment safety may be sacrificed as a result. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.
3.	BACKUP ALARM Override Switch (M916 through M920)	This switch is located on the control panel under the engine retarder switch and allows the operator to disable the backup alarm in “Quiet Zones”. Place this switch in the up position to turn off the backup alarm. Return the switch to the down position to activate the backup alarm.
4.	WORK LAMPS Switch (M916 and M920)	This switch is located on the control panel under the backup alarm override switch. Place this switch in the ON position to turn the stationary work lamps on, and the OFF position to turn off.
5.	OPERATION Switch	<u>CAUTION</u>
		Do not operate blackout lamps for extended periods of time with engine off. Failure to comply may prevent engine from starting due to run down batteries.
		This switch is a two-position switch used to select either the blackout or service lamps, but does not turn lamps on. The LIGHTS switch is used to turn all lamps on and off. To operate this switch, pull the toggle out and move to either position. This feature prevents accidental engagement or disengagement of the service lamps. In the NORMAL position, all blackout lamps are inoperable and all service lamps are operable. In the BLACKOUT position all service lamps, backup lamps, and horn are automatically locked out, and the blackout marker, tail, and stop lamps will operate when the LIGHTS switch is pulled to its first position. Pulling the LIGHTS switch to its second position turns on the blackout drive lamps in addition to the same blackout lamps operated in the first position. The blackout stop lamps (brake lights) will operate with the LIGHTS switch in either position.

Table 9. Wiper and Washer Controls and Indicators.

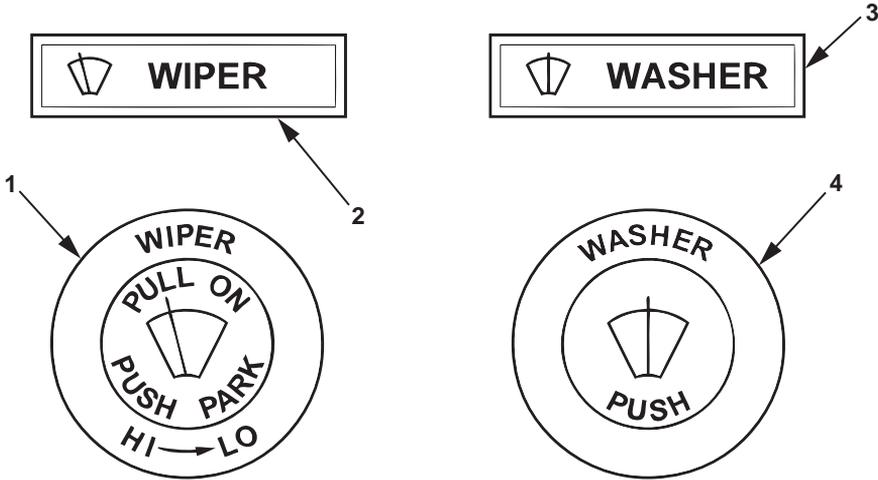


Figure 9. Wiper and Washer Controls and Indicators.

Key	Control/Indicator	Function
1.	WIPER Control	The WIPER control is a valve for operating the windshield wiper motor. Pull out the WIPER control knob to operate the pneumatic wiper motor, and rotate the switch knob for variable HI and LOW speed adjustment. Push in the knob to turn the wipers off.
2.	WIPER Indicator	This indicator is designed to aid the operator in locating the WIPER switch. This indicator will illuminate when the LIGHTS switch is pulled out to the first and second positions, and its brightness can be adjusted by rotating the LIGHTS switch knob.
3.	WASHER Indicator	This indicator, located on the control panel to the right of the WIPER indicator, is designed to aid the operator in locating the WASHER switch. This indicator will illuminate when the LIGHTS switch is pulled out to the first and second positions, and its brightness can be adjusted by rotating the LIGHTS switch knob.
4.	WASHER Control	The WASHER Control, located on the control panel below the WASHER indicator, is a valve for operating the windshield washer pump. Depress and hold the WASHER Control knob to spray cleaning compound on the windshield. Release knob to stop spray.

Table 10. Inter-Axle Differential Control.

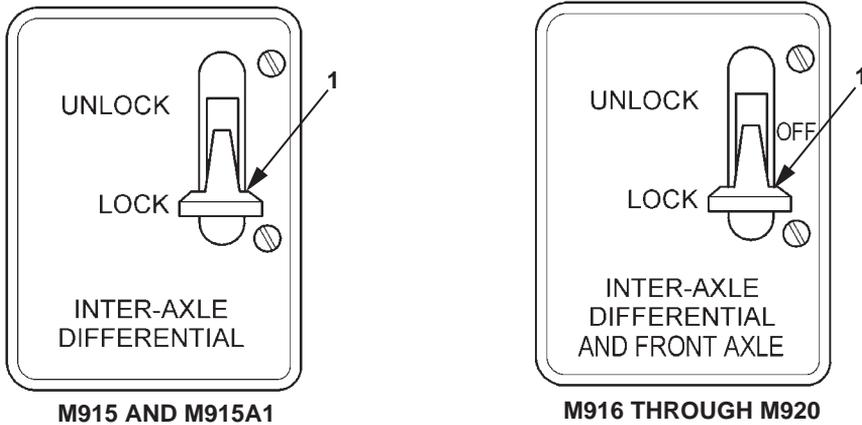


Figure 10. Inter-Axle Differential Control.

Key	Control/Indicator	Function
1.	INTER-AXLE DIFFERENTIAL Control	<p style="text-align: center;">CAUTION</p> <p>Never move the inter-axle differential control to the LOCK position while tractor is moving or any wheel is spinning or damage to equipment will result.</p>

This control is a valve for operating the air actuated inter-axle differential lockup on all models. This control engages the front driving axle on the M916 through M920.

M915 and M915A1

To engage the differential lock, bring tractor to a complete stop and move control lever to LOCK position. The DIFF LOCK OUT indicator will illuminate red when control lever is in LOCK position. To disengage the differential lock, move the control lever to UNLOCK position while the tractor is moving.

M916 through M920

To engage the differential lock and engage the front driving axle, bring tractor to a complete stop and move control lever to LOCK position. The DIFF LOCK OUT indicator will illuminate red when control lever is in LOCK position. To disengage the differential lock, let up on accelerator and move the control lever to UNLOCK position temporarily, then place switch in the center (OFF) position for normal driving while the tractor is moving.

Table 11. Tractor and Trailer Parking Brake Controls.

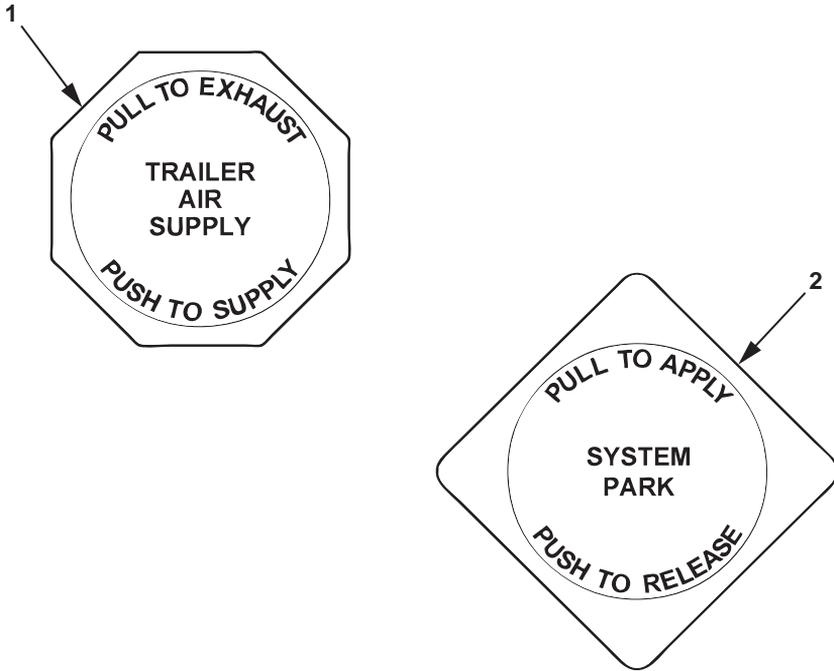


Figure 11. Tractor and Trailer Parking Brake Controls.

Key	Control/Indicator	Function
1.	TRAILER AIR SUPPLY Control (M915, M916, M917, M920, and M915A1)	<p style="text-align: center;">CAUTION</p> <p>If air system pressure drops to 60 psi (414 kPa) as a result of a release of system pressure or an air leak, the trailer air supply protection valve will automatically trip and apply the trailer spring brakes to prevent the tractor spring brakes from locking up. Failure to stop tractor and allow air system pressure to build up will result in damage to equipment.</p> <p>This control is a valve used to supply compressed air to the trailer air reservoirs and brakes. Whenever the SYSTEM PARK control is pulled out to apply the tractor parking brakes, the TRAILER AIR SUPPLY control knob will automatically pop out to apply the trailer brakes. To release the trailer brakes, push in the TRAILER AIR SUPPLY control knob after releasing the tractor parking brakes.</p>

Table 11. Tractor and Trailer Parking Brake Controls - Continued.

Key	Control/Indicator	Function
2.	SYSTEM PARK Control	<p style="text-align: center;"><u>WARNING</u></p> <p>Never use the parking brake in place of the service brake for stopping the tractor. Sudden lockup of spring brakes may result in loss of control of tractor and possible damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.</p> <p>The SYSTEM PARK control is a valve used to apply or release the parking brakes. To apply the parking brakes, bring tractor to a complete stop, then pull the SYSTEM PARK control knob out. The PARK BRAKE indicator will illuminate red when the SYSTEM PARK Control is in the out position. Push the knob in to release the parking brakes. If tractor is connected to a trailer, push in the TRAILER AIR SUPPLY control knob after releasing the tractor parking brakes.</p>

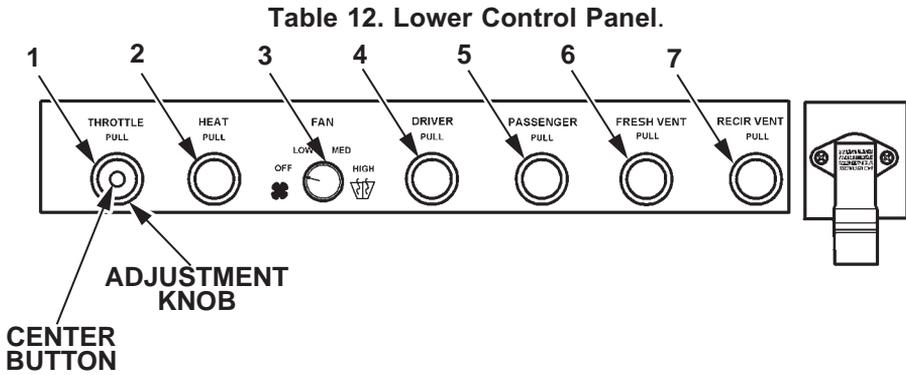


Figure 12. Lower Control Panel.

Key	Control/Indicator	Function
1.	THROTTLE Control (M916 through M920)	This control is used for setting engine speed for operating the PTO or maintaining fast idle. Press the center of the button and pull out the control knob until desired engine speed set. Release the center button. For fine tuning, turn adjustment knob. Press button and push in control to return engine to idle.
2.	HEAT Control	This knob opens and closes a valve that controls the amount of engine coolant flowing through the heater core. To increase the heater temperature, pull the HEAT control knob out, and to decrease the temperature, push knob in.
3.	FAN Switch	The heater fan has three speeds controlled by a 4-position rotary switch. Turn the FAN switch knob clockwise to LOW, MED, or HIGH positions to operate the fan. Turn knob counterclockwise to OFF position to stop fan motor.
4.	DRIVER Control	This knob operates the air vents for the driver side of cab. Pull DRIVER control knob out to divert air to the driver side; push in knob to close air vents.
5.	PASSENGER Control	This knob operates the heater air vents for the passenger side of cab. Pull PASSENGER control knob out to divert air to passenger side; push in knob to close air vents.
6.	FRESH VENT Control	This knob controls the fresh air vent. Pull FRESH VENT control knob out to send fresh air to passenger side; push in knob to close fresh air vent.
7.	RECIR VENT Control	This knob controls the recirculation vent. Pull RECIR VENT control knob out to recirculate cab air through the heater; push in knob to close vent.

Table 13. Air Filter Restriction Indicator.

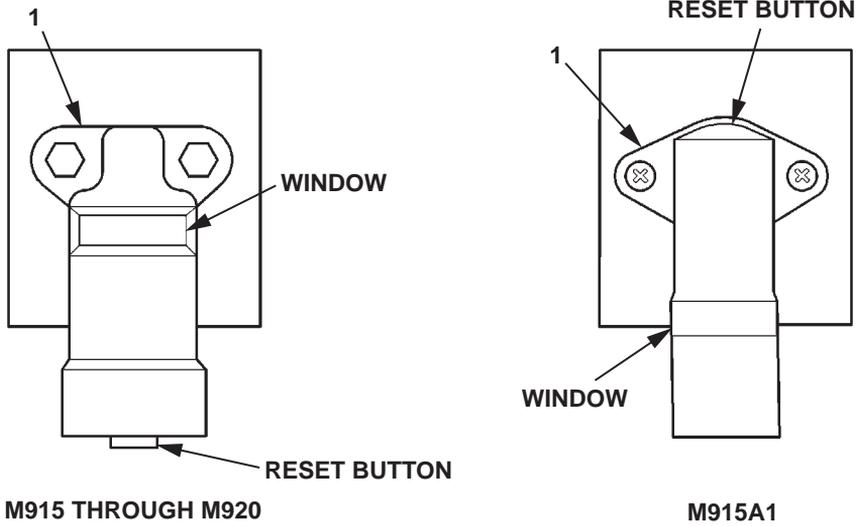


Figure 13. Air Filter Restriction Indicator.

Key	Control/Indicator	Function
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1. Air Filter Restriction Indicator

NOTE

Air cleaner maintenance is required when red band is visible on air filter restriction indicator. Notify Field Maintenance to service air filter.

This indicator, mounted on the instrument panel adjacent to the lower control panel, is designed to indicate when the engine air cleaner requires cleaning. A clear or green band visible through the window indicates there is adequate air flow through the air cleaner; a yellow or red band indicates the air cleaner is restricted and must be cleaned. Resetting is accomplished by depressing a reset button.

Table 14. Circuit Breaker and Relay Access Panel.

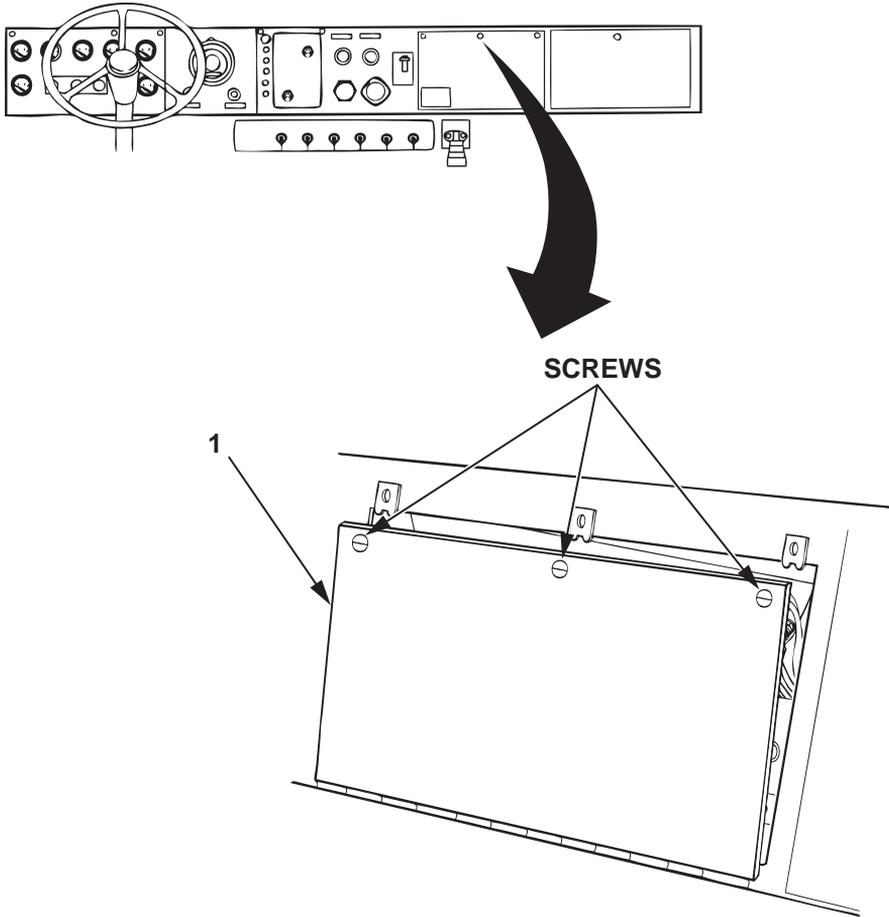


Figure 14. Circuit Breaker and Relay Access Panel.

Key	Control/Indicator	Function
1.	Panel Cover	There is a panel cover that must be unlocked and opened to gain access to the circuit breaker and relay access panel. To open panel, turn three slotted head screws one quarter turn counterclockwise, and swing the cover down. To close cover, raise cover and turn three screws one quarter turn clockwise.

Table 15. Circuit Breaker and Relays.

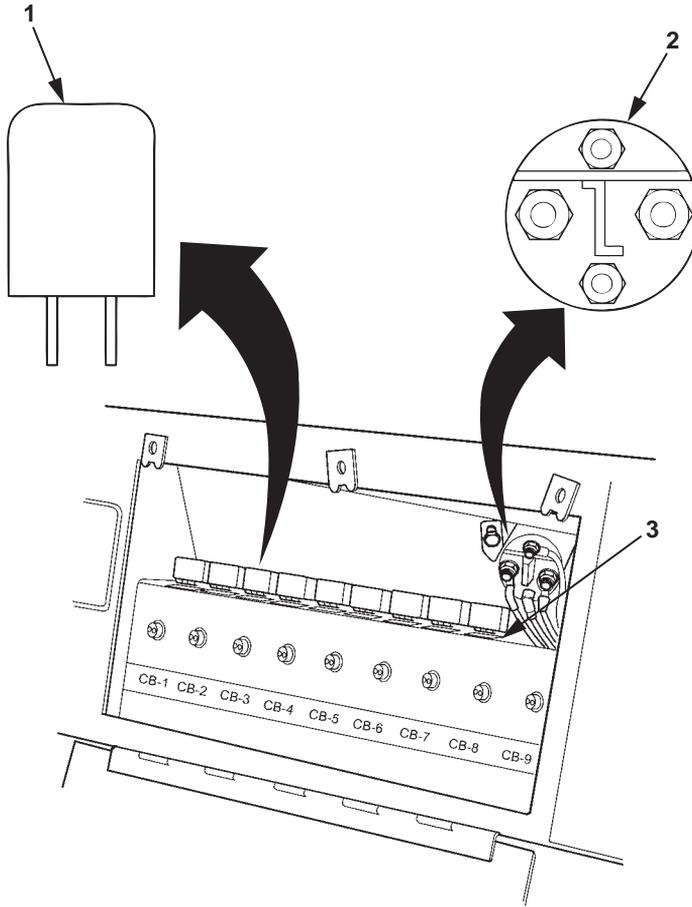


Figure 15. Circuit Breaker and Relays.

Key	Control/Indicator	Function
1.	Service, Blackout, and Trailer Lamp Relays	There are nine relays on this panel that function when the tractor and trailer lamp switches are switched on and off. There is nothing the operator can do to these relays if a problem is experienced in one of the lamp systems; notify Field Maintenance.
2.	Starter Relay	This relay energizes and closes the starter solenoid circuit. Operator can do nothing to this relay if the starter becomes inoperable; notify Field Maintenance.
3.	Relay Identification Decals	Below each relay is an identification decal that identifies the component or components controlled by that relay. Field Maintenance uses the decals to identify relays when troubleshooting a problem.

Table 16. Circuit Breakers and Glove Compartment Door.

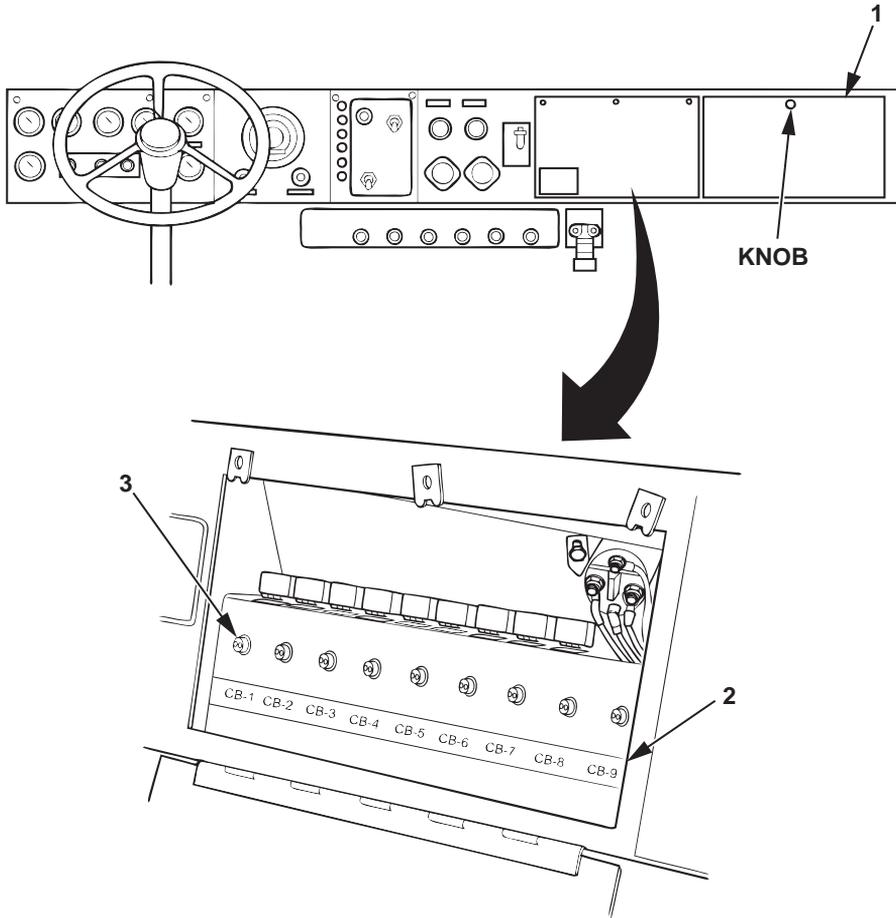


Figure 16. Circuit Breakers and Glove Compartment Door.

Key	Control/Indicator	Function
1.	Glove Compartment Door	The glove compartment door is opened by turning the fastener knob a quarter turn and swinging the door down. To close, swing door up and latch by turning knob.
2.	Circuit Breaker Identification Decals	Each circuit breaker is identified by a number (e.g., CB5) directly below its reset button. Each number corresponds to an electrical circuit protected by that circuit breaker. Field Maintenance uses the numbers to identify circuit breakers when troubleshooting a problem.

Table 16. Circuit Breakers and Glove Compartment Door - Continued.

Key	Control/Indicator	Function
3.	Circuit Breaker Buttons	<p style="text-align: center;"><u>WARNING</u></p> <p>Do not attempt to check and reset circuit breakers while driving the tractor. Always pull safely to side of road first. If tractor cannot be safely operated due to a circuit breaker that cannot be reset, do not attempt to operate tractor. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.</p> <p>There are nine 20 amp circuit breakers on the access panel. If an electrical component will not function or ceases to function (for example, the heater fan stops with FAN switch in HIGH position), the circuit breaker may have tripped and should be checked and reset. To reset any circuit breaker, open panel cover, identify circuit breaker by its number or if button is out, and depress the button. If button remains in after depressing it and component becomes operational, close panel cover. If circuit breaker trips again, an overload or short in the circuit has taken place. If tractor can be safely operated without the affected electrical item, complete mission and notify Field Maintenance. If tractor cannot be safely operated, secure tractor and notify Field Maintenance.</p>

Table 17. Cab Floor Mounted Controls.

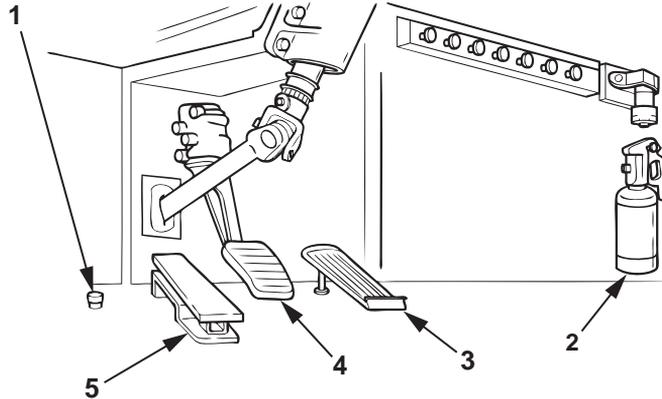


Figure 17. Cab Floor Mounted Controls.

Key	Control/Indicator	Function
1.	Headlamp Dimmer Switch	To operate the service lamp high beams, pull the LIGHTS switch out to the second position and depress and release the floor-mounted foot switch. The HIGH BEAM indicator on the control panel will illuminate blue when the high beams are on. To dim head lamps, depress and release foot switch again.
2.	Decontamination Apparatus	<p style="text-align: center;">NOTE</p> <p>The decontamination apparatus is used to spray a decontaminating agent on vehicles and equipment to reduce levels of chemical toxic agents to the minimum extent to make them safe and allow for their continued operation.</p> <p>On M915 through M920 vehicles, a decontamination apparatus is mounted under the lower control panel. To use, 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>
3.	Accelerator Pedal	To increase engine speed, place right foot on floor-mounted accelerator pedal and press down gradually. To reduce engine speed, let up on pedal.

Table 17. Cab Floor Mounted Controls - Continued.

Key	Control/Indicator	Function
4.	Service Brake Pedal	<p style="text-align: center;">NOTE</p> <p>If tractor is coupled to trailer, the trailer service brakes will also be applied when using the tractor service brake pedal.</p> <p>To apply service brakes, place right foot on service brake pedal and push down in proportion to the amount of braking force required to stop or hold tractor from moving.</p>
5.	Engine Retarder Foot Switch	<p style="text-align: center;">NOTE</p> <p>The accelerator pedal must be released to the full up position before the engine retarder foot switch will operate engine retarder.</p> <p>To activate the engine retarder, identify driving conditions and set the ENGINE RETARDER switch, located on the control panel, for the amount of engine braking desired. Release accelerator pedal and depress floor-mounted foot pedal to engage engine retarder. Release foot pedal to disengage engine retarder.</p>

Table 18. Range Selector Control M915A1.

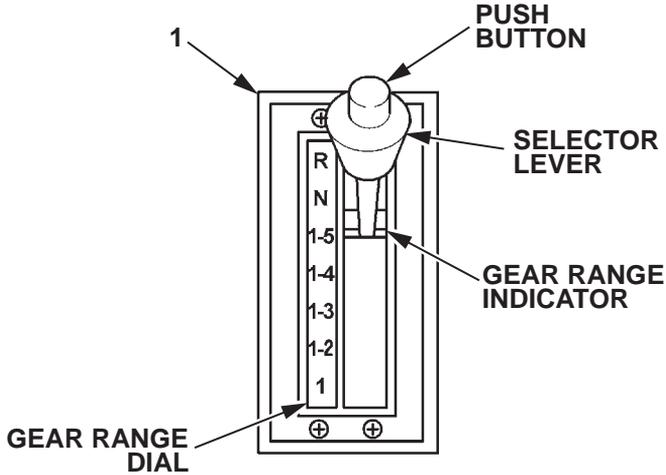


Figure 18. Range Selector Control M915A1.

Key	Control/Indicator	Function
1.	Transmission Range Selector Control (M915A1)	<p>CAUTION</p> <p>Do not allow tractor to coast in neutral (N) position. Failure to comply may result in severe damage to transmission and loss of engine braking.</p>

NOTE

The selector lever push button must always be depressed to move the selector lever except when manually up-shifting from 1-2 to 1-3, 1-3 to 1-4, and 1-4 to 1-5.

The tractor engine will not crank or start unless transmission selector lever is in neutral (N) position.

The gear range dial and indicator will illuminate when the LIGHTS switch is in the 1st and 2nd positions.

Table 18. Range Selector Control M915A1 - Continued.

Key	Control/Indicator	Function
	Transmission Range Selector Control (M915A1)	<p>To operate the selector control, apply service brakes, release parking brakes, depress push button, and move selector lever until gear range indicator is aligned with the desired gear position on the gear range dial.</p> <p>Automatic upshift and downshift points are influenced by the pressure of your foot on the accelerator pedal. For example, when the accelerator pedal is fully depressed, the transmission will automatically upshift near the governed speed of the engine (2,100 rpm). A partially depressed accelerator pedal will cause upshifts to occur at a lower engine speed.</p> <p>In all forward gear ranges, the vehicle will start in first gear and automatically upshift to the highest gear shown in the gear range selected. For example, in gear range 1-5, the vehicle will start in first gear and upshift automatically through second gear, third gear, fourth gear, and fifth gear. If gear range 1-3 is selected, the transmission will automatically upshift from first gear through second gear, and into third gear. It will not upshift beyond third gear until the selector lever is manually moved to a higher gear range.</p> <p>Manual downshifts, performed by depressing the push button and moving the selector lever, should be avoided when the vehicle is above the maximum speed obtainable in the next lower gear. If a downshift or shift to REVERSE (R) is made at too high a speed, the transmission hydraulic system automatically prevents the shift from taking place until a safe lower speed is reached.</p> <p>Normally, service brakes and the engine retarder should be used, as needed, to slow the vehicle to an acceptable speed where the transmission may be downshifted.</p>

Table 19. Fifth Wheel Control Lever M915A1.

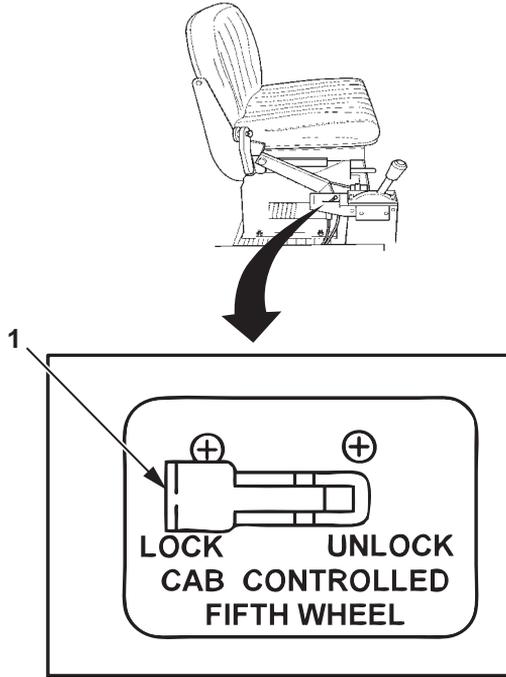


Figure 19. Fifth Wheel Control Lever M915A1.

Key	Control/Indicator	Function
1.	Fifth Wheel Control Lever (M915A1)	Moving the fifth wheel control lever inside the cab to the UNLOCK position operates an air cylinder under the fifth wheel which allows it to travel on the slide track a total of 12 inches (30.5 cm) forward or backward. This feature allows for adjustment of amount of cargo load carried by the rear tandem axles, within rated capacity.

Table 20. Steering Wheel and Column Mounted Controls.

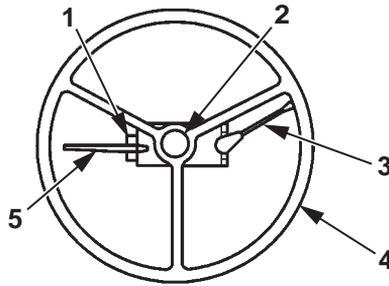


Figure 20. Steering Wheel and Column Mounted Controls.

Key	Control/Indicator	Function
<u>WARNING</u>		
<p>Hazard switch will override brake lights when in use. Use hand signals and exercise extra care when using hazard switch. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.</p>		
1.	Hazard Switch	To turn on hazard/emergency flashers, pull out hazard/emergency flasher switch.
2.	Horn Button	To sound electric horn, push horn button.
<u>CAUTION</u>		
<p>Always return trailer brake hand control to OFF/UP position. Failure to comply may result in trailer brakes burning up.</p>		
3.	Trailer Brake Hand Control	To apply trailer brakes, pull down trailer brake hand control. The trailer brake hand control can be used on grades, when at a standstill, to prevent tractor from rolling backward when moving right foot from brake pedal to the accelerator pedal.
<u>CAUTION</u>		
<p>Do not hold the steering wheel in full steer position for more than 10 seconds. Failure to comply may result in overheating of power steering fluid and may cause damage to equipment.</p>		
4.	Steering Wheel	Rotate steering wheel clockwise to rotate front wheels right, and counterclockwise to rotate front wheels left.
5.	Turn Signal Lever	To turn on right turn signal, push turn signal lever up. To turn on left turn signal, push turn signal lever down.

Table 21. Transmission Air Control M915 through M920, Fan Clutch Actuator Override M919, PTO Control M916 and M920, and Pusher Axle Controls M917, M919, and M920.

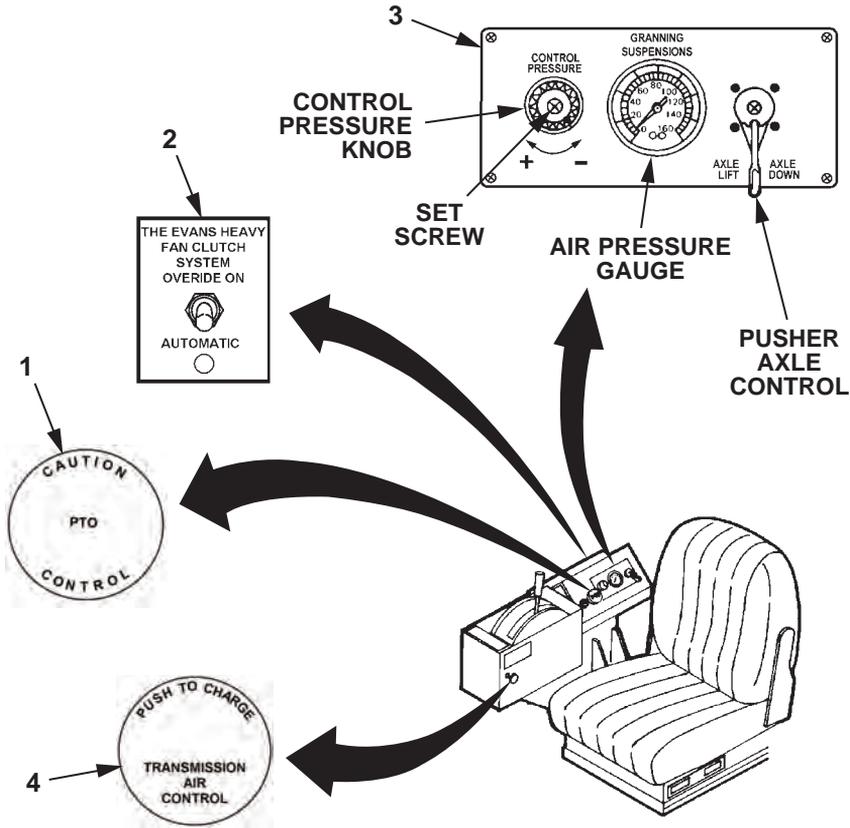


Figure 21. Transmission Air Control M915 through M920, PTO Control M916 and M920, Fan Clutch Actuator Override M919, and Pusher Axle Controls M917, M919, and M920.

Key	Control/Indicator	Function
1.	Power Take-Off Control (M916 and M920)	With transmission in 1st gear, pull cable knob to engage power take-off unit, then place transmission in neutral. Push cable knob to disengage power take-off unit. When PTO has disengaged, the indicator light will go off.
2.	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. Refer to 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.

Table 21. Transmission Air Control M915 through M920, Fan Clutch Actuator Override M919, PTO Control M916 and M920, and Pusher Axle Controls M917, M919, and M920 - Continued.

Key	Control/Indicator	Function
3.	Pusher Axle Control (M917, M919, and M920)	<p>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.</p> <p>TO LOWER PUSHER AXLE: Rotate the control pressure knob counterclockwise to remove pressure from the pusher axle. Pressure gauge should indicate 0 psi. Place the pusher axle raise/lower control in the axle down position.</p> <p>TO ADJUST LOAD ON THE PUSHER AXLE: Rotate the control pressure knob clockwise (toward +) until the air pressure gauge indicates the proper pressure setting for the desired load. Tighten the setscrew to lock the control pressure knob at the pressure selected. With setscrew tightened at a particular setting, the control pressure knob can be closed (toward -) and reset to the previous setting.</p>

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.

4. Transmission Air Control

NOTE

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

The auxiliary air supply does not register at the vehicles main air gauges. The auxiliary air supply will provide approximately 14 to 18 transmission shifts after loss of vehicle main air supply.

Push in on 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.

Table 22. Transmission Ratio Selector, M915 through M920.

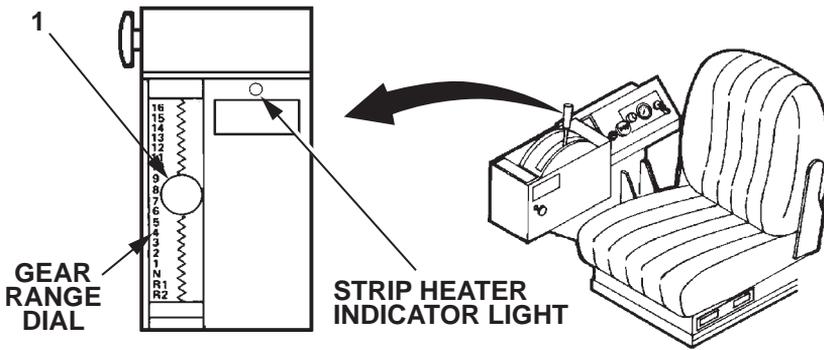


Figure 22. Transmission Ratio Selector, M915 through M920.

Key	Control/Indicator	Function
1.	Transmission Ratio Selector (M915 through M920)	<p style="text-align: center;">CAUTION</p> <p>The transmission clutch disengages at engine speeds of 1,100 rpm or less causing loss of braking efficiency of the engine as a brake. This condition can damage the transmission if held in low rpm range over 12 seconds. Down shifting within this time is mandatory.</p> <p>The drivelines must be disconnected when towing the truck, otherwise the transmission will be damaged.</p> <p>Use the service brakes to hold truck while stopped on a grade. Do not use the transmission to hold the truck as damage may result.</p> <p>Do not use the inhibitor override while the truck is in motion.</p>

Table 22. Transmission Ratio Selector, M915 through M920 - Continued.

Key	Control/Indicator	Function
	Transmission Ratio Selector (M915 through M920)	<p>Place the ratio selector in neutral (N) to start the engine. The engine will not start with the selector lever in any other position. Place the ratio selector 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 ratio selector forward or rearward to select the desired gear ratio position. The transmission will remain in the previously selected position until the ratio selector 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 11th gear ratio. A built-in inhibitor prevents more than a two step advance (or one step advance from 11th–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 ratio selector and may be used only when the truck is at a standstill. Do not use the inhibitor override when the truck is in motion.</p> <p>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 (-15° C). The indicator light on the console illuminates with the key on when the strip heaters are on. Do not operate the transmission until the indicator light goes off.</p>

Table 23. Seat Adjustment Controls.

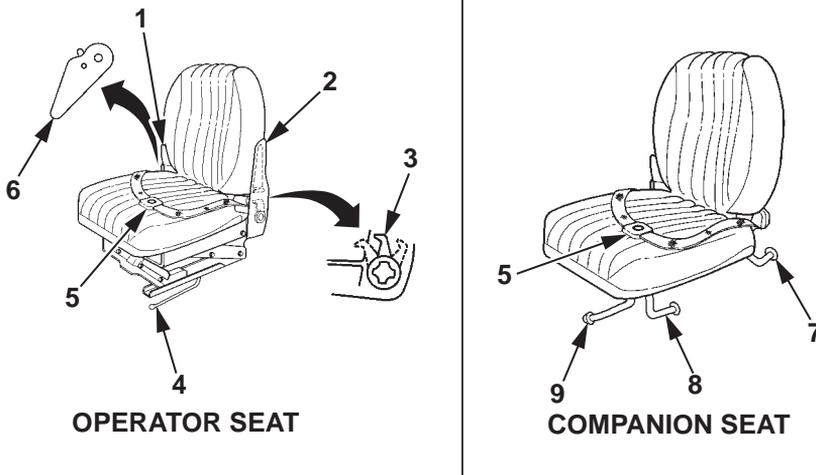


Figure 23. Seat Adjustment Controls.

Key	Control/Indicator	Function
1.	Ratchet Handle	Used to increase or decrease preload on seat.
2.	Backrest Angle Adjustment Lever	Used to tilt backrest forward or rearward in three positions.
3.	Preload Indicator	Indicator will be in the center position when seat preload is set for proper weight.
4.	Forward and Backward Seat Adjustment Lever	Lever will unlock seat so seat can be moved forward or rearward.
5.	Seatbelt	Used for safety when operating vehicle.
6.	Ratchet Trip Lever	Used to lock ratchet handle in locked position after preload is set.
7.	Companion Seat Backrest Angle Adjustment Lever	Used to tilt backrest forward or rearward in three positions.
8.	Companion Seat Cushion Adjustment Lever	Used to tilt seat cushion in three positions.
9.	Companion Seat Forward and Rearward Seat Adjustment Lever	Lever will unlock seat so seat can be moved forward or rearward.

Table 24. Additional Cab Controls.

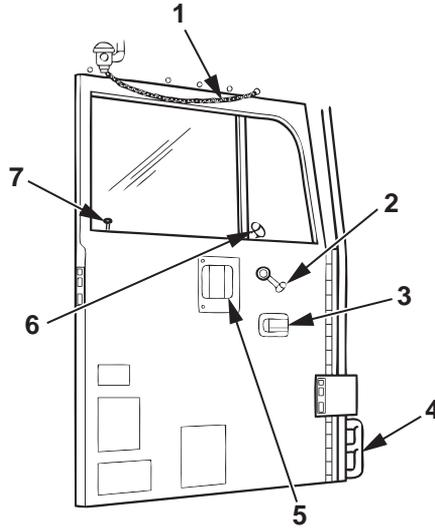


Figure 24. Additional Cab Controls.

Key	Control/Indicator	Function
1.	Air Horn Chain	To sound air horn, pull downward on chain. Release chain to silence air horn.
2.	Cab Door Window Regulator Handle	To lower left window glass, rotate left window regulator handle clockwise. To raise left window glass, rotate left window regulator handle counterclockwise. To lower right window glass rotate right window regulator handle counterclockwise. To raise right window glass, rotate right window regulator handle clockwise.
3.	Ash Tray	To open ash tray, lift top.
4.	Driver Fresh Air Vent	To bring fresh air into cab, push handle forward. To exhaust inside air from cab, pull fresh air vent back. To close fresh air vent, place handle in center position.
5.	Cab Door Inside Handle	To open cab door from inside cab, pull cab door handle. Lock knob will unlock automatically when door handle inside is pulled.
6.	Cab Vent Window Handle	Raise lever to unlock window. Push outward on vent window handle to open vent window. Pull inward on vent window handle to close vent window.
7.	Door Lock Knobs	Push down lock knob to lock doors. Pull lock knob up to unlock doors. Door lock knob will unlock automatically when inside door handle is pulled, or door is unlocked with a key from the outside.

Table 25. Crew Protection Cab Doors, M915P1, M915A1P1, M916P1, M917P1, and M920P1.

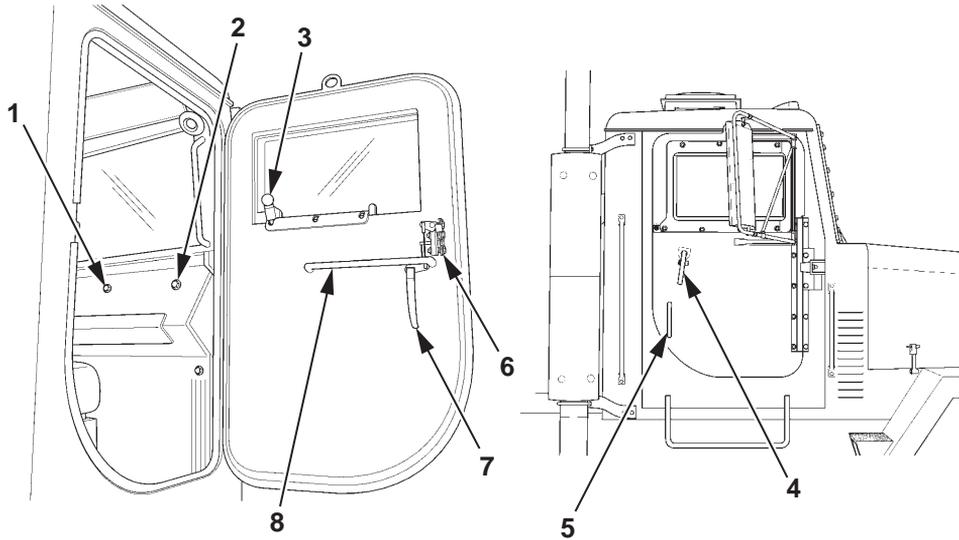


Figure 25. Crew Protection Cab Doors, M915P1, M915A1P1, M916P1, M917P1, and M920P1.

Key	Control/Indicator	Function
NOTE		
Crew protection cab doors are applicable to M915P1, M915A1P1, M916P1, M917P1, and M920P1 vehicles equipped with Crew Protection Kit.		
1.	Glove Box Handle	Used to open glove box.
2.	Glove Box Latch	Unscrew both latches to open glove box door.
3.	Window Latch	Lift up latch and slide window to open or close.
4.	Exterior Door Handle	Allows driver or passenger side door to be opened from the outside.
5.	Grab Handle	Provides a hand hold for opening the door.
6.	Door Latch	Secures side door closed.
7.	Interior Door Handle	Allows driver or passenger side door to be opened from the inside.
8.	Interior Grab Handle	Provides a hand hold for entering or existing the vehicle.

Table 26. Defroster Fans, Dome, and Map Lamps.

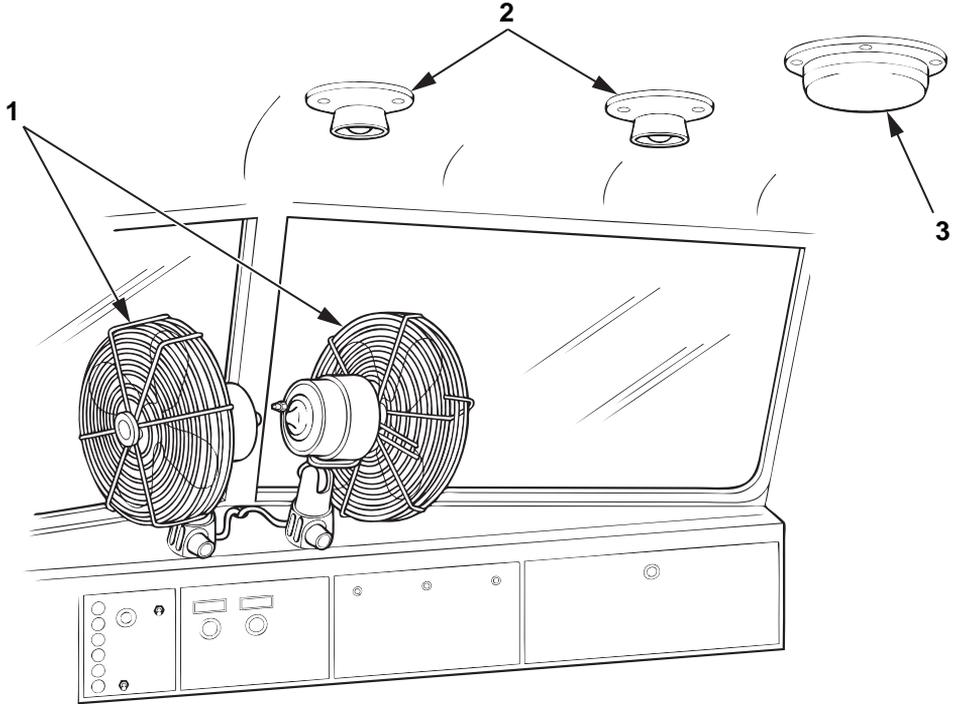


Figure 26. Defroster Fans, Dome, and Map Lamps.

Key	Control/Indicator	Function
1.	Defroster Fans	To operate fan at high speed, turn knob at base of fan clockwise. To operate fan at slower speeds, turn knob further clockwise. To turn fan OFF, turn knob counterclockwise. Fan may be swiveled on its base to direct air flow as required by conditions.
2.	Map Lamps	To turn ON map lamps, push rocker switch on lamp base. To turn OFF map lamps, push other side of rocker switch. Map lamp sockets may be swiveled to direct light as needed.
3.	Dome Lamps	Dome lamps provide general illumination of the cab interior. To turn dome lamp ON, push button on lamp base. To turn dome lamp OFF, push button on lamp base again.

Table 27. Air Conditioning Kit Controls, M915P1, M915A1P1, M916P1, M917P1, and M920P1.

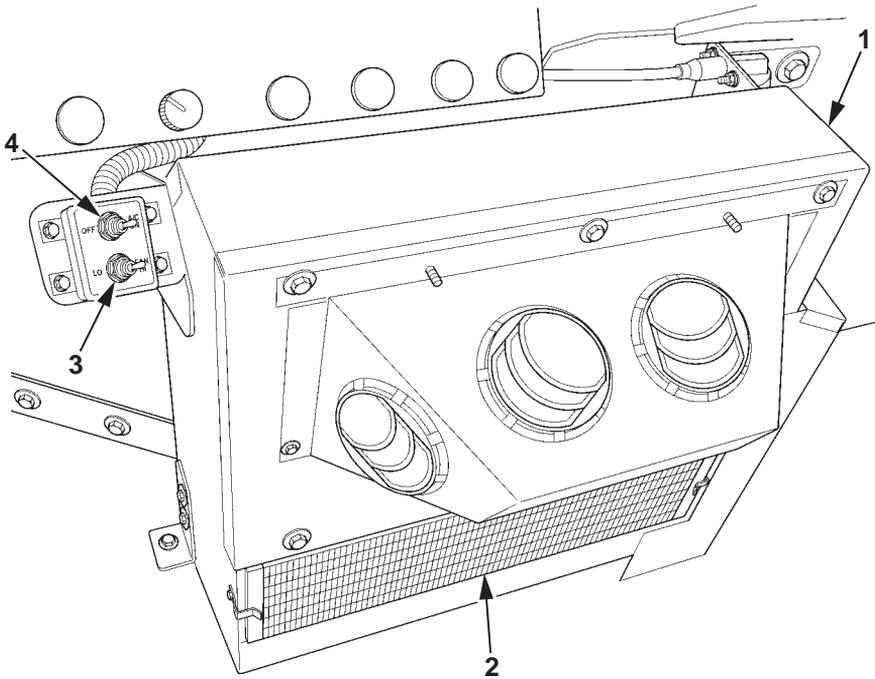


Figure 27. Air Conditioning Kit Controls, M915P1, M915A1P1, M916P1, M917P1, and M920P1.

Key	Control/Indicator	Function
NOTE		
All vehicles equipped with Crew Protection Kit are equipped with Air Conditioning Kit.		
1.	A/C Evaporator	Supplies cool air to cab.
2.	A/C Filters	Directs air flow.
3.	Fan Speed Switch	Controls the speed of A/C blower fan. Move switch to left position for LOW, center position for MEDIUM, and right position for HIGH speed.
4.	A/C On-Off Switch	Operates A/C system and A/C blower fan.

Table 28. Rear Sliding Window, M916 through M920.

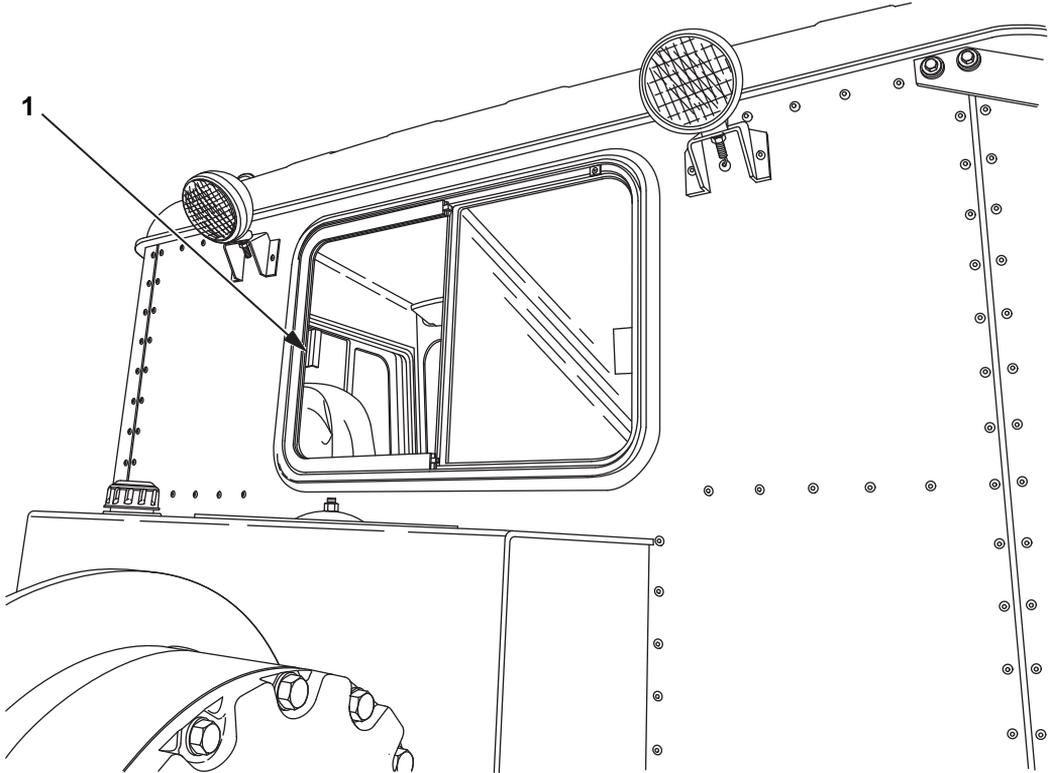


Figure 28. Rear Sliding Window, M916 through M920.

Key	Control/Indicator	Function
1.	Rear Sliding Window Latch, M916 through M920	To open rear sliding window, squeeze at center of latch and slide window toward passenger side of cab. To close rear sliding window, squeeze at center of latch and slide window toward driver side of cab.

Table 29. Crew Protection Kit Escape Hatch, M915P1, M915A1P1, M916P1, M917P1, and M920P1.

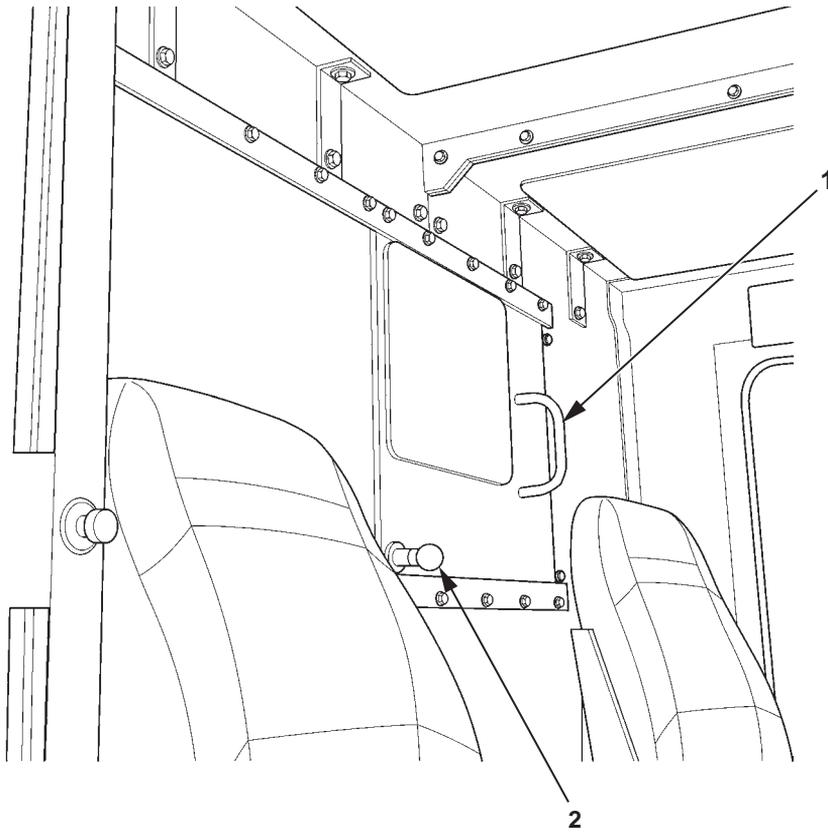


Figure 29. Crew Protection Kit Escape Hatch, M915P1, M915A1P1, M916P1, M917P1, and M920P1.

Key	Control/Indicator	Function
1.	Escape Hatch Grab Handle	Use grab handle to open escape hatch.
2.	Escape Hatch Latch	Pull to release latch and slide escape hatch open.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:**References**

AR 70-1
 DA Form 2404
 DA Form 5988-E
 WP 0007
 WP 0008
 WP 0009
 WP 0010
 WP 0011
 WP 0012
 WP 0013

References - Continued

WP 0014
 WP 0015
 WP 0021
 WP 0024
 WP 0025
 WP 0028
 WP 0029
 WP 0030
 WP 0035
 WP 0037

GENERAL

This work package provides instructions for operation of the vehicle under normal conditions. It describes the process by which the operator utilizes the equipment and the order in which operational tasks are performed. Operation Under Usual Conditions includes Assembly and Preparation for Use; Initial Adjustments, Before Use, and Self-Test; Operating Procedures; Decals and Instruction Plates; and Preparation for Movement. Follow the instruction for each heading listed below.

WP 0007 through WP 0014 provide specific instructions for the operation of M915 series and M915A1 vehicles, and WP 0010 and WP 0013 provide additional instructions for the operation of M915P1, M915A1P1, M916P1, M917P1, and M920P1 vehicles under normal conditions. For operating instructions under unusual conditions, refer to WP 0015.

ASSEMBLY AND PREPARATION FOR USE

M915 series and M915A1 vehicles require minor preparation before operation. When the vehicle is transferred between property accounts, Component of End Item (COEI) and Basic Issue Items (BII) must be removed from the vehicle and packaged and shipped separately. When the vehicle is received, COEI and BII must be unpacked and stowed on the vehicle before operation. In some cases, one or more items may require assembly and/or installation on the vehicle.

Perform the following steps prior to operating the vehicle:

1. Unpack COEI and BII and stow them in designated stowage locations. Stowage locations are noted in WP 0037.
2. Ensure Service Upon Receipt of Materiel is performed by Field Maintenance and all subsequent Field Level Maintenance is performed per the required service intervals; refer to DA Form 2404 or DA Form 5988-E, Equipment Inspection and Maintenance Worksheet.

ASSEMBLY AND PREPARATION FOR USE - CONTINUED

3. If any auxiliary equipment will be used in conjunction with vehicle operation, review the associated technical manuals for assembly and preparation for use requirements of the auxiliary equipment.

END OF TASK**INITIAL ADJUSTMENTS, BEFORE USE, AND SELF-TEST**

Perform the following checks prior to vehicle operation:

1. Check fuel level and fill fuel tank as necessary (WP 0028).
2. Check fluid levels for the following components and add proper fluids as necessary:
 - a. Engine oil (WP 0035)
 - b. Engine coolant (WP 0029)
 - c. Transmission fluid (WP 0035)
 - d. Power steering fluid (WP 0035)
 - e. Windshield washer fluid (WP 0025)
3. Check battery terminal connections and battery voltage (WP 0025).
4. Check fire extinguisher for full charge (WP 0025).
5. Check tire pressure including spare tire (WP 0030).

END OF TASK**OPERATING PROCEDURES****WARNING**

This vehicle has been designed to operate safely and efficiently within the limits specified in the TM in accordance with (IAW) AR 70-1. Operation beyond these limits without written approval from the Commander, U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-CG, Warren, MI 48397-5000, is prohibited. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

Operators must know how to use the controls and indicators before starting and driving the vehicle. In addition, operators must know the capabilities and limitations of the vehicle and be able to use the features of the vehicle in the safest and most efficient way to accomplish their mission. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

OPERATING PROCEDURES - CONTINUED**WARNING**

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

The following procedures are required to bring the equipment from OFF through STANDBY condition to FULL OPERATION:

1. Perform all operator/crew Before, During, and After Operation PMCS as required in WP 0024 and WP 0025.
2. Perform Operator PMCS for auxiliary equipment installed on vehicle. Refer to associated TMs.
3. Review operating instructions prior to performing mission. Refer to operating procedures in WP 0007 through WP 0014 and Operation Under Unusual Conditions, WP 0015.
4. If trailer is connected to fifth wheel, ensure fifth wheel primary and secondary locks are engaged as described in Fifth Wheel Operation, WP 0012.
5. Ensure wheel chocks are removed from tractor and trailer prior to operation. Refer to Placing Vehicle in Motion, WP 0010.
6. Operate vehicle IAW operator instructions in WP 0007 through WP 0014.

END OF TASK**DECALS AND INSTRUCTION PLATES**

The operator must become familiar with the decals and instruction plates associated with equipment operation. In addition, all safety related warning and caution decals and instruction plates must be understood and adhered to during operation (WP 0014).

END OF TASK**PREPARATION FOR MOVEMENT**

Refer to Towing Vehicle WP 0021 for preparation for movement procedures.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
SEAT AND SEATBELT OPERATION**

INITIAL SETUP:**References**WP 0005

GENERAL**WARNING**

The driver and passenger must wear seatbelts during vehicle operation. Ensure seatbelts are fastened and properly adjusted before placing vehicle in motion. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

All seat and seatbelt adjustments are performed while occupant is seated in normal driving position with feet flat on cab floor and hands on steering wheel. Ensure driver seat is adjusted for comfort and all controls are easily accessible.

The vehicle is equipped with an adjustable driver seat and either a two-point lap seatbelt or three-point lap and shoulder harness seatbelt. The companion seat is also adjustable and has a two-point lap seatbelt. The driver seat can be adjusted in three ways: ride level, backrest angle, and forward and backward. Ensure the driver seat is adjusted for comfort and ensure all controls are within easy reach prior to operating the vehicle.

For description and use of controls associated with the operation of the driver and companion seats and seatbelts, refer to WP 0005.

DRIVER SEAT ADJUSTMENT

Ride Level Adjustment:

NOTE

The driver seat ride level is the up and down shock absorbing movement of the seat assembly. The ride level on M915 through M920 vehicles is controlled by adjusting the preload of the seat assembly torsion bars. The preload is the amount of tension or twist applied to the torsion bars against the weight of the occupant. The correct ride level is established by increasing or decreasing the preload until preload indicator is in line with the side frame of the seat. Ride level will adjust to occupant weights of 130–275 lb (59–125 kg).

Perform step 2 to increase preload (raise ride level) or perform step 3 to decrease preload (lower ride level).

1. While seated in driver seat, observe position of preload indicator and determine if adjustment is necessary.
2. Pull up on ratchet trip lever and rotate adjustment lever back and forth until preload indicator is in line with seat side frame.
3. Push down on ratchet trip lever and rotate adjustment lever back and forth until preload indicator is in line with seat side frame.

Backrest Angle Adjustment:

NOTE

The backrest angle can be adjusted to three positions.

Lift lever up with left hand, angle backrest forward or backward to desired position, and lower lever until locked in one of three notched positions.

Forward And Backward Position Adjustment:

NOTE

The driver seat may be moved forward or backward 6 in. (15 cm).

Pull and hold lever out, use legs and body to move seat assembly forward or backward to desired position, and release lever to lock seat in position.

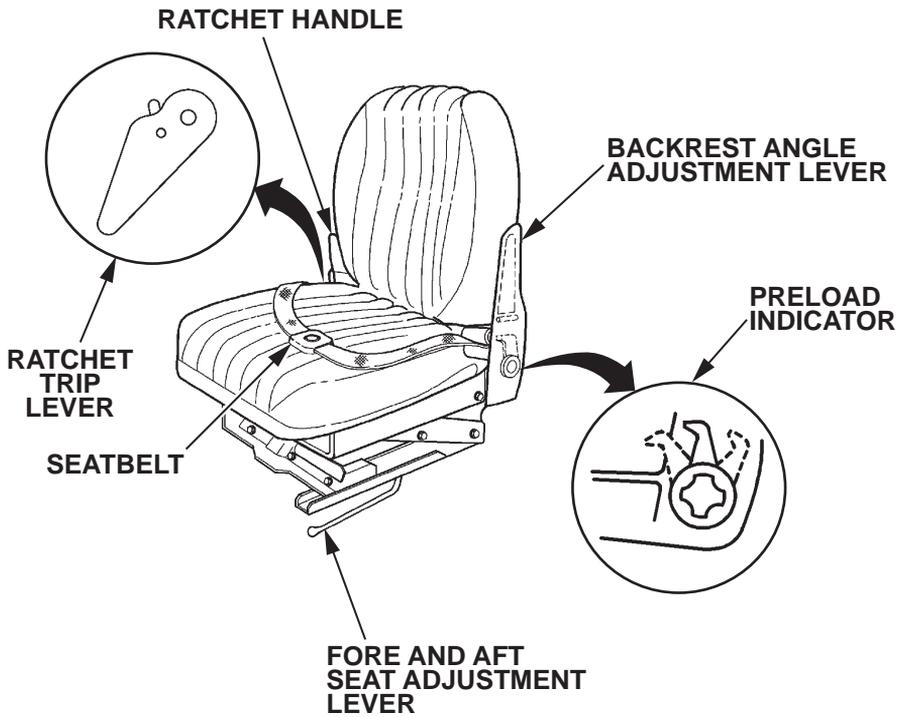


Figure 1. Operator Seat.

END OF TASK

M915A1 COMPANION SEAT ADJUSTMENT**Backrest Angle Adjustment:**

Lift backrest angle adjustment lever up with left hand, angle backrest forward or backward to desired position, and lower backrest angle adjustment lever until locked in one of three notched positions.

Forward And Backward Position Adjustment:

Pull and hold fore and aft seat adjustment lever out, use legs and body to move seat assembly forward or backward to desired position, and release fore and aft seat adjustment lever to lock seat in position.

Seat Tilt Adjustment:**NOTE**

The front edge of the seat can be tilted up or down to three positions.

Using legs, take weight off seat cushion and turn seat cushion tilt adjustment lever clockwise to tilt seat cushion up or counterclockwise to tilt seat cushion down.

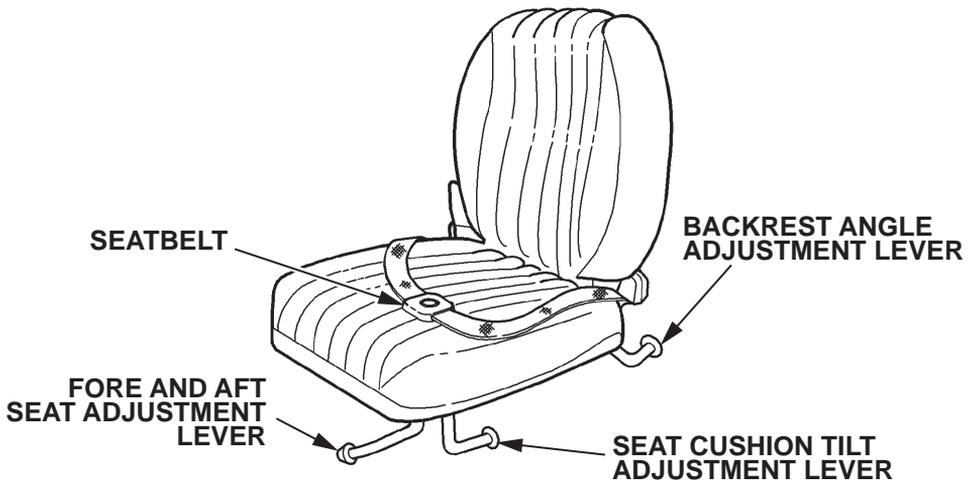


Figure 2. Companion Seat.

END OF TASK

USE OF SEATBELTS**WARNING**

Driver and companion seatbelts must be connected and adjusted for proper fit prior to placing the vehicle in motion. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Seatbelt must be completely extended from nonlocking retractor device. All excess webbing must then be adjusted at the buckle. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

1. Fasten seatbelt buckle.
2. Remove slack by slipping belt through buckle until it fits snugly.
3. To release, press center of buckle on driver seatbelt, or pull up on belt buckle on companion seatbelt.

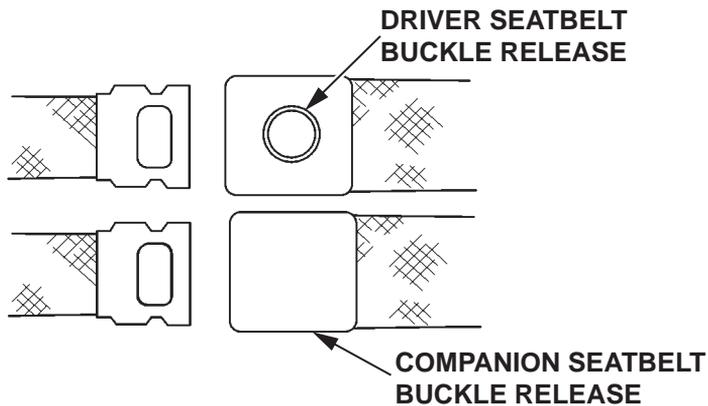


Figure 3. Seatbelts.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATING UNDER USUAL CONDITIONS
STARTING ENGINE ABOVE 32° F (0° C)**

INITIAL SETUP:**References**

WP 0005

WP 0022

WP 0023

STARTING ENGINE ABOVE 32° F (0° C)**WARNING**

Do not start engine with parking brake control pushed in (released). The vehicle could roll in either direction once brake system reaches operating pressure and spring brakes release. Always pull out parking brake control prior to starting engine or damage to equipment and possible injury or death to personnel may result. Seek medical attention in the event of an injury.

CAUTION

Ensure scheduled PMCS are performed prior to starting vehicle. Failure to comply may result in damage to equipment.

STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED

1. If not applied, pull out parking brake control knob (Figure 1, Item 1).

NOTE

M915 through M920 vehicles have a neutral safety switch which prevents the engine from being started with the transmission in gear.

2. Place transmission manual control lever (Figure 1, Item 2) in neutral (N) position (Figure 1, Item 3).

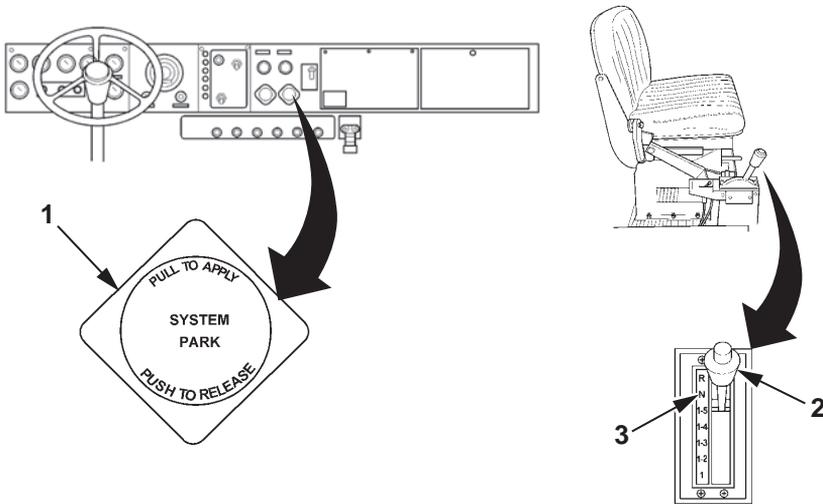


Figure 1. Applying Parking Brake and Selecting Neutral, (M915A1 Shown).

STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED

NOTE

When vehicle ignition is switched on, low air pressure warning buzzer will sound and the following warning indicators will illuminate: LOW AIR PRESSURE, ENG OIL, PARK BRAKE, and transmission heater warning lamp on the M915 through M920.

3. Insert ignition key in engine run switch (Figure 2, Item 1), and turn on ignition by moving engine run switch (Figure 2, Item 1) clockwise to IGNITION AND ACCESSORY (ON) position (WP 0005).
4. Observe low air pressure warning buzzer sound and LOW AIR PRESSURE indicator (Figure 2, Item 4), ENG OIL indicator (Figure 2, Item 2), PARK BRAKE indicator (Figure 2, Item 3), and transmission heater warning lamp on the M915 through M920 illuminate.

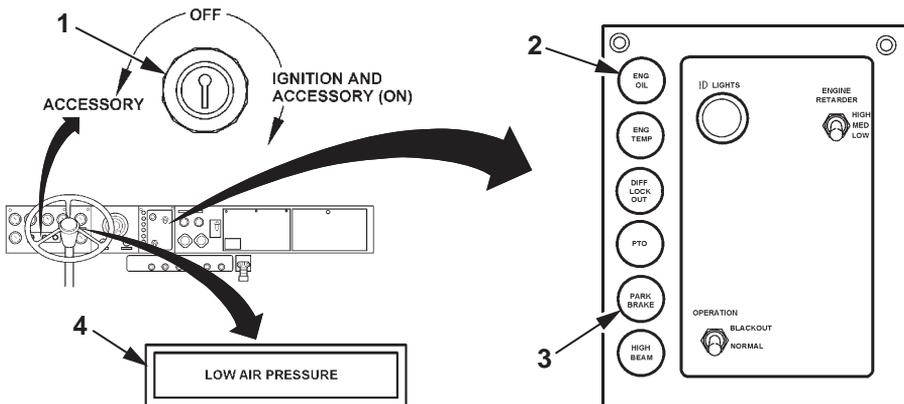


Figure 2. Turning On Ignition and Observing Warning Indicators.

STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED**WARNING**

On M915 and M915A1 vehicles, cab controlled fifth wheel control lever must be in the LOCK position when a trailer is connected to the tractor fifth wheel. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

On M915 and M915A1 tractors only, perform step 5 if trailer is connected to the tractor fifth wheel.

5. Move fifth wheel control lever (Figure 3, Item 1) to LOCK position.

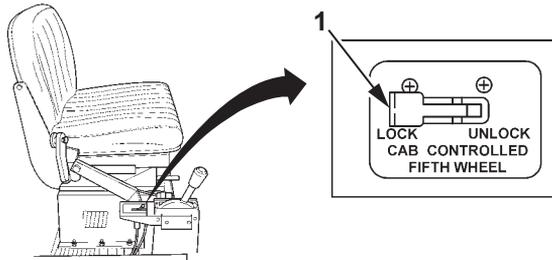


Figure 3. Control Lever, Cab Controlled Fifth Wheel.

STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED

NOTE

On M916 through M920 vehicles, the PTO control should be disengaged prior to starting vehicle engine. Perform step 6 for M916 through M920 models.

6. Check PTO indicator light (Figure 4, Item 1). If illuminated, push in PTO control knob (Figure 4, Item 2) to disengage PTO, and observe red PTO indicator light (Figure 4, Item 1) go off.

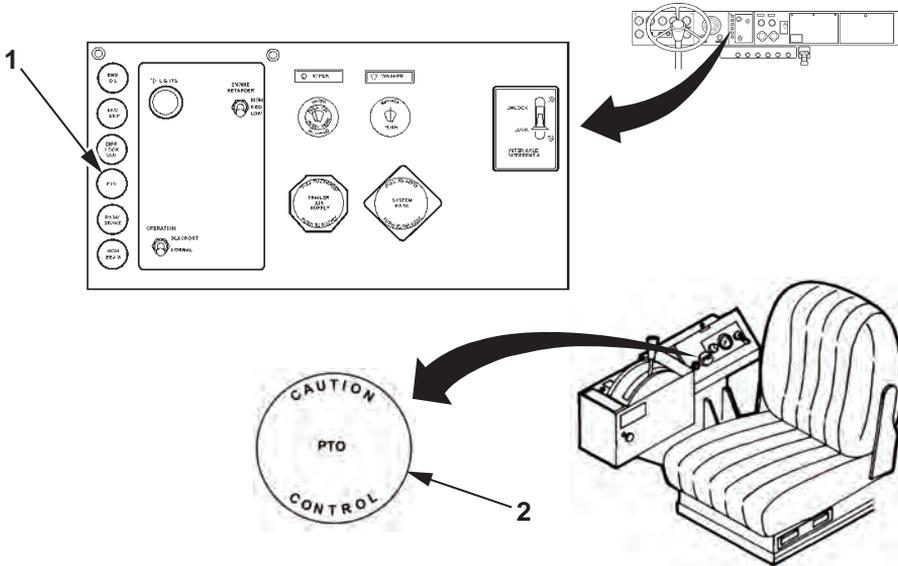


Figure 4. Disengaging PTO, (M916 through M920 Models).

STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED

NOTE

The DIFF LOCK OUT indicator will remain illuminated if the differential control switch is in LOCK position. For all normal driving conditions the differentials should be unlocked. If the differential control switch is in the LOCK position, perform step 7 for M915 and M915A1 vehicles or step 8 for M916 through M920 vehicles.

When the differential control switch is moved to the UNLOCK position the red DIFF LOCK OUT indicator may remain illuminated until the vehicle is put in motion.

7. Move differential control switch (Figure 5, Item 2) to UNLOCK position (WP 0005).
8. Move differential control switch (Figure 5, Item 2) to UNLOCK position (WP 0005). When engine is started and DIFF LOCK OUT indicator (Figure 5, Item 1) goes off, move differential control switch (Figure 5, Item 2) to OFF position.

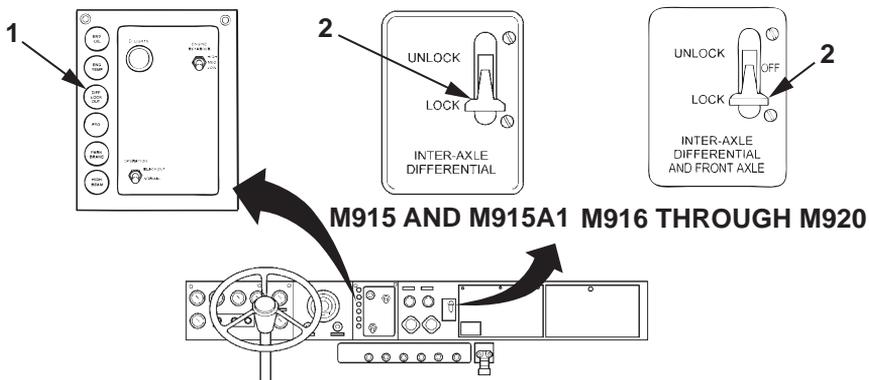


Figure 5. Differential Control Switch and Engine Start Button.

9. Turn off all vehicle accessories and ensure foot is off engine retarder foot switch (Figure 6, Item 1) prior to starting engine.

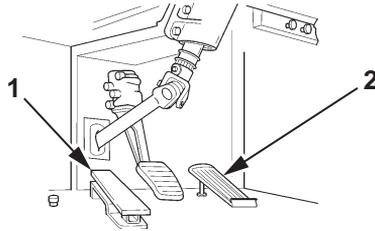
STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED

Figure 6. Engine Retarder Foot Switch and Accelerator Pedal.

CAUTION

Do not crank engine continuously for more than 15 seconds at a time. Allow two minute intervals between cranking engine for starter motor to cool. If engine fails to start after four attempts, troubleshoot starting problem. Failure to comply may result in damage to equipment.

When cranking engine, the ENGINE START button should be released once the engine starts. Do not push the ENGINE START button while engine is running. Failure to comply will result in damage to equipment.

NOTE

The engine cannot be started by pushing or towing the vehicle in gear.

The ENG TEMP indicator will illuminate while the ENGINE START button is depressed.

10. To crank and start engine, push and hold ENGINE START button (Figure 7, Item 1) down and slightly depress accelerator pedal (Figure 6, Item 2), until engine starts. Release ENGINE START button (Figure 7, Item 1) immediately after engine starts. If engine fails to start after cranking engine over for 15 seconds, perform step 11.

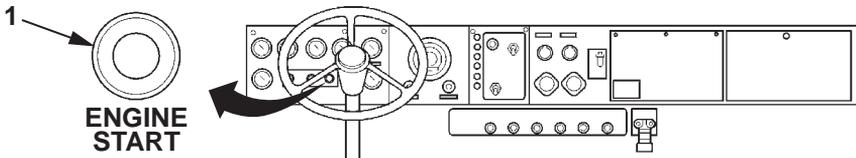


Figure 7. Engine Start Button.

STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED

11. Wait 2 minutes to allow starter motor to cool and repeat step 10. If engine fails to start after four attempts, refer to Troubleshooting Procedures, WP 0022 and WP 0023.

CAUTION

Failure to shut off engine if no oil pressure is indicated on engine oil pressure gauge may result in severe engine damage. Do not attempt to restart engine until problem has been corrected.

12. At engine startup, check engine oil pressure gauge (Figure 8, Item 1) for minimum of 5 psi (34 kPa) on M915 vehicles or 10 psi (69 kPa) on M915A1. If no oil pressure registers on engine oil pressure gauge (Figure 8, Item 1) after 10 seconds, shut off engine immediately by turning engine run switch (Figure 8, Item 5) to OFF position. Refer to Troubleshooting Procedures, WP 0022 and WP 0023.

CAUTION

Do not rev or idle engine above 1,000 rpm during warm-up. Damage to turbocharger or engine may occur if vehicle is operated without allowing sufficient time for oil circulation to reach turbocharger and for engine parts to warm up gradually.

Allow engine to warm up to normal operating temperature (180–200 degrees F (82–93 degrees C)) to ensure proper oil pressure. At low idle, if engine oil pressure drops below 5 psi (34 kPa) on M915 vehicles or 10 psi (69 kPa) on M915A1 vehicles, shut off engine and troubleshoot problem. Failure to comply may result in severe engine damage.

NOTE

On M915 through M920 vehicles, at low idle the engine oil pressure gauge should register 5–20 psi (34–138 kPa) at normal operating temperature.

If necessary during engine warm-up, set the hand throttle to maintain a smooth low idle speed.

13. Warm up engine by idling engine at 580–650 rpm until engine temperature reaches 180–200° F (82–93° C) and a minimum oil pressure of 5 psi (34 kPa) on M915 vehicles or 10 psi (69 kPa) on M915A1 vehicles is maintained on engine oil pressure gauge (Figure 8, Item 1). Ensure ENG OIL (low oil pressure) warning indicator (Figure 8, Item 3) goes off.
14. During warm-up period, observe instrument panel gauges and warning indicators for proper operation.

STARTING ENGINE ABOVE 32° F (0° C) - CONTINUED

15. Ensure **LOW AIR PRESSURE** warning indicator (Figure 8, Item 2) and buzzer go off before releasing parking brake, **PARK BRAKE** warning indicator (Figure 8, Item 4) will remain illuminated until parking brake is released prior to driving vehicle.

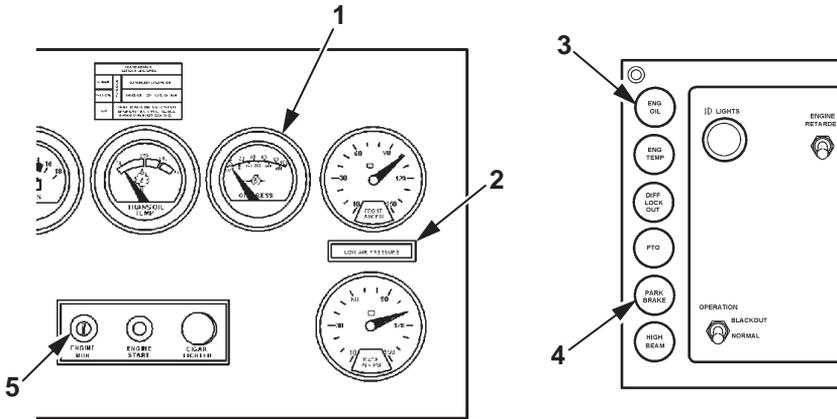


Figure 8. Instrument and Indicator Panel Gauges and Indicators.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATING UNDER USUAL CONDITIONS
COLD WEATHER STARTING BELOW 32° F (0° C)**

INITIAL SETUP:**References**

WP 0005

WP 0016

References - Continued

WP 0022

WP 0023

COLD WEATHER STARTING BELOW 32° F (0° C)

1. Install winter front cover on radiator grille (WP 0016).

WARNING

Do not start engine with parking brake control pushed in (released). The vehicle could roll in either direction once brake system reaches operating pressure and spring brakes release. Always pull out parking brake control prior to starting engine or damage to equipment and possible injury or death to personnel may result. Seek medical attention in the event of an injury.

CAUTION

Ensure scheduled PMCS are performed prior to starting vehicle. Failure to comply may result in damage to equipment.

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED

- If not applied, pull out parking brake control knob (Figure 1, Item 1).

NOTE

M915 and M915A1 vehicles have a neutral safety switch that prevents the engine from being started with the transmission in any gear other than neutral.

- Place transmission manual control lever (Figure 1, Item 3) in neutral (N) position (Figure 1, Item 2).

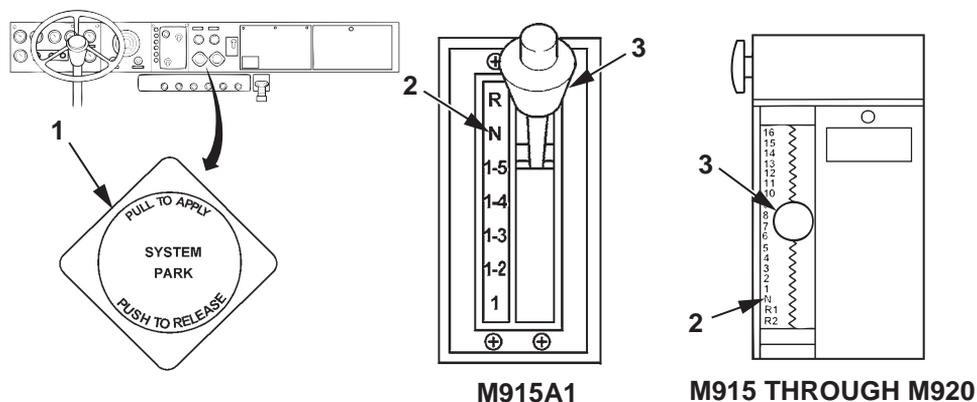


Figure 1. Applying Parking Brake and Selecting Neutral.

NOTE

Ensure all accessories are turned off and engine retarder system is disengaged.

When the vehicle ignition is switched on, the low air pressure warning buzzer will sound and the following warning indicators will illuminate: LOW AIR PRESSURE, ENG OIL, and PARK BRAKE. On M915 through M920 series vehicles, the strip heater indicator light, located on the shift console, will also illuminate in cold weather.

- Insert ignition key in engine run switch (Figure 2, Item 1) and turn on ignition by moving engine run switch (Figure 2, Item 1) clockwise to IGNITION AND ACCESSORY (ON) position (WP 0005).
- Observe low air pressure warning buzzer sound and LOW AIR PRESSURE indicator (Figure 2, Item 4), ENG OIL indicator (Figure 2, Item 2), and PARK BRAKE indicator (Figure 2, Item 3), and transmission heater warning lamp on the M915 through M920 illuminate.

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED

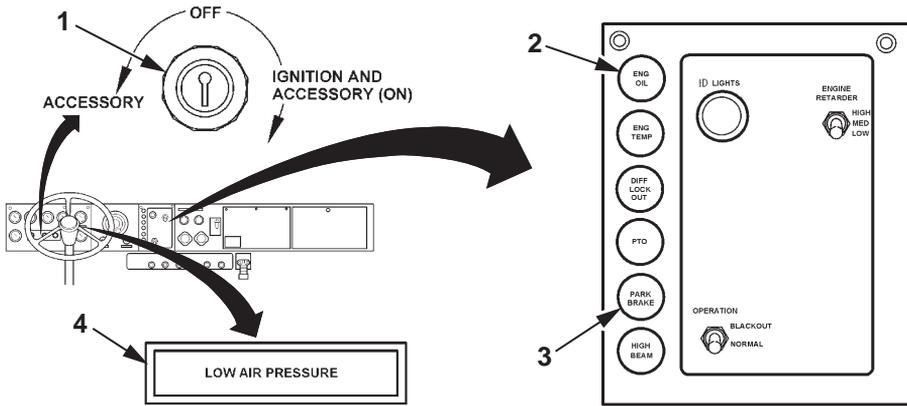


Figure 2. Turning Engine Run Switch On and Observing Warning Indicators.

WARNING

On M915 and M915A1 vehicles, the cab controlled fifth wheel control lever must be in the LOCK position when a trailer is connected to the tractor fifth wheel. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

On M915 and M915A1 tractors only, perform step 6 if trailer is connected to the tractor fifth wheel.

6. Move fifth wheel control lever (Figure 3, Item 1) to LOCK position.

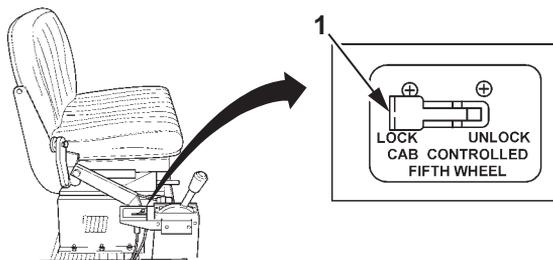


Figure 3. Control Lever, Cab Controlled Fifth Wheel.

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED

NOTE

On M916 through M920 vehicles, the PTO control must be disengaged prior to starting vehicle engine. Perform step 7 for M916 through M920 models.

7. Check PTO indicator light (Figure 4, Item 1). If illuminated, push in PTO control knob (Figure 4, Item 2) to disengage PTO, and observe red PTO indicator light (Figure 4, Item 1) go off.

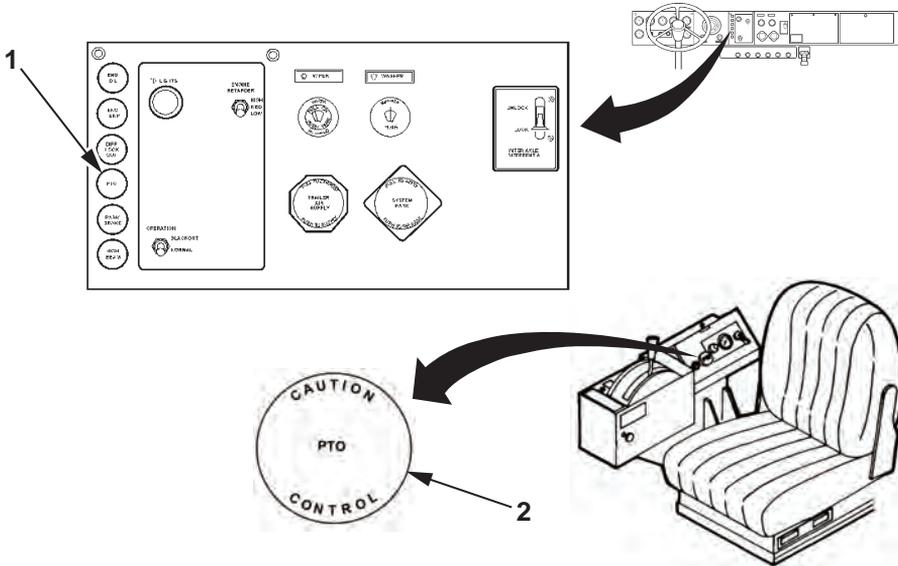


Figure 4. Disengaging PTO, (M916 through M920 Models).

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED**NOTE**

The DIFF LOCK OUT indicator will remain illuminated if the differential control switch is in LOCK position. For all normal driving conditions the differentials should be unlocked. If the differential control switch is in the LOCK position, perform step 8 for M915 and M915A1 vehicles or step 9 for M916 through M920 vehicles.

When the differential control switch is moved to the UNLOCK position, the red DIFF LOCK OUT indicator may remain illuminated until the vehicle is put in motion.

8. Move differential control switch (Figure 5, Item 2) to UNLOCK position (WP 0005).
9. Move differential control switch (Figure 5, Item 2) to UNLOCK position (WP 0005), and once engine is started and DIFF LOCK OUT indicator (Figure 5, Item 1) goes off, move differential control switch (Figure 5, Item 2) to OFF position.

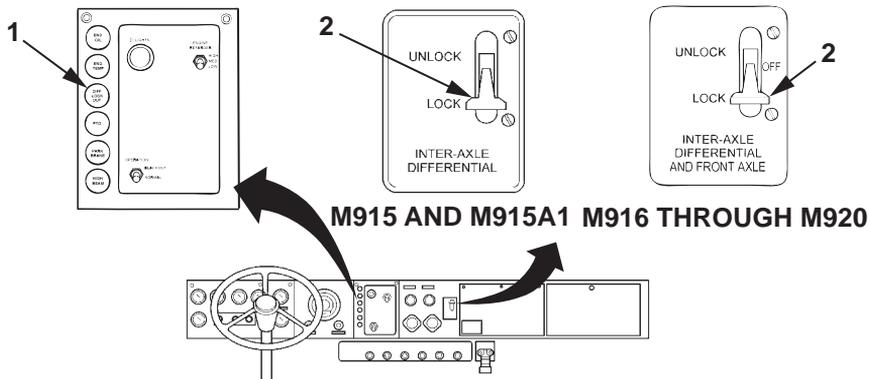


Figure 5. Differential Control Switch and Engine Start Button.

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED

10. Turn off all vehicle accessories and ensure foot is off engine retarder foot switch (Figure 6, Item 1) prior to starting engine.

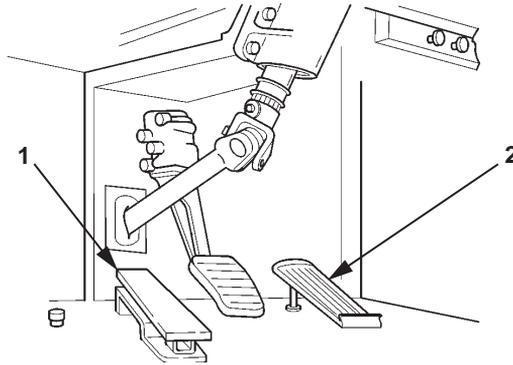


Figure 6. Engine Retarder Foot Switch and Accelerator Pedal.

CAUTION

Do not crank engine continuously for more than 15 seconds at a time. Allow two minute intervals between cranking engine for starter motor to cool. If engine fails to start after four attempts, troubleshoot starting problem. Failure to comply may result in damage to equipment.

When cranking engine, the ENGINE START button must be released once the engine starts. Do not push the ENGINE START button while engine is running. Failure to comply will result in damage to equipment.

Never depress the ether quick-start button before cranking engine. Do not hold the ether start button down for more than 4 or 5 seconds while cranking the engine. A build up of ether can result in combustion in the intake manifold and damage to equipment may result.

NOTE

The engine cannot be started by pushing or towing the vehicle in gear.

The ENG TEMP indicator will illuminate while the ENGINE START button is depressed.

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED

11. To crank and start engine, push and hold ENGINE START button (Figure 7, Item 1) down, slightly depress accelerator pedal (Figure 6, Item 2), and depress and hold ETHER quick-start button (Figure 7, Item 2) for 4 or 5 seconds until engine starts. Release ENGINE START button (Figure 7, Item 1) immediately after engine starts. If engine fails to start after cranking engine over for 15 seconds, perform step 10.

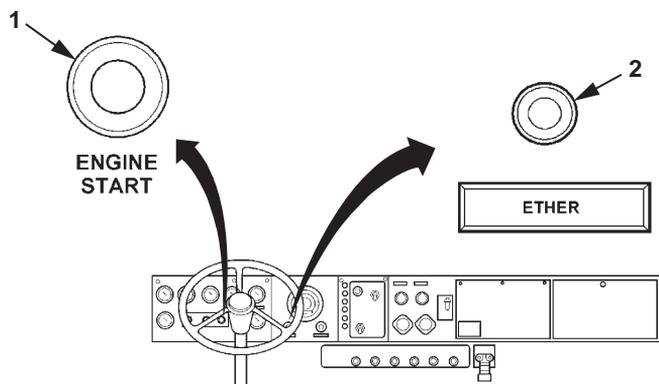


Figure 7. Starting Engine.

NOTE

At temperatures below 0° F (-18° C) it may be necessary to repeat steps 11 and 12 more than once.

12. Wait two minutes to allow starter motor to cool and repeat step 11. If engine fails to start after four attempts, refer to Troubleshooting Procedures, WP 0022 and WP 0023.

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED**CAUTION**

Failure to shut off engine if no oil pressure is indicated on engine oil pressure gauge may result in severe engine damage. Do not attempt to restart engine until problem has been corrected.

13. At engine startup, check engine oil pressure gauge (Figure 8, Item 1) for 5 psi (34 kPa) minimum on M915 vehicles or 10 psi (69 kPa) minimum on M915A1. If no oil pressure registers on engine oil pressure gauge (Figure 8, Item 1) after 10 seconds, shut off engine immediately by turning engine run switch (Figure 8, Item 5) to OFF position. Refer to Troubleshooting Procedures, WP 0022 and WP 0023.

CAUTION

Do not rev or idle engine above 1,000 rpm during warm-up. Damage to turbocharger or engine may occur if vehicle is operated without allowing sufficient time for oil circulation to reach turbocharger and for engine parts to warm up gradually.

Allow engine to warm up to normal operating temperature 180–200° F (82–93° C) to ensure proper oil pressure. At low idle, if engine oil pressure drops below 5 psi (34 kPa) on M915 through M920 vehicles or 10 psi (69 kPa) on M915A1 vehicles, shut off engine and troubleshoot problem. Failure to comply may result in severe engine damage.

NOTE

On M915 through M920 vehicles, at low idle the engine oil pressure gauge should register 5–20 psi (34–138 kPa) at normal operating temperature.

If necessary during engine warm-up, set the hand throttle to maintain a smooth low idle speed.

14. Warm up engine by idling at 580–650 rpm until engine temperature reaches 180–200° F (82–93° C) and 5 psi (34 kPa) minimum oil pressure on M915 vehicles or 10 psi (69 kPa) minimum oil pressure on M915A1 vehicles is maintained on engine oil pressure gauge (Figure 8, Item 1). Ensure ENG OIL (low oil pressure) warning indicator (Figure 8, Item 2) goes off.
15. During warm-up period, observe instrument panel gauges and warning indicators for proper operation.
16. Ensure LOW AIR PRESSURE warning indicator (Figure 8, Item 4) and buzzer go off before releasing parking brake. PARK BRAKE warning indicator (Figure 8, Item 3) will remain illuminated until parking brake is released prior to driving vehicle.

COLD WEATHER STARTING BELOW 32° F (0° C) - CONTINUED

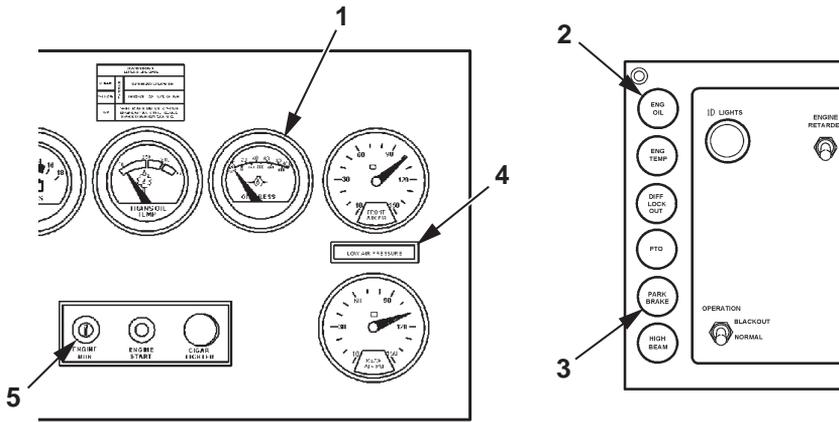


Figure 8. Instrument and Indicator Panel Gauges and Indicators.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATING UNDER USUAL CONDITIONS
PLACING VEHICLE IN MOTION**

INITIAL SETUP:**References**

WP 0005
WP 0007
WP 0008
WP 0009
WP 0012

References - Continued

WP 0013
WP 0018
WP 0027
WP 0037

PLACING VEHICLE IN MOTION

WARNING

To prevent fifth wheel movement during transit, ensure cab mounted sliding fifth wheel control lever is in LOCK position before moving vehicle. Follow procedure to verify fifth wheel control lever is locked in position when tractor is coupled to trailer, and never move fifth wheel control lever to UNLOCK position during transit. Failure to comply may result in loss of control, damage to equipment, and possible injury or death to personnel. Seek medical attention in the event of an injury.

Do not operate vehicle with low tire pressure on wet smooth roads at high speeds. Doing so may result in loss of control, damage to equipment, and possible injury or death to personnel. Seek medical attention in the event of an injury.

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

1. Ensure BII and auxiliary equipment are stowed and locked for travel (WP 0037).
2. If tractor is coupled to trailer, ensure fifth wheel primary and secondary kingpin lock releases are properly engaged, tractor-to-trailer air and electrical connections are checked, and the sliding fifth wheel control lever is in LOCK position for the M915A1 (WP 0012). If using towing pintle, ensure pintle is properly locked (WP 0013).

PLACING VEHICLE IN MOTION - CONTINUED**NOTE**

If available, assistant will adjust mirrors with driver seated in cab.

3. Adjust rear view mirrors and driver seat as necessary. Put seatbelt(s) on and adjust tension (WP 0007).

NOTE

Ensure scheduled PMCS are performed prior to operating tractor.

4. Start engine (WP 0008 or WP 0009).
5. Check engine oil pressure gauge (Figure 1, Item 3) for at least 10 psi (69 kPa) at idle. Cold engine will read higher.
6. Check engine water temperature gauge (Figure 1, Item 7) for approximately 165–195° F (74–91° C) for M915 through M920 or 160–180° F (71–82° C) for M915A1 if pulling load.
7. Check air pressure gauges (Figure 1, Items 4 and 6) for 105–140 psi (724–965 kPa). Air pressures below 60 psi (414 kPa) will result in brakes not releasing. LOW AIR PRESSURE warning lamp (Figure 1, Item 5) and buzzer should go off when both front and rear air system pressures reach approximately 64–76 psi (441–524 kPa).
8. Voltmeter (Figure 1, Item 2) should indicate 12–15 V (green shaded area).
9. Fuel gauge (Figure 1, Item 1) should indicate there is sufficient fuel for intended mission.
10. If operating in conditions requiring use of service or blackout lamps, operate headlamp switch (Figure 2, Item 1) or blackout operation switch (Figure 2, Item 2) as appropriate (WP 0005).

PLACING VEHICLE IN MOTION - CONTINUED

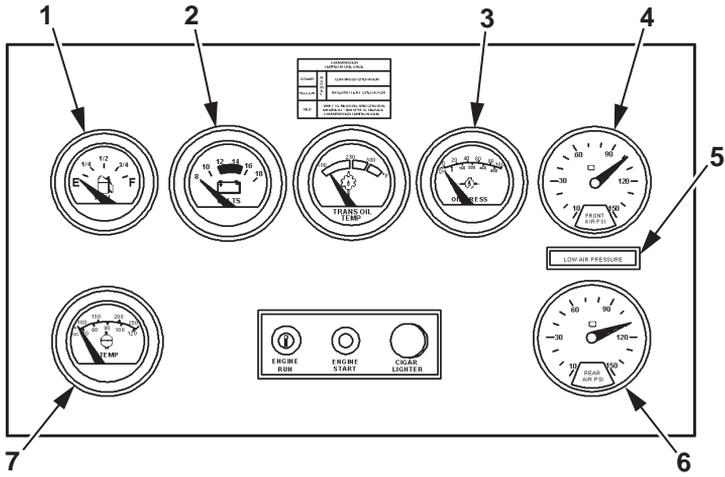


Figure 1. Instrument Panel Gauges and Indicators.

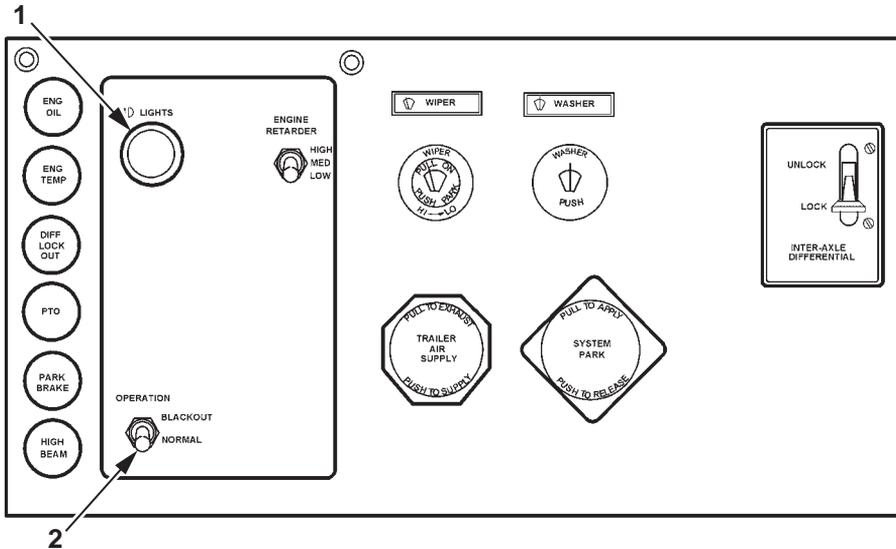


Figure 2. Instrument Panel Indicators and Controls.

PLACING VEHICLE IN MOTION - CONTINUED

11. For M915 through M920, depress the transmission Air Control Button (Figure 3, Item 2). 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

For M915 through M920, 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.

12. For M915 through M920, select the starting gear ratio using the following as a guide. Pull up on the selector lever (Figure 3, Item 1) to override the inhibitor. Suggested starting gears-level hard surfaces:
- Empty to 75,000 lb GCVW, 6th gear
 - 75,000 to 105,000 lb GCVW, 4th gear
 - 105,000 to 130,000 lb GCVW, 3rd gear

NOTE

For M915A1, use the 1-5 gear range position for all normal driving conditions. For information on all gear ranges, refer to Use of Transmission Gear Ranges M915A1 in this work package.

13. For M915A1, place transmission control lever (Figure 3, Item 1) in desired gear range (WP 0005).

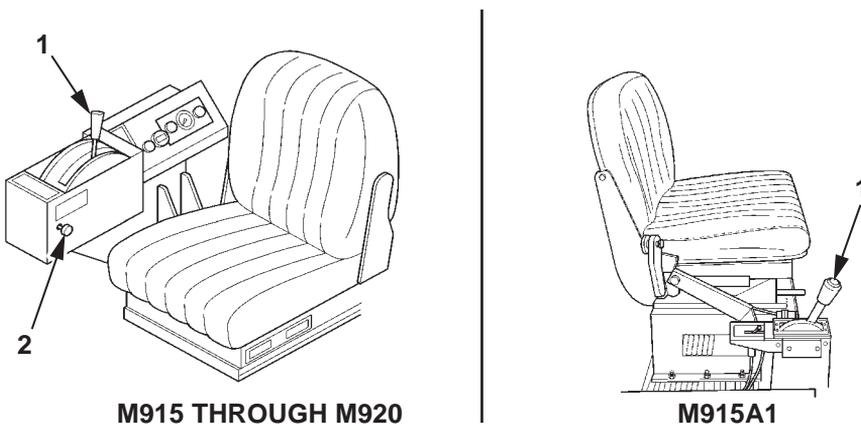


Figure 3. Transmission Control Lever.

USE OF TRANSMISSION GEAR RANGES (M915A1)**WARNING**

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

Never allow vehicle to coast in neutral (N) position. Engine braking action is not available when transmission is out of gear, and damage to equipment and possible injury or death to personnel may result. Seek medical attention in the event of an injury.

Do not start engine with parking brake control pushed in (released). The vehicle could roll in either direction once brake system reaches operating pressure and spring brakes release. Always pull out parking brake control prior to starting engine or damage to equipment and possible injury or death to personnel may result. Seek medical attention in the event of an injury.

NOTE

In low gear ranges 1, 1-2, 1-3, and 1-4, the transmission will not upshift above the highest gear selected unless engine governed speed is excessive.

1. Use reverse (R) position (1) to back up tractor. Stop tractor completely before shifting gears from forward to reverse or from reverse to forward. Reverse has only one gear and provides the greatest traction advantage.
2. Use neutral (N) position (Figure 5, Item 7) when starting engine and when tractor will be left unattended with engine running and parking brake applied. The neutral safety switch prevents engine from starting in all gear range positions other than neutral.

USE OF TRANSMISSION GEAR RANGES (M915A1) - CONTINUED

3. Use 1-5 position (Figure 5, Item 6) for all normal driving conditions. When driving in 1-5 position (Figure 5, Item 6), the transmission will start in 1st gear, and as the accelerator is depressed, the transmission will upshift to 2nd, 3rd, 4th, and 5th gears automatically. As the tractor is slowed, the transmission will downshift to the correct gear automatically.
4. Use 1-4 position (Figure 5, Item 2), 1-3 position (Figure 5, Item 3), or 1-2 position (Figure 5, Item 4) to limit the automatic shifting to a lower range when road, load, or traffic conditions make it necessary or desirable to do so.
5. Use 1 position (Figure 5, Item 5) and R position (Figure 5, Item 1) when pulling through mud and snow or driving on steep grades. This is low gear, and maximum engine braking is accomplished in this position.

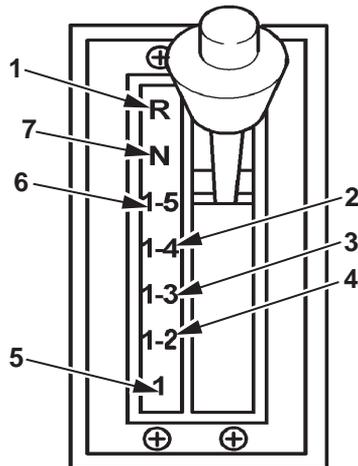


Figure 5. Transmission Control Lever and Range Indicator.

END OF TASK

BASIC DRIVING GUIDELINES**WARNING**

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

During long idling periods, engine coolant temperature will fall below normal range. The incomplete combination of fuel in a cold engine will cause dilution of crankcase oil, formation of carbon on valves, pistons, and rings, and sludge build-up in engine. If prolonged engine idling is necessary, maintain at least 800 rpm.

1. Avoid unnecessary engine idling.

NOTE

If gauges or indicators show any abnormal conditions, bring tractor to a safe stop, shut down engine, and investigate cause of problem.

2. Frequently check oil pressure gauge (Figure 6, Item 1). During normal driving conditions with engine running 1,800–2,100 rpm, engine oil pressure gauge (Figure 6, Item 1) should register 40–75 psi (276–517 kPa) for M915 through M920 or 35–50 psi (241–345 kPa) for M915A1.

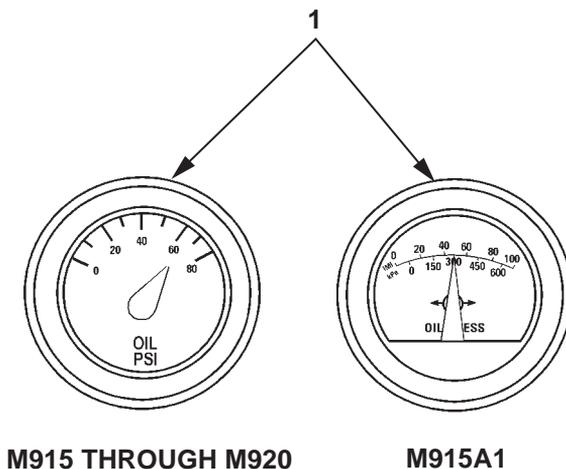


Figure 6. Oil Pressure Gauge.

BASIC DRIVING GUIDELINES - CONTINUED

- Frequently check engine water temperature gauge (Figure 7, Item 1). Normal water temperature should range from 165–195° F (74–91° C) for M915 through M920 or 180–200° F (82–93° C) for M915A1. Water temperature should be above 160° F (71° C) at low end, and up to 212° F (100° C) at high end. If temperature reaches 220° F (104° C), shut down engine and check cooling system.

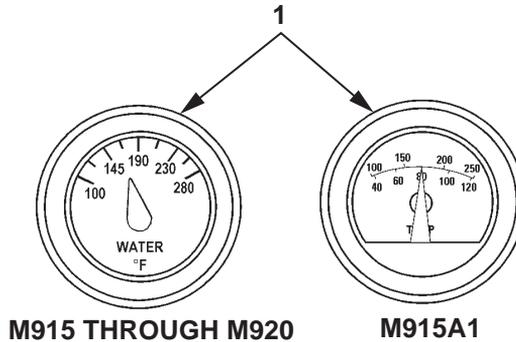


Figure 7. Water Temperature Gauge.

- Check front air pressure gauge (Figure 8, Item 1) and rear air pressure gauge (Figure 8, Item 2). The normal operating range is 105–140 psi (724–965 kPa). Air pressure should be at least 80 psi (552 kPa) for M915 through M920 or 90 psi (621 kPa) for M915A1. The low pressure warning lamp (Figure 8, Item 3) and buzzer will come on at approximately 64–76 psi (441–524 kPa).

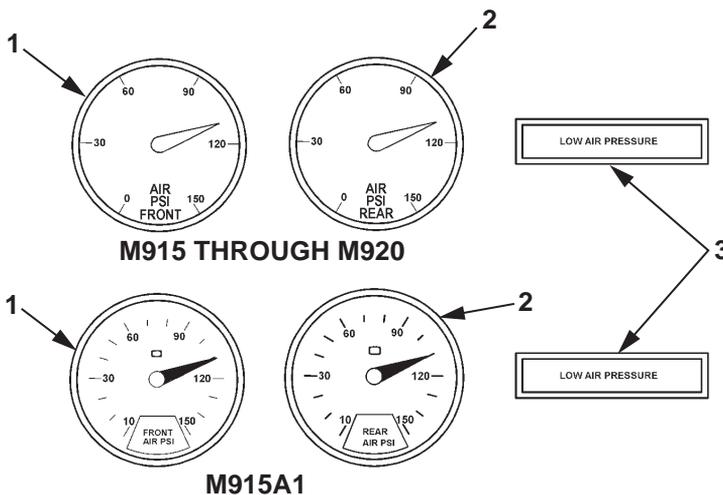


Figure 8. Air Pressure Gauges and Low Air Pressure Indicator.

BASIC DRIVING GUIDELINES - CONTINUED

- Frequently check transmission oil temperature gauge (Figure 9, Item 1). Normal operating temperature range is 40–220° F (4–104° C) for M915 through M920 or 100–250° F (38–121° C) for M915A1.

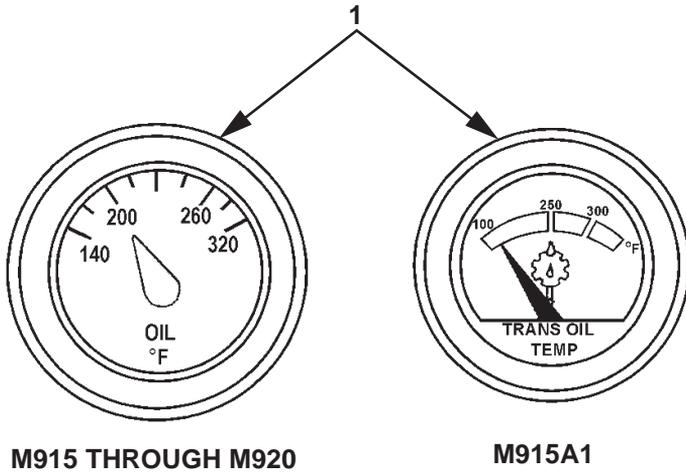


Figure 9. Transmission Oil Temperature Gauge.

- Frequently check voltmeter (Figure 10, Item 1). Normal battery voltage should be 12–15 volts.

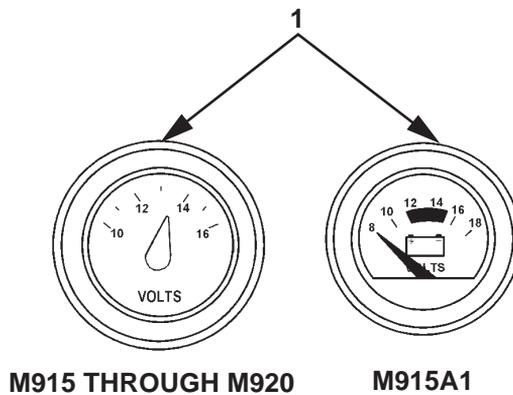
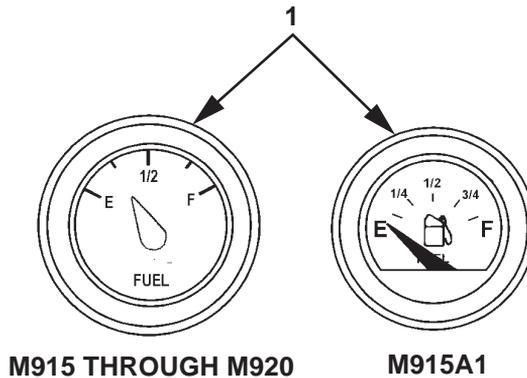


Figure 10. Voltmeter.

- Check fuel gauge (Figure 11, Item 1) for adequate fuel supply.

BASIC DRIVING GUIDELINES - CONTINUED*Figure 11. Fuel Gauge.*

8. Monitor engine rpm on tachograph for appropriate ranges. Refer to Optimum Use of Tachograph in this work package.
9. After prolonged engine operation above 1,500 rpm, run engine at idle for a minimum of 3 minutes to allow sufficient cool down of turbocharger.
10. The recommended and most efficient cruising speed for highway use is the posted legal speed limit at an engine speed of 1,800–1,900 rpm. Refer to Efficient and Economic Driving Techniques in this work package.
11. To conserve fuel and reduce high rpm engine noise when operating in city traffic or other reduced speed zones, match engine speed to road speed by selecting a gear range that permits operating engine near, but not lower than 1,500 rpm.
12. When climbing uphill grades with the M915A1, accelerate at full throttle in gear range 1-5 and allow transmission to upshift automatically, or for all vehicles manually upshift transmission once engine speed reaches 2,000 rpm, one gear at a time. Refer to Efficient and Economic Driving Techniques in this work package.

CAUTION

Never allow the engine to be pushed above the governed rpm when rolling down a grade. Failure to comply may result in damage to equipment.

NOTE

If a manual downshift or reverse shift is made at too high a road speed, the transmission hydraulic system will prevent the shift from occurring until the maximum lower speed is reached.

13. When manually descending downhill grades, avoid over speeding engine by manually downshifting to next lower gear range before reaching maximum rpm.

BASIC DRIVING GUIDELINES - CONTINUED**CAUTION**

Holding steering wheel at full lock position for more than 10 seconds will cause oil to overheat, loss of oil from power steering reservoir, and damage to power steering pump.

14. When maneuvering tractor in limited space, avoid holding steering wheel at full lock position.

END OF TASK**DRIVING GUIDELINES FOR VEHICLES EQUIPPED WITH CREW PROTECTION KIT****WARNING**

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

1. With Crew Protection Kit installed, vehicle is heavier than usual. Due to this increased weight, adjust driving to allow for greater stopping distance.
2. Vehicle may steer differently with Crew Protection Kit installed. Adjust vehicle speed accordingly and exercise caution.

WARNING

Center of gravity is higher on vehicles equipped with Crew Protection Kit. Always use slower speeds when driving vehicle. **DO NOT** operate vehicle on steep hills or inclines. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

3. Due to higher center of gravity, use slower speeds when making turns or changing lanes. Also, use extreme caution when operating vehicle on any incline. The higher center of gravity increases the chance of a vehicle rollover.

WARNING

Visibility is reduced on vehicles equipped with Crew Protection Kit. Always use a ground guide when maneuvering vehicle near obstacles. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

DRIVING GUIDELINES FOR VEHICLES EQUIPPED WITH CREW PROTECTION KIT - CONTINUED

4. Visibility is reduced on vehicles equipped with Crew Protection Kit. Operate vehicle with caution and use ground guides.

WARNING

Vehicles equipped with Crew Protection Kit have different door handles and latching hardware. Exercise caution when opening and closing armor doors to not allow clothing or equipment to catch on door hardware. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

5. When entering or exiting vehicle, use three-point contact procedure at all times. Keep clothing and equipment away from door hardware.

WARNING

DO NOT park vehicles equipped with Crew Protection Kit on a hill or incline. The parking brake may have insufficient braking capacity to hold vehicle due to increased vehicle weight. Failure to comply may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

6. Always park vehicles equipped with Crew Protection Kit on a level surface, set parking brake, and chock wheels.
7. Operate heater/air conditioning system as needed to ensure proper cab ventilation. Refer to Operating Air Conditioning Kit (WP 0013).
8. Maintain good visibility during vehicle operation. Keep all ballistic glass clean. Follow cleaning instructions for ballistic glass (WP 0027).

END OF TASK**STARTING OUT ON GRADE (M915 THROUGH M920)****WARNING**

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

STARTING OUT ON GRADE (M915 THROUGH M920) - CONTINUED**CAUTION**

With transmission engaged, do not operate vehicle with the engine speed below 1,200 rpm or above 2,100 rpm. Failure to comply may result in transmission damage.

When starting with a load, engine speed must accelerate through 1,200 rpm in three seconds or less to prevent damage to front clutch. If rpm does not increase above 1,200 rpm in three seconds, ease off accelerator and shift to a lower gear. Failure to comply may result in transmission damage.

Do not start trucks in gears one, two, or three with fast acceleration. If it is necessary to start in these lower gears, gradually accelerate when starting while shifting through these gears. Failure to comply may result in transmission damage.

M915 through M920 vehicles are equipped with strip heaters to warm transmission during cold weather. The strip heaters are thermostatically controlled for automatic operation at temperatures below 30° F (-1° C). The indicator light on the console lights when the strip heaters are on. DO not operate the transmission until indicator light goes off. Failure to comply may result in damage to equipment.

NOTE

If gear grinding is heard during a shift immediately move shift lever to the left and then back into the detent. If gear grinding persists, stop vehicle immediately and notify your supervisor. Do not operate vehicle.

1. Upshifts can be made at any engine speed above 1,750 rpm. Ease up on accelerator when shift selector is placed into the detent. This provides a smooth shift.
2. Downshift must always be made when the engine speed is at or below 1,650 rpm. Accelerate when shift selector is placed into the detent.

END OF TASK**OPTIMUM USE OF TACHOGRAPH****CAUTION**

The maximum governed engine speed is 2,100 rpm under load. Never allow the engine to exceed this rpm or damage to engine may result.

OPTIMUM USE OF TACHOGRAPH - CONTINUED

NOTE

It is not necessary to operate the engine at maximum rpm for good performance. The engine performs efficiently at low and middle speed ranges and offers a definite fuel advantage at these reduced speeds. Control rpm by tailoring engine speed to the load requirements and desired road speed.

1. Use tachometer hand (Figure 12, Item 3) of tachograph (Figure 12, Item 1) to monitor engine rpm in all gear ranges. When manually downshifting transmission while tractor is moving, monitor tachometer hand (Figure 12, Item 3) to ensure maximum 2,100 rpm engine speed is not exceeded.
2. Control engine rpm through proper use of accelerator and gear selection for load requirements and desired road speed. For the M915A1 in normal driving situations, use gear range 1-5 and allow automatic transmission to control gear selection and engine speed.
3. Use speedometer hand (Figure 12, Item 2) of tachograph (Figure 12, Item 1) to monitor tractor ground speed in miles per hour (mph). Ground speed and engine speed can be compared to help determine gear selection for any given condition (WP 0005).
4. Use odometer (Figure 12, Item 5) on tachograph (Figure 12, Item 1) to record distance traveled. Fuel consumption in miles per gallon (mpg) is calculated by dividing the number of miles traveled by the number of gallons consumed.
5. Use clock hands (Figure 12, Item 4) on tachograph (Figure 12, Item 1) to estimate destination time based on miles per hour (mph). For example, if traveling at a ground speed of 60 mph, it will take one minute to travel one mile.

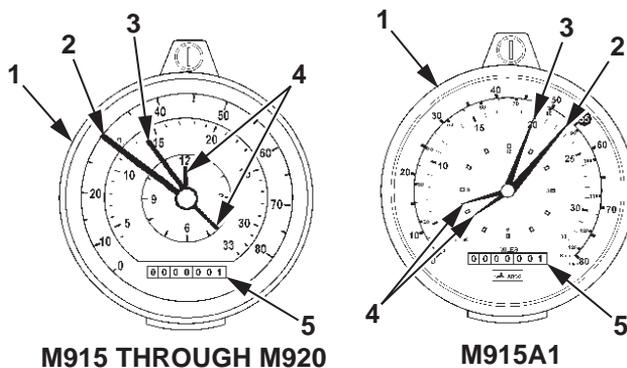


Figure 12. Tachograph.

END OF TASK

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915 THROUGH M920)

The following driving techniques should be learned to achieve efficiency, economy, and safe operation in the M915 through M920.

WARNING

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

Driving at Highway Speed

1. When driving conditions permit, maintain the legal highway speed in gear that permits running the engine below governed speed. This is engine cruising range and it affords better fuel economy than higher engine speeds. Recommended normal highway cruising range is 1,800–1,900 rpm.
2. Operate in the economy range at full throttle if satisfied with how the vehicle performs. 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.

Driving in the City**CAUTION**

Engine rpm should not be less than 1,500 rpm for city driving. Failure to comply may result in damage to equipment.

1. Operate the truck in high gear at reduced engine rpm to maintain the lawful speed. Reducing engine speed conserves fuel and lowers the noise level of the vehicle. When slowing down for towns and other posted speed zones along highway route, remain in running gear and reduce engine rpm. Avoid downshifting until ready to return truck to highway speed. Depending on gear selection recommended rpm range must not be less than 1,500 rpm for city driving.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915 THROUGH M920) - CONTINUED**Hauling Uphill**

1. The engine works hardest when moving loaded truck up a grade. The proper use of gears shortens time on hills and minimizes the amount of shifting.
2. Proceed uphill and depress the accelerator pedal completely, keeping it there as the truck moves up the grade. If there is sufficient power to maintain a satisfactory rpm, remain in that gear for the entire grade.
3. If the hill causes a steady decline in engine rpm, downshift when engine rpm is at or below 1,650 rpm. Continue to downshift in this manner until engine rpm can be maintained.
4. By remaining in each gear until arriving at the next lower shift point, truck will top the grade in the best possible time on less fuel and fewer shifts.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915 THROUGH M920) - CONTINUED**Using Engine for Braking****WARNING**

Do not use engine retarder on slippery road surfaces. Using engine retarder on wet, icy, or snow covered roads may result in loss of vehicle control. Failure to comply may result in damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.

CAUTION

Do not use engine retarder in first, second, or third gears except when descending steep grades. Never allow engine speed to drop below 1,200 rpm with the engine retarder applied. Do not engage the engine retarder when shifting or when the transmission is in neutral. Failure to comply may result in transmission damage.

1. Vehicle is equipped with retarder system which enables the engine to act as a brake. The engine retarder should be used for descending grades in city traffic or any situation where slowing is required but not on slipper road surfaces such as rain, snow, or ice. Using the engine brake on slippery surfaces can cause the vehicle to skid. Excessive use of the service brakes is not desirable. The engine retarder is most effective between 1,750–2,000 rpm. The following procedures should be applied when appropriate:
 - a. Place engine retarder switch on the instrument panel in the low position. If more engine braking is needed, place engine retarder switch to the medium position. If more engine braking is needed, set the engine retarder switch to high.
 - b. Keep vehicle in a gear that allows driver to maintain 1,750–2,000 rpm. This provides maximum engine braking effect.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915 THROUGH M920) - CONTINUED**Downhill Braking****WARNING**

Failure to comply to downhill driving procedures may cause loss of vehicle control and result in injury or death to personnel. Seek medical attention in the event of an injury.

Excessive use of the service brake to control downhill speed will result in loss of braking power due to heat build up. Failure to comply may result in severe injury or death to personnel. Seek medical attention in the event of an injury.

1. Follow proper downhill procedure by selecting a gear which allows the engine with the engine retarder applied to control truck speed with engine rpm at or below 2,000 rpm and service brakes not applied. When approaching a downgrade, progressively select a gear when combined with the engine retarder allows driver 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 procedure until engine speed can be maintained between 1,750–2,000 rpm.
3. In the event engine over speeds (above 2,100 rpm), make one positive firm application of the service brakes to slow vehicle speed.
4. In the event transmission over speeds (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 engage transmission.
6. If experiencing a total loss of braking due to heat buildup:
 - 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.

END OF TASK

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915A1)

The following driving techniques should be learned to achieve efficiency, economy, and safe operation in the M915A1.

WARNING

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

Driving at Highway Speeds**NOTE**

The transmission lockup clutch automatically engages after load is rolling and torque demand is low, and automatically disengages at lower tractor speeds. When engaged, increased fuel economy is achieved at highway cruising speeds.

1. Learn to identify transmission lockup clutch engagement/disengagement. Lockup engagement is felt similar to transmission gear range shifts. In addition, a slight change in engine sound can be heard when lockup occurs, due to a drop in rpm. With experience it is possible to tell the difference between gear range changes and lockup engagement/disengagement.
2. When driving conditions permit, maintain legal highway speed in gear range 1-5 (Figure 13, Item 1). Gear range 1-5 (Figure 13, Item 1) permits running the engine below its governed speed (preferably 10–20 percent below governed speed), and affords better fuel economy than at higher engine speeds. The recommended normal highway cruising range is 1,800–1,900 rpm.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915A1) - CONTINUED

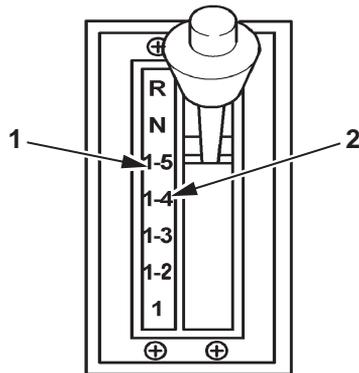


Figure 13. Transmission Control Lever Range Indicator.

NOTE

Running in a low gear at a high rpm when restricted to 25–30 mph wastes fuel and creates a higher noise level than necessary.

3. When driving conditions do not permit operating in economy range, it may be necessary to run engine at higher engine speeds (full throttle) or manually shift to a lower gear. When operating in hilly terrain, high winds, or at maximum GCWR, additional power to meet these conditions may require operating in gear range 1-4 (Figure 13, Item 2) or lower.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915A1) - CONTINUED**Driving in City Stop-and-Go Traffic****CAUTION**

Operating tractor below 1,500 rpm in gear range 1-5 will lug the engine, and is not recommend for city driving. Failure to comply may result in damage to engine.

1. Operate the vehicle in gear range 1-5 (Figure 14, Item 1) or 1-4 (Figure 14, Item 2) for normal stop-and-go city driving. Operating in gear range 1-5 (Figure 14, Item 1) or 1-4 (Figure 14, Item 2) when conditions permit, will lower engine speed and increase fuel economy. Vehicle should not be operated in high gear ranges at engine speeds below 1,500 rpm for city driving.

NOTE

The automatic transmission can be manually upshifted through all gear ranges while accelerating at full throttle. Manually down shifting is limited to the maximum allowable engine speed for the next lower gear range. However, if a manual down shift or reverse shift is made at too high a road speed, the transmission hydraulic system will prevent the shift from occurring until the maximum lower speed is reached.

2. If traffic, road, or load conditions warrant, it may be desirable to limit the automatic upshift by selecting gear range 1-3 (Figure 14, Item 3). This prevents the engine from running below 1,500 rpm in gear range 1-4 (Figure 14, Item 2) or 1-5 (Figure 14, Item 1) at slower road speeds. When conditions allow for faster road speeds, manually upshift to gear range 1-4 (Figure 14, Item 2) followed by 1-5 (Figure 14, Item 1). This practice lowers engine speed and provides increased fuel economy.

Hauling on Uphill Grades**CAUTION**

Use service brakes to hold tractor while stopped on a grade. Never use the transmission to hold tractor on grade or severe overheating and damage to transmission will result.

1. When starting from a stop on maximum uphill grades pulling maximum load, use gear range 1 (Figure 14, Item 4), accelerate at full throttle, and manually upshift once engine speed reaches 2,000 rpm one gear range at a time. If uphill grade prevents engine speed from reaching 1,700 rpm, downshift to next lower gear range to maintain at least 1,700 rpm.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915A1) - CONTINUED

2. When starting from a stop on uphill grades pulling normal loads, use gear range 1-5 (Figure 14, Item 1) and accelerate at full throttle. Allow transmission to upshift automatically until desired road speed is attained. If there is sufficient power to maintain the desired road speed, remain in gear range 1-5 (Figure 14, Item 1). Manually downshift transmission to gear range 1-4 (Figure 14, Item 2) or lower if the desired road speed cannot be attained.
3. When operating at desired road speed and an uphill grade causes a steady decrease in road speed, manually downshift to the next lower gear range once engine speed reaches 1,700 rpm. Continue to downshift in this manner to match the power demands of the grade. Once at top of hill, return to gear range 1-5 (Figure 14, Item 1).

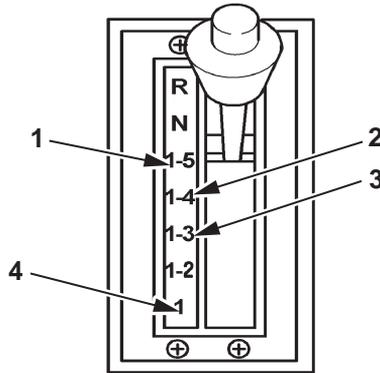


Figure 14. Transmission Range Indicator.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915A1) - CONTINUED

Using Engine for Braking

WARNING

The engine brake loses its effectiveness to control speed of tractor when tractor is pushed by additional weight of trailer on downhill grades. Failure to downshift transmission to lower gear range and use service brakes to keep tractor and engine speeds under control may result in damage to equipment and possible injury or death to personnel. Seek medical attention in the event of an injury.

Do not use engine retarder on slippery road surfaces. Using engine retarder on wet, icy, or snow covered roads may result in loss of vehicle control. Failure to comply may result in damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.

1. To operate the engine retarder, switch ENGINE RETARDER switch (Figure 15, Item 4) to the number of cylinders desired for braking action (WP 0005). To slow tractor, move foot completely off accelerator pedal (Figure 16, Item 1) and depress engine retarder control pedal (Figure 16, Item 2).
2. To maximize the braking effect of the engine retarder, keep transmission in a gear range that matches road speed and rated engine rpm. Engine braking is increased by either downshifting to the next lower gear range and/or placing the ENGINE RETARDER switch (Figure 15, Item 4) to MED position (Figure 15, Item 2) or HIGH position (Figure 15, Item 1).
3. When using the engine retarder on a downhill grade, select the same gear range necessary for climbing the same grade. To increase braking effect of engine retarder, either downshift transmission to the next lower gear range and/or switch the ENGINE RETARDER switch (Figure 15, Item 4) to MED position (Figure 15, Item 2) or HIGH position (Figure 15, Item 1). To decrease braking effect of engine retarder, either upshift transmission to higher gear range and/or switch ENGINE RETARDER switch (Figure 15, Item 4) to MED position (Figure 15, Item 2) or LOW position (Figure 15, Item 3).

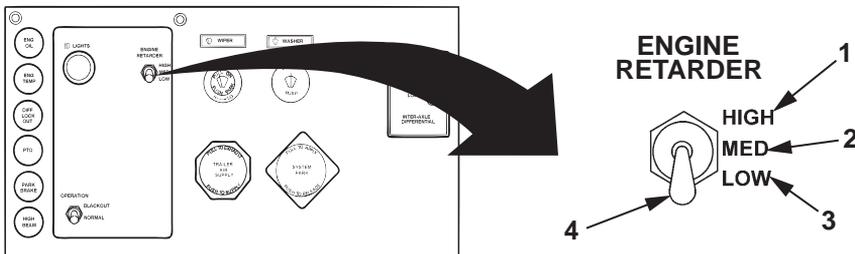


Figure 15. Engine Retarder Switch.

EFFICIENT AND ECONOMICAL DRIVING TECHNIQUES (M915A1) - CONTINUED**WARNING**

Never downshift to a gear range lower than the tractor road speed on slippery pavement. Sudden increase in engine rpm may cause drive wheels to lose traction with pavement and result in loss of control of tractor or jackknifing of trailer. Failure to comply may result in damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.

Do not use engine retarder on slippery road surfaces. Using engine retarder on wet, icy, or snow covered roads may result in loss of vehicle control. Failure to comply may result in damage to equipment and injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

Engagement of differential lockup may be helpful on slippery pavement (WP 0005).

4. The engine retarder should never be used on slippery surfaces such as wet, icy, or snow covered pavement. Initial braking force when applying the engine retarder may cause tractor drive wheels to lose traction with road surface. Use service brake pedal and/or trailer brake hand control when slowing or stopping tractor on slippery surfaces. Refer to Trailer Brake Hand Control, in this work package and Snow and Ice in Unusual Terrain Operation (WP 0018).

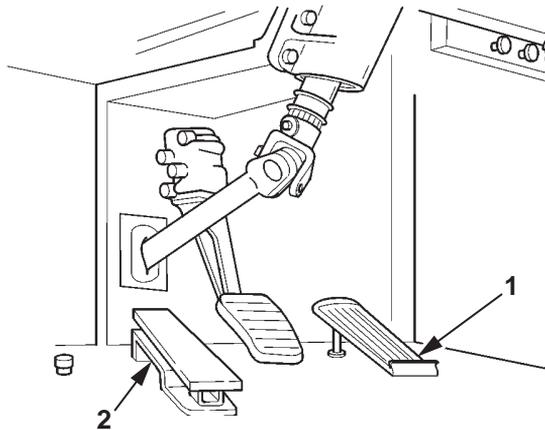


Figure 16. Accelerator and Engine Retarder Control Pedals.

END OF TASK

OPERATING 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. Failure to comply may result in damage to equipment.

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

END OF TASK**OPERATING INTER-AXLE DIFFERENTIAL LOCKUP****CAUTION**

Do not operate the truck on hard surfaces any longer than necessary with the differential lockup engaged. Driveline windup may occur and damage the differential.

Inter-axle 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 (Figure 16, Item 1) is located on instrument panel (Figure 16, Item 2) to the right of driver. Use the following instructions to engage and disengage the system.

Engage Inter-axle Differential Lockup All Models

1. Pull to the side of the road and stop truck.
2. Place Differential Lock/Unlock control (Figure 17, Item 1) in the LOCK position.
3. Observe that Differential Lockout indicator light (Figure 17, Item 3) comes on.
The truck is now ready for operation.

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.

Disengage Interaxle Differential Lockup (M915)

1. Remove foot from the accelerator pedal.
2. Place Differential Lock/Unlock control (Figure 17, Item 1) in the LOCK position.
3. Observe that Differential Lockup indicator light (Figure 17, Item 3) goes off. The system is now disengaged.

OPERATING INTER-AXLE DIFFERENTIAL LOCKUP - CONTINUED

Disengage Inter-axle Differential Lockup (M916 through M920)

1. Remove foot from the accelerator pedal.
2. Place Differential Lock/Unlock control (Figure 17, Item 1) in the UNLOCK position momentarily and observe that Differential Lockup indicator light (Figure 17, Item 3) goes off.
3. Place Differential Lock/Unlock control (Figure 17, Item 1) in the center OFF position. Do not operate truck if Differential Lockup indicator light (Figure 17, Item 3) stays on.

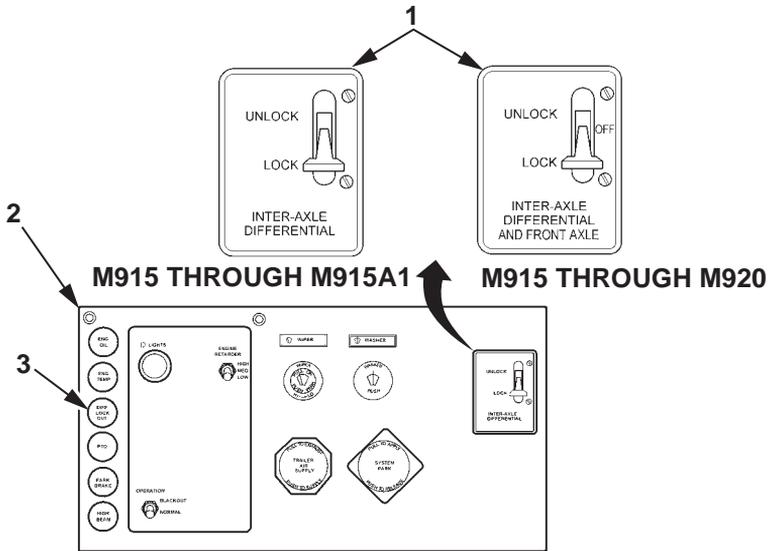


Figure 17. Inter-axle Differential Lockup Controls.

END OF TASK

OPERATING PUSHER AXLE (M917, M919, AND M920)

WARNING

Do not use the pusher axle as a step when in the raised position. When pusher axle wheels are off the ground, it freewheels. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

CAUTION

Do not use pusher axle during off-highway operations. Failure to comply may result in damage to equipment.

OPERATING PUSHER AXLE (M917, M919, AND M920) - CONTINUED

When operating the M917, M919, and M920 with payload on a highway, use (lower) pusher axle to comply with local requirements regarding maximum allowable load per axle.

Lowering Pusher Axle

1. Rotate CONTROL PRESSURE valve knob (Figure 18, Item 1) to the full left position (toward -) until pressure gauge (Figure 18, Item 2) reads 0 psi.
2. Place pusher axle control lift knob (Figure 18, Item 3) in AXLE DOWN position.

Adjusting Load On Pusher Axle

1. Refer to pusher axle air pressure load chart located in vehicle glove box (Figure 19 or 20) and determine required pressure setting.
2. Rotate CONTROL PRESSURE valve knob (Figure 18, Item 1) right (toward +) until pressure gauge (Figure 18, Item 2) indicates proper pressure setting for desired load.
3. Using screw driver, tighten setscrew (Figure 18, Item 4) at center of CONTROL PRESSURE valve knob (Figure 18, Item 1) to lock knob in position at selected pressure.
4. With setscrew (Figure 18, Item 4) tightened at selected pressure, CONTROL PRESSURE valve knob (Figure 18, Item 1) can be closed (toward -) and reset to previous setting.

Raising Pusher Axle

1. Place pusher axle control lift knob (Figure 18, Item 3) in AXLE LIFT position. This should be done when turning sharp corners to shorten turning radius and avoid dragging tires. This can be done when the vehicle is in motion.

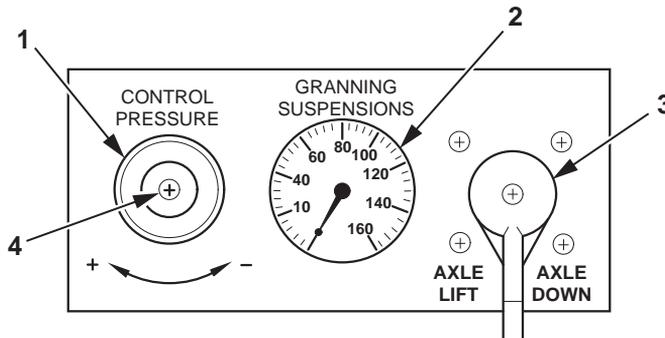


Figure 18. Pusher Axle Controls.

OPERATING PUSHER AXLE (M917, M919, AND M920) - CONTINUED

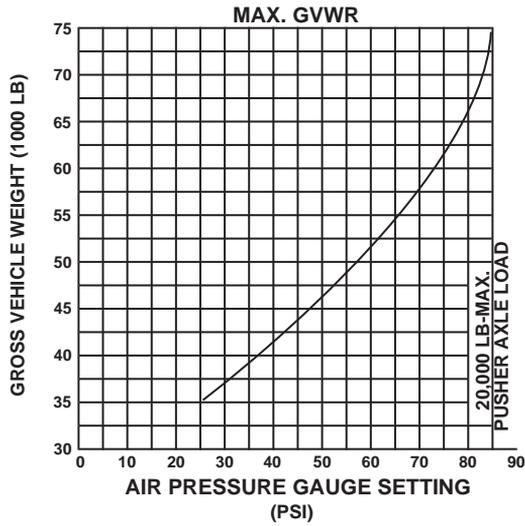


Figure 19. M917 & M919 Pusher Axle Air Pressure for Vehicle Weight Load Chart.

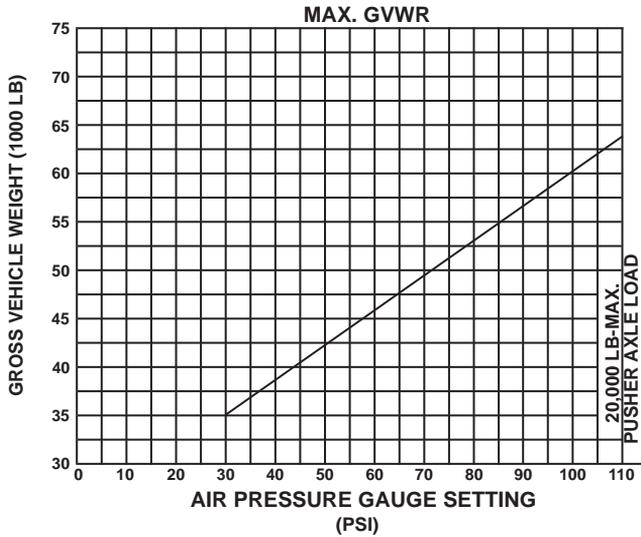


Figure 20. M920 Pusher Axle Air Pressure for Vehicle Weight Load Chart.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATION UNDER USUAL CONDITIONS
STOPPING, SHUTTING DOWN ENGINE, AND PARKING VEHICLE**

INITIAL SETUP:**References**

WP 0005
WP 0010

STOPPING, SHUTTING DOWN ENGINE, AND PARKING VEHICLE**WARNING**

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

CAUTION

Before shutting down the engine, idle (550–650 rpm) with no load for at least 3 minutes to allow turbocharger to cool. Cooling time will depend on how hard the engine has been worked. Failure to comply may result in damage to equipment.

To stop vehicle, perform the following:

1. Release accelerator pedal, refer to WP 0005.
2. Allow reduction in engine RPM and automatic downshifting of transmission to help slow vehicle, refer to WP 0010.
3. Apply service brakes to bring tractor to complete stop, refer to WP 0005.
4. Continue to depress and hold service brake pedal, shift transmission control lever to neutral (N) position, and apply parking brakes, refer to WP 0010.
5. Idle engine for at least 3 minutes to allow turbocharger to cool.
6. Turn OFF engine run switch, refer to WP 0005.

STOPPING, SHUTTING DOWN ENGINE, AND PARKING VEHICLE - CONTINUED**WARNING**

Never park tractor on a steep grade. It is never good practice to park a heavy truck on a steep slope even when parking brake holding capability exceeds federal safety standards. Failure to comply may result in tractor moving unexpectedly, damage to equipment, and injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

Parking brakes will provide sufficient holding force if parked on a normal, level surface.

To park the vehicle, perform the following:

1. Stop truck.
2. Pull parking brake control knob (WP 0005).
3. If truck is parked on normal surfaces, parking brakes will provide sufficient holding force.
4. If truck is parked on unusual surfaces, chock wheels and take any other steps to keep vehicle from moving.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATION UNDER USUAL CONDITIONS
FIFTH WHEEL OPERATION AND COUPLING AND UNCOUPLING TRAILERS**

INITIAL SETUP: Not Applicable

This work package covers fifth wheel operation and all procedures involved with coupling and uncoupling trailers for the M915, M916, M920, and M915A1 tractors. All tractors are similar, but the M915A1 is equipped with a cab controlled sliding fifth wheel and the M916 and M920 are equipped with a winch for use with light and medium equipment trailers.

M915 FIFTH WHEEL OPERATION**WARNING**

All personnel must stand clear of tractor and trailer during coupling operations. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

The M915 line haul tractor is equipped with a 36 in. (91.4 cm) fore and aft oscillating fifth wheel for use with a 2 in. (50.8 mm) kingpin. The single oscillating fifth wheel will pitch 15 degrees forward and 10 degrees aft. It is rated at 40,000 lb (18,144 kg) vertical load and 150,000 lb (68,000 kg) drawbar pull. There are two manual kingpin lock release handles on the right side of the fifth wheel as shown in figure 1. The primary release handle must be pulled first before releasing the secondary handle to uncouple the trailer.

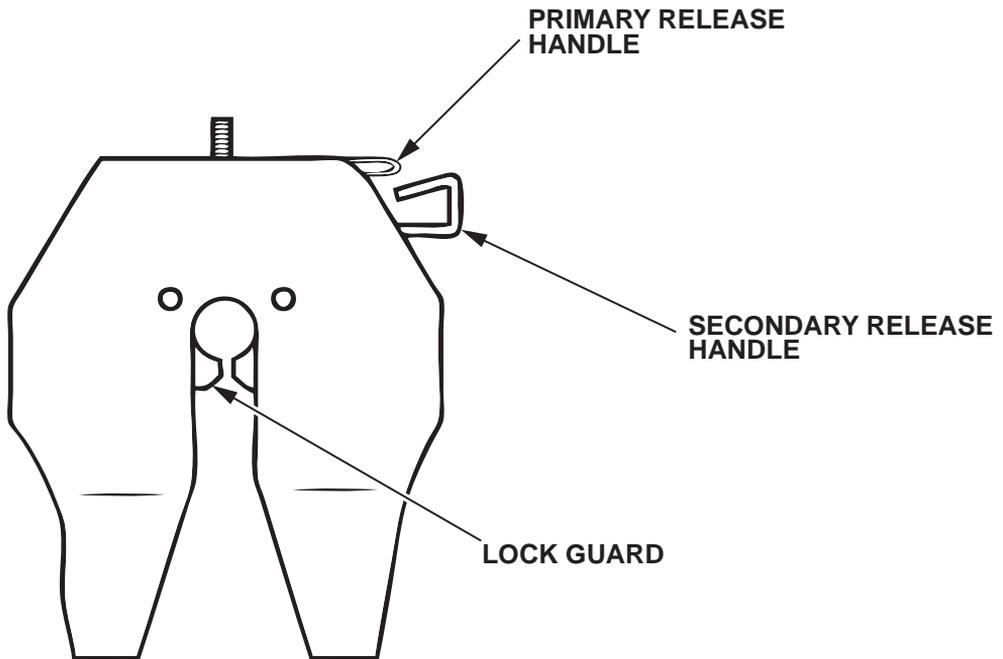


Figure 1. M915 Fifth Wheel Controls.

END OF TASK

M916 AND M920 FIFTH WHEEL OPERATION**WARNING**

All personnel must stand clear of tractor and trailer during coupling operations. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

The M916 and M920 equipment transporter tractors are equipped with a 36 in. (91.4 cm) four way oscillating fifth wheel for use with a 3.5 in. (88.9 mm) kingpin. It is rated at 70,000 lb (31,752 kg) vertical load and 200,000 lb (90,720 kg) drawbar pull. There are two manual kingpin lock release handles on the left side of the fifth wheel as shown in figure 2. The secondary release handle must be pulled first before releasing the primary handle.

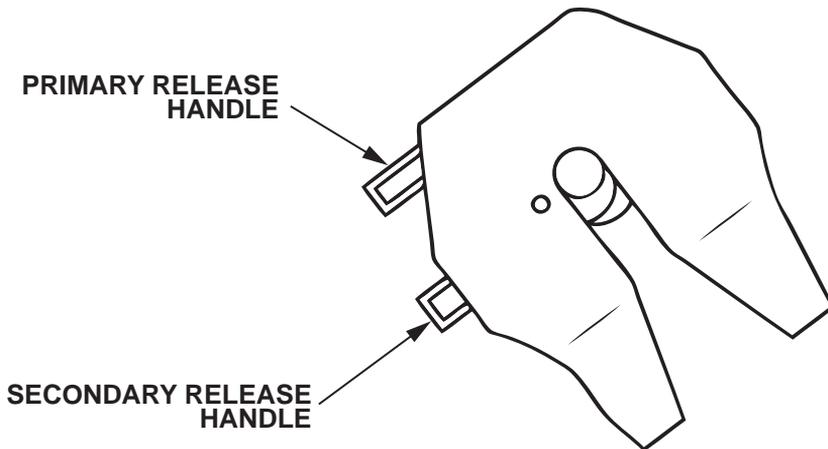


Figure 2. M916 and M920 Fifth Wheel Controls.

END OF TASK

M915A1 FIFTH WHEEL OPERATION**WARNING**

To avoid unintentional fifth wheel movement during tractor operation, always ensure fifth wheel control is in the LOCK position before placing tractor in normal operation. Failure to comply may result in damage to equipment and serious injury or death to personnel. Seek medical attention in the event of an injury.

Never move fifth wheel control to the UNLOCK position during normal tractor operation. Failure to comply may result in loss of control, damage to equipment, and serious injury or death to personnel. Seek medical attention in the event of an injury.

All personnel must stand clear of tractor and trailer during coupling operations. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

The M915A1 truck tractor is equipped with a cab controlled sliding fifth wheel for use with trailers having a 2 in. (50.8 mm) diameter kingpin. The fifth wheel is 36 in. (91.4 cm) in diameter and can oscillate or pitch 15 degrees fore and aft. Rated vertical load capacity is 40,000 lb (18,144 kg). Drawbar pull capacity is 150,000 lb (68,039 kg). There are two kingpin lock releases on the left side of the fifth wheel, as shown in figure 3. To uncouple trailer kingpin from the fifth wheel, first pull the primary lock release handle, then pull the secondary lock release handle.

Moving fifth wheel control lever inside the cab to the UNLOCK position operates an air cylinder under the fifth wheel which allows it to travel on the slide track a total of 12 in. (30.5 cm) forward or backward. This feature allows for adjustment of the amount of cargo load carried by the rear tandem axles, within rated capacity.

With trailer coupled to the fifth wheel and the control in the UNLOCK position, adjustment is made by driving forward or backward slowly with the trailer brake hand control applied. After sliding adjustment is made, move fifth wheel control lever to the LOCK position and release trailer brake hand control.

Use of the sliding fifth wheel for axle weight distribution requires scales to determine weight placed on each axle of the tractor and trailer. The normal position of the sliding fifth wheel is between the two rear tandem axles of the tractor with an unloaded or loaded trailer. From this starting position, weight on the front axle of the tractor can be increased by moving the sliding fifth wheel forward, and decreased by moving the sliding fifth wheel backward. See normal location decals on both sides of the fifth wheel assembly for correct positioning when towing the M872 trailer.

M915A1 FIFTH WHEEL OPERATION - CONTINUED

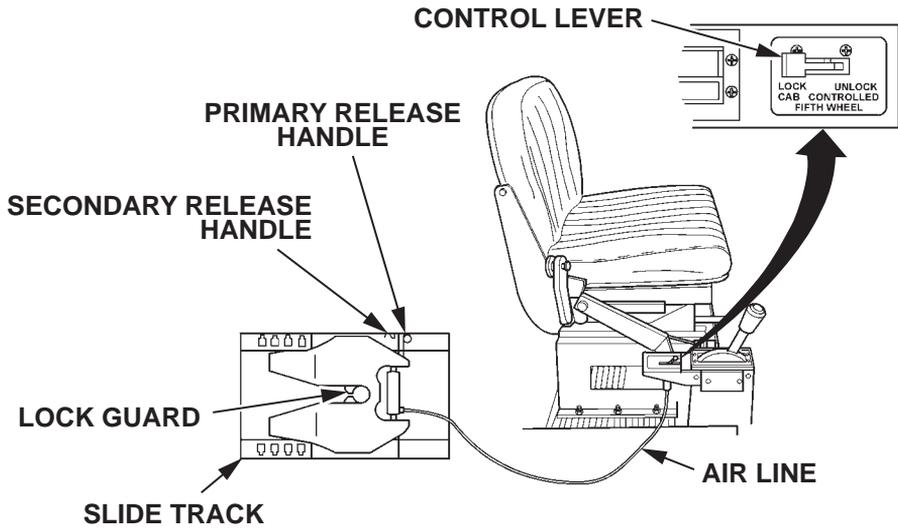


Figure 3. M915A1 Fifth Wheel Controls.

END OF TASK

CHOCKING TRAILER WHEELS BEFORE COUPLING**CAUTION**

Use chock blocks on trailers equipped with chock blocks.
Failure to comply may result in damage to equipment.

Remove chock blocks from brackets and place as specified below.

UPHILL GRADE

Place chock blocks behind wheels on both sides of axle.

DOWNHILL GRADE

Place chock blocks on front of wheels on both sides of axle.

LEVEL GROUND

Chock front wheels of one axle and the rear side on the opposite side of axle.

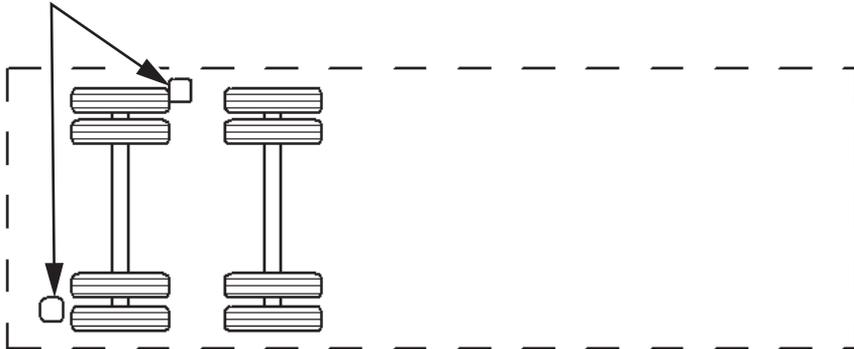
CHOCK BLOCKS

Figure 4. Chock Block Placement (Level Ground).

END OF TASK

EQUIPMENT CHECKS

Check tractor and trailer as follows before backing tractor under trailer.

1. Visually check fifth wheel for cracked, damaged, or missing parts.
2. Check mountings for good condition and mounting bolts for tightness.
3. Ensure all moving parts and top of fifth wheel are properly lubricated.
4. Check lock guard for proper operation. Notify your supervisor to have lock guard replaced if damaged or missing.
5. Ensure both primary and secondary lock release handles are pulled out and lock guard is open to accept trailer kingpin.
6. Ensure fifth wheel ramps are down, level with, or slightly below, angle of trailer pickup ramps.
7. Adjust trailer height so fifth wheel picks up trailer on fifth wheel ramps.
8. On the M915A1, ensure sliding fifth wheel control lever is in LOCK position.

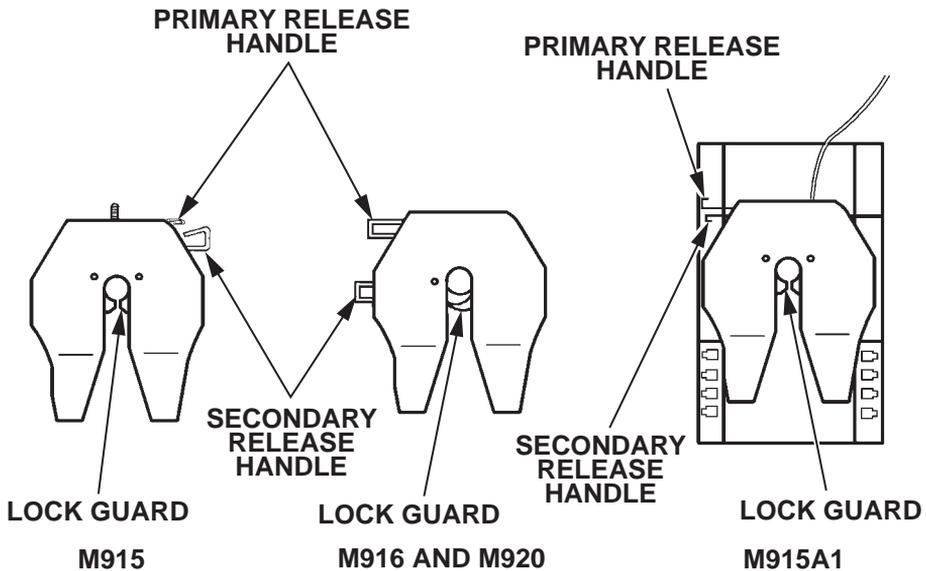


Figure 5. Fifth Wheel Equipment Checks.

END OF TASK

COUPLING AND CONNECTING TRACTOR TO TRAILER**WARNING**

Ensure no one is standing behind tractor or trailer during the coupling procedure. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

Ensure the kingpin couples with the fifth wheel. Failure to comply may result in damage to equipment, and possible injury or death to personnel. Seek medical attention in the event of an injury.

CAUTION

Ensure the kingpin does not contact fifth wheel ramps when coupling. Failure to comply may result in damage to equipment.

For M915A1 the M967/M969 fuel tankers must be hauled with fifth wheel placed two notches rearward from HAUL position. Failure to comply may result in damage to equipment.

NOTE

Two lamp cables, one 12V and one 24V, are stored in the tool box under the passenger seat. The cover at either end of the 24V cable should be locked in the open position, by sliding the metal tab back, before connecting the lamp cable.

1. Ensure tractor is centered in front of trailer at centerline as shown in figure 6.
2. Back tractor under trailer gooseneck until fifth wheel ramps meet trailer kingpin in throat of fifth wheel.
3. Stop, shift to neutral (N), and apply parking brake.
4. Verify correct alignment as shown in figure 6.
5. Ensure contact between trailer and fifth wheel ramps. If kingpin is positioned too high, it will not engage fifth wheel correctly.
6. Connect trailer service and emergency air hoses on tractor pressure couplings.
7. Enter cab and push in trailer air supply control knob and set trailer brake hand control.
8. Release parking brake control.
9. Shift transmission control lever to reverse (R) and back up until fifth wheel locks firmly on kingpin.
10. Shift transmission control lever to first gear (1) and pull against load with trailer brake hand control set. This applies pressure against kingpin and provides a test to ensure a secure coupling.
11. Set parking and service brakes.
12. Release trailer brake hand control and shift transmission control lever to neutral (N).

COUPLING AND CONNECTING TRACTOR TO TRAILER - CONTINUED

13. Leave cab and verify primary and secondary release controls on fifth wheel are in and fifth wheel has not moved from position selected.
14. Kingpin must be in fifth wheel locks. Daylight should not be seen between upper fifth wheel plate of trailer and fifth wheel.
15. Ensure kingpin is not hooked over front of fifth wheel.
16. Lift and secure trailer landing gear and stow crank handle in holder.
17. Connect necessary lamp cables, 12V for normal lamps and/or 24V for blackout lamp operation.
18. Check operation of trailer lights.
19. Using hand control in cab, check operation of trailer brakes.
20. Check all tires.
21. Ensure air supply is adequate before starting out.

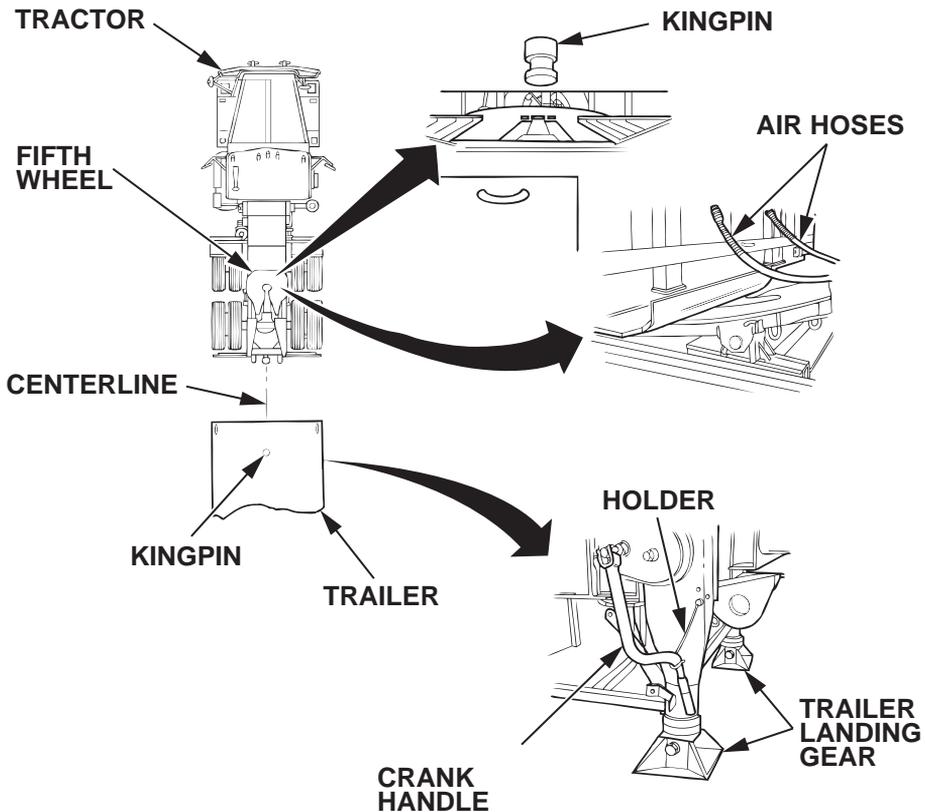


Figure 6. Tractor and Trailer Coupling.

COUPLING AND CONNECTING TRACTOR TO TRAILER - CONTINUED

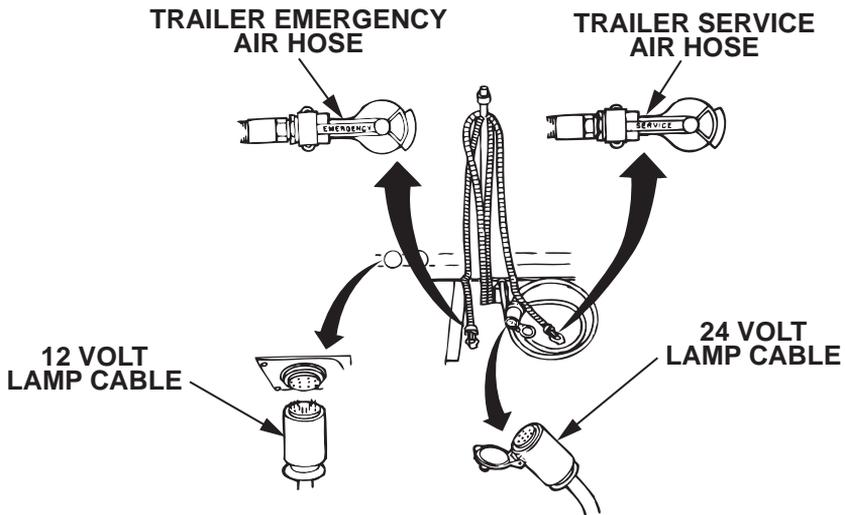


Figure 7. M915, M916, and M920 Air Hose and Cable Connections.

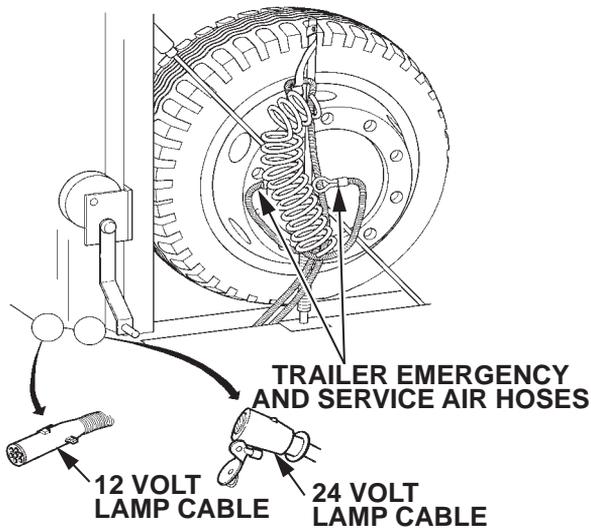


Figure 8. M915A1 Air Hose and Cable Connections.

END OF TASK

CHOCKING TRAILER WHEELS BEFORE UNCOUPLING**CAUTION**

Use chock blocks on trailers equipped with chock blocks.
Failure to comply may result in damage to equipment.

Remove chock blocks from brackets and place as specified below.

UPHILL GRADE

Place chock blocks behind wheels on both sides of axle.

DOWNHILL GRADE

Place chock blocks on front of wheels on both sides of axle.

LEVEL GROUND

Chock front wheels of one axle and the rear side on the opposite side of axle.

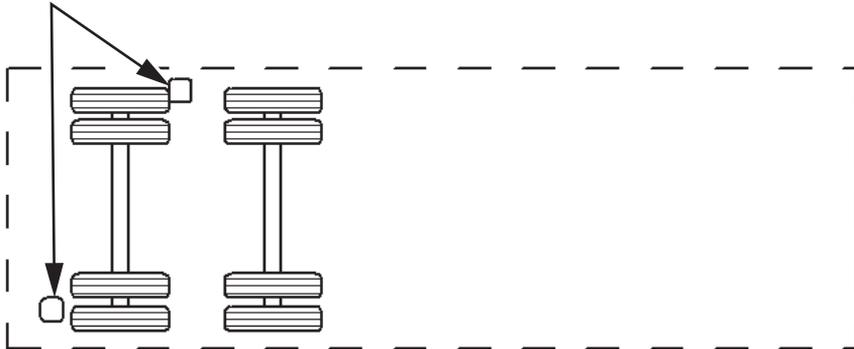
CHOCK BLOCKS

Figure 9. Chock Block Placement (Level Ground).

END OF TASK

UNCOUPLING AND DISCONNECTING TRACTOR FROM TRAILER**CAUTION**

M967/M969 fuel tankers must be hauled with fifth wheel placed two notches rearward from HAUL position. Failure to comply may result in damage to equipment.

1. Shift transmission control lever to neutral (N) and apply parking brake. Verify that parking brake indicator lamp comes on. This prevents tractor from running out from under trailer when unlocking fifth wheel.
2. Pull out trailer air supply valve.
3. Leave cab and block trailer wheels with chocks.
4. Lower trailer landing gear until bases or wheels touch ground. Turn crank two more revolutions so when trailer is uncoupled, it will not drop down sharply and will be nearly level.
5. Disconnect and secure trailer service and emergency air hoses and lamp cable(s).
6. Unlock fifth wheel by first pulling primary lock release handle and then secondary lock release handle.

CAUTION

Do not pull all the way out from under the trailer until verifying the landing gear will support the trailer. If it collapses, the rear frame area of the tractor will be able to catch the front of the trailer before equipment damage occurs.

7. Enter cab and slowly pull tractor forward until trailer kingpin is free from lock guard and landing gear is supporting trailer weight. Stop the tractor.
8. Have crew member observe trailer kingpin to ensure it clears properly during separation. Ensure kingpin clears tractor rear frame crossmember when pulling tractor out from under trailer.
9. Pull tractor slowly forward, allowing the trailer gooseneck and kingpin to completely clear the rear frame area of tractor.

UNCOUPLING AND DISCONNECTING TRACTOR FROM TRAILER - CONTINUED

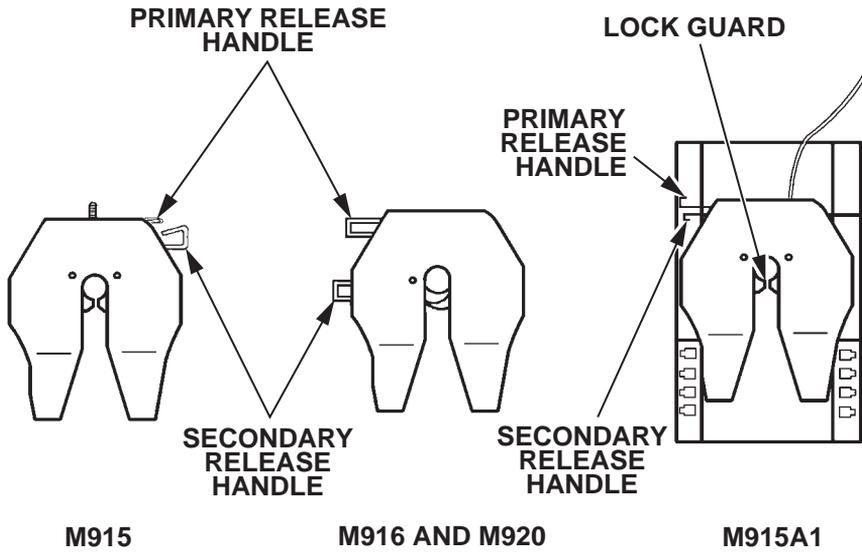


Figure 10. Fifth Wheel Controls.

END OF TASK

PINTLE TOWING

1. Attach trailer or tow bar to pintle hook.
2. Connect trailer or vehicle electrical lamp cables to electric lamp cable receptacle at rear of tractor.
3. Connect trailer air hoses to air hose quick disconnect couplings at rear of tractor.

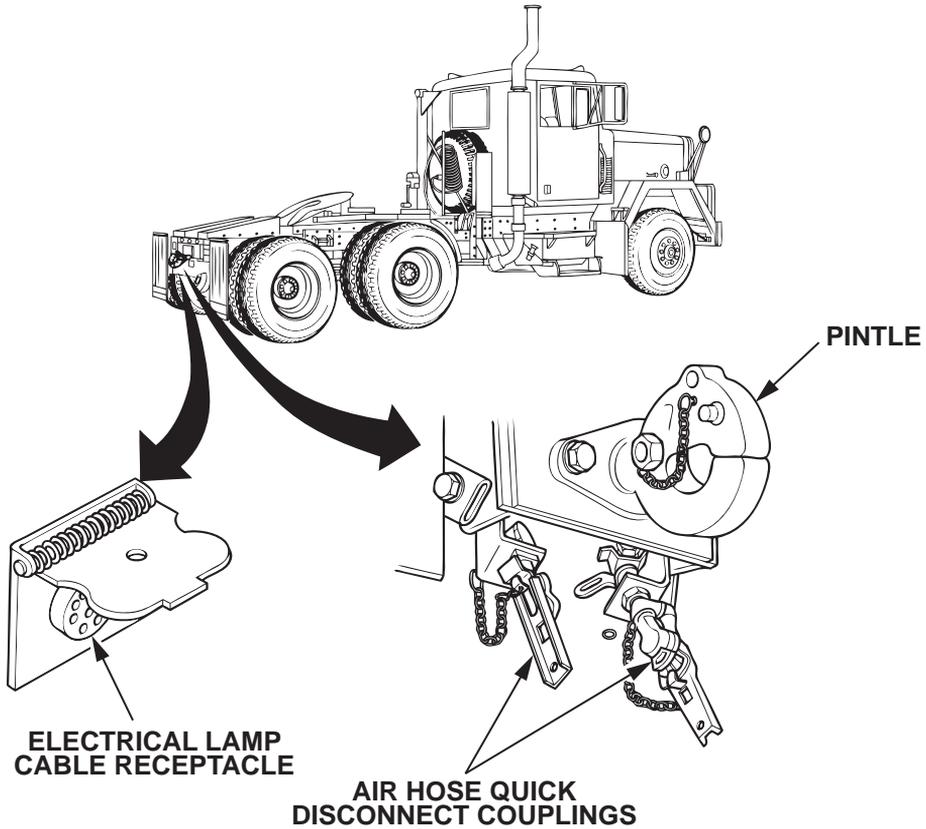


Figure 11. Pintle Towing Trailer Connections.

END OF TASK

MUD FLAP STOWAGE**NOTE**

When towing an M127 trailer, the rear mud flaps must be removed from normal position and stowed on stowage brackets.

1. Remove retaining pin from each mud flap.

NOTE

It may be necessary to tap upward on the mud flap spring with a hammer or similar tool.

2. Remove mud flaps by pulling up on spring.
3. Insert mud flaps in stowage brackets on right frame rail.
4. Insert retaining pins in springs.
5. When towing operations are complete, install mud flaps and retaining pins in normal position.

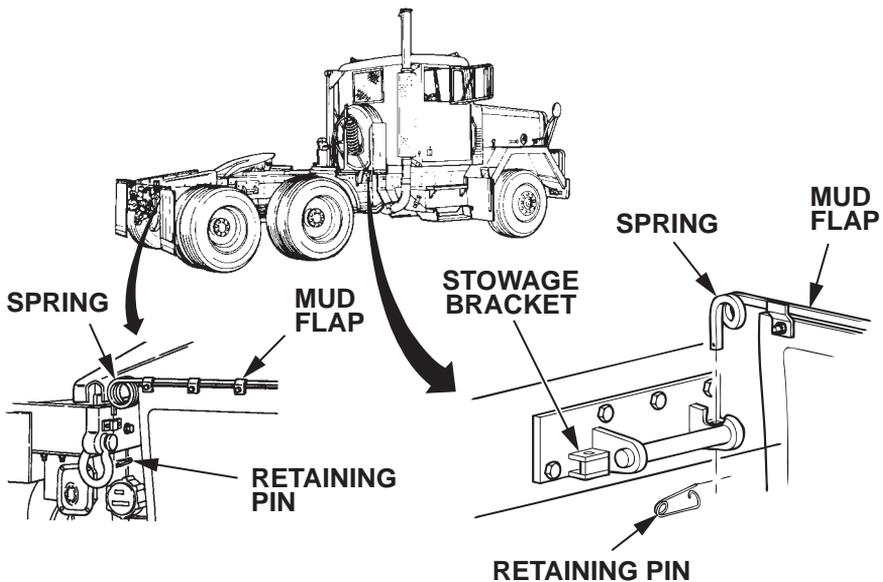


Figure 12. Mud Flap Stowage.

END OF TASK

**PREPARATION FOR LOADING LIGHT AND MEDIUM EQUIPMENT TRAILERS
(M916 AND M920)**

1. Align tractor and semi-trailer as close as possible to front of payload equipment.
2. Place transmission ratio selector in neutral (N).
3. Apply parking brakes.
4. Prepare semi-trailer for loading.

END OF TASK**WINCH (M916 AND M920)**

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 automatically sets 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 2,100 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 lb (20,250 kg).

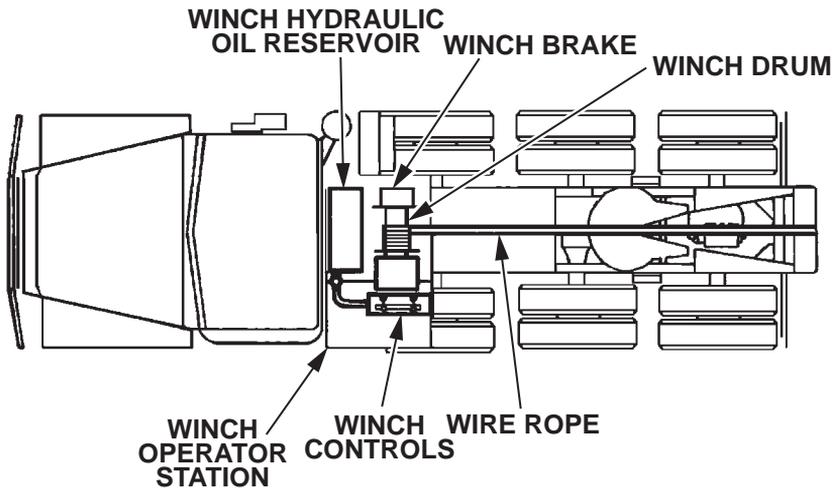


Figure 13. Winch Components.

END OF TASK

WINCH CONTROLS (M916 AND M920)

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

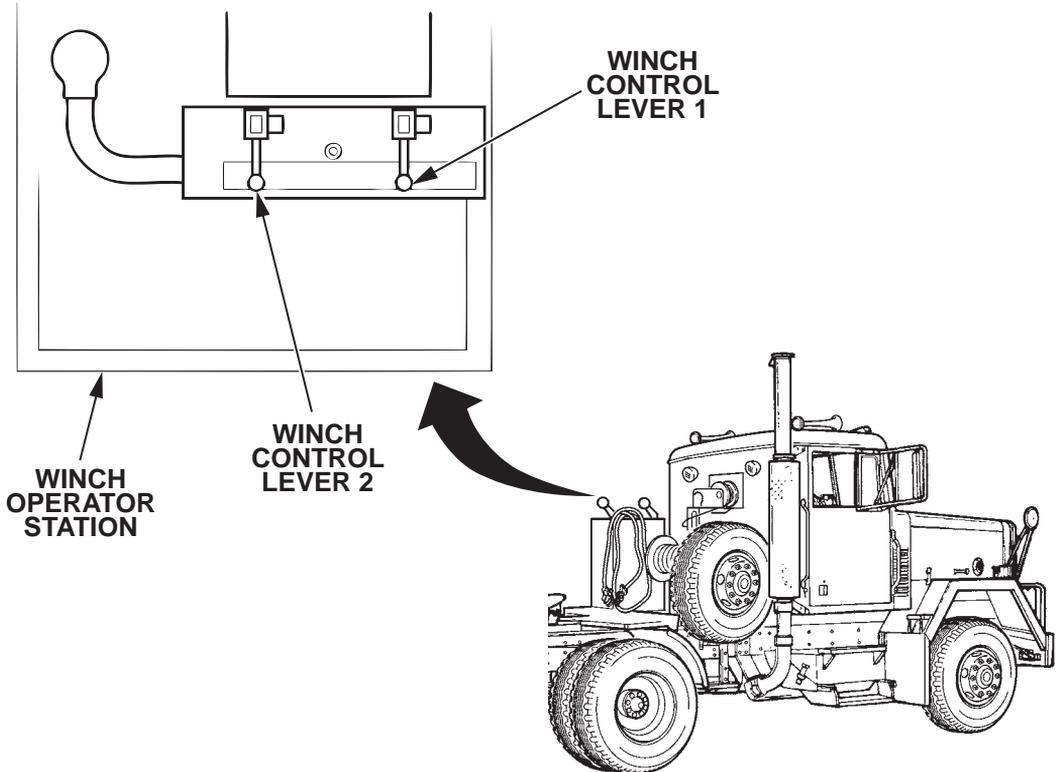


Figure 14. Winch Controls.

END OF TASK

**OPERATING WINCH AT TEMPERATURES BELOW -25° F (-32° C)
(M916 AND M920)****CAUTION**

Avoid winching operations that cause sudden shock loads. At extremely cold temperatures, metals become brittle and sudden shock loads can cause equipment damage. Failure to comply may result in damage to equipment.

1. After the winch has been serviced by Field Maintenance and before operating the winch, warm up hydraulic system by engaging PTO and operating tractor at fast idle for 30 minutes.
2. After warming hydraulic system, operate the winch in no-load condition by paying out about 100 feet of the wire rope at low speed. Take up the wire rope at low speed. Winch should be ready for normal operation.

END OF TASK**ENGAGING POWER TAKE-OFF (PTO) FOR WINCH OPERATION (M916 AND M920)****WARNING**

Hearing protection is required during winching operations. Failure to comply may result in damage to hearing. Seek medical attention in the event of an injury.

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 Field Maintenance. Seek medical attention in the event of an injury.

CAUTION

The winch is not to be used for moving or lifting people. Do not shift the transmission with the power take-off (PTO) engaged. The gears stop during shifting, which could cause excessive loading of power take off. Failure to comply may result in damage to equipment.

Keep engine speed above 1,100 rpm after engaging PTO. Failure to comply may result in damage to equipment.

1. Place transmission ratio selector in neutral (N).
2. Operate engine at low idle and set parking brakes.
3. Move ratio selector to 1st speed and pull PTO knob to engage the PTO. Return ratio selector back to neutral (N).

**ENGAGING POWER TAKE-OFF (PTO) FOR WINCH OPERATION (M916 AND M920)
- CONTINUED**

- At the winch control panel, increase engine speed to desired speed ABOVE 1,100 rpm. Normal operation is 2,100 rpm.

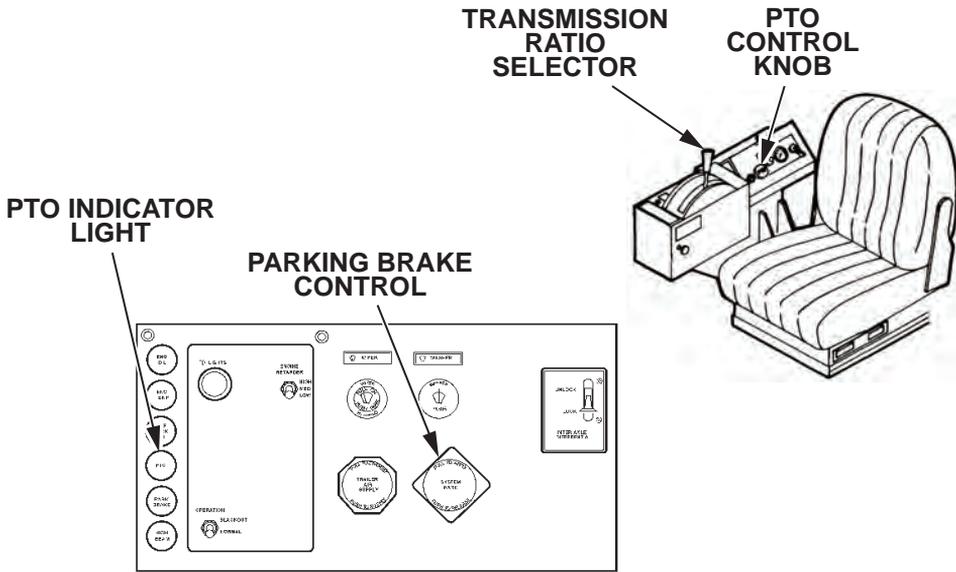


Figure 15. PTO Control Knob and Indicator Light.

END OF TASK

OPERATING WINCH (M916 AND M920)**WARNING**

Hearing protection is required during winching operations. Failure to comply may result in damage to hearing. Seek medical attention in the event of injury.

Always wear heavy gloves when handling the winch wire rope. Never allow the cable to run through your hands as broken wires can cause painful injuries. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

CAUTION

Do not pull up on control lever 2. This position is for operating equipment not used on the M915 series vehicles. Failure to comply may result in damage to equipment.

Observe drum to ensure wire rope is not completely paid out. Never operate winch with less than four turns of line on drum. Failure to comply may result in damage to equipment.

NOTE

The rated winch pull is set by limiting the hydraulic system relief valve pressure to a maximum of 2,100 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)

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

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

1. Lower pusher axle.
2. Have crew member disconnect the wire rope clevis from its anchor.
3. Pull up on winch control lever 2 to the middle position.
4. To pay out the line, pull up and hold winch control lever 1 in full up position. The winch will unwind in low speed. Have crew member walk end of the wire rope out.

OPERATING WINCH (M916 AND M920) - CONTINUED**NOTE**

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

5. To run winch in high speed, push down and hold winch control lever 2. This doubles winch speed.
6. When the desired amount of line has been paid out, stop winch by releasing both control levers.

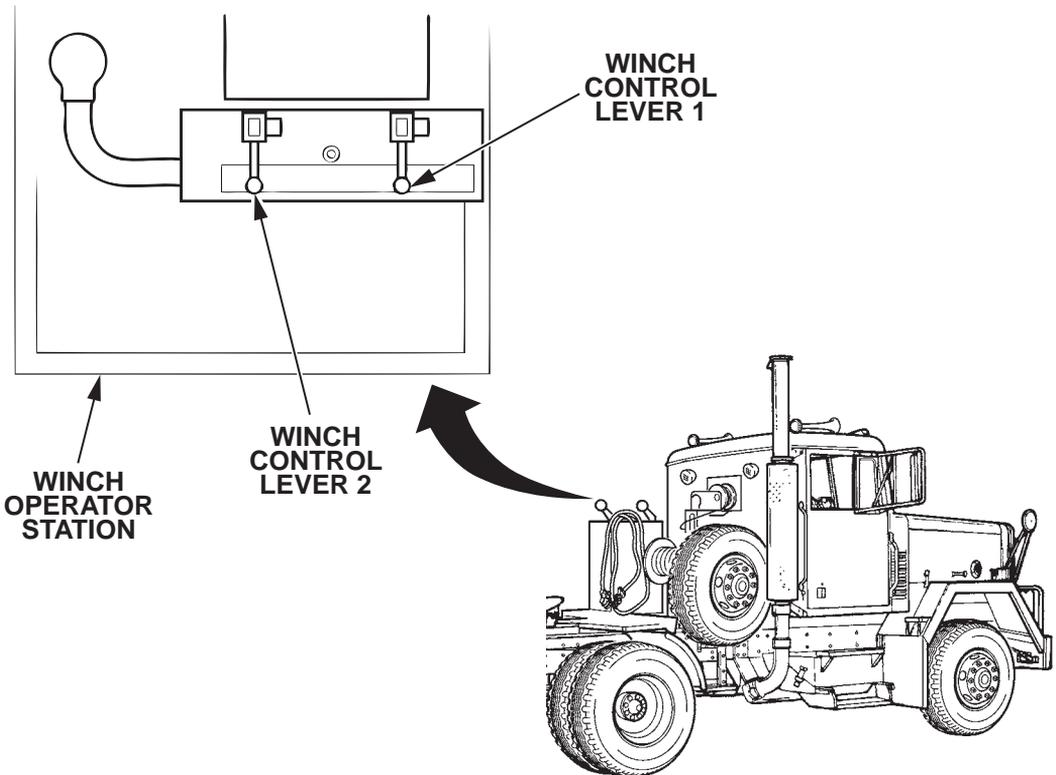


Figure 16. Winch Operator Station.

END OF TASK

SECURING WINCH WIRE ROPE (M916 AND M920)

1. Direct crew member to disconnect wire rope from payload.
2. With crew member pulling on wire rope to keep it fairly taut, begin rewinding the drum by pushing down on winch control lever 1.
3. Check that wire rope winds neatly onto drum without tangling, kinking, twisting, or overlapping. Ensure coils on the drum are tight and close together.
4. Direct crew member to signal when enough slack has been taken up to anchor the clevis.
5. Have crew member anchor wire rope clevis on winch wire rope hook.

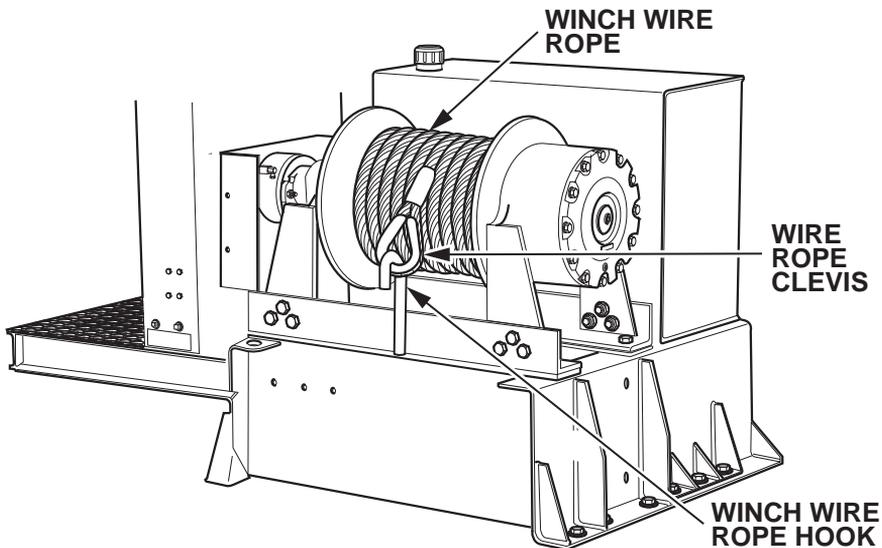


Figure 17. Securing Winch Wire Rope.

END OF TASK**NORMAL SHUTDOWN OF WINCH PTO (M916 AND M920)**

1. Release winch controls. Push in winch throttle control.
2. Reduce engine rpm using throttle control at the winch station.
3. Move PTO control to the disengage position.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER USUAL CONDITIONS
OPERATING AUXILIARY EQUIPMENT**

INITIAL SETUP:**References**

WP 0003

WP 0005

References - Continued

WP 0008

TOWING PINTLE

To open pintle:

1. Remove cotter pin.
2. Move latch and lift lock to open position.

To close pintle:

1. Move latch and push lock down. Latch will engage in closed position.
2. Insert cotter pin to secure lock.

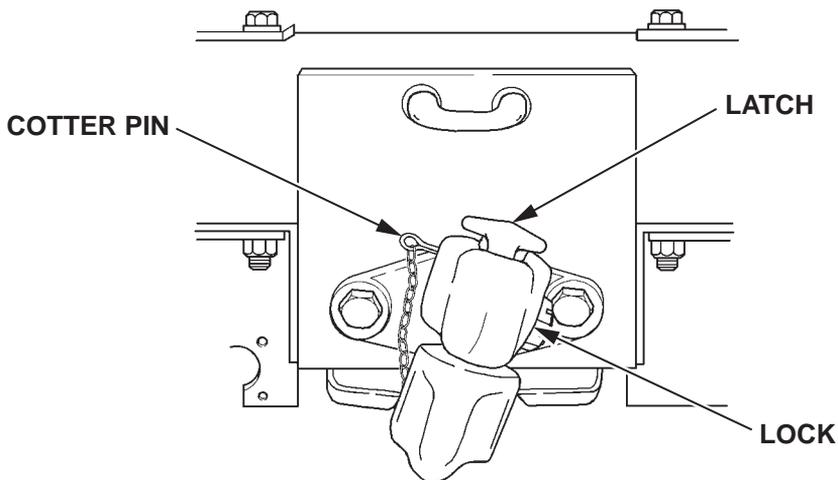


Figure 1. Towing Pintle.

END OF TASK

TIE DOWNS AND LIFTING SHACKLES**WARNING**

Improper use of lifting equipment and attachment of cables to tractor may result in injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

Lifting sling must have a weight capacity greater than the weight of the vehicle. Refer to specified vehicle weight in Equipment Description and Data (WP 0003). Failure to comply may result in injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

1. To lift truck, attach lifting sling to designated lifting shackles. Refer to figures 2 through 5.

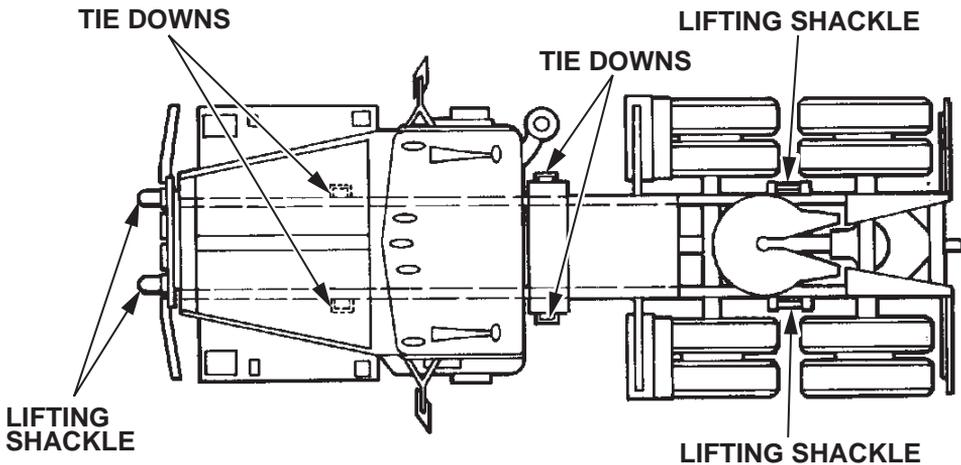
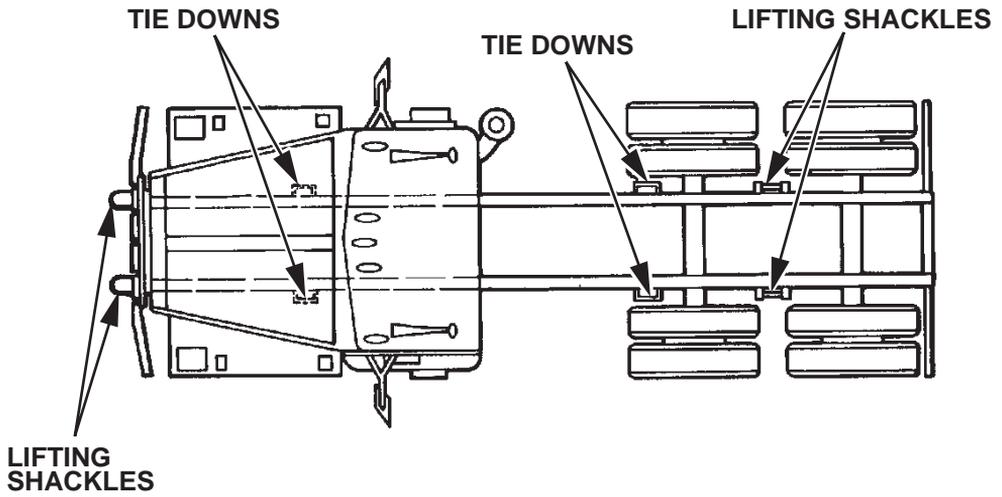
**M915**

Figure 2. M915 Towing Eyes, Lifting Shackles, and Tie Downs.

TIE DOWNS AND LIFTING SHACKLES - CONTINUED



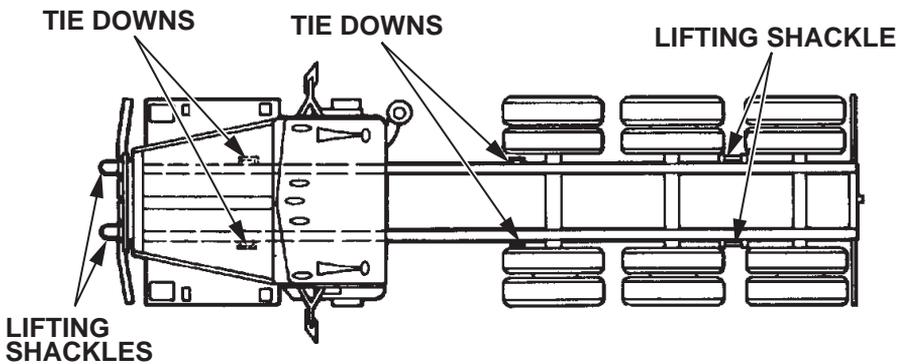
M916 AND M918

Figure 3. M916 and M918 Towing Eyes, Lifting Shackles, and Tie Downs.

TIE DOWNS AND LIFTING SHACKLES - CONTINUED**WARNING**

Ensure lifting area is clear of all non-essential personnel prior to lifting and no personnel enters during lifting operation. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

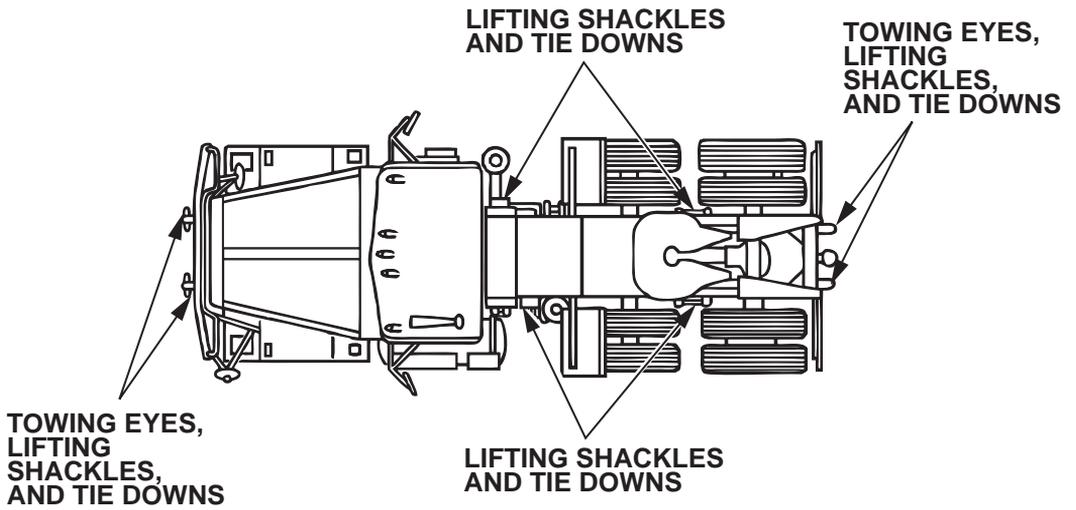
2. Lift truck slowly and have observers watch for any signs of cable failure, unusual load shifts, and obstructions.
3. During air or sea transport, secure truck by attaching cables to designated tie down points. Refer to figures 2 through 5.



M917, M919, AND M920

Figure 4. M917, M919, and M920 Towing Eyes, Lifting Shackles, and Tie Downs.

TIE DOWNS AND LIFTING SHACKLES - CONTINUED



M915A1

Figure 5. M915A1 Towing Eyes, Lifting Shackles, and Tie Downs.

END OF TASK

PORTABLE FIRE EXTINGUISHER**WARNING**

Contact with fire extinguisher chemicals may cause skin irritation. Use caution while discharging chemicals. Do not spray on or at any personnel. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. **DO NOT** have food or drink in the vicinity. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

To operate:

1. Remove extinguisher from bracket located at rear of tool box to left of passenger seat.
2. Hold extinguisher upright. Point nozzle toward base of fire and pull safety pin.
3. Press top lever, discharging chemical at base of fire. Use side-to-side motion.
4. After using fire extinguisher, notify Field Maintenance that a replacement for used extinguisher is necessary.

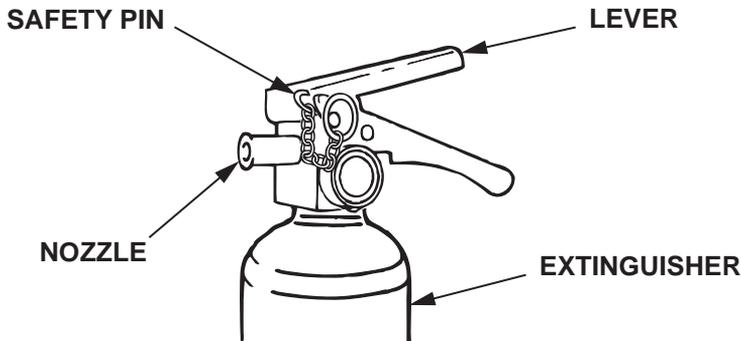


Figure 6. Fire Extinguisher.

END OF TASK

NATO SLAVE RECEPTACLE

NATO slave receptacle is mounted on side of 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.

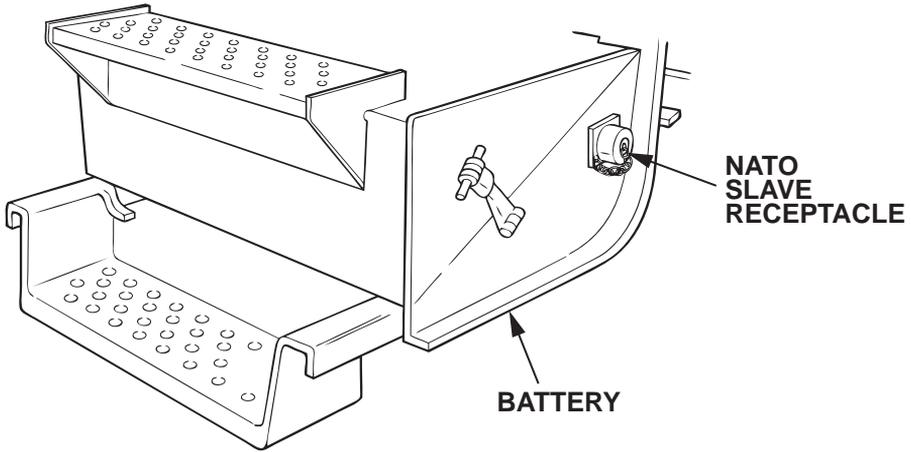


Figure 7. NATO Slave Receptacle.

END OF TASK

AIR CONDITIONING (AIR CONDITIONING KIT EQUIPPED VEHICLES ONLY)

To operate:

1. Start engine and allow engine to reach operating temperature (WP 0008).
2. Move A/C ON/OFF switch to ON position (WP 0005).
3. Adjust fan speed switch as necessary (WP 0005).
4. Adjust blower unit vents as desired.

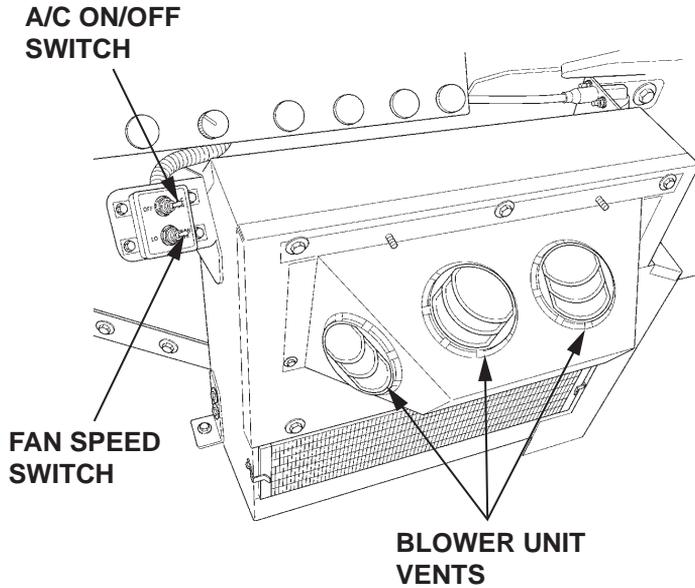


Figure 8. Air Conditioning.

END OF TASK

ESCAPE HATCH (CREW PROTECTION KIT EQUIPPED VEHICLES ONLY)

To operate:

1. Pull escape hatch latch out.

NOTE

Escape hatch latch will engage when escape hatch is moved to full open position.

2. Pull grab handle toward passenger side of cab, and slide escape hatch to full open position.

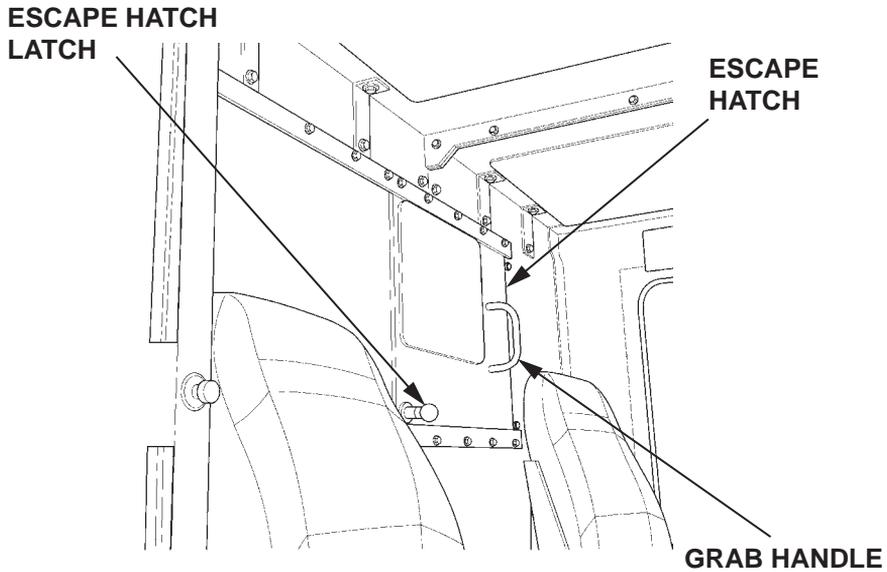


Figure 9. Opening Escape Hatch.

**ESCAPE HATCH (CREW PROTECTION KIT EQUIPPED VEHICLES ONLY) -
CONTINUED**

3. Release rear window latch, and slide rear sliding window toward passenger side of vehicle to full open position.

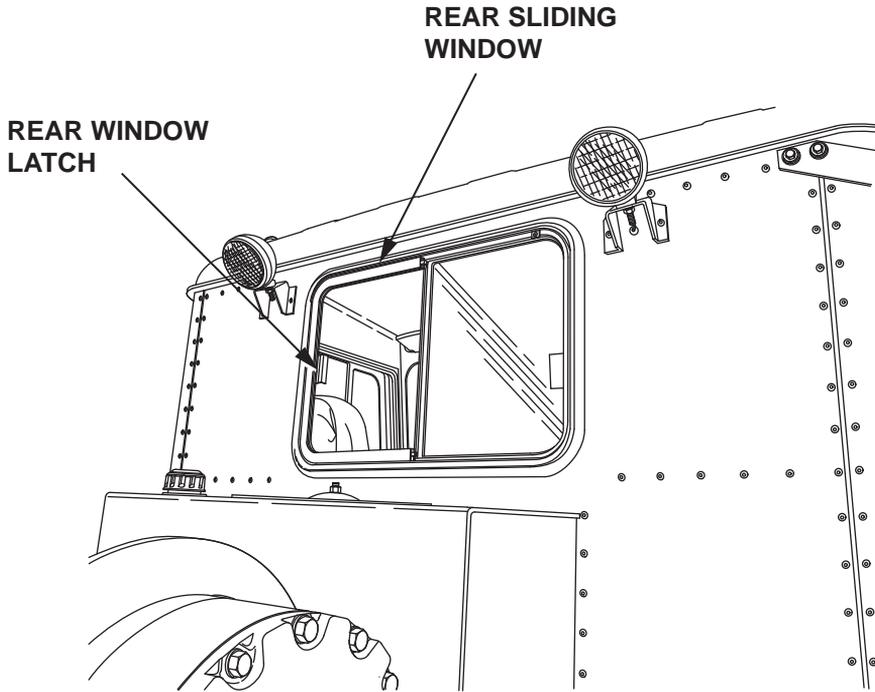


Figure 10. Opening Cab Rear Sliding Window.

**ESCAPE HATCH (CREW PROTECTION KIT EQUIPPED VEHICLES ONLY) -
CONTINUED****NOTE**

On vehicles equipped with rear window stone shield, stone shield pins can be removed from inside cab through sliding rear window.

4. On driver side of cab, remove two pins from rear window stone shield.
5. Open stone shield and exit vehicle through opening in escape hatch and sliding rear window.

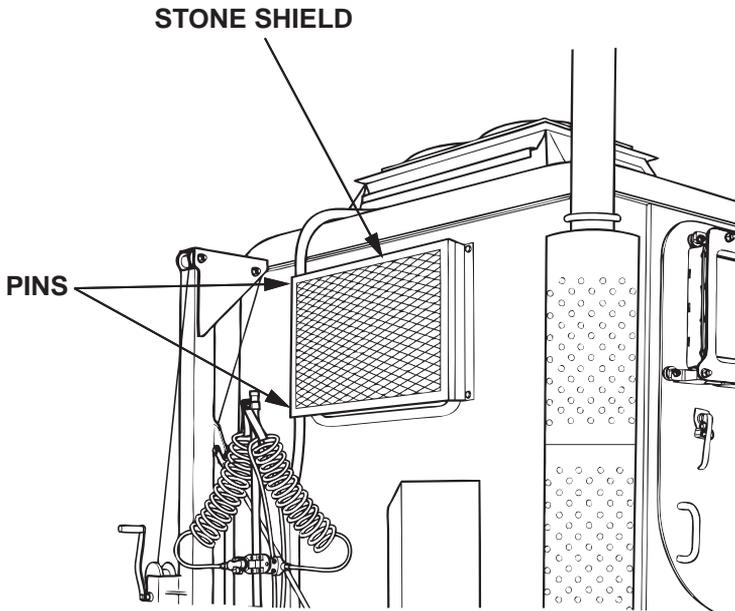


Figure 11. Opening Stone Shield.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATION UNDER USUAL CONDITIONS
DECALS AND INSTRUCTION PLATES**

INITIAL SETUP: Not Applicable

GENERAL

Locations and descriptions of data plates and decals found on the vehicles are provided under this heading. If any data plate or decal is worn, broken, unreadable, painted over, or missing, it must be replaced. Notify your supervisor.

DECALS AND INSTRUCTION PLATES

Engine Retarder Instruction Decal - This decal, located on driver sun visor, describes engine retarder operation.

Noise Emission Control Information Decal - This decal, located on driver sun visor, describes transmission operation.

Power Take-Off Instruction Decal - This decal, located on driver sun visor, describes power take-off (PTO) operation for M916 through M920 vehicles.

Transmission Instruction Decal - This decal, located on driver sun visor, describes transmission operating instructions.

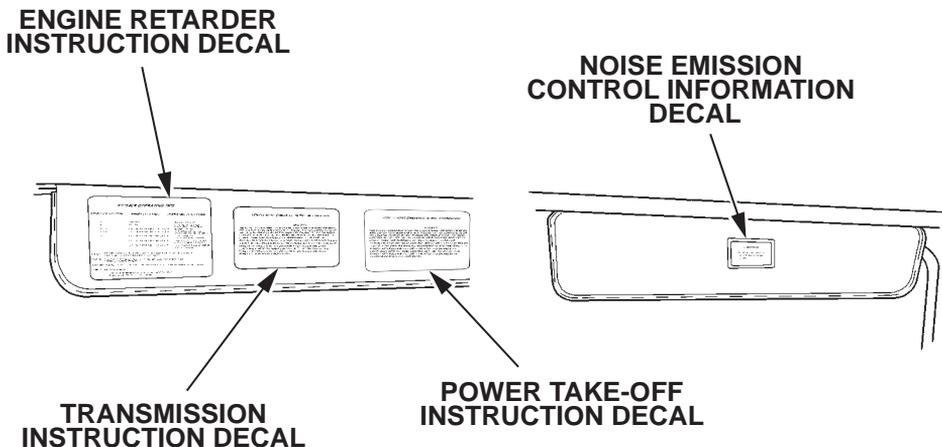


Figure 1. Sun Visor Instruction and Information Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

Transmission Oil Temperature Gauge Decal - This decal, located on instrument panel, describes transmission oil temperature gauge reading.

Ether Quick Start Instruction Decal - This decal, located on instrument panel, describes ether quick start system operation.

Differential Lockup Instruction Decal - This decal, located on instrument panel, describes inter-axle differential control operation.

Vehicle Warranty Decal - This decal, located on instrument panel, describes vehicle warranty.

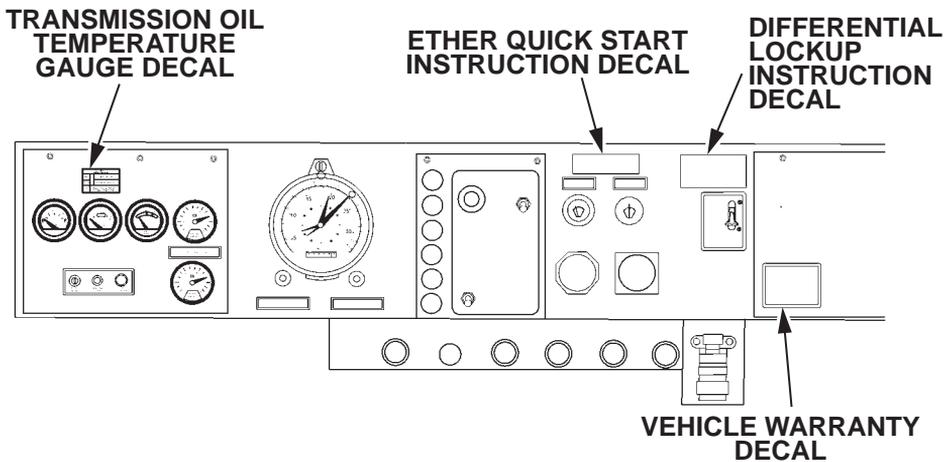


Figure 2. Instrument Panel Instruction and Information Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

Rust Proofing Data Decal - This decal, located on inside of driver door, describes vehicle rust proofing data.

Transmission Service Instructions Decal (M915 through M920) - This decal, located on inside of the driver door, describes transmission service instructions.

Towing Instruction Decal (M915A1) - This decal, located on inside of driver door, describes towing instructions.

No Spin Operating Instructions Decal (M915 through M920) - This decal, located on inside of driver door, describes no spin operating instructions.

Vehicle Identification Data - This decal, located on inside of driver door, identifies vehicle identification data.

Certification FMVSR Data - This decal, located on inside of driver door, identifies Federal Motor Vehicle Safety Regulation (FMVSR) data.

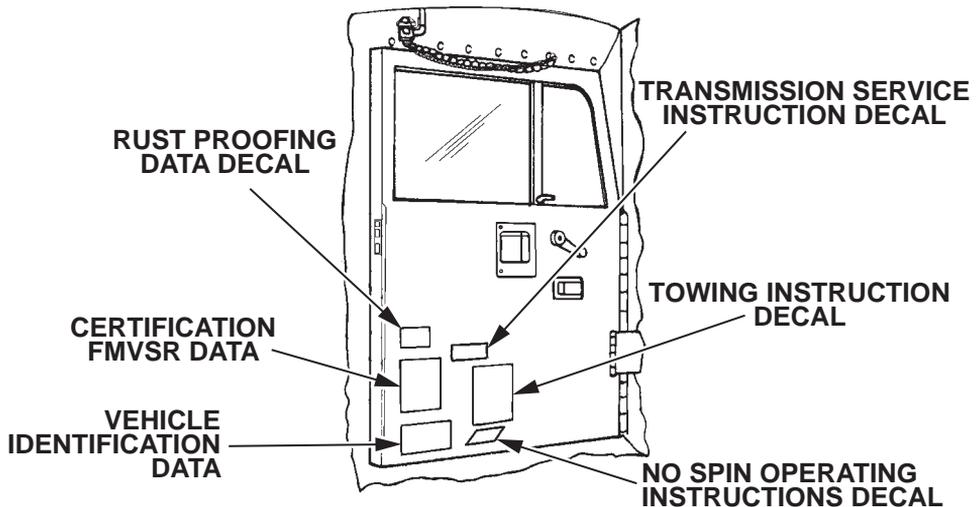


Figure 3. Driver Door Data Plates and Instruction Information Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

Relay Identification Decal (M915A1) - The decal, located below each relay, identifies the function controlled by the relay. Maintenance uses these decals to identify electrical circuits so repairs can be made.

Circuit Breaker Identification Decal (M915A1) - The decal, located under each circuit breaker, identifies them by number. Maintenance uses this decal to identify electrical circuits so repairs can be made.

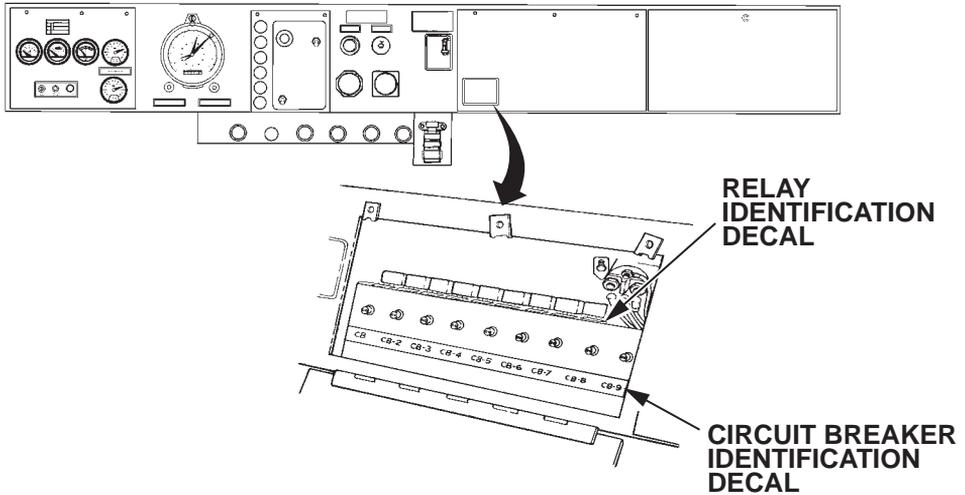


Figure 4. M915A1 Circuit Breaker and Relay Identification Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

Transmission Air Pressure Control Operating Data (M915 through M920) - This data plate, located on side of shift console, describes transmission air pressure control operating instructions.

Seat Adjustment Instruction Decals - These decals, located on side of driver seat, describe how to operate seat adjustment controls.

Transmission Operating Instructions (M915 through M920) - This data plate, located on top of shift console, describes transmission operating instructions.

Cab Controlled Fifth Wheel Instruction Data (M915A1) - This data plate, located on fifth wheel control, identifies when fifth wheel control is in Locked or Unlocked position.

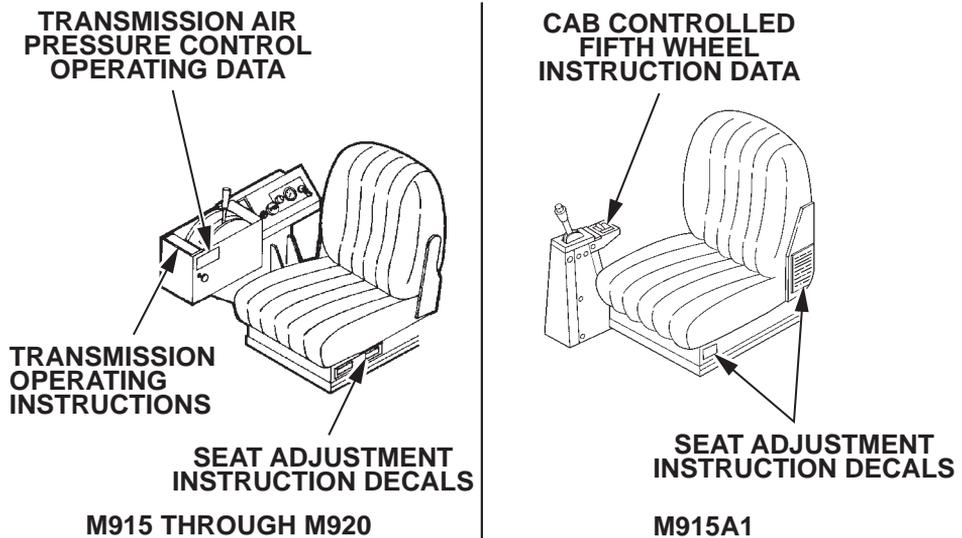


Figure 5. Driver Seat Instruction Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

Chemical, Biological, Radiological, and Nuclear (CBRN) Air Filter Warning Decal - This decal, located on the air cleaner, warns if CBRN exposure is suspected. All air filter media should be handled by personnel wearing protective equipment. Consult your unit CBRN officer or noncommissioned officer for appropriate handling or disposal instructions.

Hood Latching Safety Precautions Decal - This decal, located under the hood, describes proper instructions for raising and supporting the hood safely.

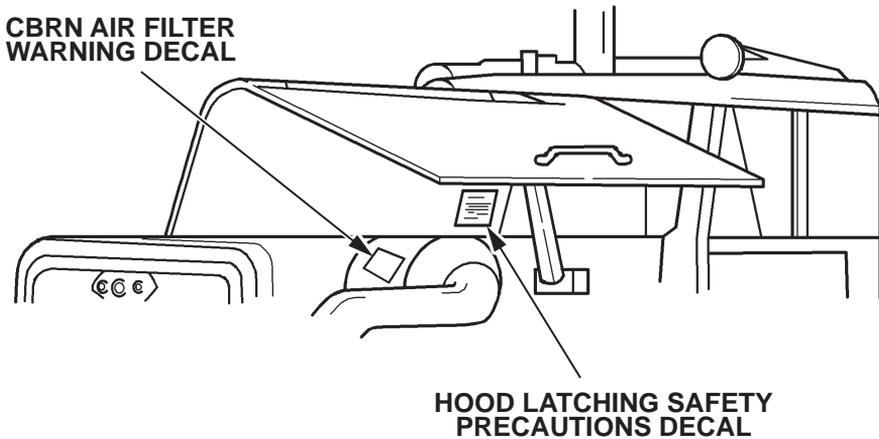


Figure 6. Engine Compartment Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

Fan Clutch Actuator Safety Precautions Decal - This decal, located on the fan shroud, alerts personnel to fan clutch actuator safety precautions.

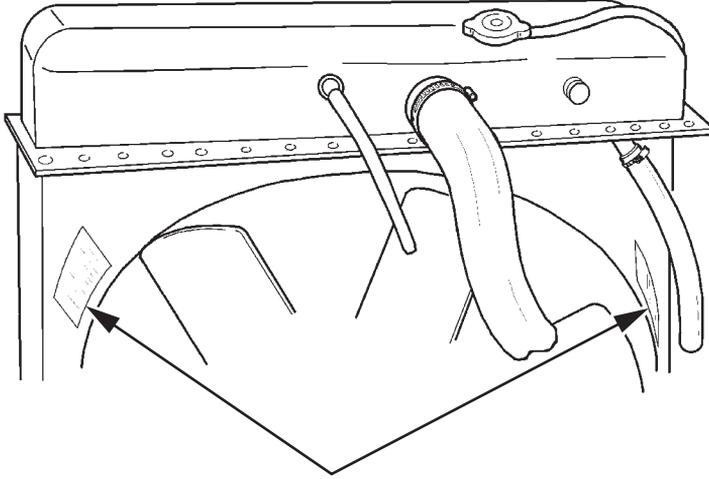
**FAN CLUTCH ACTUATOR
SAFETY PRECAUTIONS DECAL**

Figure 7. Fan Shroud Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

M872 Trailer Fifth Wheel Alignment Arrow Decals (M915A1) - These decals, located on both sides of fifth wheel, identify proper position of fifth wheel for towing the M872 trailer.

Fifth Wheel Positioning Instructions Decal (M915A1) - This decal, located on both sides of fifth wheel, describes sliding fifth operation.

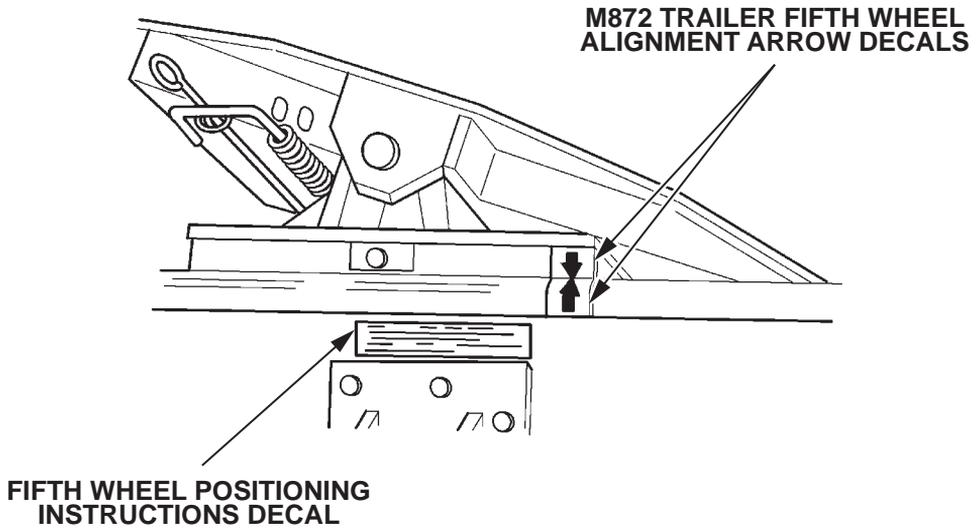


Figure 8. Fifth Wheel Decals.

DECALS AND INSTRUCTION PLATES - CONTINUED

Winch Control Operating Instructions Decal (M916 and M920) - These decals, located on top of the winch control station, describe the operation of winch controls.

Tank Capacity and Filling Instruction Decal (M916 and M920) - This decal, located on the winch hydraulic reservoir tank, identifies tank capacity and instructions for filling tank to the proper level.

Winch Identification Data Plate (M916 and M920) - This data plate, located on right side of winch frame, lists the winch manufacturer, model number, and serial number.

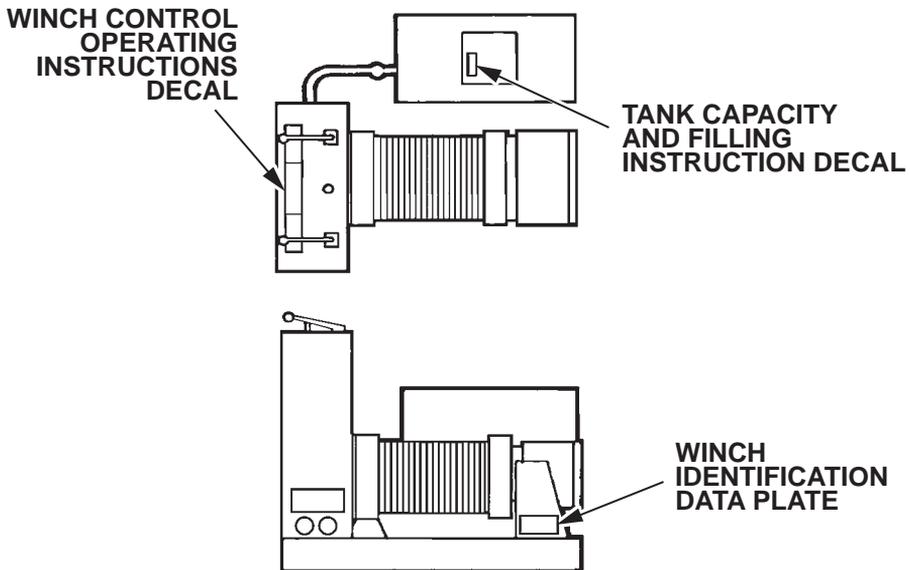


Figure 9. Winch Decals and Data Plates.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:**References**

AR 70-1
FM 55-30
FM 21-305
WP 0013
WP 0016
WP 0017

References - Continued

WP 0018
WP 0019
WP 0020
WP 0021
WP 0034

WARNING

This vehicle has been designed to operate safely and efficiently within the limits specified in the TM in accordance with (IAW) AR 70-1. Operation beyond these limits without written approval from the Commander, U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-CG, Warren, MI 48397-5000, is prohibited. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

GENERAL

NOTE

For maintenance under unusual conditions, refer to WP 0034.

This work package (WP), and WP 0016 through WP 0021 and WP 0034, provide operating and maintenance procedures for operating the vehicle under unusual conditions, including extreme temperatures, humidity, difficult terrain, fording, spring brake operation, and towing the vehicle.

For information on operation under unusual conditions for M915P1, M915A1P1, M916P1, M917P1, and M920P1 vehicles equipped with Crew Protection Kit and Air Conditioning Kit, refer to WP 0016 through WP 0021 and WP 0034. For emergency use of Crew Protection Kit escape hatch, refer to WP 0013.

GENERAL - CONTINUED

When operating under unusual conditions, it is especially important to keep vehicle clean and adequately lubricated. Become familiar with these WPs and the referenced publications. FM 55-30 contains important information on driver selection and training. FM 21-305 provides basic instruction for operators of wheeled vehicles. Use the information in these manuals along with the guidelines in the following WPs to operate the vehicle properly under unusual conditions.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS
EXTREME COLD CONDITIONS**

INITIAL SETUP:**References**

FM 9-207
WP 0003

References - Continued

WP 0009

WARNING

The driver and passenger must wear seatbelts during vehicle operation. Ensure seatbelts are fastened and properly adjusted before placing vehicle in motion. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

OPERATION IN EXTREME COLD CONDITIONS

1. M915 through M920 and M915A1 vehicles require special attention and care during periods of extreme cold weather. Remember that in extreme cold:
 - a. Lubricants thicken.
 - b. Batteries may lose power or freeze.
 - c. Electrical insulation can crack causing short circuits.
 - d. Fuel may not combine properly with air to form the necessary mixture for starting the engine.
 - e. Metals and other materials may become hard or brittle.
 - f. The cooling system requires adequate protection from extreme cold.
 - g. Fuels, lubricants, and antifreeze compounds require special storage, handling, and use.
2. Read and become familiar with the material in the referenced publications. They cover information needed when operating a vehicle in extreme cold. Keep in mind the problems characteristic of operation in cold weather, and ensure vehicle is adequately prepared and protected for existing weather conditions. Follow these guidelines when operating vehicle in conditions of extreme cold.
3. For detailed guidance on antifreeze protection, lubrication, electrical system service, and other maintenance requirements for extreme cold operations, refer to FM 9-207.

OPERATION IN EXTREME COLD CONDITIONS - CONTINUED**CAUTION**

Never use a scraper to remove frost or ice from ballistic glass. Failure to comply may result in damage to outer layer of ballistic glass.

NOTE

To clear frost and ice from ballistic glass, perform step 3 for M915P1, M915A1P1, M916P1, M917P1, and M920P1 vehicles.

Clearing frost and ice from ballistic glass requires more time than standard glass.

It will require more effort in extreme cold to open and close armor doors, egress window, and access door.

4. On vehicles equipped with Crew Protection Kit, extend vehicle warm-up time and operate heater and defroster to clear frost or ice from all ballistic glass.

END OF TASK**ARCTIC WINTERIZATION KIT****CAUTION**

Do not attempt to use extension cords in conjunction with the supplied winterization auxiliary power cable unless wire size is sufficient to carry 40 amps of current. Failure to comply may result in damage to equipment.

1. When operating in arctic conditions, ensure vehicle is equipped with Arctic Winterization Kit. All vehicles assigned to arctic regions must be equipped with a winterization kit for protection of vehicle systems from freeze damage and to enable engine starting in extreme cold. The kit consists of four separate heaters which are:
 - a. Engine coolant heater (thermostatically controlled)
 - b. Transmission heater (immersion type)
 - c. Engine oil heater (immersion type - thermostatically controlled)
 - d. Battery heater (coil type - thermostatically controlled)
2. The arctic winterization system is powered by use of an external alternating current (ac) power source. A 25 ft (7.6 m) auxiliary power cable, equipped with ground wire, is provided with the Arctic Winterization Kit. The auxiliary power cable is designed to connect to the receptacle located adjacent to the vehicle battery box and a compatible ac outlet. Each of the four heaters is turned on by a separate circuit breaker located inside a waterproof circuit breaker box. The heaters function automatically until the system is turned off. To turn on system:

ARCTIC WINTERIZATION KIT - CONTINUED

- a. When low temperatures are expected and vehicle will not be driven again while still warm, park vehicle within 25 ft (7.6 m) of auxiliary power source.
- b. Ensure engine coolant heater shutoff valve (Figure 1, Item 2), located on right side of engine below turbocharger (Figure 1, Item 1), is open.

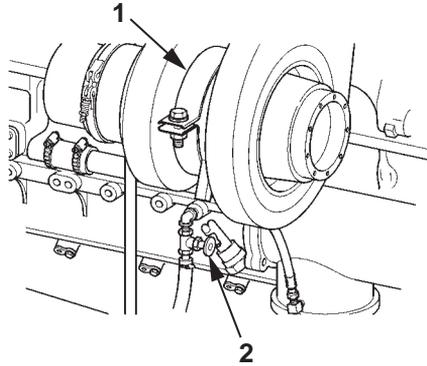


Figure 1. Engine Coolant Shutoff Valve.

- c. Open cover (Figure 2, Item 1) and connect auxiliary power cable to heater receptacle (Figure 2, Item 2). Connect opposite end of auxiliary power cable to external power source.

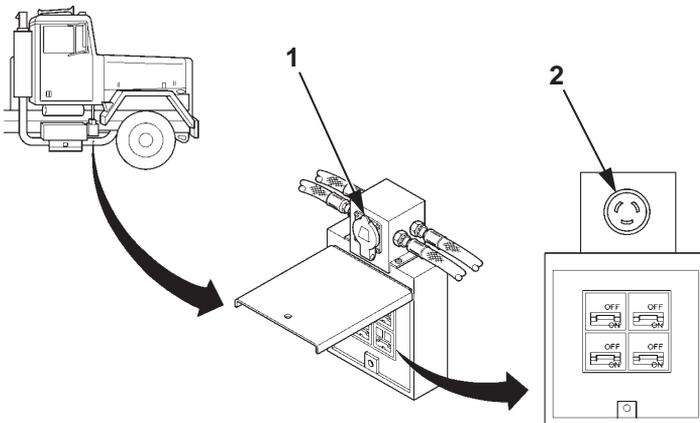


Figure 2. Heater Receptacle.

ARCTIC WINTERIZATION KIT - CONTINUED

- d. Open circuit breaker box door (Figure 3, Item 1) and switch four circuit breakers (Figure 3, Item 3) to ON position.
- e. Close circuit breaker box door (Figure 3, Item 1) to keep weather out.

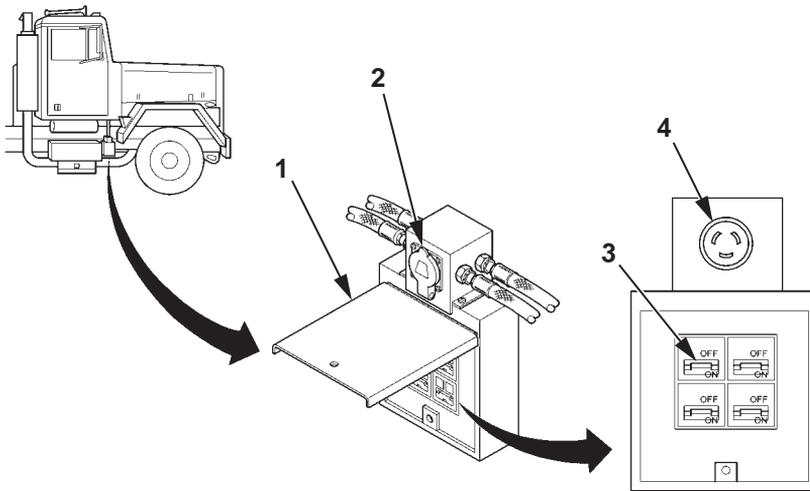


Figure 3. Circuit Breakers.

3. To turn off system:
 - a. Open circuit breaker box door (Figure 3, Item 1) and switch four circuit breakers (Figure 3, Item 3) to OFF position.
 - b. Close circuit breaker box door (Figure 3, Item 1).
 - c. Disconnect auxiliary power cable from heater receptacle (Figure 3, Item 4) and close cover (Figure 3, Item 2). Disconnect opposite end of auxiliary power cable from external power source.

END OF TASK

STARTING OUT**CAUTION**

M915 through M920 vehicles are equipped with strip heaters to warm transmission during cold weather. The strip heaters are thermostatically controlled for automatic operation at temperatures below 30° F (-1° C). The indicator light on the console lights when the strip heaters are on. Do not operate the transmission until indicator light goes off. Failure to comply may result in damage to equipment.

1. Use your cold weather starting procedure (WP 0009), and give the engine time to reach an operating temperature range of at least 120–140° F (49–60° C) for M915 through M920 or 140–160° F (60–71° C) for M915A1.
2. Adjust the amount of winter front coverage over the radiator grille to maintain a normal coolant operating range of 165–195° F (74–91° C) for M915 through M920 or 180–200° F (82–93° C) for M915A1.
3. Start driving very slowly. Be alert to the possibility 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 your supervisor if necessary.
4. Drive very slowly for approximately 100 yards, being careful not to let the engine stall. By starting out slowly and carefully, you can more easily detect any initial problems caused by the cold weather, and your tractor's fluids and components will have sufficient warm-up time.

END OF TASK**PROTECTING VEHICLE WHEN PARKED**

1. If you shut down your tractor for a short period, park in a sheltered area out of the wind. If there is no shelter available, park so that tractor does not face into the wind. Install the winter front.
2. If parking your vehicle 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 tires in case weather conditions worsen. Keep the tires out of snow, water, ice, and mud, if possible.
3. Clean snow, ice, and mud from vehicle as soon as possible after shutdown.
4. If your vehicle will be parked for an extended period of time during cold weather, notify your supervisor to have maintenance personnel remove batteries and store in a warm place. Fill fuel tank to guard against condensation. Drain any accumulated water from air reservoirs and fuel filter. Install winter front cover.
5. Ensure tires are properly inflated (WP 0003).

PROTECTING VEHICLE WHEN PARKED - CONTINUED

6. Notify your supervisor to have maintenance personnel check and service the cooling system to ensure vehicle is adequately protected against extreme cold. Ensure transmission is in neutral (N) and that vehicle tires are blocked before leaving the area.

END OF TASK**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 bypassed to prevent over pressure and possible rupture of the cooler. Notify supervisor to perform this maintenance when 0° F (-18° C) or below is expected.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS
EXTREME HOT CONDITIONS**

INITIAL SETUP:**References**

WP 0003

WP 0035

WARNING

The driver and passenger must wear seatbelts during vehicle operation. Ensure seatbelts are fastened and properly adjusted before placing vehicle in motion. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

OPERATING IN EXTREME HOT CONDITIONS

1. During hot weather, it may be necessary to alter driving procedures to prevent vehicle from overheating. The following types of operation can cause vehicle to overheat:
 - a. Continuous high speeds
 - b. Long, hard pulls
 - c. Continuous use of low gear ranges on steep grades or in soft terrain
2. Check water and transmission temperature gauges and stop vehicle if unusually high temperature readings are observed. Allow vehicle to cool.
3. Check cooling system, air cleaner, engine oil level, and radiator fins frequently. Perform necessary services and notify Field Maintenance of unusual gauge readings or other problems.
4. Shorten differential oil change interval (WP 0035).

NOTE

Perform steps 5 through 7 for M915P1, M915A1P1, M916P1, M917P1, and M920P1 vehicles.

The armored cab absorbs and retains more heat than a standard cab.

5. Park vehicle away from direct sunlight whenever possible.
6. Extend vehicle startup times in order to operate air conditioner to cool down interior of cab before performing mission.
7. Extended operation of air conditioner is required to cool the interior of cab in extreme hot weather.

END OF TASK

PROTECTING VEHICLE WHEN PARKED

1. Park vehicle under cover, if possible to protect against the effects of sun, sand, and dust. If no shelter is available, cover vehicle with tarpaulins. Ensure tarpaulins cover the engine compartment and radiator to keep out sand and dust. Cover window glass to protect against sandblasting.
2. Check tires for damage and ensure all tires are inflated to proper pressures (WP 0003).
3. Check frequently for rust and fungus growth, which are common problems in hot, humid weather. Clean and lubricate vehicle to help prevent deterioration.

END OF TASK**POWER STEERING**

The power steering system incorporates a cooler designed to reduce power steering fluid temperatures during normal or unusually warm conditions. Check oil level in power steering pump reservoir more often during periods of operation in extreme hot weather (WP 0035).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS
UNUSUAL TERRAIN OPERATION**

INITIAL SETUP:**References**

FM 21-305

References - Continued

WP 0010

WARNING

The driver and passenger must wear seatbelts during vehicle operation. Ensure seatbelts are fastened and properly adjusted before placing vehicle in motion. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

GENERAL

Become familiar with the procedures in FM 21-305 for driving on unusual terrain. The information on unusual terrain listed in this work package is applicable to all models except where noted. The M915 and M915A1 are not designed or intended for off-road use. However, if the adverse conditions described in this work package are unavoidable, the recommended procedures given should be applied.

CAUTION

Do not use pusher axle during off-highway operations. Failure to comply may result in decreased traction and possible damage to equipment.

NOTE

Perform step 1 for M917, M917P1, M919, M920, and M920P1 vehicles having pusher axle.

When engaging the locking system, the driving axles will receive equal torque.

1. Relieve air pressure load on pusher axle and raise pusher axle. This will increase traction by shifting weight to the driving axles.
2. In areas where the ground surface provides poor traction, move differential LOCK/UNLOCK lever to the LOCK position, refer to WP 0010.
3. Use the differential LOCK/UNLOCK control as needed for better traction. Disengage differential lockup when conditions return to normal. For instructions on operating the inter-axle differential lockup system, refer to WP 0010.

END OF TASK

WOODS AND ROCKY TERRAIN

1. Ensure vehicle can clear ground obstructions such as stumps or rocks before driving over them. Objects can damage components underneath vehicle. Avoid hanging limbs which might cause damage.

NOTE

M915, M915A1, and M916 vehicles are equipped with a spare wheel and tire assembly. M917 through M920 vehicles are not equipped with a spare.

2. When driving over rocky terrain, there will be a greater chance of tire punctures. Ensure a spare wheel and tire assembly is available.

END OF TASK**MUD OR OTHER SOFT SURFACES**

1. Before entering mud or soft surfaces, check conditions and select the appropriate transmission gear to allow vehicle through the area. Enter the soft area at a medium speed for the gear you have selected.
2. Maintain steady pressure on accelerator pedal to keep your vehicle rolling until solid ground is reached. Do not accelerate to the point of spinning the wheels.
3. If vehicle becomes stuck, try to pull out slowly in a lower gear. If necessary, place boards, brush, or similar material under tires to provide traction.

NOTE

M916 and M920 vehicles are equipped with a winch. Perform step 4 for self-recovery or to assist another stuck vehicle using winch.

4. If vehicle is not coupled to a trailer, it may be possible to use the vehicle's winch for self-recovery or to assist in pulling another stuck vehicle out. Attach winch cable to another vehicle or other stationary object that will not move under load when pulling on it.

END OF TASK**SAND****NOTE**

If operating the M915 through M920 or M915A1 in sand, follow the guidelines in steps 1 through 4 below.

1. Maintain steady, even movement with the transmission in low gear. Keep vehicle rolling without straining the engine and power train.
2. If vehicle becomes stuck, adjust tire pressure to gain additional traction. Reduce pressure in the front tires to 50 psi (345 kPa) and reduce pressure in the rear tires to 45 psi (310 kPa). When vehicle is free, inflate all tires to normal pressure.
3. If vehicle bogs down after reducing tire pressure, place boards, brush, canvas, or similar materials under and in front of tires to provide better traction.

SAND - CONTINUED

4. If these efforts fail and operator cannot free vehicle under its own power, use another vehicle to assist in pulling out stuck vehicle or for M916 and M920, use winch for self-recovery or to assist in pulling another stuck vehicle out.

NOTE

If operating the M915 through M920 or M915A1 in sandy or dusty areas, follow the guidelines in steps 5 through 10 below.

5. Ensure each tire has a valve cap.
6. Check engine and transmission temperature and engine oil pressure gauges frequently.
7. If vehicle overheats, stop vehicle, assess the problem, or notify your supervisor to have maintenance assess the problem.
8. Clear engine oil level tube and transmission fluid level/filler tube before removing dipsticks to check fluids. Clean accumulations of sand and dirt from around fluid filler locations before checking or adding fluids.
9. Clean spouts of fuel containers and areas around filler cap on fuel tank before adding fuel. Under extreme sandy or dusty conditions, filter fuel when filling tank.
10. When parking vehicle overnight or for an extended period in sandy conditions, park so rear of vehicle faces toward the wind or cover the radiator and all window glass with canvas.

END OF TASK**SNOW AND ICE DRIVING**

1. Accelerate slowly to avoid spinning the tires.
2. Drive at slower speeds.
3. Give signals sooner.
4. Lightly pump brakes once or twice to give early warning of intention to stop. This will also help to avoid skidding.
5. Maintain at least double the normal distance from the vehicle ahead.
6. Keep windshields, windows, mirrors, headlamps, stoplamps, and body lamps clean and free of snow and ice. Use defrosters and fans to help keep glass free of snow and ice.
7. Descend moderate grades in the gear normally used to ascend the same grade. On steep or very slippery grades, lock differential, use at least one gear lower, and activate engine retarder system.
8. After driving through slush or water, drive slowly and test the brakes. Continue driving slowly, maintaining moderate pressure on the service brake pedal to create a slight drag. Resume normal speed when brakes are dry and operating properly.

SNOW AND ICE DRIVING - CONTINUED

9. If you come to a difficult stretch of road, stop and inspect it carefully before driving on it. Select the transmission gear most likely to allow vehicle over that stretch of road and lock differential.
10. If tires start spinning, stop, back up, and try again. If necessary, rock out by locking the differential, shifting to forward gear and accelerating lightly. Shift into reverse when vehicle's forward motion stops. Repeat alternate shifting and acceleration until vehicle can use the momentum to rock out of the slippery area. Avoid spinning the tires and do not exceed 800–900 engine rpm.

END OF TASK**STOPPING****WARNING**

Do not use engine retarder on slippery road surfaces. Using engine retarder on wet, icy, or snow covered roads may result in loss of vehicle control. Failure to comply may result in damage to equipment and injury to death to personnel. Seek medical attention in the event of an injury.

1. Ease up on accelerator, leaving vehicle in gear already selected.
2. Apply brakes evenly to slow vehicle, and gradually pump brakes to avoid skidding.
3. Avoid sudden braking on slick roads which may cause vehicle to skid and trailer to jackknife.

END OF TASK**PARKING**

1. When parking vehicle on an icy, slushy, wet, or muddy surface, place boards, brush, or other material underneath tires to provide traction. This guards against tires freezing to the ground or becoming pocketed in ice, and provides traction when vehicle is started and moving again.
2. Block tires and leave transmission control lever in neutral (N) rather than setting parking brake.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS
FORDING OPERATION**

INITIAL SETUP:**References**

WP 0010

WP 0034

WP 0035

BEFORE FORDING**WARNING**

Due to increased weight and raised center of gravity on vehicles equipped with Crew Protection Kit, vehicle operator must be aware of differences in driving characteristics and adjust driving accordingly. Failure to comply may result in damage to equipment or possible injury or death to personnel. Seek medical attention in the event of an injury.

1. Before fording with the vehicle, check bottom surface condition of the water body. Ensure bottom surface is hard enough to ford without exceeding the maximum fording depth of 20 inches (51 cm). If the bottom surface is too soft, do not attempt fording. Ford to the maximum depth for short periods or short distances only.
2. Ensure engine is operating properly before entering water.
3. Lubricate unpainted surfaces properly before entering water.

BEFORE FORDING - CONTINUED

- Engage driveline locking system. Move inter-axle differential control (Figure 1, Item 2) to the LOCK position. For instructions on operating the inter-axle differential lockup system, refer to WP 0010.

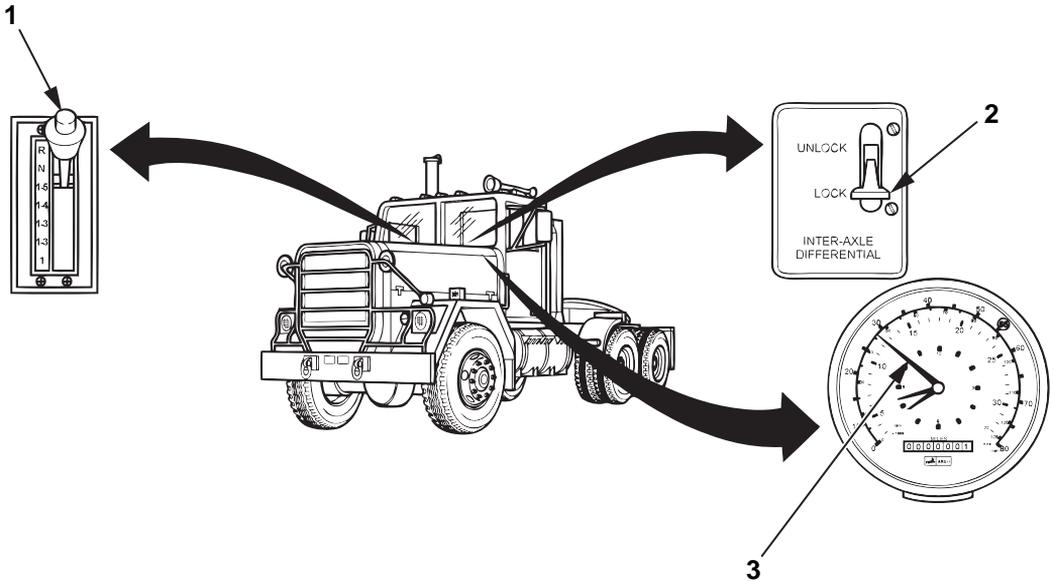


Figure 1. Fording.

END OF TASK**DURING FORDING**

- Put transmission selector lever (Figure 1, Item 1) in a low gear range.
- Enter water slowly.
- Observe speedometer (Figure 1, Item 3) and ford at speeds of no more than 3–4 mph (5–6 kph).
- When vehicle emerges from water, apply brakes repeatedly to dry brake linings. Ensure brakes are working properly before driving vehicle at normal speeds.

END OF TASK

AFTER FORDING**NOTE**

All models can ford up to 20 in. (51 cm) for five minutes without maintenance for vehicle to continue operation.

1. During fording, water may enter vehicle or its components and contaminate the fluid systems. Ensure any accumulated water is removed from vehicle before it causes damage to systems, surfaces, or equipment.
2. As soon as possible after fording, check vehicle using the following guidelines:
 - a. Let the engine run for sufficient time to drive out any accumulated water.
 - b. Drain or dry areas on vehicle where water has accumulated.
 - c. Check each fluid system in vehicle for evidence of water contamination. If water is found in one or more fluid systems, notify your supervisor to drain, flush, and refill the contaminated system.
 - d. Notify your supervisor of any necessary service or repairs before returning vehicle to normal use, refer to After Fording in WP 0034.
 - e. Notify your supervisor if lubrication is needed after fording is complete, refer to Lubrication Instructions in WP 0035.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS
SPRING BRAKE POWER SPRING OPERATION**

INITIAL SETUP:**Tools and Special Tools**

Adjustable wrench, 12 in.
(WP 0037, Table 5, Item 7)

Equipment Condition

Wheels chocked (WP 0012).

WARNING

Chock wheels to keep vehicle from moving before brakes are released. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

GENERAL

NOTE

M915A1 vehicles equipped with anti-lock brake system (ABS) have spring brake chambers added to rear-rear axle brakes.

In the event of an air system pressure loss, the spring brake chambers on the forward-rear axle will apply the forward-rear axle brakes on the M915A1. On M915 through M920 vehicles, the spring brake chambers on the forward-rear axle and rear-rear axle will apply the forward-rear axle and rear-rear axle brakes. If the vehicle 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 must do this manually.

MANUALLY COMPRESSING SPRING BRAKE POWER SPRING

1. Remove nut (Figure 1, Item 3), washer (Figure 1, Item 2), and release stud (Figure 1, Item 1) from stowage pocket (Figure 1, Item 7) of failed spring chamber (Figure 1, Item 6).
2. Remove dust cover (Figure 1, Item 4) from spring chamber (Figure 1, Item 6).
3. Insert cross-pin end of release stud (Figure 1, Item 1) into opening under dust cover (Figure 1, Item 4) on spring chamber (Figure 1, Item 6).
4. After release stud (Figure 1, Item 1) has been inserted far enough to engage pressure plate (Figure 1, Item 5), turn release stud (Figure 1, Item 1) $\frac{1}{4}$ turn to lock cross-pin end of release stud (Figure 1, Item 1) into pressure plate (Figure 1, Item 5).
5. Install washer (Figure 1, Item 2) and nut (Figure 1, Item 3) on release stud (Figure 1, Item 1).

NOTE

Chock wheels to prevent vehicle from moving before brakes are released. Failure to comply may result in serious injury or death to personnel. Seek medical attention in the event of an injury.

Observe that push rod retracts while tightening nut. This indicates pressure plate has been properly engaged.

6. Tighten nut (Figure 1, Item 3) until 2.5–2.75 in. (6.4–7 cm) of release stud (Figure 1, Item 1) remains visible above nut (Figure 1, Item 3). Spring brake is then fully engaged.

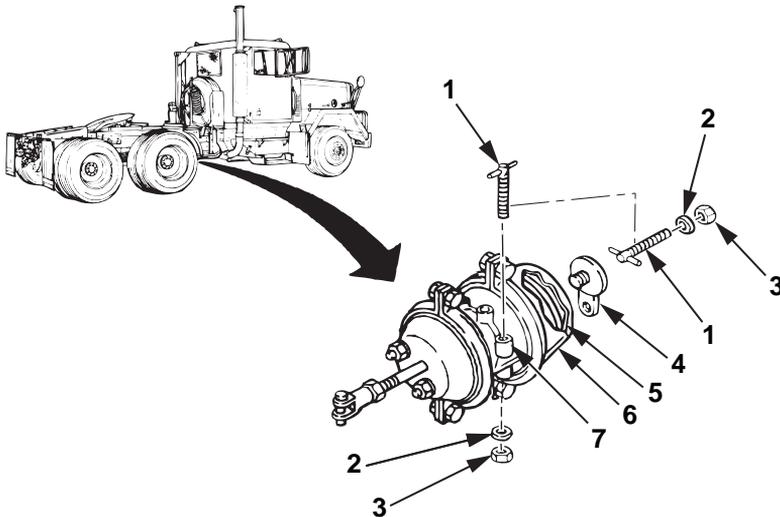


Figure 1. Spring Brake Power Spring.

END OF TASK

MANUALLY RELEASING SPRING BRAKE POWER SPRING**NOTE**

If power springs have been manually compressed, perform steps 1 through 4 to release them before returning vehicle to service.

1. Remove nut (Figure 1, Item 3) and washer (Figure 1, Item 2) from release stud (Figure 1, Item 1).
2. Disengage cross-pin end of release stud (Figure 1, Item 1) from pressure plate (Figure 1, Item 5) and remove release stud (Figure 1, Item 1) from spring chamber (Figure 1, Item 6).
3. Install dust cover (Figure 1, Item 4) on spring chamber (Figure 1, Item 6).
4. Install release stud (Figure 1, Item 1) in stowage pocket (Figure 1, Item 7) with washer (Figure 1, Item 2) and nut (Figure 1, Item 3).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS
TOWING VEHICLE**

INITIAL SETUP:**Tools and Special Tools**

Medium duty tow bar (WP 0038)

References

WP 0010

Personnel Required

Two

FM 20-22

FM 21-305

CAUTION

If the M915 or M915A1 must be towed with rear wheels on the ground, the transmission-to-rear axle prop shaft must be removed. Failure to comply may result in serious damage to automatic transmission and rear tandem axle differentials.

If the M916 through M920 vehicles must be towed with front wheels on the ground, the transmission-to-front axle prop shaft must be removed. Failure to comply may result in serious damage to automatic transmission and front axle differential.

NOTE

For cross-country towing, all tires should be on the ground.

GENERAL

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.

PREPARATION FOR TOWING**M915 AND M915A1**

1. If possible, tow with rear wheels suspended. This eliminates the need for removal of prop shaft or axle shafts.
2. If vehicle must be towed with rear wheels on the ground, set inter-axle differential control to the UNLOCK position (WP 0010) and notify your supervisor to remove transmission and forward-rear axle prop shaft at universal joints. After removal of prop shaft, secure prop shaft to truck undercarriage.
3. If prop shaft cannot be removed, notify your supervisor to remove all four axle shafts from two rear axle assemblies. Secure axle shafts to vehicle to prevent damage.

M916 THROUGH M920

1. If possible, tow with rear wheels suspended. This eliminates need for removal of rear prop shaft or axle shafts.
2. If vehicle must be towed with rear wheels on ground, set inter-axle differential control to UNLOCK position (WP 0010) and notify your supervisor to remove the transmission and forward-rear axle prop shaft at universal joints and front axle prop shaft at universal joint. After removal of prop shafts, secure prop shafts to vehicle undercarriage.
3. If prop shafts cannot be removed, notify your supervisor to remove all four axle shafts from two rear axle assemblies and two front axle shafts from front axle. Secure axle shafts to vehicle to prevent damage.

END OF TASK**USE OF TOW BAR****NOTE**

Vehicle may be towed short distances (half mile to a maximum of 10 miles), at low speeds without removing prop shafts or axle shafts. Engine must be running at idle to turn transmission oil pump.

Ensure towing device is long enough to allow for complete turning radius.

Towing vehicle speed with prop or axle shafts removed should be restricted to a maximum of 15 mph (24 kph) on primary roads and 8 mph (13 kph) on secondary roads.

1. Install medium duty tow bar (NSN 2540-01-267-2912) on pintle of towing vehicle and towing eyes of towed vehicle.

NOTE

Quick disconnect couplings are provided in the bumper for air brake operation.

2. Connect air pressure hoses between towed vehicle and towing vehicle for air brake operation.
3. Place transmission control lever in neutral (N).
4. Release parking brakes.
5. Turn on appropriate lights.

USE OF TOW BAR - CONTINUED

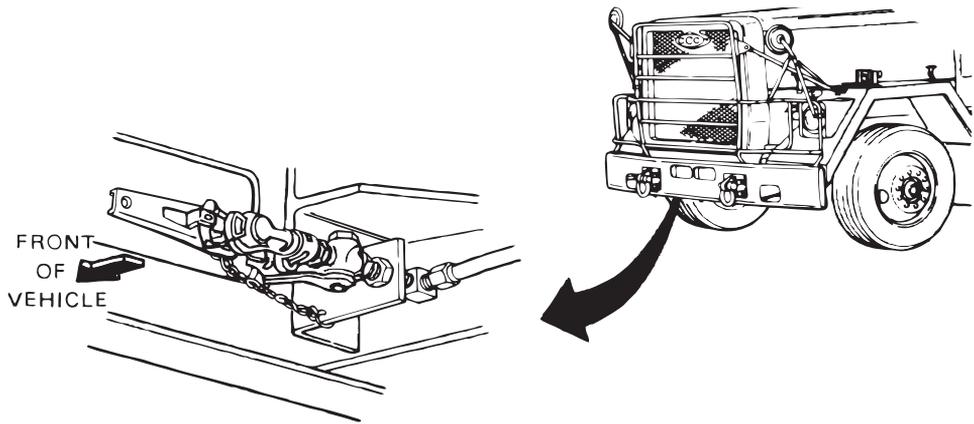


Figure 1. Air Pressure Hose Connections.

END OF TASK

END OF WORK PACKAGE

CHAPTER 3

TROUBLESHOOTING MASTER INDEX

**OPERATOR MAINTENANCE
TROUBLESHOOTING MASTER INDEX**

TROUBLESHOOTING PROCEDURES

<u>Symptom</u>	<u>Page</u>
AIR CONDITIONING (M915P1, M915A1P1, M916P1, M917P1, and M920P1)	
A/C unit does not function	WP 0023-22
A/C unit not producing cool air	WP 0023-22
Compressor noise or vibration	WP 0023-23
AIR SYSTEM AND BRAKES	
Air system loses pressure during tractor operation or low air pressure warning lamp and buzzer come on during tractor operation	WP 0023-10
Low pressure in air system (low air pressure warning lamp and buzzer are on)	WP 0023-9
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TROUBLESHOOTING PROCEDURES - CONTINUED

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END OF WORK PACKAGE	

CHAPTER 4

TROUBLESHOOTING PROCEDURES

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**References**

DA Form 2404
DA Form 5988-E
DA Form 5504
WP 0003
WP 0005
WP 0009

References - Continued

WP 0012
WP 0025
WP 0029
WP 0033
WP 0035

INTRODUCTION

This work package contains operator level troubleshooting procedures for correcting unsatisfactory operation and basic equipment malfunctions.

Each troubleshooting procedure lists a fault symptom describing a specific problem. Under each symptom is a list of possible malfunctions in the order of probability that may be the cause of the problem. Finally, a corrective action is provided for each malfunction followed by a work package or TM reference or instruction to notify supervisor to correct the problem.

Prior to performing any troubleshooting procedure, the following recommendations must be observed.

NOTE

This manual cannot list all possible malfunctions that may occur. If the symptom for a particular problem or malfunction is not listed in this work package, notify your supervisor.

1. Isolate component where malfunction occurs by finding the symptom that most accurately describes the problem.
2. Perform troubleshooting procedure in the order in which steps are listed.
3. Consider the possibility that the problem could be simple in origin and may require only minor adjustment; use common sense.
4. If a problem cannot be corrected after performing all corrective actions listed for a given symptom, notify supervisor.
5. If the corrective action is not authorized at the operator level, operators must provide a brief written description of the problem using Equipment Inspection and Maintenance Worksheet, DA Form 2404 or DA Form 5988-E, and Maintenance Request Form, DA Form 5504.

ENGINE**WARNING**

Hearing protection is required for personnel when engine is running for an extended period of time and personnel are close to vehicle. Noise levels produced by vehicle may exceed 85 dB. Long-term exposure to this noise level may cause hearing loss. Seek medical attention in the event of an injury.

NOTE

If corrective action does not correct malfunction, notify supervisor.

SYMPTOM

Engine does not crank when starter switch is activated.

MALFUNCTION

Engine run switch is not in ON position.

CORRECTIVE ACTION

Move engine run switch to ON position.

MALFUNCTION

Transmission range selector is not in neutral position.

CORRECTIVE ACTION

Move transmission range selector lever to neutral (N) position.

MALFUNCTION

Loose battery cables or terminals.

CORRECTIVE ACTION

Tighten loose connections and clean dirty cables. If cables are broken, notify supervisor.

SYMPTOM

Engine cranks but does not start.

MALFUNCTION

Empty fuel tank or fuel system malfunction.

ENGINE - CONTINUED**CORRECTIVE ACTION**

1. Visually check for fuel system leaks before completely filling fuel tank.
2. When fuel tank is completely drained and then refilled, the fuel system must be bled. If fuel system needs to be bled, notify supervisor.
3. Check fuel gauge (WP 0005). Fill fuel tank, as required.
4. Check air filter restriction gauge. If gauge indicates restriction (red instead of green), notify supervisor.

SYMPTOM

Engine cranks but does not start below 32° F (0° C).

MALFUNCTION

Ether starting aid is not being used correctly.

CORRECTIVE ACTION

Follow proper cold weather starting procedures using ether starting aid (WP 0009).

SYMPTOM

Engine starts but misfires or runs rough after proper warmup period.

MALFUNCTION

Restricted air filter.

CORRECTIVE ACTION

Check air filter restriction gauge. If gauge indicates restriction (red instead of green), notify supervisor.

SYMPTOM

Engine does not idle properly.

MALFUNCTION

Restricted air filter.

CORRECTIVE ACTION

Check air filter restriction gauge. If gauge indicates restriction (red instead of green), notify supervisor.

ENGINE - CONTINUED**MALFUNCTION**

Ether starting aid is not being used correctly.

CORRECTIVE ACTION

Follow proper cold weather starting procedures using ether starting aid (WP 0009).

SYMPTOM

Engine temperature exceeds 210° F (99° C).

MALFUNCTION

Radiator coolant level is low, cooling system leaking, clogged radiator fins, engine drive belts loose or missing, engine oil level is low, or transmission fluid level is low.

CORRECTIVE ACTION**WARNING**

Hot coolant is under pressure. Be careful when removing coolant filler cap or inspecting cooling system. Engine cooling system is under pressure and may cause severe injury to personnel. Seek medical attention in the event of an injury.

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 further left until you can remove it. Failure to comply may result in serious burns. Seek medical attention in the event of an injury.

1. Check coolant level in radiator sight glass. Add coolant to fill radiator to proper level (WP 0029).
2. Check for leaks in coolant system. If any coolant leaks are found, notify supervisor.
3. Check radiator fins are free of mud, ice, snow, or debris. Remove any material clogging radiator fins. Shine flashlight through engine side and note light at radiator. Check cooling fins are not bent or clogged. Notify supervisor to straighten bent fins.
4. Check for loose, cracked, worn, or missing fan drive belts. If belt is loose, cracked, worn, or missing, notify supervisor.
5. Check engine oil is at proper level on dipstick. Add engine oil if necessary (WP 0035).
6. Check transmission fluid is at proper level on dipstick. Add transmission fluid if necessary (WP 0035).

ENGINE - CONTINUED**SYMPTOM**

Engine lacks power.

MALFUNCTION

Restricted air filter.

CORRECTIVE ACTION

1. Check air filter restriction gauge. If gauge indicates restriction (red instead of green), notify supervisor.
2. Check to make sure PTO is disengaged. Disengage PTO.

SYMPTOM

Low or no engine oil pressure.

MALFUNCTION

Low oil level.

CORRECTIVE ACTION

Check engine oil is at proper level on dipstick. Add engine oil (WP 0035) if necessary. If no or low oil pressure is still present, notify supervisor.

SYMPTOM

Excessive engine oil consumption.

MALFUNCTION

Engine oil leaks.

CORRECTIVE ACTION

Check engine for loose oil lines or oil leaks. If any leaks are found, notify supervisor.

ENGINE - CONTINUED**SYMPTOM**

Excessive exhaust smoke after engine reaches normal operating temperature of 160–185° F (71–85° C) for M915 through M920 or 180–200° F (82–93° C) for M915A1.

MALFUNCTION

Restricted air filter, contaminated fuel, or engine malfunction.

CORRECTIVE ACTION

1. Check air filter restriction gauge. If gauge indicates restriction (red instead of green), notify supervisor.
2. Open fuel tank filler cap and check for obvious fuel contamination. If fuel is contaminated, notify supervisor.
3. Check for smell of unburned fuel in or around engine cab area. If smell of unburned fuel is present, notify supervisor.

SYMPTOM

Engine retarder does not reduce tractor speed.

MALFUNCTION

Engine retarder is not being operated correctly.

CORRECTIVE ACTION

Check engine retarder is engaged. Press down on engine retarder foot pedal and take foot completely off of accelerator pedal. If operating retarder control correctly but retarder system is not slowing vehicle, notify supervisor.

SYMPTOM

Excessive exhaust noise or fumes in or near cab.

MALFUNCTION

Faulty exhaust system components.

ENGINE - CONTINUED**CORRECTIVE ACTION****WARNING**

Carbon monoxide is a colorless, odorless, deadly poison which, when breathed, deprives the body of oxygen and causes suffocation. Exposure to air containing carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, and coma. Permanent brain damage or death to personnel may result from severe exposure. Carbon monoxide occurs in exhaust fumes of internal combustion engines.

Carbon monoxide may become dangerously concentrated under conditions of inadequate ventilation. Refer to page a of Warning Summary for further precautions that must be observed to ensure safety of personnel.

1. Check exhaust manifold, pipes, flex tubes, muffler and stack for leaks and rusted through areas with engine running. If any leaks are found, notify supervisor that rusted leaking parts require replacement.
2. Check exhaust system clamps for leakage with engine running. If any leaks are found, notify supervisor that clamps require tightening or replacement.

END OF TASK**TRANSMISSION****SYMPTOM**

Foamy fluid on transmission dipstick.

MALFUNCTION

Transmission oil level is low or transmission requires service.

CORRECTIVE ACTION**NOTE**

Perform corrective action 1 for M915 through M920 vehicles. Perform corrective action 2 for M915A1.

1. Check level on dipstick with engine off and vehicle on level ground. If fluid level is above FULL mark on dipstick, notify supervisor.
2. Check level on dipstick with engine at idle and vehicle on level ground. If transmission is 100–250° F (38–121° C) and fluid level is above HOT RUN band, or if temperature is below 100° F (38° C) and fluid level is below COLD RUN band, notify supervisor.

TRANSMISSION - CONTINUED**SYMPTOM**

Slow or erratic transmission engagement.

MALFUNCTION

Transmission oil level is low.

CORRECTIVE ACTION**NOTE**

Perform corrective action 1 for M915 through M920 vehicles. Perform corrective action 2 for M915A1.

1. Check level on dipstick with engine off and vehicle on level ground. If fluid is low, add fluid as necessary to maintain proper level. If fluid is sufficient, notify supervisor.
2. Check level on dipstick with engine at idle and vehicle on level ground. If transmission is 100–250° F (38–121° C) and fluid level is above HOT RUN band, or if temperature is below 100° F (38° C) and fluid level is below COLD RUN band, notify supervisor.

SYMPTOM

Transmission fluid temperature gauge indicates overheating.

MALFUNCTION

Transmission oil level is low or transmission requires service.

CORRECTIVE ACTION

1. Check level on dipstick with engine off on M915 through M920 or with engine at idle on M915A1 and vehicle on level ground. Check dipstick for evidence of foamy fluid. If transmission is 100–250° F (38–121° C) and fluid level is above HOT RUN band, or if temperature is below 100° F (38° C) and fluid level is below COLD RUN band, notify supervisor.
2. Check dipstick for evidence of discoloration that could indicate water/antifreeze in fluid. If there is discoloration of fluid, notify supervisor.

SYMPTOM

Fluid leaking from transmission breather.

MALFUNCTION

Transmission oil level is low or transmission requires service.

TRANSMISSION - CONTINUED**CORRECTIVE ACTION**

Check level on dipstick with engine at idle and vehicle on level ground. If transmission is 100–250° F (38–121° C) and fluid level is above HOT RUN band, or if temperature is below 100° F (38° C) and fluid level is below COLD RUN band, notify supervisor.

END OF TASK**AIR SYSTEM AND BRAKES****SYMPTOM**

Low pressure in air system (low air pressure warning lamp and buzzer are on).

MALFUNCTION

Leak in air system.

CORRECTIVE ACTION

1. Check all reservoir drains are closed. Close any open reservoir drains.
2. If tractor is not coupled to trailer, check trailer air supply control is pulled out (OFF). Pull air supply control out (OFF).
3. Check for possible air leaks at air reservoirs, hoses, fittings, and at inter-vehicular air hose connections. If any leaks are found, notify supervisor.
4. If tractor is coupled to trailer, and your test and inspections of tractor do not reveal any trouble with tractor, troubleshoot trailer. If tests, inspections, and corrective actions for both tractor and trailer do not resolve low air pressure problem, notify supervisor.

SYMPTOM

Trailer brakes will not apply when brake pedal is used or hand control on steering column is used.

MALFUNCTION

Inter-vehicular air hoses are not securely connected or trailer has air system leak.

CORRECTIVE ACTION

Check both inter-vehicular air hoses are connected securely between tractor and trailer (WP 0012). Connect air hoses securely to trailer. Charge trailer air system by pushing in (ON) trailer air supply control. If trouble continues, notify supervisor.

AIR SYSTEM AND BRAKES - CONTINUED**SYMPTOM**

Air system loses pressure during tractor operation or low air pressure warning lamp and buzzer come on during tractor operation.

MALFUNCTION

Leak in vehicle air system.

CORRECTIVE ACTION

1. Check trailer air supply control is pulled out (OFF).
2. Operate engine until warning lamp and buzzer go off and release parking brake.
3. Stop engine and note reservoir pressure.
4. Fully depress and hold service brakes for 2 minutes.
5. Check for leaks. Reservoir pressure loss should not exceed 5 psi in 2 minutes. Close any open reservoir drains. Check trailer air supply control is pulled out (OFF). If any leaks are found, notify supervisor.
6. If pressure loss does not exceed 5 psi in 2 minutes, check trailer air system in the next malfunction.

MALFUNCTION

Leak in trailer air system.

CORRECTIVE ACTION

1. Push trailer supply control in (ON) to charge trailer air reservoirs.
2. Operate engine until warning lamp and buzzer go off, then release parking brake.
3. Stop engine and note reservoir pressure.
4. Fully depress and hold service brakes for 2 minutes.
5. Check for leaks. Reservoir pressure loss should not exceed 5 psi in 2 minutes. Note any trailer air leaks. If reservoir pressure loss exceeds 5 psi in 2 minutes, notify supervisor to troubleshoot trailer.

SYMPTOM

Trailer brakes will not release.

MALFUNCTION

Trailer brake control is in ON position.

CORRECTIVE ACTION

Check trailer brake control is in OFF position. Move control to OFF position (WP 0005).

AIR SYSTEM AND BRAKES - CONTINUED**MALFUNCTION**

Trailer air supply control is not pushed in (ON).

CORRECTIVE ACTION

Check trailer air supply control is pushed in (charging position). Push in air supply control (WP 0005).

MALFUNCTION

Inter-vehicular air hoses are not securely connected between tractor and trailer.

CORRECTIVE ACTION

Check both inter-vehicular air hoses are connected securely between tractor and trailer (WP 0012). Connect hoses securely (WP 0012).

MALFUNCTION

Leaks in air system.

CORRECTIVE ACTION

Check for obvious leaks in tractor air system. If any leaks are found, notify supervisor. If no leaks are found, notify supervisor to troubleshoot trailer.

END OF TASK**DRIVELINE AIR CONTROL SYSTEM****SYMPTOM**

Driveline will not disengage (indicator lamp stays on) when differential LOCK/UNLOCK is moved to UNLOCK position.

MALFUNCTION

Driveline has not had enough time to disengage since activated or excessive driveline wind up has occurred.

CORRECTIVE ACTION

1. Check system has been unlocked long enough for system to disengage. Put LOCK/UNLOCK control in UNLOCK position and wait for lamp to go off (WP 0005).
2. If LOCK indicator lamp stays on, excessive driveline wind up may have occurred. Back up slowly and check if LOCK indicator lamp goes off. If indicator lamp stays on, notify supervisor.

END OF TASK

SLIDING FIFTH WHEEL AIR CONTROL SYSTEM (M915A1)**SYMPTOM**

Fifth wheel cannot be locked in desired position when LOCK/UNLOCK control is moved to LOCK position (tractor coupled to trailer).

MALFUNCTION

Obstructions between fifth wheel plate and slide track rack.

CORRECTIVE ACTION

Check for obstructions between fifth wheel plate and slide track rack. Clean or remove objects from area as necessary and check again.

MALFUNCTION

Air cylinder has not had sufficient time to engage.

CORRECTIVE ACTION

Check air cylinder has sufficient time to engage. Leave LOCK/UNLOCK control in LOCK position, wait for 10 seconds, and check again (WP 0005).

MALFUNCTION

Fifth wheel hung up between segments of slide track rack.

CORRECTIVE ACTION

Move LOCK/UNLOCK control to UNLOCK position, apply trailer brake hand control, and place gear range selector in (1) or (R). Move tractor slowly forward or backward an inch or two, stop and shift range selector to NEUTRAL (N). Check fifth wheel is now locked. Release trailer brake hand control.

MALFUNCTION

Air leak in fifth wheel air control system.

CORRECTIVE ACTION

If fifth wheel will not lock in position, check air line connections at cab mounted control and at air cylinder under fifth wheel plate. Check for sound of escaping air and loose fitting connections. If any leaks are found in air system connections at control or air cylinder, notify supervisor.

SLIDING FIFTH WHEEL AIR CONTROL SYSTEM (M915A1) - CONTINUED**SYMPTOM**

Fifth wheel cannot be unlocked from previous position when control is moved to UNLOCK position.

MALFUNCTION

Obstructions between fifth wheel plate and slide track rack.

CORRECTIVE ACTION

Check for obstructions between fifth wheel plate and slide track rack. Clean or remove objects from area as necessary and check whether fifth wheel position can be adjusted.

MALFUNCTION

Air cylinder has not had sufficient time to disengage.

CORRECTIVE ACTION

Check air cylinder has sufficient time to disengage. Leave LOCK/UNLOCK control in LOCK position, wait for 10 seconds, and check again (WP 0005).

MALFUNCTION

Fifth wheel hung up between segments of slide track rack.

CORRECTIVE ACTION

Move LOCK/UNLOCK control to UNLOCK position, apply trailer brake hand control, and place gear range selector in (1) or (R). Move tractor slowly forward or backward an inch or two, stop and shift range selector to NEUTRAL (N). Check fifth wheel is now locked. Release trailer brake hand control.

MALFUNCTION

Air leak in fifth wheel air control system.

CORRECTIVE ACTION

If fifth wheel will not lock in position, check air line connections at cab mounted control and at air cylinder under fifth wheel plate. Check for sound of escaping air and loose fitting connections. If any leaks are found in air system connections at control or air cylinder, notify supervisor.

END OF TASK

ELECTRICAL SYSTEM**SYMPTOM**

One or more electrical systems not working.

MALFUNCTION

Switch(es) are not in the ON position or inter-vehicular cable is not securely connected.

CORRECTIVE ACTION

Check appropriate switch(es) are in ON position and, if a lamp system, that blackout switch is in NORMAL position. If tractor is coupled to trailer and problem is with trailer lamp system, ensure inter-vehicular cable is connected securely between tractor and trailer. Turn appropriate switch(es) in ON position. If necessary, securely connect inter-vehicular cable.

MALFUNCTION

Resettable circuit breakers have tripped (M915A1).

CORRECTIVE ACTION**NOTE**

M915A1 is equipped with resettable circuit breakers.

1. Check resettable circuit breakers have not popped out, indicating a momentary overload or short circuit. Open access panel and push in to reset any circuit breakers which have popped out.
2. Recheck failing electrical system. If resetting fails to correct problem or breaker button pops out again, notify supervisor.

END OF TASK**STEERING****SYMPTOM**

Hard steering, shimmy, or wandering.

MALFUNCTION

Incorrect tire air pressure.

CORRECTIVE ACTION

Check cold air pressure in all tires. Fill as required. Refer to Tire Pressure in WP 0003 for proper pressures.

STEERING - CONTINUED**MALFUNCTION**

Loose lug nuts.

CORRECTIVE ACTION

Check for loose lug nuts. Tighten lug nuts, and notify supervisor to have lug nuts tightened to specified torque value.

MALFUNCTION

Worn, loose or damaged suspension parts, steering parts, wheels, or vehicle frame.

CORRECTIVE ACTION

Check front axle and suspension for worn, loose, or damaged parts. Check steering linkage, wheels, and front tractor frame. If any parts are loose or damaged, notify supervisor.

MALFUNCTION

Loose or damaged shock absorbers (M915 and M915A1).

CORRECTIVE ACTION**NOTE**

M915 and M915A1 are equipped with front shock absorbers.

Check for loose or damaged shock absorbers. If shocks are loose or damaged, notify supervisor.

MALFUNCTION

Power steering fluid level is low.

CORRECTIVE ACTION

Check power steering fluid reservoir for proper fluid level (WP 0025). Add fluid if necessary (WP 0035).

SYMPTOM

Vehicle steering slow to respond or intermittent.

MALFUNCTION

Power steering fluid level is low.

CORRECTIVE ACTION

Fill power steering reservoir to proper level and check for leaks (WP 0035). If leak(s) are found, notify supervisor.

STEERING - CONTINUED**MALFUNCTION**

Power steering malfunction.

CORRECTIVE ACTION

Check for proper power steering operation. With tractor standing still, turn wheels from stop to stop and hold against stop for 5 seconds. Repeat several times. If steering problem continues, notify supervisor.

MALFUNCTION

Loose lug nuts and loose or damaged suspension components.

CORRECTIVE ACTION

Check for loose lug nuts and loose or damaged suspension components. Tighten lug nuts and notify supervisor that lug nuts need to be tightened to specified torque value. If any parts are loose or damaged, notify supervisor.

END OF TASK**WHEELS AND TIRES****SYMPTOM**

Wheel vibrates or wobbles.

MALFUNCTION

Loose or missing lug nuts.

CORRECTIVE ACTION

Check wheels for loose or missing lug nuts. Tighten loose lug nuts and notify supervisor that lug nuts need to be tightened to specified torque value. If any lug nut or stud is broken or missing, notify supervisor.

MALFUNCTION

Bent wheel.

CORRECTIVE ACTION

Check that wheel is not bent. If wheel is bent, change wheel and tire assembly. Notify supervisor that a replacement wheel is needed.

MALFUNCTION

Loose, worn, or damaged suspension components.

CORRECTIVE ACTION

Check suspension for loose, worn, or damaged components. If any components are damaged, notify supervisor.

WHEELS AND TIRES - CONTINUED**SYMPTOM**

Vehicle wanders or pulls to one side on level pavement.

MALFUNCTION

Incorrect tire air pressure.

CORRECTIVE ACTION**NOTE**

Check air pressure when tires are cold.

Check air pressure in all tires. Fill as required. Refer to Tire Pressure in WP 0003 for proper pressures.

MALFUNCTION

Improper tire size or type.

CORRECTIVE ACTION

Check that all tires are proper size and type. If tires are not properly matched and if more than one tire is involved, notify supervisor. If only one tire is improper and spare tire is of correct size and type, replace improper wheel and tire assembly with spare, and notify supervisor that a replacement is needed.

MALFUNCTION

Loose, worn, or damaged steering or suspension components.

CORRECTIVE ACTION

Check steering and suspension for loose, worn, or damaged components. If any components are damaged, notify supervisor.

SYMPTOM

Excessive or uneven tire wear.

MALFUNCTION

Incorrect tire air pressure.

CORRECTIVE ACTION

Check cold air pressure in all tires. Inflate or deflate tires to proper tire pressure. Refer to Tire Pressure in WP 0003 for proper pressures.

WHEELS AND TIRES - CONTINUED**MALFUNCTION**

Bent wheel.

CORRECTIVE ACTION

Check that wheel is not bent. If wheel is bent, change wheel and tire assembly. Notify supervisor that a replacement wheel is needed.

MALFUNCTION

Loose wheel, worn, loose, or damaged suspension components.

CORRECTIVE ACTION

Tighten loose lug nuts and notify supervisor that lug nuts need to be tightened to specified torque value. If any suspension parts are loose or damaged, notify supervisor.

END OF TASK**PUSHER AXLE (M917, M919, AND M920)****SYMPTOM**

Pusher axle will not come up.

MALFUNCTION

Low air system pressure.

CORRECTIVE ACTION

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.

MALFUNCTION

Raise/lower control in incorrect position.

CORRECTIVE ACTION

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.

MALFUNCTION

Leaks in air system.

CORRECTIVE ACTION

Check for air leaks in the area of hoses and check for cracks or holes in the air bags. If any air leaks in hoses or cracks or holes in air bags are found, notify supervisor.

PUSHER AXLE (M917, M919, AND M920) - CONTINUED**SYMPTOM**

Pusher axle will not go down.

MALFUNCTION

Low air system pressure.

CORRECTIVE ACTION

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.

MALFUNCTION

Raise/lower control in incorrect position.

CORRECTIVE ACTION

Check to make sure that raise/lower control is set at the AXLE DOWN position. Set raise/lower control to AXLE DOWN position.

MALFUNCTION

Leaks in air system.

CORRECTIVE ACTION

Check for air leaks in the area of hoses and check for cracks or holes in the air bags. If any air leaks in hoses or cracks or holes in air bags are found, notify supervisor.

SYMPTOM

Pusher axle will not maintain load reaction.

MALFUNCTION

Low air system pressure.

CORRECTIVE ACTION

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.

MALFUNCTION

Air control pressure adjuster is in incorrect position.

CORRECTIVE ACTION

Check to make sure that air control pressure adjuster is turned fully to the right. Turn air control pressure adjuster fully to the right.

PUSHER AXLE (M917, M919, AND M920) - CONTINUED**MALFUNCTION**

Leaks in air system.

CORRECTIVE ACTION

Check for air leaks in the area of hoses and check for cracks or holes in the air bags. If any air leaks in hoses or cracks or holes in air bags are found, notify supervisor.

END OF TASK**POWER TAKE-OFF (PTO) (M916 THROUGH M920)****SYMPTOM**

PTO does not engage.

MALFUNCTION

PTO control is in incorrect position.

CORRECTIVE ACTION

1. Check that cable is connected to the PTO. It may become loose from road vibrations
2. Check that PTO control is in ENGAGE position and bring engine rpm above 1100 rpm.
3. Move PTO control to ENGAGE position. If PTO still does not engage, notify supervisor.

SYMPTOM

PTO indicator light stays on even though the PTO control knob is pushed completely in.

MALFUNCTION

Throttle control is in incorrect position.

CORRECTIVE ACTION

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.

END OF TASK

WINCH (M916 AND M920)**SYMPTOM**

Winch drum will not operate.

MALFUNCTION

PTO not engaged, engine not at maximum rpm, or low oil level.

CORRECTIVE ACTION**WARNING**

Do not remove fill cap when hydraulic oil is hot. The hydraulic tank is pressurized to 5 psi (35 kPa). Remove fill cap slowly. Failure to comply may result in severe injury to personnel. Seek medical attention in the event of an injury.

1. Check position of PTO and engine throttle controls. Ensure PTO control is engaged and engine throttle on winch control console is pulled out for maximum rpm.
2. Check hydraulic fluid level. Add fluid to reservoir if necessary. If winch will not operate properly, notify supervisor.

SYMPTOM

Winch unusually noisy when operating.

MALFUNCTION

Winch cable is twisted, tangled, or causing drum to bind.

CORRECTIVE ACTION**WARNING**

Always wear heavy gloves when handling the winch wire rope. Never allow the cable to run through your hands as broken wires can cause painful injuries. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Check to make sure that cable is not twisted, tangled, or causing drum to bind. Pay out or reel in cable as necessary to straighten it. If winch is still unusually noisy when operating, notify supervisor.

END OF TASK

AIR CONDITIONING (M915P1, M915A1P1, M916P1, M917P1, and M920P1)**SYMPTOM**

A/C unit does not function.

MALFUNCTION

Faulty switch or circuit breaker.

CORRECTIVE ACTION

1. Verify A/C ON/OFF switch is in ON position. Position switch in ON position.
2. Verify circuit breaker on evaporator assembly is not tripped. Reset circuit breaker.
3. Notify supervisor to troubleshoot A/C ON/OFF switch or circuit breaker.

SYMPTOM

A/C unit not producing cool air.

MALFUNCTION

Faulty switch or loose wiring connection.

CORRECTIVE ACTION

1. Verify A/C ON/OFF switch is in ON position. Position switch in ON position.
2. Verify circuit breaker on evaporator assembly is not tripped. Reset circuit breaker.
3. Notify supervisor to troubleshoot A/C ON/OFF switch or circuit breaker.

MALFUNCTION

Evaporator filter dirty or obstructed.

CORRECTIVE ACTION

1. Inspect evaporator assembly filter. Replace filter if dirty or obstructed (WP 0033).
2. If filter is not obstructed, notify supervisor to troubleshoot A/C system.

**AIR CONDITIONING (M915P1, M915A1P1, M916P1, M917P1, AND M920P1) -
CONTINUED****SYMPTOM**

Compressor noise or vibration.

MALFUNCTION

Compressor or drive belt loose.

CORRECTIVE ACTION

1. Set A/C ON/OFF switch to OFF position (WP 0005).
2. Turn engine run switch to OFF position.
3. Check for loose drive belt. If drive belt is loose, notify supervisor.
4. Check compressor for loose or missing bolts. If bolts are loose or missing, notify supervisor.

END OF TASK

END OF WORK PACKAGE

CHAPTER 5

MAINTENANCE INSTRUCTIONS

**OPERATOR MAINTENANCE
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION**

GENERAL

PMCS are required to keep the equipment in good operating condition. Operator level PMCS is performed before, during, and after operation to ensure the equipment is fully operational and ready at all times. Failure to perform PMCS as required may result in major damage or a failure which could compromise the mission or cause injury to personnel. Operators will perform PMCS as follows:

Ensure operator PMCS is performed each time vehicle is operated.

When equipment is operated for the first time or has not been operated for a three month period, notify Field Maintenance to perform PMCS inspection.

Observe all warnings, cautions, and notes when performing PMCS.

Always perform PMCS in the same order as written. With practice, this enables operators to become familiar with the equipment and quickly identify anything wrong with the equipment.

Before operating vehicle, perform all "Before" PMCS steps.

During operation of vehicle, perform all "During" PMCS steps.

After operating vehicle, perform all "After" PMCS steps.

Weekly, perform all "weekly" PMCS steps.

Monthly, perform all "monthly" PMCS steps.

At any PMCS interval, if the item checked or serviced is found not ready or available, the problem must be corrected by troubleshooting and, if necessary, by notifying Field Maintenance to perform the task.

When equipment is found to be not ready or available and the problem cannot be resolved at operator level, describe what is wrong with the equipment using DA Form 5988-E. This documents the problem and helps Field Maintenance locate and correct it. For information on how to use this form, see DA PAM 750-8.

PURPOSE OF PMCS TABLE

The purpose of the PMCS table is to provide a systematic method of inspection and servicing of equipment. In this way, small defects can be detected early and corrected before they become major problems causing equipment failure. The PMCS table is arranged with the individual PMCS procedures listed in sequence under assigned intervals. The most logical time (before, during, and after operation) to perform each procedure determines the interval to which it is assigned. Make a habit of performing the checks in the same order each time; anything wrong will be identified quickly. Refer to WP 0025 for Operator PMCS.

The following is a list and description of the column headings in the PMCS table.

Item Number - This column shows the sequence in which the checks and services are to be performed and is used to identify equipment area on the Equipment Inspection and Maintenance Worksheet, DA Form 2404 or DA Form 5988-E.

Interval - This column indicates when each check is to be performed.

Item to be Checked or Serviced - This column identifies the item and location to be checked by part, component, or assembly name.

Procedure - This column explains what type of service, specific damage, or defect is to be checked.

Equipment Not Ready/Available If: - This column lists conditions that make the equipment unavailable for use as a result of damage, missing parts, or improper functioning that presents a safety hazard. Do not accept or operate equipment with a condition noted in this column.

CORROSION PREVENTION AND CONTROL (CPC) (PMCS)

Corrosion Prevention and Control (CPC) is a continuing concern. It is important that any corrosion problems with this equipment be reported so improvements can be made and future problems eliminated.

Corrosion is typically associated with rusting of metals or galvanic corrosion, which produces a white powder. This category of corrosion also includes deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of materials may be the result of corrosion. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion," "rust," "deterioration," or "cracking" ensure the information is identified as a CPC problem. Submit the form to the address specified in DA PAM 750-8.

FLUID LEAKAGE

It is necessary for you to know how fluid leakage affects the status of the M915 through M920 and M915A1 vehicles. Following are types/classes of leakage you need to know to be able to determine the status of the M915 through M920 and M915A1 vehicles. Learn these leakage definitions and remember - when in doubt, notify your supervisor. Equipment operation is allowed with minor leakage (Class I or II). Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS.

Class III leaks should be reported immediately to your supervisor.

- (1) Class I Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
- (2) Class II Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item being checked/inspected.
- (3) Class III Leakage of fluid great enough to form drops that fall from item being checked/inspected.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

The Preventive Maintenance Checks and Services Work Package (WP 0025) includes inspection and service procedures that must be performed to maintain the vehicle in good operating condition.

TROUBLE SPOTS

Check bolts, nuts, and screws. If loose, tighten. If bent, broken, or missing, notify your supervisor.

Check painted surfaces. If paint is loose or chipped, or rust is observed on bare metal surfaces, notify your supervisor.

Check welds. If cracked or broken, notify your supervisor.

Check electrical wiring. If connection is loose, tighten. If insulation is cracked or broken, wires are bare, or connections are broken, notify your supervisor.

Check hoses and fluid lines. Ensure clamps and fittings are tight. If hoses or lines are worn, damaged, or leaking, notify your supervisor. Refer to Class Leakage Definitions for information about leaks.

CLEANING INSTRUCTIONS AND PRECAUTIONS**WARNING**

Cleaning solvent is combustible. DO NOT use or store near heat, sparks, flame, or other ignition sources. Use mechanical ventilation whenever product is used in a confined space, heated above ambient temperatures, or agitated. Keep container sealed when not in use. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Contact with cleaning solvent may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

NOTE

Dirt, grease, oil, and debris may cover up a serious problem. Check as you clean. Follow precautions printed on container. Use cleaning solvent to clean metal surfaces. Use soap and water to clean rubber and plastic.

Cleaning is an after-operation service performed by operators to maintain vehicle readiness. Vehicles must be kept as clean as possible, depending on the available cleaning equipment and materials and tactical situation.

General Cleaning Precautions

Perform all cleaning procedures in well-ventilated areas.

Wear protective gloves, clothing, and respiratory equipment when using caustic, toxic, or flammable cleaning materials.

Never use diesel fuel or gasoline for cleaning.

A fire extinguisher must be readily available during all cleaning operations using flammable cleaning materials.

GENERAL CLEANING INSTRUCTIONS AND PRECAUTIONS - CONTINUED

Special Precautions

Do not allow cleaning materials to come in contact with rubber, leather, vinyl, or canvas.

Do not allow corrosion-removing cleaning materials to contact painted surfaces.

Do not use steam or high-pressure air to clean cab or van body interiors.

Do not steam clean rustproofed surfaces.

Remove mildew from canvas with a bristle brush before cleaning canvas.

Use low-pressure air or water to clear debris from radiator core. Force debris out front of radiator by applying low-pressure air or water to rear of radiator first.

General Guidelines

Table 1 provides general guidelines for the use of cleaning materials and equipment for removing contaminants from vehicle surfaces.

Table 1. Cleaning Instructions.

SURFACE	CONTAMINANT		
	OIL/GREASE	DIRT/MUD/DUST/ SALT	SURFACE RUST/ CORROSION
	CLEANING MATERIAL/EQUIPMENT/METHOD		
Body	Grease-cleaning compound, running water, and damp and dry rags	High-pressure water, warm soapy water, soft brush, and damp and dry rags	Corrosion-removing compound, bristle brush, dry rags, and lubricating oil*
Cab Interior (Metal)	Grease-cleaning compound, running water, and damp and dry rags	Damp and dry rags	Corrosion-removing compound, bristle brush, dry rags, and lubricating oil*
Cab Interior/ Cab Top (Fabric)	Saddle soap, warm water, soft brush, and dry rags	Soft brush, warm soapy water, and damp or dry rags	—
Frame	Grease-cleaning compound, running water, and damp and dry rags	High-pressure water, warm soapy water, wire brush, and damp and dry rags	Corrosion-removing compound, wire brush, dry rags, and lubricating oil*

GENERAL CLEANING INSTRUCTIONS AND PRECAUTIONS - CONTINUED**Table 1. Cleaning Instructions - Continued.**

SURFACE	CONTAMINANT		
	OIL/GREASE	DIRT/MUD/DUST/ SALT	SURFACE RUST/ CORROSION
	CLEANING MATERIAL/EQUIPMENT/METHOD		
Engine/ Transmission	Cleaning solvent and damp and dry rags	High-pressure water, warm soapy water, soft wire brush, and damp or dry rags	Bristle brush, warm soapy water, and dry rags
Glass (Vehicles w/o Crew Protection)	Glass cleaning solution and clean dry rags	Glass cleaning solution and clean dry rags	—
Ballistic Glass (Vehicles w/Crew Protection)	General Purpose Liquid Detergent and water with soft clean cloth	General Purpose Liquid Detergent and water with soft clean cloth	—
Radiator	—	Low-pressure water or air, warm soapy water, and damp and dry rags	—
Rubber Insulation	Damp and dry rags	Damp and dry rags	—
Tires	Warm soapy water and bristle brush	High-pressure water and bristle brush	—
Wire Rope	Cleaning solvent and wire brush	Wire brush	Wire brush and lubricating oil*
Wood	Detergent, warm water, and damp and dry rags	Low-pressure water, warm soapy water, and damp and dry rags	—

* After cleaning, apply a light grade of lubricating oil to all unprotected surfaces to prevent further rusting and corrosion.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**

INITIAL SETUP:

Personnel Required

Two

References

AR 385-55

WP 0003

WP 0005

References - Continued

WP 0008

WP 0009

WP 0027

WP 0029

WP 0033

Table 1. Preventive Maintenance Checks and Services (PMCS).

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p style="text-align: center;"><u>WARNING</u></p> <p>Observe all warnings, cautions, and notes while performing Preventive Maintenance Checks and Services (PMCS). Failure to comply may result in injury to personnel or damage to equipment. Seek medical attention in the event of an injury.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Vehicle operation with a class I or II leak is permitted; however, system fluid capacities must be considered and fluid levels must be checked more frequently. All leaks must be reported to your supervisor. Failure to comply may result in further damage to equipment.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
1	Before	<p>WALK-AROUND CHECKS EXTERIOR</p> <p>Exterior Left Front</p>	<p>NOTE</p> <p>Perform Weekly and Before PMCS if you are the assigned operator but have not operated the vehicle since the last weekly inspection or you are operating the vehicle for the first time.</p> <p>Visually check for under-inflated and unserviceable tires including spare. Check tires for leaks, cuts, gouges, cracks, or bulges. Remove all penetrating objects.</p>	<p>Tires have leaks, cuts, gouges, cracks, or bulges which could result in tire failure during operation. Two or more tires, including the spare, missing or unserviceable.</p>
2	Before	Fuel Heater	<p>NOTE</p> <p>Fuel heater is located below driver-side door and above fuel tank on M915A1 only.</p> <p>Check fuel heater (Figure 1, Item 1) for leaks or damage.</p>	<p>Any Class III leak is evident.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

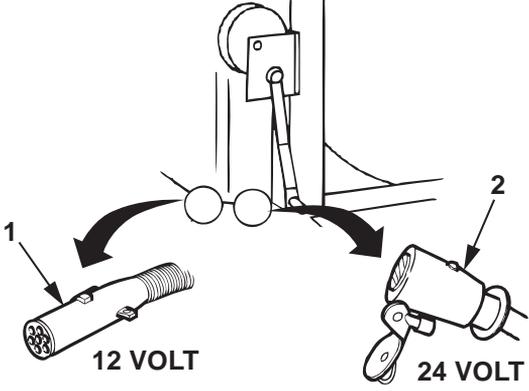
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
3	Before	Trailer Coupling Air Hoses and Connectors	<p style="text-align: center;"><i>Figure 1. Fuel Heater.</i></p> <p style="text-align: center;">NOTE Perform step 3 for M915, M915A1, M916, and M920 vehicles.</p> <p>Inspect tractor-to-trailer coupling air hoses for cracking or damaged connectors. Inspect trailer cable and electrical connectors (Figure 2, Item 1) and (Figure 2, Item 2).</p>	Air hose(s) or couplers missing, leaking, coupler(s) unserviceable, trailer electrical connectors damaged or cable missing.
 <p style="text-align: center;"><i>Figure 2. Trailer Coupling Air Hoses.</i></p>				

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
4	Before	Fifth Wheel and Ramps	<p>a. Check that lockjaw pins (Figure 3, Item 7) do not protrude more than 1/16 in. (1.6 mm) above surface of top plate, or have any lateral or vertical movement.</p> <p>b. Check for bent, worn, broken, or missing parts.</p> <p style="text-align: center;">NOTE</p> <p>Perform step c for the M915A1 only.</p> <p>c. Check slide track (Figure 3, Item 1) for damage and free movement of fifth wheel assembly (Figure 3, Item 2).</p> <p>d. Check primary (Figure 3, Item 4) and secondary (Figure 3, Item 3) release handles for operation and damage.</p> <p style="text-align: center;">NOTE</p> <p>Air lines and cylinders are located under fifth wheel top plate.</p> <p>e. Check air lines (Figure 3, Item 6) and air cylinder (Figure 3, Item 5) for damage.</p>	<p>Lockjaw pin extends more than 1/16 in. (1.6 mm) or has lateral or vertical movement.</p> <p>Bent, worn, broken, or missing parts</p> <p>Primary or secondary release handles are damaged or do not function.</p> <p>Any air leak is evident.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

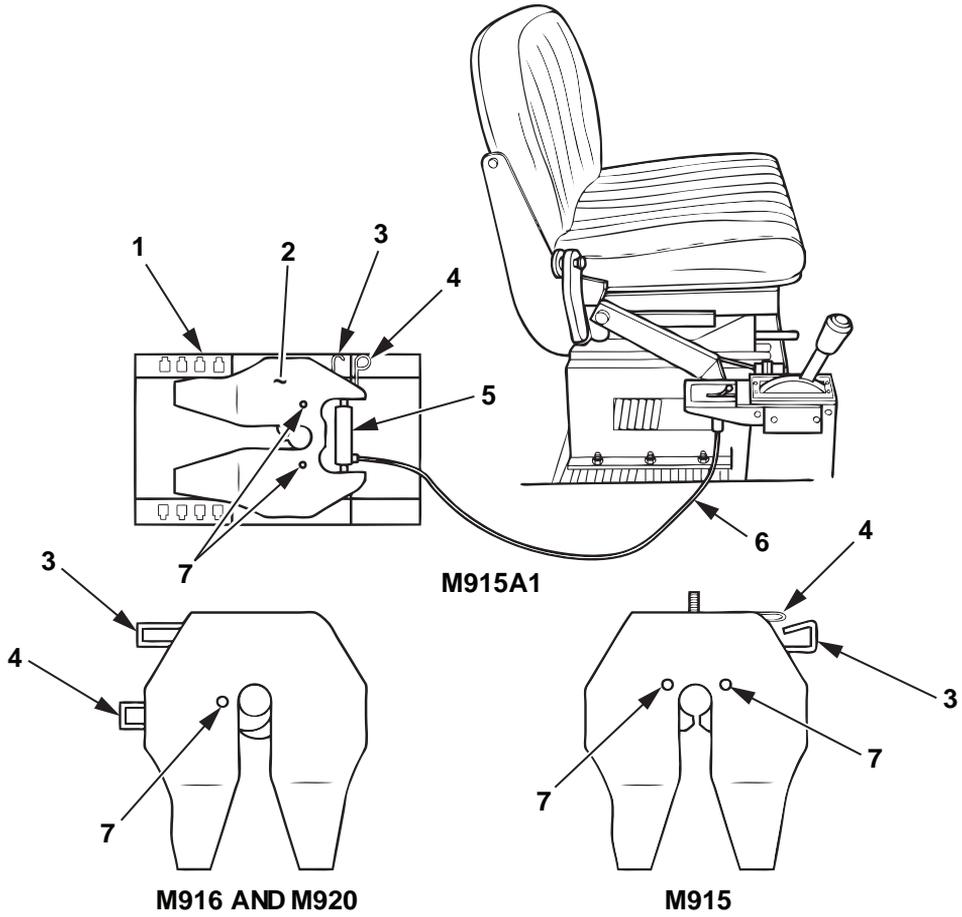
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
 <p style="text-align: center;">M915A1</p> <p style="text-align: center;">M916 AND M920</p> <p style="text-align: center;">M915</p>				
<p><i>Figure 3. Fifth Wheel Controls.</i></p> <p>NOTE If leakage is detected, further investigation is required to determine location and cause of leak.</p>				

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
5	Before	Left Side and Rear of Vehicle Under Vehicle	a. Look under vehicle for evidence of fluid (fuel, oil, or coolant) leak. b. Visually check for under-inflated and unserviceable tires including spare. Check tires for leaks, cuts, gouges, cracks, or bulges. Remove all penetrating objects. c. Check that mud flaps are in place and intact.	Any Class III leak is evident. Tires have leaks, cuts, gouges, cracks, or bulges which could result in tire failure during operation. Two or more tires, including the spare, missing or unserviceable.
6	Before	Right Side and Front Tires	Visually check for under-inflated and unserviceable tires including spare. Check tires for leaks, cuts, gouges, cracks, or bulges. Remove all penetrating objects.	Tires have leaks, cuts, gouges, cracks, or bulges which could result in tire failure during operation. Two or more tires, including the spare, missing or unserviceable.
7	Before	Front of Vehicle	Look under vehicle for evidence of fuel, oil, or coolant leak. <p style="text-align: center;">NOTE</p> Cracked or broken windshield may violate AR 385-55.	Any Class III leak is evident.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
8	Before	Windshield Wipers and Blades	Check windshield for any cracks that impair vision. Check wiper arms and blades for presence and damage.	Windshield cracked, shattered, or missing.
9	Before	ENGINE COMPARTMENT Cooling System	<p style="text-align: center;"><u>WARNING</u></p> <p>After raising engine compartment hood, ensure S-shaped safety hook is properly inserted through two matching holes in prop channel to prevent hood from accidentally falling. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.</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 further left until you can remove it. Failure to comply may result in serious burns. Seek medical attention in the event of an injury.</p> <p style="text-align: center;">NOTE</p> <p>If leakage is detected, further investigation is required to determine location and cause of leak.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

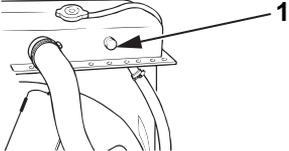
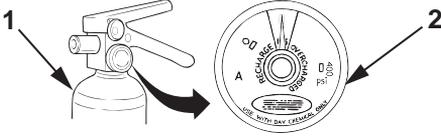
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			Check coolant level in radiator sight glass (Figure 4, Item 1). If level is low, add coolant (WP 0029).	Any Class III leak is evident.
10	Before	INTERIOR Cab Fire Extinguisher	a. Check for missing or damaged fire extinguisher (Figure 5, Item 1) under dashboard on driver side. b. Check gauge (Figure 5, Item 2) for proper pressure of approximately 150 psi (1,034 kPa). Ensure mounting bracket is secure. c. Check for damaged or missing seal.	Fire extinguisher missing or damaged. Pressure gauge needle in RECHARGE area. Seal damaged or missing.
		 <p style="text-align: center;"><i>Figure 4. Radiator Sight Glass.</i></p>	 <p style="text-align: center;"><i>Figure 5. Cab Fire Extinguisher.</i></p> <p style="text-align: center;">NOTE Missing, torn, or inoperative seatbelt may be in violation of AR 385-55.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
11	Before	Interior of Vehicle	Check seat and seatbelt for proper adjustment and ability to lock, security of pins and bolts, and tears.	
12	Before	Controls and Instruments	<p style="text-align: center;"><u>WARNING</u></p> <p>If Chemical, Biological, Radiological, and Nuclear (CBRN) exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your CBRN Officer or CBRN NCO for appropriate handling or disposal procedures. CBRN contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel. Failure to comply may result in injury or death to personnel. Wear eye protection when removing A/C air filter. Seek medical attention in the event of an injury. While performing PMCS with engine running, wear approved hearing protection. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>A sudden rise in temperature during engine warm up indicates defective cooling system.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p style="text-align: center;">NOTE</p> <p>The engine must be running to perform the following checks.</p> <ol style="list-style-type: none"> a. Start engine and run at idle speed. b. Check air cleaner indicator. If in red, clean filter and reset. c. Check voltmeter (Figure 6, Item 1) needle. Should be in green area. Normal operating range is 12–15V. d. Check transmission oil temperature gauge (Figure 6, Item 2). Normal operating range is 40–220° F (4–104° C) for M915–M920 or 120–250° F (49–121° C) for M915A1. e. Check air pressure gauges front (Figure 6, Item 4) and rear (Figure 6, Item 6). Normal operating range is 90–120 psi (621–827 kPa) for M915–M920 or 95–125 psi (655–862 kPa) for M915A1. Ensure warning light (Figure 6, Item 5) and buzzer are operational. 	<p>Engine does not operate.</p> <p>Air cleaner indicator stays in red.</p> <p>Voltmeter reads above or below the green area.</p> <p>Oil temperature gauge exceeds 220° F (104° C) for M915–M920 or 250° F (121° C) for M915A1.</p> <p>Reads less than 60 psi (414 kPa). Warning light and/or buzzer stays on or not operational.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>f. Check engine temperature gauge (Figure 6, Item 7). Normal operating range is 165–195° F (74–91° C) for M915–M920 or 160–220° F (71–104° C) for M915A1 with engine warmed up.</p> <p>g. Check engine oil pressure gauge (Figure 6, Item 3). Normal operating range is 40–75 psi (276–517 kPa) for M915–M920 or 35–50 psi (241–345 kPa) for M915A1 at 2,100 rpm and 5–20 psi (34–138 kPa) at idle.</p>	<p>Temperature gauge reads less than 165° F (74° C) or exceeds 195° F (91° C) for M915–M920 or reads less than 160° F (71° C) or exceeds 220° F (104° C) for M915A1 after engine warms up.</p> <p>Reads less than 40 psi (276 kPa) for M915 through M920 or 35 psi (241 kPa) for M915A1 at 2,100 rpm or 30 psi (207 kPa) for M915 through M920 10 psi (69 kPa) for M915A1 at at idle.</p>

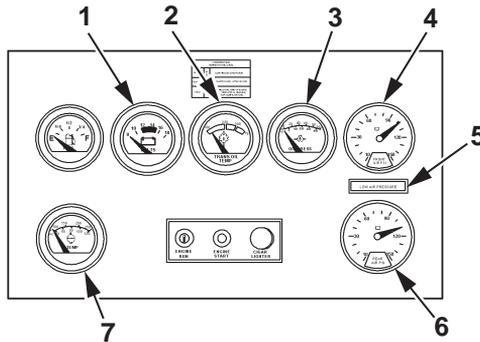


Figure 6. Instrument Panel.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>h. Check transmission and ratio selector. Shift in all ranges checking for unusual stiffness, abnormal operation, or binding.</p> <p>NOTE Perform step i for the M917, M919, and M920 only.</p> <p>i. Check pusher axle controls and gauges.</p> <p>j. Check engine retarder for braking ability.</p> <p>k. Check steering response.</p> <p>l. Listen for leakage in exhaust system.</p> <p>m. Check tachograph rpm needle for proper response to throttle. Check idle speed 580–650 rpm with engine at normal operating temperature.</p> <p>n. Check tachograph for recording paper disk.</p> <p>o. Check parking brake; pull out to apply, push in to release. With parking brake applied, place transmission in gear. Vehicle should not move.</p>	<p>Transmission or ratio selector inoperative or binding.</p> <p>Gauges or pusher axle are inoperative.</p> <p>Engine retarder is inoperable.</p> <p>Steering binds or is unresponsive.</p> <p>Pipe, clamp, or hardware damaged or missing.</p> <p>Tachograph indicates less than 580 rpm or more than 650 rpm at idle with engine at normal operating temperature.</p> <p>Disk is missing.</p> <p>Parking brake is inoperative.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
13	Before	EXTERIOR Air Dryer	<p>p. Check service brakes for pulling, grabbing, or other abnormal operation by moving vehicle approximately 10 ft.</p> <p>Check automatic drain valve (Figure 7, Item 1) operation. With engine running, when air pressure reaches 120 psi (827 kPa), a sharp burst of air will be heard at the drain valve each time the compressor unloads.</p>	<p>Brakes do not stop vehicle.</p> <p>Automatic drain valve inoperative.</p>

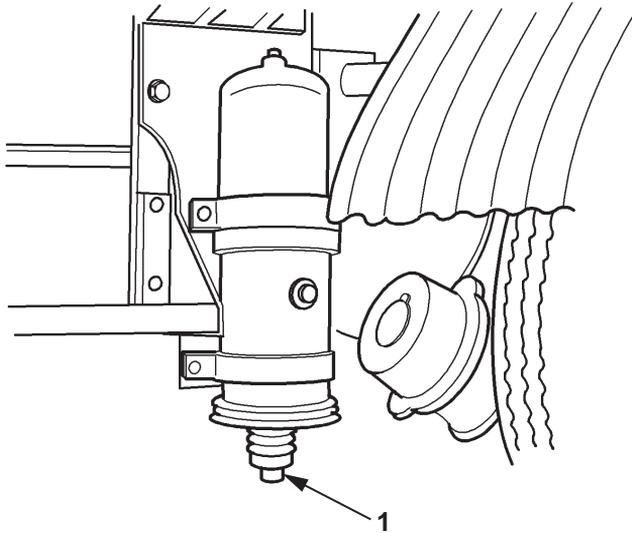


Figure 7. Automatic Drain Valve.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
14	Before	Trailer Brakes	<p align="center">NOTE</p> <p>Perform this check with the trailer loaded after the tractor and 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 align="center">NOTE</p> <p>If vehicle is equipped with Crew Protection Kit, perform steps 15–22 before operation.</p>	<p>Any air leaks are evident.</p> <p>Brakes fail to hold tractor/trailer combination from moving.</p>
15	Before	Front Armor	<p>a. Inspect wheel well armor (Figure 8, Item 3) for damaged, loose, or missing armor plate and mounting bolts.</p> <p>b. Open left hood and inspect exterior firewall armor (Figure 8, Item 2) for damaged, loose, or missing armor plate and mounting bolts.</p> <p>c. Inspect windshield ballistic glass (Figure 8, Item 1) mounting hardware for damaged, loose, or missing brackets and mounting bolts.</p>	<p>Armor plate is damaged, loose, or missing, or mounting bolts are loose or missing.</p> <p>Armor plate is damaged, loose, or missing, or mounting bolts are loose or missing.</p> <p>Any windshield ballistic glass mounting hardware is damaged, loose, or missing, or mounting bolts are loose or missing.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>d. Inspect exterior surface of windshield ballistic glass (Figure 8, Item 1) for cracks, scratches, or pitting.</p> <p>e. If dirty, clean windshield ballistic glass (Figure 8, Item 1) (WP 0027).</p>	<p>Cracks, scratches, or pitting in the exterior layer of windshield ballistic glass that penetrates through to the inner layer.</p>

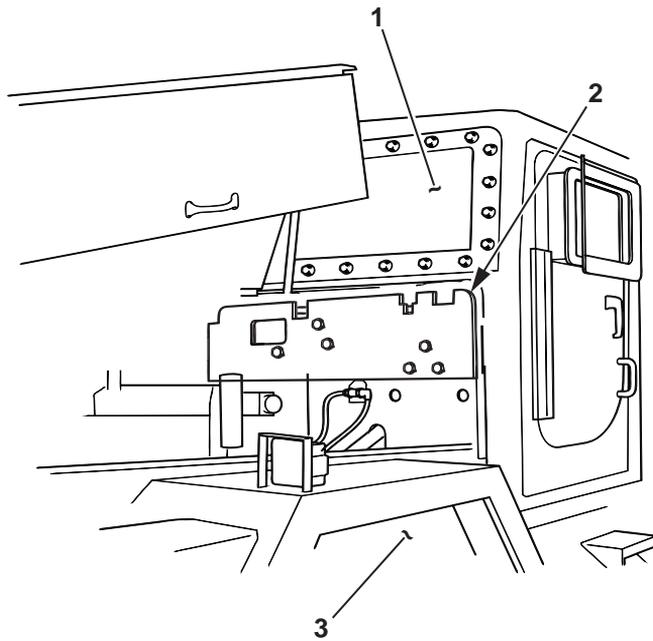


Figure 8. Front Armor.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
16	Before	Side Armor (Left Side)	<p>a. Inspect door assembly (Figure 9, Item 2) and door frame (Figure 9, Item 3) for damaged, loose, or missing mounting hardware.</p> <p>b. Inspect exterior surface of door ballistic glass (Figure 9, Item 1) for cracks, scratches, or pitting.</p> <p>c. Open door and enter cab. Close door using grab handle. Ensure door closes without binding and latches correctly (WP 0005).</p> <p>d. Ensure door ballistic glass (Figure 9, Item 1) can open, close, and securely lock.</p> <p>e. Inspect interior surface of door ballistic glass (Figure 9, Item 1) and windshield ballistic glass for cracks, scratches, or pitting.</p>	<p>Any armor panel or door assembly is damaged or mounting hardware is loose or missing.</p> <p>Cracks, scratches, or pitting in the exterior layer of door ballistic glass that penetrates through to the inner layer.</p> <p>Door binds or does not latch.</p> <p>Door ballistic glass will not close or lock.</p> <p>Cracks, scratches, or pitting on the interior surface of the door ballistic glass or windshield ballistic glass.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			f. Open door assembly (Figure 9, Item 2) and enter cab. Close door assembly (Figure 9, Item 2) using grab handle. Ensure door assembly (Figure 9, Item 2) closes without binding and latches correctly. g. If dirty, clean door ballistic glass (Figure 9, Item 1) (WP 0027).	Door assembly binds or does not latch.

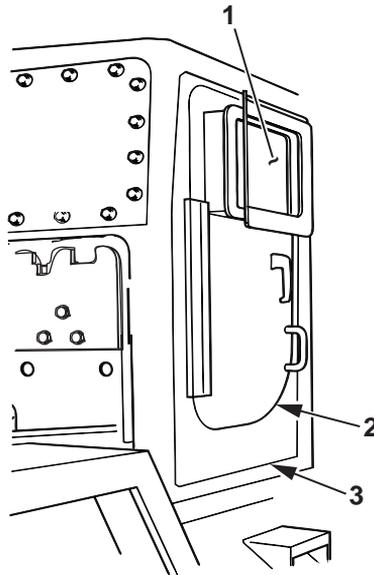


Figure 9. Side Armor (Left Side).

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
17	Before	Floor and Firewall Armor (Left Side)	Inspect left side floor armor (Figure 10, Item 2) and firewall armor (Figure 10, Item 1) for damage or loose or missing armor plates and mounting bolts.	Any floor or firewall armor is damaged, loose, or missing, or mounting bolts are loose or missing.

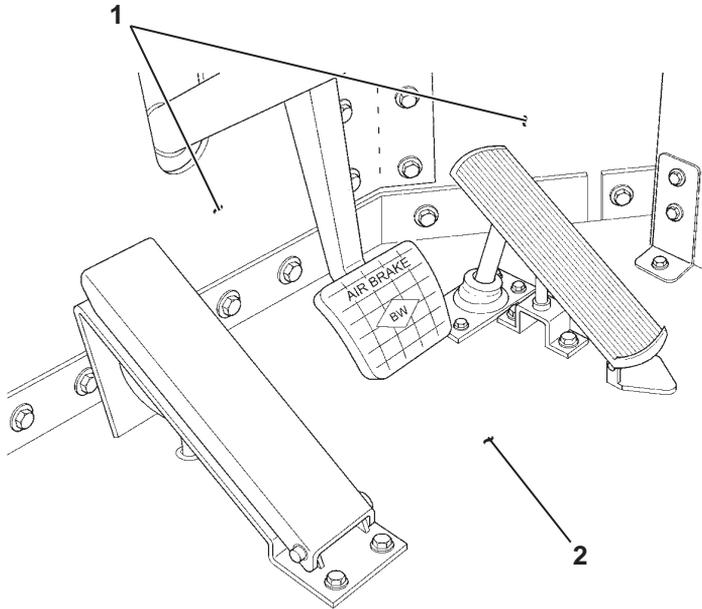


Figure 10. Floor and Firewall Armor (Left Side).

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
18	Before	Roof Armor	a. Inspect roof armor (Figure 11, Item 1) for damage or missing components. b. Inspect roof armor (Figure 11, Item 1) mounting hardware for loose or missing components.	Roof armor is damaged. Roof armor mounting hardware is loose or missing.

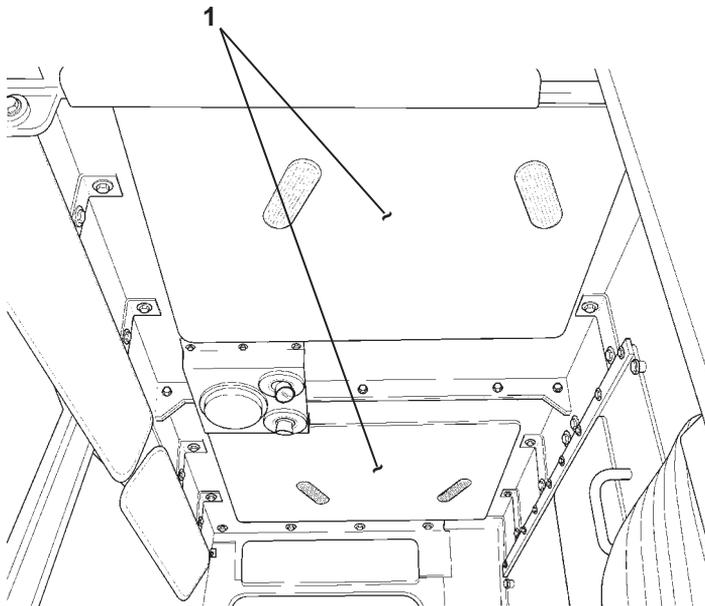


Figure 11. Roof Armor.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
19	Before	Side Armor (Right Side)	<ul style="list-style-type: none"> a. Inspect door assembly (Figure 12, Item 4) and door frame (Figure 12, Item 3) for damage or loose or missing mounting hardware. b. Inspect exterior surface of door ballistic glass (Figure 12, Item 1) for cracks, scratches, or pitting. c. Inspect windshield ballistic glass (Figure 12, Item 2) mounting hardware for damaged, loose, or missing brackets and mounting bolts. d. Inspect exterior surface of windshield ballistic glass (Figure 12, Item 2) for cracks, scratches, or pitting. e. Inspect exterior surface of windshield ballistic glass (Figure 12, Item 2) for cracks, scratches, or pitting. 	<p>Armor panel or door assembly is damaged or mounting hardware is loose or missing.</p> <p>Cracks, scratches, or pitting in the exterior layer of door ballistic glass that penetrates through to the inner layer</p> <p>Any windshield ballistic glass mounting hardware is damaged, loose, or missing, or mounting bolts are loose or missing.</p> <p>Cracks, scratches, or pitting in the exterior layer of windshield ballistic glass that penetrates through to the inner layer</p> <p>Cracks, scratches, or pitting in the exterior layer of windshield ballistic glass that penetrates through to the inner layer</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>f. Ensure door ballistic glass (Figure 12, Item 1) can open, close, and securely lock.</p> <p>g. Inspect interior surface of door ballistic glass (Figure 12, Item 1) and windshield ballistic glass (Figure 12, Item 2) for cracks, scratches, or pitting.</p> <p>h. Open door assembly (Figure 12, Item 4) and enter cab. Close door assembly (Figure 12, Item 4) using grab handle. Ensure door assembly (Figure 12, Item 4) closes without binding and latches correctly.</p> <p>i. If dirty, clean ballistic glass (WP 0027).</p>	<p>Door ballistic glass will not close or lock.</p> <p>Cracks, scratches, or pitting on the interior surface of the door ballistic glass or windshield ballistic glass</p> <p>Door assembly binds or does not latch.</p>

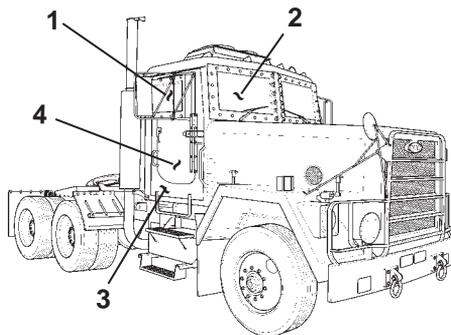


Figure 12. Side Armor (Right Side).

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
20	Before	Floor and Firewall Armor (Right Side)	a. Inspect left side floor armor (Figure 13, Item 3) and firewall armor (Figure 13, Item 2) for damaged or loose or missing armor plates and mounting bolts. b. Inspect glove box armor (Figure 13, Item 1) for damaged, loose or missing armor plates and mounting bolts. c. Ensure glove box armor (Figure 13, Item 1) is securely latched (WP 0005).	Any floor or firewall armor is damaged, loose, or missing or mounting bolts are loose or missing. Any armor panel is damaged, loose, or missing or mounting bolts are loose or missing. Glove box armor will not close or latch securely.

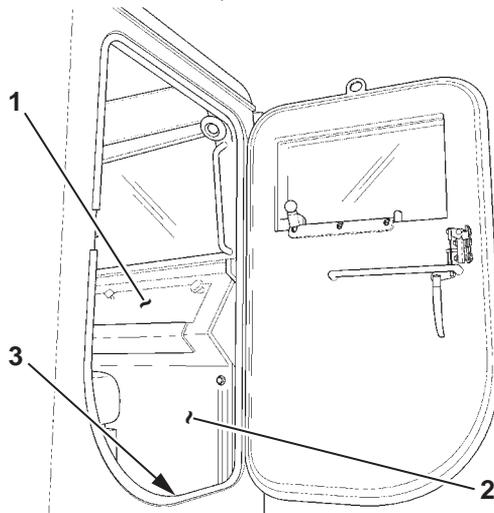


Figure 13. Floor and Firewall Armor (Right Side).

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
21	Before	Rear Armor and Escape Hatch	a. Inspect rear armor (Figure 14, Item 1) for damage or loose or missing armor plates and mounting bolts. b. Inspect escape hatch (Figure 14, Item 2) for damage. c. From inside the cab, check that escape hatch (Figure 14, Item 2) will open and securely latch closed. Ensure there is no damage to latch and mounting hardware (WP 0005).	Rear cab armor is damaged, loose, or missing, or mounting bolts are loose or missing. Escape hatch is damaged or mounting hardware is loose or missing. Escape hatch will not open or latch closed securely.

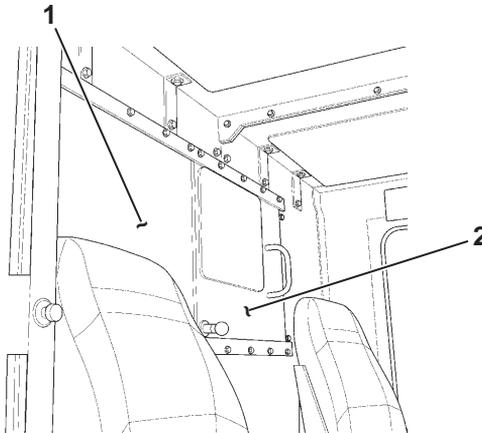


Figure 14. Roof Armor and Escape Hatch.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
22	During	INTERIOR A/C Blower Unit	<p style="text-align: center;">NOTE</p> The Air Conditioning Kit is installed on vehicles equipped with Crew Protection Kit only. If vehicle is equipped with air conditioning, perform during operation step 22. a. Start engine, refer to WP 0008 or WP 0009. b. Turn A/C switch (Figure 15, Item 1) ON and fan speed switch (Figure 15, Item 3) to HIGH position (WP 0005). c. Operate A/C system for five minutes and check temperature of air coming out of blower unit vents (Figure 15, Item 2).	Temperature of air coming out of vents is not cold and A/C is required for mission.

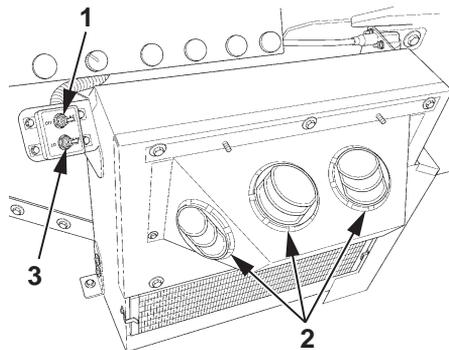


Figure 15. A/C Blower Unit.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
23	During	Steering/Swaying	Observe any unusual sway, dip, or unstable handling. Check vehicle steering response for unusual free-play, binding, wandering, or shimmy.	Loose or binding steering action or steering wheel difficult to turn. Steering is unstable or inoperative.
24	During	Gauges	Monitor all gauges and warning buzzers during operation.	Any gauge is not functioning properly.
25	After	Turbocharger	When shutting down engine, listen to turbocharger (Figure 16, Item 1) for rattling noises.	Unusual or rattling noises or a defective turbocharger

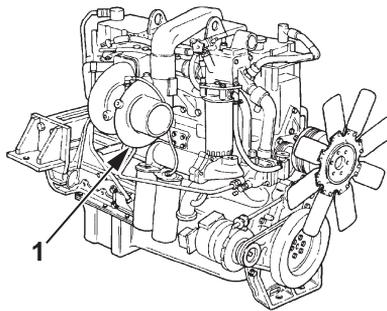


Figure 16. Turbocharger.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
26	After	Horns	<p align="center">NOTE</p> <p>Operation of vehicles with inoperative horn may violate AR 385-55.</p> <p>Check operation of horns if tactical situation permits.</p>	
27	After	EXTERIOR Lights	Check operation of headlights, taillights, turn signals, brake lights, and blackout lights.	Mission requires blackout lights and lights are not operating.
28	After	Exterior of Vehicle	<p>Check for obvious damage to vehicle.</p> <p>Check under vehicle for signs of leaks.</p> <p>Visually check for under-inflated and unserviceable tires including spare. Check tires for leaks, cuts, gouges, cracks, or bulges. Remove all penetrating objects.</p>	<p>Any damage that prevents operation</p> <p>Any Class III leak is evident.</p> <p>Tires have leaks, cuts, gouges, cracks, or bulges which could result in tire failure during operation. Two or more tires, including spare, missing or unserviceable.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
29	After	Exterior of Vehicle (Left Side)	Check left-side view and spotter mirrors and arms.	
30	After	Air Reservoirs and System	Drain air reservoirs completely. Check air lines and reservoirs for leaks and damage.	Any air leaks, damage to air lines or reservoirs, or oil coming from air tanks is noted during draining.
31	After	Exterior of Vehicle (Right Side)	Check right-side view and spot mirrors and arms.	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
32	After	Transmission	<p style="text-align: center;">NOTE</p> <p>Perform step a for the M915 through M920 only.</p> <p>a. Shut off engine and let vehicle sit for five minutes before checking transmission oil level. The level should be between the ADD and FULL marks on transmission dipstick (Figure 17, Item 1). If necessary to service, fill to within 1/4 in. (6.4 mm) of FULL mark.</p> <p style="text-align: center;">NOTE</p> <p>Perform steps b and c for the M915A1 only. The hot check method is preferred, but oil level may be checked with transmission temperature below 120° F (49° C) by reading cold run band on dipstick.</p> <p>b. With transmission temperature gauge 120°–250° F (49°–121° C) while idling in neutral with brake applied, remove dipstick (Figure 17, Item 1) and check oil level. Dipstick (Figure 17, Item 1) should read between high and low mark on hot run band.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

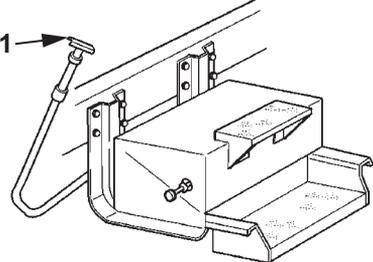
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			c. If below low mark on hot run band, add oil to bring level to mid-point of band. Approximately one quart will raise level from bottom line to middle of band.	
				
33	After	Winch and Winch Reservoir (M916 and M920)	a. Visually inspect winch, reservoir lines, and hoses for leakage and damage. b. Check fluid level. Fluid level should be at full mark on sight. c. Check cable for kinks, frays, and breaks in wire. d. During operation, check for oil leakage and adequate control response.	Hoses/lines are damaged. Class III leaks are evident. Winch cable frayed, has kinks that cannot be removed, is broken, or missing. No control response. Class III leaks evident.

Figure 17. Transmission Dipstick.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
		ENGINE COMPARTMENT	<p style="text-align: center;"><u>WARNING</u></p> <p>After raising engine compartment hood, ensure S-shaped safety hook is properly inserted through two matching holes in prop channel to prevent hood from accidentally falling. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.</p> <p>When working in engine compartment with engine running, keep clear of cooling fan. The fan can engage at any time and serious injury to personnel may result. Seek medical attention in the event of an injury. The engine must be shut off before performing PMCS steps 34 through 44. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Do not overfill engine oil crankcase. Failure to comply may result in damage to equipment.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

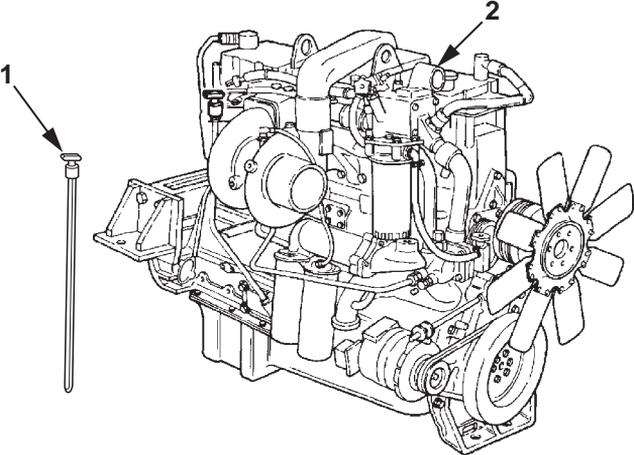
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
34	After	Engine Oil Level	Check oil dipstick (Figure 18, Item 1) for proper oil level. Dipstick (Figure 18, Item 1) should read between low and high marks. If below low mark, add oil through oil fill cap (Figure 18, Item 2) to bring level to high mark.	Engine has used more than one quart of oil per 100 miles.
 <p>The diagram shows a side view of an engine. A dipstick, labeled '1', is shown to the left of the engine. An arrow points from the dipstick to the oil fill cap on the engine, which is labeled '2'. The engine has a cooling fan on the right side.</p>				
<p>Figure 18. Engine Oil Dipstick.</p>				
			<p>CAUTION</p> <p>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 your supervisor. Failure to comply may result in damage to equipment.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

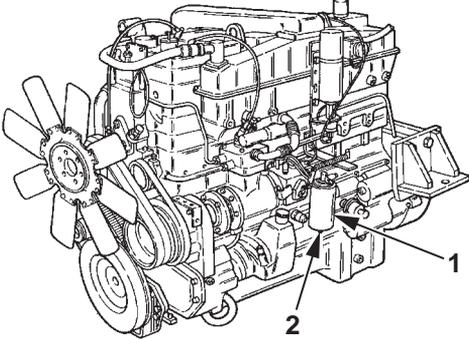
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
35	After	Fuel Filter	<p style="text-align: center;">NOTE</p> <p>Some fuel filters may not be equipped with drains. With engine running, perform step 35.</p> <ol style="list-style-type: none"> a. Open drain (Figure 19, Item 2) on bottom of fuel filter (Figure 19, Item 1). Drain fuel into suitable container until fuel runs clear. Close drain (Figure 19, Item 2) securely. Dispose of fuel in accordance with local requirements. b. Check for leaks or damage. 	<p>Any Class III leak is evident.</p> <p>Any Class III leak is evident.</p>
				
<p><i>Figure 19. Engine Fuel Filter.</i></p>				
36	After	Engine Compartment	<ol style="list-style-type: none"> a. Check for fluid leakage and damage. b. Check oil filters for leaks. c. Visually check radiator, mounting brackets, and hoses for damages or coolant leaks. 	<p>Any Class III leak is evident.</p> <p>Any Class III leak is evident.</p> <p>Any Class III leak is evident.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
37	After	Drive Belts	<p>a. Check for frayed or cracked belts (Figure 20, Item 1).</p> <p>b. Check belt adjustment. Deflection should not be more than 1/2 in. (12.7 mm). If belts are loose, notify your supervisor.</p> <p>c. Check pulleys (Figure 20, Item 2) for damage or cracks.</p>	<p>Any drive belt missing, broken, or cracked to belt fiber. More than one crack 1/8 in. (3.2 mm) deep (50% belt thickness) within a 6 in. (152.4 mm) length. Frays greater than 2 in. (50.8 mm) or excessive play.</p> <p>Deflection more than 1/2 in. (12.7 mm).</p> <p>Any pulley with large chips or cracked belt walls.</p>

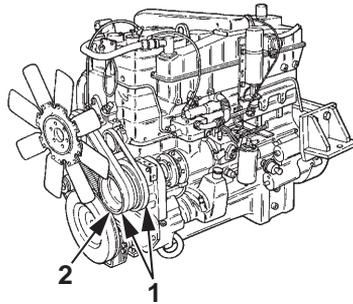


Figure 20. Drive Belts.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
38	After	Fan Clutch and Actuator	<p>d. Check water pump for coolant leaks.</p> <p>e. Check air compressor for oil leaks or damage.</p> <p style="text-align: center;"><u>WARNING</u></p> <p>Engine must be off to check the fan clutch and actuator. Failure to comply may result in severe injury or death to personnel. Seek medical attention in the event of an injury.</p> <p>a. Check fan clutch for damage. Look for loose attaching bolts.</p> <p>b. Inspect hoses for looseness at fittings, for air leaks, fraying, cracks, and abrasions.</p> <p>c. Check fan clutch actuator (Figure 21, Item 1) for signs of leaks and loose hose connections.</p>	<p>Any Class III leak is evident.</p> <p>Any Class III leak or damage is evident.</p> <p>Damaged or loose hardware.</p> <p>Any air leak is evident.</p> <p>Air leakage from the exhaust port when engine temperature is below 185° F (85° C).</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

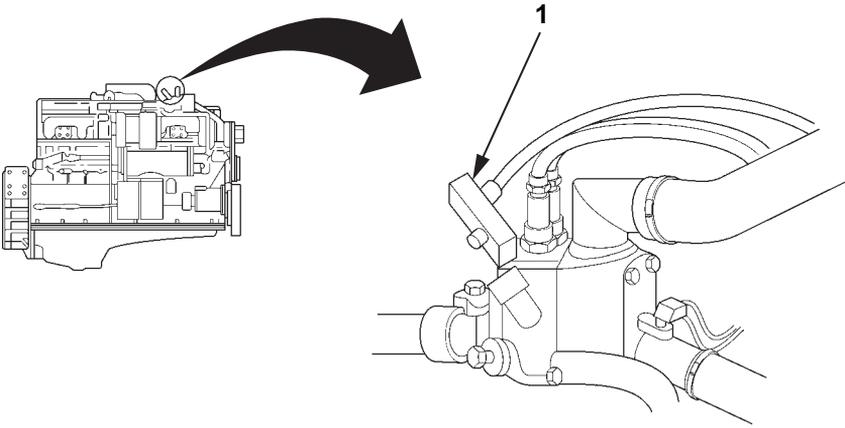
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
				
<p><i>Figure 21. Fan Clutch and Actuator.</i></p>				

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
39	Weekly	Air Cleaner	<p style="text-align: center;">WARNING</p> <p>If Chemical, Biological, Radiological, and Nuclear (CBRN) exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your CBRN Officer or CBRN NCO for appropriate handling or disposal procedures. CBRN contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel. Wear eye protection when removing A/C air filter. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.</p> <p style="text-align: center;">NOTE</p> <p>Perform step a for M915–M920. Perform step b for M915A1.</p> <p>a. Empty automatic dust unloader.</p> <p>b. Remove dust and moisture boot, and empty air cleaner canister.</p>	<p>Dust unloader missing or damaged.</p> <p>Air cleaner canister dust and moisture boot missing or damage is evident.</p>

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
40	Weekly	Steering Pump and Reservoir	<p>Inspect for loose steering pump mounting or damage. Check pump for leakage. Inspect pump hoses for deterioration and leaks.</p> <p>CAUTION</p> <p>Do not overfill steering pump reservoir. Failure to comply may result in damage to equipment.</p> <p>With engine hot and engine off, check fluid level in steering pump for proper level. If level is low, add fluid to bring level to full mark on dipstick (Figure 22, Item 1).</p>	Any Class III leak or steering pump mounting damage is evident.

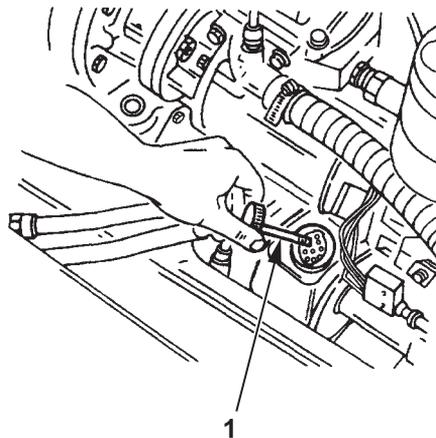


Figure 22. Power Steering Pump Reservoir.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
41	Weekly	Fan Clutch and Actuator	Check for leaks, damaged fins, loose or damaged hoses, debris, or dirt in radiator fins.	Any Class III leak is evident.
42	Weekly	Turbocharger	Inspect turbocharger (Figure 23, Item 1), oil lines (Figure 23, Item 2), 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.	Any Class III leak is evident.

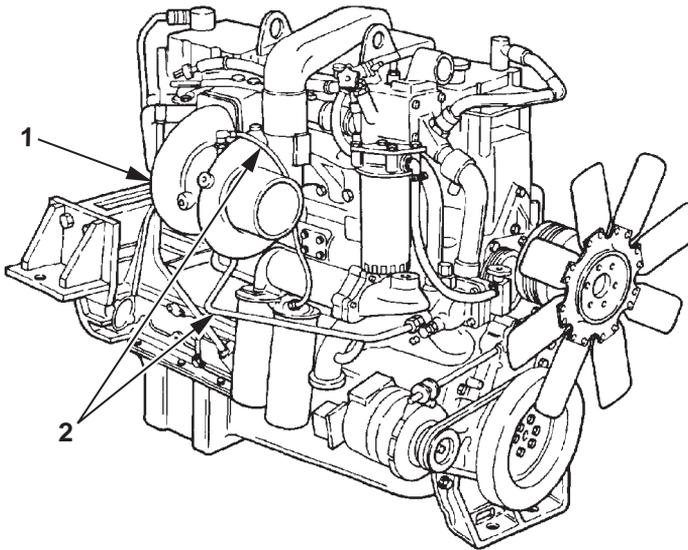


Figure 23. Turbocharger.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
43	Weekly	Oil Bypass Filter	Check oil bypass filter (Figure 24, Item 1) lines and fittings for leaks, looseness, and damage.	Any Class III leak is evident.

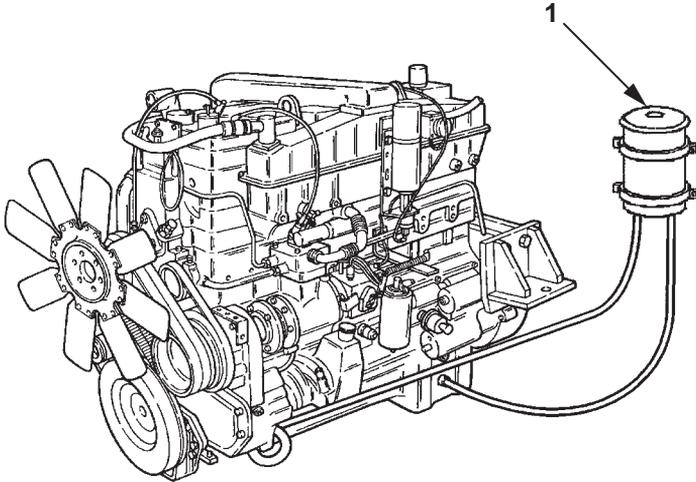


Figure 24. Oil Bypass Filter.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
44	Weekly	Cooling System	Check for leaks, damaged fins, loose or damaged hoses, and debris or dirt in radiator fins.	Class III leak is evident.
45	Weekly	Ether Quick-Start Assembly	Inspect ether quick-start assembly (Figure 25, Item 1) mounting for loose hardware. Check lines, fittings, and canister for damage.	Any leak or reservoir damage is evident.
<p><i>Figure 25. Ether Quick-Start Assembly.</i></p>				
46	Weekly	EXTERIOR Tires	<ul style="list-style-type: none"> a. Check tire tread depth. Tread should not be worn beyond level of wear bar. b. Check for correct air pressure, refer to tire pressure data (WP 0003). 	Tire worn to or beyond wear bar.
47	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.
48	Weekly	Air System	With air system charged and engine off, check air lines and fittings for leaks and damage.	Any reservoir, line, or fitting leaks or damage is evident.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
49	Weekly	Frame	Visually inspect frame side rails, crossmembers, cab supports, and underbody supports for loose or missing bolts and cracked or broken welds. NOTE Perform step 50 for M915, M915A1, M916, M917, and M920.	Loose or broken side rails, cab supports, crossmembers, missing bolts, or broken welds
50	Weekly	Fuel Tank	Check fuel tank, lines, and fittings for leakage.	Any Class III leak is evident.
51	Weekly	Trailer Couplings	a. Check electrical connectors (Figure 26, Item 2) and cable for damage. b. Check trailer air lines and quick disconnect couplings (Figure 26, Item 1) for damage (front and rear).	Electrical cable missing or damaged. Air lines leak or damage is evident.

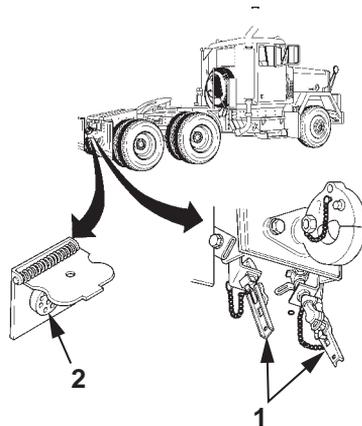


Figure 26. Trailer Couplings.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
52	Weekly	Spare Tire Hoist and Winch	Check spare tire hoist and winch operation.	Spare tire hoist and winch damaged or does not operate.
53	Weekly	Winch (M916 and M920)	Check spare tire hoist and winch operation.	Spare tire hoist and winch damaged or does not operate.
54	Weekly	Pusher Axle Air Bags (M917, M919 & M920)	<p>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 pusher axle in the raised or lowered position.</p> <p><u>WARNING</u></p> <p>During normal operation the exhaust pipe and muffler will become very hot. Exercise caution not to make body contact or touch hot exhaust components with bare hands. Failure to comply may result in severe burns to personnel. Seek medical attention in the event of an injury.</p> <p>NOTE</p> <p>Operation of vehicle with damaged exhaust may violate AR 385-55.</p>	Air bags do not hold air or leak.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
55	Weekly	Exhaust System	Inspect exhaust stack (Figure 27, Item 1) and muffler (Figure 27, Item 2) for leaks, damage, and rusted through conditions.	Any pipe, clamp, or hose leak; damaged, missing, or rust through is evident.

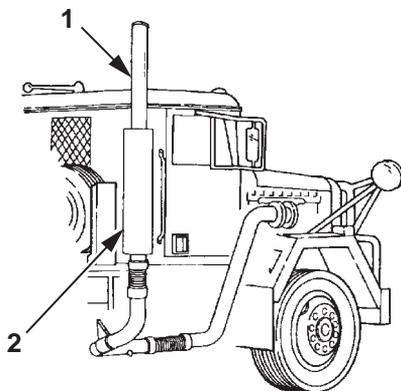


Figure 27. Exhaust System.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p style="text-align: center;"><u>WARNING</u></p> <p>Do not smoke, have open flame, or make sparks when performing battery maintenance. Batteries may explode causing severe injury to personnel. Failure to comply may result in injury to personnel and/or damage to equipment. Seek medical attention in the event of an injury.</p> <p>Remove all jewelry such as rings, bracelets, and identification tags. If jewelry comes in contact with battery terminals, a direct short can occur resulting in instant heating of jewelry or tools and damage to electrical system. Failure to comply may result in damage to equipment and injury to personnel. Seek medical attention in the event of an injury.</p> <p>Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to personnel if acid contacts eyes or skin. Seek medical attention in the event of an injury.</p>	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
56	Weekly	Batteries	Check electrolyte level. Electrolyte should be filled to level/split ring in battery filler opening (vent). If fluid is low, fill with distilled water to level ring. Run vehicle at least 15 minutes to charge battery. If fluid is gassing (boiling), notify your supervisor.	Battery is unserviceable, missing, or leaking; terminals or cables are loose, corroded, or holddowns are not secure.
57	Weekly	Body	Check body and cab for damage or rusted through conditions that could impair operation.	
58	Weekly	Cab	<ol style="list-style-type: none"> a. Check cab mounts for cracks, breaks, and damage. b. Check doors, latches, and auxiliary equipment for proper operation. 	Cab mounts or welds cracked or broken.
59	Weekly	Front Suspension	Inspect front suspension springs and mounting hardware for cracks, breaks, or loose or missing hardware and/or shackles. Notify your supervisor of any damage found.	Any cracks, breaks, or loose hardware or damage to suspension springs is noted.
60	Weekly	Cab Mounts	Inspect front and rear cab mounts for evidence of deterioration, over compression, or loose mounting hardware. Notify your supervisor of any damage or looseness found.	

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
61	Weekly	Wheels and Wheel Rims	Inspect wheel lug nuts and wheel rim bolts/nuts for looseness (e.g., polished surface, rust, or minor cracks around bolt and wheel mating surfaces). Notify your supervisor of any looseness found.	Two or more studs or nuts are missing from the same wheel.
62	Weekly	Crew Protection Kit Mounting Hardware	Check all armor kit mounting hardware for loose or missing hardware. Notify your supervisor of any loose or missing mounting hardware found.	
63	Weekly	Escape Hatch	From inside the cab, check that escape hatch will open and securely latch closed (WP 0005). Ensure there is no damage to latch and mounting hardware.	Escape hatch will not open or latch closed securely.
64	Weekly	Door Assemblies and Stops Roof	Check both door assembly seals, hardware, and door stops for damaged or loose components. Notify your supervisor of any damage found. NOTE The Air Conditioning Kit is installed on vehicles equipped with Crew Protection Kit only. If vehicle is equipped with air conditioning, perform item 65 through 68.	Loose components are evident.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
65	Weekly	A/C Condenser	<p>a. Inspect A/C condenser (Figure 28, Item 1) for damage and loose or missing mounting hardware.</p> <p>b. Inspect A/C condenser (Figure 28, Item 1) for leaks. Leaks can be identified by oil residue on fittings (Figure 28, Item 3), along A/C hoses (Figure 28, Item 2), or on condenser core.</p> <p>c. Inspect A/C hoses (Figure 28, Item 2) and electrical harness (Figure 28, Item 4) for damage and loose or missing mounting hardware.</p> <p>d. Inspect A/C hoses (Figure 28, Item 2) for leaks. Leaks can be identified by oil residue on fittings (Figure 28, Item 3) or along A/C hose (Figure 28, Item 2).</p>	<p>Condenser is damaged or mounting bolts are loose or missing and A/C is required for mission.</p> <p>Leaks are evident and A/C is required for mission.</p> <p>A/C hoses or electrical harness are damaged or have loose or missing mounting hardware and A/C is required for mission.</p> <p>Leaks are evident and A/C is required for mission.</p>

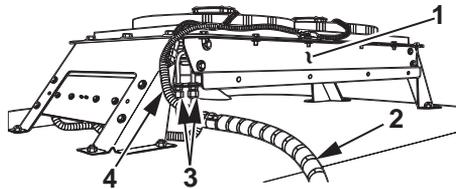


Figure 28. A/C Condenser.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
66	Weekly	INTERIOR OF CAB A/C Evaporator Assembly	a. Inspect evaporator assembly (Figure 29, Item 2) for damage and loose or missing mounting hardware. b. Inspect switch box (Figure 29, Item 1) for damage and loose or missing mounting hardware. <p style="text-align: center;"><u>WARNING</u></p> If Chemical, Biological, Radiological, and Nuclear (CBRN) exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your CBRN Officer or CBRN NCO for appropriate handling or disposal procedures. CBRN contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel. Wear eye protection when removing A/C air filter. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.	Evaporator assembly unit is damaged or has loose or missing mounting hardware and A/C is required for mission. Switch box is damaged or has loose or missing mounting hardware and A/C is required for mission.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p>c. Inspect A/C filter (Figure 29, Item 3) and clean or replace if necessary (WP 0033).</p> <p>d. Inspect two drain tubes (Figure 29, Item 4) located at bottom corners of evaporator assembly (Figure 29, Item 2) for damage, looseness, and blockage. Clean or replace as necessary.</p>	

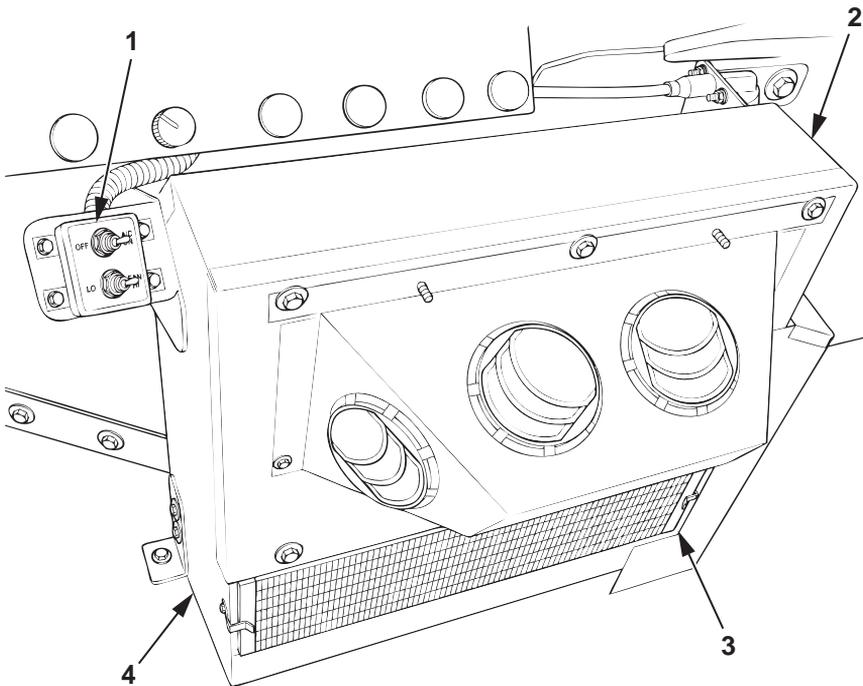


Figure 29. A/C Evaporator Assembly.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
67	Weekly	OUTSIDE OF CAB LEFT SIDE A/C Receiver/Dryer Unit	a. Inspect receiver/dryer (Figure 30, Item 3) for damage and loose or missing mounting hardware. b. Inspect receiver/dryer (Figure 30, Item 3) for leaks. Leaks can be identified by oil residue on A/C hoses and hose fittings (Figure 30, Item 1). c. Inspect A/C hoses and hose fittings (Figure 30, Item 1) and electrical harness (Figure 30, Item 2) for damage and loose or missing mounting hardware.	Receiver/dryer unit is damaged or has loose or missing mounting hardware and A/C is required for mission. Leaks are evident and A/C is required for mission. A/C hoses and hose fittings or electrical harness are damaged or have loose or missing mounting hardware and A/C is required for mission.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			d. Inspect A/C hoses and hose fittings (Figure 30, Item 1) for leaks. Leaks can be identified by oil residue along A/C hoses and hose fittings (Figure 30, Item 1).	Leaks are evident and A/C is required for mission.

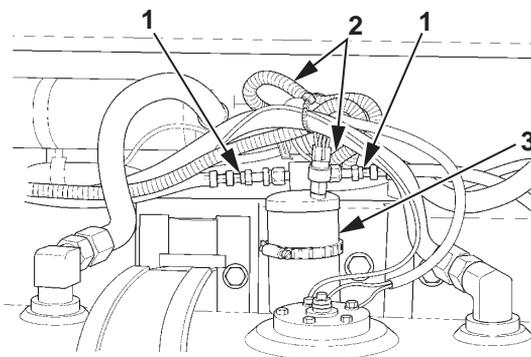
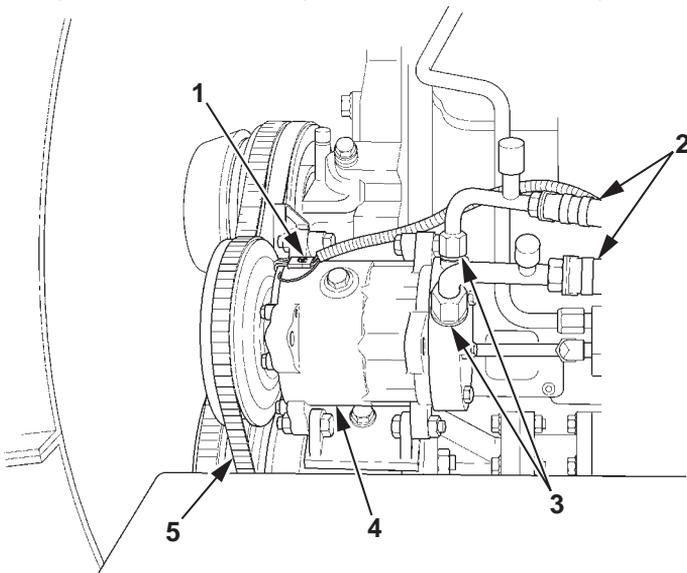


Figure 30. A/C Receiver/Dryer.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
68	Weekly	ENGINE COMPARTMENT A/C Compressor	a. Open left side engine cover (WP 0005). b. Inspect compressor (Figure 31, Item 4) for damage and loose or missing mounting hardware. c. Inspect compressor (Figure 31, Item 4) for leaks. Leaks can be identified by oil residue on fittings (Figure 31, Item 3). d. Inspect A/C hoses (Figure 31, Item 2) and electrical harness (Figure 31, Item 1) for damage and loose or missing mounting hardware. e. Inspect A/C hoses (Figure 31, Item 2) for leaks. Leaks can be identified by oil residue on fittings (Figure 31, Item 3) or along A/C hose (Figure 31, Item 2). f. Inspect compressor belt (Figure 31, Item 5) for damage and correct tightness (120 lb for new belts).	Compressor is damaged or mounting bolts are loose or missing and A/C is required for mission. Leaks are evident and A/C is required for mission. A/C hoses or electrical harness are damaged or have loose or missing mounting hardware and A/C is required for mission. Leaks are evident and A/C is required for mission. Compressor belt is damaged or loose and A/C is required for mission.

Table 1. Preventive Maintenance Checks and Services (PMCS) - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
				
<p><i>Figure 31. A/C Compressor.</i></p>				

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
CLEANING VEHICLE**

INITIAL SETUP:**Materials/Parts**

Detergent (WP 0039, Item 9)

Rag, wiping (WP 0039, Item 25)

GENERAL CLEANING

Perform both exterior and interior cleaning procedures when cleaning the vehicle.

EXTERIOR

1. Never wipe off dirt when vehicle is dry.
2. Never wash vehicle in direct sunlight or if the vehicle exterior is hot to touch.
3. Wash your vehicle 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 vehicle.
4. While cleaning truck, look closely for evidence of rust, corrosion, bare metal, or other exterior damage. If any problems are found, notify your supervisor to treat affected areas.

INTERIOR

1. Remove loose dust and dirt from cab interior.
2. Clean upholstery and seatbelts using mild solution of warm water and soap (never use solvents or abrasives).
3. Using clean rags, wipe dry all areas that have been washed.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
CLEANING BALLISTIC GLASS**

INITIAL SETUP:**Materials/Parts**

Cleaning compound, windshield
(WP 0039, Item 7)

Rag, wiping (WP 0039, Item 25)

Equipment Condition - Continued

Engine off (WP 0011).

Parking brake set (WP 0011).

Equipment Condition

Vehicle parked on level ground
(WP 0011).

CLEANING**CAUTION**

Remove rings or other hard objects from hands before cleaning ballistic glass. DO NOT use hard, dirty, or gritty cloths on ballistic glass. DO NOT apply water or cleaning compound unless ballistic glass is cool and protected from heating effects of sunlight. Failure to follow these instructions will damage ballistic glass.

Do not use bug spray or other aerosol sprays on or near ballistic glass. Failure to follow these instructions will damage ballistic glass.

NOTE

Follow this procedure to clean inner plastic laminate surfaces of ballistic glass. Clean outside surfaces of ballistic glass in the same manner as plain glass.

1. Add cleaning compound to 1 gal. (3.8 L) of water as directed by manufacturer label.
2. Saturate a soft, clean cloth with cleaning solution and lightly rub plastic surfaces.
3. Flush off cleaning solution with water and dry with a soft, clean cloth.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
FILLING FUEL TANK**

INITIAL SETUP:**Materials/Parts**

Diesel fuel, arctic
(WP 0039, Item 10)

Diesel fuel, DF-1, regular
(WP 0039, Item 11)

Materials/Parts - Continued

Diesel fuel, DF-2, regular
(WP 0039, Item 12)

References

WP 0011

GENERAL

This work package provides general instructions for filling the fuel tank.

FUELING VEHICLE**WARNING**

When fueling vehicle, ensure pump nozzle contacts the filling tube on top of the fuel tank to carry off static electricity. Do not smoke or have open flame in fueling area. Failure to comply may result in injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

1. Park vehicle, stop engine, and apply parking brake (WP 0011).
2. Wipe off any dirt on fuel tank (Figure 1, Item 1) around filler cap (Figure 1, Item 2).
3. Remove filler cap (Figure 1, Item 2) from fuel tank (Figure 1, Item 1).
4. Fill fuel tank (Figure 1, Item 1) with appropriate diesel fuel.
5. Install filler cap (Figure 1, Item 2) on fuel tank (Figure 1, Item 1).

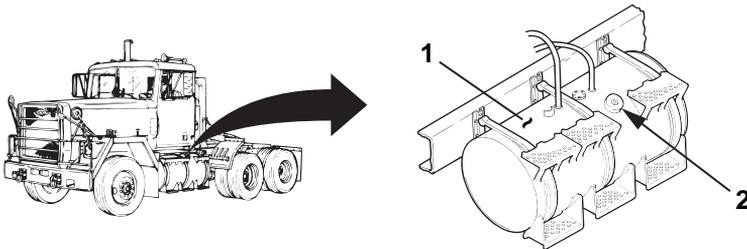


Figure 1. Fuel Tank and Filler Cap.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
COOLING SYSTEM SERVICE**

INITIAL SETUP:**Materials/Parts**

Antifreeze (WP 0039, Item 2)
Antifreeze (WP 0039, Item 3)
Sealing compound (WP 0039, Item 26)

References

WP 0001

GENERAL**WARNING**

Accidental or intentional introduction of liquid contaminants into the environment is a violation of state, federal, and military regulations. Refer to Army POL (WP 0001) for information concerning storage, use, and disposal of these liquids. Failure to comply may result in damage to environment and health of personnel. Seek medical attention in the event of an injury.

NOTE

Use a drain pan to capture any draining coolant. Dispose of fluids in accordance with local policy and ordinances. Ensure all spills are cleaned up.

This work package provides instructions for draining the cooling system, filling an empty cooling system, and adding coolant to a partly filled cooling system.

DRAINING COOLING SYSTEM**WARNING**

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 further left until you can remove it. Failure to comply may result in serious burns. Seek medical attention in the event of an injury.

Leaking or spilled coolant may cause a slip and fall hazard. When draining cooling system, clean any leaking or spilled coolant immediately using suitable absorbent materials. Dispose of contaminated cloths, rags, or cleaning materials in accordance with local procedures and plans. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

1. Remove radiator cap (Figure 1, Item 1) from radiator filler neck (Figure 1, Item 2).

NOTE

Use a suitable drain pan to capture coolant when draining cooling system.

The radiator has one drain cock located on the left side of the radiator bottom tank, facing the engine.

Coolant is drained from the engine cylinder block by removing the temperature sending unit from the cylinder block. The temperature sending unit is located on the right side of the cylinder block near the back of engine.

A drain cock is located on the top of the thermostat manifold and on front of oil cooler. These drain cocks are used to drain coolant or allow air to escape the cooling system when filling or adding coolant.

2. Position drain pan under radiator drain cock (Figure 2, Item 5). Open radiator drain cock (Figure 2, Item 5) and allow coolant to drain.
3. Position drain pan under oil cooler drain cock (Figure 2, Item 2). Open thermostat manifold drain cock (Figure 2, Item 3) and oil cooler drain cock (Figure 2, Item 2) and allow coolant to drain.
4. Disconnect electrical connector from temperature sending unit (Figure 2, Item 1).
5. Position drain pan under right side of cylinder block (Figure 2, Item 4). Remove temperature sending unit (Figure 2, Item 1) from cylinder block (Figure 2, Item 4) and allow all coolant to drain.

DRAINING COOLING SYSTEM - CONTINUED

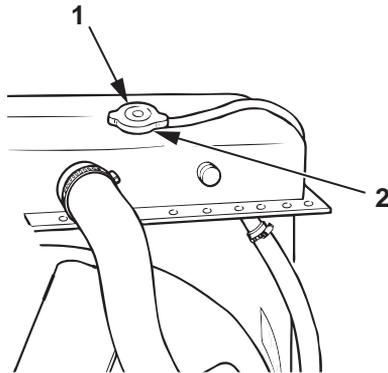


Figure 1. Removing Radiator Cap.

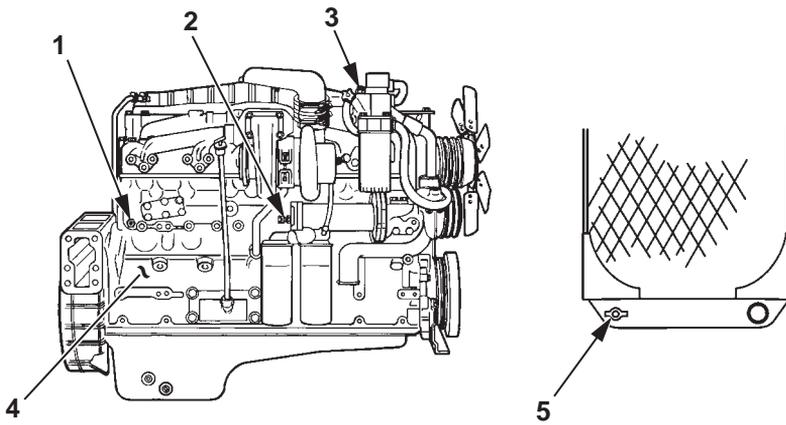


Figure 2. Draining Cooling System.

END OF TASK

FILLING EMPTY COOLING SYSTEM**WARNING**

Contact with sealing compound may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. **DO NOT** have food or drink in the vicinity. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Leaking or spilled coolant may cause a slip and fall hazard. When draining cooling system, clean any leaking or spilled coolant immediately using suitable absorbent materials. Dispose of contaminated cloths, rags, or cleaning materials in accordance with local procedures and plans. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

NOTE

Fill cooling system with a mixture of clean water and antifreeze. If unknown, notify supervisor for proper mixture of water and antifreeze.

Perform steps 1 through 3 if temperature sending is removed from cylinder block.

1. Apply thin coat of sealing compound to threads of temperature sending unit (Figure 3, Item 1).
2. Install temperature sending unit (Figure 3, Item 1) on cylinder block (Figure 3, Item 4).
3. Connect electrical connector to temperature sending unit (Figure 3, Item 1).
4. Close radiator drain cock (Figure 3, Item 5) and oil cooler drain cock (Figure 3, Item 3).
5. Open thermostat manifold drain cock (Figure 3, Item 2), and pour coolant through radiator filler neck (Figure 4, Item 3) until coolant flows from thermostat manifold drain cock (Figure 3, Item 2). Close thermostat manifold drain cock (Figure 3, Item 2).
6. Continue filling radiator (Figure 3, Item 6) with coolant until coolant level is even with top of radiator sight glass (Figure 4, Item 2).

FILLING EMPTY COOLING SYSTEM - CONTINUED

7. Start engine, and allow engine to reach normal operating temperature of 165–195° F (74–91° C) for M915 through M920 or 180–200° F (82–93° C) for M915A1.
8. Open and close oil cooler drain cock (Figure 3, Item 3) and thermostat manifold drain cock (Figure 3, Item 2) to allow any remaining air to escape from cooling system.
9. Recheck coolant level and add coolant as necessary until coolant level is even with top of radiator sight glass (Figure 4, Item 2).
10. Install radiator cap (Figure 4, Item 1) on radiator filler neck (Figure 4, Item 3).
11. Check for leaks.

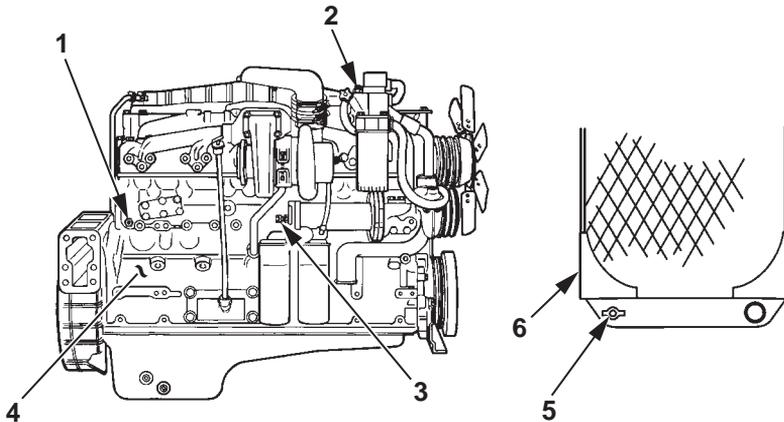


Figure 3. Filling Empty Cooling System.

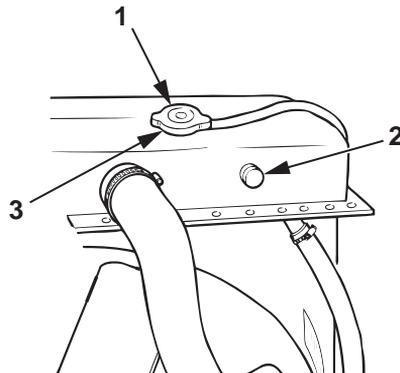


Figure 4. Checking Coolant Level.

END OF TASK

ADDING COOLANT TO PARTIALLY EMPTY COOLING SYSTEM**WARNING**

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 further left until you can remove it. Failure to comply may result in serious burns. Seek medical attention in the event of an injury.

Leaking or spilled coolant may cause a slip and fall hazard. When draining cooling system, clean any leaking or spilled coolant immediately using suitable absorbent materials. Dispose of contaminated cloths, rags, or cleaning materials in accordance with local procedures and plans. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

NOTE

Fill cooling system with a mixture of clean water and antifreeze. If unknown, notify supervisor for proper mixture of water and antifreeze.

1. Remove radiator cap (Figure 5, Item 1) from radiator filler neck (Figure 5, Item 3).
2. Add coolant through radiator fill neck (Figure 5, Item 3) until coolant level is even with top of sight glass (Figure 5, Item 2).
3. Open and close oil cooler drain cock (Figure 6, Item 3) and thermostat manifold drain cock (Figure 6, Item 2) to allow any residual air to escape from cooling system.
4. Recheck coolant level and add coolant as necessary until coolant level is even with top of radiator sight glass (Figure 5, Item 2).
5. Install radiator cap (Figure 5, Item 1) on radiator filler neck (Figure 5, Item 3).
6. Check for leaks.

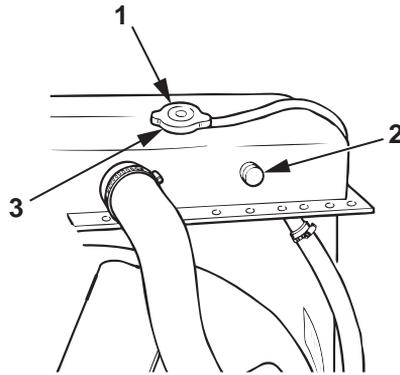
ADDING COOLANT TO PARTIALLY EMPTY COOLING SYSTEM - CONTINUED

Figure 5. Radiator Site Glass.

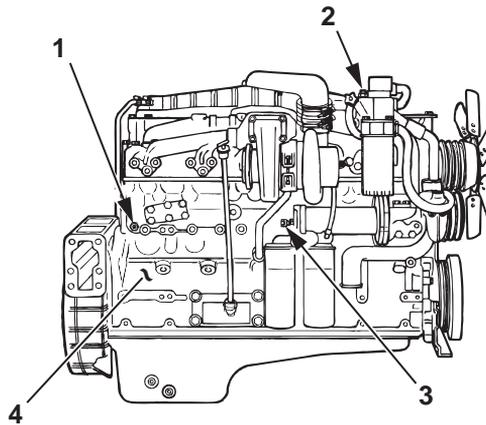


Figure 6. Adding Coolant to Cooling System.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
WHEEL AND TIRE SERVICE**

INITIAL SETUP:**Personnel Required**

Two

References - Continued

WP 0011

References

WP 0003

WP 0025

WARNING

Exercise caution when raising or lowering spare wheel and tire assembly. All personnel must stand clear during lifting operations. Should wheel and tire assembly fall over or drop from lift, serious injury to personnel may result. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

CAUTION

In case of a flat on any model vehicle, if tactical situation permits, immediately stop the vehicle where there will be no hazard to other traffic or to the crew member changing the tire. Notify your supervisor as soon as possible so wheel nuts can be tightened to proper torque value and tire can be repaired and returned to service. Failure to comply may result in damage to equipment.

NOTE

Wheels and tires are inspected when performing weekly Preventive Maintenance Checks and Services (PMCS), (WP 0025).

A spare wheel and tire assembly is provided on M915, M916, and M915A1 vehicles. On these vehicles a tire lift is provided to raise and lower the spare wheel and tire assembly from the stowed position.

On M917, M918, M919, and M920 vehicles, no spare is provided. Should you have a flat, use one of the pusher axle wheel and tire assemblies as a spare.

If you should have a flat on the rear of an M918 vehicle, reduce speed as much as practical and notify your supervisor as soon as possible. If you should have a flat on one of the front tires of an M918 vehicle, exchange the flat tire with one of the outside rear duals.

NOTE

When changing tires, do not substitute type or size of tire unless all tires on the vehicle can be converted. Keep all tires the same.

TIRE INFLATION

Checking tire air pressure is an important aspect of tire maintenance. Tire air pressure must be checked weekly. Recommended air pressures for all tires on all vehicle models have been carefully selected to provide maximum tire life and performance. Refer to Equipment Data in WP 0003 for proper tire air pressure application. Check and adjust tire air pressure when tires are cold. Recommended air pressures are specified for cold tires (i.e., tires that have not warmed up due to vehicle operation). When vehicle is operated and tire warms up, tire air pressure increases. Do not decrease warm tire air pressure to recommended air pressure for a cold tire. Following cross-country operations in mud, sand, or snow, ensure that tires are inflated for highway use.

WARNING

Stay clear of wheel when checking tire air pressure and inflating tire. Injury or death to personnel may result from exploding wheel components. Seek medical attention in the event of an injury.

1. Remove tire air pressure gauge from tool box.
2. Remove tire valve stem cap.
3. Check tire air pressure. Refer to Equipment Data in WP 0003 for proper tire air pressure application.
4. If necessary, remove air hose from tool box and use quick disconnect coupling provided at air reservoir as indicated in (Figure 1, Item 1), (Figure 2, Item 1), and (Figure 3, Item 1) to put air in tires.
5. Install tire valve stem cap and tighten finger tight.
6. Store tire air pressure gauge and air hose in tool box.

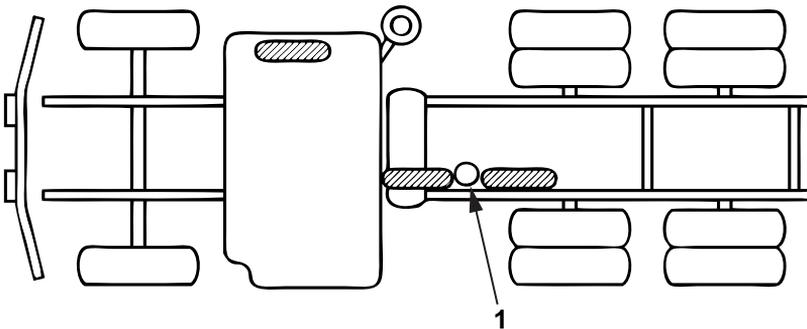


Figure 1. M915, M918, and M915A1.

TIRE INFLATION - CONTINUED

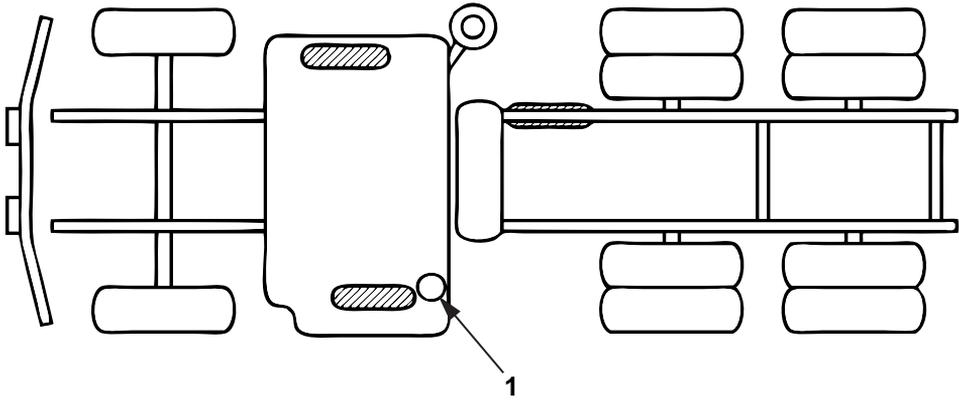


Figure 2. M916.

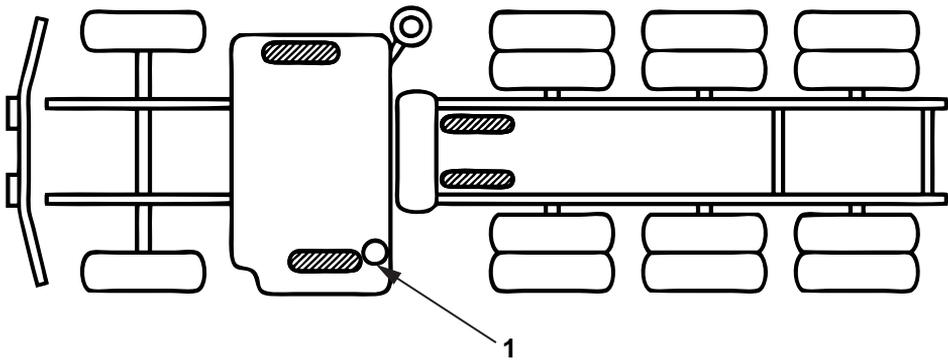


Figure 3. M917, M919, and M920.

END OF TASK

**REMOVING SPARE WHEEL AND TIRE FROM TIRE CARRIER
(M915, M916, AND M915A1)****WARNING**

Exercise caution when raising or lowering spare wheel and tire assembly. All personnel must stand clear during lifting operations. Should wheel and tire assembly fall over or drop from lift, serious injury to personnel may result. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Do not touch hot clutch disc when raising or lowering spare wheel and tire assembly winch brake. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Ensure winch cable drum has a minimum of four full turns of cable prior to lifting spare wheel and tire assembly. Failure to comply may result in cable pulling off cable drum and injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

CAUTION

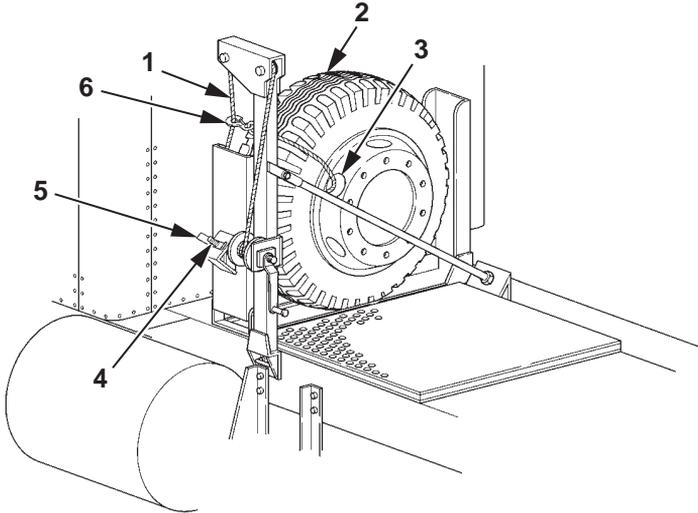
If winch brake disc shows signs of overheating, stop and allow 15 minutes for winch brake disc to cool down.

NOTE

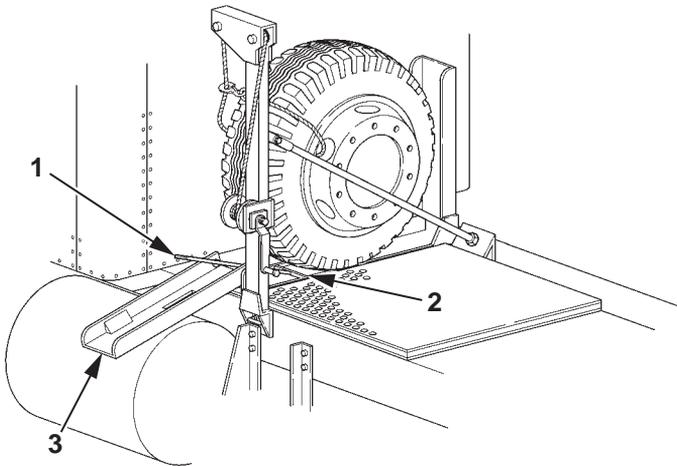
The winch automatically brakes when pressure is taken off handle regardless of which direction it is being turned. If slack is needed to secure cable around wheel and tire assembly, you must pull on cable and turn handle in a counterclockwise direction at the same time. Do not pull out more cable than needed.

1. Park vehicle on level ground, stop engine, apply parking brake, and chock wheels (WP 0011).
2. Install winch cable (Figure 4, Item 1) through wheel opening (Figure 4, Item 3), wrap it around wheel and tire assembly (Figure 4, Item 2), and secure snap hook (Figure 4, Item 6) on winch cable (Figure 4, Item 1).
3. Remove tractor-to-trailer electrical cable at tractor.
4. Remove wing nut (Figure 4, Item 5) from bolt (Figure 4, Item 4), lower spare tire carrier side panel (Figure 5, Item 3), and remove bolt (Figure 5, Item 1) from tire carrier base (Figure 5, Item 2).

**REMOVING SPARE WHEEL AND TIRE FROM TIRE CARRIER
(M915, M916, AND M915A1) - CONTINUED**



*Figure 4. Spare Wheel and Tire Carrier
(M915, M916, and M915A1).*



*Figure 5. Spare Tire Carrier Side Panel
(M915, M916, and M915A1).*

**REMOVING SPARE WHEEL AND TIRE FROM TIRE CARRIER
(M915, M916, AND M915A1) - CONTINUED****WARNING**

Ensure winch cable drum has a minimum of four full turns of cable prior to lifting spare wheel and tire assembly. Failure to comply may result in cable pulling off cable drum and injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

Ensure wheel and tire assembly does not suddenly drop from truck by guiding it down between fuel tank and fender. Failure to comply could cause winch cable to snap and injury to personnel or damage to equipment may result. Seek medical attention in the event of an injury.

NOTE

Ensure cable is paying out when turning handle counterclockwise or handle will unscrew and winch will become inoperative.

The winch automatically brakes when pressure is taken off handle regardless of which direction it is being turned. If slack is needed to secure cable around wheel and tire assembly, you must pull on the cable and turn the handle in a counterclockwise direction at the same time. Do not pull out more cable than needed.

This step requires two personnel.

5. Remove wheel and tire assembly (Figure 6, Item 1) from spare tire carrier (Figure 6, Item 3) and place on spare tire carrier side panel (Figure 6, Item 5).
6. Take up slack in winch cable (Figure 6, Item 2) by turning winch handle (Figure 6, Item 4) in clockwise direction.
7. While guiding spare tire assembly (Figure 7, Item 3) over fuel tank (Figure 7, Item 5) and fender, turn winch handle (Figure 7, Item 2) counterclockwise and lower spare tire assembly (Figure 7, Item 3) to ground.
8. Remove winch cable (Figure 7, Item 1) from wheel and tire assembly (Figure 7, Item 3) and leave winch cable (Figure 7, Item 1) payed out for storing flat wheel and tire assembly later.

REMOVING SPARE WHEEL AND TIRE FROM TIRE CARRIER
(M915, M916, AND M915A1) - CONTINUED

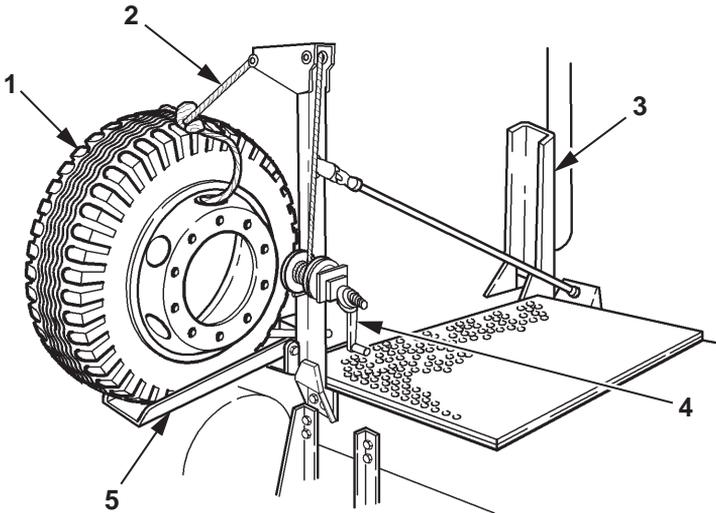


Figure 6. Wheel and Tire Assembly on Side Panel
(M915, M916, and M915A1).

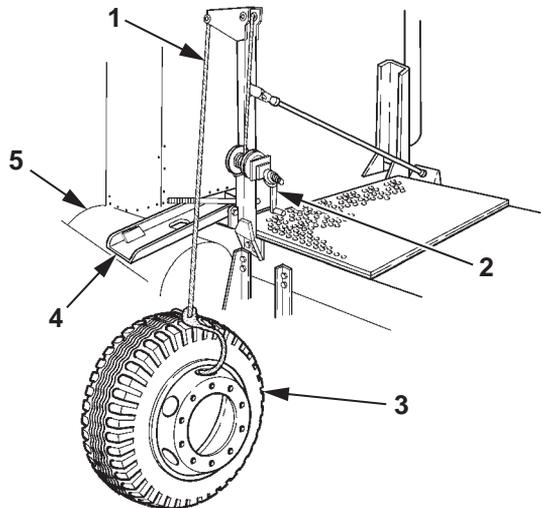


Figure 7. Lower Wheel and Tire Assembly
(M915, M916, and M915A1).

END OF TASK

INSTALLING SPARE WHEEL AND TIRE ON CARRIER (M915, M916, AND M915A1)**WARNING**

Exercise caution when raising or lowering spare wheel and tire assembly. All personnel must stand clear during lifting operations. Should wheel and tire assembly fall over or drop from lift, serious injury to personnel may result. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Do not touch hot clutch disc when raising or lowering spare wheel and tire assembly winch brake. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Ensure winch cable drum has a minimum of four full turns of cable prior to lifting spare wheel and tire assembly. Failure to comply may result in cable pulling off cable drum and injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

CAUTION

If winch brake disc shows signs of overheating, stop and allow 15 minutes for winch brake disc to cool down.

NOTE

The winch automatically brakes when pressure is taken off handle regardless of which direction it is being turned. If slack is needed to secure cable around wheel and tire assembly, you must pull on cable and turn the handle in a counterclockwise direction at same time. Do not pull out more cable than needed.

1. Install winch cable (Figure 8, Item 1) through wheel opening (Figure 8, Item 4), wrap it around wheel and tire assembly (Figure 8, Item 3), and secure snap hook (Figure 8, Item 5) back on winch cable (Figure 8, Item 1).
2. Take up slack in winch cable (Figure 8, Item 1) by turning winch handle (Figure 8, Item 2) in clockwise direction.

NOTE

This step requires two personnel.

3. Turn winch handle (Figure 9, Item 2) clockwise to install wheel and tire assembly (Figure 9, Item 1) on spare tire carrier side panel (Figure 9, Item 4) while guiding it around fuel tank (Figure 9, Item 3) and fender.

INSTALLING SPARE WHEEL AND TIRE ON CARRIER (M915, M916, AND M915A1) - CONTINUED

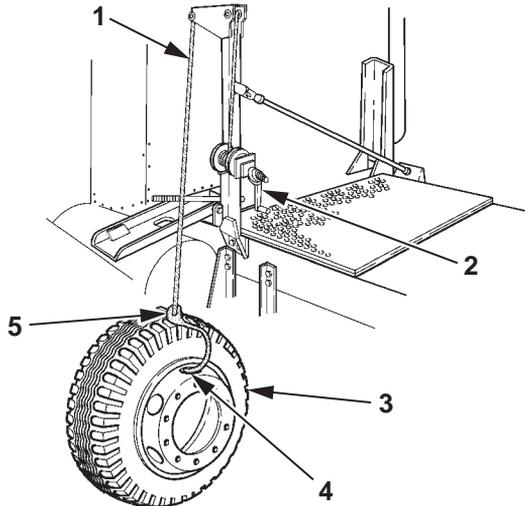


Figure 8. Raising Spare Wheel and Tire Assembly (M915, M916, and M915A1).

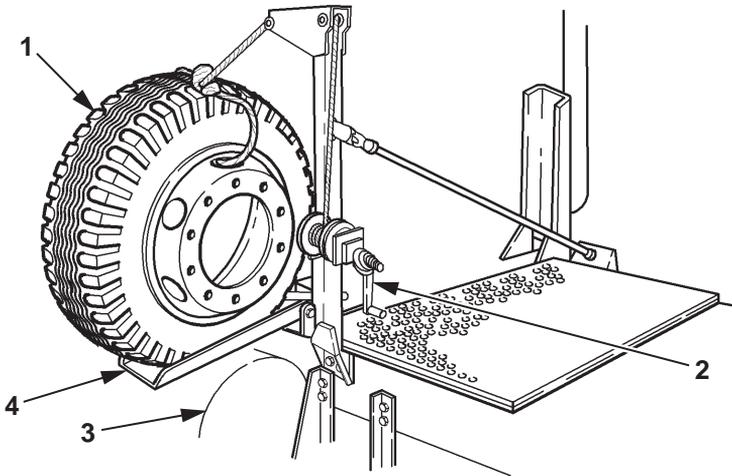


Figure 9. Wheel and Tire Assembly on Side Panel (M915, M916, and M915A1).

INSTALLING SPARE WHEEL AND TIRE ON CARRIER (M915, M916, AND M915A1) - CONTINUED

4. Install wheel and tire assembly (Figure 10, Item 1) on spare tire carrier (Figure 10, Item 2).

NOTE

After wheel and tire assembly has been secured, cable may be slightly loose but should remain attached to wheel and tire assembly.

Crank handle must be in 12 or 6 o'clock position when not in use to avoid possible interference with trailer.

5. Install bolt (Figure 10, Item 4) on tire carrier base (Figure 10, Item 3).
6. Raise spare tire carrier side panel (Figure 11, Item 1) and install wing nut (Figure 11, Item 3) on bolt (Figure 11, Item 2).
7. Connect tractor-to-trailer electrical cable connector to trailer.
8. Release parking brake and remove wheel chocks (WP 0011).

INSTALLING SPARE WHEEL AND TIRE ON CARRIER (M915, M916, AND M915A1) - CONTINUED

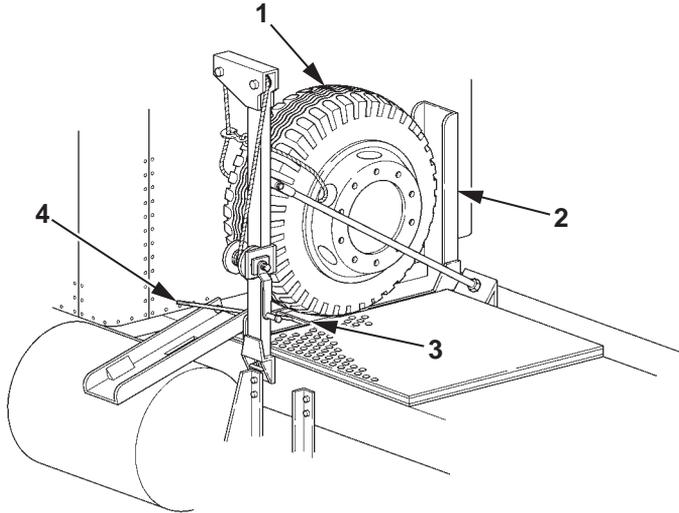


Figure 10. Install Tire on Spare Tire Carrier (M915, M916, and M915A1).

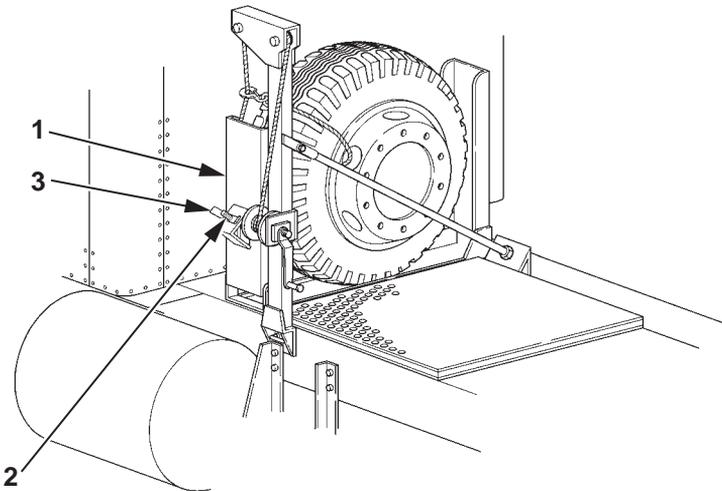


Figure 11. Secure Side Panel (M915, M916, and M915A1).

END OF TASK

WHEEL AND TIRE REPLACEMENT

1. Park vehicle on level ground, stop engine, apply parking brake, and chock wheels.
2. Check tire pressure of wheel and tire assembly to be installed. Refer to Equipment Data in WP 0003 for proper tire air pressure application.

NOTE

Wheel nuts on left side have left-hand threads and must be turned clockwise to loosen. Wheel stud nuts on right side have right-hand threads and must be turned counterclockwise to loosen. Studs and wheel nuts are stamped L (left) and R (right).

3. Using spare tire mounting wrench, loosen all wheel nuts (Figure 12, Item 1) from wheel and tire assembly (Figure 12, Item 4) to be removed.
4. Position jack as instructed in Jacking Procedure and raise axle until tire clears ground.
5. Remove all wheel nuts (Figure 12, Item 1) from wheel and tire assembly (Figure 12, Item 4) to be removed.
6. Remove wheel and tire assembly (Figure 12, Item 4) from hub (Figure 12, Item 2).
7. If inner dual wheel and tire assembly is being replaced, remove inner wheel and tire assembly from hub (Figure 12, Item 2).
8. If removed, install new inner dual wheel and tire assembly.
9. Install outer dual wheel and tire assembly (Figure 12, Item 4) on hub (Figure 12, Item 2) so inner valve stem is visible through hole in outer wheel (Figure 12, Item 3).

NOTE

Wheel nuts on left side have left-hand threads and must be turned counterclockwise to tighten. Wheel stud nuts on right side have right-hand threads and must be turned clockwise to tighten. Studs and wheel nuts are stamped L (left) and R (right).

10. Using spare tire mounting wrench, install all wheel nuts (Figure 12, Item 1) on wheel (Figure 12, Item 4) snugly.
11. Lower jack as instructed in Jacking Procedure.
12. Tighten wheel nuts (Figure 12, Item 1) alternately as shown in figure 12 and notify your supervisor that wheel nuts (Figure 12, Item 1) need to be tightened to specified torque value.
13. Release parking brake and remove wheel chocks (WP 0011).

WHEEL AND TIRE REPLACEMENT - CONTINUED

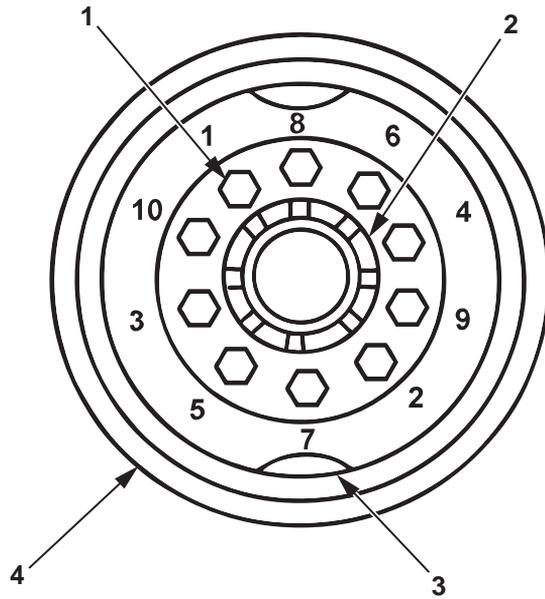


Figure 12. Wheel Nut Tightening Sequence.

END OF TASK

JACKING PROCEDURES**WARNING**

The vehicle's hydraulic jack is intended only for lifting and is not a safe support for performing maintenance. Do not get under vehicle unless it is properly supported by jack stands or wood blocks. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Ensure parking brake is released and chocks are placed behind tires at opposite end of vehicle to be raised prior to jacking operations. Do not place chocks in front of tires at opposite end of vehicle to be raised. If vehicle is not free to roll during jacking operations, it may topple jack. Move chocks tight against tires after jacking and set parking brake. Failure to comply may result in injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

OPERATING HYDRAULIC JACK

1. To raise jack (Figure 13, Item 1), insert slotted end of two-piece handle (Figure 13, Item 6) over release valve (Figure 13, Item 5), and turn release valve (Figure 13, Item 5) right until seated.
2. Insert two-piece handle (Figure 13, Item 6) in pump assembly socket (Figure 13, Item 4), and operate pump assembly (Figure 13, Item 3) by moving handle (Figure 13, Item 6) up and down to raise jack cylinder (Figure 13, Item 2).
3. To lower jack (Figure 13, Item 1), insert slotted end of two-piece handle (Figure 13, Item 6) over release valve (Figure 13, Item 5), and slowly turn release valve (Figure 13, Item 5) left until jack cylinder (Figure 13, Item 2) lowers into jack (Figure 13, Item 1).

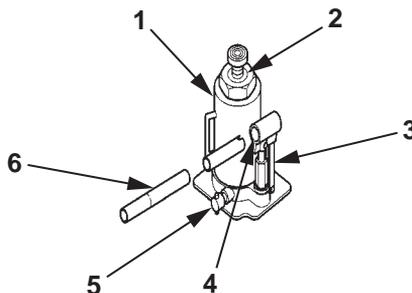


Figure 13. Operating Jack.

END OF TASK

FRONT AXLE JACK PLACEMENT (M915 AND M915A1)

1. Place jack (Figure 14, Item 3) on ground or wood block if ground is soft.
2. Position jack (Figure 14, Item 3) under first small leaf spring (Figure 14, Item 6) just forward of front axle (Figure 14, Item 1).
3. Turn adjustable ram (Figure 14, Item 5) left until it contacts first small leaf spring (Figure 14, Item 6).
4. Using jack handle (Figure 14, Item 4), raise jack (Figure 14, Item 3) until tire (Figure 14, Item 2) clears ground.

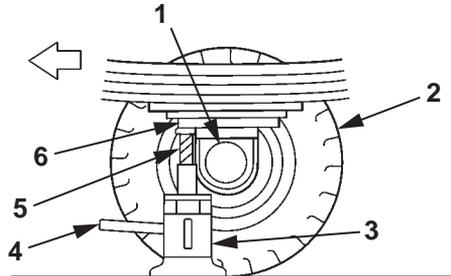


Figure 14. Front Axle Jack Placement, M915 and M915A1.

END OF TASK**FRONT AXLE JACK PLACEMENT (M916 THROUGH M920)**

1. Place jack (Figure 15, Item 4) on ground or wood block if ground is soft.
2. Position jack (Figure 15, Item 4) directly under front axle (Figure 15, Item 1) at center of front spring mounting pad (Figure 15, Item 3).
3. Turn adjustable ram (Figure 15, Item 5) left until it contacts center of front spring mounting pad (Figure 15, Item 3).
4. Raise jack (Figure 15, Item 4) until tire (Figure 15, Item 2) clears ground.

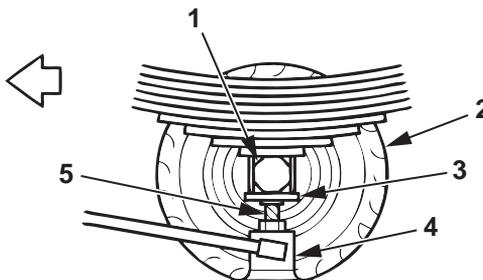


Figure 15. Front Axle Jack Placement, M916 through M920.

END OF TASK

FORWARD-REAR OR REAR-REAR AXLE JACK PLACEMENT (M915 THROUGH M920 AND M915A1)

1. Place jack (Figure 16, Item 3) on ground or wood block if ground is soft.
2. Position jack (Figure 16, Item 3) under walking beam (Figure 16, Item 1) inboard of walking beam trunion support (Figure 16, Item 5).
3. Turn adjustable ram (Figure 16, Item 4) left until it contacts walking beam (Figure 16, Item 1).
4. Raise jack (Figure 16, Item 3) until tandem rear tires (Figure 16, Item 2) clear ground.

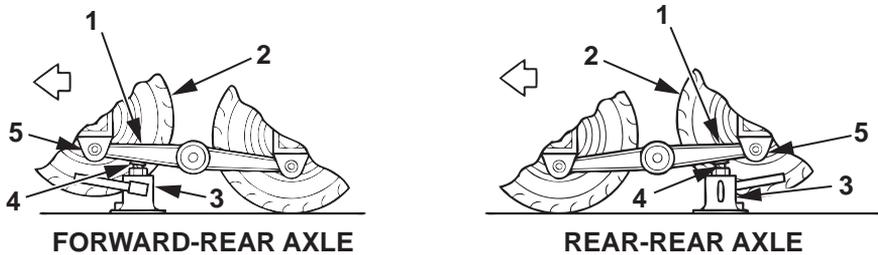


Figure 16. Forward-Rear and Rear-Rear Axle Jack Placement.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
BATTERY INSPECTION**

INITIAL SETUP:**References**

WP 0010

WP 0011

WARNING

Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to personnel if acid contacts eyes or skin. Seek medical attention in the event of an injury.

Do not smoke, have open flame, or make sparks when performing battery maintenance. Batteries may explode causing severe injury to personnel. Failure to comply may result in injury to personnel and/or damage to equipment. Seek medical attention in the event of an injury.

Remove all jewelry such as rings, bracelets, and identification tags. If jewelry comes in contact with battery terminals, a direct short can occur resulting in instant heating of jewelry or tools and damage to electrical system. Failure to comply may result in damage to equipment and injury to personnel. Seek medical attention in the event of an injury.

Check to make sure that the batteries are connected as shown in figure 1. Failure to comply may result in damage to equipment or possible injury to personnel. Seek medical attention in the event of an injury.

GENERAL

M915 through M920 and M915A1 vehicles have four batteries connected in series-parallel that supply 12-volts to the electrical system and 24-volts to the starter motor.

BATTERY INSPECTION

1. Park vehicle, stop engine, apply parking brake and chock wheels (WP 0011).
2. Disconnect two battery box latches (Figure 1, Item 3) from battery box cover (Figure 1, Item 1).
3. Remove battery box cover (Figure 1, Item 1) from battery box (Figure 1, Item 5) by pulling battery box cover (Figure 1, Item 1) from locating pins (Figure 1, Item 2).
4. Check charge level indicators (Figure 1, Item 4) for green color. If any charge level indicator (Figure 1, Item 4) is completely dark or yellow in color, notify your supervisor.
5. Check the following connections. If connections are loose, notify your supervisor.
 - a. Positive and negative battery posts.
 - b. Jumper cable clamps-posts.
 - c. All cable-clamp connections.
 - d. Ground connection.
6. Check battery box (Figure 1, Item 5) for signs of leaking batteries. If batteries are leaking, notify your supervisor.
7. Align locating pins (Figure 1, Item 2) and install battery box cover (Figure 1, Item 1) on battery box (Figure 1, Item 5).
8. Secure battery box cover (Figure 1, Item 1) to battery box (Figure 1, Item 5) with two latches (Figure 1, Item 3).
9. Release parking brake and remove wheel chock (WP 0010).

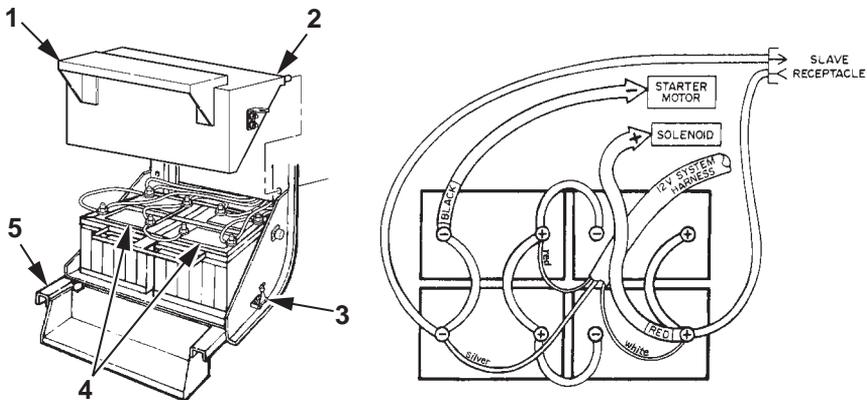


Figure 1. Battery Box, Battery, and Cables Inspection.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FAN CLUTCH LOCKUP PROCEDURE (M915 THROUGH M920)**

INITIAL SETUP: Not Applicable

FAN CLUTCH LOCKUP

WARNING

Let radiator cool before performing this task. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

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

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
A/C AIR FILTER REPLACEMENT**

INITIAL SETUP:

Equipment Condition

- Vehicle parked on level ground (WP 0011).
 - Engine off (WP 0011).
 - Parking brake set (WP 0011).
 - Engine run switch in off position (WP 0011).
-

REMOVAL**WARNING**

If Chemical, Biological, Radiological, and Nuclear (CBRN) exposure is suspected, personnel wearing protective equipment should handle all air cleaner media. Consult your CBRN Officer or CBRN NCO for appropriate handling or disposal procedures. CBRN contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel. Wear eye protection when removing A/C air filter. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

1. Unlatch two clamps (Figure 1, Item 2) on evaporator assembly (Figure 1, Item 1).
2. Remove air filter (Figure 1, Item 3) from evaporator assembly (Figure 1, Item 1).

END OF TASK**INSTALLATION**

1. Install air filter (Figure 1, Item 3) in evaporator assembly (Figure 1, Item 1).
2. Latch two clamps (Figure 1, Item 2) on evaporator assembly (Figure 1, Item 1).

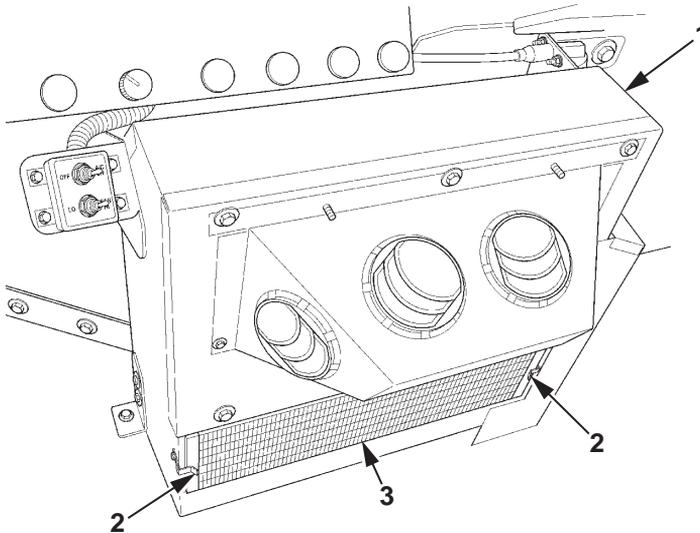


Figure 1. A/C Air Filter Replacement.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
MAINTENANCE UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:**References**

FM 9-207
WP 0003
WP 0016
WP 0017

References - Continued

WP 0025
WP 0026
WP 0029
WP 0035

GENERAL

This work package (WP) provides special instructions for maintaining vehicles under unusual conditions, which include extreme temperatures, humidity, fording, and difficult terrain. When operating under unusual conditions, it is especially important to keep the vehicle clean and adequately lubricated.

EXTREME COLD WEATHER

1. In extreme cold weather it is essential the vehicle is kept in top condition or it will be very difficult to get the vehicle started. Ensure all scheduled PMCS (WP 0025) are carefully performed prior to operation, and be sure to notify supervisor of any problems.
2. Always give engine extra time to reach its operating temperature range of 165–195° F (74–91° C) for M915 through M920 or 180–200° F (82–93° C) for M915A1.
3. For detailed guidance on antifreeze protection, lubrication, electrical system service, and other maintenance requirements for extreme cold weather operations, refer to FM 9-207.
4. 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 bypassed to prevent over pressure and possible rupture of the cooler. Notify supervisor to perform maintenance when 0° F (–18° C) or below is expected.
5. For M915P1, M915A1P1, M916P1, M917P1, and M920P1, ensure procedure for removing frost and ice from ballistic glass (WP 0016) is properly performed to prevent damage to ballistic glass.

END OF TASK

EXTREME HOT WEATHER

1. Check engine coolant level frequently. Ensure coolant is maintained at proper level (WP 0029). Check cooling system (radiator, hoses, and lines) for possible leaks, and notify supervisor of any problems.
2. The power steering system incorporates an oil cooler designed to reduce power steering fluid temperatures during normal and unusually warm conditions. Check oil level in power steering pump reservoir more often during periods of operation in extreme hot weather (WP 0035).
3. Check tires frequently to ensure each tire is inflated to the proper pressure (WP 0003) (but be very careful not to over inflate tires). Wait until tires are cool before adjusting tire pressures.
4. For M915P1, M915A1P1, M916P1, M917P1, and M920P1, ensure procedures for operating in extreme heat with crew protection armor and air conditioning are followed (WP 0017).

END OF TASK**EXTREME HUMID WEATHER**

In hot humid weather, exposed metal surfaces can rust rapidly. Fungus can grow in the fuel tank and on canvas tarps, seats, and other equipment. Frequent inspection, cleaning, and lubrication are necessary to maintain vehicle readiness in humid conditions. Fuel filters and air reservoirs must be drained frequently due to increased condensation in fuel and air systems. Clean affected areas carefully and if necessary, notify supervisor of any needed parts.

END OF TASK**AFTER FORDING**

1. Always check for sand and mud after you have forded water with vehicle. Thoroughly clean the vehicle. If water fording depth was 21 in. (53 cm) or more, notify supervisor and request after-fording maintenance for vehicle.
2. If vehicle has been operated in salt water, let vehicle dry, then check it for evidence of salt accumulation. Use a clean damp cloth to immediately remove all salt accumulation.
3. If salt water fording depth was 21 in. (53 cm) or more, notify supervisor and request vehicle needs after-fording maintenance as a result of operating vehicle in salt water.

END OF TASK

AFTER OPERATING ON UNUSUAL TERRAIN

1. After operating in mud, clean all accumulated mud from vehicle (WP 0026).
2. Check and clean radiator if mud is stuck in cooling fins.
3. If vehicle has been operated in sandy or dusty conditions, frequently check air cleaner, radiator cooling fins, and all system fluids. If any fluid is found to be contaminated with sand or dust, notify supervisor that vehicle needs special servicing after operation in sand or dust.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
LUBRICATION INSTRUCTIONS**

INITIAL SETUP:**References**

FM 9-207

References - ContinuedWP 0001

WARNING

Accidental or intentional introduction of liquid contaminants into the environment is a violation of state, federal, and military regulations. Refer to Army POL (WP 0001) for information concerning storage, use, and disposal of these liquids. Failure to comply may result in damage to environment and health of personnel. Seek medical attention in the event of an injury.

Contact with any lubrication material called out in this work package may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

Leaking or spilled lubrication material called out in this work package may cause a slip and fall hazard. When draining lubrication material, clean any leaking or spilled lubrication material immediately using suitable absorbent materials. Dispose of contaminated cloths, rags, or cleaning materials in accordance with local procedures and plans. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

NOTE

These instructions are mandatory.

Use a drain pan to capture any draining fluids. Dispose of fluids in accordance with local policy and ordinances. Ensure all spills are cleaned up.

For lubrication instructions for the M917 w/ Dump Truck Body, refer to your supervisor.

For lubrication instructions for the M918 w/ Bituminous Distributor Body, refer to your supervisor.

For lubrication instructions for M919 w/ Concrete-Mobile Mixer Body, refer to your supervisor.

1. The lubrication procedures in this work package are to be performed on the vehicle daily under normal conditions in order to be mission-ready at all times.
2. When the vehicle has been operated under unusual conditions, it may be necessary to perform procedures on vehicle more often. When in doubt, notify your supervisor.
3. Localized lubrication figures 1, 2, and 3, identify lubrication points, required lubricants, and procedures performed by the operator/crew. Specific notes and illustrations and any special lubrication instructions are contained in the LOCALIZED LUBRICATION POINTS section.

MILITARY SYMBOLS FOR LUBRICANTS AND INTERVALS

LUBRICANT SYMBOLS

- ATF** Fluid, Transmission (Dexron®)
- GAA** Grease, Automotive and Artillery
- GO** Lubrication Oil, Gear, Multipurpose
- OEA** Lubricating Oil, Internal Combustion Engine, Tactical Services
- OE/HDO** Lubricating Oil, Internal Combustion Engine, Tactical Service

LUBRICANT INTERVALS

- D** Daily
- W** Weekly
- 1** 1,000 mi (1,609 km) or 1 month, whichever occurs first
- 3** 3,000 mi (4,828 km) or 3 months, whichever occurs first
- 6** 6,000 mi (9,656 km) or 6 months, whichever occurs first
- 12** 12,000 mi (19,308 km) or 12 months, whichever occurs first
- 24** 24,000 mi (38,624 km) or 24 months, whichever occurs first

CLEANING**WARNING**

Cleaning solvent is combustible. DO NOT use or store near heat, sparks, flame, or other ignition sources. Use mechanical ventilation whenever product is used in a confined space, heated above ambient temperatures, or agitated. Keep container sealed when not in use. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

Contact with cleaning solvent may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least 15 minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity. Failure to comply may result in injury or death to personnel. Seek medical attention in the event of an injury.

LUBRICANTS**NOTE**

For arctic operation lubrication instructions, refer to FM 9-207, Operations and Maintenance of Ordnance Materiel in Cold Weather.

Perform lubrication after fording operations.

The following list of capacities should be used as a guide only. Do not overfill.

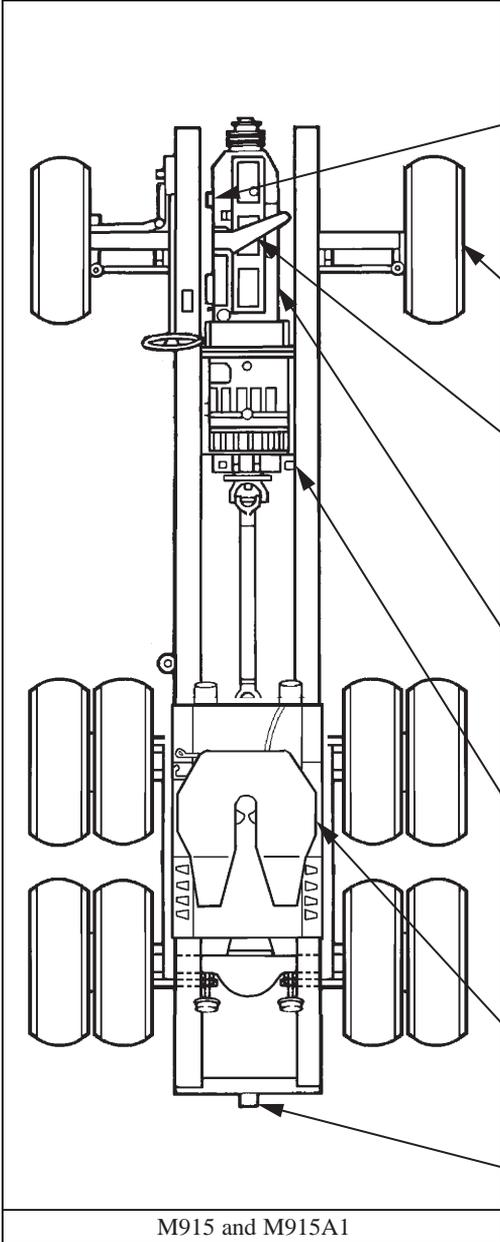
Table 1. Use of Lubricants.

APPLICATION	CAPACITY	LUBRICANT	EXPECTED TEMPERATURE
Engine (M915 through M920)	46 qt (43.5 L) with both filters	OE/HDO 30 OE/HDO 10 OEA (Arctic Grade) Oil	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Engine (M915A1)	44 qt (41.6 L)	OE/HDO 30 OE/HDO 10 OEA (Arctic Grade) Oil	Above +32° F (0° C) +40 to -15° F (+4 to -26° C) 0 to +65° F (-18 to +18° C)
Transmission (M915 through M920)	22 qt (20.8 L)	OE/HDO 30 OE/HDO 10 OEA (Arctic Grade) Oil	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)

Table 1. Use of Lubricants - Continued.

APPLICATION	CAPACITY	LUBRICANT	EXPECTED TEMPERATURE
Transmission (M915A1)	32 qt (30.3 L) with external filter	OE/HDO 30 OE/HDO 10 OEA (Arctic Grade) Oil	Above +32° F (0° C) +40 to -15° F (+4 to -26° C) 0 to +65° F (-18 to +18° C)
Differential Front (M916 through M920)	27 pt (12.8 L)	GO 85/140 GO 80/90 GO 75 (+40° F (+4° C) Limit)	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Differential Forward-Rear (M915)	40 pt (18.9 L)	GO 85/140 GO 80/90 GO 75 (+40° F (+4° C) Limit)	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Differential Forward-Rear (M916 through M920)	34 pt (16.1 L)	GO 85/140 GO 80/90 GO 75 (+40° F (+4° C) Limit)	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Differential Forward-Rear (M915A1)	38 pt (18.0 L)	GO 85/140 GO 80/90 GO 75 (+40° F (+4° C) Limit)	Above +32° F (0° C) +40 to -15° F (+4 to -26° C) 0 to -65° F (-18 to -54° C)
Differential Rear-Rear (M915 and M915A1)	36 pt (17.0 L)	GO 85/140 GO 80/90 GO 75 (+40° F (+4° C) Limit)	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Differential Rear-Rear (M916 through M920)	28 pt (13.2 L)	GO 85/140 GO 80/90 GO 75 (+40° F (+4° C) Limit)	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Transfer Case (M916 through M920)	5 qt (4.7 L)	GO 80/90 GO 80/90 GO 75	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Power Steering (M916 through M920 and M915A1)	2 qt (1.9 L)	OE/HDO 10 or OEA (Arctic Grade) Dexron® ATF is preferred	All Temperatures
Winch Drum (M916 through M920)	5 qt (4.7 L)	GO 80/90 GO 80/90 GO 75	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
Winch Reservoir (M916 through M920)	42 gal (159 L)	OE/HDO 10 OE/HDO 10 OEA (Arctic Grade) Oil	Above +32° F (0° C) +40 to -10° F (+4 to -23° C) 0 to -65° F (-18 to -54° C)
GAA - Grease Automotive and Artillery	As Required	GAA	—

LUBRICATION LOCATIONS

	INTERVAL	LUBRICANT	PROCEDURE
	D	OE/HDO 10 OEA	Power Steering Pump Level Check and Fill (See note 1)
	D	GO	Front Wheel Bearings Level Check and Fill (M915A1) (See note 2)
	D		Fuel Filter/Water Separator Drain Moisture (See note 3)
	D	OE/HDO	Engine Oil Level Check and Fill (See note 4)
	D	OE/HDO, OEA	Transmission Oil Level Check and Fill (See note 5)
	1	GAA	Fifth Wheel Lubrication (See note 6)
	W	OE/HDO 10	Pintle Hook Lubrication (See note 8)

M915 and M915A1

Figure 1. Lubrication Locations
(M915 and M915A1).

LUBRICATION LOCATIONS - CONTINUED

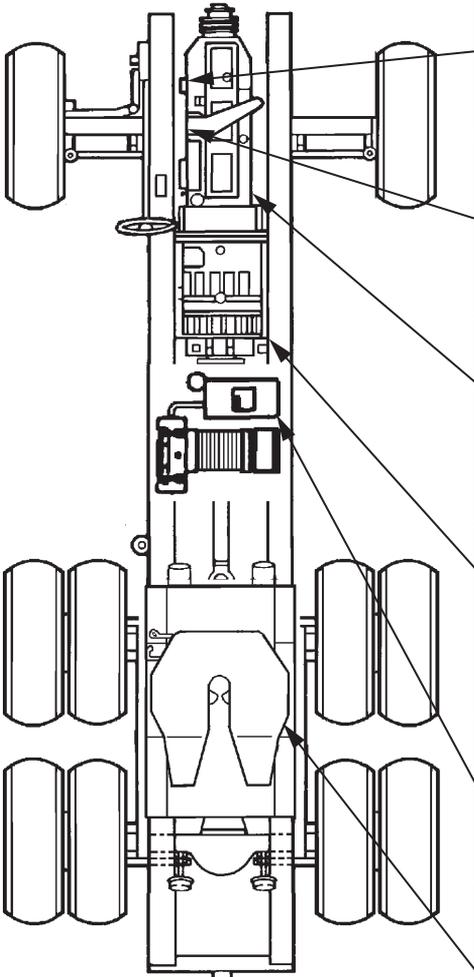
	INTERVAL	LUBRICANT	PROCEDURE
	D	OE/HDO 10 OEA	Power Steering Pump Level Check and Fill (See note 1)
	D		Fuel Filter/Water Separator Drain Moisture (See note 3)
	D	OE/HDO	Engine Oil Level Check and Fill (See note 4)
	D	OE/HDO, OEA	Transmission Oil Level Check and Fill (See note 5)
	D	OE/HDO, OEA	Winch Reservoir (M916) Level Check and Fill (See note 7)
	1	GAA	Fifth Wheel (M916) Lubrication (See note 6)
	W	OE/HDO 10	Pintle Hook Lubrication (M916) (See note 8)

Figure 2. Lubrication Locations (M916 and M918).

LUBRICATION LOCATIONS - CONTINUED

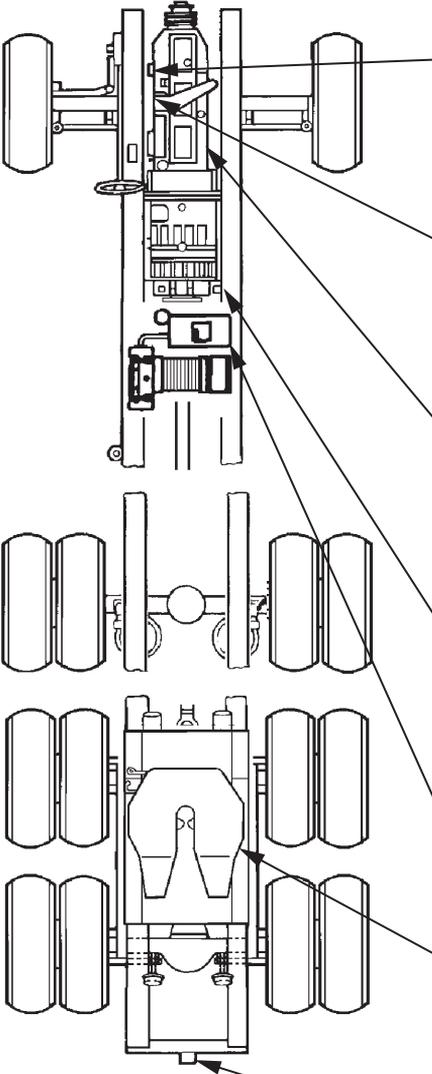
 <p>M917, M919, and M920</p>	INTERVAL	LUBRICANT	PROCEDURE
	D	OE/HDO 10 OEA	Power Steering Pump Level Check and Fill (See note 1)
	D		Fuel Filter/Water Separator Drain Moisture (See note 3)
	D	OE/HDO	Engine Oil Level Check and Fill (See note 4)
	D	OE/HDO, OEA	Transmission Oil Level Check and Fill (See note 5)
	D	OE/HDO, OEA	Winch Reservoir (M920) Level Check and Fill (See note 7)
	1	GAA	Fifth Wheel (M920) Lubrication (See note 6)
W	OE/HDO- 10	Pintle Hook Lubrication (M917, M920) (See note 8)	

Figure 3. Lubrication Locations
(M917, M919, and M920).

LOCALIZED LUBRICATION POINTS

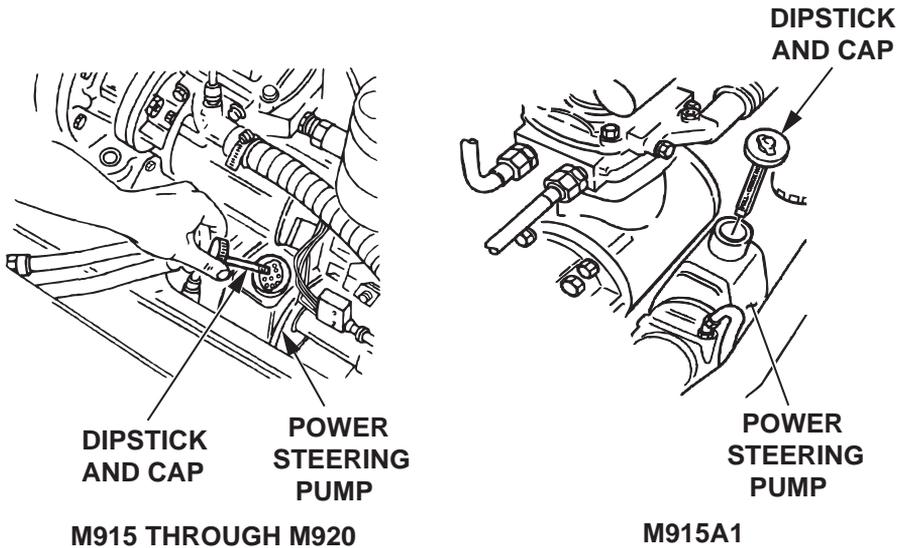


Figure 4. Power Steering Pump Level Check and Fill.

NOTE 1 - Power Steering Pump Level Check and Fill

Check daily with fluid hot and engine off. Wipe all dirt and grease from around dipstick and cap assembly, remove cap, and check fluid level (Figure 4). Add fluid as necessary to bring fluid level on dipstick to full mark. If fluid contamination is suspected, notify your supervisor.

LOCALIZED LUBRICATION POINTS - CONTINUED

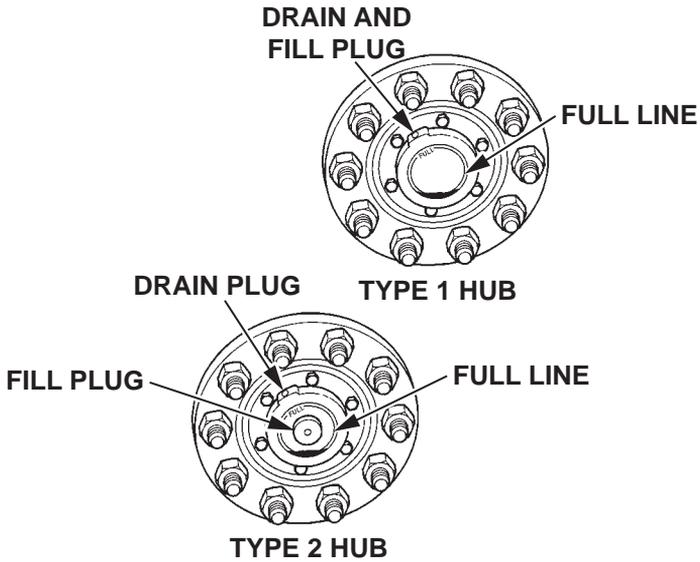


Figure 5. Front Wheel Bearing Level Check and Fill (M915A1).

NOTE 2 - Front Wheel Bearing Level Check and Fill (M915A1)

Check fluid level daily. Fluid should be level with full line (Figure 5). Add fluid as necessary to bring fluid level to full line. If fluid contamination is suspected, notify your supervisor.

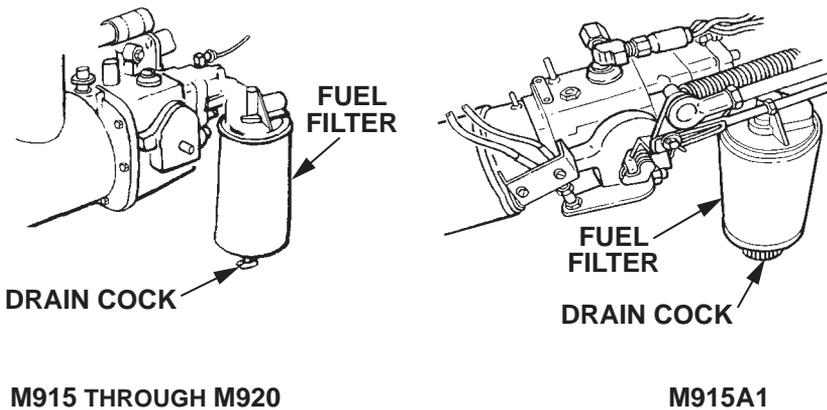


Figure 6. Fuel Filter/Water Separator Drain Moisture.

LOCALIZED LUBRICATION POINTS - CONTINUED**NOTE 3 - Fuel Filter/Water Separator Drain Moisture****WARNING**

Do not perform fuel filter/water separator draining while smoking or near fire, flames, or sparks. Fuel may ignite causing injury or death to personnel and/or damage to equipment. Seek medical attention in the event of an injury.

Accidental or intentional introduction of liquid contaminants into the environment is a violation of state, federal, and military regulations. Refer to Army POL (WP 0001) for information concerning storage, use, and disposal of these liquids. Failure to comply may result in damage to environment and health of personnel. Seek medical attention in the event of an injury.

CAUTION

Do not overtighten drain cock. Failure to comply may result in damage to drain cock and fuel leaks.

NOTE

If one quart or more of fuel must be drained from fuel filter/water separator before fuel is clear, notify your supervisor.

Park vehicle on level ground with the parking brake applied.

Wipe dirt and oil from drain cock (Figure 6). With engine running and transmission in neutral, open drain cock on bottom of fuel filter/water separator and drain fuel and any moisture into suitable container until fuel runs clear. Close drain cock securely and check for leaks. Notify your supervisor for disposal of fuel.

LOCALIZED LUBRICATION POINTS - CONTINUED

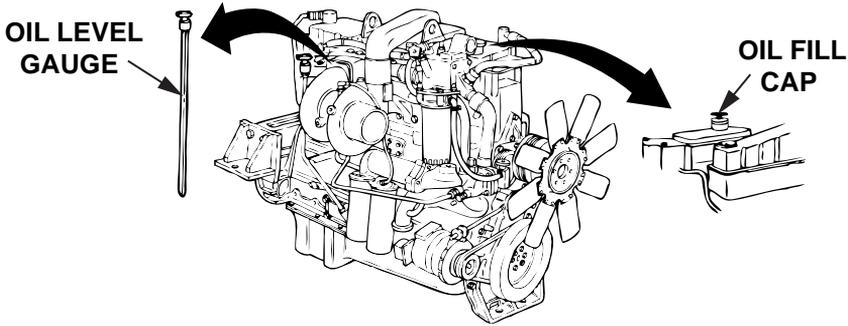


Figure 7. Engine Oil Level Check and Fill.

NOTE 4 - Engine Oil Level Check and Fill

CAUTION

Do not overfill oil in engine. Failure to comply may cause excess oil consumption or damage to engine.

NOTE

Shut engine off and let stand two minutes prior to oil level check.

Wipe dirt and oil from around dipstick (Figure 7). Using dipstick, check engine oil level. Engine oil level should be between the low and high marks. If engine oil is below the low mark, clean and remove oil fill cap and add engine oil to bring level to full mark on level gauge. If engine has used one quart or more of oil in 100 miles (161 km), notify your supervisor.

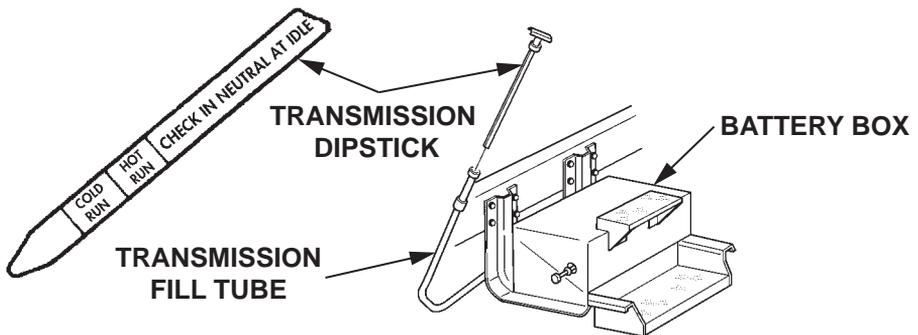


Figure 8. Transmission Level Check and Fill.

LOCALIZED LUBRICATION POINTS - CONTINUED**NOTE 5 - Transmission Oil Level Check and Fill****CAUTION**

Do not overfill transmission. Overfilling may cause aeration of the transmission oil (milky appearance). If overfilling occurs, drain transmission oil to bring to proper level.

If fluid level is low, bring to proper level with same oil grade or type. Mixing of oil grade or type may cause damage to internal transmission components.

NOTE

Park vehicle on level ground with the parking brake applied.

1. Start the engine and shift the transmission through all drive ranges to fill the clutch cavities and oil passages, then shift to neutral.
2. Run the engine for at least one minute at 1,000–1,200 rpm to clear the system of air.

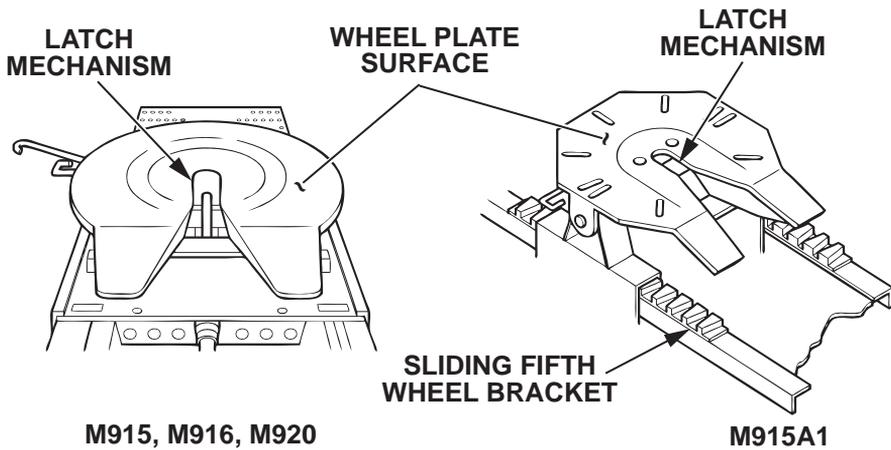
Hot Oil Check (HOT RUN band)

Be sure the temperature of the transmission has reached 120° F (49° C) or above. With the engine idling and the transmission in NEUTRAL, remove the dipstick (Figure 8) from the oil fill tube and check the oil level. If the oil registers in the HOT RUN band, the quantity of oil in the transmission is safe for operating the vehicle. If it registers on or below the bottom line of the HOT RUN band, add required amount of oil necessary to bring the oil level to the middle of the HOT RUN band (approximately one quart of oil is required to move the oil level from the bottom line of the HOT RUN band to the middle of the HOT RUN band).

Cold Oil Check (COLD RUN band)

Run the engine for one minute at 1,000 rpm to charge the system. With the transmission oil temperature gauge reading below 120° F (49° C), and the engine idling with the transmission in NEUTRAL, remove the dipstick (Figure 8) from the oil filler tube and check the oil level. If the oil level registers in the COLD RUN band the quantity of oil in the transmission is safe for operating the vehicle. If the oil level registers on or below the bottom line of the COLD RUN band, add the required amount of oil necessary to bring the oil level to the middle of the COLD RUN band (approximately one quart of oil is required to move the oil level from the bottom line of the COLD RUN band to the middle of the COLD RUN band).

LOCALIZED LUBRICATION POINTS - CONTINUED



*Figure 9. Fifth Wheel Lubrication
(M915, M916, M920, and M915A1).*

NOTE 6 - Fifth Wheel Lubrication (M915, M916, M920, and M915A1)

1. Latch Mechanism - Apply a liberal coat of GAA lubricant to the top and bottom latch mechanisms (Figure 9).
2. Wheel Plate Surface - Apply a liberal amount of GAA lubricant to the wheel plate surface (Figure 9).
3. Sliding Fifth Wheel Bracket (M915A1) - Apply a film of OE/HDO 10 lubricant on the rack and slide path of the bracket on the sliding fifth wheel (Figure 9).

LOCALIZED LUBRICATION POINTS - CONTINUED

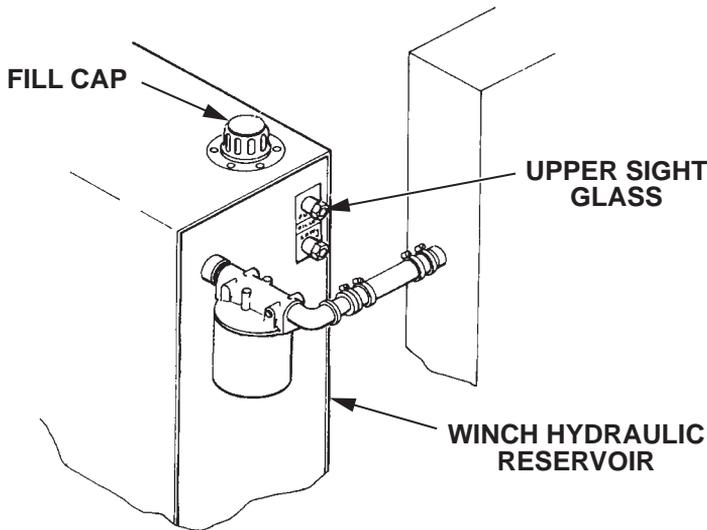


Figure 10. Winch Reservoir Level Check and Fill (M916 and M920).

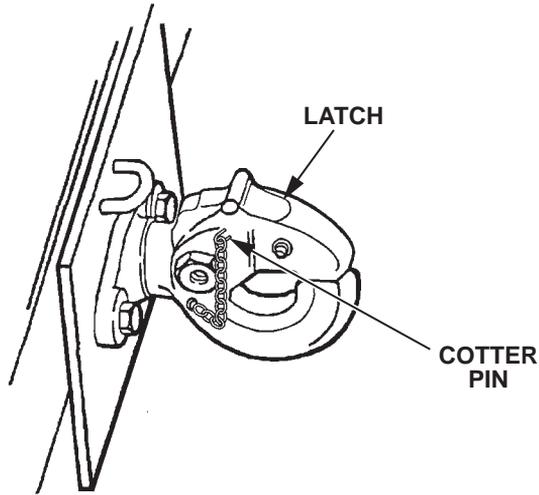
WARNING

Winch system retains some pressure even when not in use. Wear goggles/face shield when opening winch reservoir. Failure to comply may result in injury to personnel. Seek medical attention in the event of an injury.

NOTE 7 - Winch Reservoir Level Check and Fill (M916 and M920)

Check winch reservoir, oil should be visible in upper sight glass (Figure 10). If oil is not visible in upper sight glass, wipe any dirt or oil from fill cap and remove fill cap slowly to allow any residual pressure to release from system. Add necessary quantity of the proper oil to bring oil level to upper sight glass.

LOCALIZED LUBRICATION POINTS - CONTINUED



*Figure 11. Pintle Hook Lubrication
(M915, M916, M917, M920, and M915A1).*

**NOTE 8 - Pintle Hook Lubrication
(M915, M916, M917, M920, and M915A1)**

1. Check latch for looseness.
2. Lubricate cotter pin and latch (Figure 11) with OE/HDO 10.

END OF TASK

END OF WORK PACKAGE

CHAPTER 6

SUPPORTING INFORMATION

OPERATOR MAINTENANCE REFERENCES

SCOPE

This work package lists all field manuals, forms, technical manuals, and miscellaneous publications referenced in this manual.

PUBLICATIONS INDEX

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

DA Pam 25-30 Consolidated Index of Army Publications and Blank Forms

FORMS

The following forms pertain to this manual. See DA Pam 25-30 for index of blank forms. See DA Pam 750-8, The Army Maintenance Management System (TAMMS) Users Manual, for instructions on the use of maintenance forms pertaining to this manual.

DA Pam 738-751 Functional Users Manual for the Army Maintenance Management Systems - Aviation (TAMMS-A)

DA Pam 750-8 The Army Maintenance Management System (TAMMS) Users Manual

DA Form 2028 Recommended Changes to DA Publications and Blank Forms

DA Form 2404/5988-E Equipment Inspection and Maintenance Worksheet

DA Form 5504 Maintenance Request Form

SF 368 Product Quality Deficiency Report

FIELD MANUALS

FM 4-25.11 First Aid

FM 9-207 Operations and Maintenance of Ordnance Material in Cold Weather

FM 20-22 Vehicle Recovery Operations

FM 21-305 Manual for the Wheeled Vehicle Driver

FM 55-30 Army Motor Transport Units and Operations

TECHNICAL MANUALS

TM 3-4230-204-12&P Operator's and Unit Maintenance Manual for Decontaminating Apparatus, Portable, ABC-M11

TM 5-3805-274-13&P Operator and Field Maintenance Manual Including Repair Parts and Special Tools List (RPSTL) for M917 Truck Body

TM 5-3895-371-10 Operator Manual for M918 Bituminous Distributor Truck Body

TECHNICAL MANUALS - CONTINUED

TM 5-3895-372-10	Operator Manual for M919 Concrete Mobile Mixer Truck Body
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use
TM 746-10	Marking, Packaging, and Shipment of Supplies and Equipment: General Packaging Instructions for Field Use
TM 9-2320-273-23-1	Field Maintenance Manual for M915, M915P1, M915A1, M915A1P1, M916, M916P1, M920, M920P1 Truck Tractor and Chassis for M917, M917P1, M918, and M919
TM 9-2320-273-23-2	Field Maintenance Manual for M915, M915P1, M915A1, M915A1P1, M916, M916P1, M920, M920P1 Truck Tractor and Chassis for M917, M917P1, M918, and M919
TM 9-2320-273-23-3	Field Maintenance Manual for M915, M915P1, M915A1, M915A1P1, M916, M916P1, M920, M920P1 Truck Tractor and Chassis for M917, M917P1, M918, and M919

MISCELLANEOUS PUBLICATIONS

AR 70-1	Army Acquisition Policy
AR 385-55	Prevention of Motor Vehicle Accidents
AR 700-138	Army Logistics Readiness and Sustainability
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-909	Field and Garrison Furnishings and Equipment
CTA 50-970	Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items)

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
COMPONENTS OF END ITEM (COEI)
AND BASIC ISSUE ITEMS (BII) LISTS**

INTRODUCTION**SCOPE**

This work package lists COEI and BII for the M915, M915A1, M916, M917, M918, M919, and M920 to help you inventory items for safe and efficient operation of the equipment.

GENERAL**NOTE**

There is no authorized COEI for M915, M915A1, M916, M917, M918, M919, or M920 vehicles.

There is no authorized COEI or BII for M915P1, M915A1P1, M916P1, M917P1, or M920P1 vehicles.

The COEI and BII information is divided into the following lists:

Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the vehicle. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII). These essential items are required to place the vehicle in operation, operate it, and do emergency repairs. Although shipped separately packaged, BII must be with the vehicle during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

EXPLANATION OF COLUMNS IN THE COEI LIST AND BII LIST

Column (1) Item Number. Gives you the reference number of the item listed.

Column (2) National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (4) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

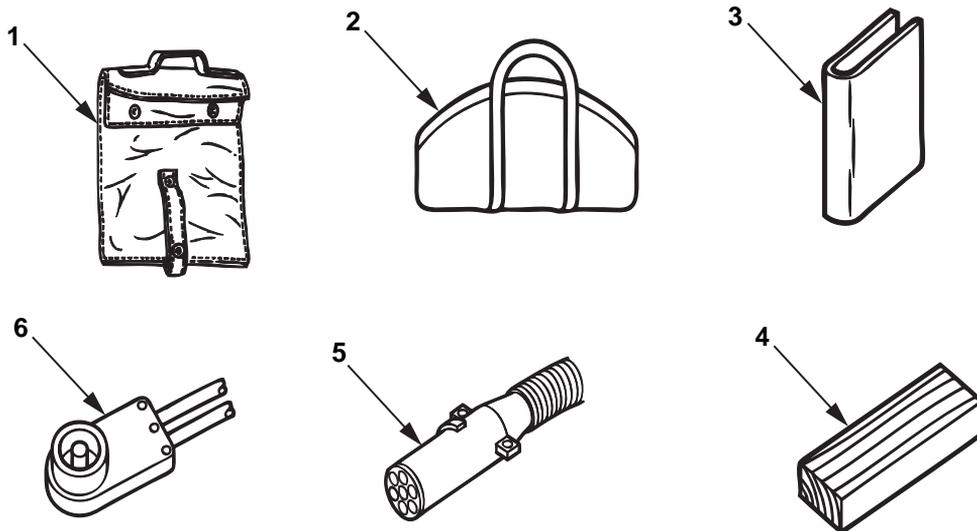
Code	Used On
U21	Model M915
U2A	Model M915A1
U22	Model M916
U23	Model M917
U24	Model M918
U25	Model M919
U26	Model M920

Column (5) U/I. Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) Qty Rqr. Indicates the quantity required.

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

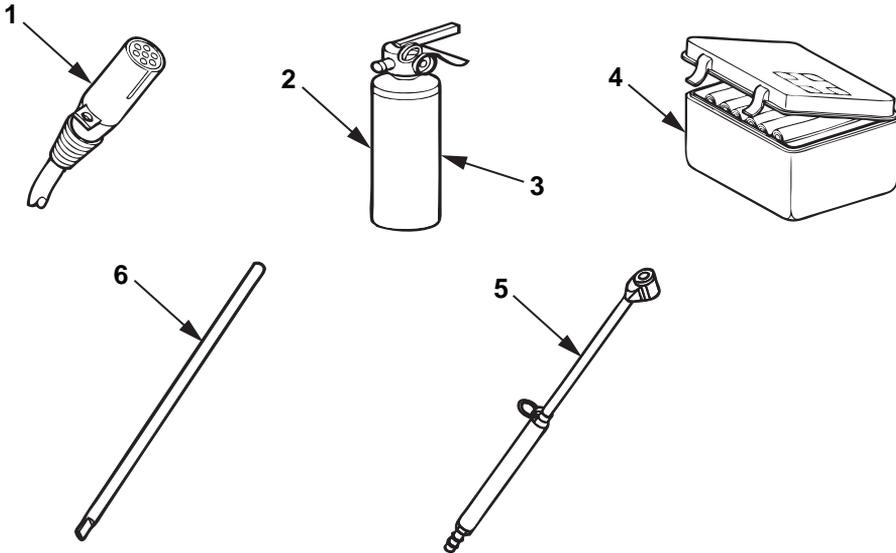
Table 1. Basic Issue Items (BII).



(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqtr.
1	2540-00-670-2459	BAG ASSEMBLY, PAMPHLET (in tool box under passenger seat) 11676920 (19207)	U2A, U21 Thru U26	EA	1
2	5140-00-473-6256	BAG, TOOL (in tool box under passenger seat) 5140-00-473-6256 (64067)	U2A, U21 Thru U26	EA	1
3	7510-00-889-3494	BINDER, LOOSE-LEAF (in tool box under passenger seat) 11677003 (19207)	U2A, U21 Thru U26	EA	1
4	5510-00-491-0307	BLOCK, WOOD (in tool box under passenger seat) CPR103023-2 (34623)	U22 Thru U26	EA	1
5	5995-01-082-6214	CABLE ASSEMBLY (in tool box under passenger seat) BE27451 (06721)	U2A	EA	1
6	6150-01-022-6004	CABLE ASSEMBLY, POWER (in tool box under passenger seat) 11682336-1 (19207)	U2A, U21 Thru U26	EA	1

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - CONTINUED

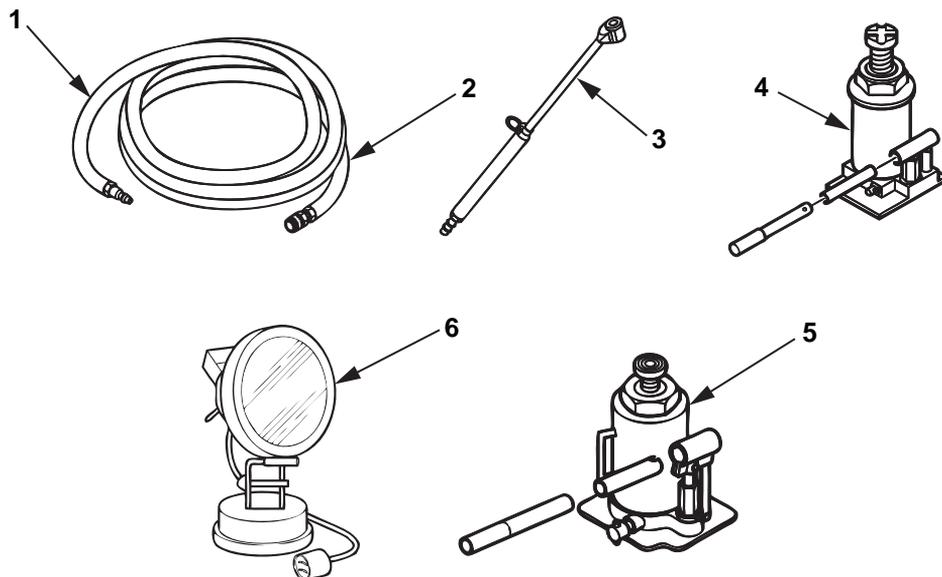
Table 2. Basic Issue Items (BII).



(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr.
1	6150-01-148-6944	CABLE ASSEMBLY, SPECIAL PURPOSE (in tool box under passenger seat) 32-2051 (1F3G5)	U21, U22, U26	EA	1
2	4210-00-270-4512	EXTINGUISHER, FIRE (in rear of tool box) SCD539482 (80063)	U2A	EA	1
3	4210-00-775-0127	EXTINGUISHER, FIRE (in rear of tool box) AA393-A2B (80244)	U21 Thru U26	EA	1
4	6545-00-922-1200	FIRST AID KIT, GENERAL PURPOSE (on front of tool box) 11677011 (19207)	U2A, U21 Thru U26	EA	1
5	4910-01-003-9599	GAGE, TIRE PRESSURE, SELF-CONTAINED (in tool box under passenger seat) 61-J2-1506 (94894)	U21 Thru U26	EA	1
6	5120-01-084-3298	HANDLE, WRENCH (in tool box under passenger seat) 967556 (34623)	U2A, U21 Thru U26	EA	1

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - CONTINUED

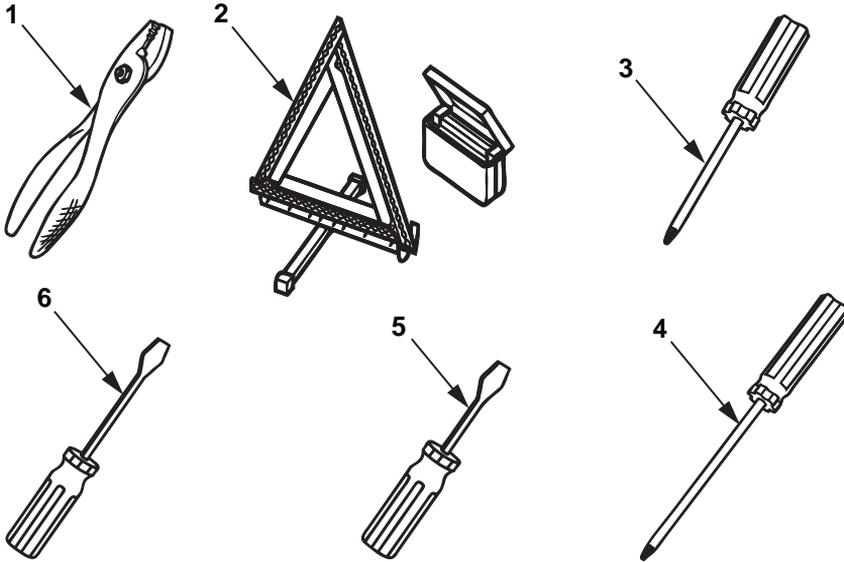
Table 3. Basic Issue Items (BII).



(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqrd.
1	4720-01-119-5206	HOSE ASSEMBLY (in tool box under passenger seat) MB145-20065 (34623)	U2A	EA	1
2	4720-00-328-5422	HOSE ASSEMBLY, PNEUMATIC, TIRE INFLATOR, 40 FT LONG, QUICK DISCONNECT (in tool box under passenger seat) 11624422-7 (19207)	U21 Thru U26	EA	1
3	4910-01-298-5479	INFLATOR-GAGE, PNEUMATIC TIRE, 10-120 psi (in tool box under passenger seat) 64A2-1506 (94894)	U2A	EA	1
4	5120-00-224-7330	JACK, HYD, 12 TON (in tool box) 5120-00-224-7330 (80244)	U2A & U21	EA	1
5	5120-00-188-1788	JACK, HYD, 20 TON (in tool box) 5120-00-188-1788 (80244)	U22 Thru U26	EA	1
6	6220-01-327-3225	LAMP UNIT, VEHICULAR (in tool box under passenger seat) 1401152 (78422)	U22 & U26	EA	1

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - CONTINUED

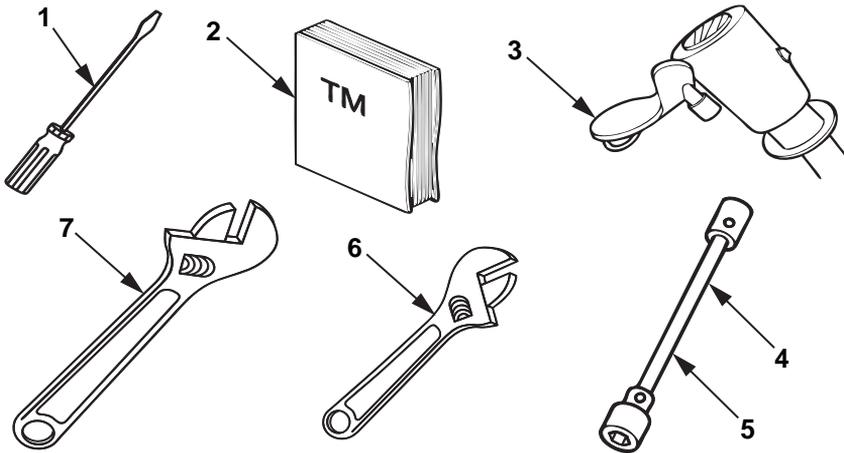
Table 4. Basic Issue Items (BII).



(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqtr.
1	5120-00-223-7397	PLIERS, SLIP JOINT (in tool box under passenger seat) B107.500 (05047)	U2A, U21 Thru U26	EA	1
2	9905-00-148-9546	REFLECTOR SET, HIGHWAY WARNING, TRIANGULAR (in tool box under passenger seat) 11669000 (19207)	U2A, U21 Thru U26	EA	1
3	5120-00-234-8913	SCREWDRIVER, CROSS TIP, 4-in. (in tool box under passenger seat) B107.30 (05047)	U2A, U21 Thru U26	EA	1
4	5120-00-224-7375	SCREWDRIVER, CROSS TIP, 8-in. (in tool box under passenger seat) B107.30 (05047)	U2A, U21 Thru U26	EA	1
5	5120-00-222-8852	SCREWDRIVER, FLAT TIP, 4-in. (in tool box under passenger seat) B107.600 (05047)	U2A, U21 Thru U26	EA	1
6	5120-00-237-6985	SCREWDRIVER, FLAT TIP, 8-in. (in tool box under passenger seat) B107.600 (05047)	U21 Thru U26	EA	1

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - CONTINUED

Table 5. Basic Issue Items (BII).



(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr.
1	5120-01-367-3746	SCREWDRIVER, FLAT TIP (in tool box under passenger seat) B107.15 (05047)	U2A	EA	1
2	N/A	TECHNICAL MANUAL, OPERATOR'S (in glove box) TM 9-2320-273-10	U2A, U21 Thru U26	EA	1
3	5995-01-082-3172	WIRING HARNESS (in tool box under passenger seat) MA365-20000 (34623)	U2A, U21, U22 & U26	EA	1
4	5120-00-316-9217	WRENCH, SOCKET (in tool box under passenger seat) GGG-W-644 (81348)	U21 Thru U26	EA	1
5	5120-01-088-2471	WRENCH, WHEEL STUD NUT (in tool box under passenger seat) 41-W-3838-40 (19207)	U2A	EA	1
6	5120-00-240-5328	WRENCH, ADJUSTABLE, 8-in. (in tool box under passenger seat) B107.8 (05047)	U2A, U21 Thru U26	EA	1
7	5120-00-264-3796	WRENCH, ADJUSTABLE, 12-in. (in tool bag under passenger seat) B107.8 (05047)	U2A, U21 Thru U26	EA	1

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
ADDITIONAL AUTHORIZATION LIST (AAL)**

INTRODUCTION**SCOPE**

This work package lists additional items authorized for the support of the M915, M915A1, M916, M917, M918, M919, and M920.

GENERAL

This list identifies items that do not have to accompany models M915, M915A1, M916, M917, M918, M919, and M920 and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

EXPLANATION OF COLUMNS IN THE AAL

Column (1) National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (3) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

Code	Used on
U21	Model M915
U2A	Model M915A1
U22	Model M916
U23	Model M917
U24	Model M918
U25	Model M919
U26	Model M920

Column (4) U/I. Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) Qty Recm. Indicates the quantity recommended.

Table 1. Additional Authorization List (AAL).

(1) National Stock Number (NSN)	(2) Description, Part Number/(CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recm.
5940-00-549-6583	ADAPTER, BATTERY TERMINAL AA-52425-2 (58536)	U21 thru U26	EA	4
5940-00-549-6581	ADAPTER, BATTERY TERMINAL MS A-A-524325-1 (58536)	U21 thru U26	EA	4
5110-00-293-2336	AX: SINGLE-BIT 4-16-HD-WT 36.5 IN. TO 36.5 IN. LG. 6150925 (19207)	U21 thru U26, U2A	EA	1
5610-00-491-0307	BLOCK: WOOD, 4x8x9 in. CPR103023-2 (34623)	U21 thru U26, U2A	EA	1
5510-00-491-0306	BLOCK: WOOD, 7x8x9 in. CPR103023-1 (19207)	U21 thru U26	EA	1
2540-00-933-9034	CHAIN ASSEMBLY: TIRE A-A-52507-2245 (58536)	U21 thru U26, U2A	PR	2
2540-00-933-6935	CHAIN ASSEMBLY: TIRE MS500055-23 (96906)	U21 thru U26, U2A	PR	2
5340-01-267-2908	CLEVIS, ROD END 12322662 (19207)	U21 thru U26	EA	2
4730-00-595-0083	COUPLING HALF, QUICK DISCONNECT A52484-1 (58536)	U2A	EA	1
2920-00-738-6272	COVER, BATTERY TERMINAL 10942521 (19207)	U21 thru U26	EA	8
4230-00-720-1618	DECONTAMINATING APPARATUS, MILD51048 (81349)	U21 thru U26	EA	1
5120-00-288-6574	HANDLE: MATTOCK-PICK, 36.5 in. to 36.5 in. lg. 5120-00-288-6574 (80244)	U21 thru U26, U2A	EA	7
4720-00-740-9662	HOSE ASSEMBLY, NONMETALLIC MS39325-9-126-B (96906)	U21 thru U26, U2A	EA	2
6240-00-783-2853	LAMP, INCANDESCENT, 12 V BEACON A7079B12 (72914)	U21 thru U26	EA	1
5120-00-243-2395	MATTOCK: PICK-TYPE, 5 LB, W/O HANDLE 5120-00-243-2395 (80244)	U21 thru U26, U2A	EA	1
5315-00-539-9174	PIN, GROOVE, HEADED 10929861 (19207)	U21 thru U26	EA	2
5315-00-350-4326	PIN, LOCK 5213744 (19207)	U21 thru U26	EA	2
5120-00-293-3336	SHOVEL: HAND RD-PT, D-HDL, SHORT SIZE 2 5120-00-293-3336 (80244)	U21 thru U26, U2A	EA	1
2540-01-267-2912	TOWBAR, MEDIUM DUTY 8383002 (19207)	U2A	EA	1
2540-00-378-2012	TOWBAR, MOTOR VEHICLE 8383802 (19207) composed of: 12322662, 10929861, and 5213744	U21 thru U26, U2A	EA	1

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
EXPENDABLE AND DURABLE ITEMS LIST**

INTRODUCTION**SCOPE**

This work package lists expendable and durable items that you will need to operate and maintain the M915, M915A1, M916, M917, M918, M919, and M920. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipment or CTA 8-100, Army Medical Department Expendable/Durable Items.

EXPLANATION OF COLUMNS IN THE EXPENDABLE/DURABLE ITEMS LIST

Column (1) Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use Antifreeze WP 0039, Item 2).

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item (C = Crew).

Column (3) National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Part Number/(CAGEC). This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (5) U/I. Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable and Durable Items List.

(1) Item Number	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/(CAGEC)	(5) U/I
1	C	8040-00-902-3871 8040-00-865-8991	ADHESIVE MIL-A-46106 (81349) 3 oz 12 oz	KT KT
2	C	6850-01-464-9096	ANTIFREEZE, Arctic, type IP, ethylene glycol, prediluted (60/40%), recycled engine coolant A-A-52624 (58536) 55 gal	DR
3	C	6850-01-464-9125 6850-01-464-9137 6850-01-464-9152	ANTIFREEZE, GLYCOL, INHIBITED A-A-52624 (58536) 1 gal 5 gal 55 gal	GL CO DR
4	C	9150-00-190-0932 9150-00-231-9071	BRAKE FLUID, AUTOMOTIVE J 1703 (81343) 1 pt 1 gal	PT GL
5	C	9150-01-102-9455	BRAKE FLUID, AUTOMOTIVE, Arctic type MIL-PRF-46176 (81349) 1 gal	GL
6	C	6850-01-474-2318 6850-01-474-2320 6850-01-474-2321	CLEANING COMPOUND, Solvent, type III MIL-PRF-680 (81349) 1 gal 5 gal 55 gal	GL BX DR
7	C	6850-00-926-2275	CLEANING COMPOUND, WINDSHIELD 0854-000 (OFTT5) 16 oz	BX
8	C	8030-00-251-3980	COMPOUND, ANTISEIZE MIL-PRF-907 (81349) 1 Pound Can	LB
9	C	7930-00-282-9699	DETERGENT, GENERAL PURPOSE LIQUID 7930-00-282-9699 (83421) 1 gal	BX

Table 1. Expendable and Durable Items List - Continued.

(1) Item Number	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/(CAGEC)	(5) U/I
10	C	9150-00-286-5282 9150-00-286-5284 9150-00-286-5285 9150-00-286-5283	DIESEL FUEL, ARCTIC VVF800GRADEDFAAR (81348) 5 gal 55 gal, 16 gauge drum 55 gal, 18 gauge drum bulk	CN DR DR GL
11	C	9140-00-286-5287 9140-00-286-5288 9140-00-286-5289 9140-00-286-5286	DIESEL FUEL, DF-1 Regular ASTM D 975 (81346) 5 gal 55 gal, 16 gauge drum 55 gal, 18 gauge drum bulk	CN DR DR GL
12	C	9140-00-286-5295 9140-00-286-5296 9140-00-286-5297 9140-00-286-5294	DIESEL FUEL, DF-2 Regular ASTM D 975 (81346) 5 gal 55 gal, 16 gauge drum 55 gal, 18 gauge drum bulk	CN DR DR GL
13	C	9150-01-197-7688 9150-01-197-7693 9150-01-197-7690 9150-01-197-7689 9150-01-197-7692 9150-01-197-7691	GREASE, AUTOMOTIVE AND ARTILLERY M-10924-A (81349) 2-1/4 oz M-10924-B (81349) 14 oz M-10924-C (81349) 1-3/4 lb M-10924-D (81349) 6-1/2 lb M-10924-E (81349) 35 lb M-10924-F (81349) 120 lb	TU CA CN CN CN DR
14	C	9150-00-698-2382 9150-00-657-4959	HYDRAULIC FLUID, AUTOMATIC TRANSMISSION Dexron VI QT (24617) 1 qt Dexron VI 5GL (24617) 5 gal	QT CN
15	C	9150-00-935-9807	HYDRAULIC FLUID, PETROLEUM BASE, PRESERVATIVE AVERX904 (77988) 1 qt	QT
16	C	6810-01-075-5546	ISOPROPYL ALCOHOL 7618-19-4 (53390) 4 oz	BT
17	C	9150-00-189-6727 9150-00-186-6668 9150-00-191-2772 9150-01-496-1962	LUBRICATING OIL, ENGINE, OE/HDO 10 M2104-1-10W (81349) 1 qt M2104-3-10W (81349) 5 gal M2104-4-10W (81349) 55 gal MIL-PRF-2104 (81349) bulk	QT CN DR GL

Table 1. Expendable and Durable Items List - Continued.

(1) Item Number	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/(CAGEC)	(5) U/I
18	C	9150-00-186-6681 9150-00-188-9858 9150-00-189-6729 9150-00-183-7808	LUBRICATING OIL, ENGINE, OE/HDO 30 M2104-1-30W (81349) 1 qt M2104-3-30W (81349) 5 gal M2104-4-30W (81349) 55 gal M2104-2-30W (81349) bulk	QT CN DR GL
19	C	9150-00-188-9865	LUBRICATING OIL, ENGINE, OE/HDO 50 MIL-L-2104 (81349) 5 gal	CN
20	C	9150-00-186-6699 9150-01-413-6892 9150-01-230-9748	LUBRICATING OIL, ENGINE, Multi-viscosity 10W/30 Grade MIL-L-46152 (81349) 1 qt J2362 (13873) 5 gal J2362 (81343) 55 gal	QT CO DR
21	C	9150-00-402-4478 9150-00-402-2372 9150-00-491-7197	LUBRICATING OIL, ENGINE OEA ICE, Subzero MIL-L-46167 (81349) 1 qt MIL-PRF-46167 (81349) 5 gal MIL-PRF-46167 (81349) 55 gal	QT CN DR
22	C	9150-00-234-5197	LUBRICATING OIL, EXPOSED GEAR VVL751 (81348) 5 lb	CN
23	C	9150-01-035-5390 9150-01-035-5391 9150-00-257-5440 9150-00-257-5443	LUBRICATING OIL, EXPOSED GEAR, Subzero GOS M2105-1-75W (81349) 1 qt M2105-3-75W (81349) 5 gal MILL10324 (81349) 5 gal MILL10324 (81349) 55 gal	QT CN CN DR
24	C	9150-01-035-5393	LUBRICATING OIL, GEAR J2360 (81343) 5 gal	CN
25	C	7920-00-205-1711	RAG, WIPING 7920-00-205-1711 (80244) 50 Pound Bale	BE
26	C	8030-00-252-3391	SEALING COMPOUND, TYPE 2 MIL-S-45180 (81349) 11 oz	TU

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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE <i>Date you filled out this form.</i>
For use of this form, see AR 25-30; the proponent agency is GAASA							
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>) <i>Your mailing address</i>	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER <i>TM Number</i>						DATE <i>Date of the TM</i>	TITLE <i>Title of the TM</i>
ITEM	PAGE	PARA- GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
SAMPLE							
* Reference to line numbers within the paragraph or subparagraph.							
TYPED NAME, GRADE OR TITLE <i>Your Name</i>						TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION <i>Your Phone Number</i>	SIGNATURE <i>Your Signature</i>

TO: <i>(Forward direct to addressee listed in publication)</i> U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
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PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER				DATE		TITLE		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

SAMPLE

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is GAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
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PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 9-2320-273-10						DATE 14 DEC 2012	TITLE Operator's Manual for M915, M915A1, M915P1, M915A1P1, M916, M916P1, M917, M917P1, M918, M919, M920, AND M920P1
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
Empty table for recommended changes and reasons							
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i> U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
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PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER TM 9-2320-273-10	DATE 14 DEC 2012	TITLE Operator's Manual for M915, M915A1, M915P1, M915A1P1, M916, M916P1, M917, M917P1, M918, M919, M920 & M920P1
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is GAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 9-2320-273-10						DATE 14 DEC 2012	TITLE Operator's Manual for M915, M915A1, M915P1, M915A1P1, M916, M916P1, M917, M917P1, M918, M919, M920, AND M920P1
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
Empty table for recommended changes and reasons							
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i> U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
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PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER TM 9-2320-273-10	DATE 14 DEC 2012	TITLE Operator's Manual for M915, M915A1, M915P1, M915A1P1, M916, M916P1, M917, M917P1, M918, M919, M920 & M920P1
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is GAASA						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 9-2320-273-10						DATE 14 DEC 2012	TITLE Operator's Manual for M915, M915A1, M915P1, M915A1P1, M916, M916P1, M917, M917P1, M918, M919, M920, AND M920P1
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
Empty table for recommended changes							
<i>* Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i> U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
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PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER TM 9-2320-273-10	DATE 14 DEC 2012	TITLE Operator's Manual for M915, M915A1, M915P1, M915A1P1, M916, M916P1, M917, M917P1, M918, M919, M920 & M920P1
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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By Order of the Secretary of the Army:

RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Official:

A handwritten signature in black ink that reads "Joyce E. Morrow". The signature is written in a cursive style with a large, stylized initial "J".

JOYCE E. MORROW
Administrative Assistant to
the Secretary of the Army
1230506

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 380297,
requirements for TM 9-2320-273-10.

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meter = 0.3937 Inch
 1 Decimeter = 10 Centimeters = 3.94 Inches
 1 Meter = 10 Decimeters = 100 Centimeters
 = 1000 Millimeters = 39.37 Inches
 1 Dekameter = 10 Meters = 32.8 Feet
 1 Hectometer = 10 Dekameters = 328.08 Feet
 1 Kilometer = 10 Hectometers = 1000 Meters
 = 0.621 Mile = 3,280.8 Feet
 Millimeters = Inches times 25.4
 Inches = Millimeters divided by 25.4

WEIGHTS

1 Centigram = 10 Milligrams = 0.154 Grain
 1 Decigram = 10 Centigrams = 1.543 Grains
 1 Gram = 0.001 Kilogram = 10 Decigrams
 = 1000 Milligrams = 0.035 Ounce
 1 Dekagram = 10 Grams = 0.353 Ounce
 1 Hectogram = 10 Dekagrams = 3.527 Ounces
 1 Kilogram = 10 Hectograms = 1000 Grams
 = 2.205 Pounds
 1 Quintal = 100 Kilograms = 220.46 Pounds
 1 Metric Ton = 10 Quintals = 1000 Kilograms
 = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liter = 0.034 Fluid Ounce
 1 Centiliter = 10 Milliliters = 0.34 Fluid Ounce
 1 Deciliter = 10 Centiliters = 3.38 Fluid Ounces
 1 Liter = 10 Deciliters = 1000 Milliliters
 = 33.82 Fluid Ounces
 1 Dekaliter = 10 Liters = 2.64 Gallons
 1 Hectoliter = 10 Dekaliters = 26.42 Gallons
 1 Kiloliter = 10 Hectoliters = 264.18 Gallons

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inch
 1 Sq Decimeter = 100 Sq Centimeters = 15.5 Sq Inches
 1 Sq Meter (Centare) = 10 Sq Decimeters
 = 10,000 Sq Centimeters = 10.764 Sq Feet
 1 Sq Dekameter (Are) = 100 Sq Meters = 1,076.4 Sq Feet
 1 Sq Hectometer (Hectare) = 100 Sq Dekameters
 = 2.471 Acres
 1 Sq Kilometer = 100 Sq Hectometers
 = 1,000,000 Sq Meters = 0.386 Sq Mile

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.061 Cu Inch
 1 Cu Decimeter = 1000 Cu Centimeters = 61.02 Cu Inches
 1 Cu Meter = 1000 Cu Decimeters
 = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE

$5/9 (^{\circ}\text{F} - 32^{\circ}) = ^{\circ}\text{C}$
 $(9/5 \times ^{\circ}\text{C}) + 32^{\circ} = ^{\circ}\text{F}$
 -35° Fahrenheit is equivalent to -37° Celsius
 0° Fahrenheit is equivalent to -18° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 100° Fahrenheit is equivalent to 38° Celsius
 212° Fahrenheit is equivalent to 100° Celsius

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>	<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches	Centimeters.....	2.540	Centimeters	Inches.....	0.394
Feet.....	Meters.....	0.305	Meters.....	Feet.....	3.280
Yards	Meters.....	0.914	Meters.....	Yards.....	1.094
Miles	Kilometers.....	1.609	Kilometers	Miles	0.621
Square Inches	Square Centimeters.....	6.451	Square Centimeters	Square Inches.....	0.155
Square Feet.....	Square Meters.....	0.093	Square Meters.....	Square Feet.....	10.764
Square Yards.....	Square Meters.....	0.836	Square Meters.....	Square Yards.....	1.196
Square Miles	Square Kilometers	2.590	Square Kilometers	Square Miles.....	0.386
Acres	Square Hectometers	0.405	Square Hectometers....	Acres	2.471
Cubic Feet	Cubic Meters	0.028	Cubic Meters	Cubic Feet.....	35.315
Cubic Yards.....	Cubic Meters	0.765	Cubic Meters	Cubic Yards.....	1.308
Fluid Ounces	Milliliters.....	29.573	Milliliters.....	Fluid Ounces	0.034
Pints.....	Liters	0.473	Liters	Pints.....	2.113
Quarts.....	Liters	0.946	Liters	Quarts.....	1.057
Gallons	Liters	3.785	Liters	Gallons.....	0.264
Ounces.....	Grams	28.349	Grams	Ounces	0.035
Pounds.....	Kilograms	0.454	Kilograms	Pounds.....	2.205
Short Tons.....	Metric Tons	0.907	Metric Tons	Short Tons	1.102
Pound-Feet.....	Newton-Meters.....	1.356	Newton-Meters.....	Pound-Feet.....	0.738
Pounds-Inches.....	Newton-Meters.....	0.11375	Kilopascals	Pounds per Square Inch.....	0.145
Pounds per Square Inch..	Kilopascals	6.895	Kilometers per Liter ...	Miles per Gallon.....	2.354
Ounce-Inches.....	Newton-Meters.....	0.007062	Kilometers per Hour ...	Miles per Hour	0.621
Miles per Gallon.....	Kilometers per Liter	0.425	°Fahrenheit	°Celsius.....	$^{\circ}\text{C} = (^{\circ}\text{F}-32)\times 5/9$
Miles per Hour	Kilometers per Hour	1.609	°Celsius.....	°Fahrenheit	$^{\circ}\text{F} = (9/5\times^{\circ}\text{C})+32$

