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TECHNICAL MANUAL
OPERATOR'S MANUAL FOR
THE M1083A1 SERIES 5 TON, 6 X 6
MEDIUM TACTICAL VEHICLES (MTV)

VOLUME NO. 1 OF 2

MODEL	NSN	EIC
TRK, CAR., MTV, M1083A1		
W/WN	2320-01-447-3884	BUL
W/O WN	2320-01-447-3890	BT9
TRK., CAR., MTV, W/MHC, M1084A1	2320-01-447-3887	BUB
TRK., CAR., MTV, LWB, M1085A1		
W/WN	2320-01-447-3897	BUR
W/O WN	2320-01-447-3891	BUG
TRK, CAR., MTV, LWB W/MHC, M1086A1	2320-01-447-3895	BUH
TRK., TRACTOR, MTV, M1088A1		
W/WN	2320-01-447-3900	BUC
W/O WN	2320-01-447-3893	BUN
TRK., WKR., MTV, M1089A1	2320-01-447-3892	BUD
TRK., DUMP, MTV, M1090A1		
W/WN	2320-01-447-6344	BUP
W/O WN	2320-01-447-3899	BUE
TRK., CHAS., MTV, M1092A1	2320-01-447-3894	BT8
TRK., CHAS., MTV, LWB M1096A1	2320-01-447-3885	XXX

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HEADQUARTERS, DEPARTMENTS OF THE ARMY AND AIR FORCE

NOVEMBER 2004

WARNING SUMMARY

WARNING

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU.

Carbon monoxide is a colorless, odorless, DEADLY POISONOUS gas and when breathed deprives body of oxygen and causes SUFFOCATION. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Permanent BRAIN DAMAGE or DEATH can result from severe exposure.

The following precautions MUST be followed to ensure personnel are safe whenever any type of personnel heater or engine is operated for any purpose. Failure to comply may result in serious injury or death to personnel.

DO NOT operate heater or engine in an enclosed area without adequate ventilation.

DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment covers removed unless necessary for maintenance purposes.

NEVER sleep in a vehicle when the heater is operating or the engine is idling.

BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either is present, IMMEDIATELY VENTILATE personnel compartments. Treatment of affected personnel shall be: expose to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE. If necessary, give cardiopulmonary resuscitation, as described in FM 21-11, and get immediate medical attention. Failure to comply may result in serious injury or death to personnel.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.

WARNING

Do not touch extremely cold metal (below -26° F (-32° C]). Bare skin may freeze to cold metal. Failure to comply may result in injury to personnel.

WARNING SUMMARY - Continued

WARNING

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU.

DO NOT operate troopseat heater or engine in an enclosed area without adequate ventilation. NEVER sleep in a vehicle when troopseat heater is operating or the engine is idling. Failure to comply my result in serious injury or death to personnel.

WARNING

Nuclear, Biological, or Chemical (NBC) contaminated air filters must be handled and disposed of only by authorized and trained personnel. The unit commander or senior officer in charge of maintenance personnel must ensure that prescribed protective clothing (FM 3-4) is used, and prescribed safety measures and decontamination procedures (FM 3-5 and TB 700-4) are followed. The unit standard operating procedures are responsible for final disposal of contaminated air filters. Failure to comply may result in serious injury or death to personnel.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. Keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in serious injury or death to personnel.

WARNING

Pressure in radiator overflow tank must be released before removing radiator cap. Failure to comply may result in injury to personnel.

WARNING

Never raise cab while occupied or when parked uphill on a steep grade. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Both suspension compression plates must be installed on axle studs. Failure to comply may result in serious injury or death to personnel.

WARNING

Cab hydraulic latch must be locked before driving vehicle. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not pull seat belt more than 1 in. (2.54 cm) away from shoulder. Seat belt will not be effective if accident occurs. Failure to comply may result in serious injury or death to personnel.

WARNING

Vehicle must be secure. Chock wheels when stopped on incline. Vehicle may roll downhill. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Ensure vehicle is parked on level ground before changing flat tire. Vehicle may roll. Failure to comply may result in serious injury or death to personnel.

WARNING

Wear arctic clothing when cab temperatures fall and remain below 30° F (-1° C). Cold stress preventative measures in FM 31-70 should be applied when vehicle cab temperatures fall and remain below 30° F (-1° C). Failure to comply may result in serious injury or death to personnel.

WARNING

Engine compartment and accessories may be extremely hot when engine is running or has been running recently. Use caution around engine when cab is raised. Failure to comply may result in injury to personnel.

WARNING SUMMARY - Continued

WARNING

Engine compartment contains a partially exposed fan blade. Use extreme caution around front of engine. Failure to comply may result in injury to personnel.

WARNING

Cargo cover weighs approximately 60 lbs (27 kgs). Long Wheel Base (LWB) cargo cover weighs approximately 80 lbs (36 kgs). Arctic cargo cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Ensure engine oil is cool before performing any maintenance. Failure to comply may result in serious injury to personnel.

WARNING

Ensure safety strap is fastened across back and front of vehicle before transporting troops. Failure to comply may result in serious injury or death to personnel.

WARNING

Ensure both doors are securely closed before cab is raised. Do not allow personnel near cab when cab is being raised. Cab doors could open. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Ensure both doors are securely closed before cab is lowered. Do not allow personnel near cab when cab is being lowered. Cab doors could open. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Data and instruction plates given below must be followed at all times to safely operate vehicle. Failure to comply may result in injury to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

Extreme care should be taken when removing radiator cap if WATER TEMP gage reads above 180° F (82° C). Contact with steam or hot coolant under pressure may result. Failure to comply may result in injury to personnel.

WARNING

Tire weighs approximately 350 lbs (159 kgs). If treads of tire catch on tool box during lowering, raise tire and pull tire away from tool box and continue lowering. Use extreme care when lowering or handling tire. Failure to comply may result in injury to personnel.

WARNING

Tire weighs approximately 350 lbs (159 kgs). Use extreme care when handling tire. Failure to comply may result in injury to personnel.

WARNING

Place hydraulic jack on flat surface. Do not allow personnel under vehicle when jacking. Failure to comply may result in serious injury or death to personnel.

WARNING

Handle tire with care. Tire may have exposed broken metal cords or sharp debris in it. Failure to comply may result in injury to personnel.

WARNING

All cleaning procedures must be accomplished in well-ventilated areas. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Use caution when inflating tire. Over inflation may cause tire to blow apart. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

Wheels must be chocked and service brakes applied before parking brake is released. Vehicle may roll if wheels are not chocked. Failure to comply may result in serious injury or death to personnel.

WARNING

Protective gloves, clothing, and/or respiratory equipment must be worn whenever caustic, toxic, or flammable cleaning solutions are used. Failure to comply may result in injury to personnel.

WARNING

A fire extinguisher must be available and ready during all cleaning operations involving solvents. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Manifold operator must stand near hydraulic manifold and observe spare tire. Guide person must stand to the right front of vehicle, well clear of spare tire. Failure to comply may result in serious injury or death to personnel.

WARNING

Ensure tires have correct tire pressure for terrain conditions and driving speed (refer to Table 1 Cold Tire Inflation Pressure and Restrictions). Failure to comply may result in serious injury or death to personnel.

WARNING

Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breath vapors. Keep away from heat or flame. Never smoke when using Dry Cleaning Solvent; the flashpoint for Type I Dry Cleaning Solvent is 100° F (38° C) and for Type II is 138° F (50° C). Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

If personnel become dizzy while using Dry Cleaning Solvent, immediately get fresh air and medical help. If Dry Cleaning Solvent contacts skin or clothes, flush with cold water. If Dry Cleaning Solvent contacts eyes, immediately flush eyes with water and get medical attention. Failure to comply may result in serious injury or death to personnel.

WARNING

Hydraulic fluid (MIL-PRF-5606H) is TOXIC. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that come in contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

WARNING

Lead-acid battery gases can explode. Do not smoke, have open flames, or make sparks around a battery, especially if caps are off. Battery may give off gas which can explode. Failure to comply may result in serious injury or death to personnel.

WARNING

Do not back up vehicle without an assistant. Operator has limited vision while backing vehicle. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not smoke, have open flame, or make sparks near batteries when slave starting vehicle. Batteries can explode. Failure to comply may result in serious injury or death to personnel.

WARNING

Remove rings, bracelets, wristwatches, neck chains, and any other jewelry before working around vehicle. Jewelry may catch on equipment or may short across an electrical circuit or battery terminal. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Ensure master power switch on both vehicles are turned to off before connecting NATO power cable. Vehicles must not touch each other. Failure to comply may result in serious injury or death to personnel.

WARNING

Diesel fuel is flammable. Do not fill fuel tank with engine running, while smoking, or when near an open flame. Never overfill fuel tank or spill fuel. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

WARNING

Do not perform fuel/water separator checks, inspections, or draining while smoking, or when near fire or sparks. Fuel could ignite. Failure to comply may result in serious injury or death to personnel.

WARNING

Gasoline is highly flammable. Do not operate swingfire heater while filling gas tank. Do not smoke or have open fires within 25 ft (7.6 m) of area while filling gas tank. Failure to comply may result in serious injury or death to personnel.

WARNING

Allow swingfire heater to cool down before draining gasoline from swingfire heater gas tank. Failure to comply may result in serious injury or death to personnel.

WARNING

Exhaust fumes from swingfire heater are poisonous. Do not operate swingfire heater in a closed room. Ensure adequate ventilation is available. If personnel become dizzy, seek immediate medical attention. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Diesel fuel or gasoline must never be used for cleaning. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Operating in water or mud causes brake linings to get wet and can impair vehicle braking. Dry brakes by driving vehicle about 500 ft (153 m) while applying service brakes often. If adequate braking is not restored by drying brakes, notify Unit Maintenance. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Rear axle service brakes will not operate if REAR BRAKE AIR pressure gage reads below 75 psi (517 kPa). Rear axle braking will be provided by rear spring brakes for a limited time. Allow greater stopping distance. Discontinue vehicle operation as soon as possible. Failure to comply may result in serious injury or death to personnel.

WARNING

Front axle service brakes will not operate if FRONT BRAKE AIR pressure gage reads below 75 psi (517 kPa). Allow greater stopping distance. Discontinue vehicle operation as soon as possible. Failure to comply may result in serious injury or death to personnel.

WARNING

Notify Unit Maintenance that lugnuts need to be tightened to 415-475 lb-ft (563-644 N·m) as soon as possible. Wheel may come loose if lugnuts are not tightened to proper torque. Failure to comply may result in serious injury or death to personnel.

WARNING

Do not exceed maximum vehicle speed and grade limitations during normal operations. Do not exceed maximum approach or departure angles or ford water greater than maximum depth. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

Vehicle speed should be reduced to 5-10 mph (8-16 km/h) during blackout conditions. Failure to comply may result in serious injury or death to personnel.

WARNING

Bridges along your route may be marked with a class number. The bridge class number shows the safe capacity of the bridge. If the bridge class number on your vehicle is equal to or less than the bridge class number, the bridge will hold your vehicle. If the bridge class number on your vehicle is greater than the bridge class number, DO NOT CROSS BRIDGE. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not press brake pedal hard three or four times in a row. Air supply will be used up and service brakes will not work until air pressure builds up again. Do not operate vehicle until FRONT and REAR BRAKE AIR pressure reaches at least 100 psi (690 kPa). Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Transmission incorporates a hold feature to prohibit upshifting above selected gear during normal driving. However, during downhill operation, transmission may upshift above selected gear. On downgrades, vehicle speed may need to be restricted by using service brakes. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Avoid driving diagonally across a hill. Vehicle could roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not straddle or drive on sides of sand mounds. Loose sand will not support vehicle on steep slopes. Avoid driving diagonally across a hill. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

Towing vehicle and disabled vehicle must have parking brakes applied before connecting/disconnecting towbar. Vehicles may roll into each other. Failure to comply may result in serious injury or death to personnel.

WARNING

Towbar weighs approximately 100 lbs (45 kgs) and requires two or more personnel to carry. Failure to comply may result in injury to personnel.

WARNING

Do not place hands near pintle hook when connecting/disconnecting towbar from pintle hook. Failure to comply may result in injury to personnel.

WARNING

Personnel must not occupy towed vehicle during towing operation. Towed vehicle may become disconnected while being towed. Failure to comply may result in serious injury or death to personnel.

WARNING

Ground guide is required to guide vehicle backing up. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Wear heavy leather-palmed work gloves when handling cable. Cables can become frayed or contain broken wires. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury to personnel.

WARNING

Ensure no one is behind tailgate before dump body is raised. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Set up stifflegs if load is swung around rear of vehicle. Vehicle could turn over if not supported. Failure to comply may result in serious injury or death to personnel.

WARNING

Underlift assembly must be operated with WRECKER REMOTE CONTROL if Operator is not able to keep underlift assembly and disabled vehicle in sight at all times during operation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Stinger camlock must be locked into first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

WARNING

Ensure there are at least five wraps of cable on hoist drum at all times. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not exceed rated payload of vehicle. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Sandshoe weighs approximately 70 lbs (32 kgs). Use the aid of an assistant to lower/raise sandshoe. Failure to comply may result in injury to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

Keep hands and feet clear of stifflegs during operation. Failure to comply may result in injury to personnel.

WARNING

Do not raise vehicle tires off ground with stifflegs. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Stifflegs must be positioned so that vehicle is level from side to side. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Slowly take out slack in cable before recovering equipment. Failure to comply may result in serious injury or death to personnel.

WARNING

Use extreme caution when disconnecting cable. Cable may spin rapidly to the left approximately 1 1/2 turns when disconnected. Failure to comply may result in serious injury or death to personnel.

WARNING

Keep all personnel clear of area when tension is on cable. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

M1089A1 and disabled vehicle must have parking brakes applied before connecting/disconnecting towbar. Failure to comply may cause vehicles to roll into each other and may result in serious injury or death to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines terrain conditions allow safe operation. The following are maximum speeds for safe operation.

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Never stand against or between tractor tires, stand between tractor and trailer, allow anyone behind trailer during movement, or allow anyone to stand on opposite side of Operator during fifth wheel release. Always chock trailer tires before coupling, connect trailer brakes air supply and set trailer brakes before sliding fifth wheel. Use release tool when releasing and engaging slide latch lever. Failure to comply may result in serious injury or death to personnel.

WARNING

Use release tool with hook side up when closing slide latch release lever. Failure to comply may result in injury to personnel.

WARNING

Underlift assembly must be operated with WRECKER REMOTE CONTROL if Operator is not able to keep underlift assembly and disabled vehicle in sight at all times during operation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

M1089A1 hydraulic hoses are under 3,000 pounds pressure and must be handled carefully to prevent damage or personal injury. Failure to comply may result in serious injury or death to personnel.

WARNING

MODE SELECTOR SWITCH must be in NORMAL position to relieve pressure before disconnecting hydraulic hoses. Failure to comply may result in serious injury or death to personnel.

WARNING

Keep hands and feet clear of outriggers during operation. Failure to comply may result in injury to personnel.

WARNING

Keep boom clear of all electrical lines and other obstacles while operating Material Handling Crane (MHC). Failure to comply may result in serious injury or death to personnel.

WARNING

Area must be clear of personnel before operating swing or telescoping boom. Boom must be rotated and telescoped slow enough so Operator has control of load. If Operator cannot see load during operation, operate Material Handling Crane (MHC) with REMOTE CONTROL UNIT. Failure to comply may result in serious injury or death to personnel.

WARNING

Operator must keep load in sight at all times while operating Material Handling Crane (MHC). Load may unexpectedly shift. Failure to comply may result in serious injury or death to personnel.

WARNING

Do not operate Material Handling Crane (MHC) unless outriggers are set up and MHC is level from side to side. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Do not operate Material Handling Crane (MHC) and 15K Self-Recovery Winch (SRW) at the same time. Load may unexpectedly shift. Failure to comply may result in serious injury or death to personnel.

WARNING

Material Handling Crane (MHC) must be operated with REMOTE CONTROL UNIT if Operator is not able to keep load in sight at all times during operation. Failure to comply may result in serious injury or death to personnel.

WARNING

Main panel Material Handling Crane (MHC) controls must not be used when WRECKER REMOTE CONTROL is connected. MHC may move inadvertently. Failure to comply may result in serious injury or death to personnel.

WARNING

Wheels must always be chocked before operating Material Handling Crane (MHC). Vehicle may move or load may shift. Failure to comply may result in serious injury to personnel or damage to equipment.

WARNING

Goggles must be worn while operating Material Handling Crane (MHC) controls. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in serious injury to personnel.

WARNING

Outriggers must be positioned so that Material Handling Crane (MHC) is level from side to side. Use of MHC when vehicle is not level can cause vehicle to roll over. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Attach guide lines to load to keep control of load at all times. An assistant is required to attach guide lines. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not raise vehicle tires off ground with outriggers. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

There must always be at least five wraps of cable on 15K Self-Recovery Winch (SRW). If load is applied with less than five wraps of cable on 15K SRW, cable may come loose on drum. Failure to comply may result in serious injury or death to personnel.

WARNING

Ensure line pull does not exceed capacity of 15K Self-Recovery Winch (SRW). Failure to comply may result in serious injury or death to personnel.

WARNING

Cab protector is spring loaded and weighs approximately 180 lbs (82 kgs). Hold cab protector down before removing pins. Slowly allow cab protector to raise to vertical position after pins are removed. Failure to comply may result in injury to personnel.

WARNING

Ensure no one is behind tailgate before dump body is raised. Failure to comply may result in serious injury or death to personnel.

WARNING

Assistant must stand clear when dump body is being lowered. Failure to comply may result in injury to personnel.

WARNING SUMMARY - Continued

WARNING

Cab protector is spring loaded and weighs approximately 180 lbs (82 kgs). Keep pressure on cab protector when lowering and when installing pins. Failure to comply may result in injury to personnel.

WARNING

Do not press dump TAILGATE RELEASE switch while tailgate is not connected at the top. Tailgate will fall from dump body. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Dump body must be supported by maintenance legs at any time that maintenance is performed with dump body up. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Dump cover weighs approximately 60 lbs (27 kgs). Arctic dump cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift dump cover. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Position of assistant must be known at all times. Do not allow anyone to stand between tractor and trailer, behind trailer, or under trailer neck during coupling of tractor to trailer. Failure to comply may result in serious injury or death to personnel.

WARNING

DO NOT attempt to use hydraulic jack on rear axles without jack adapter installed. Failure to comply may result in serious injury or death to personnel.

WARNING

Pressure in coolant reservoir must be released before removing cap. Failure to comply may result in injury to personnel.

WARNING SUMMARY - Continued

WARNING

Trailer wheels must be chocked before coupling/uncoupling with fifth wheel. Trailer wheels may roll if they are not chocked. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Listen for air leaks coming from the connections at the SERVICE and EMERGENCY gladhands. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not overfill coolant reservoir. Overfilling coolant reservoir will not allow enough space for coolant to expand during troopseat heater operation. Failure to comply may result in injury to personnel or damage to personnel.

WARNING

Use this procedure only in the event of an emergency. Using the MANUAL OVERRIDE switch to operate the Material Handling Crane (MHC) defeats the overload shutdown circuits and allows the MHC to exceed the rated capacity. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Extreme care should be taken when removing radiator cap if WATER TEMP gage reads above 180° F (82° F). Contact with steam or hot coolant under pressure may result. Failure to comply may result in injury to personnel.

WARNING

Use care when removing debris from engine fan. Engine components will be hot. Failure to comply may result in injury to personnel.

WARNING SUMMARY - Continued

WARNING

Never raise cab while occupied or when parked uphill on a steep grade. Failure to comply may result in serious injury or death to personnel.

WARNING

Power cable must be connected to Light Material Handling Crane (LMHC) before being connected to circuit breaker box. Failure to comply may result in serious injury or death to personnel.

WARNING

Ensure that engine is shut down before connecting power cable at vehicle NATO connector. Failure to comply may result in injury or death to personnel.

WARNING

Determine required Light Material Handling Crane (LMHC) settings prior to raising boom. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Ensure there are at least two wraps of cable on hoist drum at all times. Cable could come off hoist drum while load is being lifted. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Ensure that engine is not running before disconnecting circuit breaker box NATO connector from vehicle NATO connector. Failure to comply may result in serious injury or death to personnel.

WARNING

Power source must be turned off before disconnecting power cable. Failure to comply may result in injury to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

Light Material Handling Crane (LMHC) boom and winch weighs approximately 110 lbs (50 kgs). The aid of an assistant is required to remove LMHC boom and winch. Failure to comply may result in injury to personnel.

WARNING

Light Material Handling Crane (LMHC) mast weighs approximately 110 lbs (50 kgs). Use the aid of an assistant to remove mast from cargo bed pocket. Failure to comply may result in injury to personnel.

WARNING

Light Material Handling Crane (LMHC) mast weighs approximately 110 lbs (50 kgs). Use the aid of an assistant to install mast from cargo bed pocket. Failure to comply may result in injury to personnel.

WARNING

Light Material Handling Crane (LMHC) boom and winch weighs approximately 110 lbs (50 kgs). The aid of an assistant is required to install LMHC boom and winch. Failure to comply may result in injury to personnel.

WARNING

Cargo bed is approximately 5 ft (1.5 m) above ground level. Use care during any Light Material Handling Crane (LMHC) operation. Failure to comply may result in injury or death to personnel.

WARNING

Ensure that wheels are chocked prior to setting up Light Material Handling Crane (LMHC). Failure to comply may result in injury to personnel.

WARNING

Determine required Light Material Handling Crane (LMHC) settings prior to telescoping boom. Failure to comply may result in injury to personnel or damage to equipment.

WARNING SUMMARY - Continued

WARNING

Ensure that service and emergency gladhand connections do not leak. Failure to comply may result in serious injury or death to personnel, or damage to equipment.

WARNING

Keep hands clear of 30K winch during operation. Failure to comply may result in injury to personnel.

WARNING

Operate vehicle at high idle (1350 rpm) until coolant temperature is 165° F (74° C) and windshield is sufficiently clear of frost/ice. Failure to comply may cause serious injury to personnel or may result in damage to equipment.

WARNING

Area must be clear on both sides before extending outriggers. Failure to comply may result in serious injury to personnel.

WARNING

When operating the vehicle in snowy or icy conditions, apply the brake pedal momentarily, every few miles. This will ensure that brake linings do not become encrusted with snow or ice. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Do not engage engine exhaust brake feature in icy or slippery conditions. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Do not drive vehicle until windshield is sufficiently clear of frost/ice. Failure to comply may result in severe injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Never mix gasoline or JP-4 turbine fuel with other fuels outside vehicle fuel tank. Any mixture should be done by adding fuels to fuel tank. Gasoline and JP-4 turbine fuel are highly combustible and may explode, resulting in injury or death to personnel.

WARNING

Do not place hands near pintle hook when aligning towbar eye with pintle hook or when removing towbar. Failure to comply may result in injury to personnel.

WARNING

Do not place hands near pintle hook when removing towbar. Failure to comply may result in injury to personnel.

WARNING

Keep hands and feet clear of the outriggers during operation. Failure to comply may result in injury to personnel.

WARNING

Do not disconnect cable from stowage ring until boom is raised to a 30-degree angle. Hook assembly could fall. Failure to comply may result in injury to personnel.

WARNING

Operator must keep control of load at all times. Attach guide lines to load. An assistant is required to attach guide lines. Failure to comply may result in serious injury or death to personnel.

WARNING

Gasoline is highly flammable. Do not smoke or have open flames within 25 feet of area when draining tank. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Area must be clear of personnel before rotating or telescoping boom. Boom must be rotated and telescoped slow enough so operator has control of load. If Operator cannot see load during operation, operate Material Handling Crane (MHC) with REMOTE CONTROL UNIT. Failure to comply may result in serious injury or death to personnel.

WARNING

Vehicle Operator and all crew members must wear properly fitted and approved hearing protection devices when operating any FMTV at speeds of 40 mph (64 km/h) and above. Failure to comply may result in injury to personnel.

WARNING

Operators of the M1084A1, M1086A1, and M1089A1 Material Handling Crane (MHC) must wear properly fitted and approved hearing protection devices during all craning operations. Failure to comply may result in injury to personnel.

WARNING

All personnel working within 12 ft (3.5 m) of an operating M1084A1 or M1085A1 cargo vehicle must wear properly fitted and approved hearing protection devices. Failure to comply may result in injury to personnel.

WARNING

All personnel working within 18 ft (5.5 m) of an operating M1089A1 wrecker must wear properly fitted and approved hearing protection devices. Failure to comply may result in injury to personnel.

WARNING

Personnel firing the M240/M2HB machine gun or Mark 19 grenade launcher from an FMTV vehicle during training exercises must be wearing properly fitted and approved hearing protection devices. Failure to comply may result in injury to personnel.

WARNING SUMMARY - Continued

WARNING

All personnel within 180 ft (55 m) of weapons being fired from an FMTV vehicle during training exercises must be wearing properly fitted and approved hearing devices. Failure to comply may result in injury to personnel.

WARNING

When mission requires the vehicle Operator and crew to remain in a stationary FMTV vehicle with the engine running in outside temperatures above 90° F (32°C) vehicle Operator and crew must observe proper safety precautions to prevent heat stress injury. Refer to FM 21-10 Field Hygiene and Sanitation, and FM 21-11 First Aid for Soldiers for proper precautions and preventive measures. Failure to comply may result in injury to personnel.

WARNING

When mission requires the vehicle Operator and crew to operate the FMTV vehicle in outside temperatures above 90° F (32° C) with the windows closed, vehicle Operator and crew must observe proper safety precautions to prevent heat stress injury. Refer to FM 21-10 Field Hygiene and Sanitation, and FM 21-11 First Aid for Soldiers for proper precautions and preventive measures. Failure to comply may result in injury to personnel.

WARNING

Do not flat tow a fully loaded MTV and trailer combination. The FMTV Wrecker towbar can be damaged if weight capacity is exceeded. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

When towing a vehicle with nonfunctional brakes, use extreme caution and reduce/adjust speed accordingly. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Keep all personnel clear of area when tension is on cable. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

WARNING

Wear heavy leather-palmed work gloves when handling wire rope. Never let moving wire rope slide through hands, even when wearing gloves. Failure to comply may result in serious injury to personnel.

WARNING

Flagged safety pin is only removed for pneumatic operation of tailgate. It will remain installed at all other times. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Tailgate may be hinged from the top or bottom depending on mission requirements. Use care during positioning. Failure to comply may result in injury to personnel.

WARNING

Prior to normal driving, the flagged safety pin must be installed. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Tailgate weighs approximately 270 lbs. (123 kgs). Use care when handling. Two assistants are required to lower or raise tailgate. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Ensure flagged safety pin and manual release handle pin are installed prior to using bottom hinge option. Failure to comply may result in injury to personnel.

WARNING

Tailgate weighs approximately 270 lbs. (123 kgs). Use care when lowering or raising. Failure to comply may result in injury to personnel.

WARNING SUMMARY - Continued

WARNING

Vehicle S/N 18,550 or higher are equipped with a Load and Battery Control Device (LBCD). LBCD have internal capacitors, which must be discharged prior to maintenance or troubleshooting procedures being performed. Failure to comply may result in damage to equipment and/or injury to personnel.

WARNING

Do not operate vehicle if radiator cap is damaged or missing. Failure to comply will result in injury to personnel or damage to equipment.

INSET LATEST UPDATED PAGES/WORK PACKAGES, DESTROY SUPERSEDED DATA

LIST OF EFFECTIVE PAGES / WORK PACKAGES

NOTE: The portion of text affected by the updates is indicated by a vertical line in the outer margins of the page. Updates to illustrations are indicated by miniature pointing hands. Updates to wiring diagrams are indicated by shaded areas.

Dates of issue for original and updated pages / work packages are:

Original ..0..15 April 00
Revision ..A 1 November 04

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 128 AND TOTAL NUMBER OF WORK PACKAGES IS 117 CONSISTING OF THE FOLLOWING

Page / WP	*Change No.
Cover (Back Blank)	0
A to aa (Back Blank)	0
A (B Blank)	0
Title (Back Blank)	0
i to vi	0
Chapter 1 Cover (Back Blank)	0
WP 0001 to WP 0018	0
WP 0018 01	0
WP 0019 to WP 0109	0
WP 0109 01	0
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Index 1 to 84	0
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Authentication	0
Back Cover	0

*Zero in this column indicates an original page or work package.

TM 9-2320-392-10-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 1 November 2004

TECHNICAL MANUAL
OPERATOR'S MANUAL FOR THE M1083A1 SERIES 5 TON, 6 X 6 MEDIUM TACTICAL VEHICLES (MTV)
VOLUME NO. 1 OF 2

MODEL	NSN	EIC
TRK, CAR., MTV, M1083A1		
W/WN	2320-01-447-3884	BUL
W/O WN	2320-01-447-3890	BT9
TRK., CAR., MTV, W/MHC, M1084A1	2320-01-447-3887	BUB
TRK., CHAS., MTV, LWB, M1085A1		
W/WN	2320-01-447-3897	BUR
W/O WN	2320-01-447-3891	BUG
TRK, CAR., MTV, LWB		
W/MHC, M1086A1	2320-01-447-3895	BUH
TRK., TRACTOR, MTV, M1088A1		
W/WN	2320-01-447-3900	BUC
W/O WN	2320-01-447-3893	BUN
TRK., WKR., MTV, M1089A1	2320-01-447-3892	BUD
TRK., DUMP, MTV, M1090A1		
W/WN	2320-01-447-6344	BUP
W/O WN	2320-01-447-3899	BUE
TRK., CHAS., MTV, M1092A1	2320-01-447-3894	BT8
TRK., CHAS., MTV, LWB M1096A1	2320-01-447-3885	XXX

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http:// aeps. ria. army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or email your letter or DA Form 2028 direct to: AMSTA-LC-CI/TECH PUBS, TACOM-R1, 1 Rock Island Arsenal, Rock Island IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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

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Subject Index 1

HOW TO USE THIS MANUAL

OVERVIEW

This Technical Manual (TM) is provided to help you operate and maintain the Medium Tactical Vehicle (MTV). It is divided into the following major sections in order of appearance:

Front Cover. Provides information about the type of manual and vehicle models covered by the TM.

Warning Summary. Provides a summary of all warnings that apply throughout the manual. Read all WARNINGS and CAUTIONS before performing any operation, troubleshooting, or maintenance procedures.

Table of Contents. Lists the Chapters, Work Packages, and Alphabetical Index in order of appearance.

Chapter 1, Introductory Information with Theory of Operation for M1083A1 Series Vehicles. Describes the MTV and provides equipment data.

Chapter 2, Operating Instructions for M1083A1 Series Vehicles. Describes operator's controls and indicators, and operating instructions.

Chapter 3, Troubleshooting Procedures for M1083A1 Series Vehicles. Provides instructions for troubleshooting problems with the MTV.

Chapter 4, Preventive Maintenance Checks and Services (PMCS) and Maintenance Instructions for M1083A1 Series Vehicles. Provides the instructions for Operator maintenance.

Chapter 5, Supporting Information for M1083A1 Series Vehicles. Contains information about References, Components of End Items (COEI) and Basic Issue Items (BII) lists, Additional Authorization List (AAL), Expendable and Durable Items List, and Stowage Location.

Subject Index. Lists important subjects contained in this TM in alphabetical order. It also gives the work package and page numbers where each subject is located.

FINDING INFORMATION

There are several ways to find the information you need in this manual. They are as follows:

Table of Contents. Lists Chapters, Sections, and Indexes with Work Package numbers in order of appearance.

HOW TO USE THIS MANUAL - Continued

OVERVIEW - Continued

Malfunction Index. Lists malfunctions contained in the Troubleshooting with Work Package numbers in order of appearance.

Alphabetical (Subject) Index. Lists all important topics in alphabetical order with Work Package and page numbers.

TROUBLESHOOTING

Troubleshooting is contained in Chapter 3. When you have a problem with the operation of your equipment, look at Malfunction/Symptom Index in WP 0071 00. Find the malfunction in the Index. Turn to the Work Package listed for the malfunction. Perform the steps required to correct the malfunction. If you cannot find the malfunction, or the malfunction is not corrected, notify Unit Maintenance.

OPERATION AND MAINTENANCE

Operation. Before you operate the MTV, familiarize yourself with the controls and indicators (Chapter 2, WP 0004 00 through WP 0016 00). Perform your BEFORE preventive maintenance (Chapter 4, WP 0099 00). Read the operating instructions contained in Chapter 2, WP 0017 00 through WP 0069 00. Always follow WARNINGS and CAUTIONS. During operation, perform your DURING preventive maintenance and perform your AFTER preventive maintenance after operation (WP 0099 00).

Maintenance. When you perform maintenance, look over the entire procedure before starting. Make sure you have the necessary tools and materials at hand. Always observe WARNINGS and CAUTIONS.

CHAPTER 1

INTRODUCTORY INFORMATION WITH THEORY OF OPERATION FOR THE M1083A1 SERIES VEHICLES

M1083A1 SERIES GENERAL INFORMATION 0001 00

SCOPE

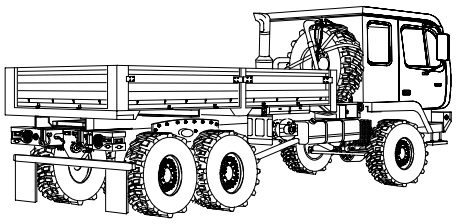
This Technical Manual (TM) contains instructions for operation, checks, and corrective maintenance for the M1083A1 series Medium Tactical Vehicle (MTV). The MTV will herein be referred to as the vehicle.

Type of Manual: Operator's Instructions

Name and Model: M1083A1 Truck, Cargo: 5-Ton, 6x6, Dropside; M1084A1 Truck, Cargo: 5-Ton, 6x6, Dropside, w/Material Handling Crane (MHC); M1085A1 Truck, Cargo: 5-Ton, 6x6, Dropside, Long Wheel Base (LWB); M1086A1 Truck, Cargo: 5-Ton, 6x6, Dropside, LWB, w/MHC; M1088A1 Truck, Tractor: 5-Ton, 6x6; M1089A1 Truck, Wrecker: 5-Ton, 6x6; M1090A1 Truck, Dump: 5-Ton, 6x6; M1092A1 Truck, Chassis: 5-Ton, 6x6; and M1096A1 Truck, Chassis: 5-Ton, 6x6, LWB.

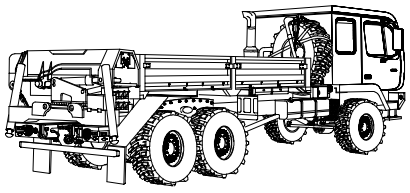
Purpose of Equipment: The M1083A1 series is a family of 6x6 wheeled vehicles. The M1083A1 is a cargo hauling vehicle that can be outfitted for troop transport when equipped with a troopseat kit. The M1084A1 is a cargo hauling vehicle; it is equipped with a Material Handling Crane (MHC). The M1085A1 is a Long Wheel Base (LWB) cargo hauling vehicle that can be outfitted for troop transport when equipped with a troopseat kit. The M1086A1 is a LWB cargo hauling vehicle and is equipped with a MHC. The M1088A1 is a tractor with fifth wheel and is used to pull various types of fifth wheel trailers. The M1089A1 is a wrecker with two 30K winches, an underlift assembly, and a MHC. It is used for recovering disabled vehicles. The M1090A1 is a dump truck that can be outfitted for troop transport when equipped with a troopseat kit. The M1092A1 is a standard wheelbase vehicle chassis. This chassis will accept a standard cargo bed or may be modified for special missions. The M1096A1 is a LWB vehicle chassis. This chassis will accept a long cargo bed or may be modified for special missions.

M1083A1



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M1084A1

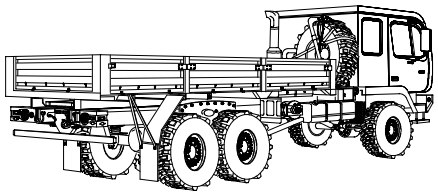


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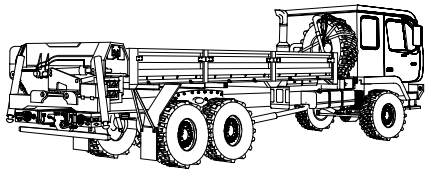
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M1085A1



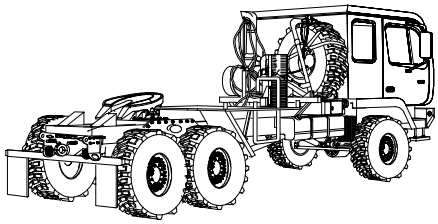
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M1086A1



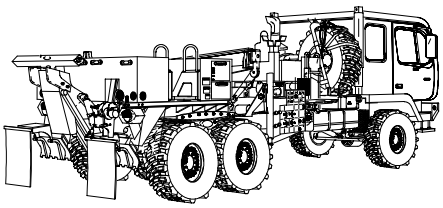
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M1088A1



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M1089A1

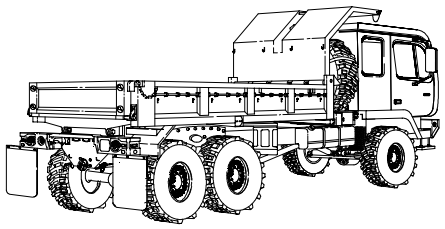


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M1083A1 SERIES GENERAL INFORMATION - Continued 0001 00

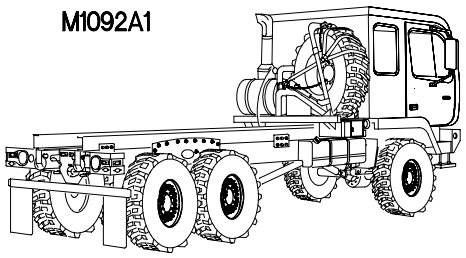
SCOPE - Continued

M1090A1



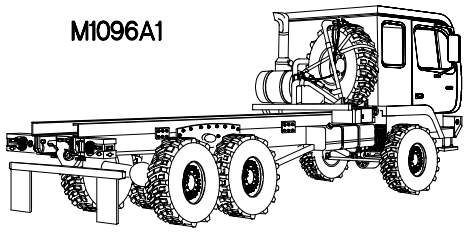
0100B07-

M1092A1



0100B08-.dwg

M1096A1



0100B09-

MAINTENANCE FORMS AND PROCEDURES

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 738-750, Functional Users Manual for The Army Maintenance Management System (TAMMS).

M1083A1 SERIES GENERAL INFORMATION - Continued 0001 00

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 don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-RE-E/MPA, Warren, MI 48397-5000. We'll send you a reply.

HAND RECEIPTS (HR) MANUALS

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). TM 9-2320-392-10-HR consists of preprinted hand receipts that list end item related equipment (i.e., COEI, BII, and AAL) that must be accounted for. As an aid to property accountability, additional HR manuals may be requisitioned through normal publication channels.

CORROSION PREVENTION AND CONTROL (CPC)

The vehicle has a total service life of 20 years which allows for extended periods of operation in a corrosive environment. A corrosive environment includes exposure to high humidity, salt spray, road de-icing chemicals, gravel damage, and atmospheric contamination. No action beyond normal washing and repair of damaged areas is needed to control corrosion. To prevent moisture accumulation, drain holes are provided on structural and sheet metal areas where needed, and stowage boxes are provided with seals and baffled drains.

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

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using form SF 368 (Product Quality Deficiency Report). Use of key words such as "corrosion", "rust", "deterioration" , or "cracking" will ensure that the information is identified as a CPC problem.

The form should be submitted to the address specified in DA PAM 738-750, Functional Users Manual for The Army Maintenance Management System (TAMMS).

M1083A1 SERIES GENERAL INFORMATION - Continued 0001 00

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Command decision, according to the tactical situation, will determine when the using organization is to destroy a vehicle. A destruction plan will be prepared by the using organization, unless one was prepared by a higher authority. For general vehicle destruction procedures, refer to TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-automotive and Armaments Command).

PREPARATION FOR SHIPMENT

Land, Sea, and Air Shipment

Instructions for shipment of the vehicle by land, sea, and air are contained in the following publications:

PUBLICATION NUMBER	PUBLICATION TITLE
MTMCTEA PAM 56-1	Marine Terminal Lifting Guidance
MTMCTEA PAM 55-19	Tiedown Handbook for Rail Movements
MTMCTEA REF 92-55-20	Tiedown Handbook for Truck Movements
FM 55-450-3	Multi-service Helicopter External Air Transport: Basic Operations and Equipment
FM 55-450-4	Multi-service Helicopter External Air Transport: Single-Point Load Rigging Procedures
FM 55-450-5	Multi-service Helicopter External Air Transport: Dual-Point Load Rigging Procedures
TB 55-46-1	Standard Characteristics (Dimensions, Weight, and Cube) for Transportability of Military Vehicles and Other Outsize/Overweight Equipment (in TOE Line Item Number Sequence)

Preparation of Internal Air Transport Procedure

The Preparation for Internal Air Transport procedure for reducing cab height is contained in WP 0055 00.

Tie Down and Helicopter-Lift

Vehicle Tie Down and Helicopter-Lift instructions are contained in Data and Instruction Plates (WP 0043 00).

M1083A1 SERIES GENERAL INFORMATION - Continued 0001 00

PREPARATION FOR SHIPMENT - Continued

Preparation for Highway or Rail Shipment

Cab air springs must be deflated and pinned for shipment (WP 0055 00). Upon arrival at destination, cab air springs must be unpinned and inflated (WP 0055 00).

WARRANTY INFORMATION

The vehicle is warranted by Stewart & Stevenson Services, Inc., Tactical Vehicle Systems Division for 18 months from warranty start date. For complete information covering this warranty, refer to TB 9-2300-427-15, Warranty Program for M1083A1 Series, 5 Ton, 6x6, Medium Tactical Vehicles (MTV).

NOMENCLATURE CROSS-REFERENCE LIST

Common Name	Official Nomenclature
Cold Start System	Ether quick-start system
Engine Coolant	Antifreeze, ethylene glycol mixture
Gladhand	Quick-disconnect coupling
Parking Brake	SYSTEM PARK Control
Throttle Pedal	Accelerator pedal

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviation/ Acronym

AAL	Additional Authorization List
ABS	Anti-lock Braking System
amp	Amperes
AOAP	Army Oil Analysis Program
ATAAC	Air-to-Air Aftercooler
BII	Basic Issue Item
BO	Blackout (Drive)
BRT	Bright
° C	Degrees Celsius
CAC	Charge Air Cooler
CAGEC	Commercial and Government Entity Code
CBR	Chemical, Biological, and Radiological
CCW	Counterclockwise
cid	Cubic Inch Displacement
cm	Centimeter
COEI	Component of End Item
CPC	Corrosion Prevention and Control
CTA	Common Tables of Allowance
CTIS	Central Tire Inflation System
CW	Clockwise

M1083A1 SERIES GENERAL INFORMATION - Continued 0001 00

LIST OF ABBREVIATIONS/ACRONYMS - Continued

Abbreviation/ Acronym	
DA	Department of the Army
DRIC	Dual Relay Interconnect Controller
ECM	Electronic Control Module
ECU	Electronic Control Unit
EIR	Equipment Improvement Recommendation
° F	Degrees Fahrenheit
FMVSS	Federal Motor Vehicle Safety Standard
ft	Foot
gal	Gallon, U.S.
GCWR	Gross Combination Weight Rating
GPFU	Gas Particulate Filter Unit
GVW	Gross Vehicle Weight
HD	Heavy Duty
HEUI	Hydraulic Electronic Unit Injector
HI	High
hp	Horsepower
in.	Inch
JTA	Joint Tables of Allowance
kg	Kilogram
km/h	Kilometer Per Hour
kPa	Kilopascal
kw	Kilowatt
L	Liter
lb	Pound
LBCD	Load and Battery Control Device
LED	Light Emitting Diode
LH	Left Hand
LMHC	Light Material Handling Crane
LO	Low
LWB	Long Wheel Base
m	Meter
MBDS	Manual Battery Disconnect Switch
MGVW	Maximum Gross Vehicle Weight
MHC	Material Handling Crane
mi	Mile
mm	Millimeter
mph	Miles Per Hour
MTOE	Modified Table of Organization and Equipment
MTV	Medium Tactical Vehicle
N	Neutral (Drive)
NBC	Nuclear, Biological, Chemical
OSS	Overload Shutdown System
PCB	Printed Circuit Board
PDP	Power Distribution Panel

M1083A1 SERIES GENERAL INFORMATION - Continued 0001 00

LIST OF ABBREVIATIONS/ACRONYMS - Continued

Abbreviation/ Acronym	
PMCS	Preventive Maintenance Checks and Services
psi	Pounds Per Square Inch
PTO	Power Take-Off
qt	Quart
QTY	Quantity
REQD	Required
RH	Right Hand
rpm	Revolutions Per Minute
SAE	Society of Automotive Engineers
SER	Service
SRW	Self-Recovery Winch
TAMMS	The Army Maintenance Management System
TDA	Table of Distribution and Allowance
TM	Technical Manual
TPS	Throttle Position Sensor
U/M	Units of Measure
vac	Volts Alternating Current
vdc	Volts Direct Current
WTEC III	World Transmission Electronic Controls III
WTEC III TPSS	WTEC III Transmission Pushbutton Shift Selector
XMSN	Transmission

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA 0002 00

EQUIPMENT, CHARACTERISTICS, CAPABILITIES, AND FEATURES

Characteristics

The MTVs are a series of 6x6 tactical vehicles designed for use over all types of roads, cross-country terrain, and in all weather conditions. The cab and chassis for all vehicle models are similar. Each vehicle model is equipped with a unique body and may be equipped with other auxiliary equipment depending on vehicle mission.

Capabilities

1. The vehicle operates in temperatures from -25° F to 120° F (-32° C to 49° C) and to -50° F (-46° C) with arctic kit(s) installed.

2. The vehicle can ford water up to 30 in. (76 cm) deep for 15 minutes without damage or requiring maintenance before operation can continue.

3. The normal operating range for the vehicle is 300 mi (483 km), based on 54 gal (204 L) of usable fuel and vehicle at maximum gross vehicle weight when operated at an average speed of 25 mph (40 km/h). Varying loads, prolonged idle, use of Power Take-Off (PTO), off-road driving, and climatic conditions will affect operating range.

4. Tiedown points are located so that the vehicle can be restrained in all directions during air transport in C-130 and C-141 aircraft. The vehicles are capable of being transported by highway, rail, and sea.

Features

1. An in-line, six-cylinder, 442 cid (7.2 L), turbocharged diesel engine, producing 330 hp (246 kW).

2. An automatic transmission with seven forward speeds and one reverse speed. The transmission incorporates an integral transfer case. Normal mode is used when operating the vehicle under usual conditions. Off-road mode is used when operating on unimproved road surfaces. When operating in the normal mode, 70 percent of the power is distributed to the rear axles and 30 percent to the front axle. When operating in the off-road mode, power is evenly distributed between front and rear axles.

3. The braking system is equipped with Anti-lock Braking System (ABS). ABS monitors wheel speeds at all times and controls braking during wheel lock situations.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT CHARACTERISTICS , CAPABILITIES, AND FEATURES - continued

4. A power steering system consisting of a recirculating ball type steering gear box with hydraulic boost. Mechanical linkage provides the Operator with control in the event of steering oil pressure loss.

NOTE

M1088 and M1089 with serial number 18,550 or higher, are equipped with larger fuel tanks. The larger fuel tanks have a capacity of 74.1-gal (281 L) with 72.6 (273 L) usable gallons.

5. A fuel system which includes a 56 gal (212 L) capacity fuel tank with 54 usable gal (204 L), fuel/water separator with fuel priming pump, fuel transfer pump, secondary fuel filter, and fuel injectors.

6. Two front and two rear towing eyes with shackles.

7. A manually operated pintle hook for towing a trailer or a disabled vehicle.

8. A Central Tire Inflation System (CTIS) that allows the Operator to adjust tire pressure, with the touch of a button, to suit terrain conditions.

9. A cab with accommodations for three personnel, or two personnel if a radio is installed.

10. SERVICE and EMERGENCY gladhands at the rear and front of the vehicle. Gladhands at the front of the vehicle are used for towing the vehicle if it becomes disabled. Gladhands at the rear of the vehicle are for towing a trailer or another disabled vehicle.

11. An air-powered, hydraulically-operated system that allows the Operator to raise and lower the cab and spare tire quickly and easily. This system also provides the Operator with the means to safely and easily lower and raise the vehicle suspension for internal air transport. In addition, a back-up hydraulic pump is provided in the event there is not enough air pressure available to operate the primary system.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Major External Components Common To All Vehicle Variants

Table 1 describes common external components found on M1083A1 series vehicle.

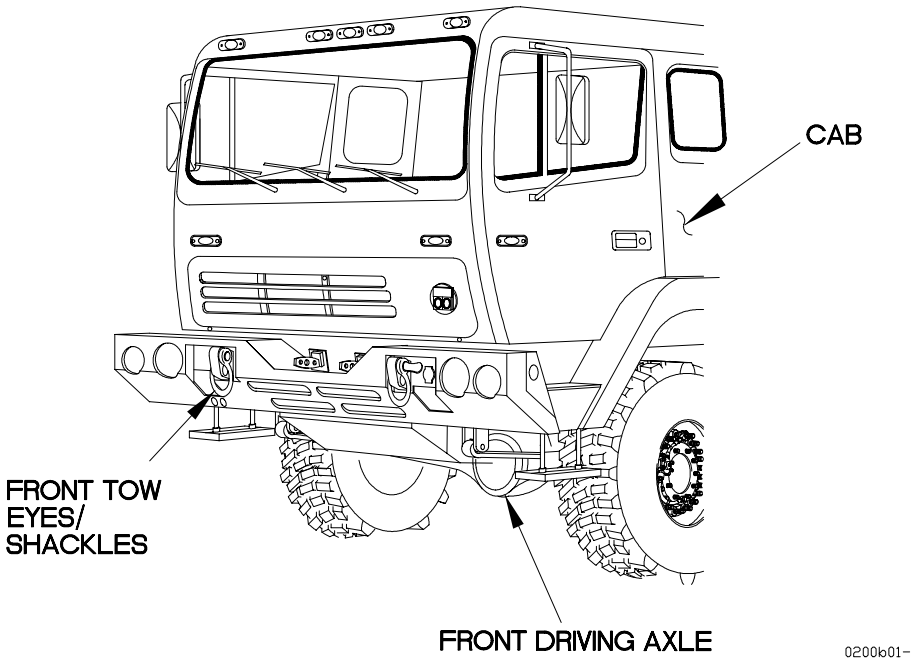


Table 1. M1083A1 Series Vehicles Common Components Location.

COMPONENT	DESCRIPTION
Cab	The cab provides the crew with protection from the weather and contains the controls, gages, and indicators needed to operate the vehicle. The cab accommodates three fully equipped personnel if no radio is installed, and two fully equipped personnel if a radio is installed. The cab can be raised and lowered from the hydraulic manifold located on the passenger side of the vehicle.
Front driving axle	Supports the weight of the vehicle and transmits power to drive the front wheels.
Front tow eyes/shackles	Provides attachment points for towing.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

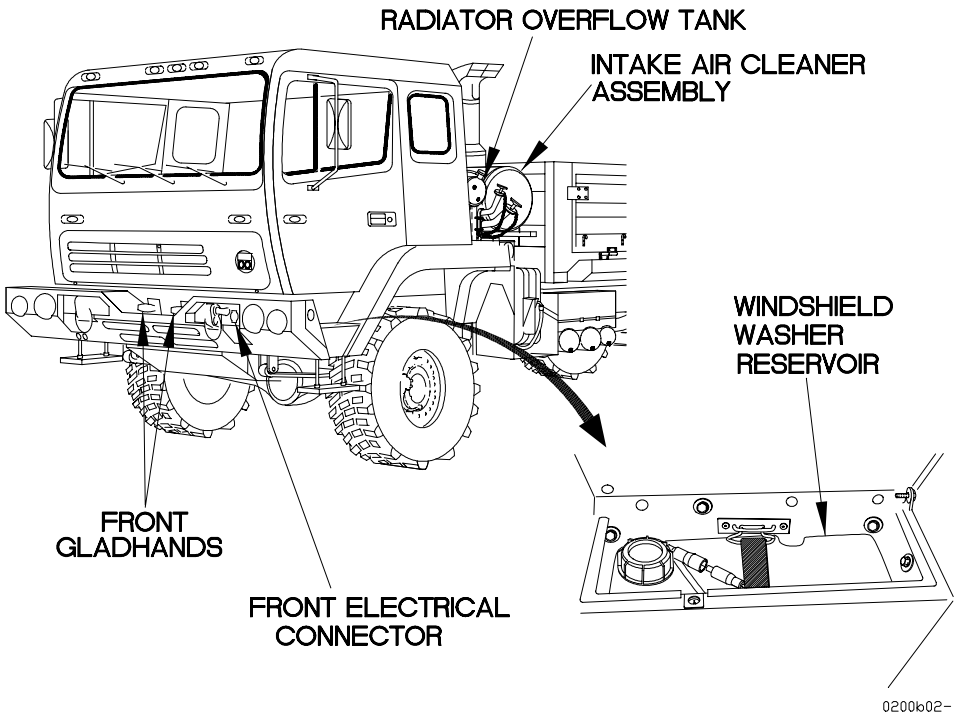


Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

COMPONENT	DESCRIPTION
Front gladhands	Allows connection of brake air supply between vehicles during towing operations.
Front electrical connector	A connector that receives 12 vdc power from a towing vehicle through an intervehicular cable.
Windshield washer reservoir	A 3-quart (3 L) reservoir that stores fluid used to clean the windshield.
Radiator overflow tank	A reservoir that can store up to eight quarts (8 L) of engine coolant.
Intake air cleaner assembly	A cartridge-type filter that removes particles from the air before it enters the turbocharger.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

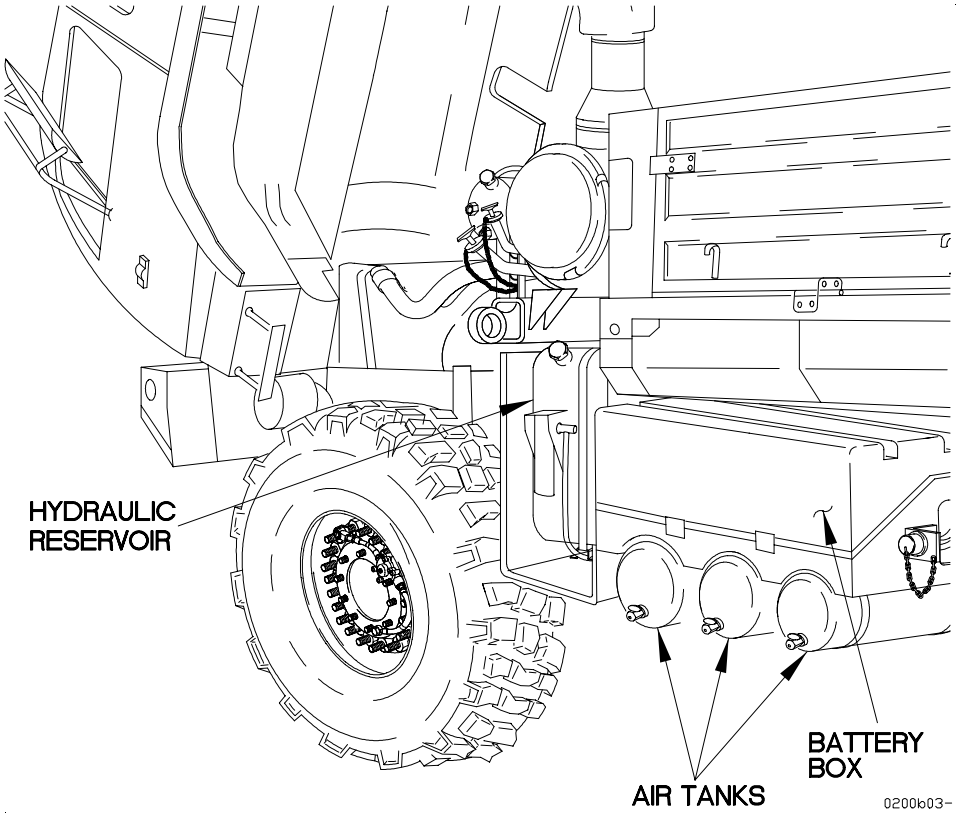


Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

COMPONENT	DESCRIPTION
Battery box	The battery box contains four, 12 vdc, lead-acid batteries connected in series and parallel.
Air tanks	The primary and secondary air tanks and the wet tank store compressed air for operation of the brakes, Central Tire Inflation System (CTIS), and the air/hydraulic power unit.
Hydraulic reservoir (if equipped)	A 27 gal (102 L) reservoir that stores the oil needed to operate the 15K Self-Recovery Winch (SRW) and/or the Material Handling Crane (MHC). May be installed on any vehicle model except M1089A1.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

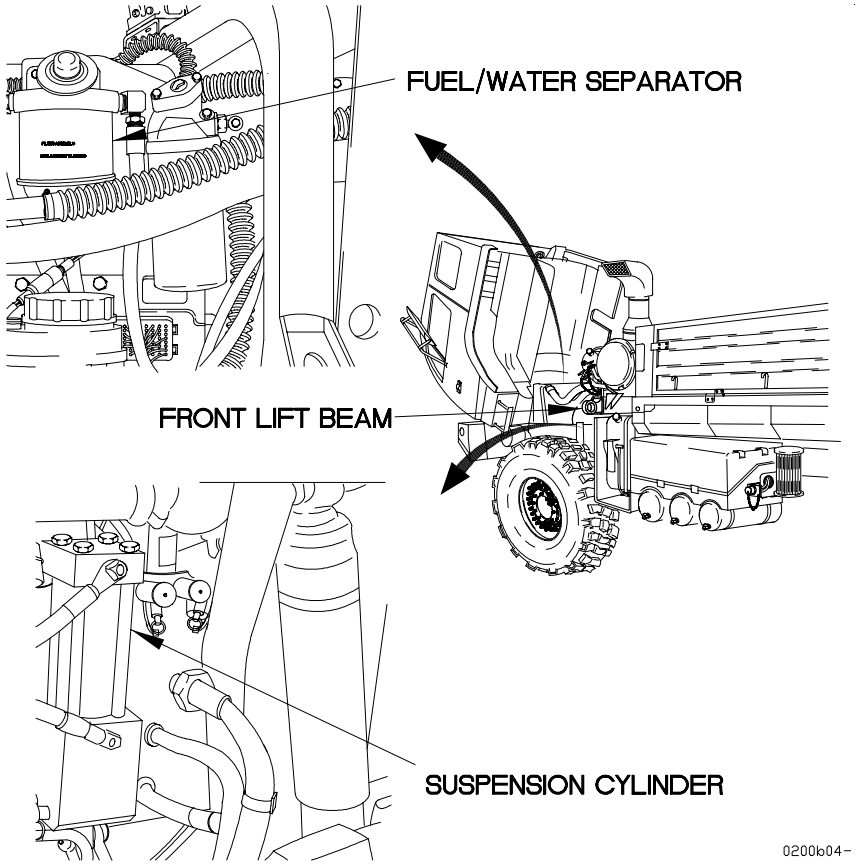


Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

COMPONENT	DESCRIPTION
Front lift beam	Provides attachment points for lifting/loading operations.
Fuel/water separator	Removes moisture and contaminants from the fuel before it enters the fuel pump. The fuel/water separator incorporates a fuel priming pump and an electric heater to prevent gelling of the fuel in cold weather.
Suspension cylinder	Provides a means of compressing the vehicle suspension in preparation for internal air transport.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

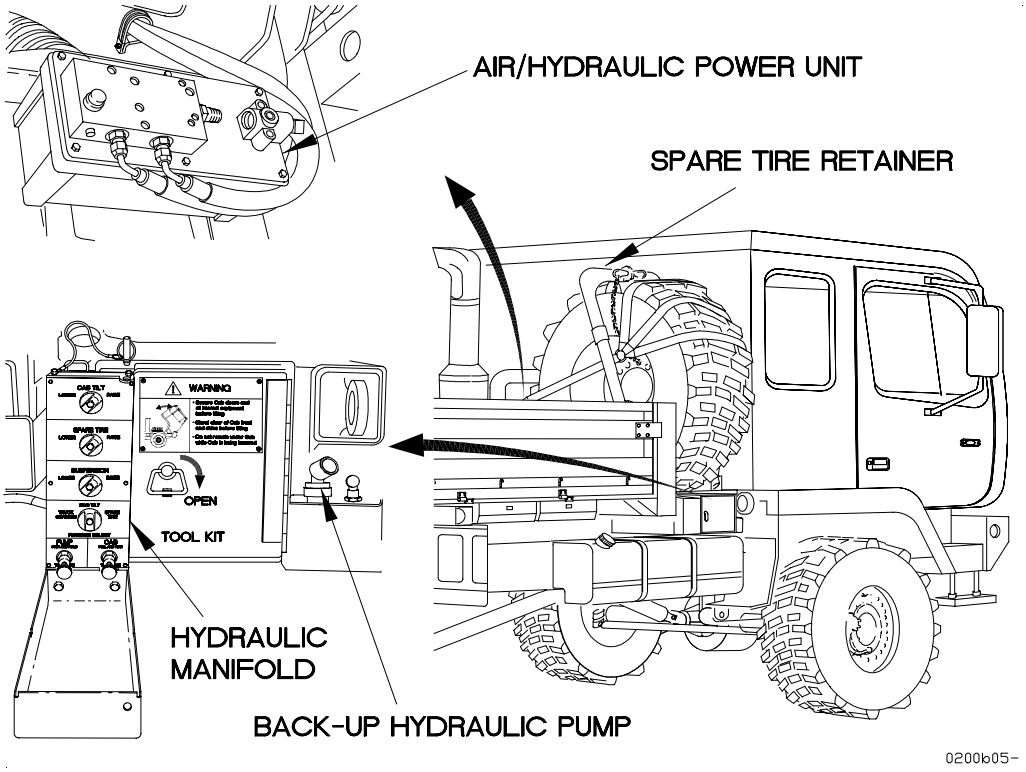


Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

COMPONENT	DESCRIPTION
Spare tire retainer	Provides a stowage location for the spare tire. The operation of the spare tire retainer is controlled from the hydraulic manifold.
Hydraulic manifold	The hydraulic manifold contains the valves and controls used to raise and lower the cab, spare tire, and vehicle suspension.
Back-up hydraulic pump	This manual pump serves as a back-up for the hydraulic manifold. This pump is used in the event that there is not enough air pressure in the air tanks to operate the air/hydraulic power unit.
Air/hydraulic power unit	Converts air pressure into hydraulic pressure to operate the cylinders used to raise and lower the cab, spare tire, and vehicle suspension.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

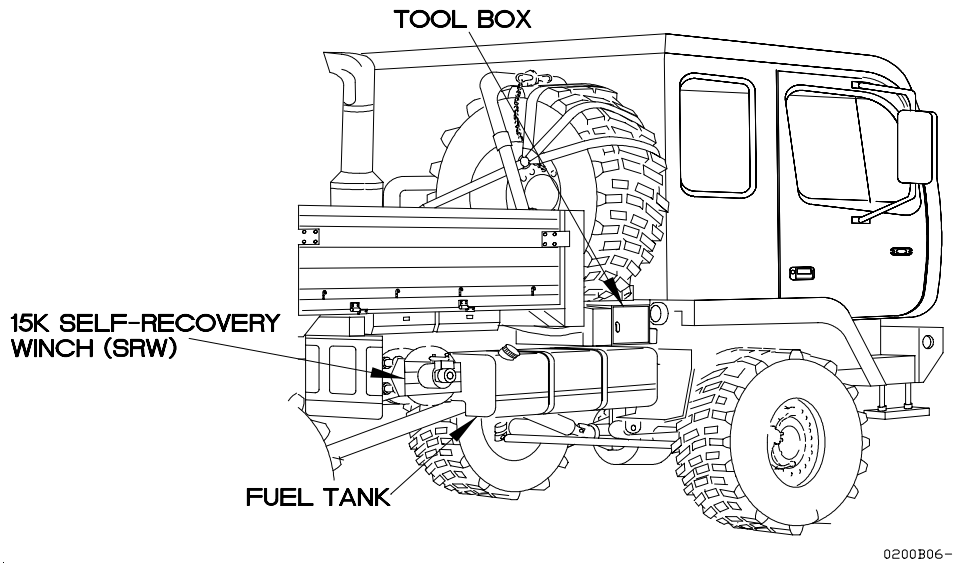
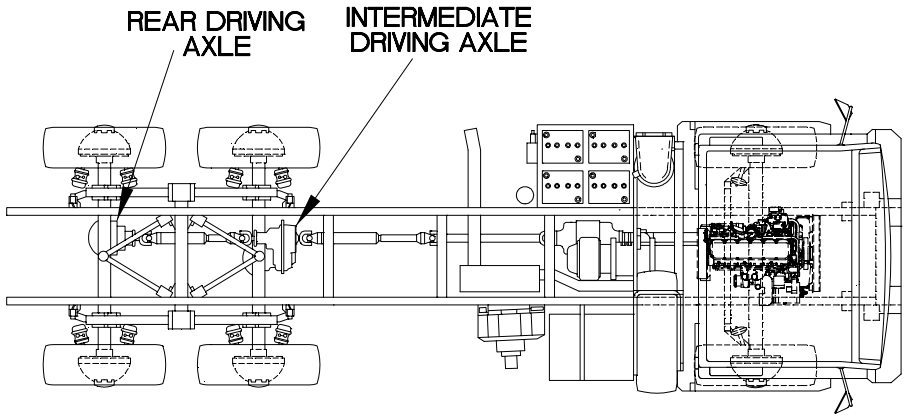


Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

COMPONENT	DESCRIPTION
Tool box	Used to stow Basic Issue Items (BII), Components of End Item (COEI), and Additional Authorization List (AAL) items.
Fuel tank	Stores fuel to operate the engine. Fuel tank has a 56 gal (212L) fill capacity with a usable capacity of 54 gal (204 L) **NOTE** M1088 and M1089 S/N 18,550 or higher, have a fill capacity of 74.1-gal (281 L) with 72.6 (273 L) usable gallons.
15K SRW (if equipped)	Provides the Operator with the ability to recover the vehicle from a stranded condition. It also allows the Operator to attempt retrieval of a medium or light vehicle not equipped with a 15K SRW.



0200B07-

Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

COMPONENT	DESCRIPTION
Intermediate driving axle	Supports the weight of the vehicle and transmits power to drive the intermediate wheels.
Rear driving axle	Supports the weight of the vehicle and transmits power to drive the rear wheels.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

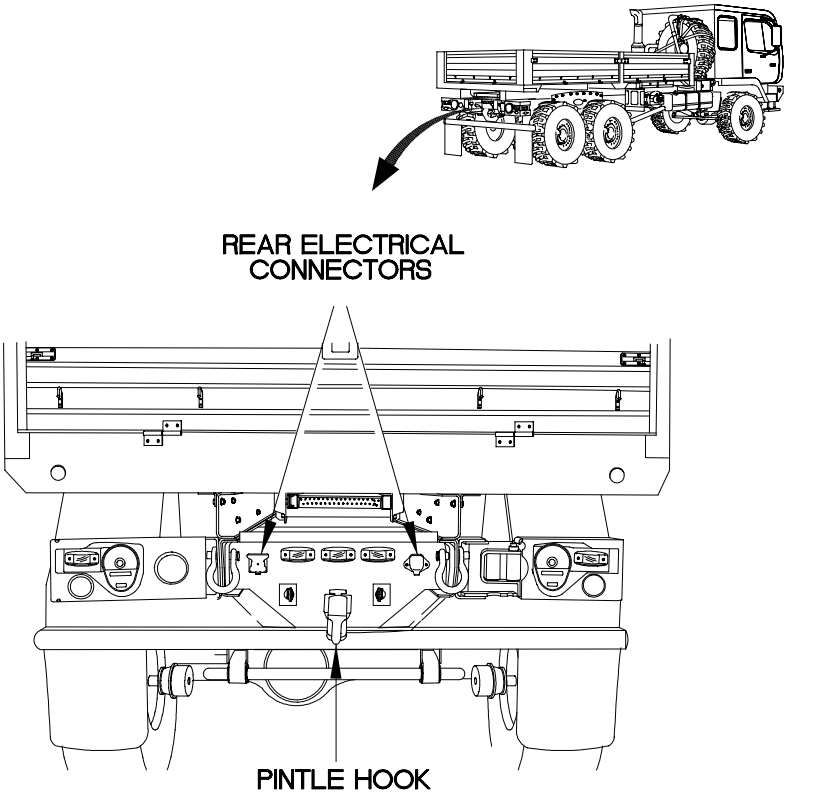


Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

COMPONENT	DESCRIPTION
Rear electrical connectors	Two connectors (24 vdc/12-pin and 12 vdc/7-pin) that supply electrical power to a trailer or a towed vehicle through an intervehicular cable.
Pintle hook	Hook used for towing a trailer. Model M1089A1 is equipped with pintle hook that is attached to the underlift assembly when required by the mission. The pintle hook on model M1089A1 is stowed in a tool box when not in use.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

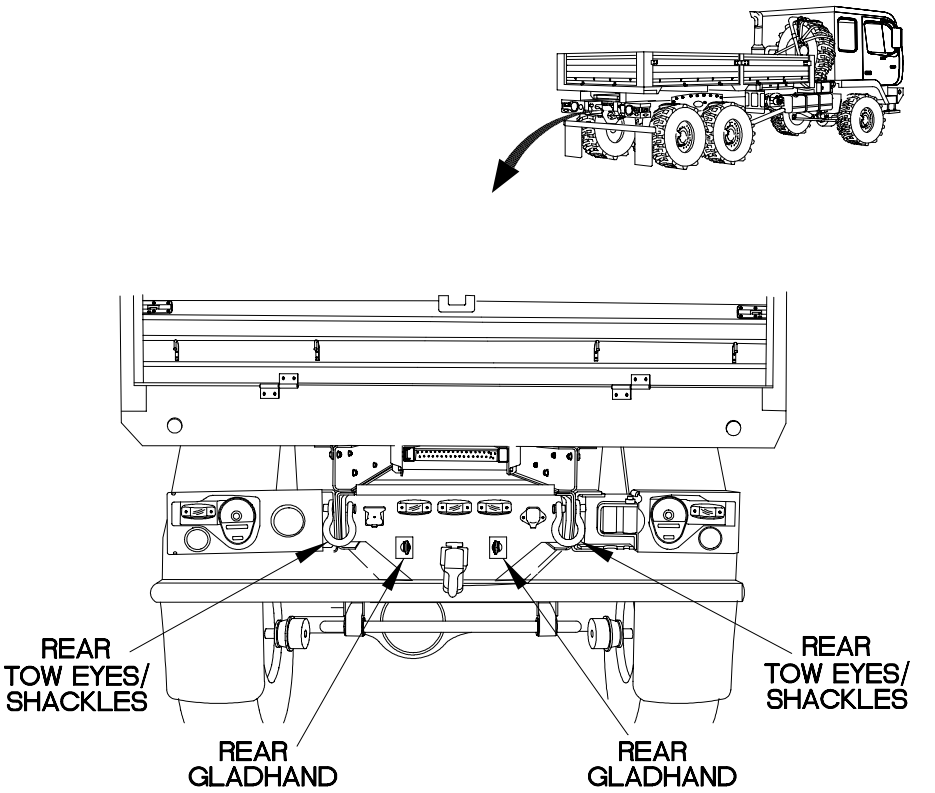


Table 1. M1083A1 Series Vehicles Common Components Location - Continued.

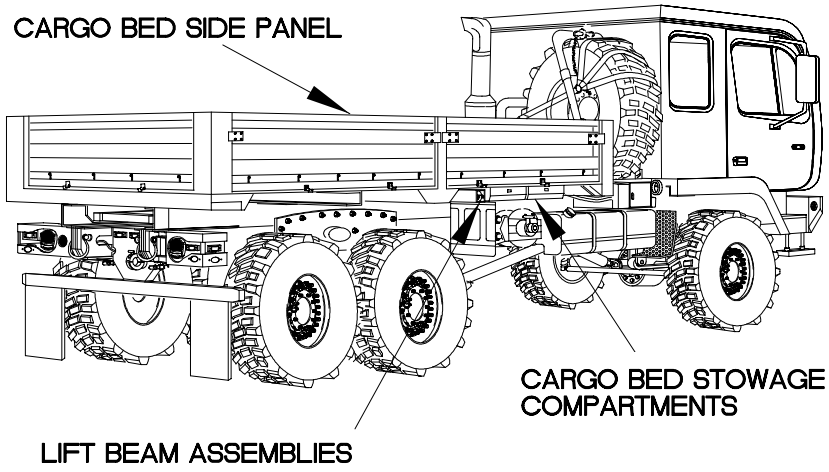
COMPONENT	DESCRIPTION
Rear gladhands	Allows connection of brake air supply to towed vehicle or the trailer during towing operations.
Rear tow eyes/shackles	Provides attachment points for towing.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Major External Components Common To M1083A1 And M1085A1 Cargo Vehicles

Table 2 describes external components common to M1083A1 and M1085A1 cargo vehicles.



0200B10-

Table 2. M1083A1 and M1085A1 Cargo Vehicles Components Location.

COMPONENT	DESCRIPTION
Cargo bed side panels	Aluminum panels used to keep cargo from falling out of cargo bed. They may be raised or lowered, or removed and stowed under the cargo bed.
Cargo bed stowage compartments	Two compartments used to stow cargo cargo bed side panels when removed.
Lift beam assemblies	Two extendible beams that act as sling spreaders, when deployed, to prevent damage to cargo dropsides during external air transport.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

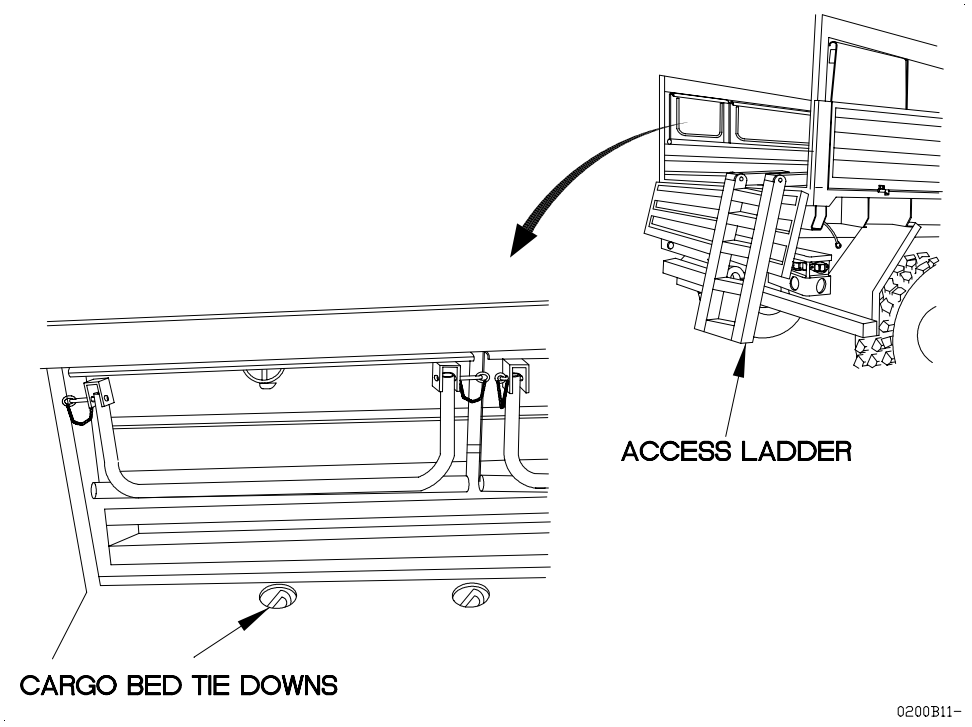


Table 2. M1083A1 and M1085A1 Cargo Vehicles Components Location.

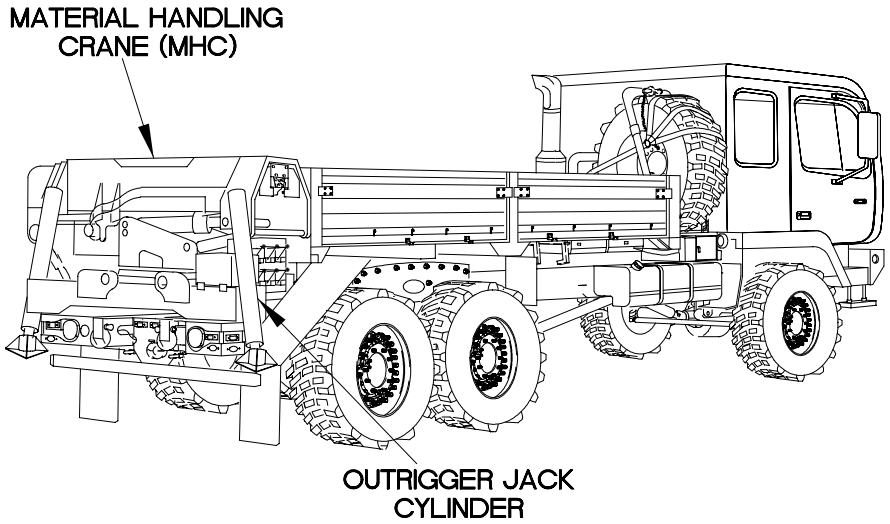
COMPONENT	DESCRIPTION
Cargo bed tie downs	Anchor points for securing cargo.
Access ladder	Used to assist personnel when climbing into or out of cargo bed. The access ladder is stored underneath the cargo bed when not in use.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Major External Components Common To M1084A1 And M1086A1 Cargo Vehicles With Material Handling Crane (MHC)

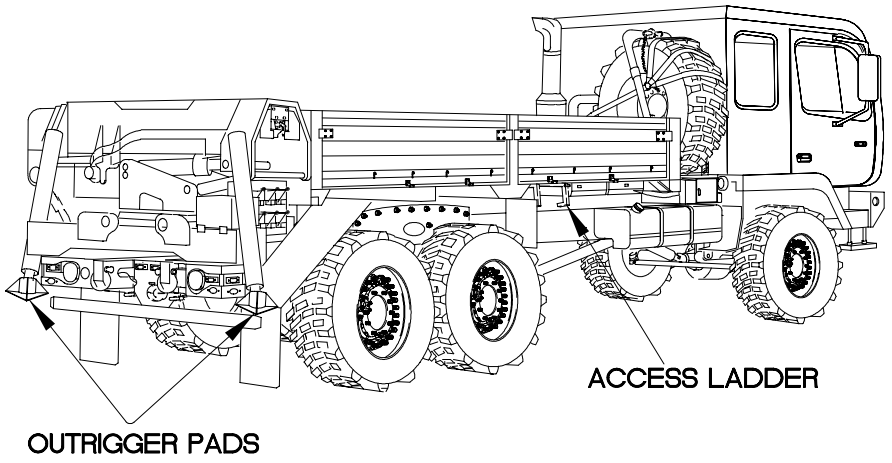
Table 3 describes external components common to M1084A1 and M1086A1 cargo vehicles.



0200B12-

Table 3. M1084A1 and M1086A1 Cargo Vehicles With MHC Components Location.

COMPONENT	DESCRIPTION
Material Handling Crane (MHC)	The MHC is powered by hydraulic pressure supplied from a single stage hydraulic pump. The MHC is controlled from a fixed Operator station or from a remote control.
Outrigger jack cylinders	Two hydraulic cylinders used to stabilize the MHC when in use; also used to help level the MHC on uneven terrain. The MHC cannot be operated unless the outrigger jack cylinders are extended to the ground.



0200B13-

Table 3. M1084A1 and M1086A1 Cargo Vehicles With MHC Components Location - Continued.

COMPONENT	DESCRIPTION
Outrigger pads	Steel pads that attach to the bottom of the outrigger jack cylinders to support and anchor the vehicle during MHC operations.
Access ladder	Used to assist personnel when climbing into or out of cargo bed. The access ladder is stored underneath the right side of the cargo bed when not in use.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Major External Components Of M1088A1 Tractors

Table 4 describes external components of found on the M1088A1 tractor.

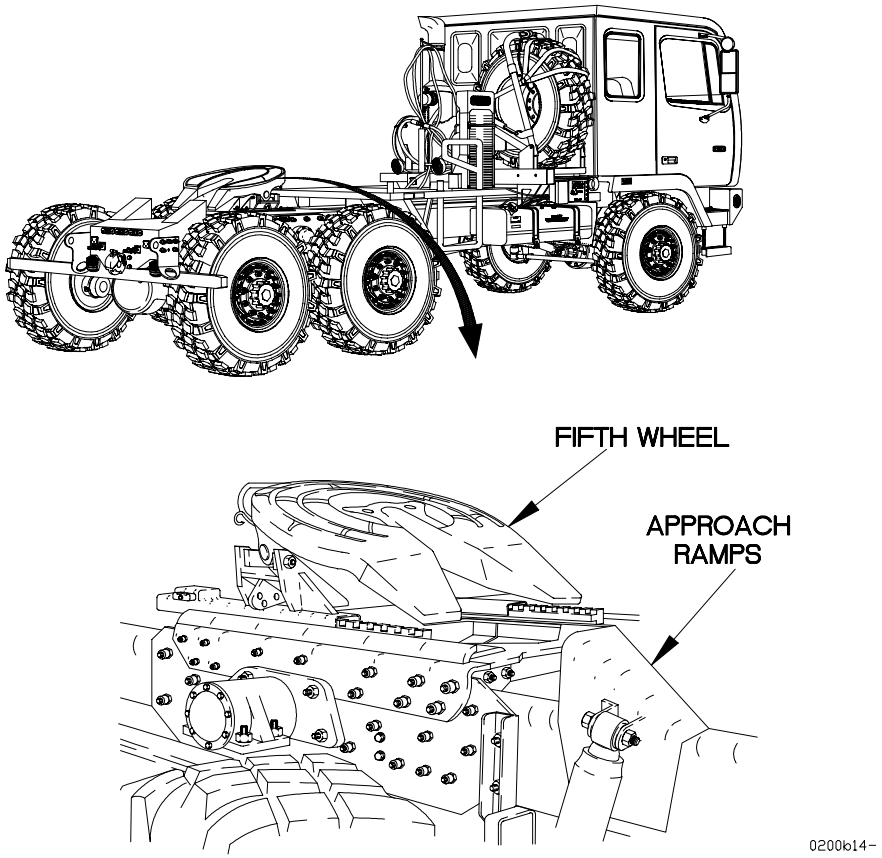


Table 4. M1088A1 Tractor Components Location.

COMPONENT	DESCRIPTION
Fifth wheel	A pivoting plate with locking jaws for connecting the M1088A1 vehicle to a trailer equipped with a kingpin-type hitch. The fifth wheel allows the M1088A1 vehicle to rotate approximately 180 degrees around the trailer kingpin.
Approach ramps	The approach ramps raise the front end of a trailer to guide the trailer kingpin into the fifth wheel.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

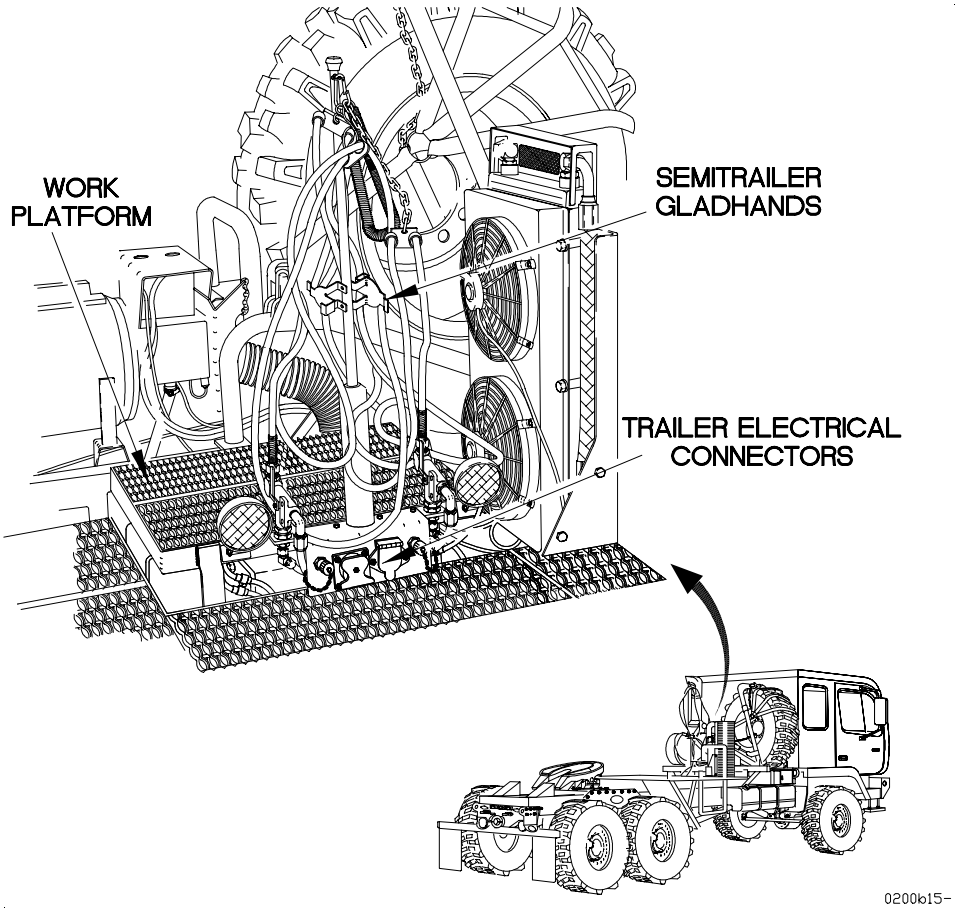


Table 4. M1088A1 Tractor Components Location - Continued.

COMPONENT	DESCRIPTION
Work platform	An open grating that extends the width of the vehicle from the rear of the cab to the front of the fifth wheel and allows for working around the fifth wheel.
Trailer electrical connectors	Two connectors (24 vdc/12-pin and 12 vdc/7-pin) that provide power for the trailer electrical system
Semitrailer gladhands	Connects brake air supply to trailer.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Major External Components of M1090A1 Dump Trucks

Table 5 describes external components found on the M1090A1 dump trucks.

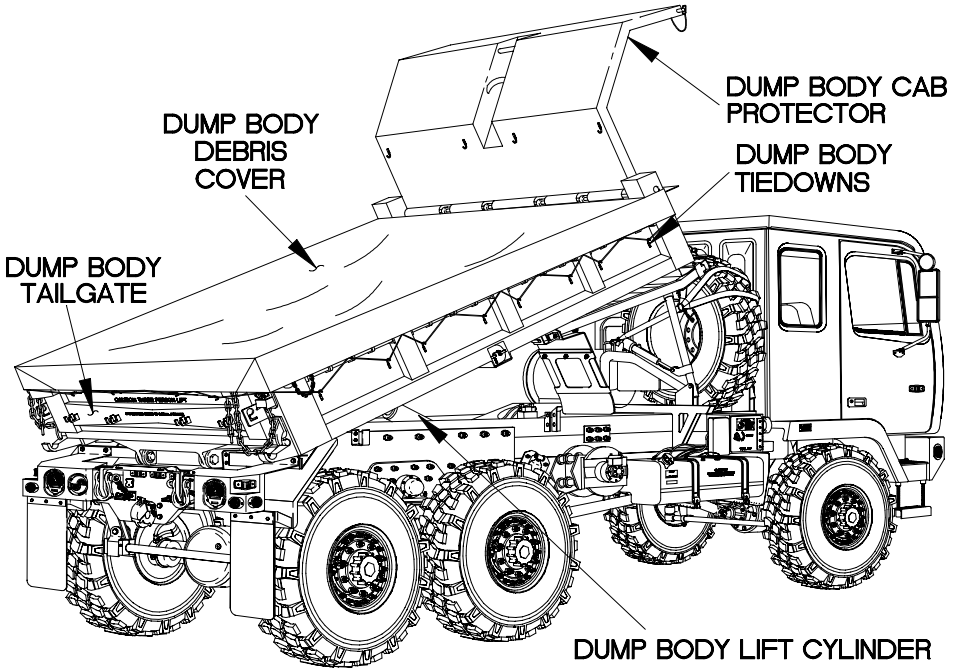


Table 5. M1090A1 Dump Truck Components Location.

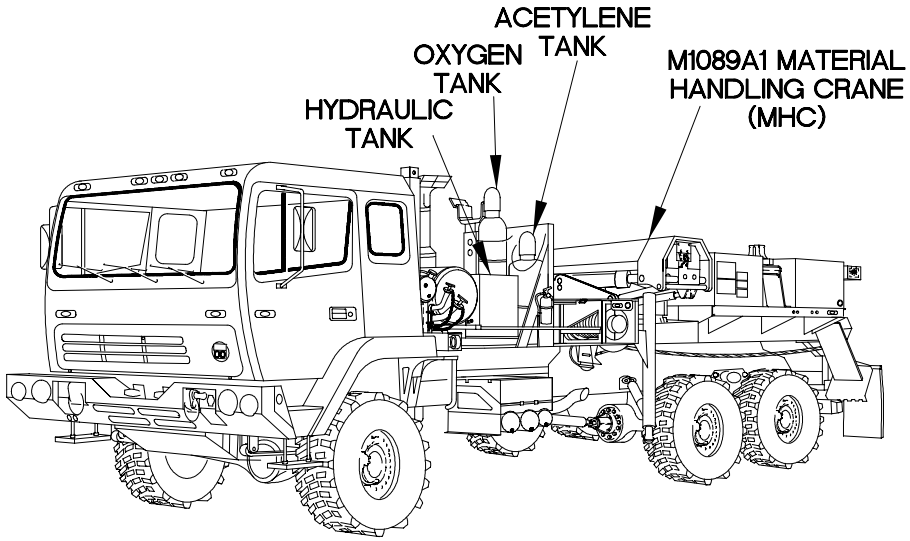
COMPONENT	DESCRIPTION
Dump body tailgate	A panel, at the rear of the dump body, which can be opened from the top or bottom.
Dump body debris cover	A cover used to prevent loose cargo (sand, gravel, etc.) from being blown out of the dump body.
Dump body cab protector	Protects the cab from damage caused by shifting loads.
Dump body lift cylinder	A hydraulic cylinder which is used to raise and lower the dump body.
Dump body tiedowns	Anchor points for securing cargo

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Major External Components Of M1089A1 Wreckers

Table 6 describes external components found on the M1089A1 wrecker.



0200B17-

Table 6. M1089A1 Wrecker Components Location.

COMPONENT	DESCRIPTION
Hydraulic tank	A 73 gal (276 L) tank which contains oil for the underlift assembly, stifflegs, MHC, 30K winches, and 15K SRW.
Oxygen tank	Used for welding operations.
Acetylene tank	Used for welding operations.
M1089A1 Material Handling Crane (MHC)	A hydraulic powered MHC used for material handling operations. The M1089A1 MHC can be controlled from the WRECKER CONTROL PANEL FIXED OPERATORS STATION or from the REMOTE CONTROL UNIT.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Major External Components Of M1089A1 Wreckers

Table 6 describes the external components found on the M1089A1 wrecker.

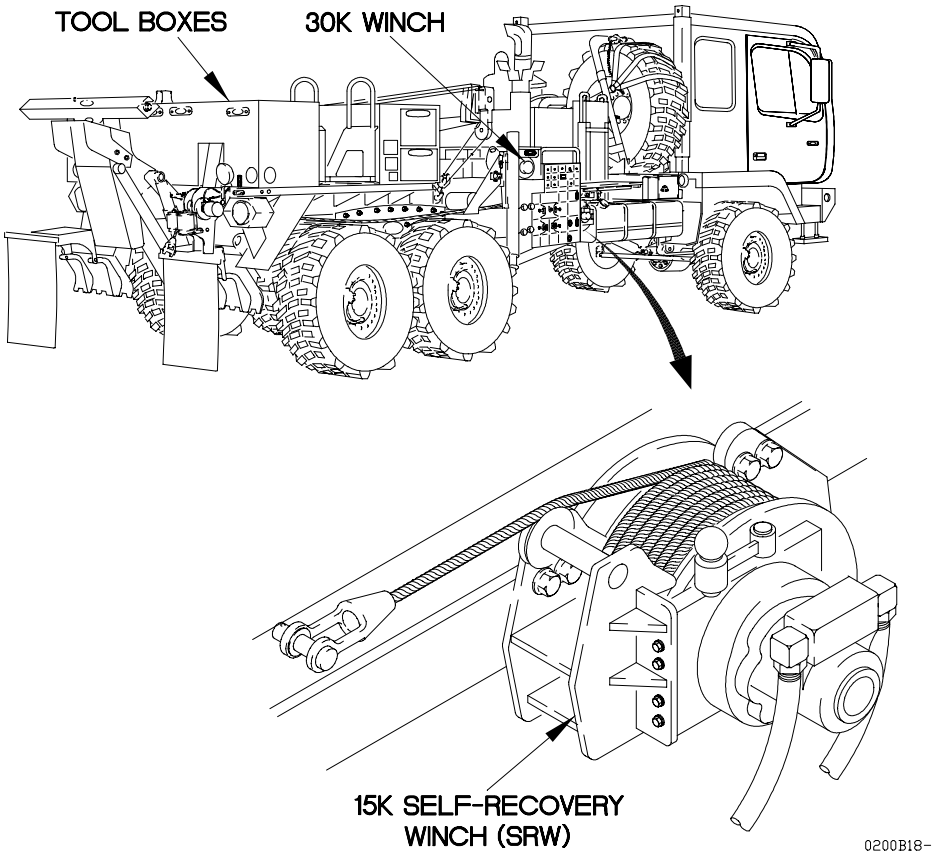


Table 6. M1089A1 Wrecker Components Location - Continued.

COMPONENT	DESCRIPTION
Tool boxes	Four compartments used to stow Basic Issue Items (BII), Components of End Item (COEI), and Additional Authorization List (AAL) items.
30K winches	Two hydraulic powered 30K winches used to recover disabled vehicles.
15K Self-Recovery Winch (SRW)	A hydraulic powered 15K winch used for vehicle self-recovery operations.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

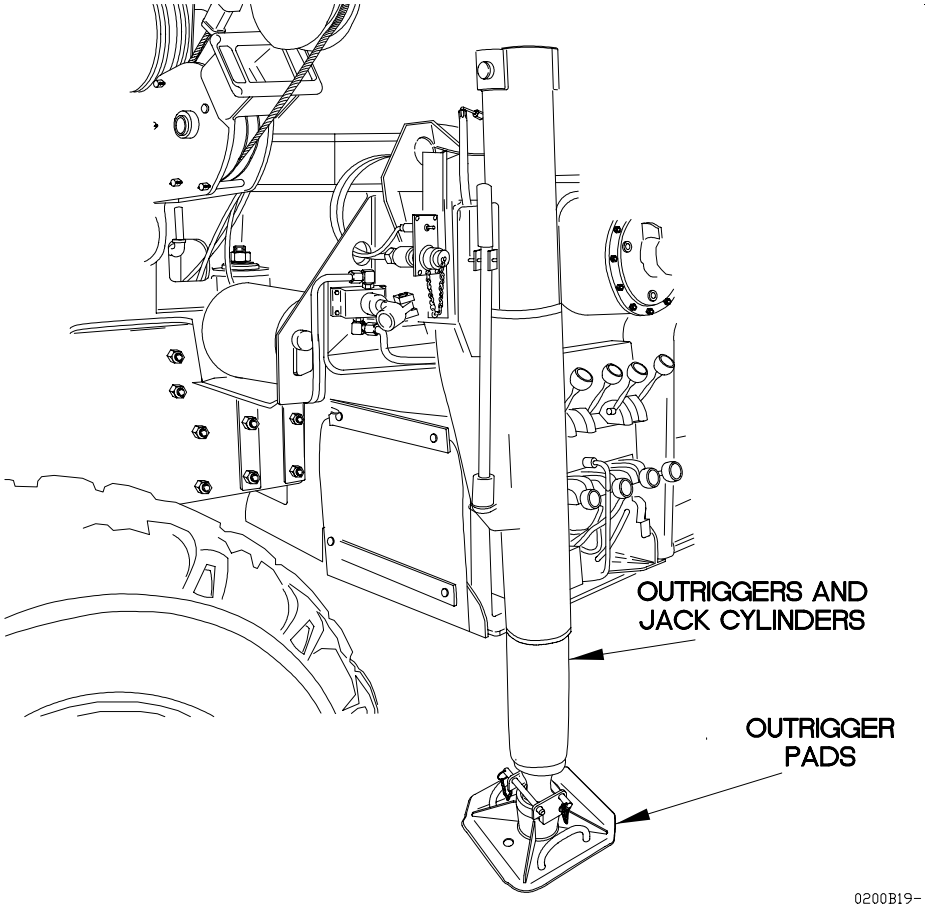


Table 6. M1089A1 Wrecker Components Location - Continued.

COMPONENT	DESCRIPTION
Outriggers and jack cylinders	The hydraulic powered outrigger beams provide the MHC with a wider base circle of support. The jack cylinders help to stabilize and level the MHC during crane operations.
Outrigger pads	Steel pads attached to the bottom of the jack cylinders to support and anchor the vehicle during crane operations.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

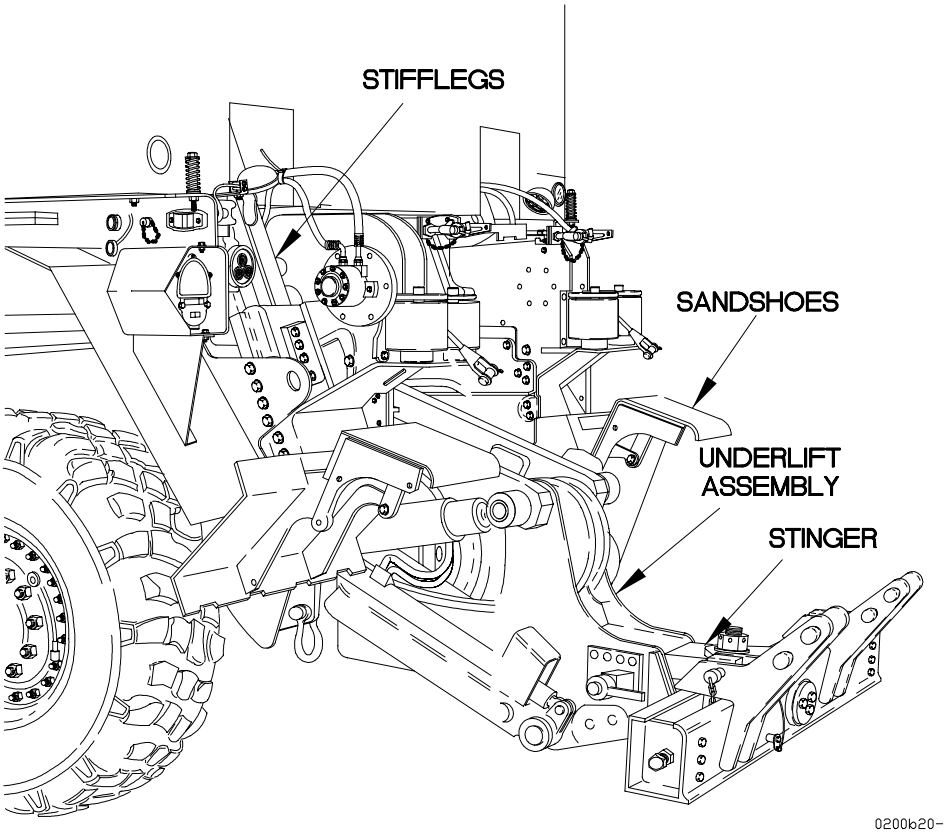


Table 6. M1089A1 Wrecker Components Location - Continued.

COMPONENT	DESCRIPTION
Stifflegs	Two hydraulic powered stabilizers used during 30K winch and MHC operations.
Sandshoes	Steel pads attached to the ends of the stifflegs to anchor the vehicle during 30K winch and MHC operations.
Underlift assembly	A hydraulic powered unit used to lift and support the front or rear of a disabled vehicle for towing.
Stinger	A hydraulic powered cylinder used to extend and retract the crossbar during a recovery operation.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

DIFFERENCES BETWEEN MODELS

Table 7 describes major equipment and operational differences between models of the M1083A1 series vehicles. An "X" means that model is provided with the equipment/capability listed.

Table 7. Differences Between Models.

FEATURE	M1083A1	M1084A1	M1085A1	M1086A1	M1088A1	M1089A1	M1090A1	M1092A1	M1096A1
BODY FEATURE									
Cargo Bed, 14 ft (4.3 m)	X	X							
Cargo Bed, 20 ft (6.1 m)			X	X					
Dump Bed							X		
Fifth Wheel					X				
MHC, 5,000 lbs capacity (2,270 kgs)		X		X					
MHC, 11,000 lbs capacity (4,994 kgs)						X			
Underlift Assembly						X			
30K Winches						X			
15K SRW	X		X		X	X	X		
OPERATING DESCRIPTION									
Personnel/Cargo Transport	X	X	X	X			X		
Material Handling		X		X		X			
Semitrailer Hauling					X				
Dump Operations							X		
Vehicle Recovery						X			

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

DIFFERENCES BETWEEN MODELS - Continued

Table 7. Differences Between Models - Continued.

FEATURE	M1083A1	M1084A1	M1085A1	M1086A1	M1088A1	M1089A1	M1090A1	M1092A1	M1096A1
SPECIAL PURPOSE KITS[1]									
Arctic Kits									
Swingfire Arctic Kit	X	X	X	X	X	X	X	X	X
Arctic Engine Preheat Kit	X	X	X	X	X	X	X	X	X
Cab Heater	X	X	X	X	X	X	X	X	X
Cargo Area Arctic Kit	X		X						
Cargo Cover Kit	X		X				X		
Light Material Handling Crane (LMHC)	X		X						
Machine Gun Ring Mount Kit	X	X	X	X	X		X	X	X
Rotating Amber Warning Light Kit	X	X	X	X	X		X	X	X
Troopseat Kit	X		X				X		
200 Amp Alternator Kit	X	X	X	X	X	X	X	X	X
Auxiliary Panel	X	X	X	X	X	X	X	X	X
Arctic Front	X	X	X	X	X	X	X	X	X
Bumperette Kit	X	X	X	X			X	X	X
Convex Mirror Kit	X	X	X	X	X	X	X	X	X
Resilient Mount Kit	X	X	X	X	X	X	X	X	X
RH Convex Mirror Kit	X	X	X	X	X	X	X	X	X

[1] Vehicles may or may not be equipped with special purpose kits. If an "X" appears under the model number, it means that a special purpose kit is available for that vehicle model.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

DIFFERENCES BETWEEN MODELS - Continued

Table 7. Differences Between Models - Continued.

FEATURE	M1083A1	M1084A1	M1085A1	M1086A1	M1088A1	M1089A1	M1090A1	M1092A1	M1096A1
Rim Cover Kit	X	X	X	X	X	X	X	X	X
S-280 Shelter Tiedown	X		X						
Tiedown Kit (Unmodified)	X		X						
Modification Kit, Tiedown	X		X						
Tiedown Kit (Modified)	X		X						
Tank and Pump Unit	X		X						
500 Gallon Drum	X		X						
Ladder Adapter Bracket Kit, S-280 Shelter	X		X						
Wrecker Fuel/Water Can						X			
WHEELBASES									
161 in. (410 cm)	X				X		X	X	
177 in. (450 cm)		X	X						X
209 in. (530 cm)						X			
217 in. (550 cm)				X					
Vehicle Turning Radius									
40 ft. (12 m)	X				X		X	X	
50 ft. (15 m)		X	X	X		X			X

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA

Table 8 provides overall dimensions for the M1083A1 series vehicles.

Table 8. Vehicle Dimensions.

Vehicle	Overall Length	Overall Width	Overall Height
Truck, Cargo, M1083A1	22 ft 10 in. (7.0 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Cargo w/MHC, M1084A1	25 ft 8 in. (7.8 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Cargo, Long Wheelbase, M1085A1	29 ft 4 in. (8.9 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Cargo, Long Wheelbase w/MHC, M1086A1	31 ft 10 in. (9.7 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Tractor, M1088A1	23 ft 5 in. (7.1 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Wrecker, M1089A1	30 ft (9.1 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Dump, M1090A1	23 ft 6 in. (7.2 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Chassis, M1092A1	22 ft 11 in. (7.0 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)
Truck, Chassis, Long Wheelbase, M1096A1	27 ft 5 in. (8.4 m)	8 ft (2.4 m)	9 ft 4 in. (2.8 m)

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 9 provides information regarding the weight and payload of the M1083A1 series vehicles.

Table 9. Vehicle Weights and Payloads.

Vehicle	Curb Weight[2]	Payload	Maximum Towed Load[3]	Vertical Load[4]
Truck, Cargo, M1083A1	20,896 lbs (9,487 kgs)	10,000 lbs (4,540 kgs)	21,000 lbs (9,534 kgs)	2,100 lbs (953 kgs)
Truck, Cargo w/MHC, M1084A1	24,692 lbs (11,210 kgs)	10,000 lbs (4,540 kgs)	21,000 lbs (9,534 kgs)	2,100 lbs (953 kgs)
Truck, Cargo, Long Wheelbase, M1085A1	22,451 lbs (10,193 kgs)	10,000 lbs (4,540 kgs)	21,000 lbs (9,534 kgs)	2,100 lbs (953 kgs)
Truck, Cargo, Long Wheelbase w/MHC, M1086A1	26,133 lbs (11,864 kgs)	10,000 lbs (4,540 kgs)	21,000 lbs (9,534 kgs)	2,100 lbs (953 kgs)
Truck, Tractor, M1088A1	19,650 lbs (8,291 kgs)	N/A	60,710 lbs (27,562 kgs) on fifth wheel (4)	25,000 lbs (11,350 kgs) on fifth wheel
			21,000 lbs (9,534 kgs) on pintle hook	2,100 lbs (953 kgs) on pintle hook

[2] Curb weight is defined as vehicle weight plus 404 lbs (183 kgs) of fuel weight and 606 lbs (275 kgs) of crew weight.

[3] Any 5-ton MTV vehicle can flat tow any other MTV vehicle up to GVW (Gross Vehicle Weight = Curb Weight + Payload).

[4] Special trailer limitations may prevent towing the maximum load under off-road or other conditions. Consult the specific trailer manual to determine what, if any, limitations apply.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 9. Vehicle Weights and Payloads - Continued.

Vehicle	Curb Weight	Payload	Maximum Towed Load	Vertical Load
Truck, Wrecker, M1089A1	35,582 lbs (16,154 kgs)	N/A	21,000 lbs (9,534 kgs) on pintle kit	2,100 lbs (953 kgs) on pintle hook
			36,678 lbs (16,652 kgs) with underlift	20,000 lbs (9,080 kgs) with underlift retracted
Truck, Dump, M1090A1	22,987 lbs (10,436 kgs)	10,000 lbs (4,540 kgs)	21,000 lbs (9,534 kgs)	2,100 lbs (953 kgs)
Truck, Chassis, M1092A1	17,977 lbs (8,166 kgs)	10,000 lbs (4,540 kgs)	21,000 lbs (9,534 kgs)	2,100 lbs (953 kgs)
Truck, Chassis, Long Wheelbase, M1096A1	18,504 lbs (8,401 kgs)	10,000 lbs (4,540 kgs)	21,000 lbs (9,534 kgs)	2,100 lbs (953 kgs)

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

WARNING

Do not exceed maximum vehicle speed and grade limitations during normal operations. Do not exceed maximum approach or departure angles or ford water greater than maximum depth. Failure to comply may result in serious injury or death to personnel or damage to equipment.

Table 10 provides information that is applicable to all M1083A1 series vehicles.

Table 10. Vehicle Performance Data.

Maximum Speed	Cruising Range	Maximum Grade	Maximum Approach Angle	Maximum Departure Angles	Maximum Fording Depth
55 mph (88 km/h)	300 mi (483 km)	60 percent 30 percent (M1088A1 and M1089A1 when not towing vehicle or trailer) 22 percent (M1088A1 and M1089A1 when towing vehicle or trailer)	40 degrees	40 degrees (M1088A1 and M1089A1) 38.2 degrees (M1084A1) 63 degrees (all other models)	30 in. (76 cm)

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 11 provides information regarding fluid requirements for all M1083A1 series vehicles.

Table 11. Fluid Capacities.

Cooling system	43.8 qt (41.5 L)
Cooling system w/arctic kit (all models except M1088A1/M1089A1)	58.3 qt (55.2 L)
Cooling system w/arctic kit (M1088A1/M1089A1)	67.5 qt (63.9 L)
Engine crankcase	25 qt (24 L)
Transmission/transfer case assembly (all models except M1088A1/M1089A1)	49.3 qt (46.7 L)
Transmission/transfer case assembly (M1088A1/M1089A1)	58.6 qt (55.4 L)
Fuel tank	56 gal (212 L) total, 54 gal (204 L) usable
Steering system reservoir	5 qt (4.8 L)
Windshield washer reservoir	7.5 qt (7.1 L)
Front differential housing	8.5-21.1 qt (8-20 L)
Rear differential housing	8.5-21.1 qt (8-20 L)
Intermediate differential housing	8.5-21.1 qt (8-20 L)
Hydraulic reservoir (M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, M1090A1)	27 gal (102.2 L)
Hydraulic tank (M1089A1)	74 gal (280 L)
Air transport hydraulic system (total system)	3 qt (2.8 L)
Air/hydraulic power unit	3 pt (1.4 L)
Back-up hydraulic pump	19 oz (562 ml)

Table 12 provides detail information for the major components of the M1083A1 series vehicles.

Table 12. System Data.

ENGINE	
Make	Caterpillar
Model	3126 ATAAC
Type	in-line diesel, 4-cycle, turbocharged
Number of Cylinders	6
Bore	4.33 in. (11 cm)
Stroke	5.0 in. (12.7 cm)
Displacement	440 cid (7.2 L)
Maximum Brake Horsepower (at 2,600 rpm)	330 hp SAE (246 kW)
Maximum Governed Engine Speed (loaded)	2,600 rpm
Maximum Governed Engine Speed (no load)	2,860 rpm

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

ENGINE - Continued

Oil Filter Type ..... Full flow, replaceable element
Oil Filter Quantity 1

FUEL SYSTEM

Type ..... Mechanical Injection, Cam-Driven
Number of Fuel Tanks 1
Fuel Types

NOTE

Primary fuels listed below must be used whenever possible. Alternate I fuels are most desirable if primary fuels are not available, with alternate II fuels and emergency fuels second most and least desirable.

Primary Fuels

Diesel fuel, VV-F-800, grade DF-2 ..... Do not use below +32°F (0°C) (NATO code no. F54)

Diesel fuel, VV-F-800, grade DF-1 ..... Do not use below +10°F (-23°C) (NATO code no F-54)

Diesel fuel, VV-F-800, grade DF-A ..... All temperatures (NATO code no. F-54)

Alternate I Fuels

Turbine fuel, MIL-T-5624, grade JP-5 ..... Do not use below -51°F (-46°C) (NATO code no. F-44)

Diesel fuel, MIL-F-16884 ..... Do not use below +15°F (-9°C) (NATO code no. F-75 or F-76)

Turbine fuel, aviation, kerosene type, ... Do not use below -58°F (-50°C) MIL-T-83133, grade JP-8 (NATO code no. F-34)

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

WARNING

Never mix gasoline or JP-4 turbine fuel with other fuels outside vehicle fuel tank. Any mixing should be done by adding fuels to fuel tank. Gasoline and JP-4 turbine fuel are highly combustible and may explode, resulting in injury or death to personnel.

CAUTION

If engine runs rough when using any alternate II fuel, add 10% to 30% diesel fuel to smooth engine performance. Failure to add diesel fuel may result in damage to pistons.

Alternate II Fuels

Turbine fuel, MIL-T-5624, grade JP-4 ..... Do not use below -72°F (-58°C)
(NATO code no. F-40)

Caution

Extend operation on emergency fuels may cause early clogging of fuel filters and early fouling of fuel injector nozzles. Add diesel fuel as required to smooth engine performance.

Emergency Fuels

Commercial burner fuel oil ..... Do not use below 0°F (-18°C)
(ASTM D396), grade FO-1

Commercial burner fuel oil ..... Do not use below +20°F (-7°C)
(ASTM D396), grade FO-2

ASTM D3699 Kerosene .....
(NATO F45)

Fuel Filter (primary) ..... Fuel/Water Separator
Fuel Filter (secondary) ..... Particulate type
Air Cleaner Type ..... Dry element

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

COOLING SYSTEM

Type	Water, Radiator
Maximum Radiator Working Pressure	15 psi (103 kPa)
Fan	Engine-driven, clutch-type

AIR COMPRESSOR

Make	Midland
Model	EL 1600
Type	Piston-type, Two-cylinder

ELECTRICAL SYSTEM

Alternator

Make	C.E. Niehoff
Model (100 Amps, 14 vdc/28 vdc)	N1506-1
Type	Engine-driven, EMI/RFI suppressed,waterproof

Voltage Regulator

Make	C.E. Niehoff
Model	N3030
Type	Solid State

Starter

Make	Prestolite
Model	M0017703ME

Batteries

Make	Exide
Type	6TL
Quantity	4
Battery Connection	Series-parallel
Ratings	600 cold cranking amps at 0° F (-18° C) for 60 seconds 350 cold cranking amps at -40° F (-40° C) for 60 seconds

TRANSMISSION

Make	Allison
Model	MD3070PT
Type	Automatic
Forward Speeds	7
Reverse Speeds	1

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

TRANSMISSION - Continued

Power Take-Off (PTO) (if equipped)
Make ..... Chelsea
Model 275 XMFJX-D5XK

AXLES

Front
Make ..... Rockwell
Carrier Type ..... Single reduction, amboid gearing, ABS
Wheel End Type ..... Bevel wheel end reduction
Wheel End Ratio ..... 2 to 1
Overall Axle Gear Ratio ..... 7.8 to 1
Steering Angle ..... 35 degrees

Intermediate
Make ..... Rockwell
Carrier Type ..... Single reduction, amboid gearing, ABS
Wheel End Type ..... Bevel wheel end reduction
Wheel End Ratio ..... 2 to 1
Overall Axle Gear Ratio ..... 7.8 to 1

Rear
Make ..... Rockwell
Carrier Type ..... Single reduction, amboid gearing
Wheel End Type ..... Bevel wheel end reduction
Wheel End Ratio ..... 2 to 1
Overall Axle Gear Ratio ..... 7.8 to 1

DRIVE SHAFTS

Make ..... Rockwell

SUSPENSION SYSTEM

Make
Front ..... Standen's Limited
Rear ..... Standen's Limited

Type
Front ..... Multiple Leaf Spring
Rear ..... Multiple Leaf Spring w/Bogeys

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

CAB

Personnel Capacity 3
Seat Design ..... Cushioned with Springs, Driver's Forward/Backward Adjustable
Steering Wheel ..... Adjustable, Tilt and Telescopic

BRAKE SYSTEM

Front
Make ..... Rockwell
Model (all variants) ..... Stopmaster, RSA-1550-830
Type ..... Full air, wedge-type, self-adjusting, ABS
Drum Size ..... 17.2 in. (43.7 cm) diameter by 8.2 in. (20.8 cm) wide
Number of Brake Air Chambers ..... 1 per wheel
Pressure Range ..... 60-120 psi (414-827 kPa)

Rear
Make ..... Rockwell
Model (all models except M1088A1/M1089A1) ..... Stopmaster, RDA-1550-831
Model (M1088A1 and M1089A1) ..... Stopmaster, RDA-1550-833
Type ..... Full air, wedge-type, self-adjusting, ABS
Drum Size ..... 17.2 in. (43.7 cm) diameter by 8.2 (20.8 cm) wide
Number of Brake Air Chambers ..... 2 per wheel
Pressure Range ..... 60-120 psi (414-827 kPa)

TOWING EYES

Quantity ..... 4 (2 front, 2 rear)

PINTLE HOOK

Type ..... Manual-release
Maximum Load Capacity
Pulling ..... 21,000 lbs (9,534 kgs)
Vertical ..... 2,100 lbs (953 kgs)

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

WHEELS

Make ..... Titan
Rim Size and Type ..... 20 by 10, two-piece, bolt-together
Quantity ..... 7 (including spare)
Studs Per Wheel 10
Maximum Wheel Load ..... 9,000 lbs (4,086 kgs)

TIRES

Make ..... Michelin
Size ..... 395/85 R20 XML
Tread Design ..... Non-directional, on-off road
Ply Rating PR14
Tube or Tubeless ..... Tubeless
Load Range 159G
Maximum Load ..... 9,645 lbs (4,379 kgs)
Maximum Cold Inflation Pressure ..... 95 psi (655 kPa)
Maximum Highway Speed ..... 55 mph (88 km/h)

CENTRAL TIRE INFLATION SYSTEM (CTIS)

Make ..... Eaton

TIRE PRESSURES (all models except M1088A1/M1089A1)

Terrain Condition	Maximum Speed	Tire Pressure
Highway	55 mph (88 km/h)	60 psi (414 kPa)
Cross Country	40 mph (64 km/h)	37 psi (255 kPa)
Sand (soft terrain)	12 mph (19 km/h)	22 psi (152 kPa)
Emergency	5 mph (8 km/h) (10 minutes)	16 psi (110 kPa)

TIRE PRESSURES (M1088A1/M1089A1)

Terrain Condition	Maximum Speed	Tire Pressure
Highway	55 mph (88 km/h)	81 psi (558 kPa)
Cross Country	40 mph (64 km/h)	54 psi (372 kPa)
Sand (soft terrain)	12 mph (19 km/h)	32 psi (221 kPa)
Emergency	5 mph (8 km/h) (10 minutes)	24 psi (165 kPa)

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

30K WINCHES (M1089A1)

Make	dp Manufacturing
Model	SD30
Rated Capacity	30,000 lbs (133,400 N)
Speeds	2
Cable Dimension	0.75 in. (1.9 cm) diameter

MATERIAL HANDLING CRANE (MHC)

M1084A1/M1086A1

Make	Grove
Maximum Capacity at Boom Length of 7 ft (2.1 m)	5,000 lbs (2,270 kgs)

MATERIAL HANDLING CRANE (MHC)

M1089A1

Make	Grove
Maximum Capacity at Boom Length of 11 ft (3.4 m)	11,000 lbs (4,994 kgs)

FIFTH WHEEL (M1088A1)

Make	Holland
Type	Fully-oscillating with kingpin lock
Diameter	36 in. (91.4 cm) diameter
Rating	
Vertical Load	40,000 lbs (18,160 kgs)
Drawbar Load	150,000 lbs (68,100 kgs)
Lateral Load	25,382 lbs (11,523 kgs)
Kingpin Size	2 in. (5 cm)

15K SELF-RECOVERY WINCH (SRW) (if equipped)

Make	dp Manufacturing
Model	15 K
Rated Capacity	15,500 lbs (68,944 N)
Speeds	1
Cable Dimension	0.5 in. (1.27 cm) diameter by 280 ft (85 m)

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

SPECIAL PURPOSE KITS[5]

Arctic Kits
Make ..... ESPAR
Part No. (Swingfire Heater Adapter) 57K1218
Output ..... 40,000 Btu

Make ..... Webasto
Part No. (Cab Heater) 57K1217
Output ..... 40,000 Btu

Make ..... Global Thermoelectric
Part No. (Cargo Area Arctic Kit) 57K4364
Output ..... 30,000/60,000 Btu
Make ..... Beru
Part No. (Arctic Engine Preheat) 57K4366

Bumperette Kit
Part No. 57K3398

Convex Mirror Kit
Part No. 57K1995

RH Convex Mirror Kit
Part No. 57K2008

Soft Top Cover Kit (Green Camo)
Part No. (M1083A1/M1084A1) 57K1899
Part No. (M1085A1/M1086A1) 57K1900
Part No. (M1090A1) 57K1901

Soft Top Cover Kit (Tan)
Part No. (M1083A1/M1084A1) 57K1926

Light Material Handling Crane (LMHC) Kit
Part No. (M1083A1.M0185A1) 57K1215

Machine Gun Ring Mount Kit
Part No. 57K1224

[5] Vehicle may be equipped with these items depending on mission, climate, and other factors.

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

SPECIAL PURPOSE KITS - Continued

Rotating Amber Warning Light Kit
- Part No. 57K1220
- Type ..... 24 vdc, Magnet-Mounted

Rim Cover Kit
- Part No. 57K1996

Troopseat Kit
- Part No. (M1083A1) 57K1894-001
- Part No. (M1085A1) 57K1896-001
- Part No. (M1090A1) 57K2015

200 Amp Alternator Kit
- Part No. 57K1912

Auxiliary Panel Kit
- Part No. 57K1974

Arctic Front Kit
- Part No. 57K1946

Tiedown, S-280 Shelter
- Part No. (M1083A1) ..... 57K1949 (Unmodified)
- Part No. (M1083A1) ..... 57K4378 (Modified)
- Part No. (M1085A1) ..... 57K1970 (Unmodified)
- Part No. (M1085A1) ..... 57K4447 (Modified)

Modification Kit, S-280 Shelter
- Part No. (M1083A1) 57K4377
- Part No. (M1085A1) 57K4448

Tank and Pump Unit
- Part No. (M1083A1) 57K1954
- Part No. (M1085A1) 57K1955

500 Gallon Drum
- Part No. (M1083A1) 57K1956
- Part No. (M1085A1) 57K1957

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 12. System Data - Continued.

SPECIAL PURPOSE KITS - Continued

Resilient Mount Kit
Part No. 57K2003

Ladder Adapter, S-280 Shelter
Part No. (M1083A1/M1085A1) 57K1950

WARNING

Bridges along your route may be marked with a class number. The bridge class number shows the safe capacity of the bridge. If the bridge class number on your vehicle is equal to or less than the bridge class number, the bridge will hold your vehicle. If the bridge class number on your vehicle is greater than the bridge class number; DO NOT CROSS BRIDGE. Failure to comply may result in serious injury or death to personnel or damage to equipment.

Table 13 provides the vehicle class number for the M1083A1 series vehicle, to be displayed on the front of each model. Refer to FM 5-36 Route Reconnaissance and Classification for more information on bridge classification.

Table 13. Vehicle Classification.

Vehicle	Vehicle Class Number
	Cross-Country/Off Highway
M1083A1	16
M1083A1 w/winch	16
M1084A1	17
M1085A1	16
M1085A1 w/winch	16
M1086A1	17

M1083A1 SERIES EQUIPMENT, DESCRIPTION AND DATA - Continued 0002 00

EQUIPMENT DATA - Continued

Table 13. Vehicle Classification - Continued.

Vehicle	Vehicle Class Number
	Cross-Country/Off Highway
M1088A1[6]	22
M1088A1 w/winch[7]	23
M1089A1	22
M1090A1	16
M1090A1 w/winch	17
M1092A1	8
M1096A1	8

[6] Weight of trailer and payload must be known to determine class number.

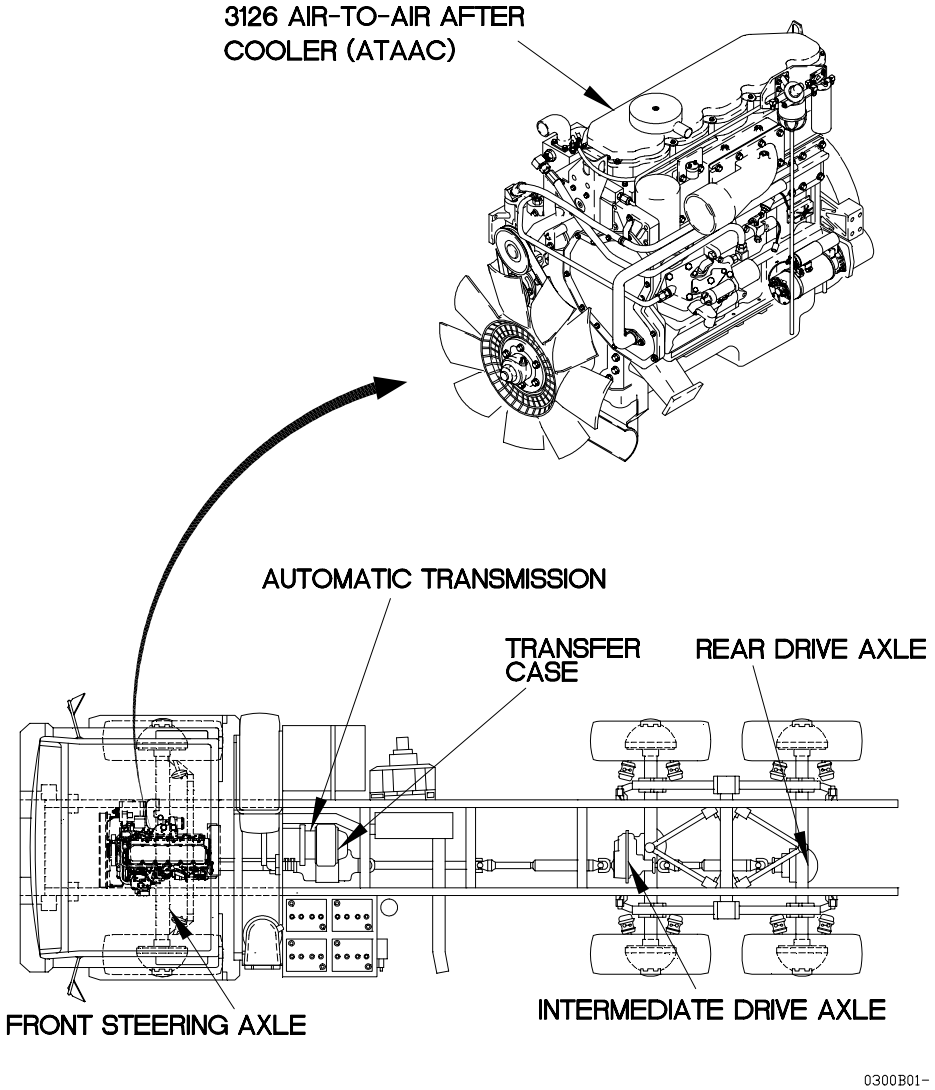
[7] Weight of trailer and payload must be known to determine class number.

M1083A1 SERIES THEORY OF OPERATION 0003 00

POWERTRAIN

The Powertrain for the vehicle is provided by a diesel engine which is coupled directly to an automatic transmission. Power from the automatic transmission is supplied to the transfer case and on to the front steering axle, intermediate drive axle, and rear drive axle through a series of drive shafts and universal joints. The capability of the powertrain is enhanced by the use of a seven-speed transmission.

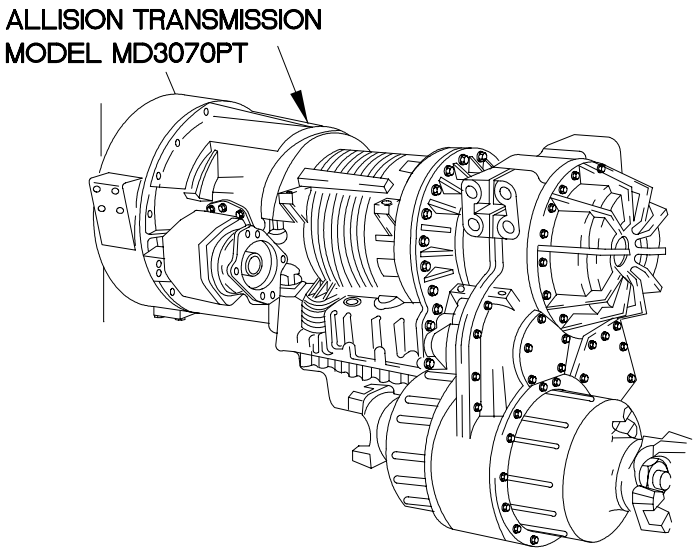
Engine. The vehicle is equipped with a Caterpillar model 3126 Air-To-Air Aftercooler (ATAAC) diesel engine rated at 330 hp (246 kW).



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

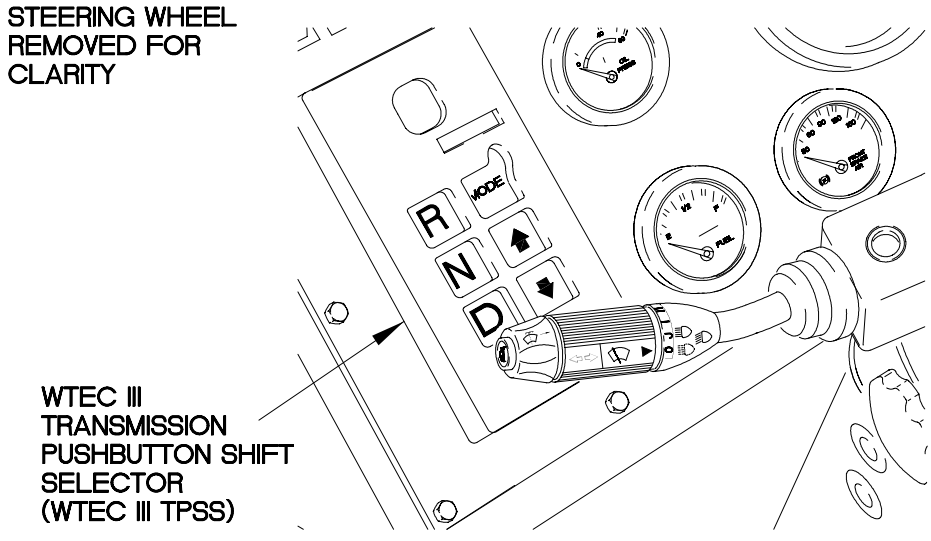
POWERTRAIN - Continued

Transmission. The vehicle is equipped with a fully automatic, electronically controlled, seven-speed close-ratio Allison transmission Model MD3070PT



0300b02-

1. The WTEC III Transmission Pushbutton Shift Selector (TPSS) is located in the instrument panel assembly to the Operator's left.



0300b03-

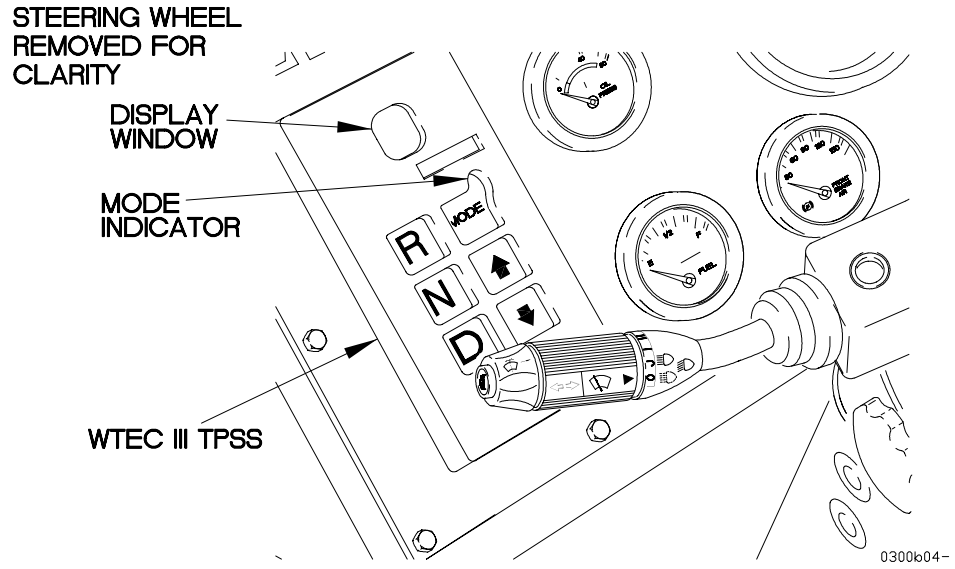
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

POWERTRAIN - Continued

2. The transmission defaults to Neutral (**N**) whenever the master power switch is positioned to off. When the master power switch is position to on, the mode indicator will illuminate briefly on the WTEC III TPSS. The mode indicator will go out and **N** will appear in the display window. This lets you know that the transmission is in highway mode and Neutral (**N**) range.

3. The Drive (**D**) gear selection is used for normal driving conditions. The transmission will engage 2nd gear when **D** is selected and the vehicle is stopped. The WTEC III TPSS display window will illuminate **7**, indicating the highest available gear. Low gear (1st gear), is available only through manual selection by pressing the down arrow button until **1** is displayed in the display window. You may manually downshift or upshift to a lower or higher gear range as required. The transmission will not downshift to a lower gear if the engine speed is too high for the gear selected. Selecting a specific gear, for example 3rd, will prevent the transmission upshifting past the selected gear.

4. Until **MODE** is pressed on the WTEC III TPSS, the vehicle is operating as a 4 X 6 vehicle. When **MODE** is pressed, the mode indicator will illuminate and the vehicle is operating as a 6 x 6 (all wheel drive) vehicle. If the vehicle is stopped, the display window will illuminate **5**, indicating that 5th gear is the highest available gear. This off-road mode is useful if road or load conditions require the use of a lower gear range for maximum torque. The vehicle must be completely stopped and engine operating at idle speed before the transmission will allow you to shift from a forward gear to Reverse (**R**) gear.

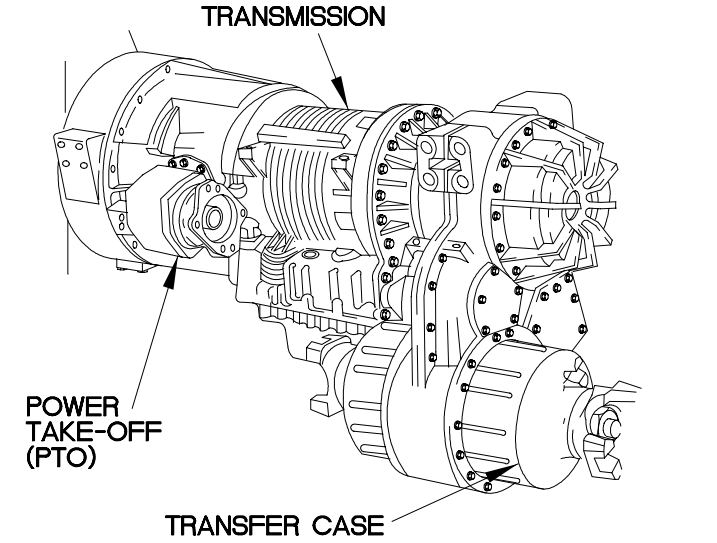


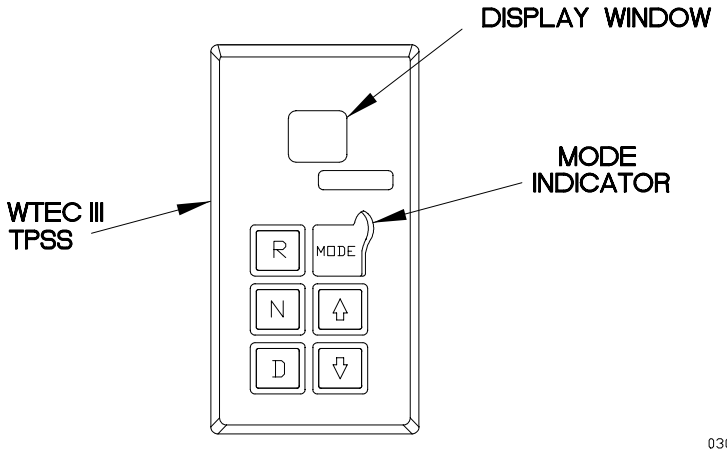
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

POWERTRAIN - Continued

5. The transmission may include an electrically controlled Power Take-Off (PTO). The PTO provides power to a hydraulic pump, which powers the 15K Self-Recovery Winch (SRW) (if equipped) or hydraulically operated equipment. The transmission will not shift from Neutral (**N**) if the PTO is engaged and the winch switch is in the on position.

Transfer Case. The transfer case contains the gears and clutches that provide the transmission with the seventh gear. The transfer case delivers power from the transmission to the front driveshaft and rear driveshaft. In normal driving conditions, the transfer case splits the output torque of the transmission, providing 70 percent of the torque to the rear and 30 percent to the front. In 1st gear, or anytime the mode indicator is illuminated, the output torque of the transmission is split evenly between front and rear.



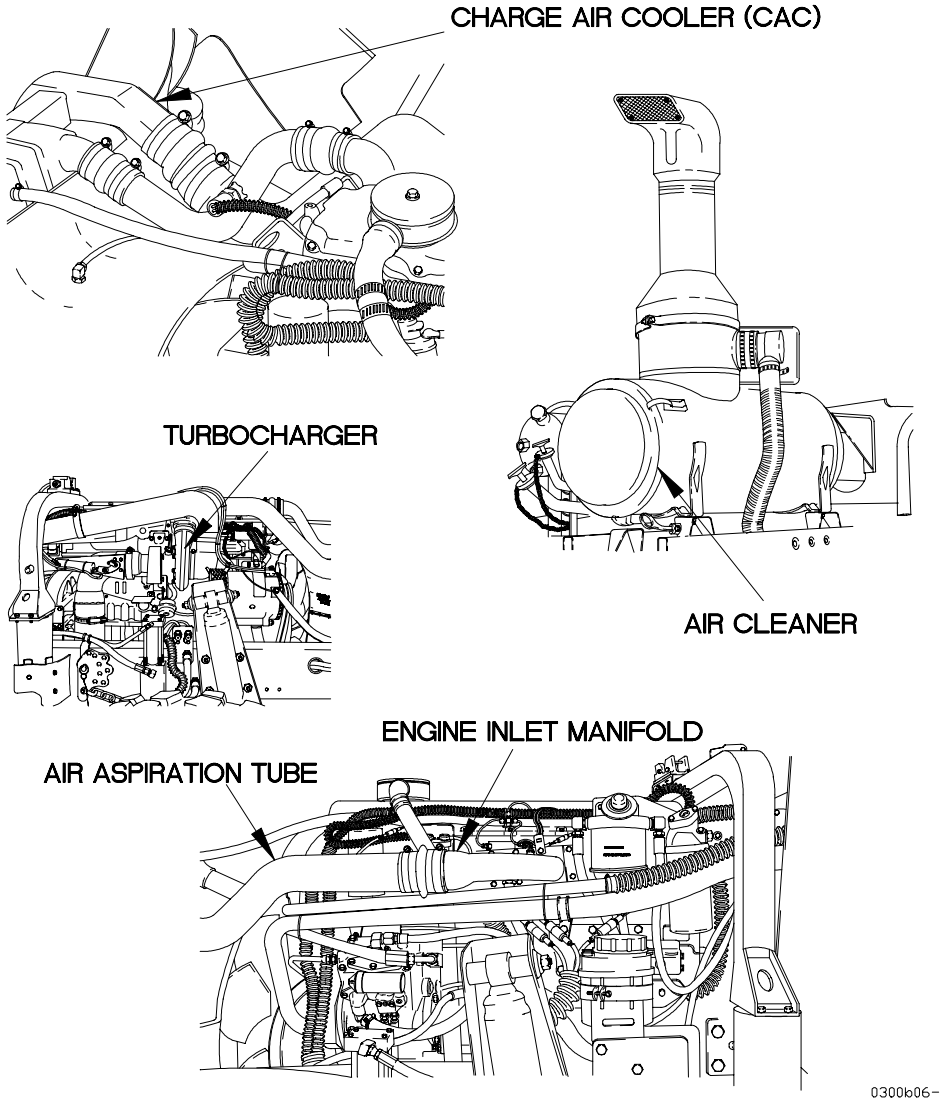


0300b05-

M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ENGINE AIR INTAKE SYSTEM

The Engine Air Intake System consists of a dry-type air cleaner, turbocharger, and a Charge Air Cooler (CAC). The turbocharger increases engine horsepower by delivering a higher volume of air to the engine. The turbocharger compresses the air and delivers it to the CAC. The air flows through the CAC which cools the air before it is delivered to the engine cylinders. The air aspiration tubes pass the cooled and compressed air to the engine inlet manifold. The compressed air/fuel mixture allows more complete burning of the fuel. The result is an increase in horsepower and lower emissions.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

FUEL SYSTEM

NOTE

M1088 and M1089 with serial number 18,550 or higher, are equipped with larger fuel tanks. The larger fuel tanks have a capacity of 74.1-gal (281 L) with 72.6 (273 L) usable gallons.

The Fuel System consists of a 56 gal (212 L) capacity fuel tank with 54 usable gal (204 L) of fuel, fuel priming pump and fuel/water separator, fuel transfer pump, secondary fuel filter, and fuel injectors.

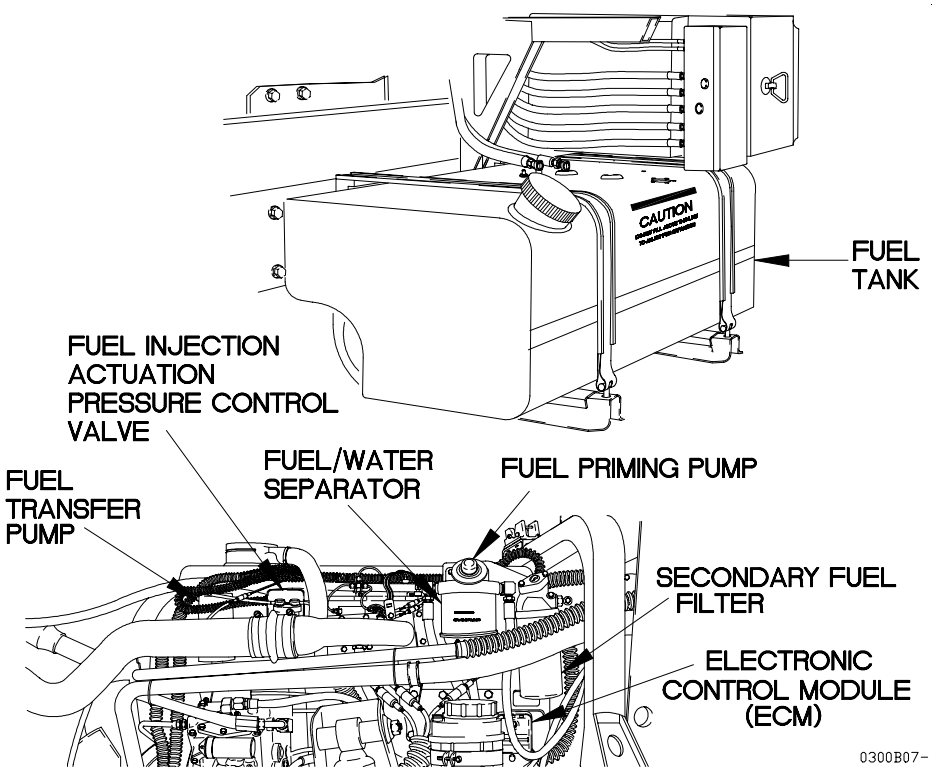
1. The fuel priming pump acts as an engine priming feature and is hand actuated. The fuel transfer pump is used to fuel the secondary fuel filter.

2. The fuel/water separator removes water and large solid particles from the fuel before it is passed to the fuel injectors.

3. The fuel injection actuation pressure control valve receives the fuel passed from the fuel transfer pump when it is energized by the Electronic Control Module (ECM).

4. The ECM adjusts the amount of fuel delivered to the engine as engine speed changes.

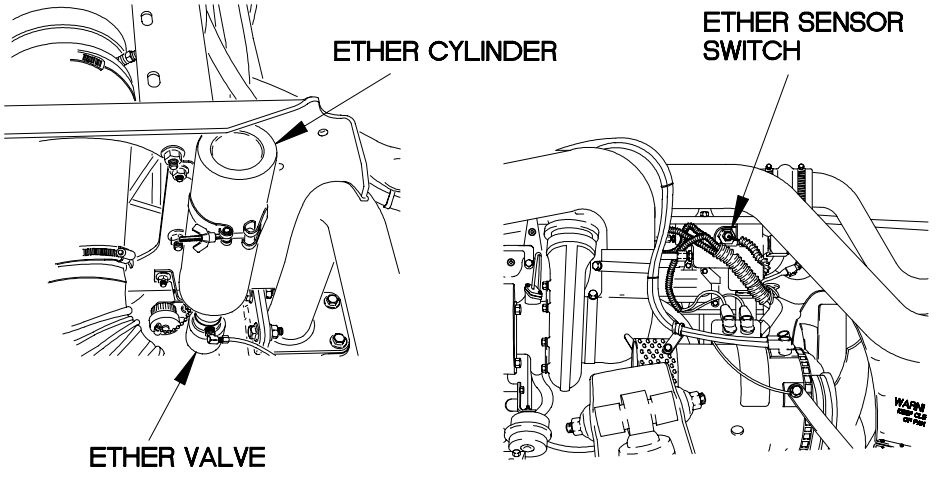
5. The secondary fuel filter removes finer particles from the fuel before it reaches the cylinder head.

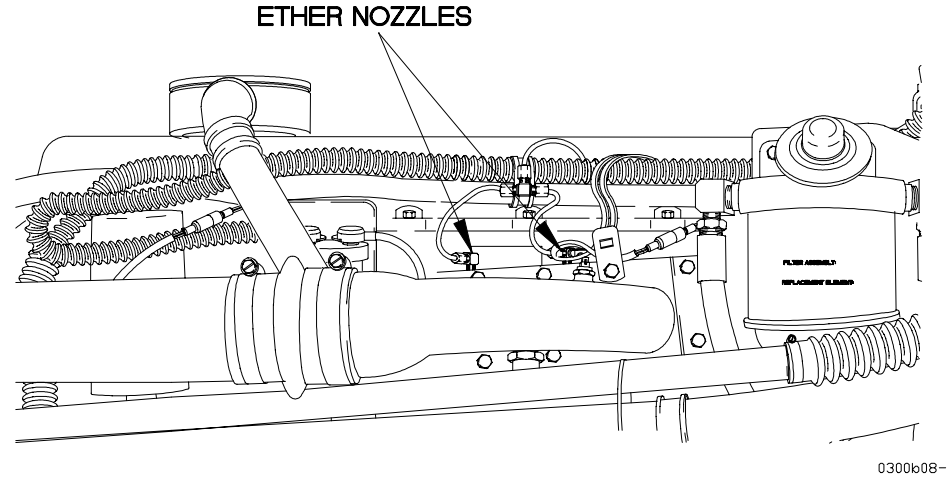

FUEL
TANK
FUEL INJECTION
ACTUATION
PRESSURE CONTROL
VALVE
FUEL/WATER
SEPARATOR
FUEL PRIMING PUMP
FUEL
TRANSFER
PUMP
SECONDARY FUEL
FILTER
ELECTRONIC
CONTROL MODULE
(ECM)
0300B07-

M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

FUEL SYSTEM - Continued

6. The vehicle is also equipped with an ether quick start system for starting the engine when the outside temperature is below 32° F (0° C). The ether quick start system is composed of an ether cylinder, ether valve, two ether nozzles and an ether sensor switch. The ether sensor switch detects the temperature of the engine coolant and disables the ether valve if the coolant temperature is above 100° F (38° C).





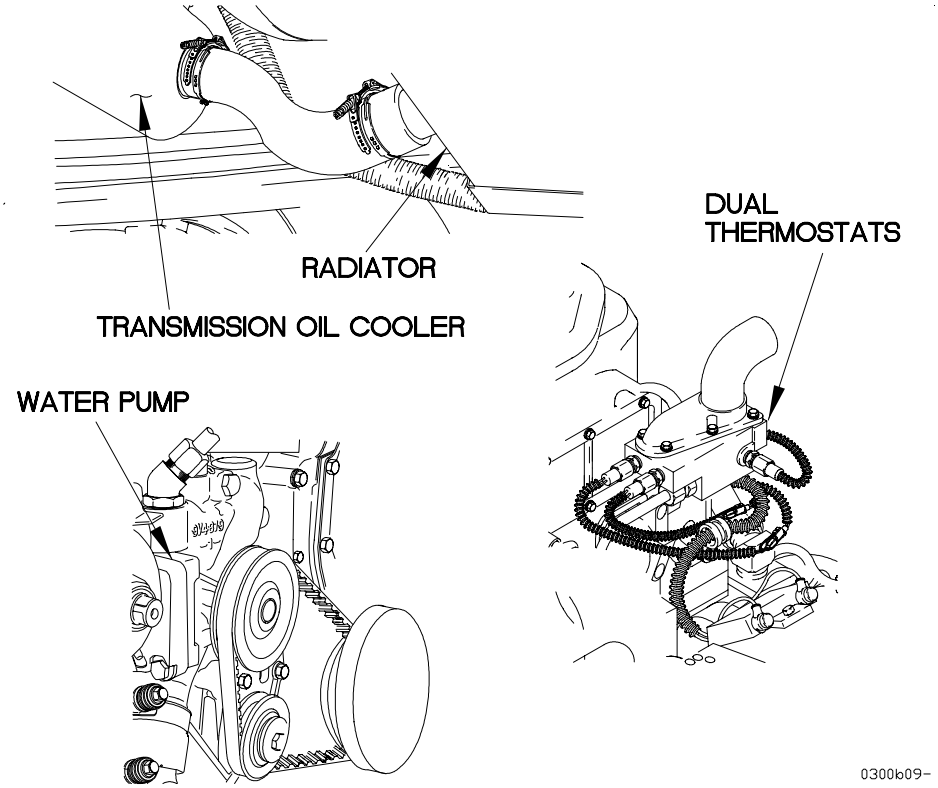
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

COOLING SYSTEM

The Cooling System protects the engine, transmission, and air compressor by providing a means of removing the heat generated during operation of the vehicle.

1. The radiator pressure cap, in combination with the ethylene glycol-based antifreeze, effectively raises the boiling point of the coolant to well above 212° F (100° C).

2. The dual thermostats help the engine warm-up quickly by remaining closed until the coolant temperature reaches approximately 199° F (93° C). When the coolant temperature reaches approximately 199° F (93° C), the thermostats open and coolant is circulated through the water jacket in the engine to maintain the correct operating temperature for the engine. Coolant is drawn from the radiator, through the transmission oil cooler, and circulated through the cooling system by the water pump. Heat is drawn from the radiator by the engine fan pulling air over the radiator cooling fins.

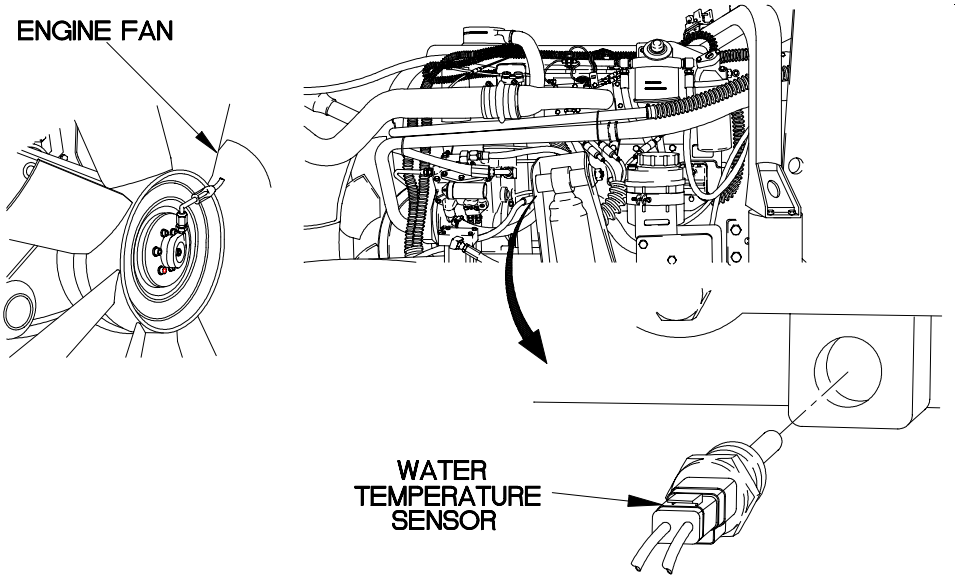


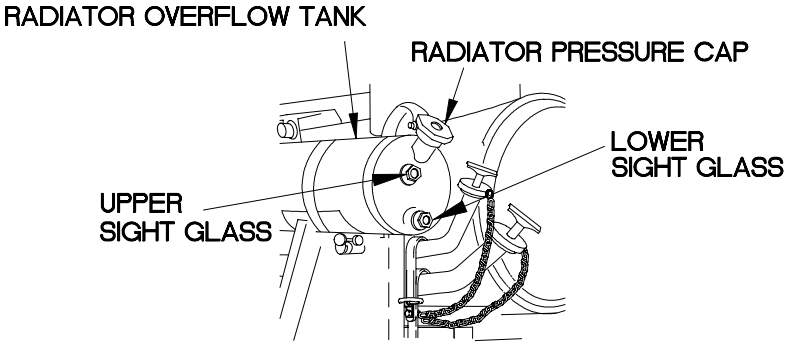
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

COOLING SYSTEM - Continued

3. A radiator overflow tank is provided to allow for expansion of the coolant. The radiator overflow tank also serves as the point where new coolant is introduced into the cooling system. The radiator overflow tank has two sight glasses. The upper sight glass indicates the coolant level to fill to with engine shut down. If coolant is not visible in the lower sight glass, do not operate the vehicle.

4. The engine fan, with pneumatic fan clutch, is activated by the water temperature sensor. Whenever this sensor detects a high engine temperature condition, air pressure is removed from the fan clutch and the engine fan is engaged.



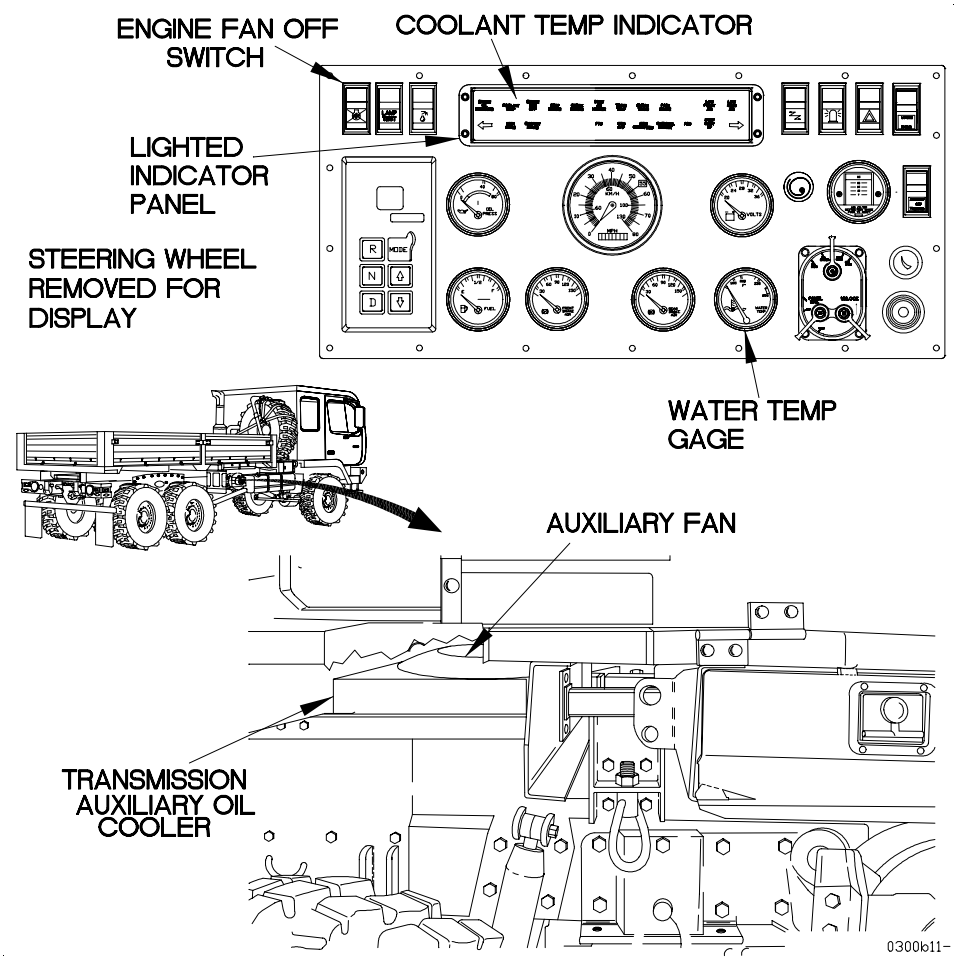


M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

COOLING SYSTEM - Continued

5. Positioning the engine fan off switch to the on position keeps the engine fan from engaging while fording water more than 30 in. (76 cm) deep.

6. Cooling capacity for the transmission is increased by the use of a transmission auxiliary oil cooler. An electric fan provides air flow through the oil cooler core. The WATER TEMP gage on the instrument panel assembly allows you to monitor coolant temperature. In addition, the COOLANT TEMP indicator on the lighted indicator display illuminates when the coolant temperature exceeds 230° F (110° C). When the personnel heater is in use, warm coolant is used to heat the air in the cab before being returned to the radiator. Otherwise, coolant is returned directly to the radiator to be cooled.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

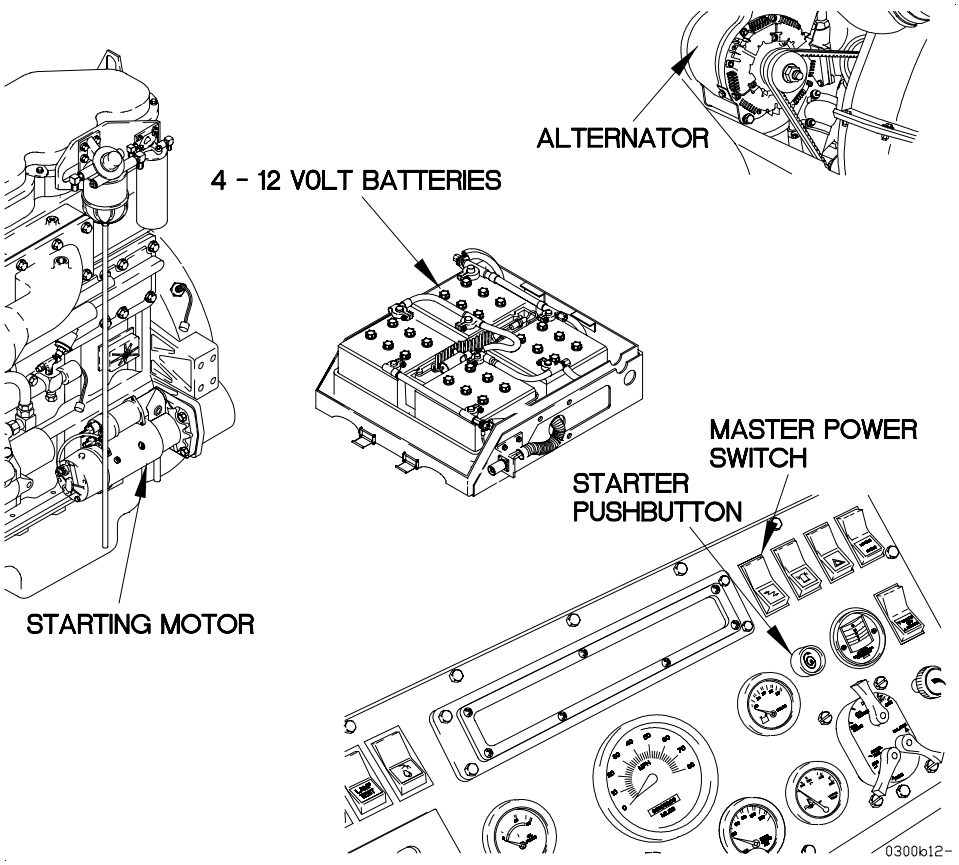
ELECTRICAL SYSTEM

The vehicle Electrical System is a combined 12/24 vdc system. Four 12-volt batteries are connected in series-parallel with the negative terminal grounded to the vehicle chassis.

1. Positioning the master power switch to on applies power to all electrical circuits needed to operate the vehicle.

2. The starting motor operates directly from the 24 vdc source through the starter pushbutton.

3. A 12/24-volt belt-driven alternator with a 100 amp capacity maintains the charge on the batteries. The 24 vdc source supplies electrical power to operate the starting motor, Central Tire Inflation System (CTIS), fuel/water separator, air dryer, ether injection system, instrument panel assembly gages, windshield wipers/washer, and the Material Handling Crane (MHC). The 12 vdc source supplies electrical power to the vehicle lights and instrument panel assembly lights.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM - Continued

4. Vehicle S/N 18,550, or higher, are equipped with a Dual-Voltage, 100 Amp Alternator. The Dual-Voltage, 100 Amp Alternator:

   - Can operate without batteries
   - Provides a trickle charge to the batteries.
   - Has on-board voltage regulator.
   - Is equipped with two on-board LED's: One for the 12 vdc output and one for the 24 vdc output.

Table 1 shows to interpret the alternator LED status.

Table 1 Alternator LED status (vehicle S/N 18,550 or higher).

LED COLOR	SYSTEM STATUS
Off	Regulator is not energized.
FLASHING	
Green	The respective system voltage (12 or 24 vdc) is normal.
Amber	The respective system voltage (12 or 24 vdc) is low.
Red	The respective system voltage (12 or 24 vdc) is high.
STEADY	
Red	The alternator is shut down and is not producing power for either (12 or 24 vdc).

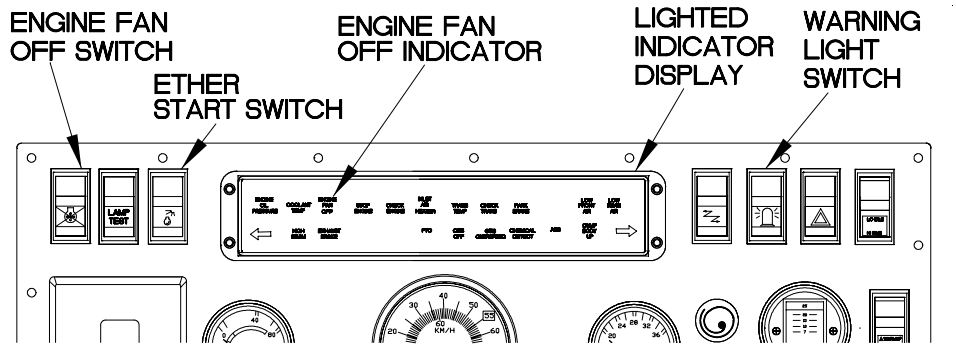
5. The engine fan off switch is used to keep the engine fan from engaging during deep water fording. The ENGINE FAN OFF indicator will illuminate on the lighted indicator display when the engine fan off switch is turned on.

6. The ether start switch is used to start the engine when the outside temperature is 32° F (0° C) or below. Pressing the ether start switch sends a measured charge of ether to the engine to make starting easier.

7. The warning light switch operates the amber warning light on the cab roof when installed.

M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM – Continued

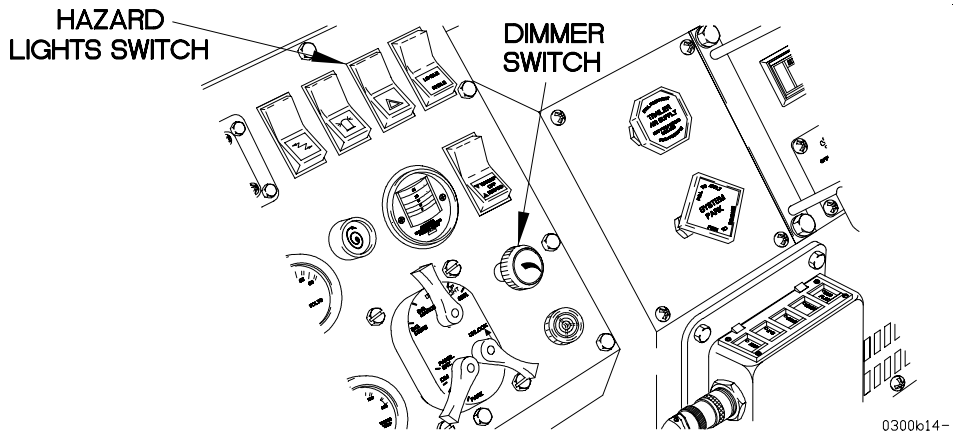


8. Positioning the hazard lights switch to on causes both left and right turn signals to flash.

9. A dimmer switch is provided so that you can adjust the brightness of the instrument panel lighting.

NOTE

The dimmer switch applies only to vehicle S/N 18,549 or lower.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

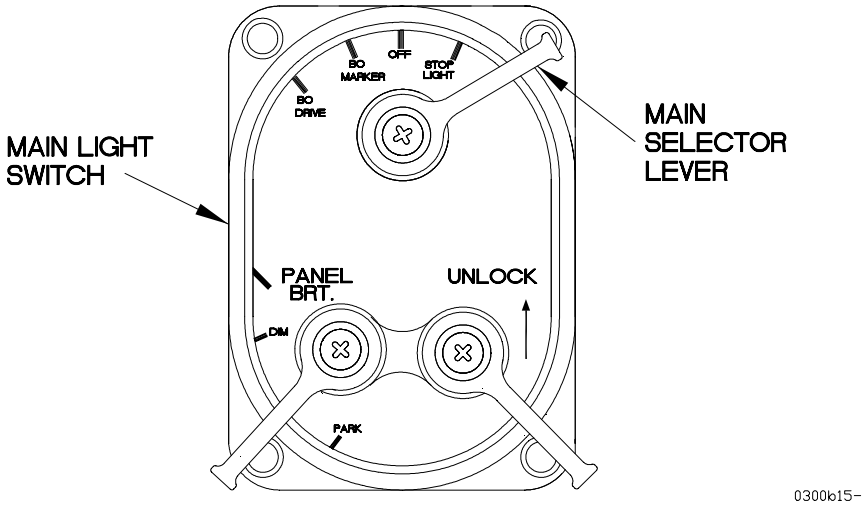
ELECTRICAL SYSTEM - Continued

NOTE

The following paragraph describes the main light switch for vehicle S/N 18,549 or lower.

10. The main light switch is the only switch that is active even when the master power switch is off.

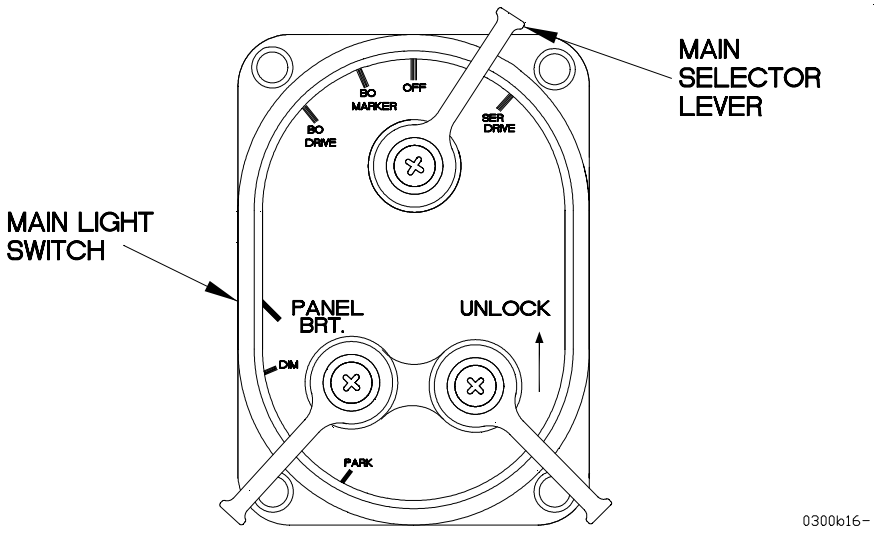
    a. Positioning the main selector lever to SER DRIVE causes the headlights, taillights, marker lights, and clearance lights to illuminate; stoplights will illuminate when the ignition switch is turned on and brake pedal is depressed.



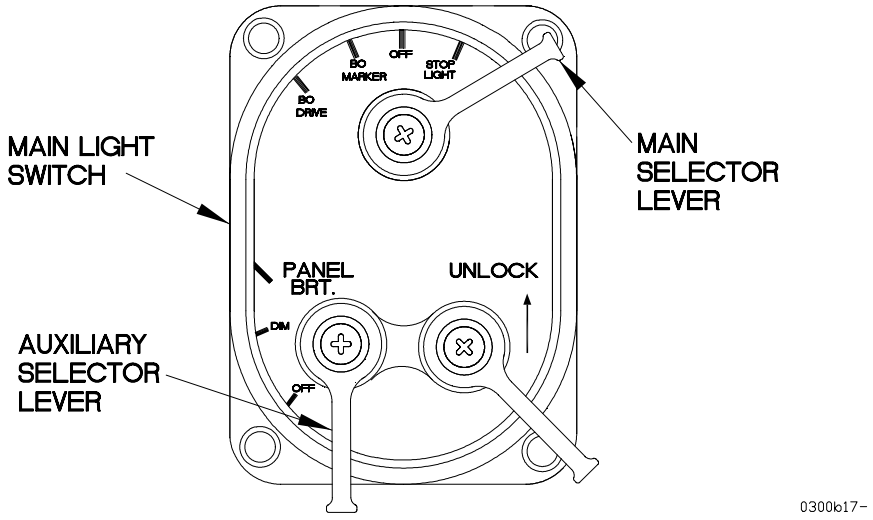
    b. Positioning the main selector lever to STOP LIGHT extinguishes all vehicle lights but allows stoplights to illuminate when brake pedal is depressed.

M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM – Continued



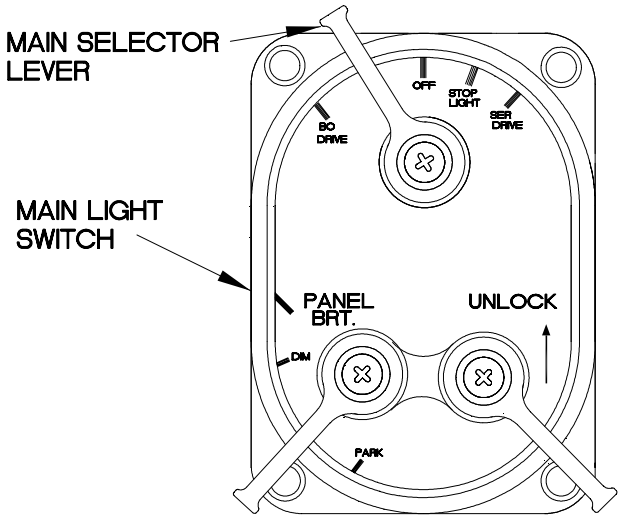
c. Positioning the auxiliary selector lever to PARK with the main selector lever in SER DRIVE causes the headlights to extinguish and the front parking lights to illuminate.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

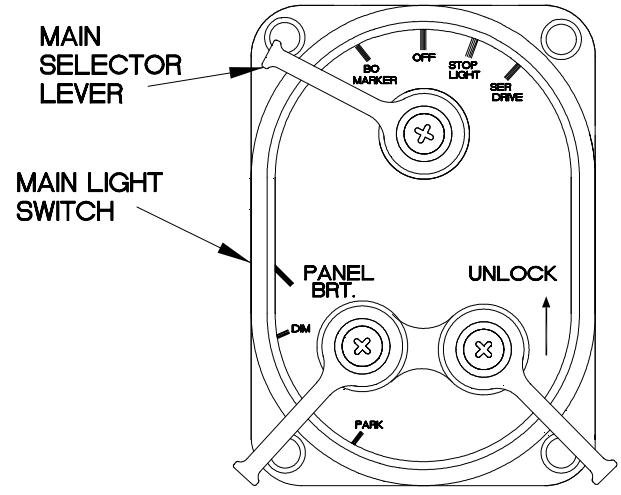
ELECTRICAL SYSTEM – Continued

d. Positioning the main selector lever to BO MARKER causes the blackout marker lights to illuminate.



0300b18-

e. Positioning the main selector lever to BO DRIVE causes the blackout drive light and blackout marker lights to illuminate.

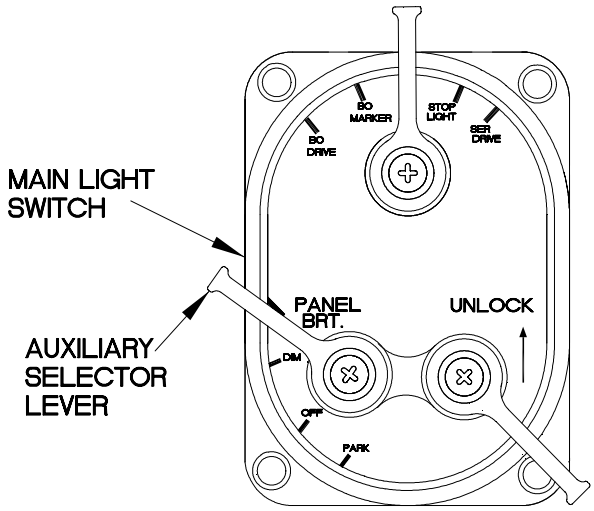


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M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM – Continued

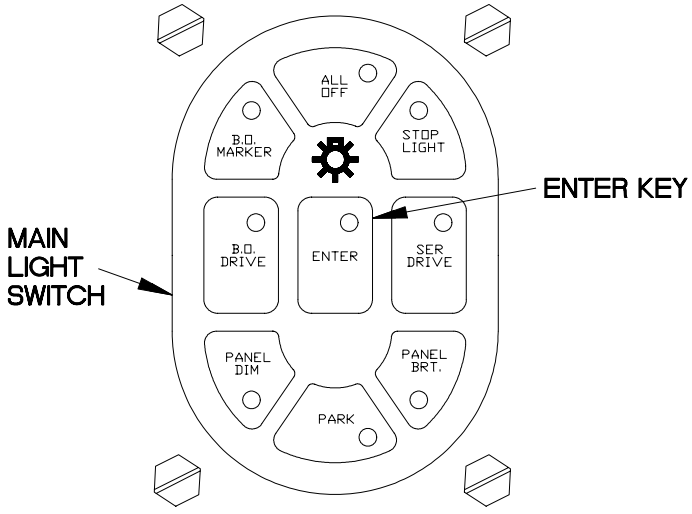
f. Instrument panel assembly lights are illuminated when the auxiliary selector lever is in PANEL BRT position.



0300b20-

11. The following paragraph describes the main light switch equipped on vehicle S/N 18,550 or higher, in addition to controlling activation of vehicle lighting systems, the main light switch provides dimming for both the 12 vdc and 24 vdc panel lighting. The main light switch also provides variable backlighting to indicate switch position.

a. Pressing the ENTER key after a selection has been made enters the selected function. If ENTER is not pressed within 5 seconds after the selection has been made, the switch will reset to the previous mode to prevent accidental switching.

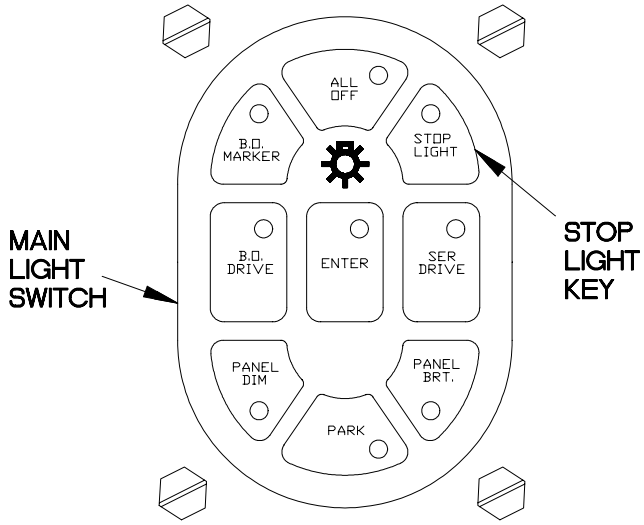


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M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

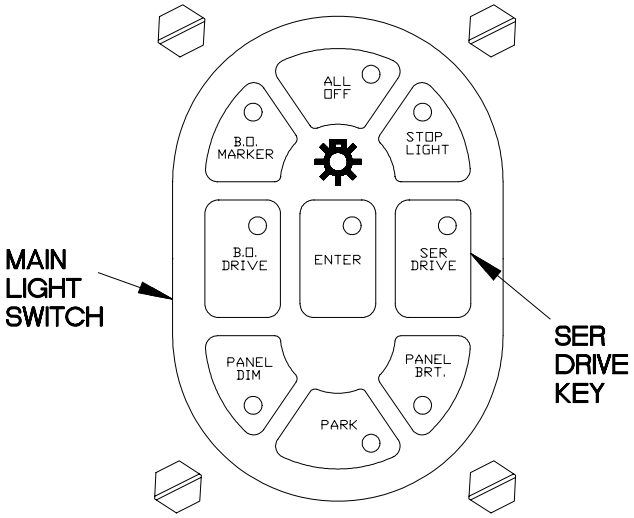
ELECTRICAL SYSTEM – Continued

b. When STOP LIGHT key is selected, the stop lights operate when the brake pedal is pressed.



0300a32

c. When the SER DRIVE key is selected, all service lights operate.

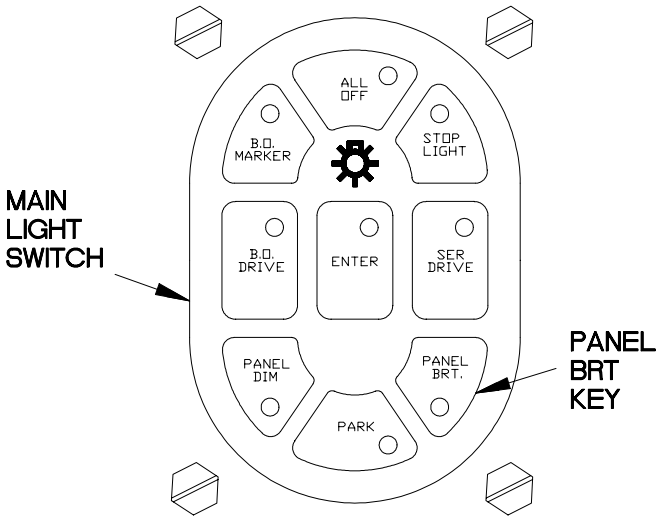


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M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

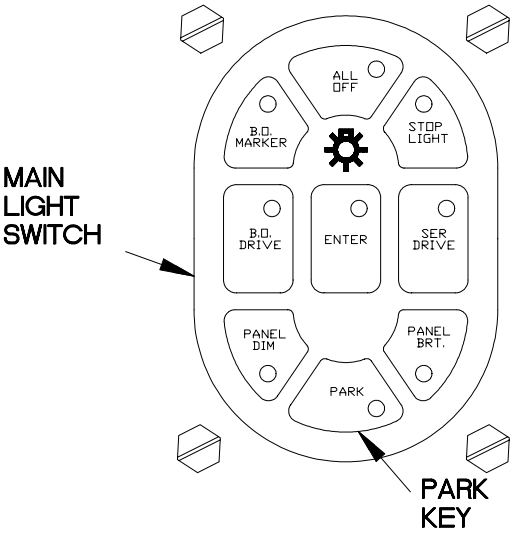
ELECTRICAL SYSTEM – Continued

d. When the PANEL BRT key is selected, all dashboard illuminators are illuminated.



0300a34

e. When the PARK key is selected, parking brake lights will illuminate.

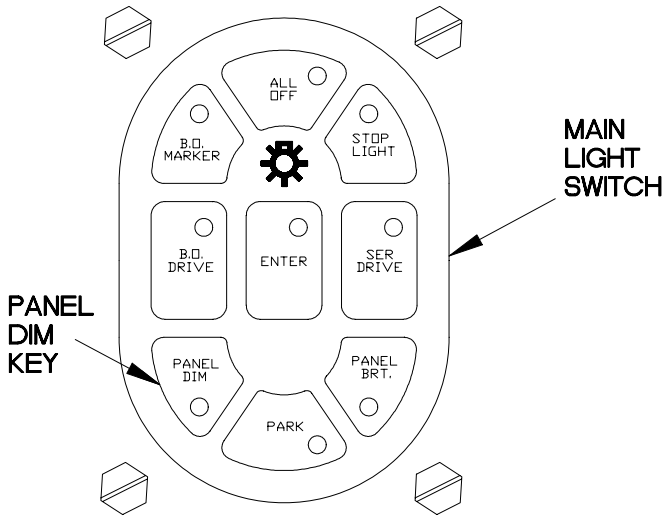


0300a35

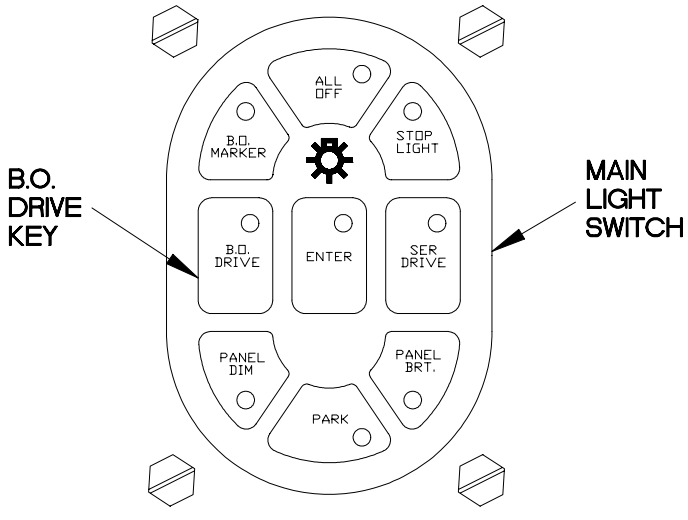
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM – Continued

f. When the PANEL DIM key is selected, all dashboard illumination is turned off.



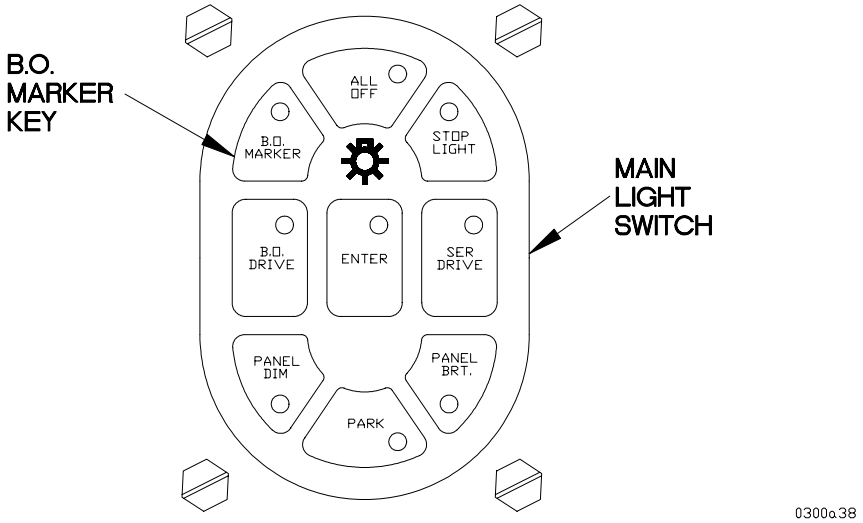
g. When the B.O. DRIVE key is selected, all blackout lights will operate.



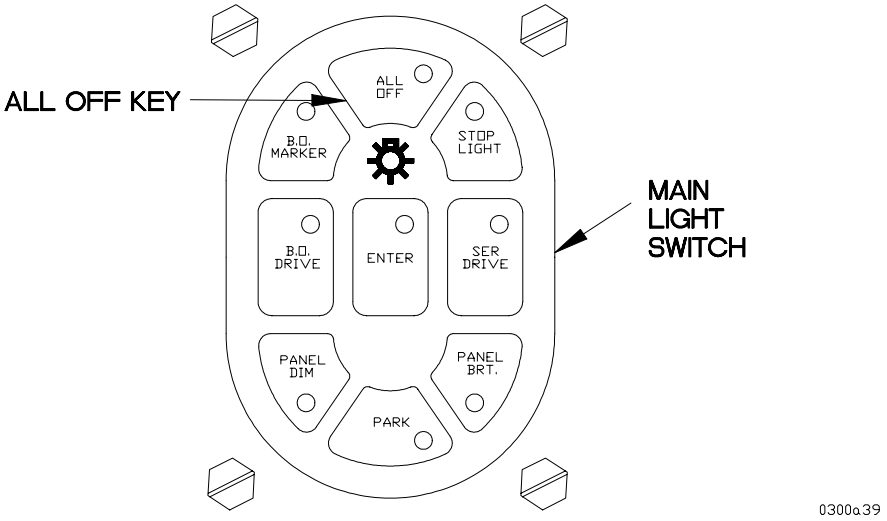
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM – Continued

h. When the B.O. MARKER key is selected, blackout marker lights illumiante.



i. When the ALL OFF key is selected all main light switch functions are turned off.



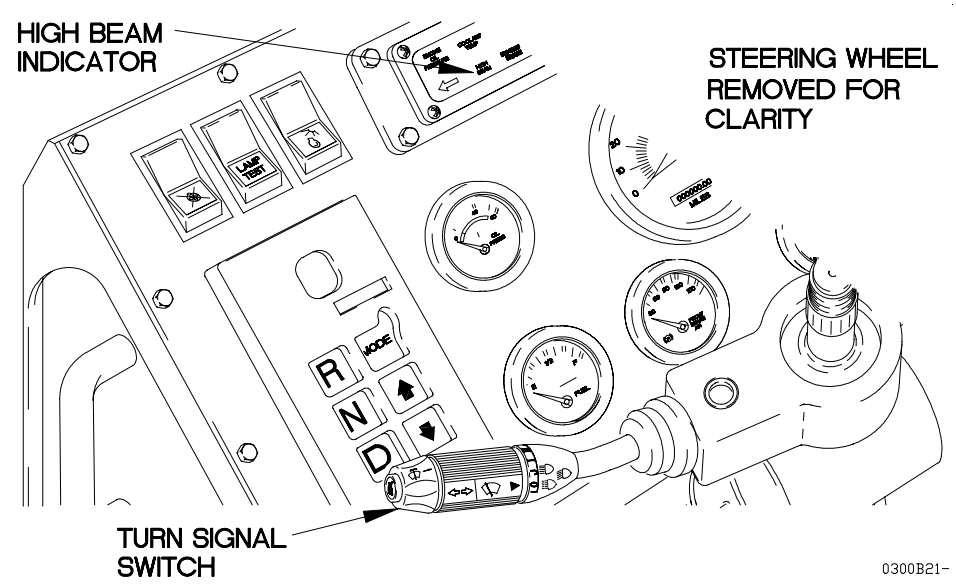
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM – Continued

12. Headlight high beams are controlled from the turn signal switch.

    a. Pulling the turn signal switch towards you will switch the headlights from low beam to high beam. The HIGH BEAM indicator will illuminate when high beams are on.

    b. Pulling the turn signal switch again will switch the headlights from high beam to low beam.



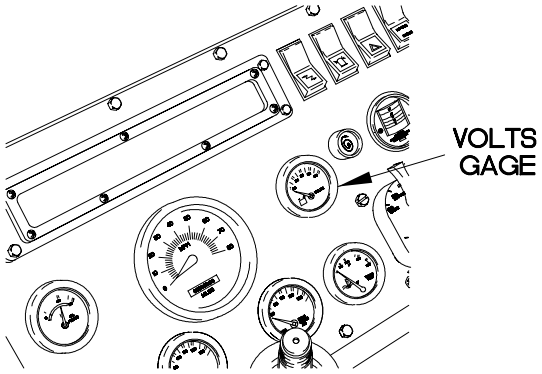
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM - Continued

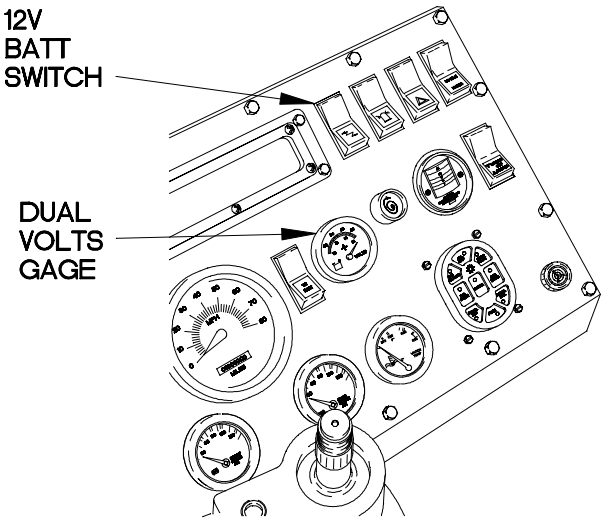
NOTE

The following step applies to vehicle S/N 18,549 or lower.

13. The VOLTS gage shows the voltage output for the 24 vdc system.



14. Vehicle S/N 18,550 or higher are equipped with a momentary 12V BATT switch and a dual-voltage VOLTS gage. The normal indication on the VOLTS GAGE is 24 vdc. Depressing the 12V BATT switch changes the VOLTS indication to 12 vdc.

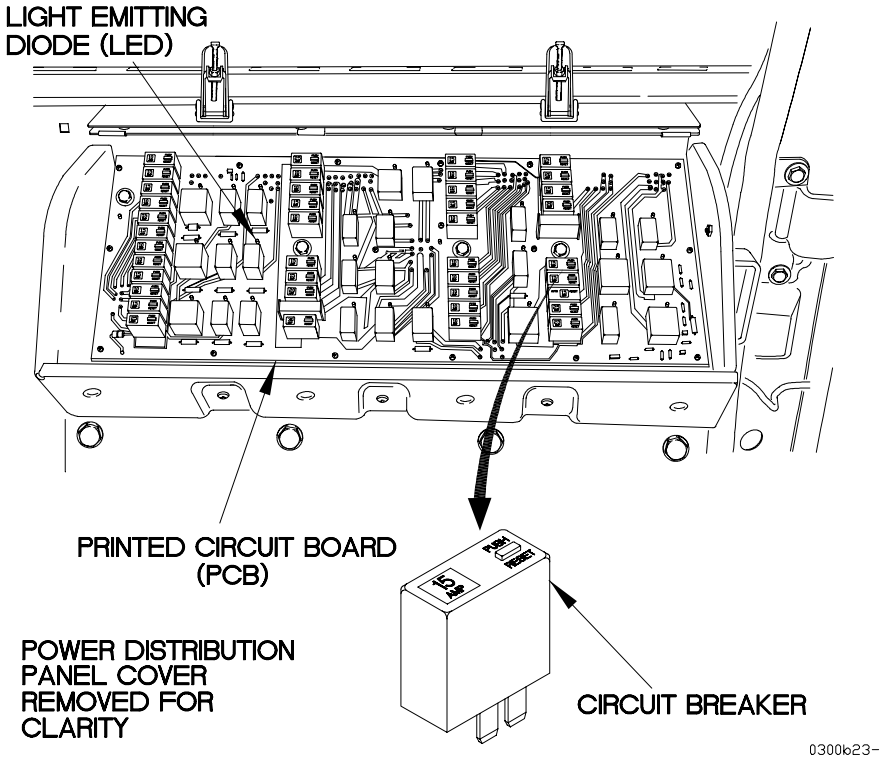


M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

ELECTRICAL SYSTEM - Continued

15. The Printed Circuit Board (PCB) is equipped with LEDs. If the LEDs illuminate, the circuit is functioning.

16. All electrical circuits are protected against overloads by circuit breakers.



17. Wiring harnesses and electrical cable assemblies carry electrical current to operate equipment and accessories. Most electrical equipment and accessories are grounded directly to the vehicle chassis.

BRAKE SYSTEM

The vehicle is equipped with a brake system that complies with the Federal Motor Vehicle Safety Standard (FMVSS) 121. The brake system is made up of an air compressor, air dryer, primary and secondary air tanks, and several valves to control the application and release of the brakes. An Anti-lock Braking System (ABS) is also provided. The ABS monitors wheel speed at all times and prevents brake lock situations. An exhaust brake is also installed to add driveline braking to the FMTV. The result of this feature is quicker safer stops with less brake lining wear than vehicles that do not have this system installed.

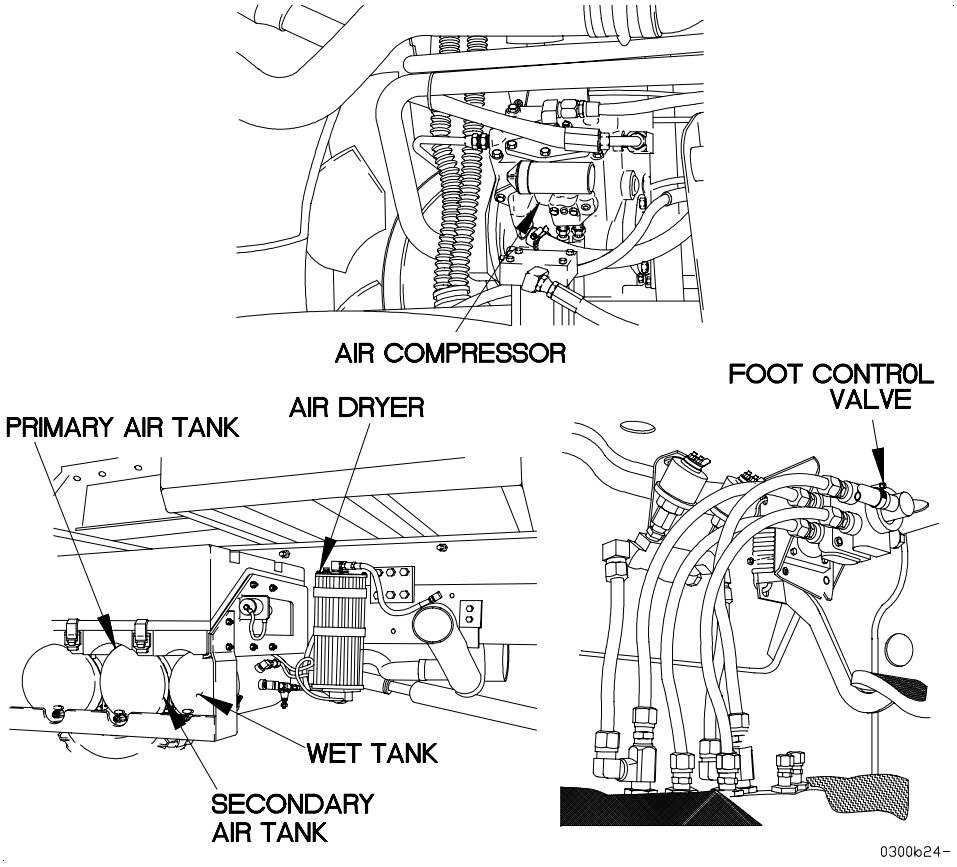
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

BRAKE SYSTEM - Continued

1. The air compressor supplies approximately 120 psi (827 kPa) to the air dryer.

2. The air dryer contains a heating element and a desiccant cartridge to remove moisture from the air before it is delivered to the primary air tank and secondary air tank.

3. The foot control valve receives pressurized air from both the primary and secondary air tanks. The foot control valve is a two circuit design, with one set of ports directing air to the front brakes from the secondary air tank and a second set of ports directing air to the rear brakes from the primary air tank. The plumbing between the primary and secondary air tanks is designed to allow controlled braking in the event of a failure in the primary (rear brakes) or secondary (front brakes) brake circuit. When air pressure in the wet tank falls below a preset limit, pressurized air, normally used for the CTIS, fan solenoid and differential lock solenoid, is redirected to the primary brake circuit.



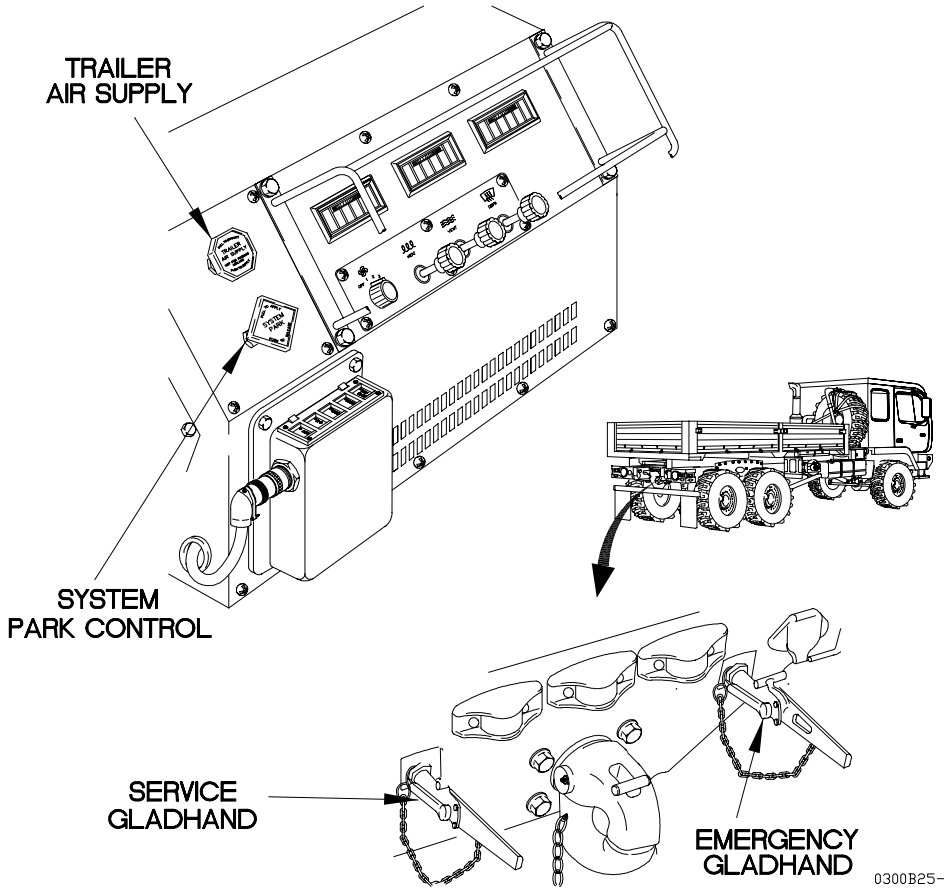
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

BRAKE SYSTEM - Continued

4. The SYSTEM PARK control vents air pressure from the primary brake circuit and applies the rear spring brakes. It also supplies air to the trailer supply valve.

5. The TRAILER AIR SUPPLY control supplies brake air pressure to a towed vehicle or trailer.

6. SERVICE gladhand and EMERGENCY gladhand provide the necessary connections to supply a towed vehicle or trailer with brake air pressure.



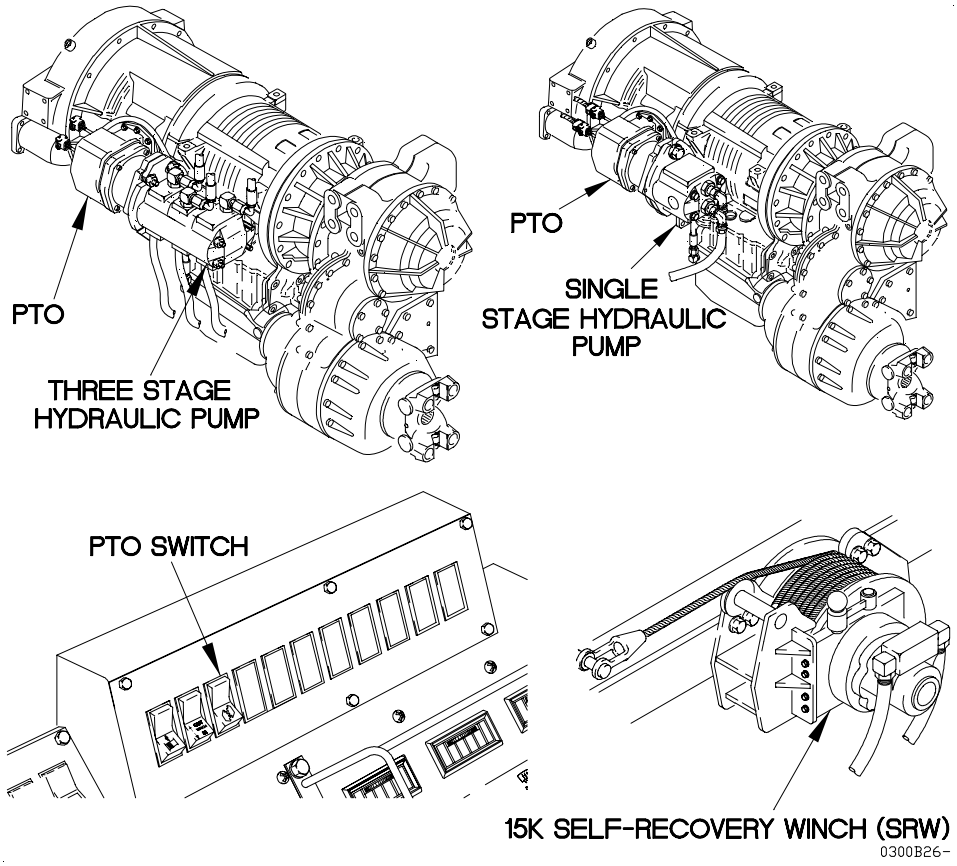
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

15K SELF-RECOVERY WINCH (SRW)

15K SRW. When specified, any vehicle except models M1084A1 and M1086A1 may be equipped with a 15K SRW mounted on the right hand frame rail. The 15K SRW is rated for 15,500 lbs (68,944 N) pull when the winch drum has one full layer of cable. Pulling capacity is reduced with each layer of cable that is added to the winch drum. One full layer of cable is the minimum amount of cable that may be left on the drum when using the 15K SRW. Pulling capacity with seven full layers of cable on the winch drum is 9,090 lbs (40,432 N). For recovery operations, the 15K SRW cable may be routed to the front on all vehicles so equipped. The 15K SRW cable may be routed to the rear of the vehicle on models M1083A1, M1085A1, And M1090A1.

1. Hydraulic pressure to operate the 15K SRW is supplied by a three stage hydraulic pump on model M1089A1 and a single stage hydraulic pump for all other models. The hydraulic pump is mounted on the back of the PTO.

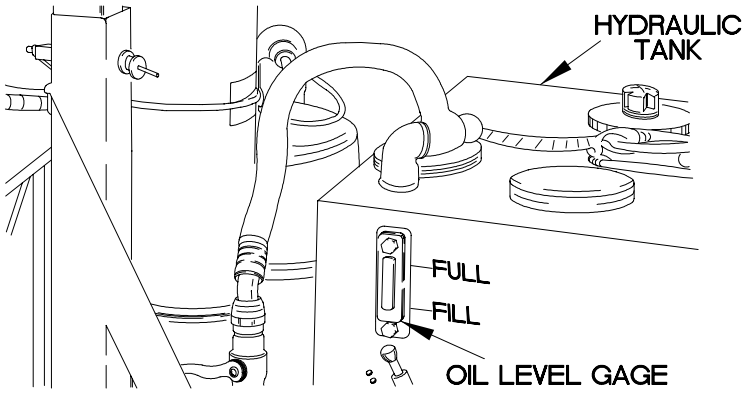
2. Placing the PTO switch in the on position causes the PTO drive gear to engage with the transmission. When the PTO is engaged, it drives the hydraulic pump.



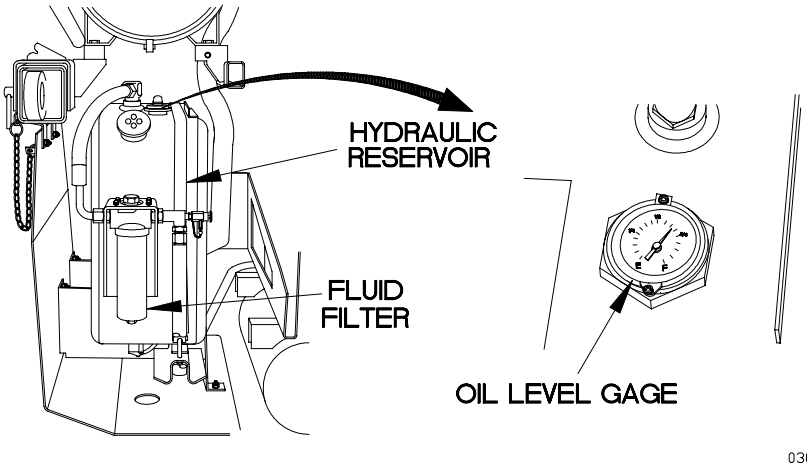
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

15K SELF-RECOVERY WINCH (SRW) - Continued

Hydraulic Tank (M1089A1). The M1089A1 hydraulic tank is mounted on the vehicle bed, in the middle of the vehicle. The hydraulic tank holds 74 gal (280 L) of oil and is equipped with an hydraulic oil level gage. An internal fuel filter is installed in the hydraulic tank to remove contaminants.



Hydraulic Reservoir (all models except M1089A1). The hydraulic reservoir is mounted on the left hand frame rail and contains the oil needed to operate the 15K SRW. The hydraulic reservoir holds 27 gal (102.2 L) of oil and is equipped with an hydraulic oil level gage. A fluid filter is also mounted on the hydraulic reservoir to remove contaminants.

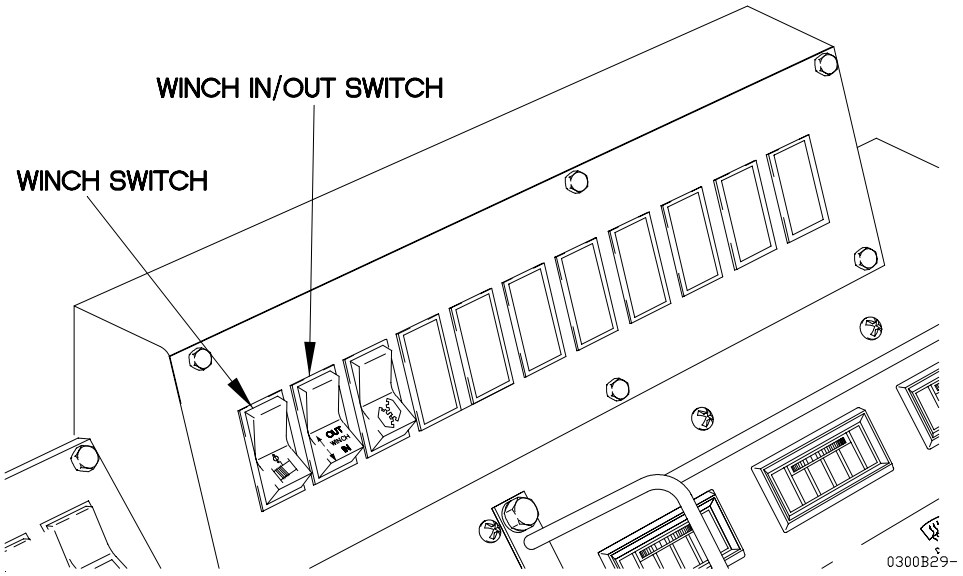


M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

15K SELF-RECOVERY WINCH (SRW) - Continued

1. When the winch switch is turned on, hydraulic power is supplied to the 15K SRW and the transmission is locked in Neutral.

2. The 15K SRW cable can be payed out or reeled in by pressing the WINCH IN/OUT switch.



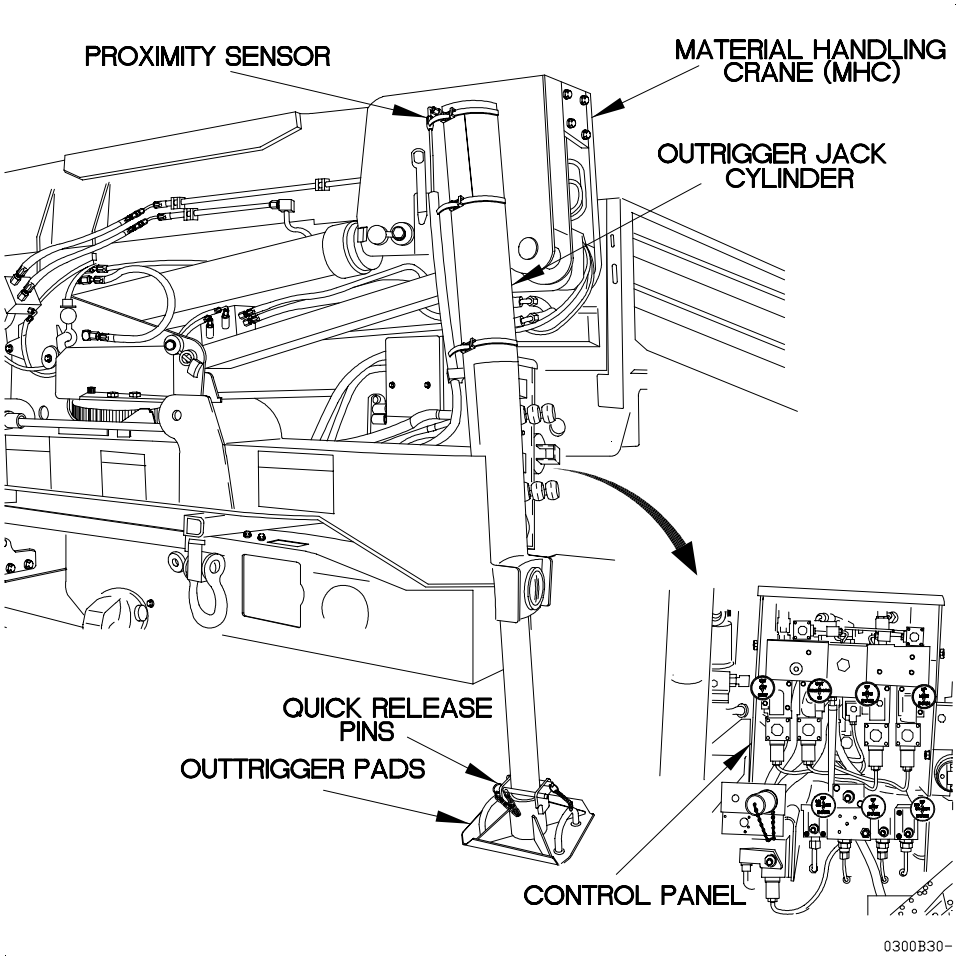
M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC)

M1084A1/M1086A1 Material Handling Crane (MHC). The MHC is mounted on the frame at the rear of the vehicle. The MHC has a lifting capacity of 5,000 lbs (2,270 kgs). The MHC contains an overload shutdown system which monitors boom angle, boom extension, and load weight. If the overload shutdown system senses an overload condition, hoist up, boom telescope out, and boom up functions become locked out.

M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) - Continued

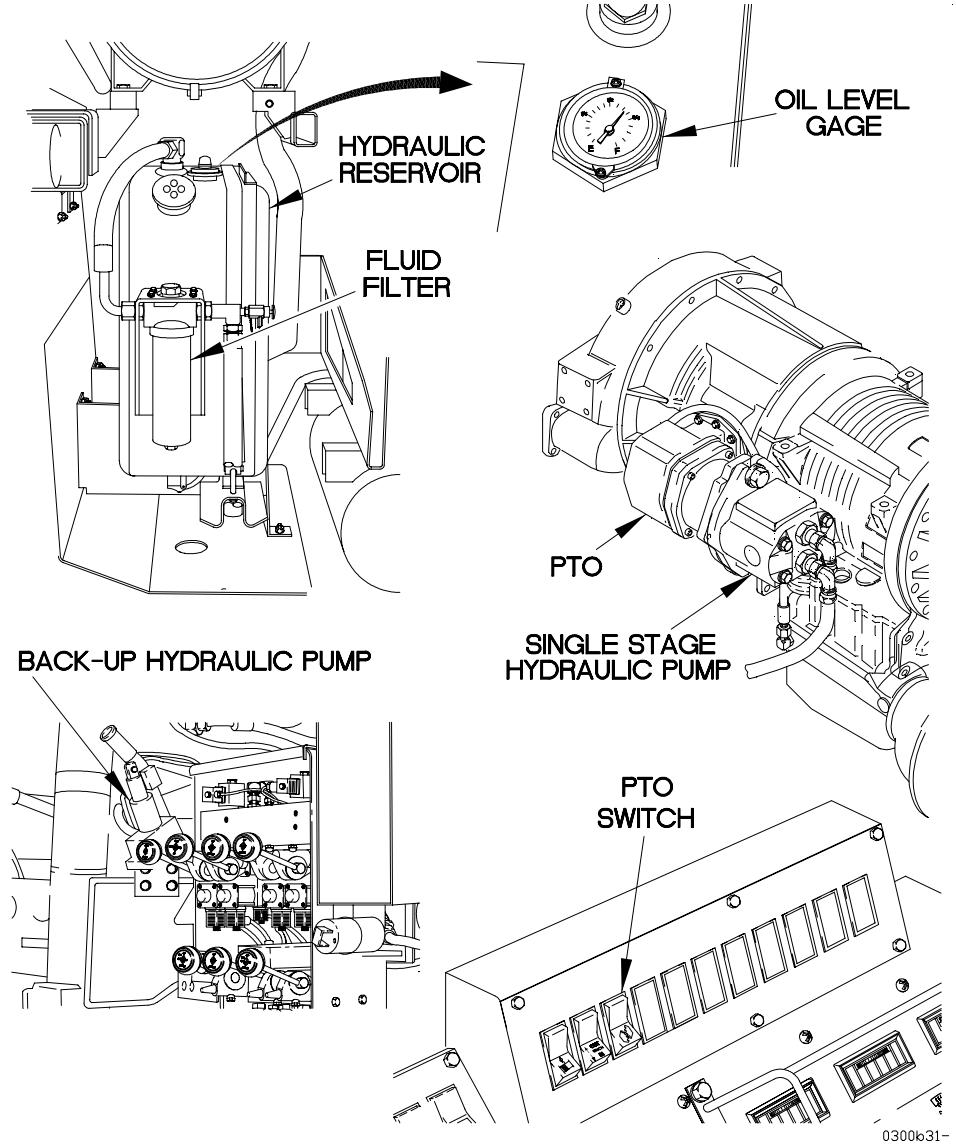
The vehicle is stabilized during MHC operation by outrigger jack cylinders. Proximity sensors are attached to the outrigger jack cylinders to prevent operation of the MHC unless the Outrigger jack cylinders are extended to the ground. Outrigger pads are provided and are attached to the bottom of the outrigger jack cylinders by quick release pins. All MHC functions are controlled by levers at the control panel.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) - Continued

Hydraulic System. The hydraulic reservoir contains the oil needed to operate the MHC. The hydraulic reservoir holds 27 gal (102 L) of oil and is equipped with an hydraulic oil level gage. A fluid filter is mounted on the reservoir to remove contaminants. Hydraulic pressure is supplied by a single stage hydraulic pump mounted on the back of the PTO. Placing the PTO switch in the on position causes the PTO drive gear to engage with the transmission and drive the single stage hydraulic pump. A manually operated back-up hydraulic pump allows you to lower any load to the ground and stow the MHC if the single stage hydraulic pump fails.

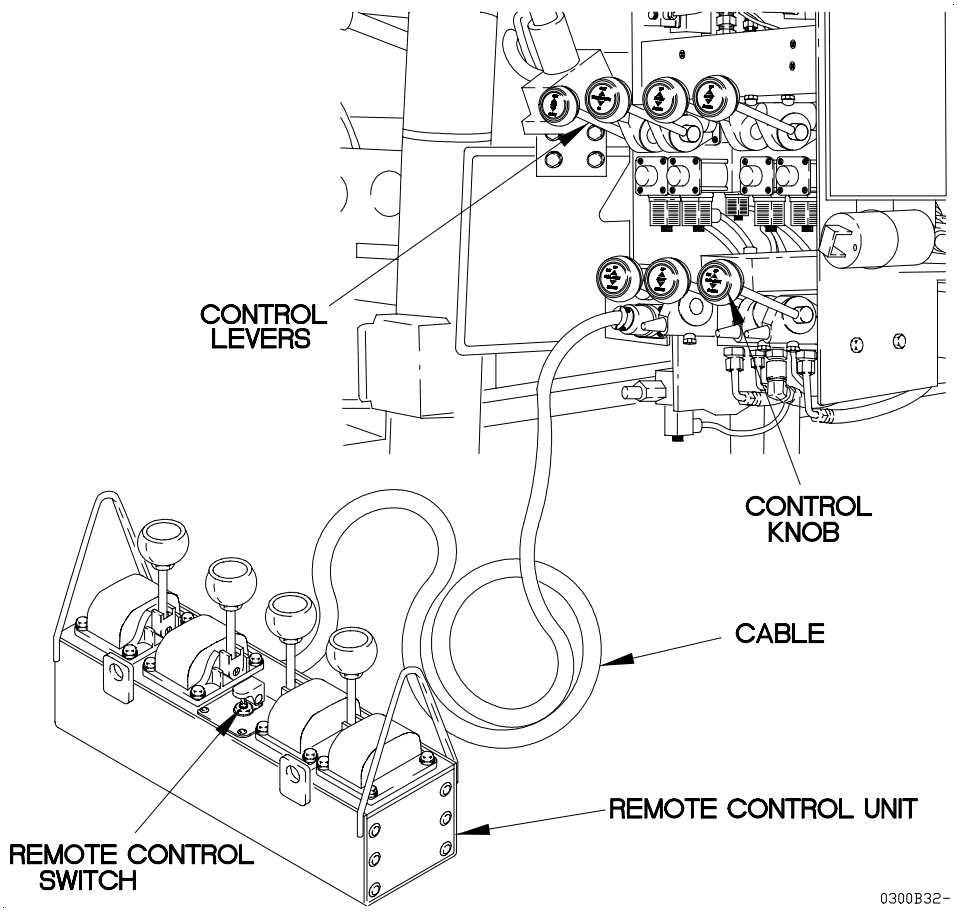


M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) - Continued

Control Levers and Remote Control. All control levers are spring-loaded and will return to the center position when released. Moving the lever slightly from the center position results in a slow movement of the function which that valve controls. Moving the lever further from the center position results in a faster movement. The function of each control lever is identified on the end of the control knob.

The MHC REMOTE CONTROL UNIT allows you to operate the MHC from either side of the vehicle. This means that you can keep the load in sight at all times. A remote control switch switches power to the REMOTE CONTROL UNIT. The REMOTE CONTROL UNIT is attached to the MHC by a cable. The MHC responds to the REMOTE CONTROL UNIT levers the same as it does to the levers at the control panel. The levers on the REMOTE CONTROL UNIT are also spring-loaded and will return to the center position when released. The REMOTE CONTROL UNIT has levers to operate hoist up/down, boom up/down, boom telescope in/out, and swing clockwise/counterclockwise.

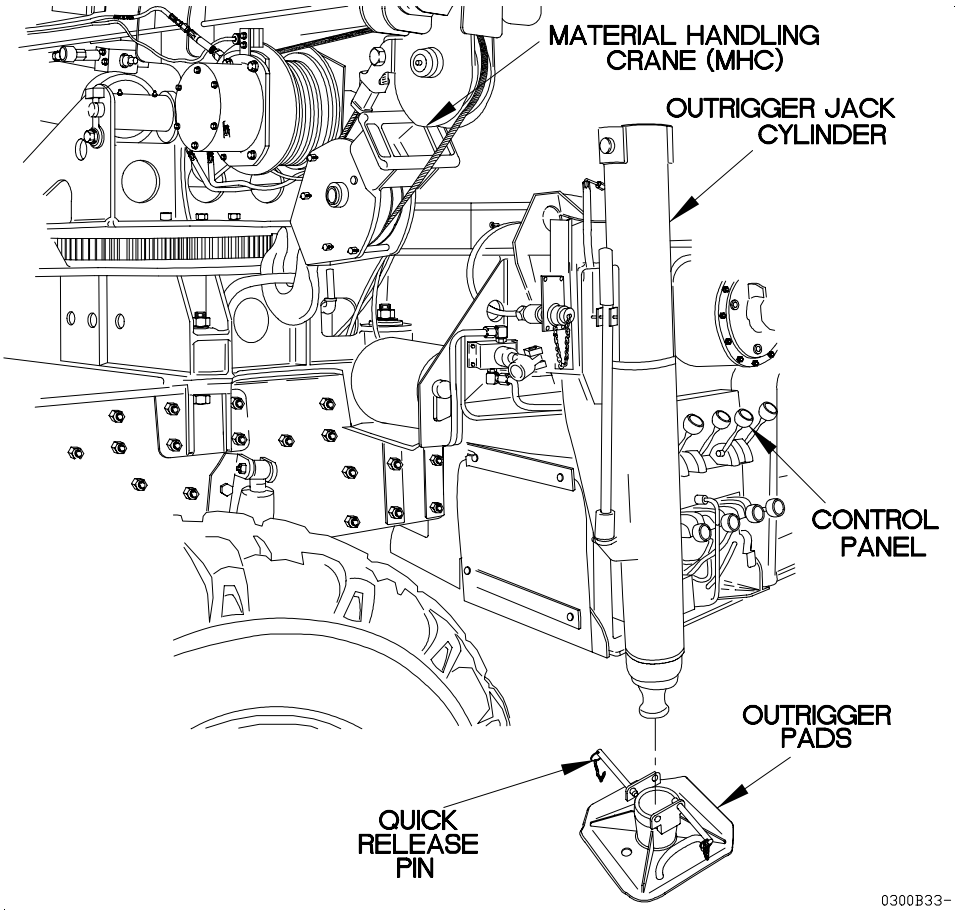


M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

M1089A1 MATERIAL HANDLING CRANE (MHC), 30K WINCHES, AND UNDERLIFT ASSEMBLY

M1089A1 Material Handling Crane (MHC). The MHC is mounted on the frame near the middle of the vehicle. The MHC has a lifting capacity of 10,000 lbs (4,540 kgs). The MHC contains an overload shutdown system which monitors boom angle, boom extension, and load weight. If the overload shutdown system senses an overload condition; hoist up, boom telescope out, and boom up functions become locked out.

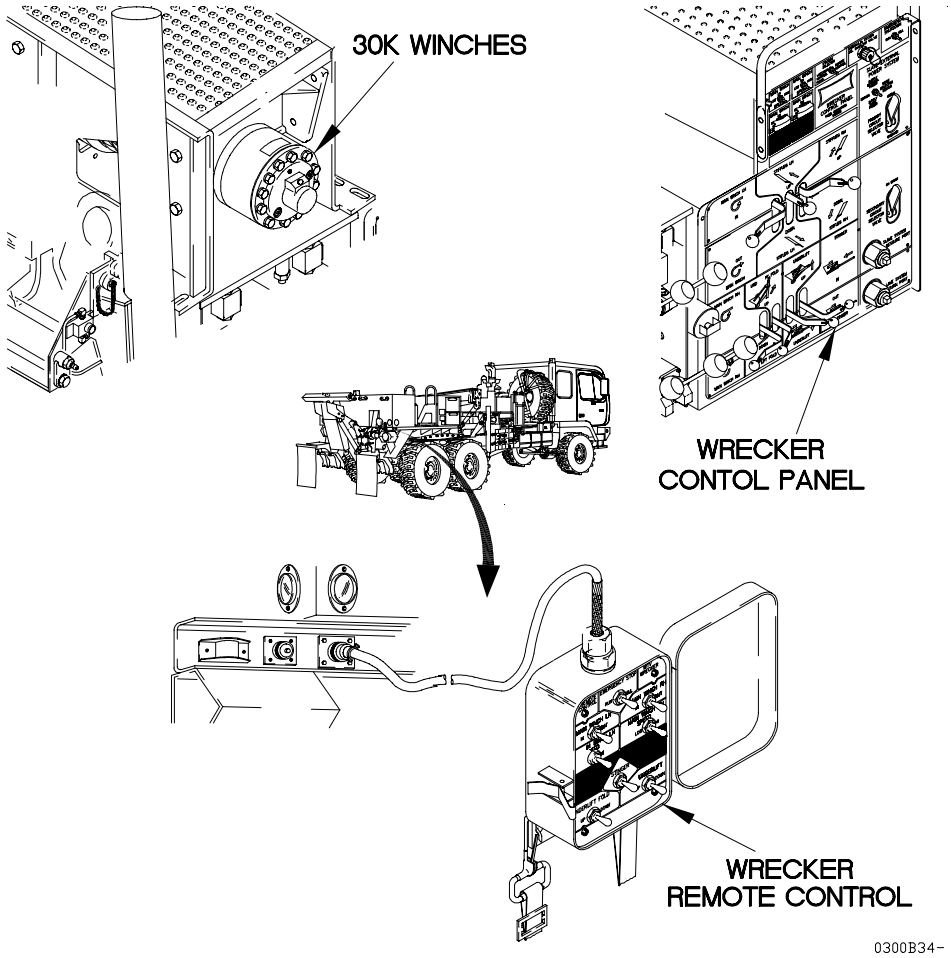
1. The vehicle is stabilized during MHC operation by outrigger jack cylinders attached to outrigger beams. Outrigger pads are provided and are attached to the bottom of the outrigger jack cylinders by quick release pins. All MHC functions are controlled by levers at the control panel.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

M1089A1 MATERIAL HANDLING CRANE (MHC), 30K WINCHES, AND UNDERLIFT ASSEMBLY - Continued

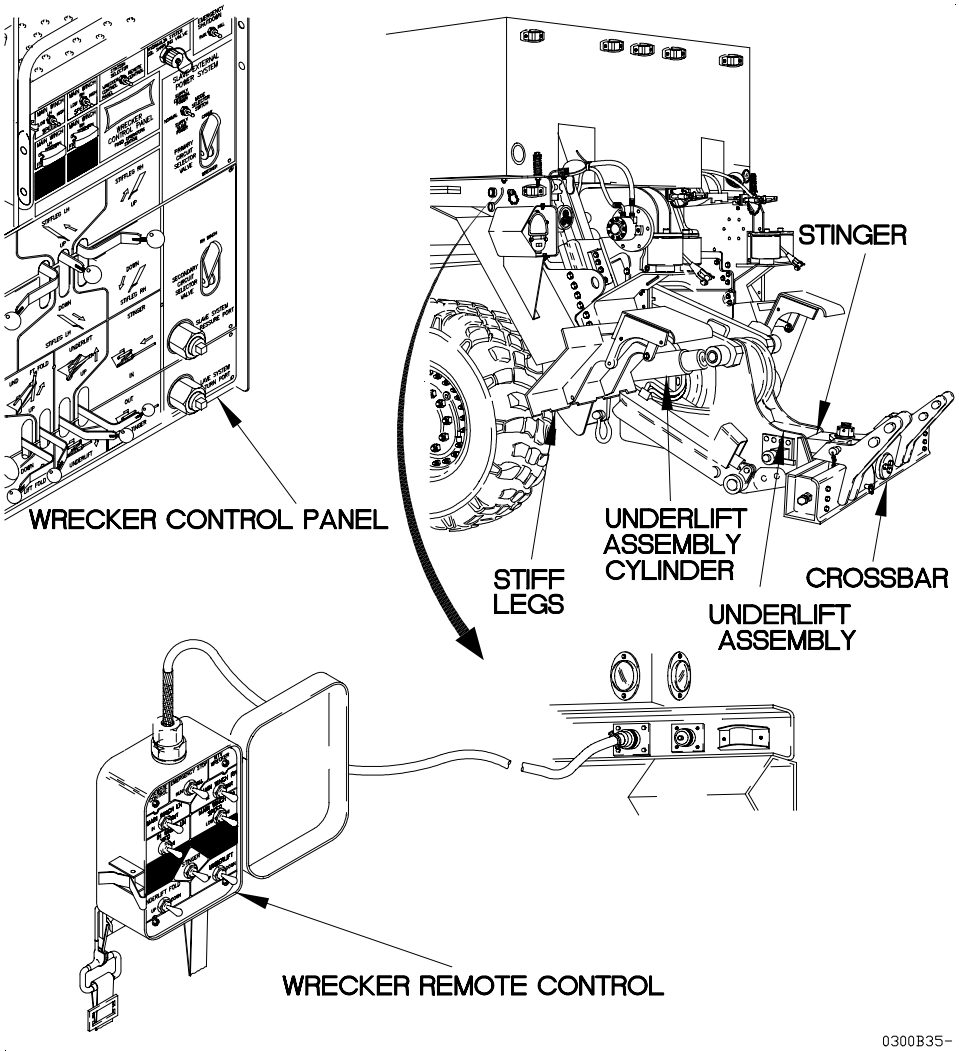
30K Winches. The left and right 30K winches are located ahead of the MHC, and are designed to be used for recovering disabled or stranded vehicles from the rear of the M1089A1. Pulling capacity with one full layer of cable on the drum is 30,000 lbs (133,440 N). Pulling capacity is reduced with each layer of cable that is added to the drum. One full layer of cable is the minimum amount of cable that may be left on the drum when using the 30K winches. The 30K winches are rated for a 15,000 lbs (66,720 N) pull with a full drum of cable. The 30K winches can be controlled from the WRECKER CONTROL PANEL or from the WRECKER REMOTE CONTROL which is connected to a remote control connector by a cable. The 30K winches respond to the WRECKER REMOTE CONTROL switches the same as they do to the levers at the WRECKER CONTROL PANEL.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

M1089A1 MATERIAL HANDLING CRANE (MHC), 30K WINCHES, AND UNDERLIFT ASSEMBLY - Continued

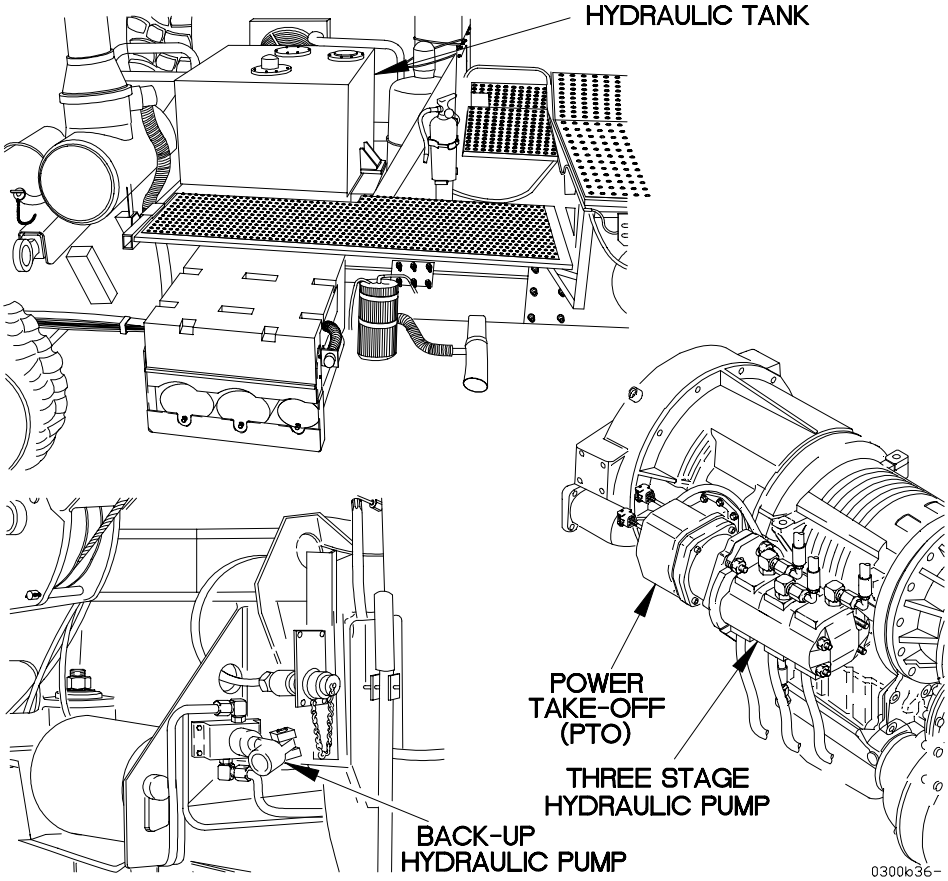
Underlift Assembly. The hydraulic underlift assembly is attached to the rear of the vehicle and is used for towing a disabled vehicle. Stifflegs are used to keep the M1089A1 stable during recovery operations. The stinger can be extended to position the crossbar beneath the vehicle being recovered. The crossbar is equipped with adapters which allow it to tow a wide range of vehicles. Two underlift assembly cylinders control the height of the crossbar to allow the Operator to lift and tow a disabled vehicle. Underlift assembly functions are controlled from the WRECKER CONTROL PANEL or from the WRECKER REMOTE CONTROL.



M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

M1089A1 MATERIAL HANDLING CRANE (MHC), 30K WINCHES, AND UNDERLIFT ASSEMBLY - Continued

Hydraulic System. All of the hydraulics on the M1089A1 are connected to a common power source and supply system. The M1089A1 is provided with a hydraulic tank with a capacity of 74 gallons (280 L) of fluid. Hydraulic pressure for the MHC is supplied by a three stage hydraulic pump attached to the rear of the PTO. The hydraulic cylinders on the MHC contain valves which stop the movement of the cylinder in case of sudden hydraulic pressure loss. A manually operated back-up hydraulic pump allows you to lower any load to the ground and stow the MHC if the three stage hydraulic pump fails.



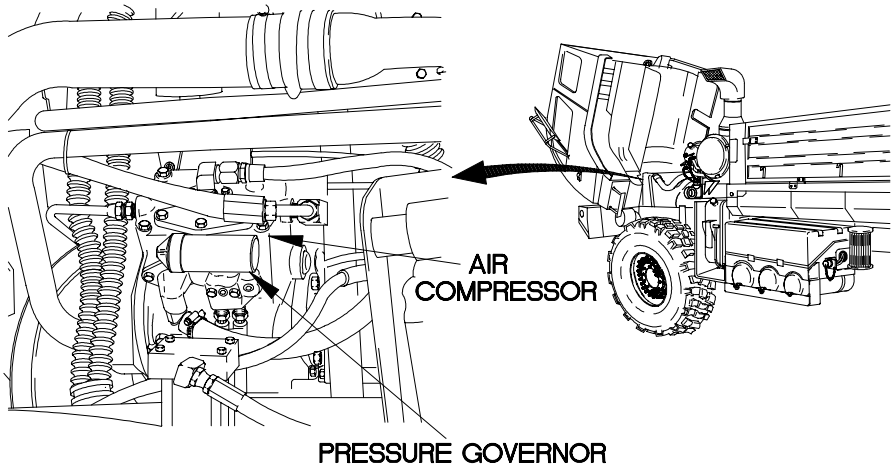
M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

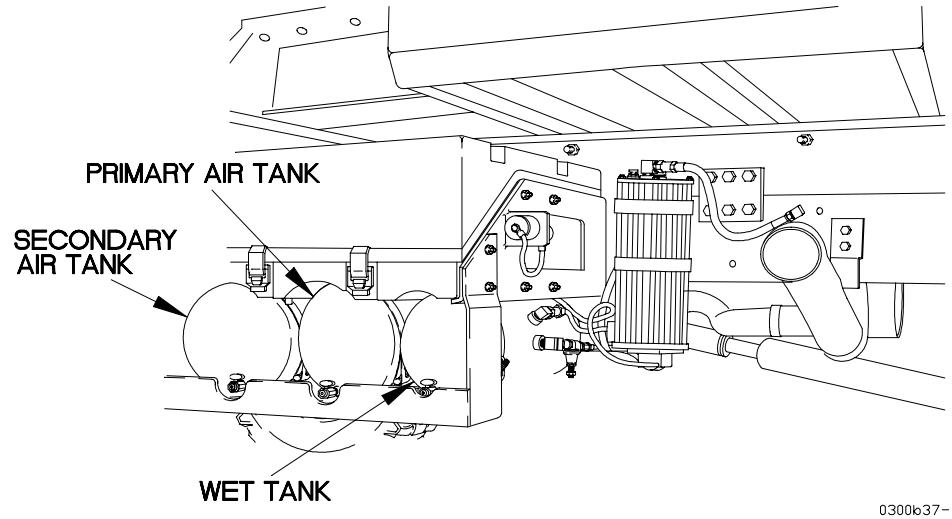
AIR SYSTEM

The air system provides clean, dry air for use in the air brake system and the CTIS.

1. The air system is pressurized by an engine-driven air compressor with an average output pressure of 125 psi (862 kPa). The system pressure is controlled by a pressure governor which maintains the output pressure between 105-125 psi (724-862 kPa).

2. Air is supplied to the air brake portion of the system by the primary air tank and secondary air tank. Air for the CTIS, fan solenoid, and differential lock solenoid comes from the wet tank.

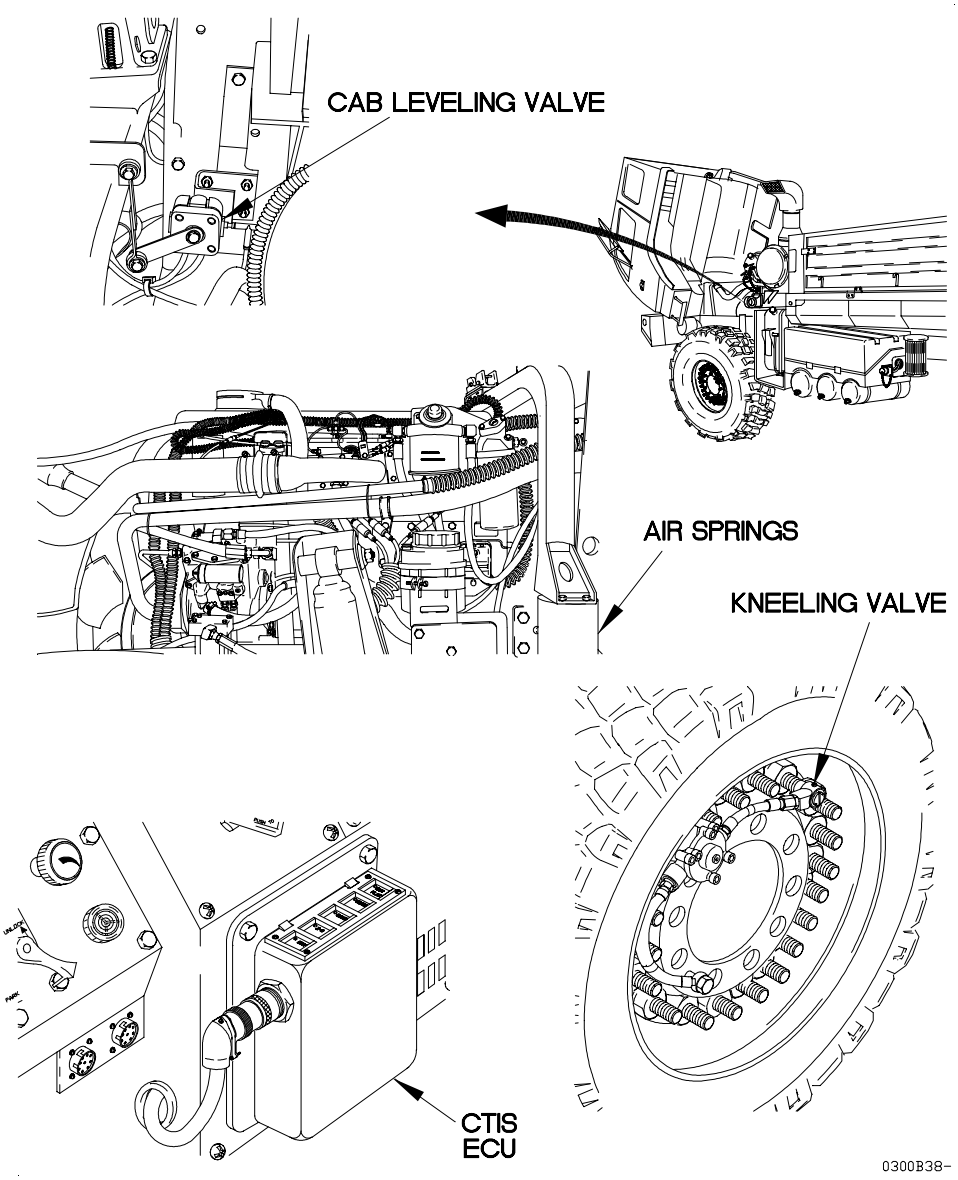




M1083A1 SERIES THEORY OF OPERATION - Continued 0003 00

AIR SYSTEM - Continued

3. Air pressure in the tires is controlled by the CTIS ECU. The CTIS ECU provides for four tire pressure settings: highway, cross-country, sand, and emergency. Run flat is an enhance mode used in all four modes. Kneeling valves on the front tires allow the front of the vehicle to be lowered for internal air transport (C-130 and C-141). Air pressure is also used to keep the cab level through the use of air springs, mounted below the rear cab support, and a cab leveling valve.



CHAPTER 2

OPERATING INSTRUCTIONS FOR THE M1083A1 SERIES VEHICLES

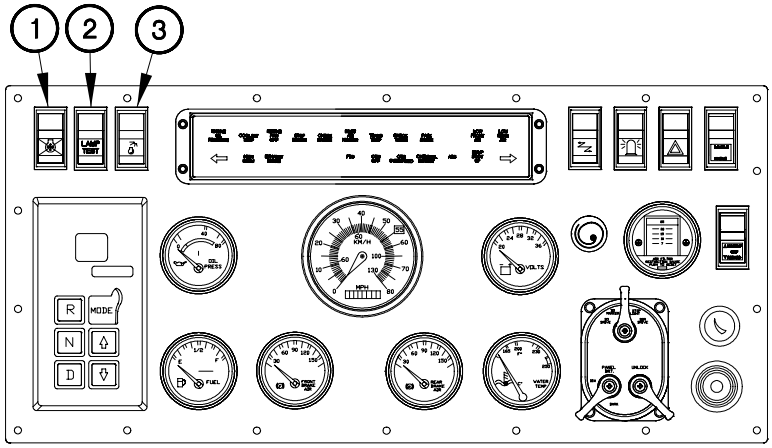
INSTRUMENT PANEL CONTROLS AND INDICATORS 0004 00

GENERAL

The following paragraphs contain illustrations that show the location of each control and indicator for the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name, based on the panel markings, and the functional description of each control and indicator.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS

Table 1 describes controls and indicators on the instrument panel assembly (vehicle S/N 18,549 or lower.
Table 2 describes controls and indicators on the instrument panel assembly (vehicle S/N 18,550 or higher.



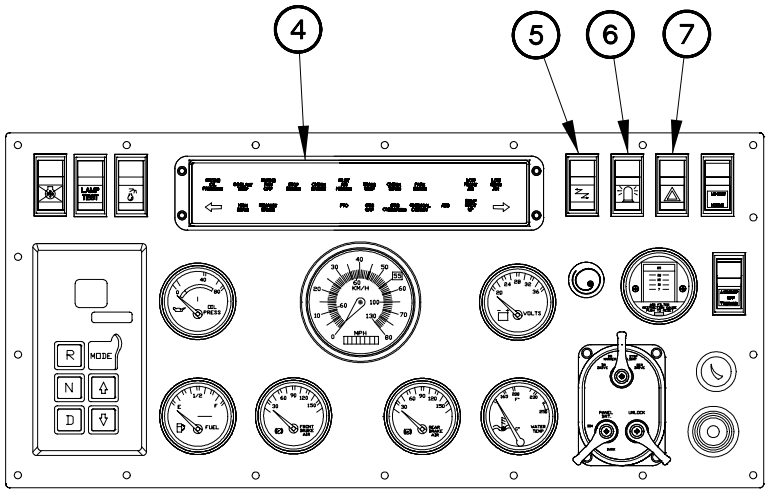
0400b01-

Table 1. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,549 or lower).

KEY	CONTROL OR INDICATOR	FUNCTION
1	Engine fan off switch	When positioned to on, engine fan off switch will illuminate to indicate the engine fan is disabled. Engine fan off switch will remain in the off position and not illuminated unless otherwise directed.
2	LAMP TEST switch	Tests all lights on Lighted Indicator Display.
3	Ether start switch	Injects ether into engine intake system to assist with cold weather starting when switch is pressed.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued



STEERING WHEEL
REMOVED FOR CLARITY

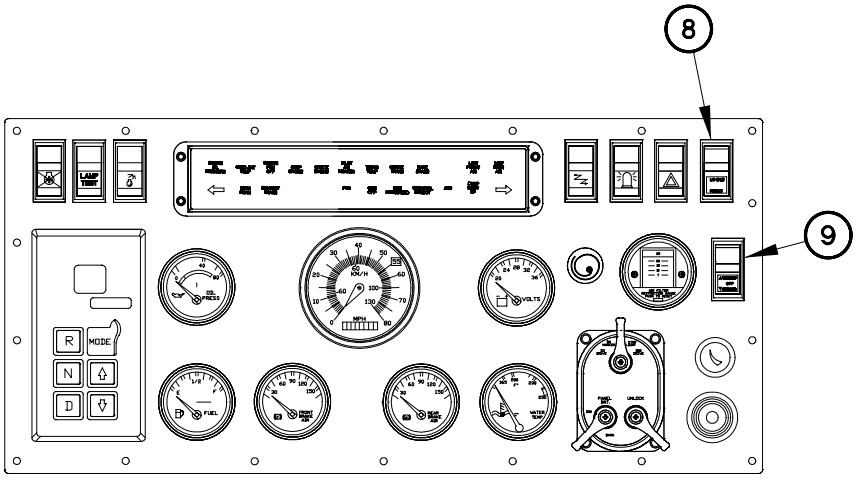
0400b02-

Table 1. Instrument Panel Assembly Controls and Indicators(Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	Lighted indicator display	Indicators illuminate to indicate operating characteristics of the vehicle. Table 3 describes all indicators on the Lighted Indicator Display.
5	Master power switch	Controls electrical power for engine starting and/or electrical system operation.
6	Warning light switch	Operates vehicle warning light(s) (when installed).
7	Hazard lights switch	Operates hazard lights. Left and right turn signals and indicators flash when switch is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued



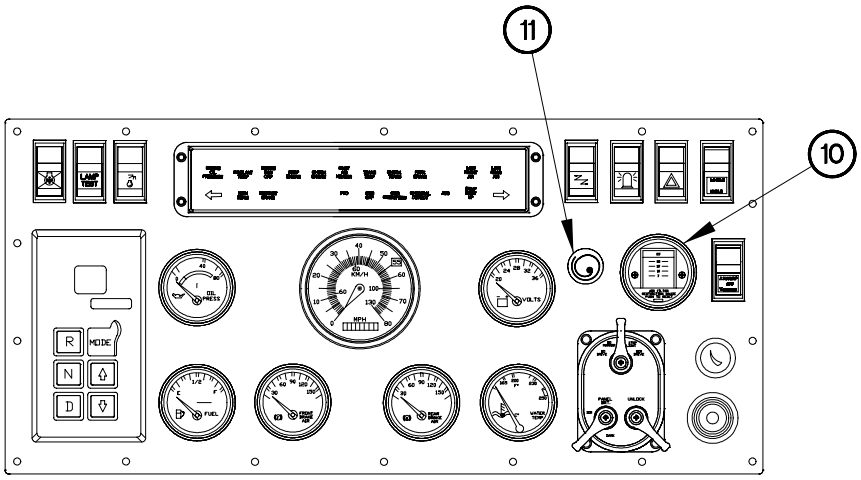
0400b03-

Table 1. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
8	LO IDLE/HI IDLE switch	Momentary switch. Press switch once, engine runs at 1350 RPM. Press switch again, engine returns to 700 RPM.
9	WARMUP/OFF/RETARD switch	Three position switch. Top portion of switch used to warm up engine in temperatures below 32° F (0° C). Bottom portion of switch is used to engage exhaust brake. When positioned to the center, both functions are off.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued



STEERING WHEEL
REMOVED FOR CLARITY

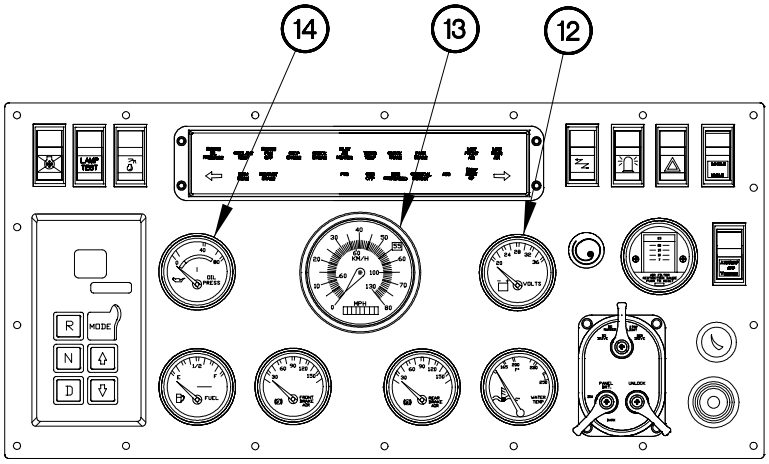
0400b04-

Table 1. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
10	AIR FILTER RESTRICTION GAUGE	Indicates when air filter is restricted. Diaphragm enters red zone when air filter is clogged and needs service. RESET button on face of gauge can be pressed to reset gauge after air cleaner is serviced.
11	Starter pushbutton	Starts engine. Starter pushbutton operates only when master power switch is positioned to on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued



STEERING WHEEL
REMOVED FOR CLARITY

0400b05-

Table 1. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
12	VOLTS gage	Shows battery output voltage when engine is not running and alternator output voltage when engine is running.
13	Speedometer/Odometer	Speedometer shows vehicle speed in miles per hour (mph) and kilometers per hour (km/h). Odometer indicates number of miles the vehicle has traveled.
14	OIL PRESS gage	Shows engine oil pressure (in psi). Normal oil pressure range is 15-80 psi.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

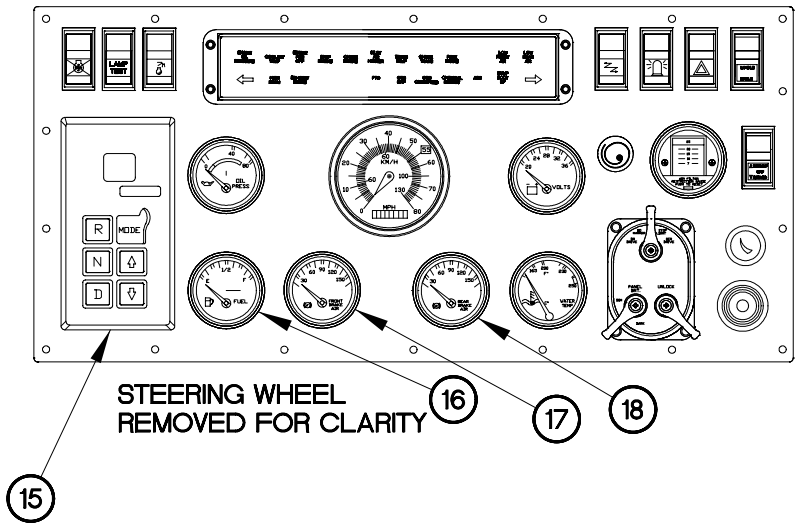


Table 1. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
15	WTEC III Transmission Pushbutton Shift Selector (WTEC III TPSS)	Used to select forward or reverse range, to set highest gear range, to switch from highway to off-road mode, and to monitor transmission operation. Table 5 describes all controls and indicators on the WTEC III TPSS.
16	FUEL gage	Shows fuel level in fuel tank.
17	FRONT BRAKE AIR pressure gage	Shows air pressure (in psi) available to operate front brakes. Normal air pressure range is 75-120 psi.
18	REAR BRAKE AIR pressure gage	Shows air pressure (in psi) available to operate rear brakes. Normal air pressure range is 75-120 psi.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

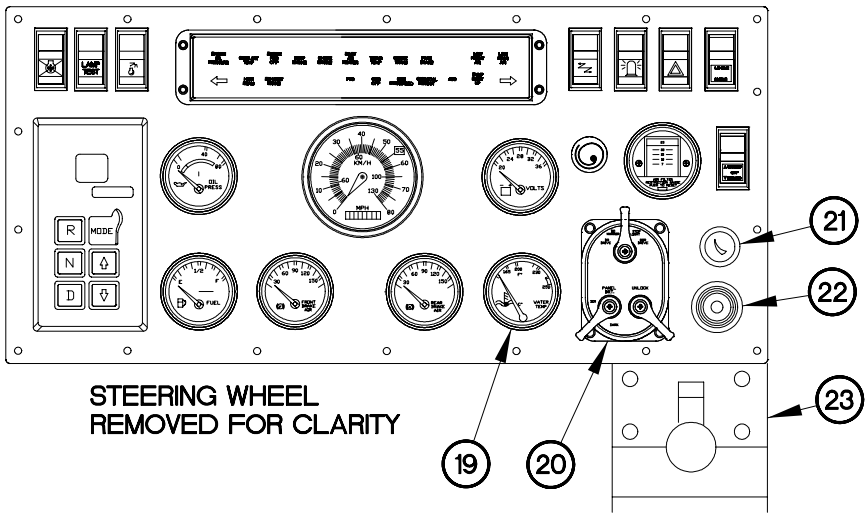


Table 1. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,549 or lower)- Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
19	WATER TEMP gage	Shows engine coolant temperature in degrees Fahrenheit. Normal temperature range is 165-230° F.
20	Main light switch	Control service and blackout lights. Table 6 shows all controls on the main light switch.
21	Dimmer switch	Controls brightness of instrument panel assembly lighting. Turn control left to increase brightness, right to decrease brightness.
22	Audible alarm	A steady tone sounds when air pressure is below 75 psi. A wavering (dual) tone sounds when troop transport alarm switch is activated (on vehicles with troopseat kits).
23	Trailer handbrake controls (M1088A1)	Applies and releases trailer service brakes without engaging vehicle service brakes.

INSTRUMENT PANEL CONTROLS AND INDICATORS 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS

Table 2 describes controls and indicators for the Instrument Panel Assembly.

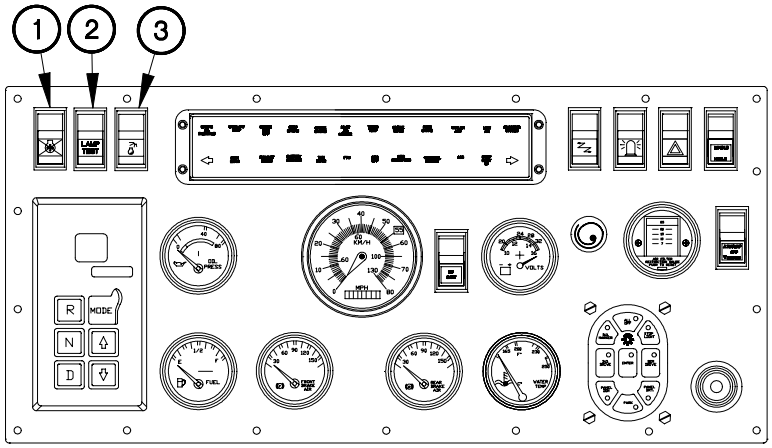
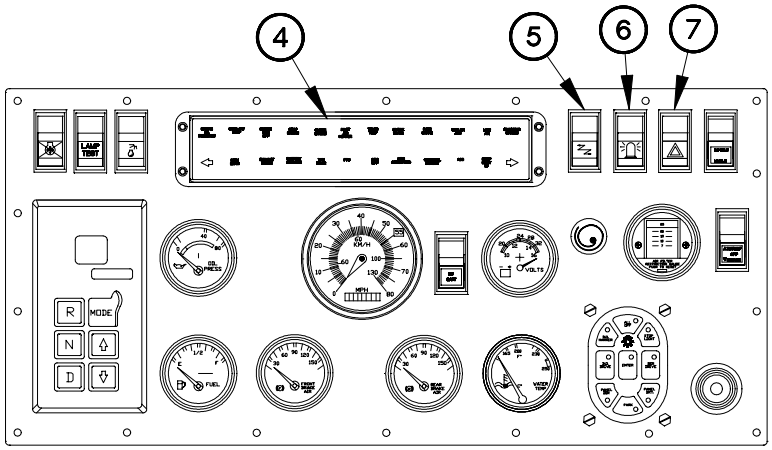


Table 2. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,550 or higher).

KEY	CONTROL OR INDICATOR	FUNCTION
1	Engine fan off switch	When positioned to on, engine fan off switch will disable the engine fan and cause the ENGINE FAN OFF indicator to illuminate. Engine fan off switch is only used to turn off the engine fan during fording operations.
2	LAMP TEST switch	Tests all lights on Lighted Indicator Display.
3	Ether start switch	Injects ether into engine intake system to assist with cold weather starting when switch is pressed.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS – Continued



STEERING WHEEL
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Table 2. Instrument Panel Assembly Controls and Indicators(Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	Lighted indicator display	Indicators illuminate to indicate operating characteristics of the vehicle. Table 4 describes indicators on the Lighted Indicator Display.
5	Master power switch	Controls electrical power for engine starting and/or electrical system operation.
6	Warning light switch	Operates vehicle warning light(s) (when installed).
7	Hazard lights switch	Operates hazard lights. Left and right turn signals and indicators flash when switch is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

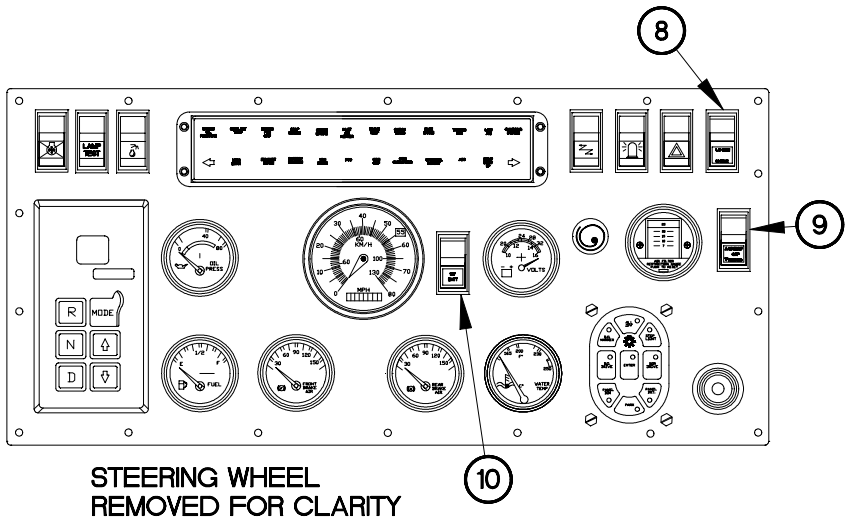


Table 2. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
8	LO IDLE/HI IDLE switch	Momentary switch. Press switch once, engine runs at 1350 RPM. Press switch again, engine returns to 700 RPM.
9	WARMUP/OFF/RETARD switch	Three position switch. Top portion of switch used to warm up engine in temperatures below 32° F (0° C). Bottom portion of switch is used to engage exhaust brake. When positioned to the center, both functions are off.
10	12V BATT switch	Momentary switch. Displays 12 volt DC ignition power on VOLTS gage when depressed.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

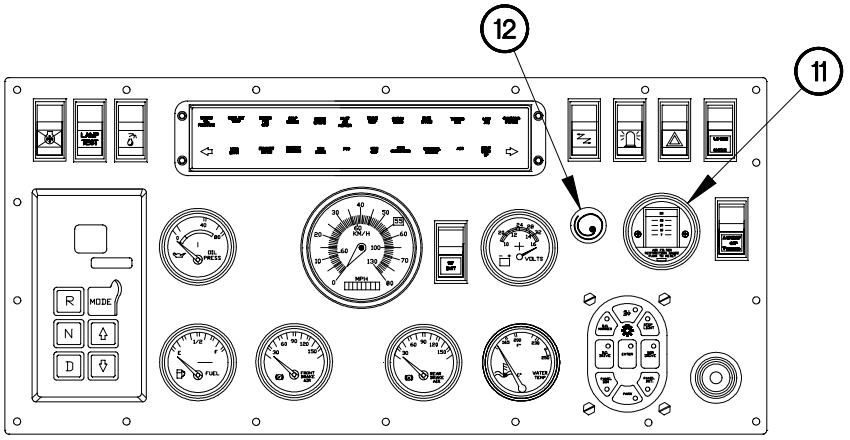


Table 2. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
11	AIR FILTER RESTRICTION GAUGE	Indicates when air filter is restricted. Diaphragm enters red zone when air filter is clogged and needs service. RESET button on face of gauge can be pressed to reset gauge after air cleaner is serviced.
12	Starter pushbutton	Starts engine. Starter pushbutton operates only when master power switch is positioned to on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS – Continued

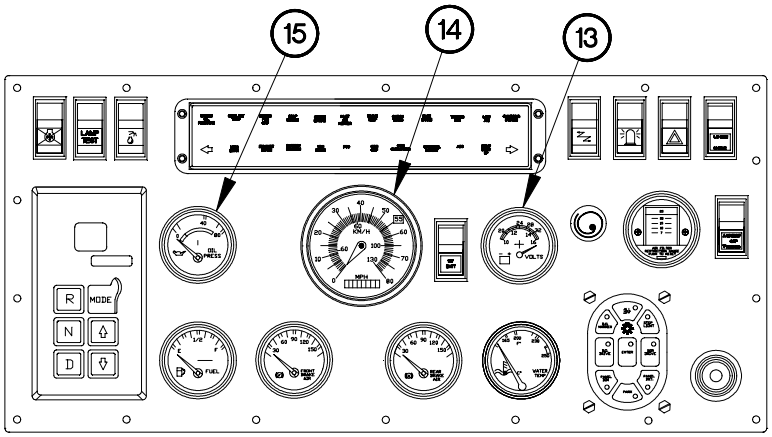
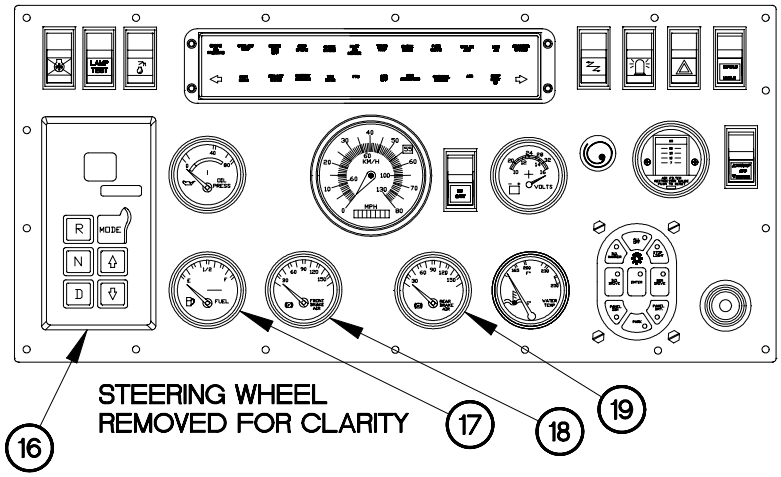


Table 2. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
13	VOLTS gage	Displays 24 VDC battery output voltage when engine is not running and 24 VDC alternator output voltage when engine is running. 12 VDC is displayed when 12 VDC BATT switch is depressed (Key 10).
14	Speedometer/Odometer	Speedometer shows vehicle speed in miles per hour (mph) and kilometers per hour (km/h). Odometer indicates number of miles the vehicle has traveled.
15	OIL PRESS gage	Shows engine oil pressure (in psi). Normal oil pressure range is 15-80 psi.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued



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Table 2. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
16	WTEC III Transmission Pushbutton Shift Selector (WTEC III TPSS)	Used to select forward or reverse range, to set highest gear range, to switch from highway to off-road mode, and to monitor transmission operation. Table 5 describes all controls and indicators on the WTEC III TPSS.
17	FUEL gage	Shows fuel level in fuel tank.
18	FRONT BRAKE AIR pressure gage	Shows air pressure (in psi) available to operate front brakes. Normal air pressure range is 75-120 psi.
19	REAR BRAKE AIR pressure gage	Shows air pressure (in psi) available to operate rear brakes. Normal air pressure range is 75-120 psi.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

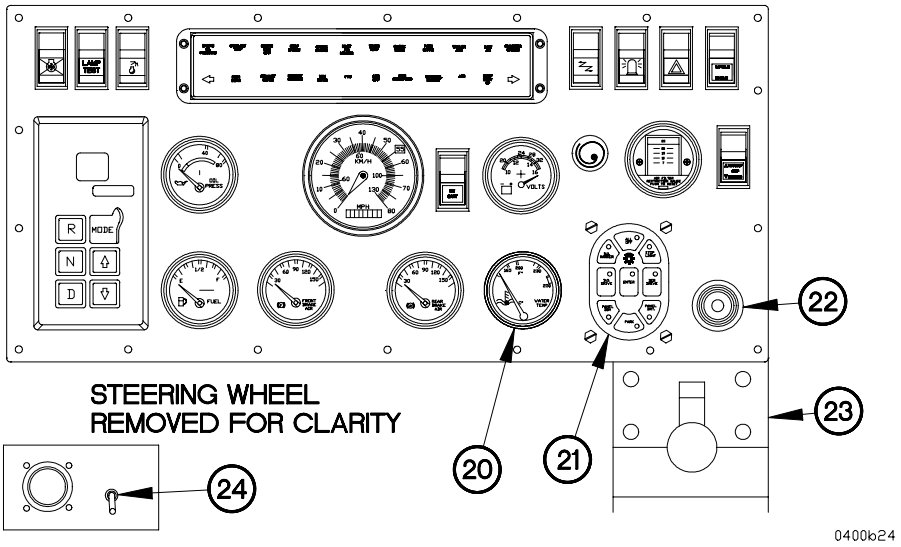


Table 2. Instrument Panel Assembly Controls and Indicators (Vehicle S/N 18,550 or higher)- Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
20	WATER TEMP gage	Shows engine coolant temperature in degrees Fahrenheit. Normal temperature range is 165-230° F.
21	Main light switch	Control service and blackout lights. Table 7 shows all controls on the main light switch.
22	Audible alarm	A steady tone sounds when air pressure is below 75 psi. A wavering (dual) tone sounds when troop transport alarm switch is activated (on vehicles with troopseat kits).
23	Trailer handbrake controls (M1088A1)	Applies and releases trailer service brakes without engaging vehicle service brakes.
24	BATTERY DISCONNECT SWITCH	Two-position toggle switch disconnects battery power from vehicle.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY

Table 3 describes Lighted Indicator Display (vehicle S/N 18,549 or lower).
Table 4 describes Lighted Indicator Display (vehicle S/N 18,550 or higher).

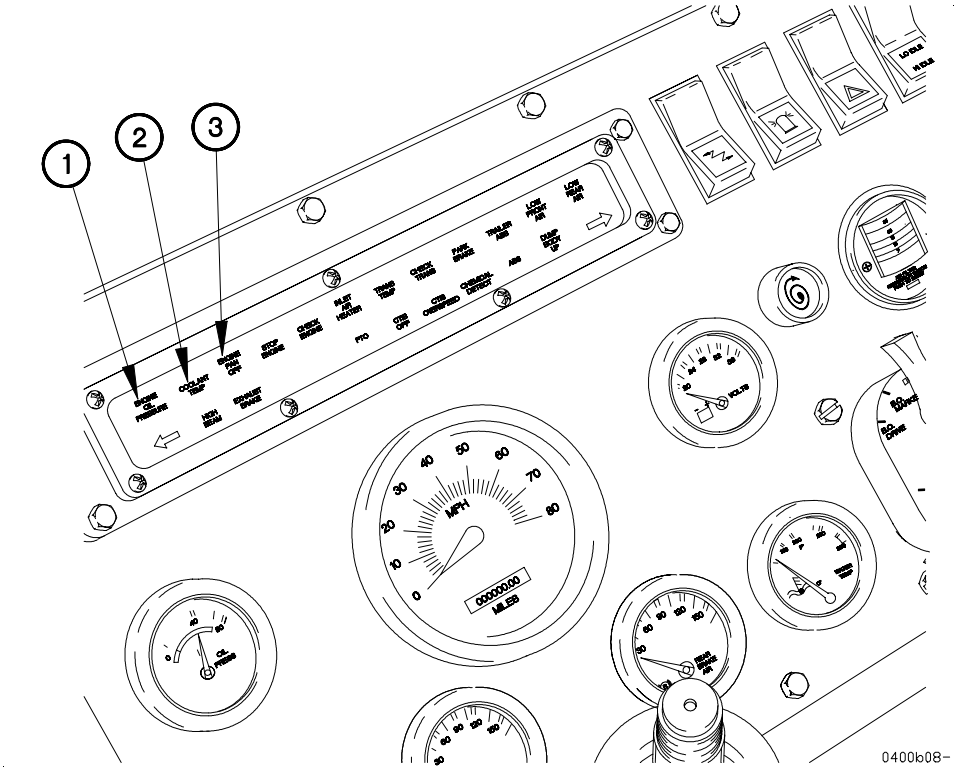


Table 3. Lighted Indicator Display (Vehicle S/N 18,549 or lower).

KEY	CONTROL OR INDICATOR	FUNCTION
1	ENGINE OIL PRESSURE indicator	Illuminates (red) when engine oil pressure drops below 6 psi. STOP ENGINE indicator illuminates when ENGINE OIL PRESSURE indicator is on.
2	COOLANT TEMP indicator	Illuminates (red) when engine coolant temperature is greater than 230° F.
3	ENGINE FAN OFF indicator	Illuminates (amber) when the engine fan is disabled. Indicates the engine fan off switch is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY - Continued

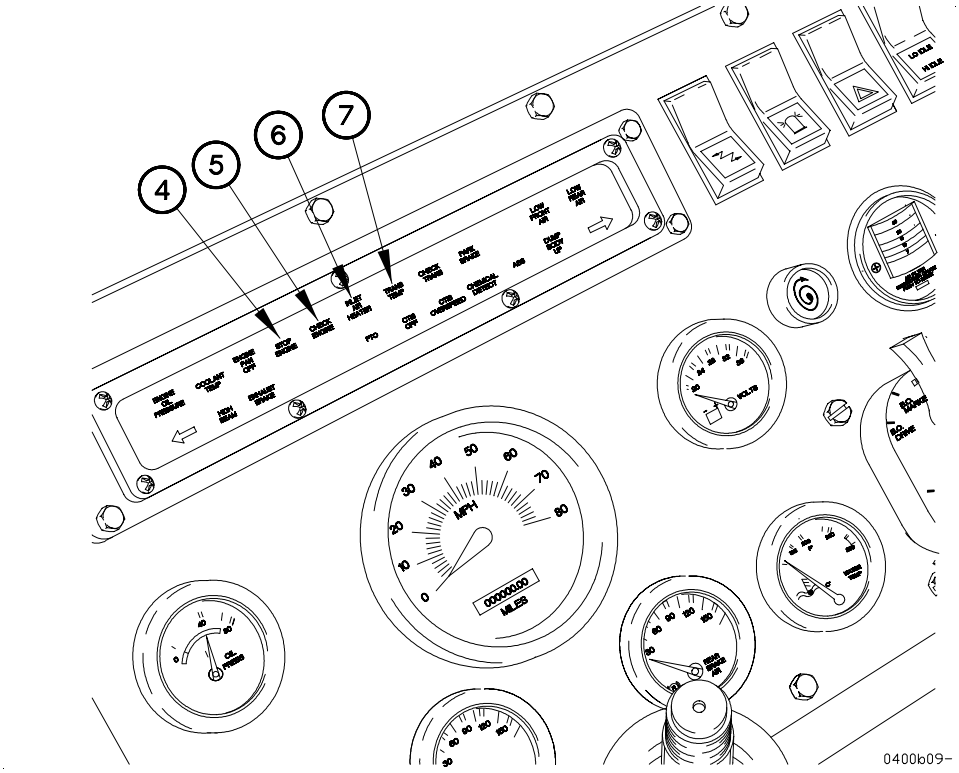


Table 3. Lighted Indicator Display (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	STOP ENGINE indicator	Illuminates (red) upon engine start, for approximately two seconds. If an engine fault occurs the indicator will flash (red).
5	CHECK ENGINE indicator	Illuminates (amber) at ignition, for approximately two seconds. If the Electronic Control Module (ECM) senses an active code, indicator will flash (amber).
6	INLET AIR HEATER indicator	Illuminates (red) briefly when engine coolant and inlet manifold air temperature is below 77° F.
7	TRANS TEMP indicator	Illuminates (red) when transmission oil temperature is greater than 225° F.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY – Continued

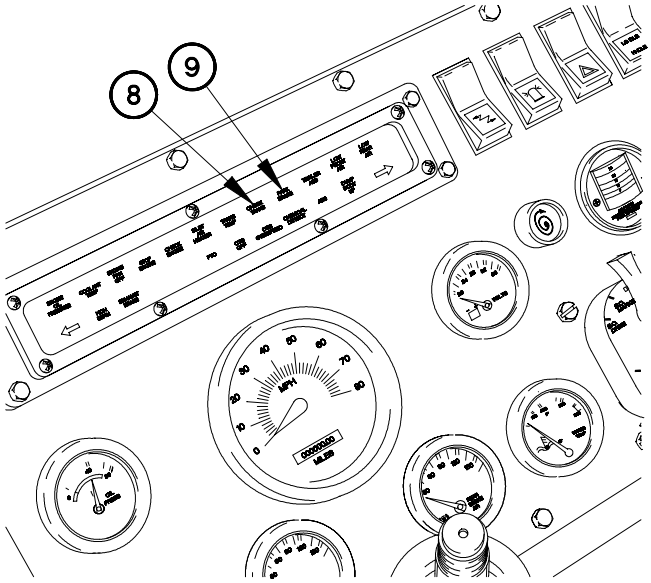


Table 3. Lighted Indicator Display (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
	NOTE	
	Depending on the problem with the transmission, the WTEC III Transmission Electronic Control Unit (ECU) may or may not respond to WTEC III TPSS requests. Gear shifting capability may be limited.	
8	CHECK TRANS indicator	Illuminates (amber) any time WTEC III Transmission ECU detects a do not shift condition. Notify Unit Maintenance if CHECK TRANS indicator illuminates. Also illuminates briefly when engine is started.
9	PARK BRAKE indicator	Illuminates (amber) when parking brake is applied.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY – Continued

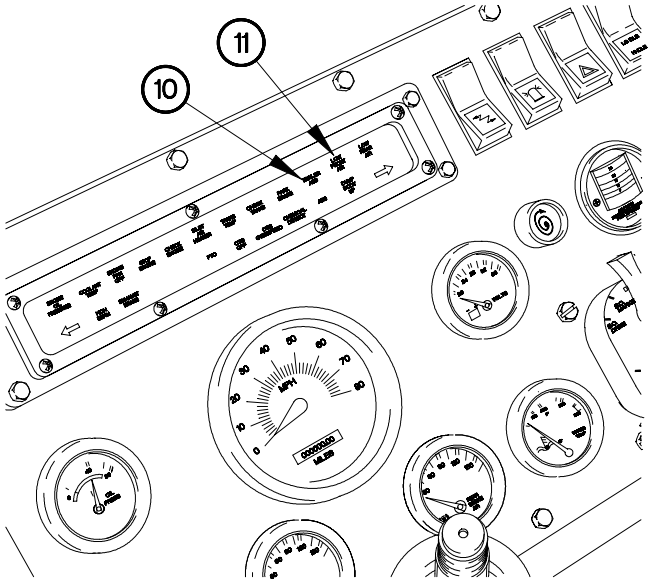


Table 3. Lighted Indicator Display (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
10	TRAILER ABS indicator (vehicle S/N 15,676 or higher)	Illuminates (red) if the trailer Anti-Lock Braking System (ABS) ECU detects a problem with the ABS at speeds above 4 mph (6 km/h). Also illuminates briefly when engine is started. If ABS indicator illuminates, continue with mission and notify Unit Maintenance upon completion of the mission.
11	LOW FRONT AIR indicator	Illuminates (red) when air pressure for the front service brakes drops below 75 psi. Audible alarm sounds and STOP ENGINE indicator illuminates when LOW FRONT AIR indicator is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

0004 00

LIGHTED INDICATOR DISPLAY – Continued

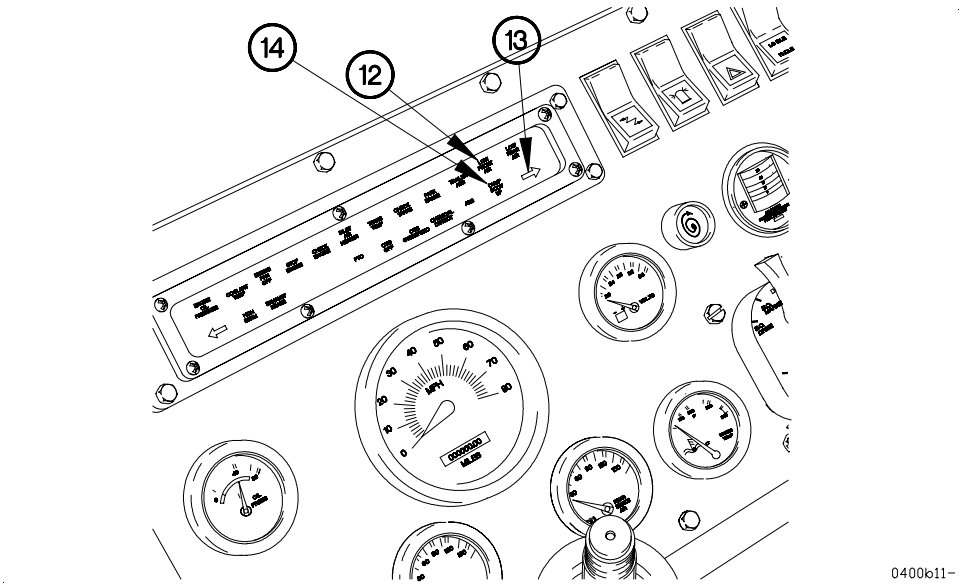


Table 3. Lighted Indicator Display (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
12	LOW REAR AIR indicator	Illuminates (red) when air pressure for the rear service brakes drops below 75 psi. Audible alarm sounds and STOP ENGINE indicator illuminates when LOW REAR AIR indicator is on.
13	Right turn signal	Flashes (green) when right turn signal is on.
14	DUMP BODY UP indicator (M1090A1 Only)	Illuminates (red) when dump body is raised.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY – Continued

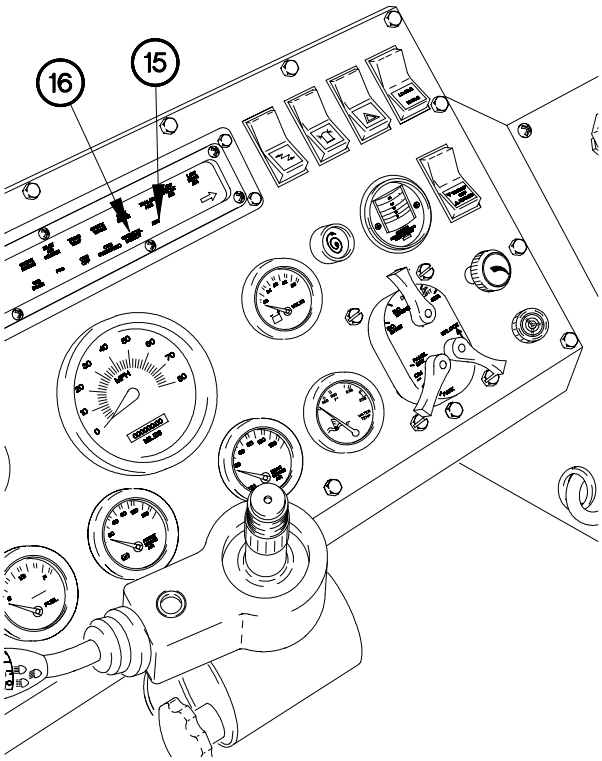


Table 3. Lighted Indicator Display (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
	Note	
After service, ABS indicator will stay illuminated until vehicle is driven at speeds above 4 mph (6 km/h).		
15	ABS indicator	Illuminates (red) if the Anti-Lock Braking System (ABS) ECU detects a problem with the ABS at speeds above 4 mph (6 km/h). Also illuminates briefly when engine is started. If ABS indicator illuminates, continue with the mission and notify Unit Maintenance upon completion of the mission.
16	CHEMICAL DETECT indicator	Illuminates (red) when M43 chemical detector senses a chemical agent. M42 alarm sounds when CHEMICAL DETECT indicator is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

0004 00

LIGHTED INDICATOR DISPLAY - Continued

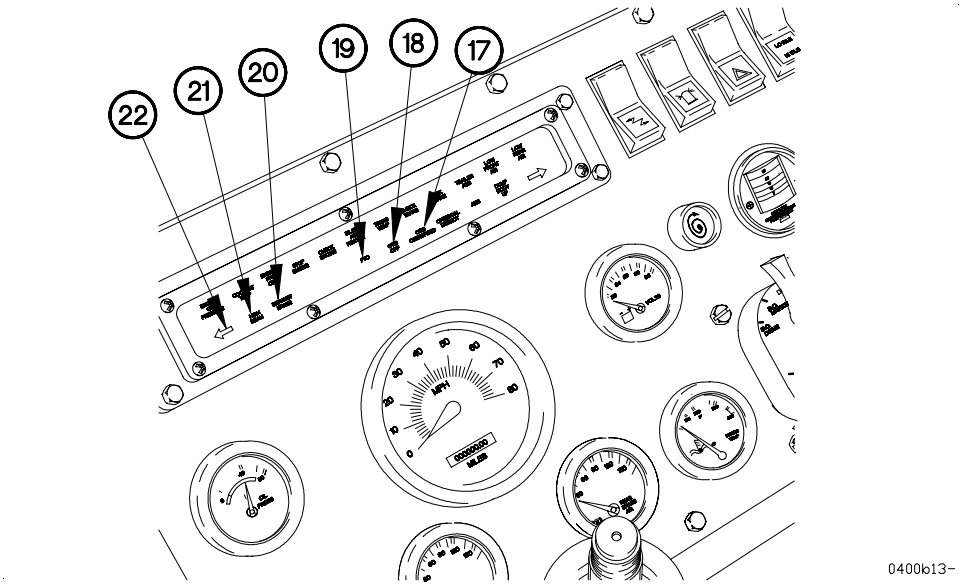
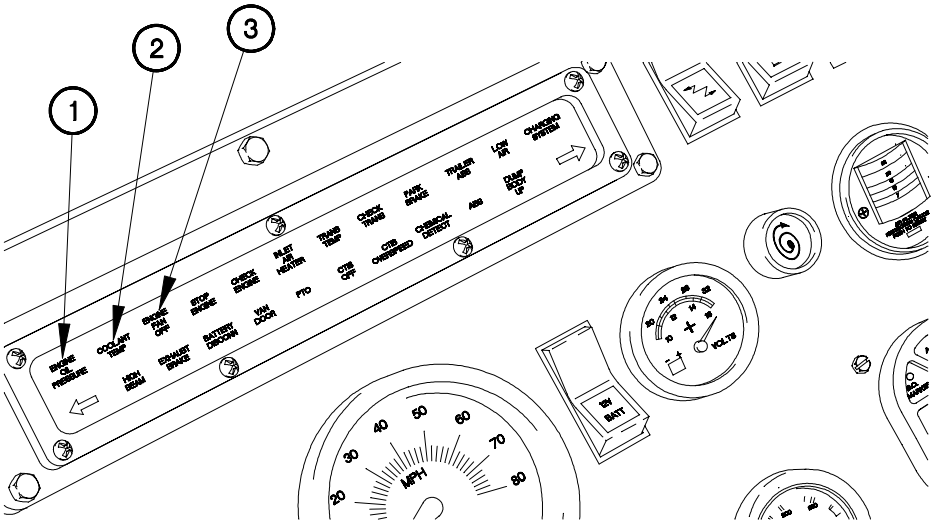


Table 3. Lighted Indicator Display (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
17	CTIS OVERSPEED indicator	Illuminates (amber) when vehicle speed exceeds safe limit for selected tire inflation pressure.
18	CTIS OFF indicator	Illuminates (green) when operator disables Central Tire Inflation System (CTIS).
19	PTO indicator	Illuminates (green) when Power Take-Off (PTO) is engaged.
20	EXHAUST BRAKE indicator	Illuminates (green) when WARM UP/OFF/RETARD switch is engaged in the retard position.
21	HIGH BEAM indicator	Illuminates (green) when high beam headlights are on.
22	Left turn signal	Flashes (green) when left turn signal is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY



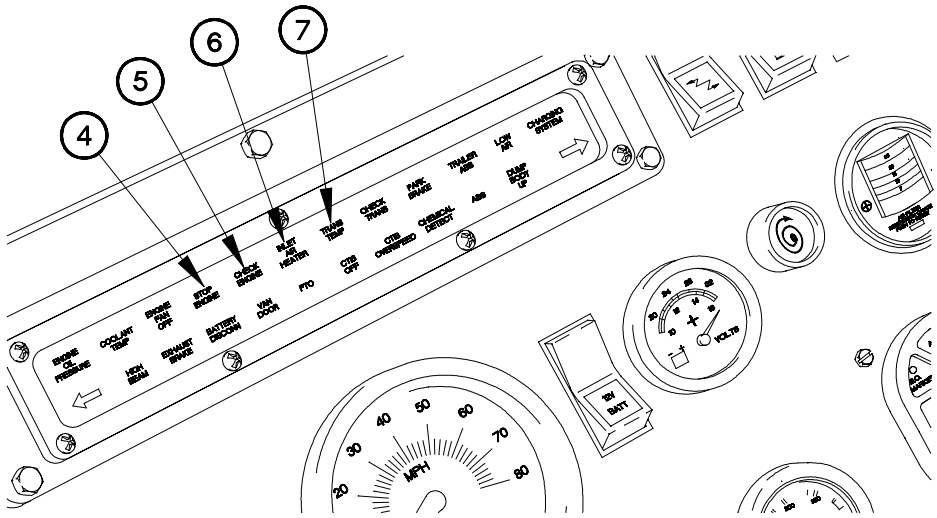
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Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher).

KEY	CONTROL OR INDICATOR	FUNCTION
1	ENGINE OIL PRESSURE indicator	Illuminates (red) when engine oil pressure drops below 6 psi. STOP ENGINE indicator illuminates when ENGINE OIL PRESSURE indicator is on.
2	COOLANT TEMP indicator	Illuminates (red) when engine coolant temperature is greater than 230° F.
3	ENGINE FAN OFF indicator	Illuminates (amber) when the engine fan is disabled. Indicates the engine fan off switch is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY - Continued



0400b27

Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	STOP ENGINE indicator	Illuminates (red) upon engine start, for approximately two seconds. If an engine fault occurs the indicator will flash (red).
5	CHECK ENGINE indicator	Illuminates (amber) at ignition, for approximately two seconds. If the Electronic Control Module (ECM) senses an active code, indicator will flash (amber).
6	INLET AIR HEATER indicator	Illuminates (red) briefly when engine coolant and inlet manifold air temperature is below 77° F.
7	TRANS TEMP indicator	Illuminates (red) when transmission oil temperature is greater than 225° F.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY - Continued

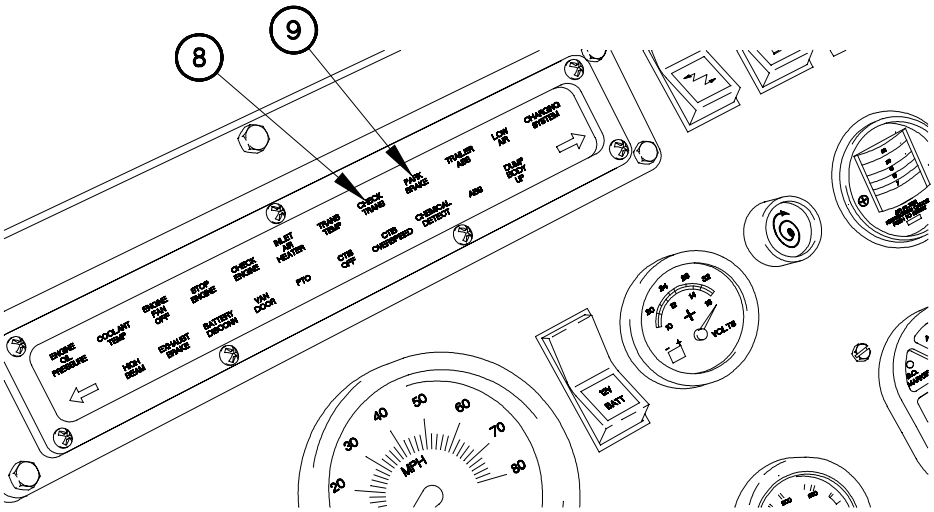


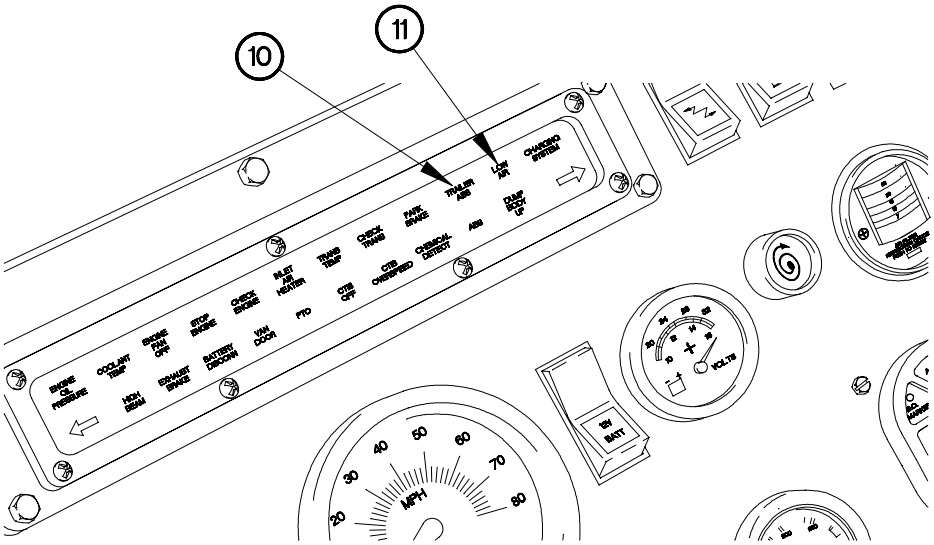
Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
	NOTE Depending on the problem with the transmission, the WTEC III Transmission Electronic Control Unit (ECU) may or may not respond to WTEC III TPSS requests. Gear shifting capability may be limited.	
8	CHECK TRANS indicator	Illuminates (amber) any time WTEC III Transmission ECU detects a do not shift condition. Notify Unit Maintenance if CHECK TRANS indicator illuminates. Also illuminates briefly when engine is started.
9	PARK BRAKE indicator	Illuminates (amber) when parking brake is applied.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

0004 00

LIGHTED INDICATOR DISPLAY - Continued



0400b29

Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
10	TRAILER ABS indicator (vehicle S/N 15,676 or higher)	Illuminates (red) if the trailer Anti-Lock Braking System (ABS) ECU detects a problem with the ABS at speeds above 4 mph (6 km/h). Also illuminates briefly when engine is started. If ABS indicator illuminates, continue with mission and notify Unit Maintenance upon completion of the mission.
11	LOW AIR indicator	Illuminates (red) when air pressure for the front service brakes drops below 75 psi. Audible alarm sounds and STOP ENGINE indicator illuminates when LOW AIR indicator is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

0004 00

LIGHTED INDICATOR DISPLAY - Continued

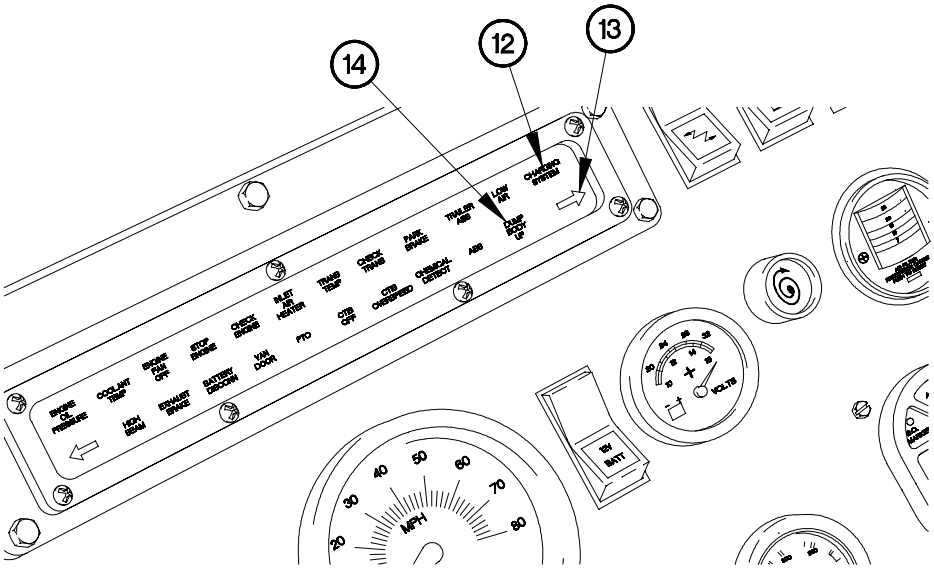


Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
12	CHARGING SYSTEM indicator	Illuminates (red) when the alternator ceases to provide an output. Vehicle continues to operate until 24 VDC batteries discharge to approximately 10 VCD.
13	Right turn signal	Flashes (green) when right turn signal is on.
14	DUMP BODY UP indicator (M1090A1 Only)	Illuminates (red) when dump body is raised.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY - Continued

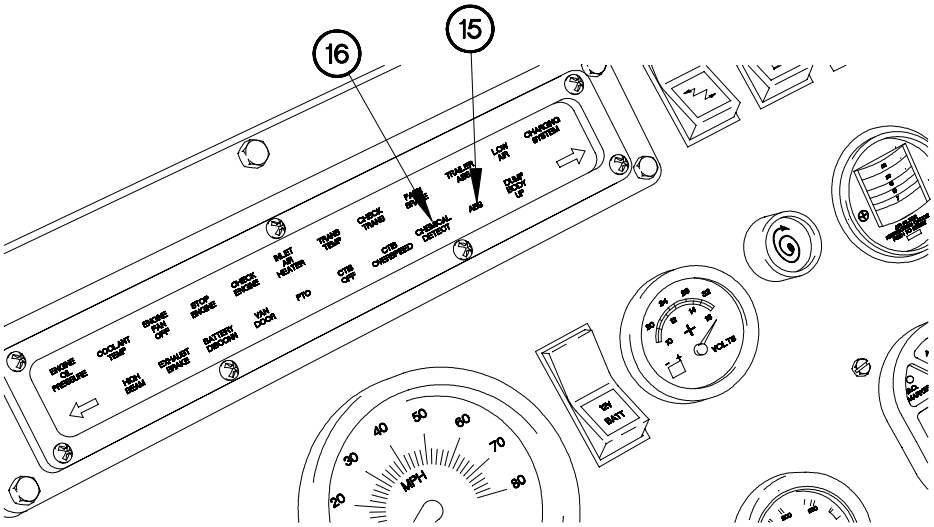


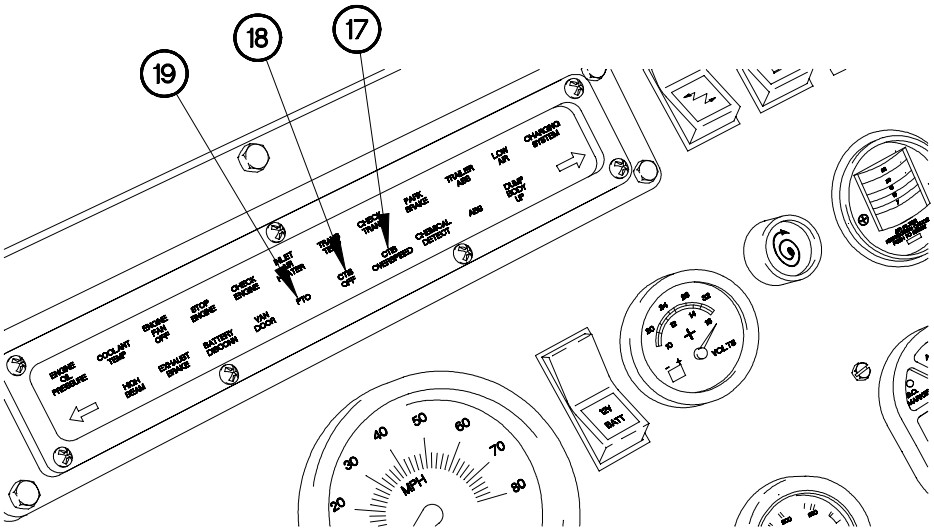
Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
	Note	
After service, ABS indicator will stay illuminated until vehicle is driven at speeds above 4 mph (6 km/h).		
15	ABS indicator	Illuminates (red) if the Anti-Lock Braking System (ABS) ECU detects a problem with the ABS at speeds above 4 mph (6 km/h). Also illuminates briefly when engine is started. If ABS indicator illuminates, continue with the mission and notify Unit Maintenance upon completion of the mission.
16	CHEMICAL DETECT indicator	Illuminates (red) when M43 chemical detector senses a chemical agent. M42 alarm sounds when CHEMICAL DETECT indicator is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued

0004 00

LIGHTED INDICATOR DISPLAY - Continued



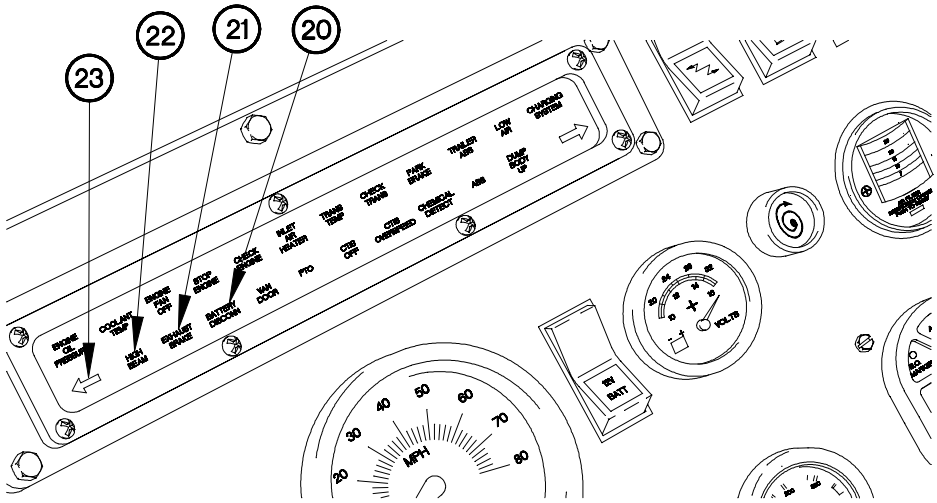
0400b32

Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
17	CTIS OVERSPEED indicator	Illuminates (amber) when vehicle speed exceeds safe limit for selected tire inflation pressure.
18	CTIS OFF indicator	Illuminates (green) when operator disables Central Tire Inflation System (CTIS).
19	PTO indicator	Illuminates (green) when Power Take-Off (PTO) is engaged.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

LIGHTED INDICATOR DISPLAY - Continued



0400b33

Table 4. Lighted Indicator Display (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
20	BATTERY DISCONNECT indicator	Illuminates (red) when the batteries have been disconnected. The Limp Home System recharges undercharged batteries while they are disconnected and reintroduces them when an adequate battery voltage level is achieved. Illuminates (red) for approximately 6 seconds after starting engine.
21	EXHAUST BRAKE indicator	Illuminates (green) when WARM UP/OFF/RETARD switch is engaged in the retard position.
22	HIGH BEAM indicator	Illuminates (green) when high beam headlights are on.
23	Left turn signal	Flashes (green) when left turn signal is on.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (WTEC III TPSS)

Table 5 describes controls and indicators on the WTEC III TPSS.

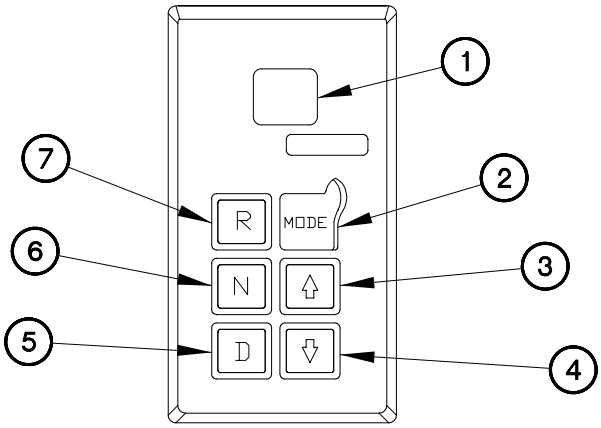


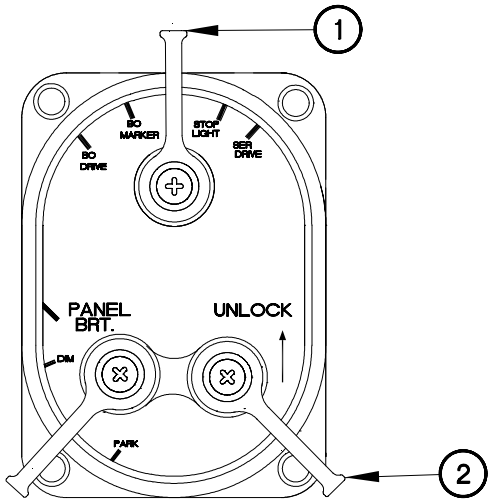
Table 5. WTEC III Transmission Pushbutton Shift Selector (TPSS).

KEY	CONTROL OR INDICATOR	FUNCTION
1	WTEC III TPSS display window	Displays the following information: a. R - Reverse gear selected. b. N - Neutral (no gear selector mode or transmission placed in Neutral). c. 1 through 7 - current forward gear selected.
2	MODE select button	Switches transmission between highway mode and off-road mode.
3	Up arrow button	Switches transmission to next higher forward gear or to select maximum forward gear.
4	Down arrow button	Switches transmission to next lower forward gear or to downshift to first gear.
5	D range button	Switches transmission to Drive. Automatically selects seventh gear as maximum forward gear. Second gear is the lowest gear available. First gear is available only as a manual selection.
6	N range button	Switches transmission to Neutral.
7	R range button	Switches transmission to Reverse.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS -Continued 0004 00

MAIN LIGHT SWITCH

Table 6 describes controls on the Main Light Switch (vehicle S/N 18,549 or lower).
Table 7 describes controls on the Main Light Switch (vehicle S/N 18,550 or higher).



0400b15-

Table 6. Main Light Switch Controls (Vehicle S/N 18,549 or lower).

KEY	CONTROL OR INDICATOR	FUNCTION
1	Main selector lever	Controls operation of service and blackout lights. a. All blackout lights operate when main selector lever is positioned to BO DRIVE. b. Blackout marker lights operate when main selector lever is positioned to BO MARKER. c. Stoplights operate when main selector lever is positioned to STOP LIGHT and brake pedal is pressed. d. All service drive lights operate when main selector lever is positioned to SER DRIVE. e. No exterior lights operate when main selector lever is positioned to OFF.
2	UNLOCK lever	Locks main light switch. UNLOCK lever must be lifted and held in order to place main selector lever in any position except BO MARKER.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

MAIN LIGHT SWITCH – Continued

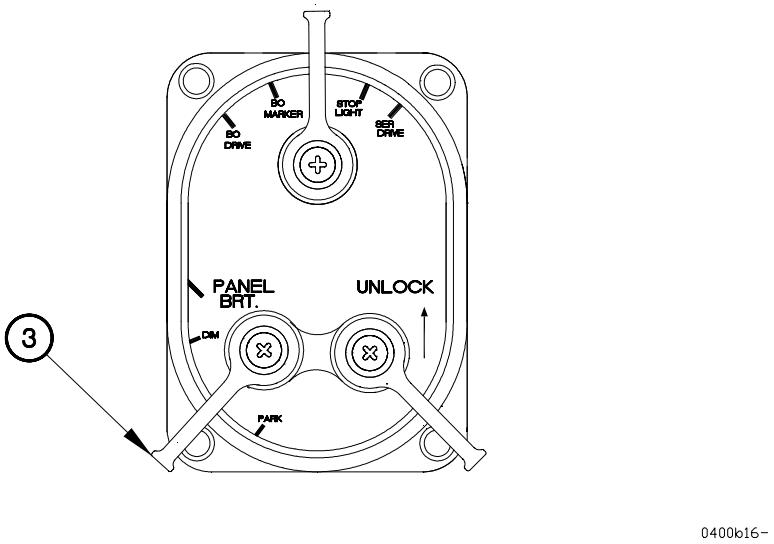
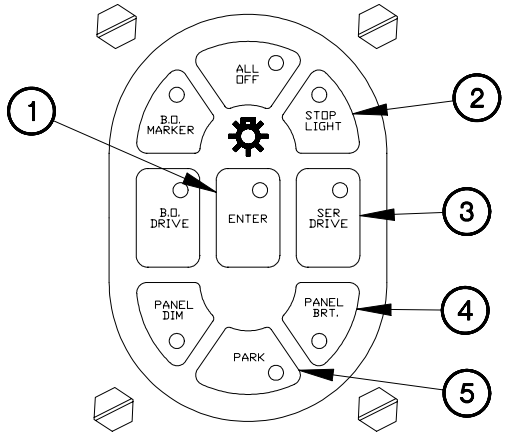


Table 6. Main Light Switch Controls (Vehicle S/N 18,549 or lower) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
3	Auxiliary lever	Controls operation of parking lights. a. Operates parking lights when auxiliary lever is positioned to PARK and main selector lever is positioned to SER DRIVE. b. PANEL BRT position allows adjustment of Instrument Panel Assembly illumination by using the dimmer switch. c. DIM position turns off all illumination on Instrument Panel Assembly.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

MAIN LIGHT SWITCH



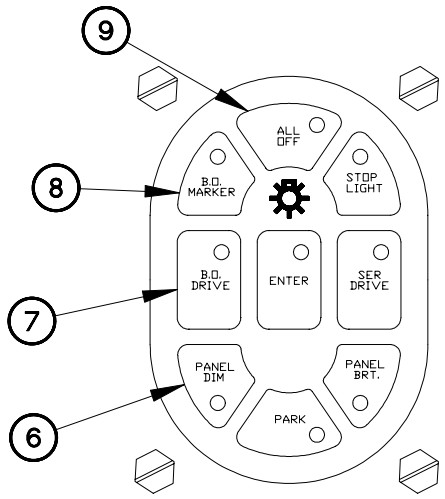
0400b34

Table 7. Main Light Switch Controls (Vehicle S/N 18,550 or higher).

KEY	CONTROL OR INDICATOR	FUNCTION
1	ENTER key	Enter desired function after selection has been made. If ENTER is not pressed within five seconds after selection has been made, switch will reset to previous mode. This prevents accidental switching.
2	STOP LIGHT key	When selected, stoplights operate when brake pedal is pressed.
3	SER DRIVE key	When selected, all service drive lights operate.
4	PANEL BRT key	When selected, illuminates all dashboard switchesand gages.
5	PARK key	When selected, parking lights will illuminate.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

MAIN LIGHT SWITCH - Continued



0400b35

Table 7. Main Light Switch Controls (Vehicle S/N 18,550 or higher) - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
6	PANEL DIM key	When selected, turns off all dashboard illuminations.
7	B.O. DRIVE key	When selected, all blackout lights operate.
8	B.O. MARKER key	When selected, blackout marker lights operate.
9	ALL OFF key	When selected, turns off all main light switch functions.

INSTRUMENT PANEL ASSEMBLY CONTROLS AND INDICATORS - Continued 0004 00

DUMP BED CONTROLS

Table 8 describes controls of the TAILGATE RELEASE, and DUMP BED UP/DOWN switches.

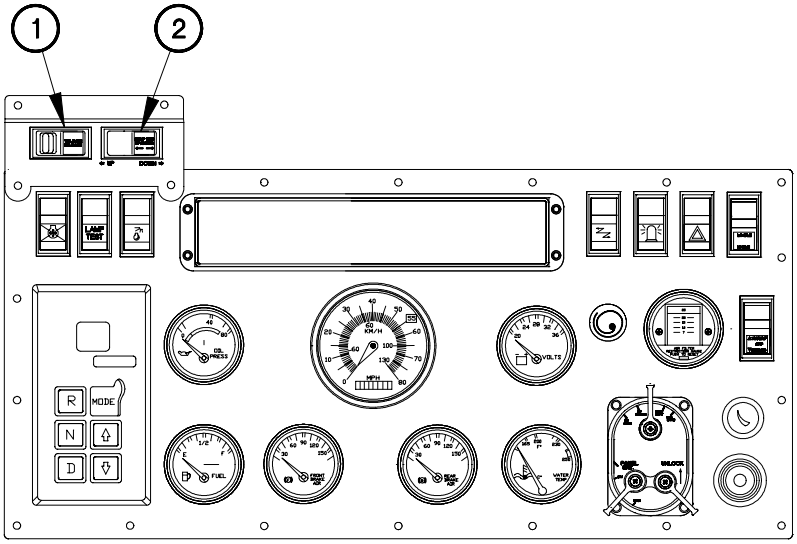


Table 8. TAILGATE RELEASE and DUMP BED UP/DOWN Switch Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	TAILGATE RELEASE switch	Controls opening and closing of tailgate on the dump bed.
2	DUMP BED UP/DOWN switch	Controls raising and lowering of the dump body. Push left half of switch to raise dump body UP, right half of switch to lower dump body DOWN.

AUXILIARY PANEL CONTROLS AND INDICATORS - 0005 00

GENERAL

The following paragraphs contain illustrations that show the location of each control and indicator for the auxiliary panel of the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

AUXILIARY PANEL CONTROLS AND INDICATORS M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, AND M1089A1

Table 1 describes controls and indicators that may be located on the auxiliary panel for Models M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, and M1089A1. Some switch locations may be blank, depending on the model of your vehicle.

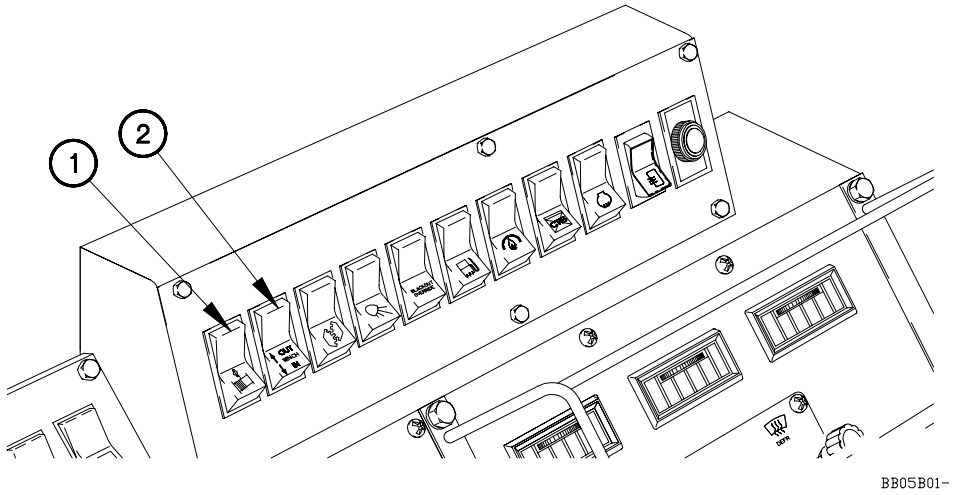


Table 1. Auxiliary Panel Controls and Indicators for M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, and M1089A1.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Winch on/off switch (Models with 15K Self-Recovery Winch (SRW))	Provides Power to the WINCH IN/OUT SWITCH.
2	WINCH IN/OUT switch (Models with 15K SRW)	Controls reel in/pay out of 15K SRW cable. Power Take-Off (PTO) switch must be positioned to on before WINCH IN/OUT switch will operate. Push top half of switch to pay out cable, bottom half of switch to reel in cable.

AUXILIARY PANEL CONTROLS AND INDICATORS - Continued 0005 00

AUXILIARY PANEL CONTROLS AND INDICATORS M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, AND M1089A1 - Continued

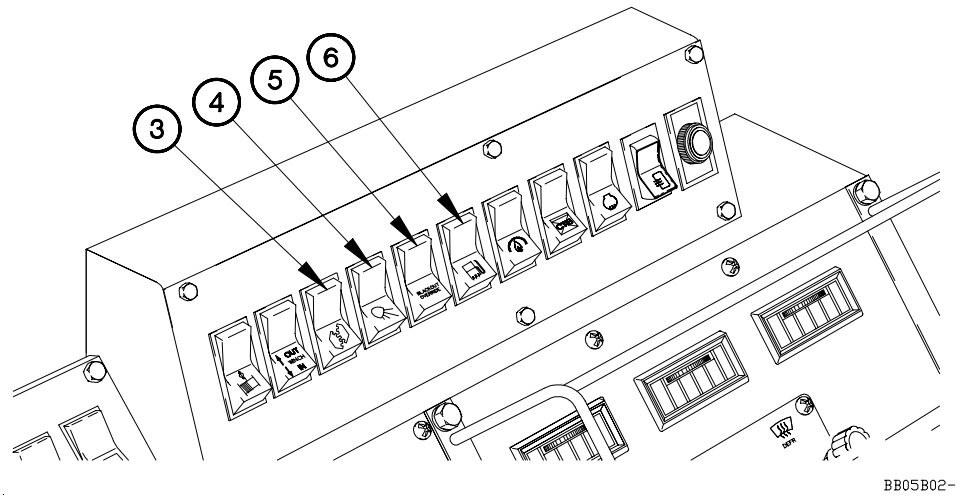


Table 1. Auxiliary Panel Controls and Indicators for M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, and M1089A1.

KEY	CONTROL OR INDICATOR	FUNCTION
3	PTO on/off switch (Models with PTO).	When placed to ON engine automatically idles at 1350 rps and transmission is locked in Neutral.
4	Work lights switch (M1084A1, M1086A1, M1088A1, and M1089A1)	Controls operation of work lights.
5	BLACKOUT OVERRIDE switch (M1084A1, M1086A1, M1088A1, and M1089A1)	Allows work lights to operate when vehicle is operating in blackout mode.
6	Fuel preheat switch (Models with cab arctic heater)	Controls operation of fuel preheater.

AUXILIARY PANEL CONTROLS AND INDICATORS - Continued 0005 00

AUXILIARY PANEL CONTROLS AND INDICATORS M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, AND M1089A1 - Continued

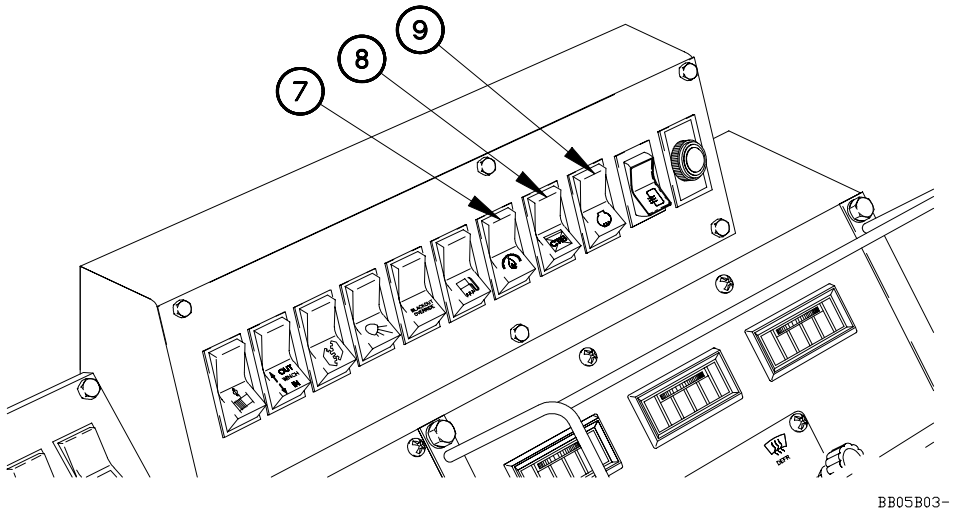


Table 1. Auxiliary Panel Controls and Indicators for M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, and M1089A1 - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
7	Arctic heater switch (Models with cab arctic heater)	Controls operation of arctic heater for cab.
8	CTIS on/off switch (Models with cab arctic heater)	Controls operation of Central Tire Inflation System (CTIS). Push top half of switch to turn CTIS on, bottom half of switch to turn CTIS off.
9	Swingfire pump switch (Models with cab arctic heater)	Controls operation of the pump which circulates engine coolant through the swingfire heat exchanger.

AUXILIARY PANEL CONTROLS AND INDICATORS - Continued 0005 00

AUXILIARY PANEL CONTROLS AND INDICATORS M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, AND M1089A1 - Continued

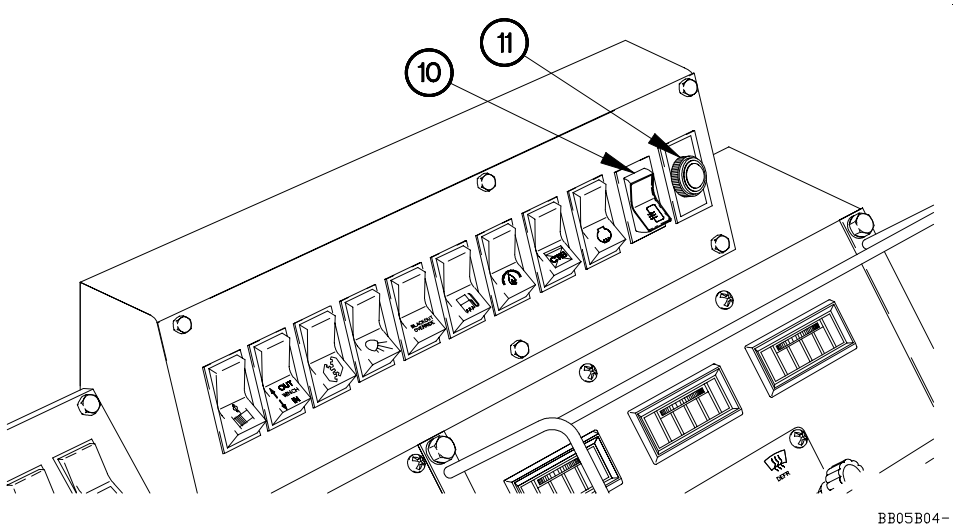


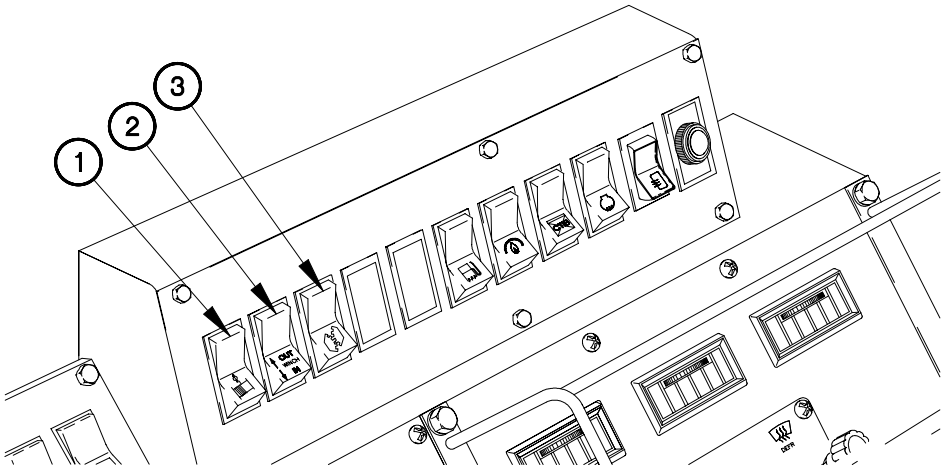
Table 1. Auxiliary Panel Controls and Indicators for M1083A1, M1084A1, M1085A1, M1086A1, M1088A1, and M1089A1 - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
10	Arctic engine preheat check switch (Models with cab arctic heater)	Initiates back-up diagnostic check.
11	Arctic engine preheat indicator light (Models with cab arctic heater)	Indicates system operation and is used for diagnosis.

AUXILIARY PANEL CONTROLS AND INDICATORS - Continued 0005 00

AUXILIARY PANEL CONTROLS AND INDICATORS FOR M1090A1

Table 2 describes controls and indicators that may be located on the auxiliary panel for the M1090A1.



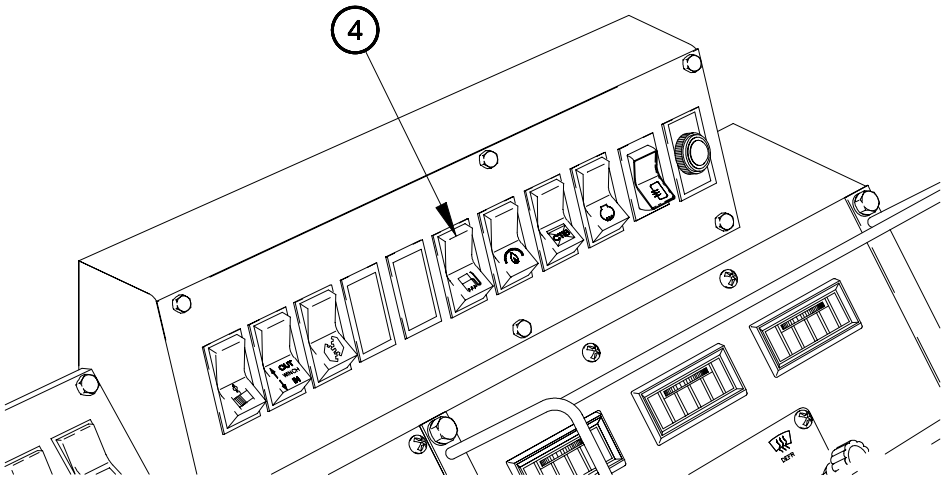
BB05B08-

Table 2. Auxiliary Panel Controls and Indicators for M1090A1.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Winch on/off switch (Models with 15K SRW)	Locks transmission in Neutral for self-recovery operation.
2	WINCH IN/OUT switch (Models with 15K SRW)	Controls reel in/pay out of 15K SRW cable. PTO and winch switches must be turned on before WINCH IN/OUT switch will operate. Push top half of switch to pay out cable, bottom half of switch to reel in cable.
3	PTO on/off switch (Models with PTO)	Controls operation of PTO.

AUXILIARY PANEL CONTROLS AND INDICATORS - Continued 0005 00

AUXILIARY PANEL CONTROLS AND INDICATORS FOR M1090A1



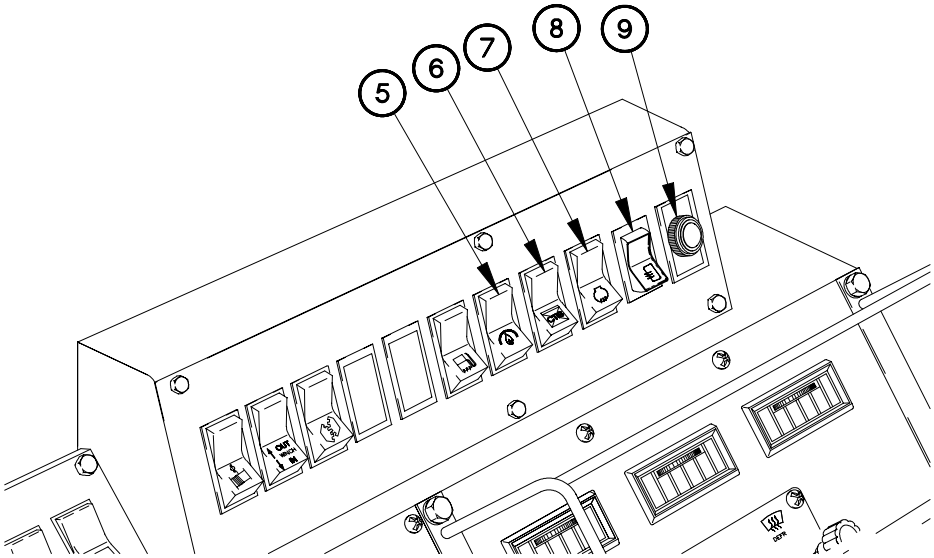
BB05B09-

Table 2. Auxiliary Panel Controls and Indicators for M1090A1.

KEY	CONTROL OR INDICATOR	FUNCTION
4	Fuel preheat switch (Models with cab arctic heater)	Controls operations of fuel preheater.

AUXILIARY PANEL CONTROLS AND INDICATORS - Continued 0005 00

AUXILIARY PANEL CONTROLS AND INDICATORS FOR M1090A1 - Continued



BB05B10-

Table 2. Auxiliary Panel Controls and Indicators for M1090A1 - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
5	Arctic heater switch (Models with cab arctic heater)	Controls operation of cab arctic heater.
6	CTIS on/off switch (Models with cab arctic heater)	Controls operation of Central Tire Inflation System (CTIS). Push top half of switch to turn CTIS on, bottom half of switch to turn CTIS off.
7	Swingfire pump switch (Models with cab arctic heater)	Controls operation of the pump which circulates engine coolant through the swingfire heat exchanger.
8	Arctic engine preheat check switch (Models with cab arctic heater)	Initiates back-up diagnostic check.
9	Arctic engine preheat indicator light (Models with cab arctic heater)	Indicates system operation and is used for diagnosis.

CENTER CONSOLE CONTROLS AND INDICATORS 0006 00

GENERAL

The following paragraphs contain illustrations that show the location of each control and indicator for the center console of the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

AIR SYSTEM CONTROLS

Table 1 describes air system controls on the center console.

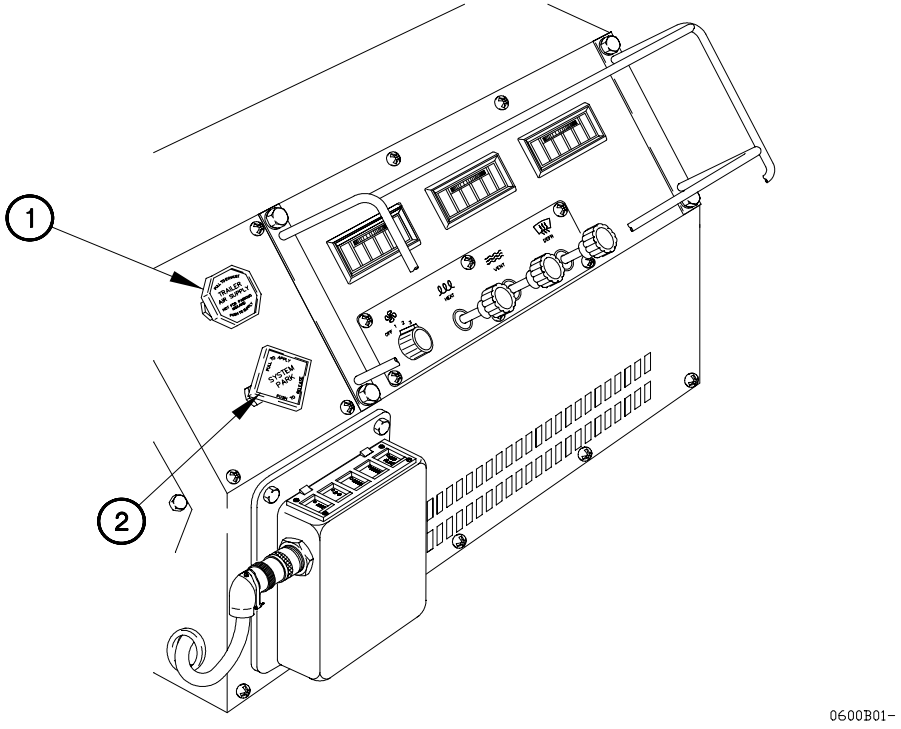


Table 1. Air System Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	TRAILER AIR SUPPLY control	Controls air supply to trailer brakes. Air is supplied to trailer when control is pushed in and the SYSTEM PARK is activated.
2	SYSTEM PARK control	Applies and releases the parking brakes and trailer parking brakes (if equipped). Parking brakes are applied when control is pulled. It also applies to the TRAILER AIR SUPPLY valve.

CENTER CONSOLE CONTROLS AND INDICATORS - Continued 0006 00

HEATER/DEFROST CONTROLS

Table 2 describes personnel heater controls on the center console.

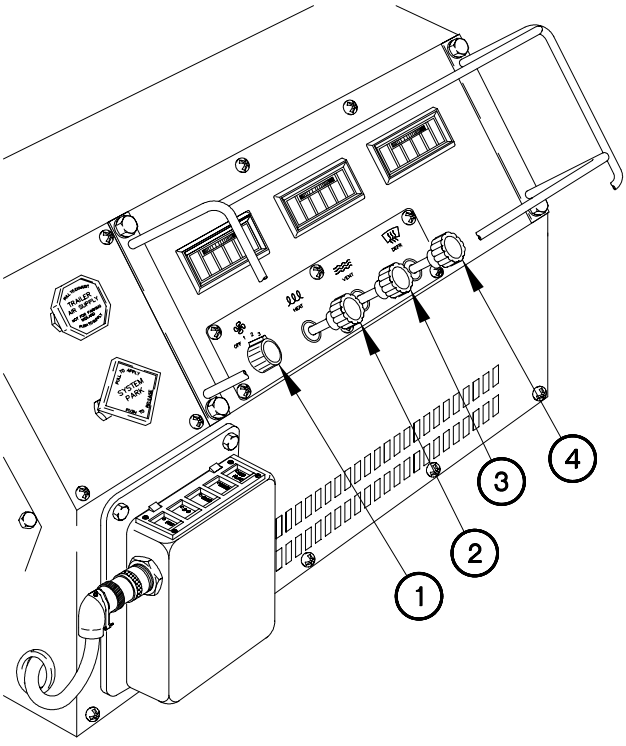


Table 2. Heater/Defrost Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Fan switch	Four-position switch used to control operation and speed of heater fan.
2	HEAT control	Controls temperature of air that heats cab interior and defrosts windshield. Temperature of air increases when control is pulled.
3	VENT control	Controls flow of outside air to cab. When control is pulled, fresh air is vented into cab.
4	DEFR (Defrost) control	Controls windshield defrosting. Air is routed from heater to defrost windshield when control is pulled.

CENTER CONSOLE CONTROLS AND INDICATORS - Continued 0006 00

INCLINOMETER

Table 3 describes the Inclinometer on the center console.

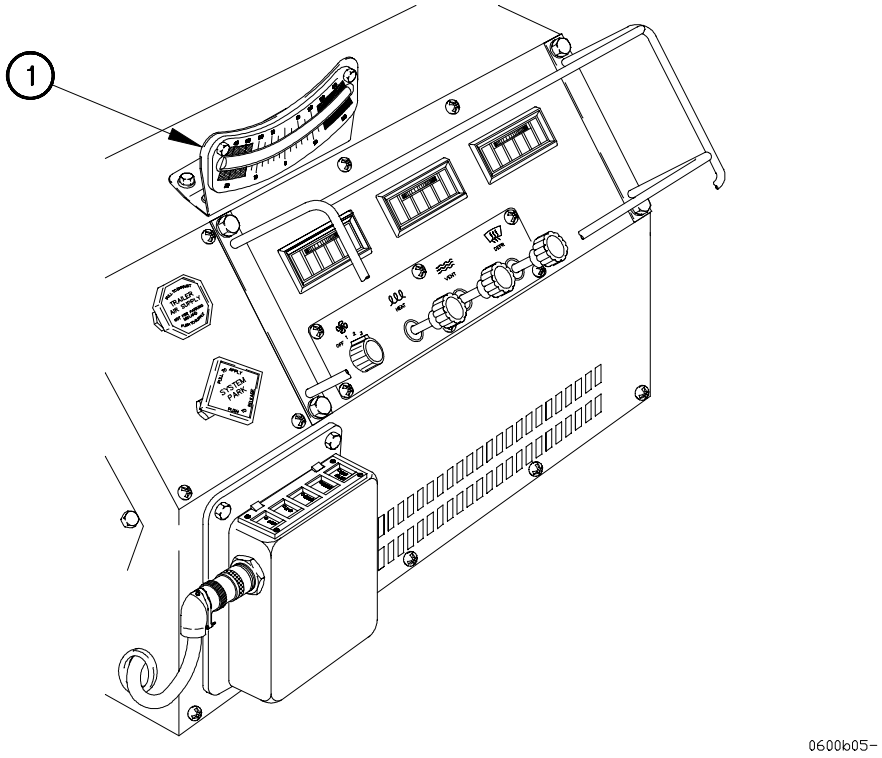


Table 3. Inclinometer.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Inclinometer	Used on vehicles to prevent flip-over. Color zones (RED) = flip-over danger, BLACK = safe operation) are used to instantly alert the operator of danger. The color zones are based on degree settings. Inclinometer may be mounted on personnel heater or auxiliary panel on later models.

CENTER CONSOLE CONTROLS AND INDICATORS - Continued 0006 00

CTIS ELECTRONIC CONTROL UNIT (ECU)

Table 4 describes CTIS controls and indicators on the center console.

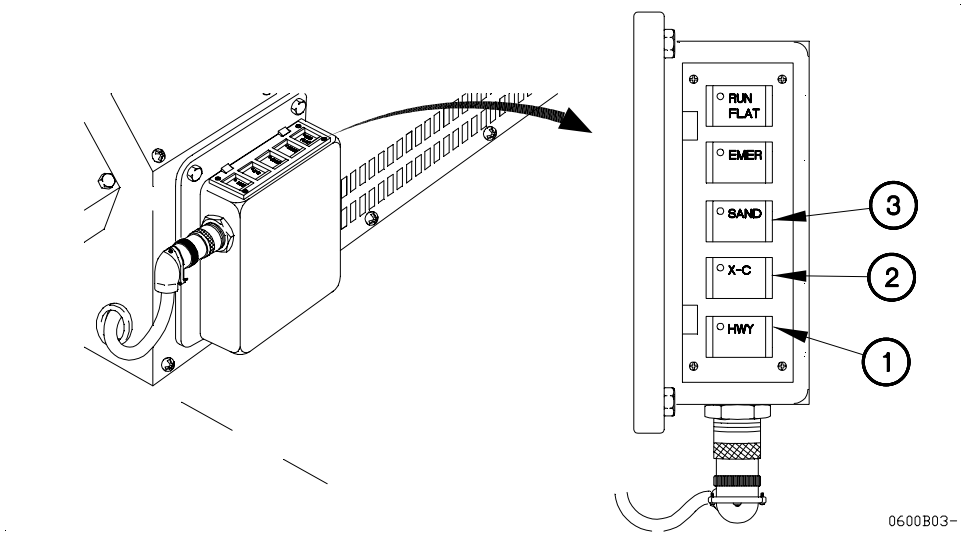


Table 4. CTIS Electronic Control Unit (ECU) Controls and Indicators.

KEY	CONTROL OR INDICATOR	FUNCTION
1	HWY (Highway) mode button and indicator	Pressed to set CTIS in highway mode. Indicator illuminates steady when tire pressure is 60 psi (414 kPa) for all models except M1088A1 and M1089A1, and 81 psi (558 kPa) for models M1088A1 and M1089A1. Maximum speed is 55 mph (88 km/h) in HWY mode.
2	X-C (Cross-Country) mode button and indicator	Pressed to set CTIS in cross-country mode. Indicator illuminates steady when tire pressure is 37 psi (255 kPa) (54 psi (372 kPa) for M1088A1 and M1089A1 only). Maximum speed is 40 mph (64 km/h) in X-C mode.
3	SAND (Soft Terrain) mode button and indicator	Pressed to set CTIS in soft terrain mode. Indicator illuminates steady when tire pressure is 22 psi (152 kPa) (32 psi (221 kPa) for M1088A1 and M1089A1 only). Maximum speed is 12 mph (19 km/h) in SAND mode.

CENTER CONSOLE CONTROLS AND INDICATORS - Continued 0006 00

CTIS ELECTRONIC CONTROL UNIT (ECU) - Continued

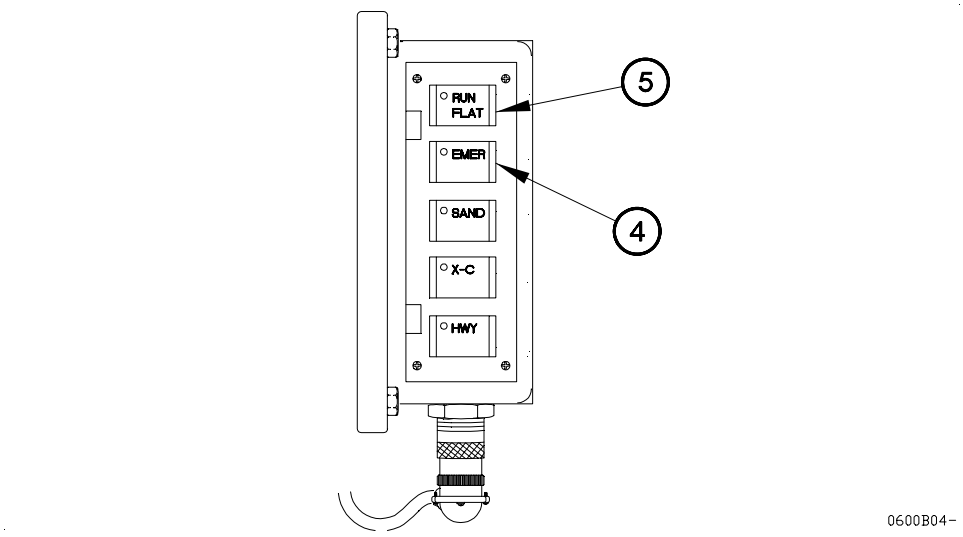


Table 4. CTIS Electronic Control Unit (ECU) Controls and Indicators - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	EMER (Emergency) mode button and indicator	Pressed to set CTIS in emergency mode. Indicator illuminates steady when tire pressure is 16 psi (110 kPa) for all models except M1088A1 and M1089A1 and 24 psi (165 kPa) for models M1088A1 and M1089A1. Maximum speed is 5 mph (8 km/h) in EMER mode.
5	RUN FLAT mode button and indicator	Enhance mode used to maintain tire air pressure in the event of a leak in the other four modes.

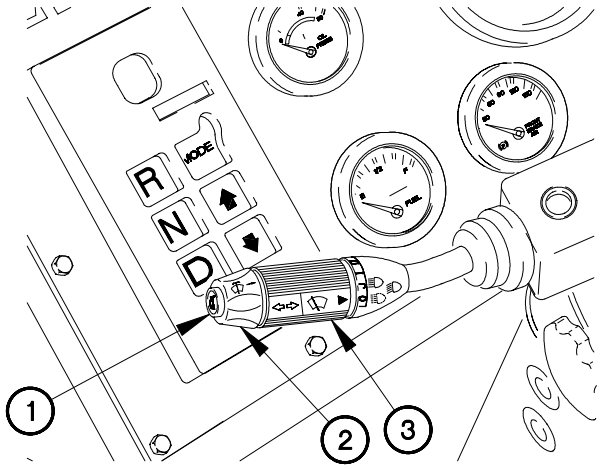
STEERING COLUMN CONTROLS 0007 00

GENERAL

The following paragraphs contain illustrations that show the location of each steering column control for the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

STEERING COLUMN CONTROLS

Table 1 describes controls on the steering column.



0700B01-

Table 1. Steering Column Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Horn button	Sounds horn when pressed.
2	Windshield washer switch	Activates windshield washer when pushed in.
3	Windshield wiper switch	Four-position switch used to operate and control the speed of the windshield wipers. Windshield wipers operate intermittently when switch is placed in the "J" position. Windshield wipers operate at low or high speed when switch is placed in the "I" or "II" position.

STEERING COLUMN CONTROLS - Continued

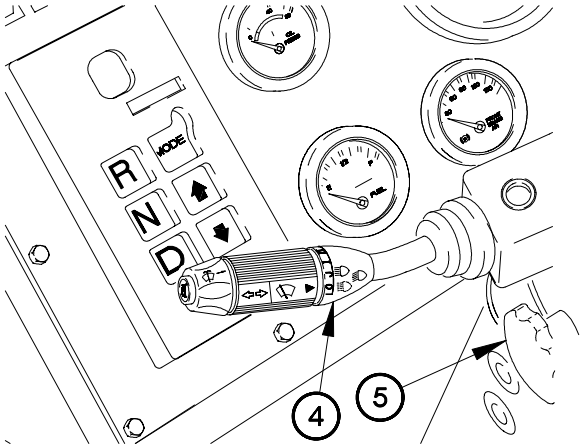


Table 1. Steering Column Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	Turn signal/headlight dimmer control	Operates turn signals and controls headlight dimming. Right turn signal indicator will flash when control is pushed up. Left turn signal indicator will flash when control is pushed down. Headlight dimming is controlled by pulling the control toward the Operator. HIGH BEAM indicator illuminates when high beam headlights are on.
5	Steering wheel tilt/telescope control	Adjusts angle and height of steering wheel.

FLOOR-MOUNTED CONTROLS 0008 00

GENERAL

The following paragraph contains an illustration that shows the location of each floor-mounted control for the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

FLOOR-MOUNTED CONTROLS

Table 1 describes floor-mounted controls.

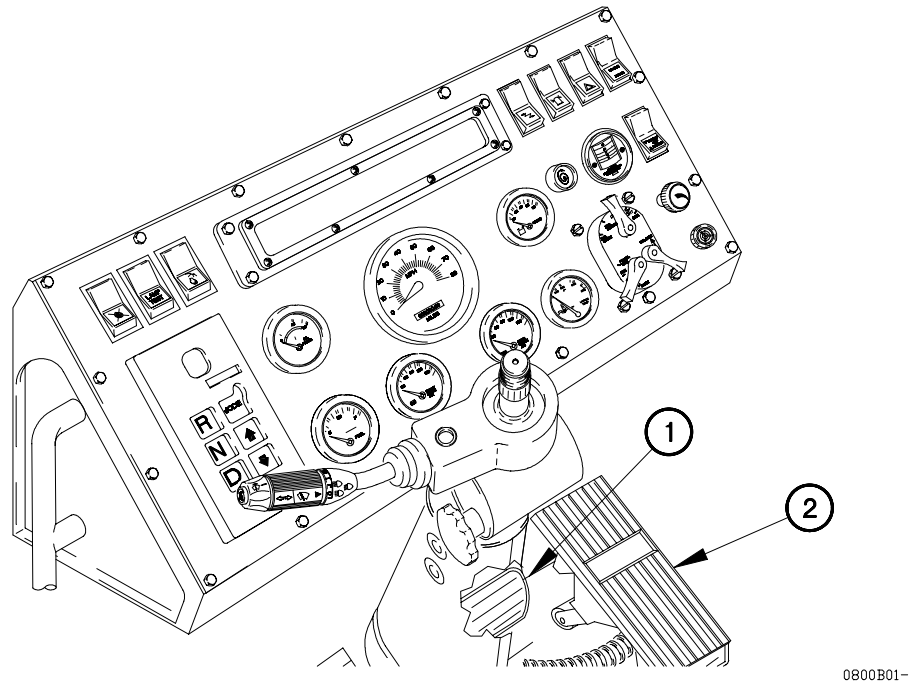


Table 1. Floor-Mounted Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Brake pedal	Applies service brakes when pressed. Also applies trailer service brakes when the vehicle is coupled to a trailer and TRAILER AIR SUPPLY control is pushed in.
2	Accelerator pedal	Controls engine speed.

DOOR-MOUNTED CONTROLS 0009 00

GENERAL

The following paragraph contains an illustration that shows the location of each door-mounted control for the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

DOOR MOUNTED CONTROLS

Table 1 describes door-mounted controls.

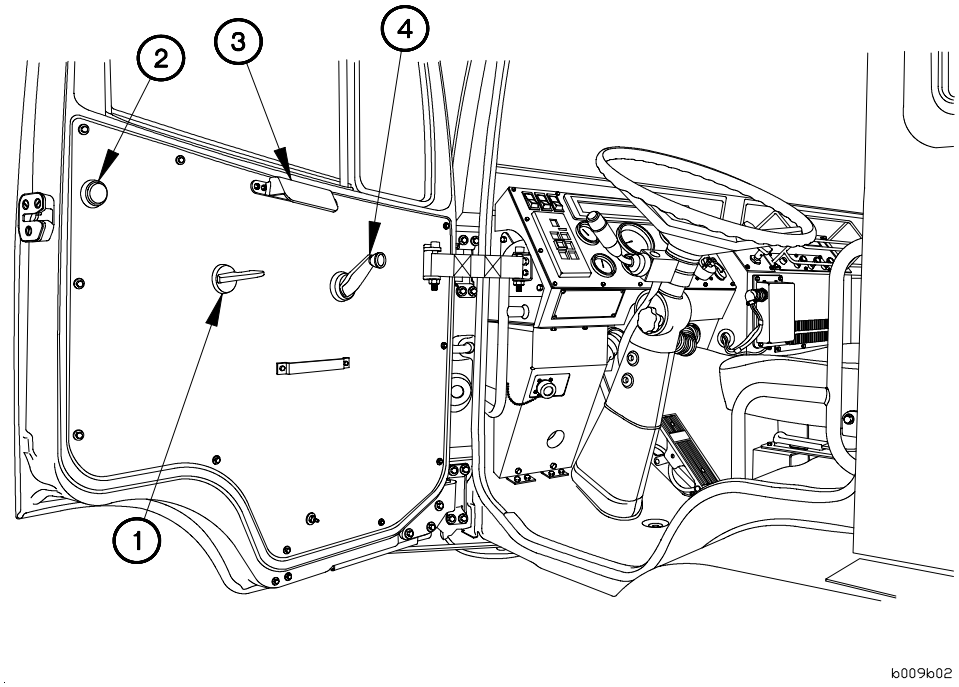


Table 1. Door-Mounted Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Cab door latch	Opens cab door from inside or outside of vehicle when pulled.
2	Cab door lock	Locks door so that it cannot be opened from the outside of the vehicle.
3	Cab door pull bar.	Pulls cab door closed.
4	Cab door window glass regulator	Raises and lowers window glass when handle is turned.

SEAT CONTROLS 0010 00

GENERAL

The following paragraphs contain illustrations that show the location of each seat control for the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

SEAT CONTROLS

Table 1 describes controls on the driver's and passenger's seat.

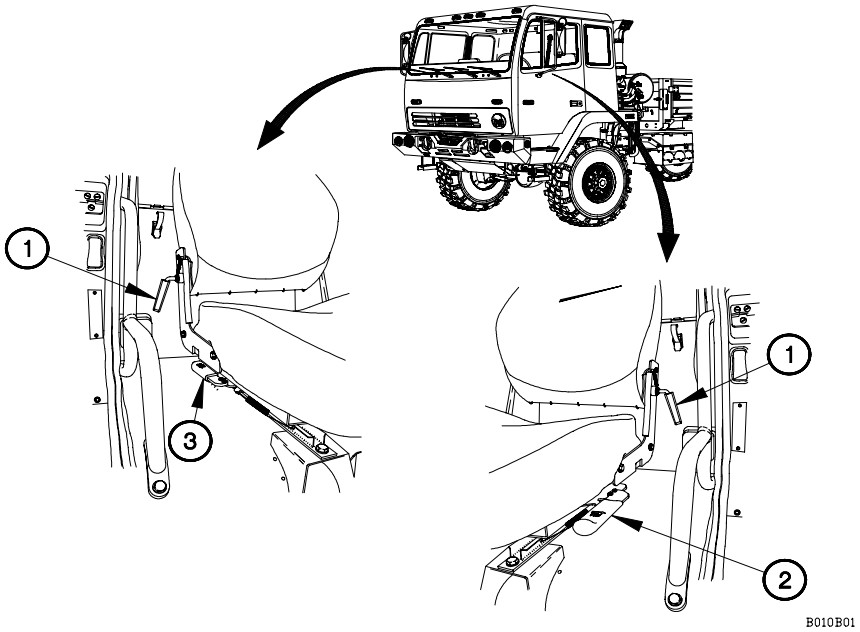


Table 1. Seat Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Seat back release knob	Allows the seat back to fold forward to allow access to stowage area behind seat.
2	Forward/backward adjustment control	Pulls outward to allow the driver's seat to be moved forward or backward.
	NOTE	
	The following control is provided on vehicle S/N 18,549 and higher.	
3	Forward/Backward adjustment control.	Pulls outward to allow passenger's seat to be moved forward or backward.

EXTERIOR CONTROLS AND INDICATORS 0011 00

GENERAL

The following paragraphs contain illustrations that show the location of each exterior control and indicator for the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

PASSENGER SIDE EXTERIOR CONTROLS AND INDICATORS

Table 1 describes controls on the exterior passenger side of the vehicle.

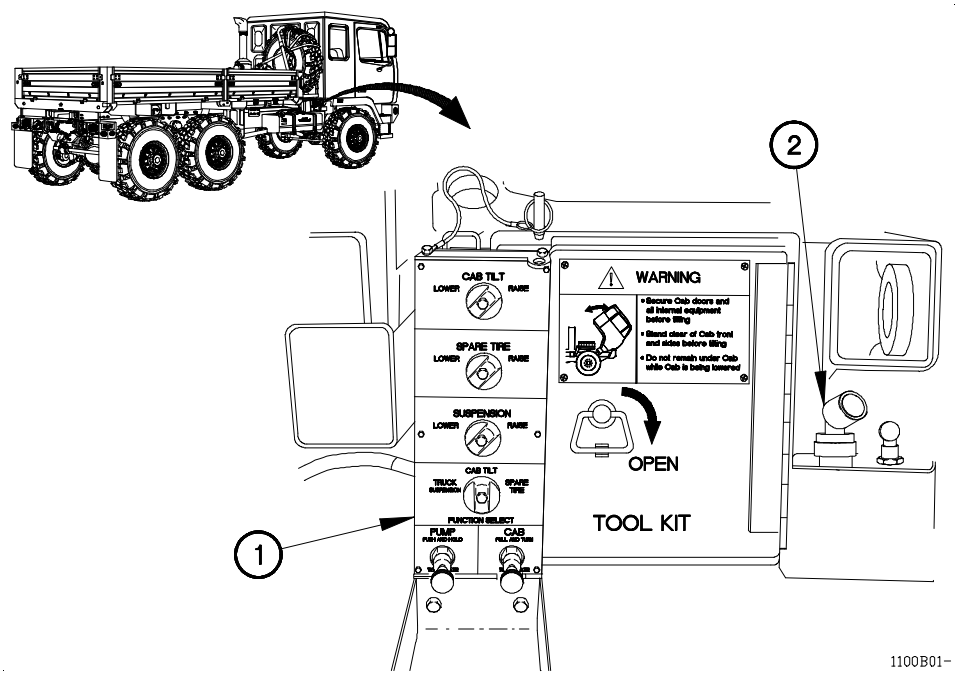


Table 1. Passenger Side Exterior Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Hydraulic manifold	Used to raise and lower the cab and spare tire, and to compress the suspension for internal air transport. Table 2 describes all controls on hydraulic manifold.
2	Back-up hydraulic pump	Hydraulic hand pump that provides back-up power in case of failure to the hydraulic manifold.

EXTERIOR CONTROLS AND INDICATORS - Continued 0011 00

PASSENGER SIDE EXTERIOR CONTROLS AND INDICATORS - Continued

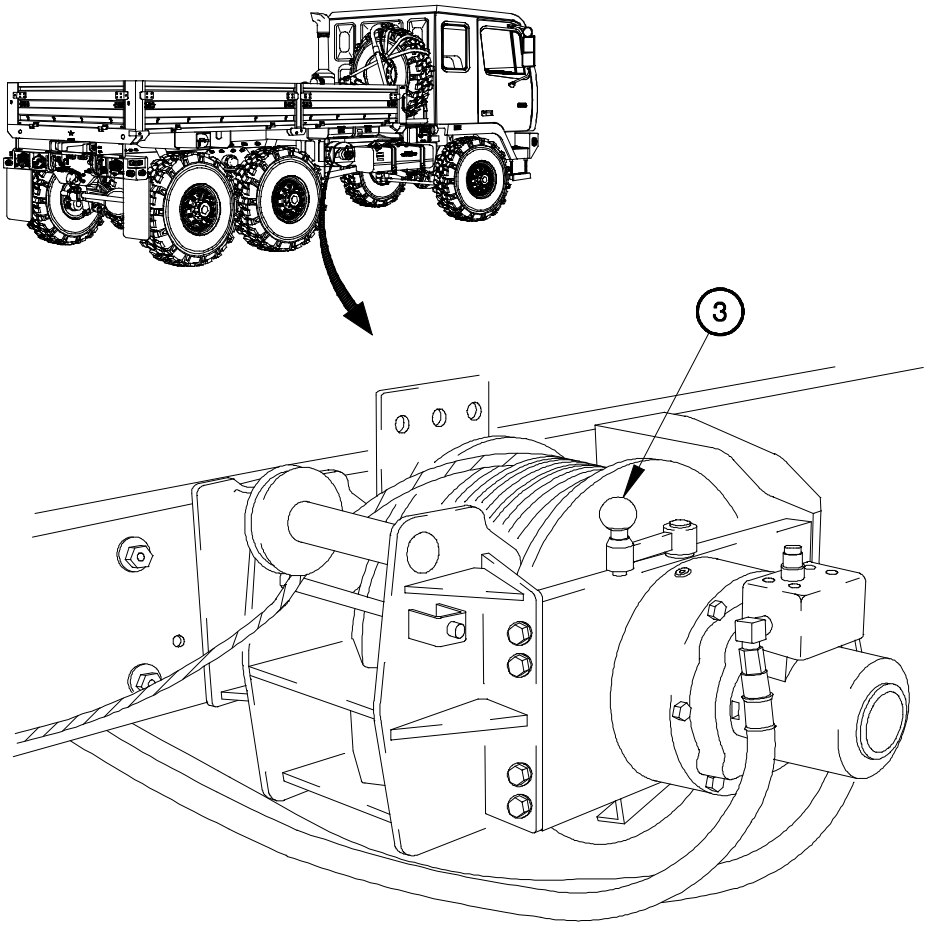


Table 1. Passenger Side Exterior Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
3	Winch clutch control lever (Models with 15K Self-Recovery Winch (SRW))	Engages and disengages 15K SRW clutch. When disengaged, winch drum will spool freely and cable can be payed out by hand. When engaged, 15K SRW operation is controlled from the WINCH IN/OUT switch inside cab.

EXTERIOR CONTROLS AND INDICATORS - Continued 0011 00

PASSENGER SIDE EXTERIOR CONTROLS AND INDICATORS - Continued

NOTE

The following three controls are only equipped on vehicle S/N 18,550 or higher.

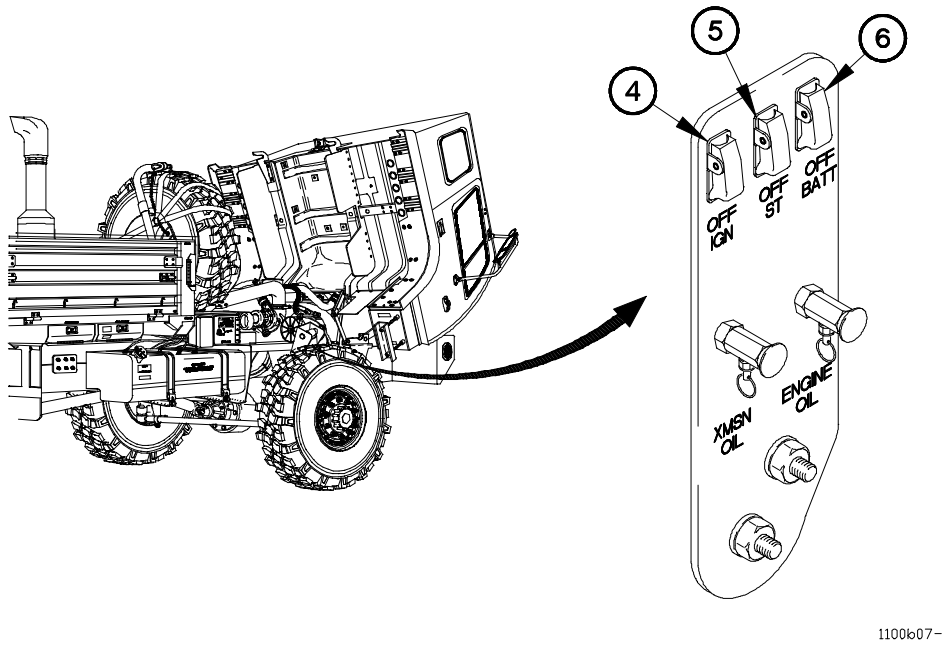


Table 1. Passenger Side Exterior Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	OFF IGN switch	Placing the OFF IGN switch to the on position supplies battery power to the 12 VDC and 24 VDC ignition
5	OFF ST switch	Placing the OFF ST switch (momentary) to the ON position starts the vehicle.
	NOTE To prevent alternator load dump (voltage spike) the OFF BATT switch is to be operated after the engine is shut down.	
6	OFF BATT switch	Placing the OFF BATT switch to the OFF position supplies a ground signal to the master battery disconnect relay and after a 1 second delay, disconnects the batteries from the electrical system.

EXTERIOR CONTROLS AND INDICATORS - Continued 0011 00

HYDRAULIC MANIFOLD CONTROLS

Table 2 describes controls on the hydraulic manifold.

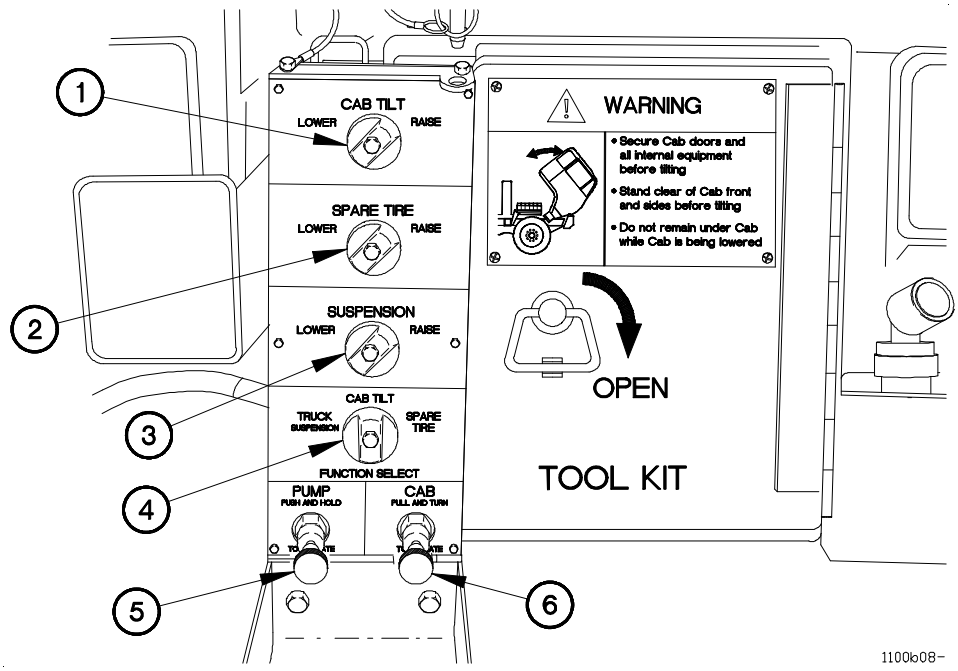


Table 2. Hydraulic Manifold Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
1	CAB TILT knob	Allows operator to raise or lower the cab.
2	SPARE TIRE knob	Allows operator to raise or lower the spare tire.
3	SUSPENSION knob	Allows operator to raise or lower the suspension.
4	FUNCTION SELECT knob	Allows operator to determine what component will receive hydraulic pressure.
5	PUMP knob	Pushing in and holding PUMP knob will activate pre-selected system: SUSPENSION, CAB TILT, or SPARE TIRE. Works with FUNCTION SELECT knob.
6	CAB knob	Turn knob to the left and pull out to deflate cab air springs. Press and turn knob to the right to inflate cab air springs.

DRIVER'S SIDE EXTERIOR CONTROLS AND INDICATORS

Table 3 describes controls and indicators on the exterior driver's side of the vehicle.

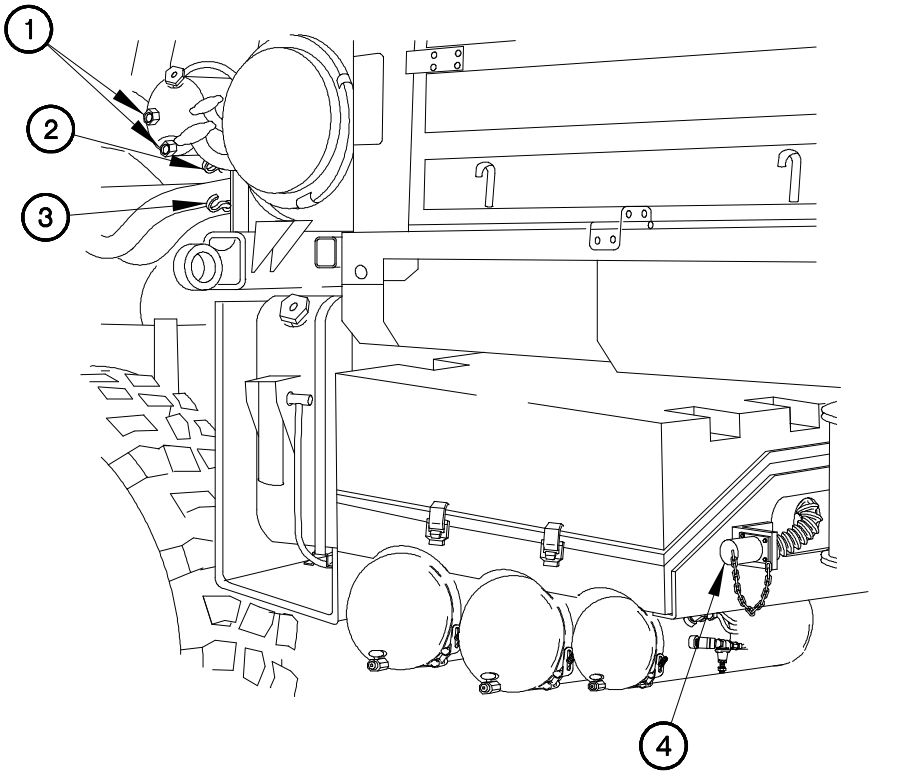


Table 3. Driver's Side Exterior Controls and Indicators.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Radiator overflow tank sight glasses	Top sight glass indicates safe coolant level with the engine not running. When coolant is not visible in lower sight glass, vehicle should not be operated.
2	XMSN (Transmission) DIPSTICK	Indicates oil level in the transmission.
3	Engine oil dipstick	Indicates oil level in the engine.
4	NATO receptacle	Receptacle used for starting the vehicle using external power.

EXTERIOR CONTROLS AND INDICATORS - Continued 0011 00

DRIVER'S SIDE EXTERIOR CONTROLS AND INDICATORS - Continued

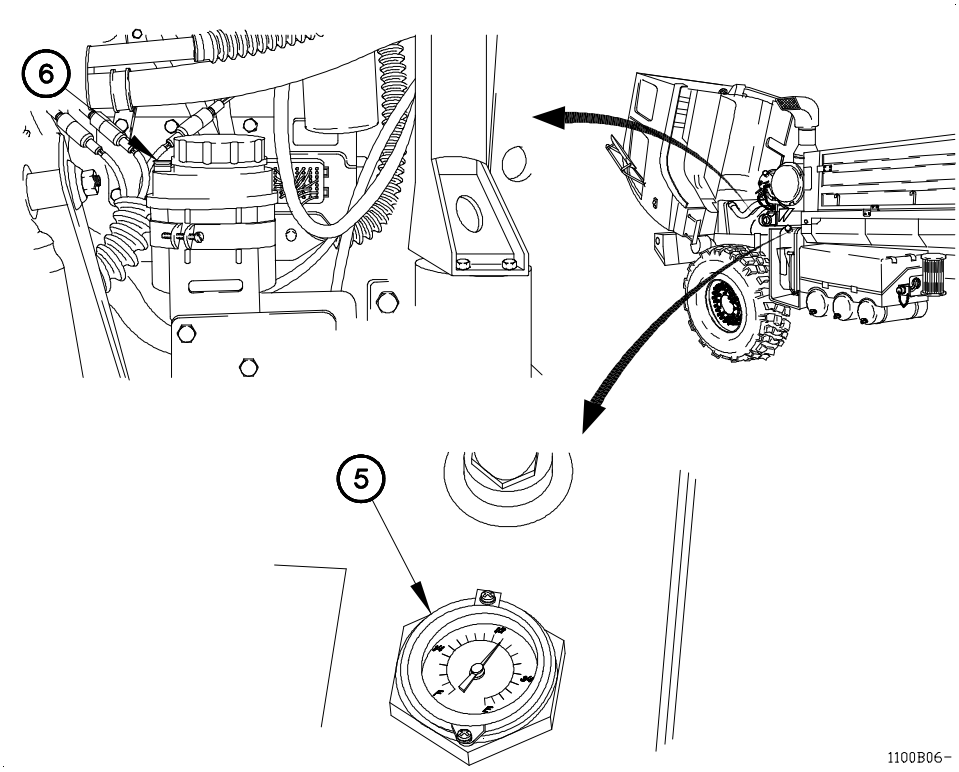


Table 3. Driver's Side Exterior Controls and Indicators - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
5	Hydraulic oil level gage (Models with 15K SRW)	Indicates oil level in the hydraulic reservoir.
6	Power steering dipstick	Indicates oil level in the power steering reservoir.

EXTERIOR CONTROLS AND INDICATORS - Continued 0011 00

DRIVER'S SIDE EXTERIOR CONTROLS AND INDICATORS (Vehicle S/N 18,550 or Higher)

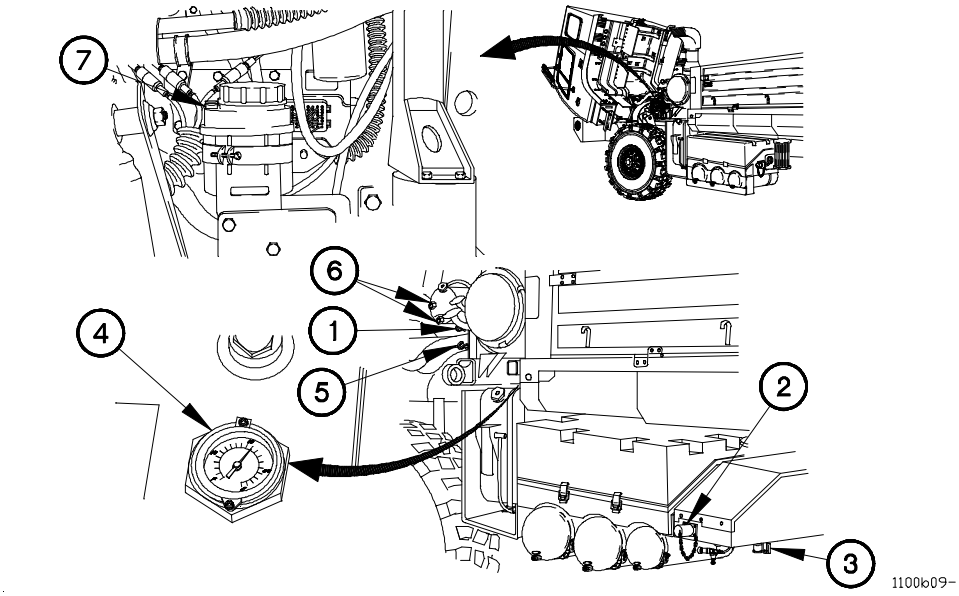


Table 3. Driver's Side Exterior Controls and Indicators. (Vehicle S/N 18,550 or Higher)

KEY	CONTROL OR INDICATOR	FUNCTION
1	XMSN (Transmission) DIPSTICK	Indicates oil level in the transmission.
2	NATO receptacle	Receptacle used for starting the vehicle using external power.
3	Manual Battery Disconnect Switch (MBDS)	When switched to the OFF position, disconnects the batteries from the electrical system.
4	Hydraulic oil lever gage (Models with 11K SRW)	Indicates oil level in the hydraulic reservoir.
5	Engine oil dipstick	Indicates oil level in the engine.
6	Radiator overflow tank sight glasses	Top sight glass indicates safe coolant level with engine not running.
7	Power steering dipstick	Indicates oil level in the power steering reservoir.

SPECIAL PURPOSE KIT CONTROLS AND INDICATORS 0012 00

GENERAL

The following paragraphs contain illustrations that show the location of each special purpose kit control and indicator for the M1083A1 series vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the names and the functional descriptions of each control and indicator.

TROOP TRANSPORT ALARM SWITCH

Table 1 describes the troop transport alarm switch.

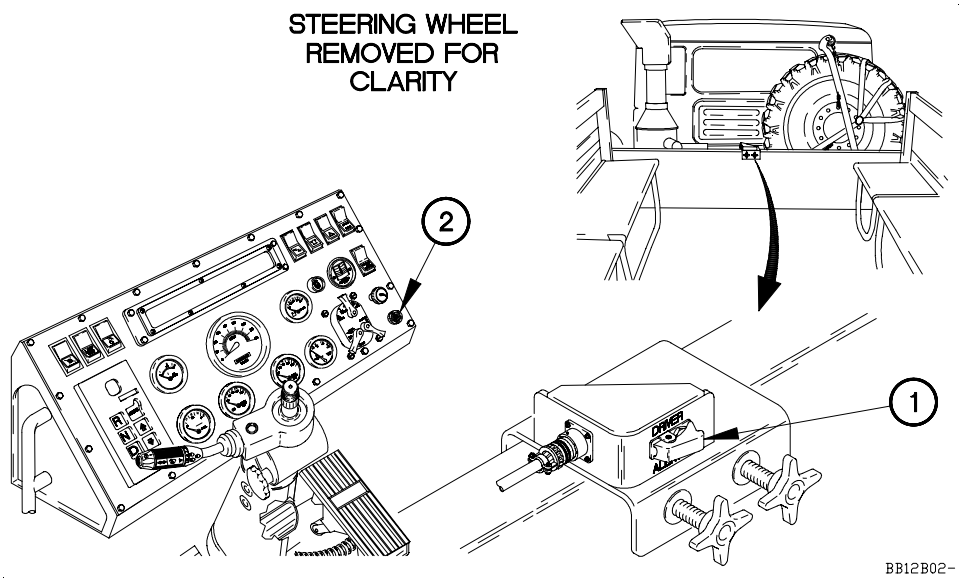


Table 1. Troop Transport Alarm Switch.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Troop transport alarm switch	The troop transport alarm switch is part of the troopseat kit. The troop transport alarm switch is a momentary switch located in the cargo bed when the troopseat kit is installed. The troop transport alarm switch is used to alert the driver to stop the vehicle.
2	Troop transport alarm	The troop transport alarm is a dual tone audible alarm located in the cab. When activated by the troop transport alarm switch located in the cargo bed, the troop transport alarm alerts the driver to stop the vehicle.

SPECIAL PURPOSE KIT CONTROLS AND INDICATORS - 0012 00 Continued

LMHC

Table 2 describes LMHC controls and indicators.

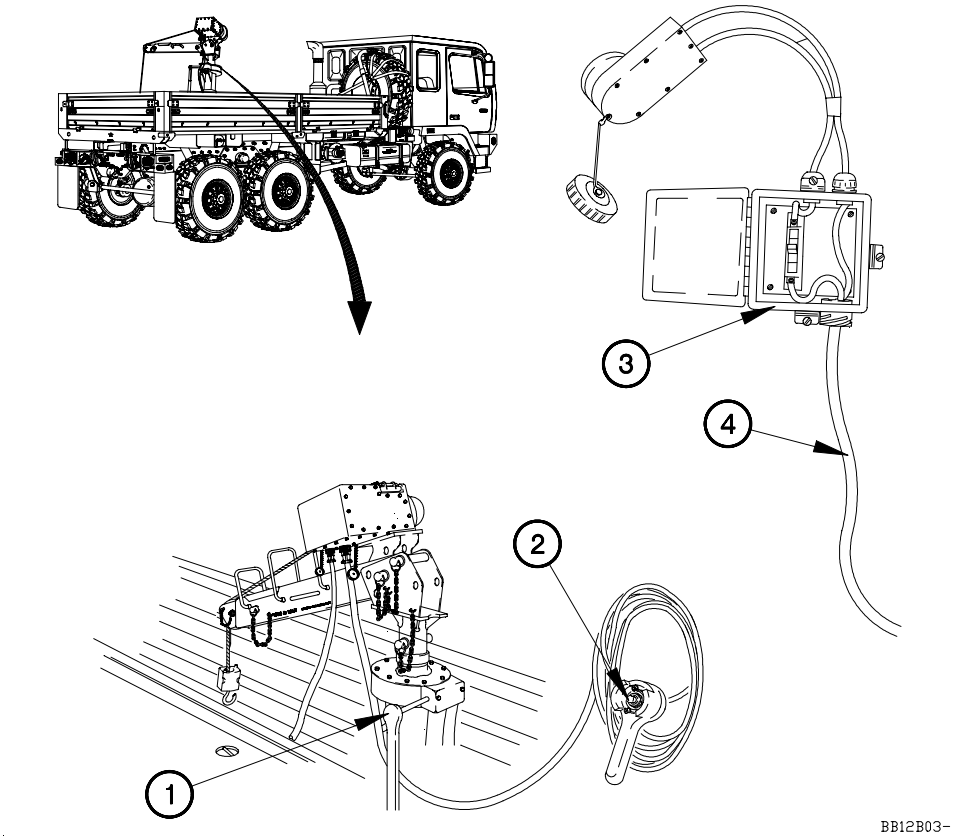


Table 2. Light Material Handling Crane (LMHC) Controls and Indicators.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Swing control	Swings LMHC boom to right and left.
2	Winch remote control	Remote control unit used to extend and retract hoist cable.
3	Circuit breaker box	Turns power on and off and protects LMHC from damage from electrical overloads.
4	Power cable	Supplies power to circuit breaker box.

SPECIAL PURPOSE KIT CONTROLS AND INDICATORS - 0012 00 Continued

CARGO AREA ARCTIC HEATER

Table 3 describes cargo area arctic heater controls and indicators.

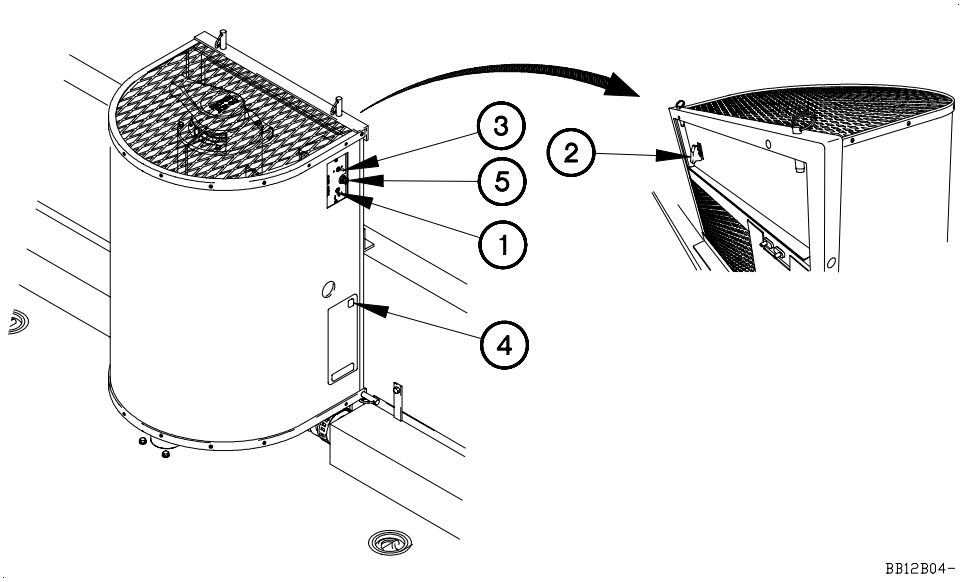


Table 3. Cargo Area Arctic Heater Controls and Indicators.

KEY	CONTROL OR INDICATOR	FUNCTION
1	START/OFF/RUN switch	Turns power on and off, also starts diagnostic mode for cargo area arctic heater.
2	Override switch	Allows cargo area arctic heater to operate while engine is not running.
3	LO/HI switch	Switches cargo area arctic heater from low heat (30,000 BTU) to high heat (60,000 BTU).
4	Diagnostic Display	Displays diagnostic codes for cargo area arctic heater.
5	Control Box Lamp	Illuminates to indicate cargo area arctic heater has achieved ignition. Flashes to indicate abnormal conditions are present in cargo area arctic heater.

SPECIAL PURPOSE KIT CONTROLS AND INDICATORS - 0012 00 Continued

ARCTIC ENGINE PREHEAT INDICATOR AND SWITCH

Table 4 describes the arctic engine preheat indicator light and switch.

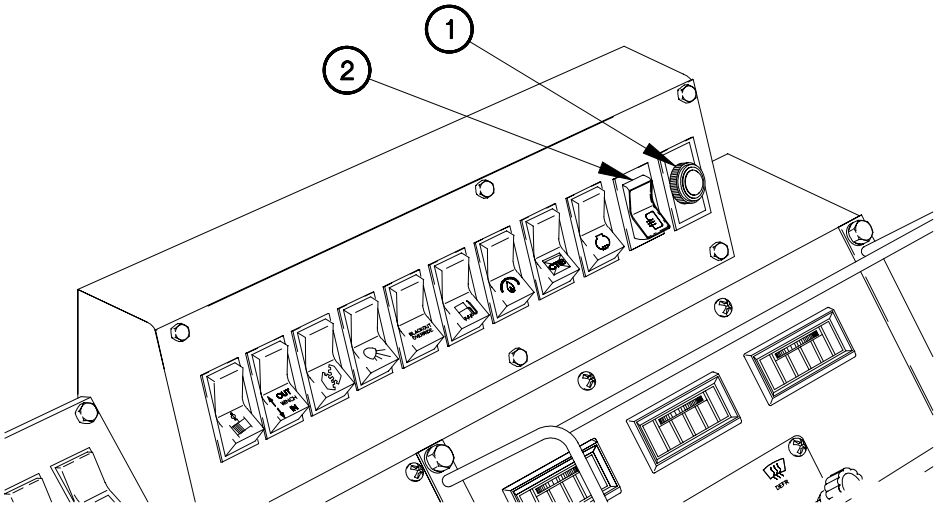


Table 4. Arctic Engine Preheat Indicator and Switch.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Arctic engine preheat indicator light	The arctic engine preheat indicator light is part of the arctic engine preheat kit. It is located on the auxiliary panel and is used to show arctic engine preheat system status and for diagnostics.
2	Arctic engine preheat check switch	The arctic engine preheat check switch is a rocker switch located on the auxiliary panel. When activated, it starts a diagnostic check of the arctic engine preheat system.

SPECIAL PURPOSE KIT CONTROLS AND INDICATORS - 0012 00 Continued

ENGINE BLOCK ARCTIC HEATER INDICATORS

Table 5 describes the engine block arctic heater indicator lights.

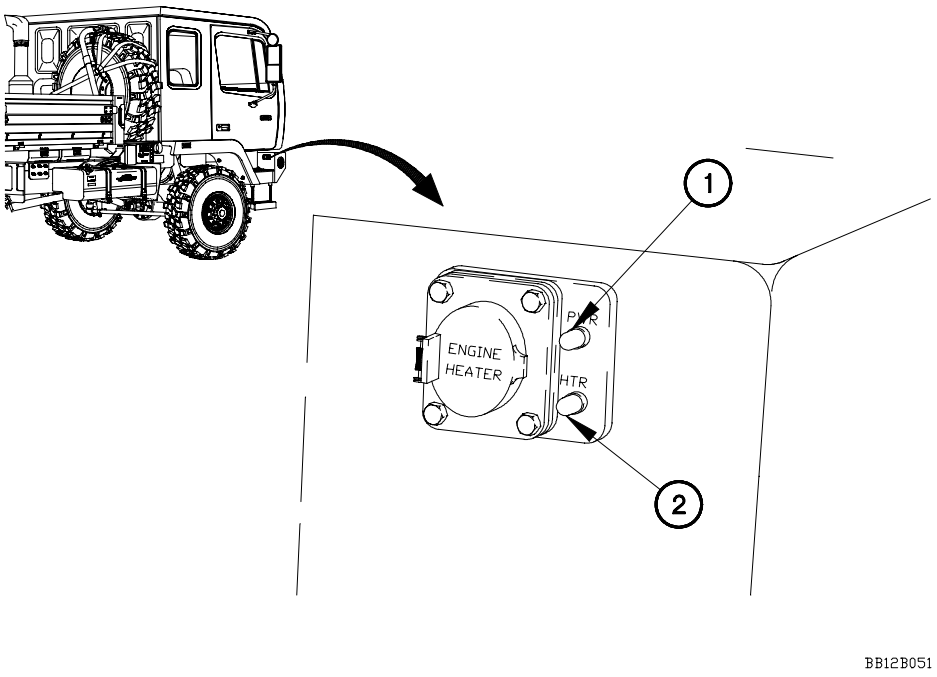


Table 5. Engine Block Arctic Heater Indicator Lights.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Engine Block Arctic Heater Power (PWR) indicator light	The engine block arctic heater power indicator light is part of the engine block arctic heater kit. It is located on the rear RH side of the front bumper and is used to show engine block arctic heater system AC power is ON/OFF.
2	Engine Block Arctic Heater (HTR) indicator	The engine block arctic heater indicator light is part of the engine block arctic heater kit. It is located on the rear RH side of the front bumper and is used to show engine block arctic heater system is ON/OFF.

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS 0013 00

GENERAL

The following paragraphs contain illustrations that show the location of each MHC control and indicator for operation of the M1084A1/M1086A1 vehicles. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the names and the functional descriptions of each control and indicator.

MHC CONTROLS

Table 1 describes all controls on the MHC.

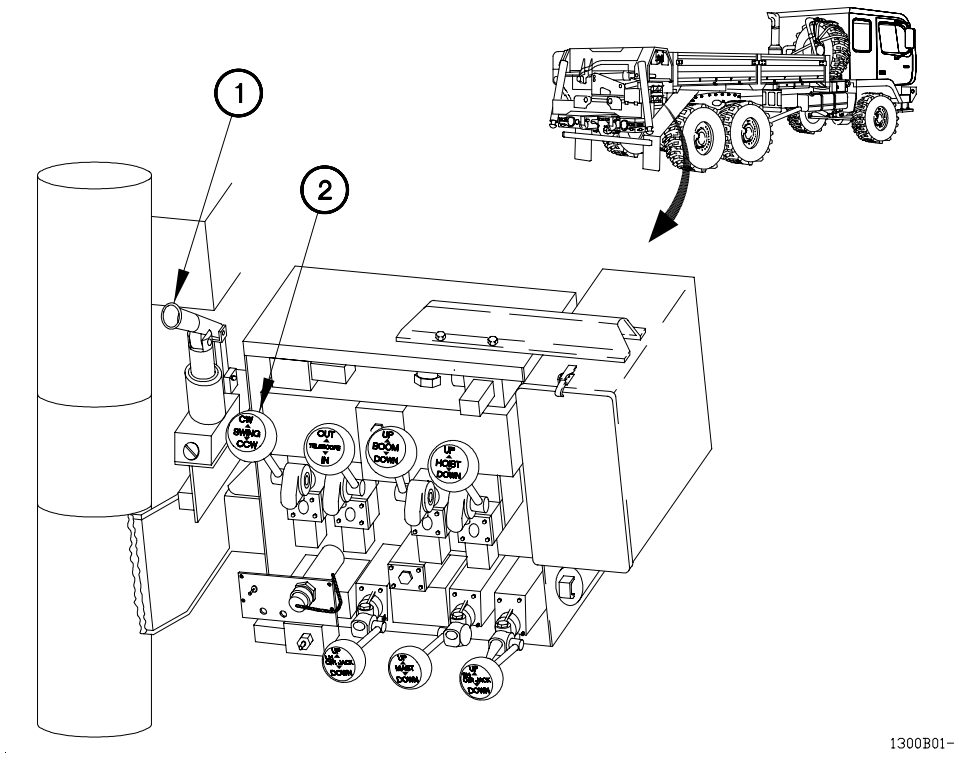
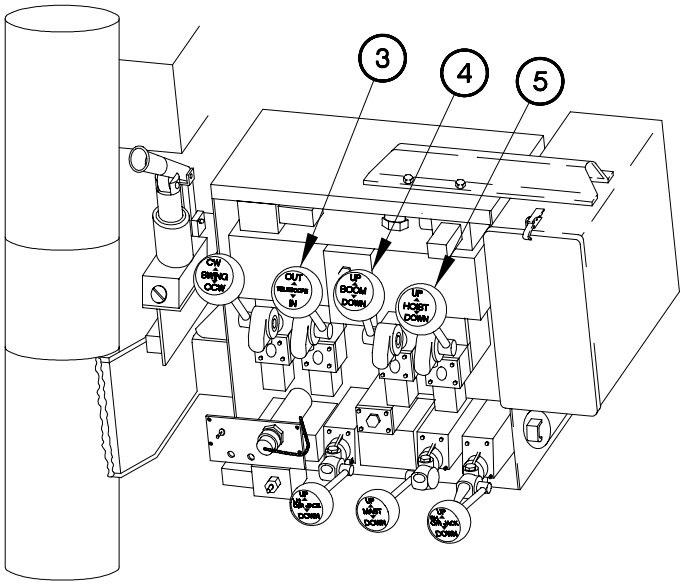


Table 1. Material Handling Crane (MHC) Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Manual hydraulic pump	Used to manually retract and stow the MHC in the event of hydraulic pump failure.
2	SWING lever	Swings the MHC boom to the right (CW) and to the left (CCW).

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued 0013 00

MHC CONTROLS - Continued



1300B02-

Table 1. Material Handling Crane (MHC) Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
3	TELESCOPE lever	Extends and retracts the boom.
4	BOOM lever	Raises and lowers the boom.
5	HOIST lever	Pays out and reels in the hoist cable.

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued 0013 00

MHC CONTROLS - Continued

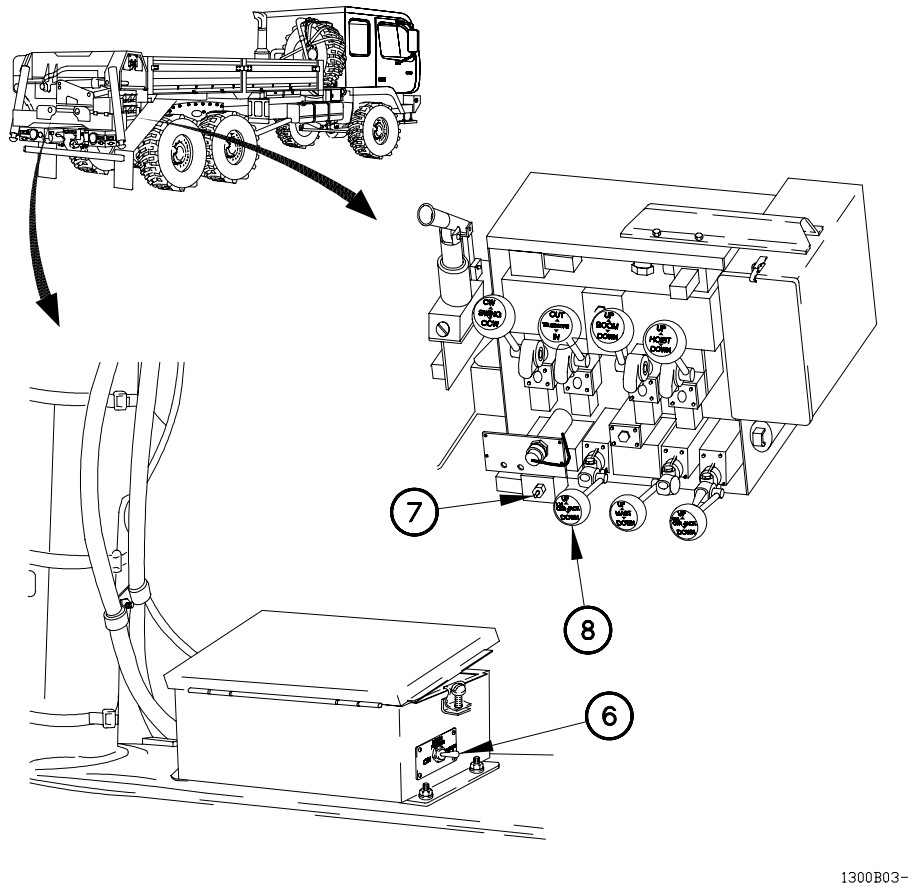
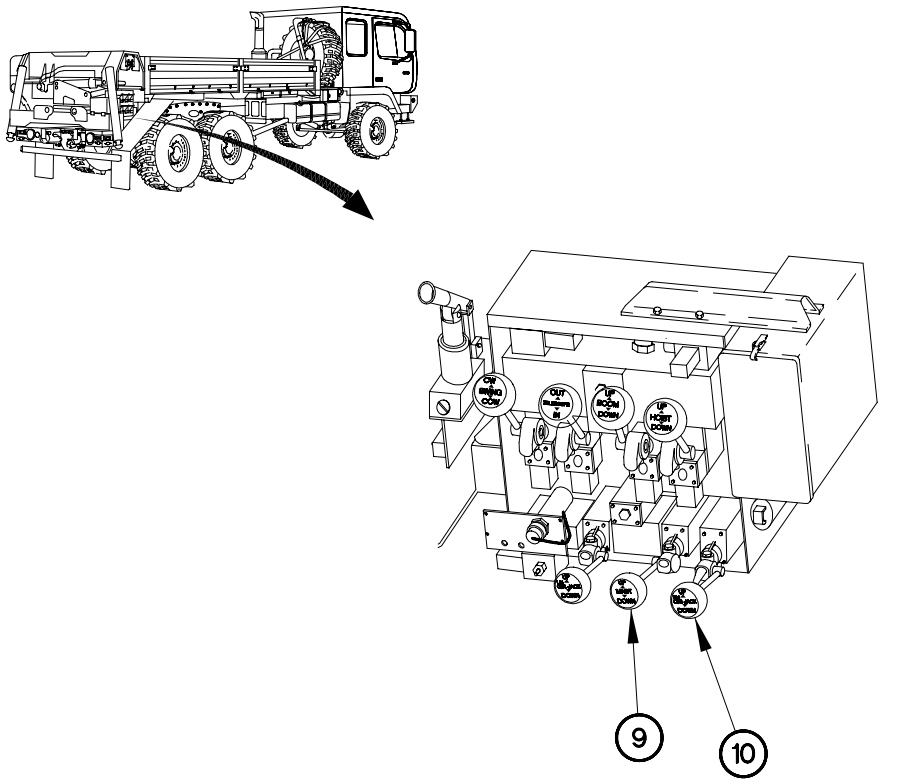


Table 1. Material Handling Crane (MHC) Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
6	MAIN POWER switch	Two-position switch controls electrical power to the MHC.
7	MANUAL OVERRIDE switch	Pushbutton switch that allows the operator to stow the MHC when an electrical power loss has occurred.
8	LH O/R (Left Hand Outrigger) JACK lever	Raises and lowers the left side outrigger.

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued 0013 00

MHC CONTROLS - Continued



1300B04-

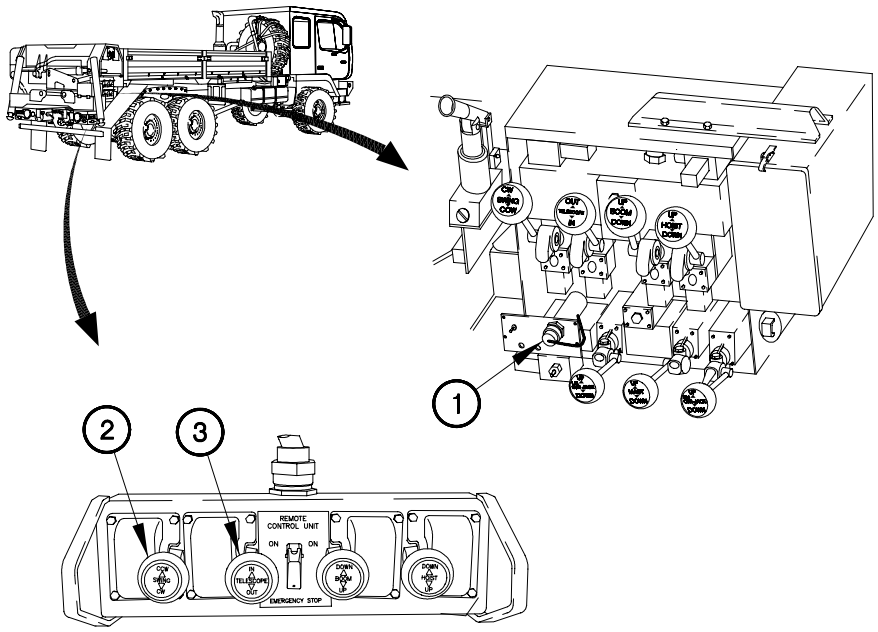
Table 1. Material Handling Crane (MHC) Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
9	Mast lever	Raises and lowers the mast.
10	RH O/R (Right Hand Outrigger) JACK lever	Raises and lowers the right side outrigger.

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued 0013 00

REMOTE CONTROL UNIT

Table 2 describes controls on the REMOTE CONTROL UNIT.



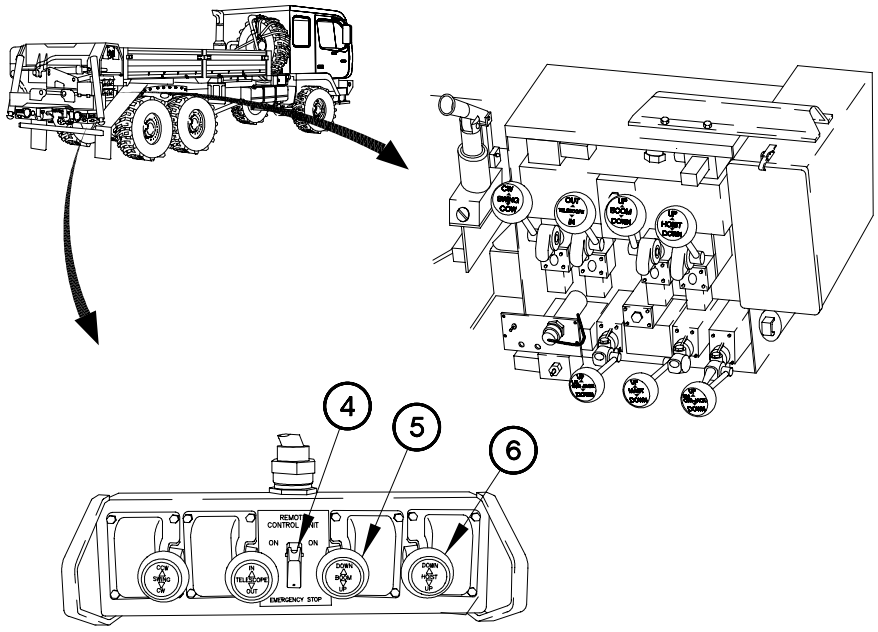
1300B05-

Table 2. REMOTE CONTROL UNIT.

KEY	CONTROL OR INDICATOR	FUNCTION
1	REMOTE CONTROL UNIT receptacle	Used to connect REMOTE CONTROL UNIT to the M1084A1/M1086A1 MHC controls.
2	SWING lever	Swings the boom to the right (CW) position and to the left (CCW) position when REMOTE CONTROL UNIT switch is positioned to ON.
3	TELESCOPE lever	Extends and retracts the boom when REMOTE CONTROL UNIT switch is positioned to ON.

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued 0013 00

REMOTE CONTROL UNIT - Continued



1300B06-

Table 2. REMOTE CONTROL UNIT - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
4	REMOTE CONTROL UNIT switch	Two-position switch controls power to the REMOTE CONTROL UNIT. The POWER switches on both the MHC controls and REMOTE CONTROL UNIT must be positioned to ON before the REMOTE CONTROL UNIT will operate.
5	BOOM lever	Raises and lowers the boom when REMOTE CONTROL UNIT switch is positioned to ON.
6	HOIST lever	Pays out and reels in the hoist cable when REMOTE CONTROL UNIT switch is positioned to ON.

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued 0013 00

OTHER MHC INDICATORS

Table 3 describes other indicators on the MHC.

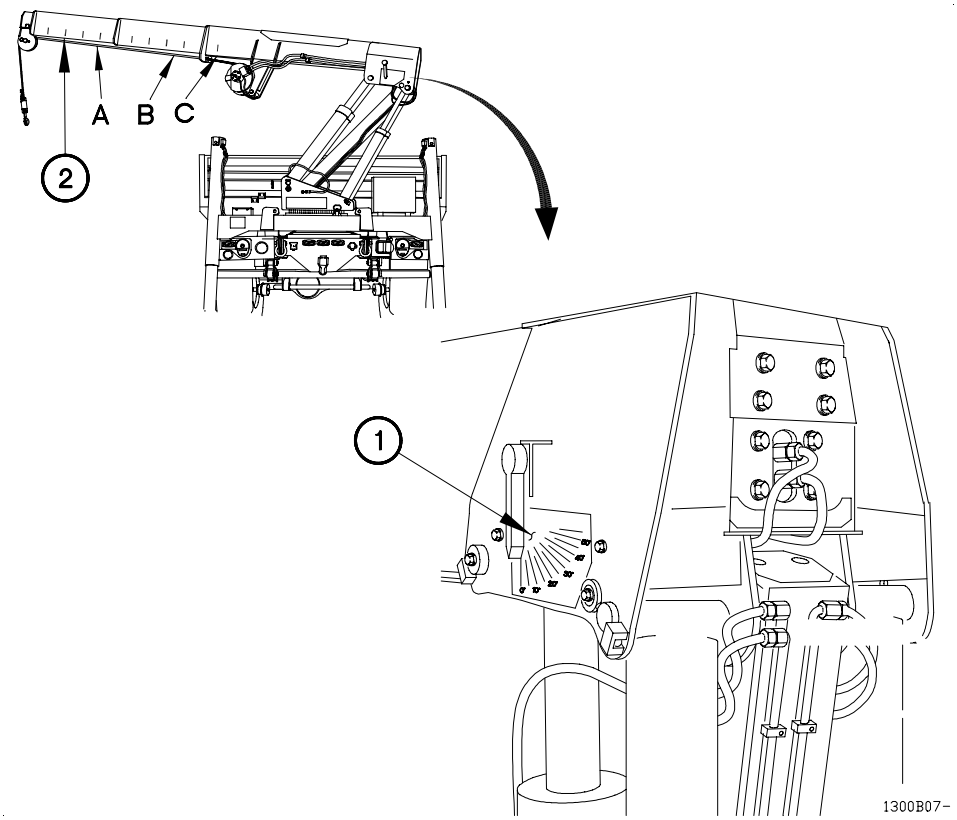


Table 3. Material Handling Crane (MHC) Boom Angle and Extension Indicators.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Boom angle indicator	Indicates the angle of the boom.
	NOTE To determine the extended length of the boom, add the measurements at points A and B to C.	
2	Boom extension indicators	Indicates the boom extension from minimum retraction to maximum extension. Boom extension indicators are marked every 12 in (30.5 cm).

DUMP BODY CONTROLS 0014 00

GENERAL

The following paragraph contains an illustration that shows the location of each dump control and indicator of the M1090A1 vehicle. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

DUMP BODY CONTROLS

Table 1 describes exterior controls on the dump body.

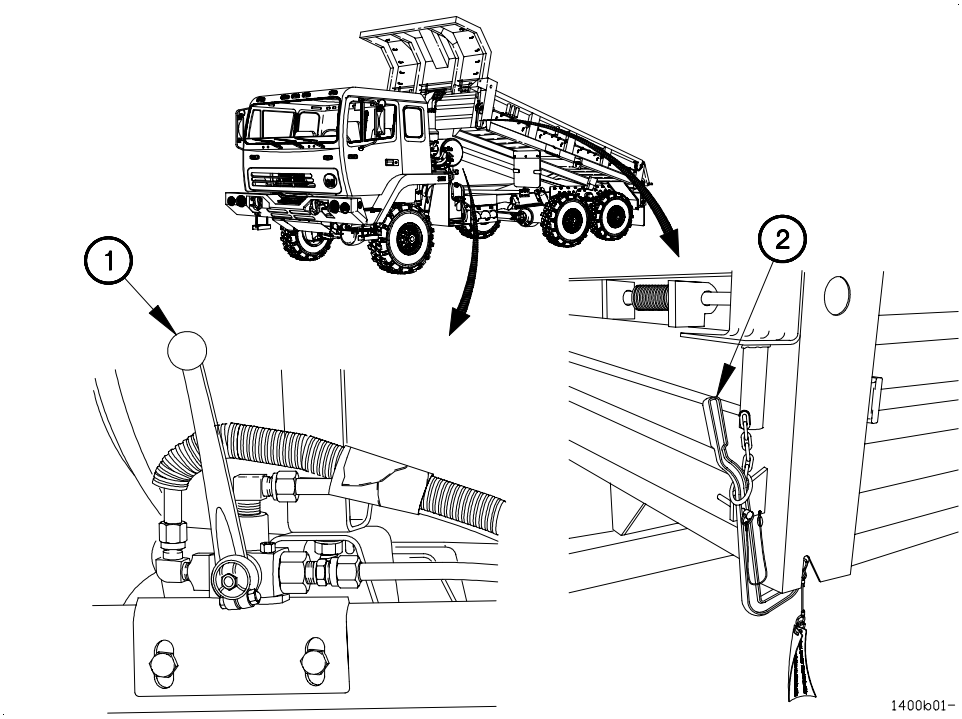


Table 1. Exterior Dump Body Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Manual tailgate control	Is used to manually release the tailgate in the event of air pressure loss.
2	Tailgate manual release	Is used to release the tailgate in the event of electrical and/or pneumatic failure.

TRACTOR CONTROLS 0015 00

GENERAL

The following paragraph contains illustrations that show the location of each tractor control and indicator of the M1088A1 vehicle. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the name and the functional description of each control and indicator.

TRACTOR CONTROLS

Table 1 describes controls on the tractor fifth wheel.

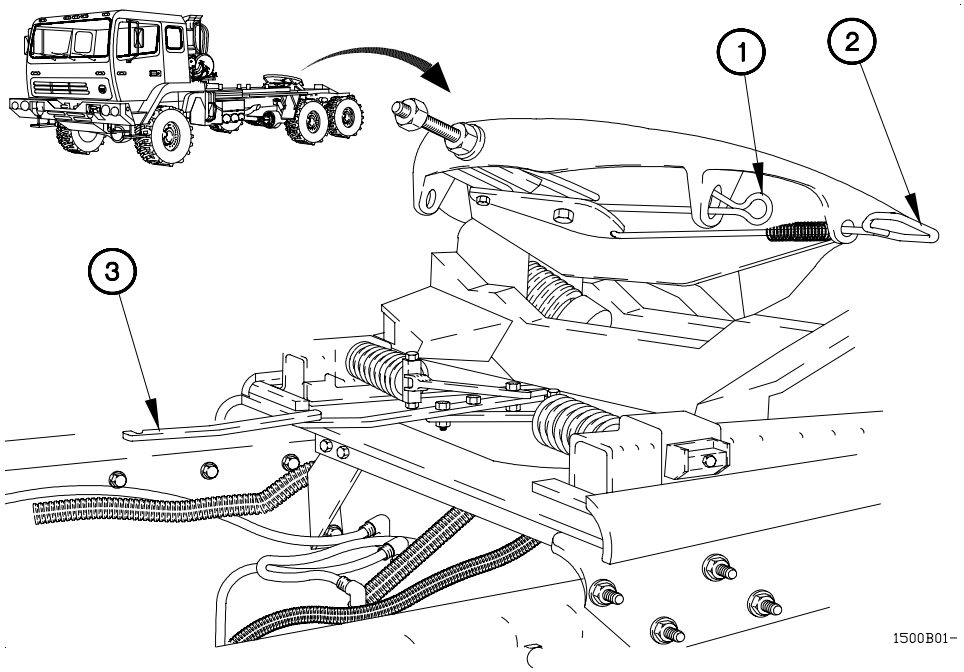


Table 1. Controls on the Tractor Fifth Wheel.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Secondary lock-release handle	Unlocks fifth wheel coupler jaws and allows them to be opened with primary lock release handle. Coupler jaws unlock when handle is pulled.
2	Primary lock-release handle	Opens fifth wheel coupler jaws. Coupler jaws open when handle is pulled.
3	Slide-release lever	Unlocks/locks fifth wheel. Fifth wheel must be able to slide to the rear or slide to the front.

WRECKER CONTROLS AND INDICATORS 0016 00

GENERAL

The following paragraphs contain illustrations that show the location of each wrecker control and indicator of the M1089A1 vehicle. Each control and indicator is clearly labeled as it appears on the vehicle. Callouts on the illustration are keyed to the tabular listing which contains the names and the functional descriptions of each control and indicator.

WRECKER CONTROLS

Table 1 describes controls on the WRECKER CONTROL PANEL.

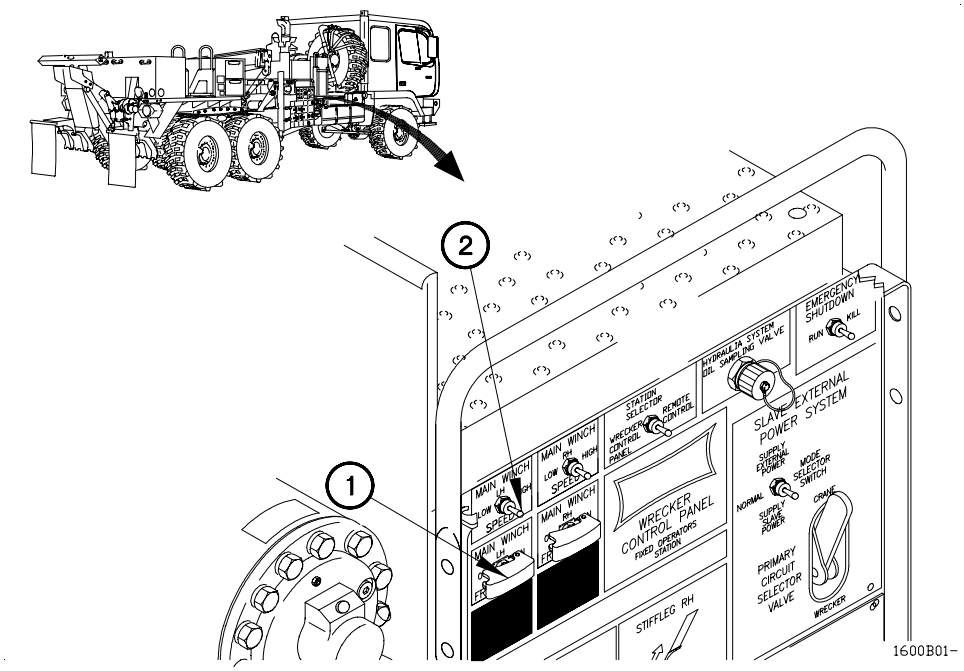


Table 1. WRECKER CONTROL PANEL.

KEY	CONTROL OR INDICATOR	FUNCTION
1	MAIN WINCH LH FREE SPOOL switch	Two-position switch used to engage and disengage the left 30K winch clutch. When disengaged, winch drum spools freely and cable can be payed out. When engaged, winch operation is controlled by 30K winch control lever.
2	MAIN WINCH LH SPEED switch	Two-position switch used to control the pay out/reel in speed of the left 30K winch.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER CONTROLS - Continued

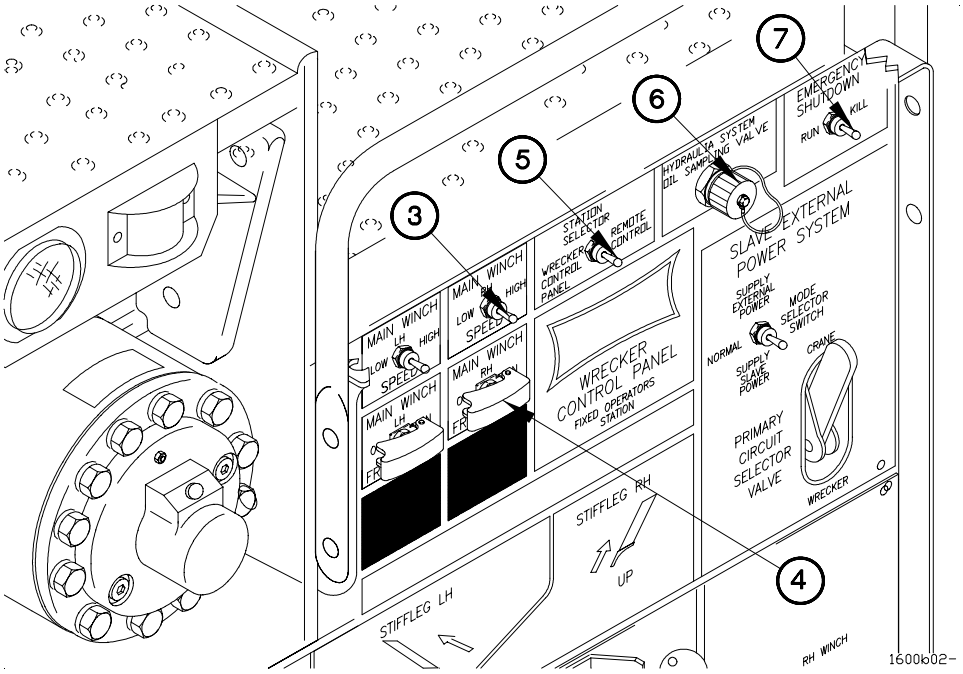
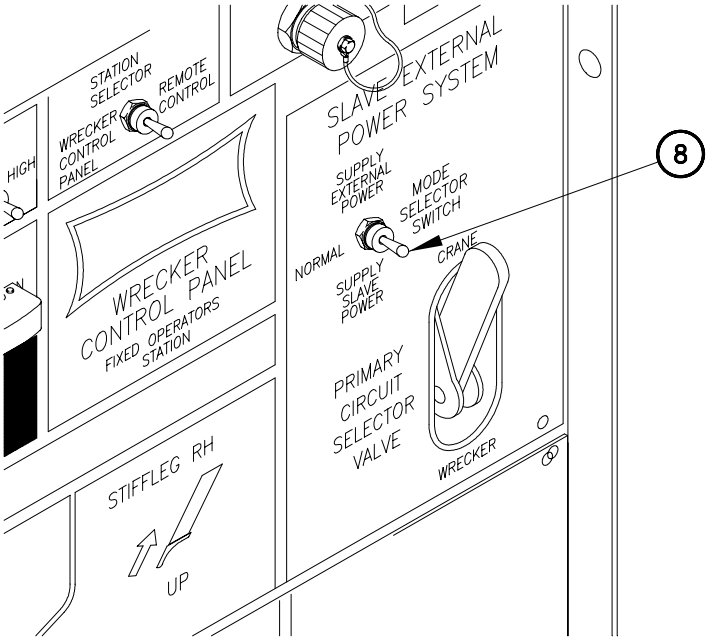


Table 1. WRECKER CONTROL PANEL - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
3	MAIN WINCH RH SPEED switch	Two-position switch used to control the pay out/reel in speed of the right 30K winch.
4	MAIN WINCH RH FREE SPOOL switch	Two-position switch used to engage and disengage the right 30K winch clutch. When disengaged, winch drum spools freely and cable can be payed out. When engaged, winch operation is controlled by 30K winch control lever.
5	STATION SELECTOR switch	Two-position switch used to select desired station (WRECKER CONTROL PANEL or WRECKER REMOTE CONTROL) for operating wrecker components.
6	HYDRAULIC SYSTEM OIL SAMPLING VALVE	Valve used to take oil samples for Army Oil Analysis Program (AOAP).
7	EMERGENCY SHUTDOWN switch	Switch used to shut down engine in an emergency.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER CONTROLS - Continued



1600B03–

Table 1. WRECKER CONTROL PANEL - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
8	MODE SELECTOR SWITCH	Three-position switch used to select the operating mode for wrecker hydraulic system. When switch is positioned to SUPPLY EXTERNAL POWER, oil will be delivered to supply ports at the left rear side of the wrecker to operate hydraulic power tools. When the switch is positioned to NORMAL, the wrecker hydraulic system will supply power to hydraulic components on the wrecker. When the switch is positioned to SUPPLY SLAVE POWER, hydraulic power will be supplied through the pressure and return ports on the WRECKER CONTROL PANEL.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER CONTROLS - Continued

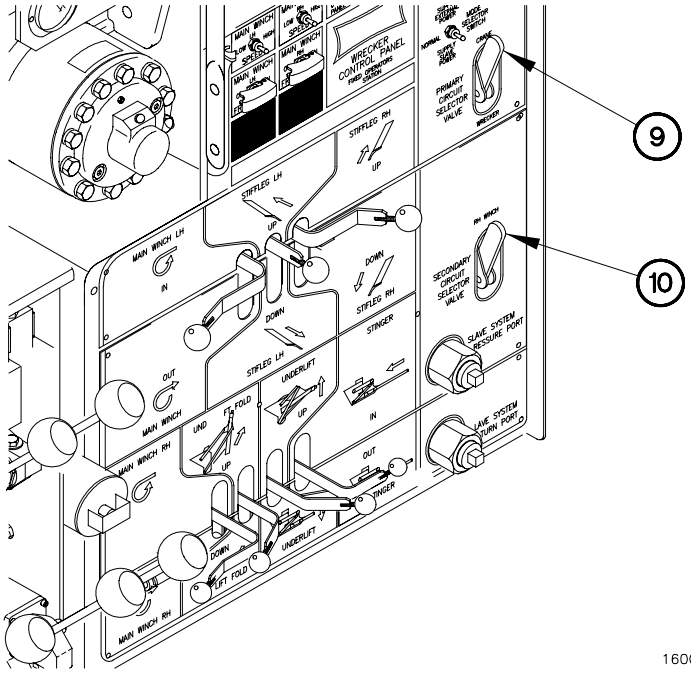


Table 1. WRECKER CONTROL PANEL - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
9	PRIMARY CIRCUIT SELECTOR VALVE lever	Lever is placed in the CRANE position to operate the MHC. In this position the underlift assembly and 30K winches will not operate. Lever is placed in the WRECKER position to operate underlift assembly and 30K winches. In this position the MHC will not operate.
10	SECONDARY CIRCUIT SELECTOR VALVE lever	Used when PRIMARY CIRCUIT SELECTOR VALVE lever is in the WRECKER position. This lever controls which bank of hydraulic control levers on the WRECKER CONTROL PANEL will operate. When the lever is positioned to RH WINCH, the lower bank of hydraulic control levers will operate: 30K MAIN WINCH RH, UNDERLIFT FOLD, UNDERLIFT, and STINGER. When the lever is positioned to LH WINCH, the upper bank of hydraulic control levers will operate: 30K MAIN WINCH LH, STIFFLEG LH, and STIFFLEG RH.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER CONTROLS - Continued

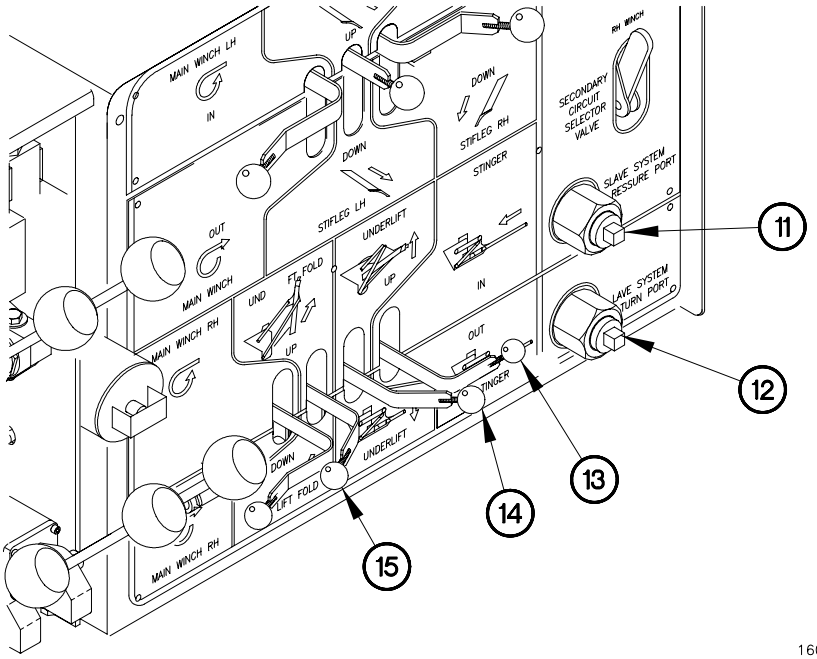


Table 1. WRECKER CONTROL PANEL - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
11	SLAVE SYSTEM PRESSURE PORT	Hydraulic pressure port for supply hose connection when providing hydraulic power to another vehicle.
12	SLAVE SYSTEM RETURN PORT	Hydraulic return port for return hose connection when providing hydraulic power to another vehicle.
13	STINGER lever	Extends and retracts the stinger.
14	UNDERLIFT lever	Raises and lowers underlift assembly when secured in the horizontal operating position.
15	UNDERLIFT FOLD lever	Raises and lowers underlift assembly to the vertical and horizontal positions. Underlift assembly is secured in each position with lock pin.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER CONTROLS - Continued

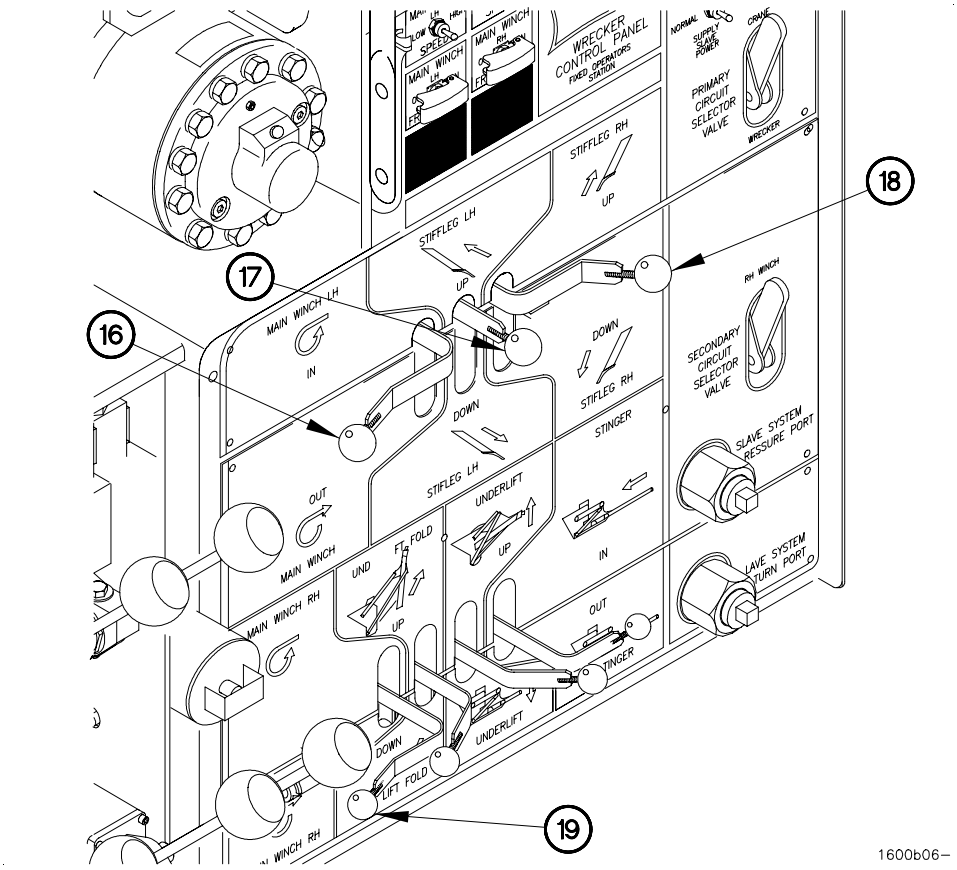


Table 1. WRECKER CONTROL PANEL - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
16	MAIN WINCH LH lever	Pays out and reels in left 30K winch cable when MAIN WINCH LH FREE SPOOL switch is positioned to OFF.
17	STIFFLEG LH lever	Raises and lowers left stiffleg.
18	STIFFLEG RH lever	Raises and lowers right stiffleg.
19	MAIN WINCH RH lever	Pays out and reels in right 30K winch cable when MAIN WINCH RH FREE SPOOL switch is positioned to OFF.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER REMOTE CONTROL

Table 2 describes controls on the WRECKER REMOTE CONTROL.

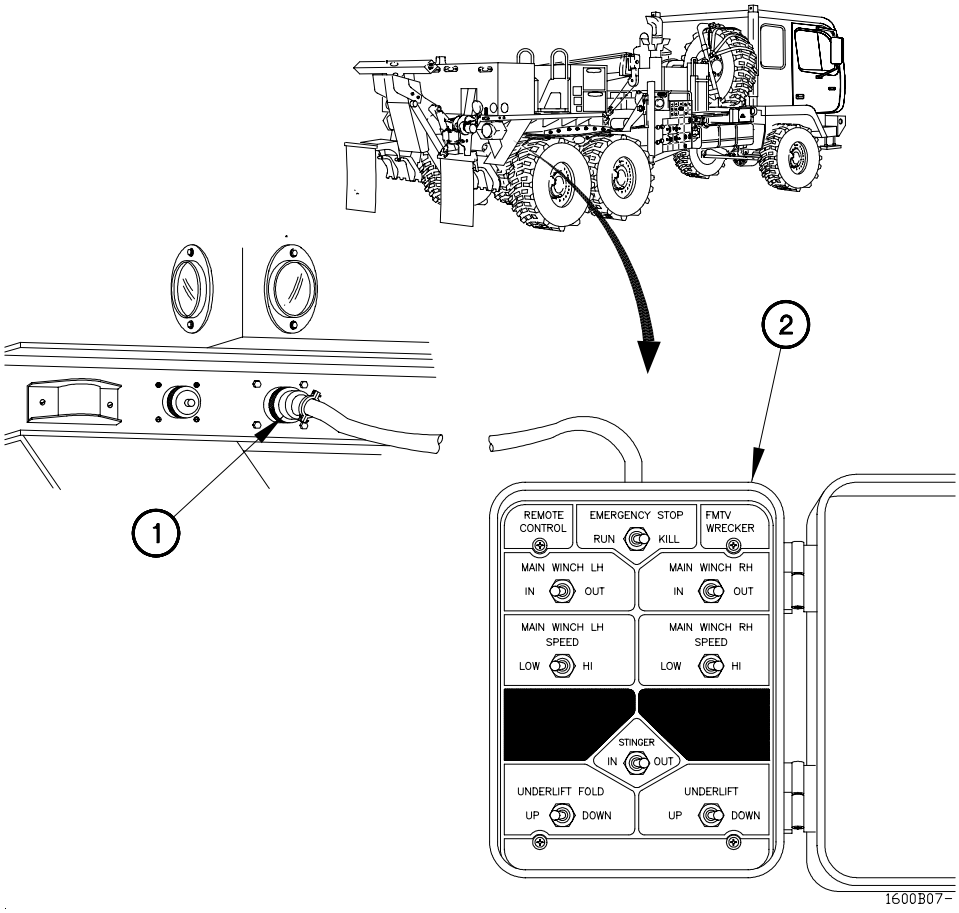
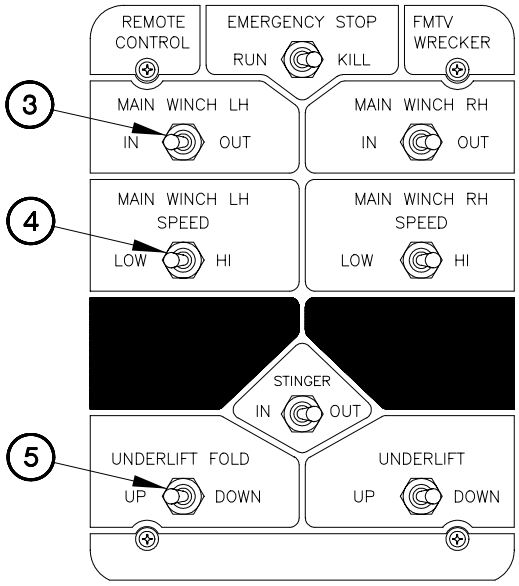


Table 2. WRECKER REMOTE CONTROL.

KEY	CONTROL OR INDICATOR	FUNCTION
1	WRECKER REMOTE CONTROL RECEPTACLE	Used to connect WRECKER REMOTE CONTROL.
2	WRECKER REMOTE CONTROL	Used to operate underlift assembly and 30K winches when Operator cannot keep underlift assembly and disabled vehicle in sight at all times during recovery operations.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER REMOTE CONTROL- Continued



1600B08-

Table 2. WRECKER REMOTE CONTROL - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
3	MAIN WINCH LH switch	Pays out and reels in left 30K winch cable when MAIN WINCH LH FREE SPOOL switch is positioned to OFF and STATION SELECTOR switch on the WRECKER CONTROL PANEL is positioned to REMOTE CONTROL.
4	MAIN WINCH LH SPEED switch	Two-position switch used to control the pay out/reel in speed of the left recovery winch when STATION SELECTOR switch on the WRECKER CONTROL PANEL is positioned to REMOTE CONTROL.
5	UNDERLIFT FOLD switch	Raises underlift assembly to the vertical position and lowers underlift assembly to the horizontal position when STATION SELECTOR switch on the WRECKER CONTROL PANEL is positioned to REMOTE CONTROL. Underlift assembly is secured in each position with lock pin.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER REMOTE CONTROL- Continued

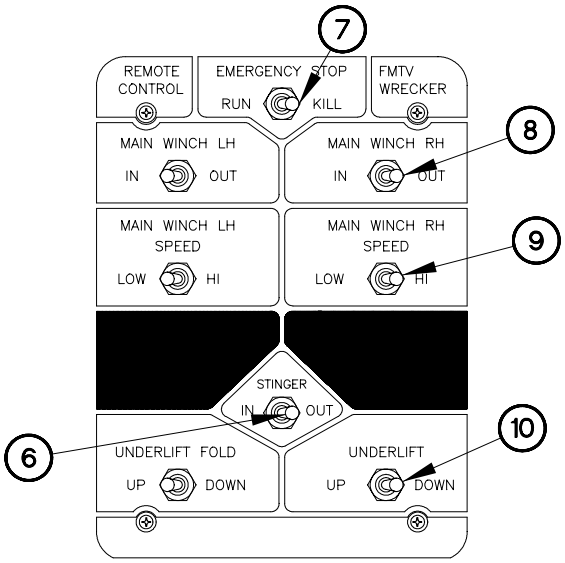


Table 2. WRECKER REMOTE CONTROL - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
6	STINGER switch	Extends and retracts the stinger when STATION SELECTOR switch on the WRECKER CONTROL PANEL is positioned to REMOTE CONTROL..
7	EMERGENCY STOP switch	Switch used to shut down engine in an emergency.
8	MAIN WINCH RH switch	Pays out and reels in right 30K winch cable when MAIN WINCH RH FREE SPOOL switch is positioned to OFF and STATION SELECTOR switch on the WRECKER CONTROL PANEL is positioned to REMOTE CONTROL.
9	MAIN WINCH RH SPEED switch	Two-position switch used to control the pay out/reel in speed of the right 30K winch when STATION SELECTOR switch on the WRECKER CONTROL PANEL is positioned to REMOTE CONTROL.
10	UNDERLIFT switch	Raises and lowers underlift assembly when it is secured in the horizontal operating position and STATION SELECTOR switch on the WRECKER CONTROL PANEL is positioned to REMOTE CONTROL.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

MATERIAL HANDLING CRANE (MHC) CONTROLS

Table 3 describes the MHC controls.

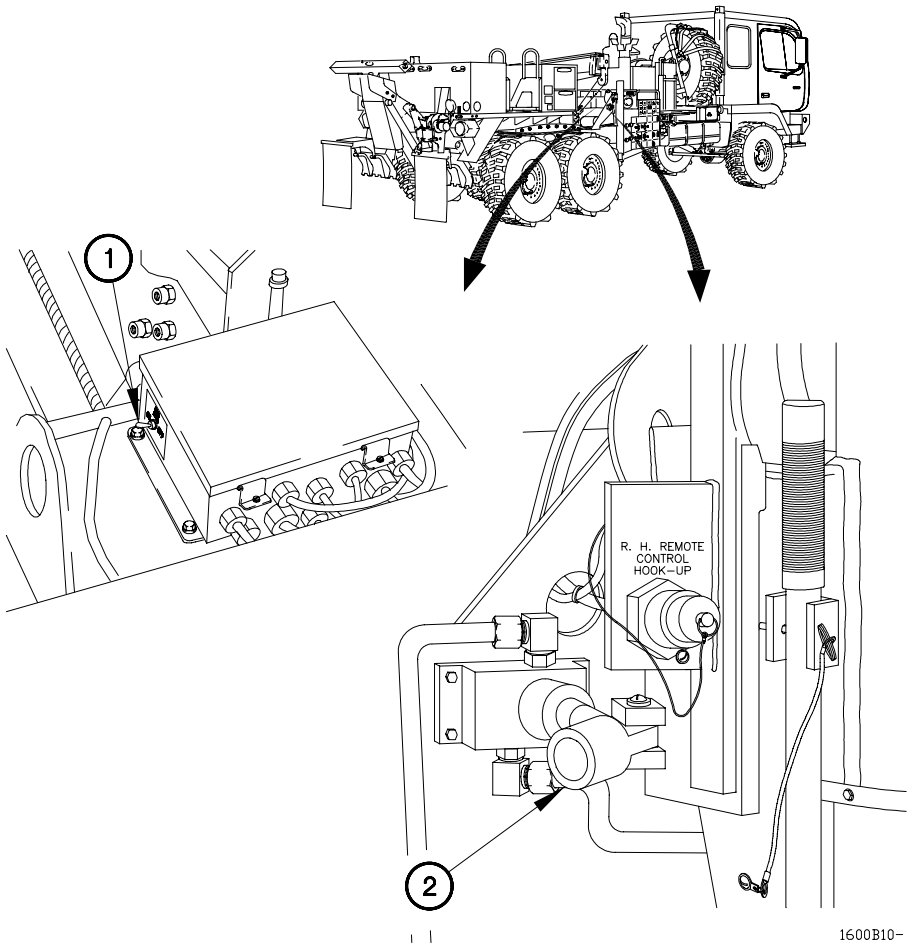


Table 3. Material Handling Crane (MHC) Controls.

KEY	CONTROL OR INDICATOR	FUNCTION
1	POWER ON/OFF switch	Two-position switch controls power to the MHC.
2	Manual hydraulic pump	Used to manually stow the MHC in the event of a hydraulic pump failure.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

MATERIAL HANDLING CRANE (MHC) CONTROLS - Continued

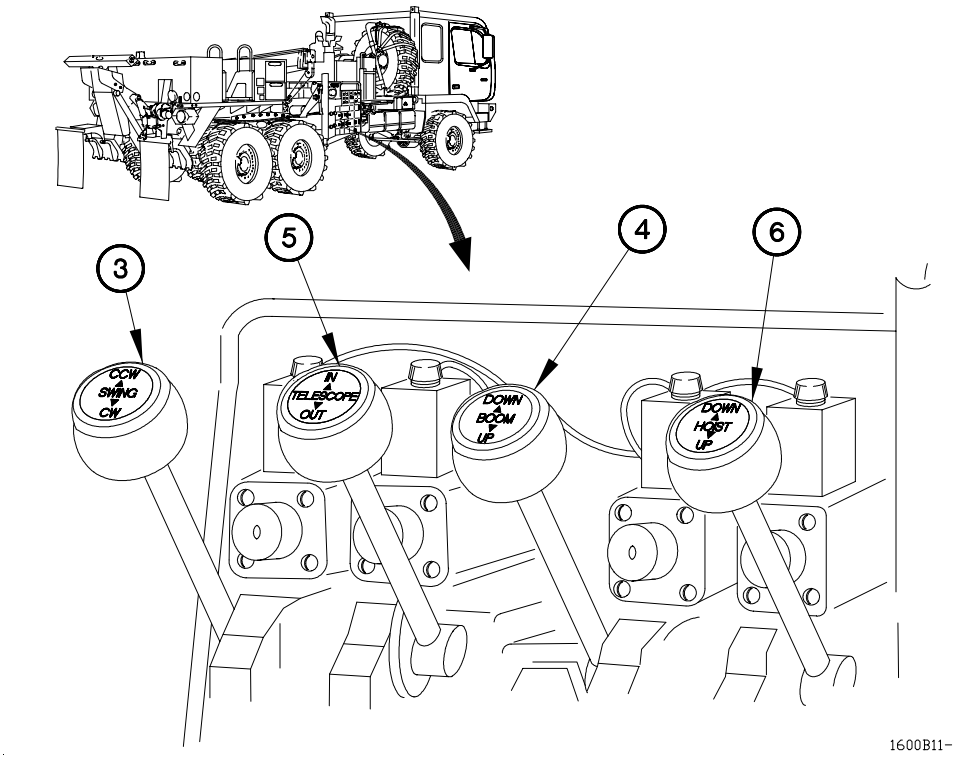


Table 3. Material Handling Crane (MHC) Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
3	SWING lever	Swings the boom to the right (CW) and to the left (CCW).
4	BOOM lever	Raises and lowers the boom.
5	TELESCOPE lever	Extends and retracts the boom.
6	HOIST lever	Pays out and reels in the hoist cable.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

MATERIAL HANDLING CRANE (MHC) CONTROLS - Continued

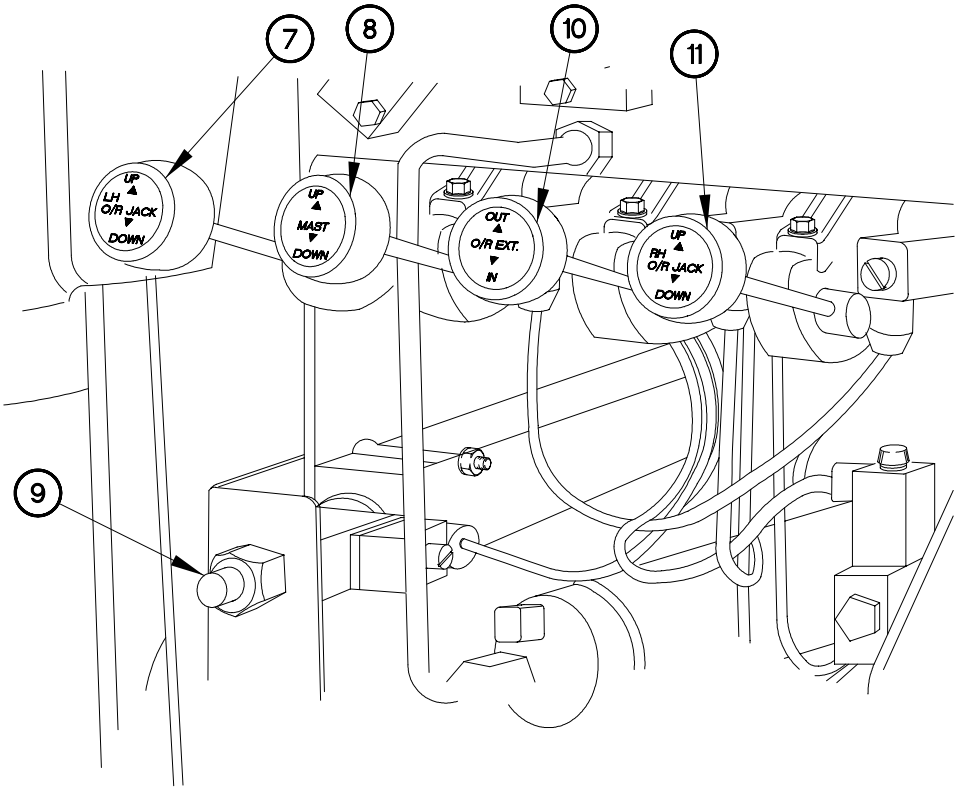


Table 3. Material Handling Crane (MHC) Controls - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
7	LH O/R (Left Hand Outrigger) JACK lever	Raises and lowers the left side outrigger.
8	MAST lever	Raises and lowers the mast.
9	MANUAL OVERRIDE switch	Pushbutton switch that allows the operator to stow the MHC when a loss of electrical power has occurred.
10	O/R EXT (Outrigger Extension) lever	Controls the distance between the left and right outriggers.
11	RH O/R (Right Hand Outrigger) JACK lever	Raises and lowers the right side outrigger.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

REMOTE CONTROL UNIT

Table 4 describes controls on the REMOTE CONTROL UNIT.

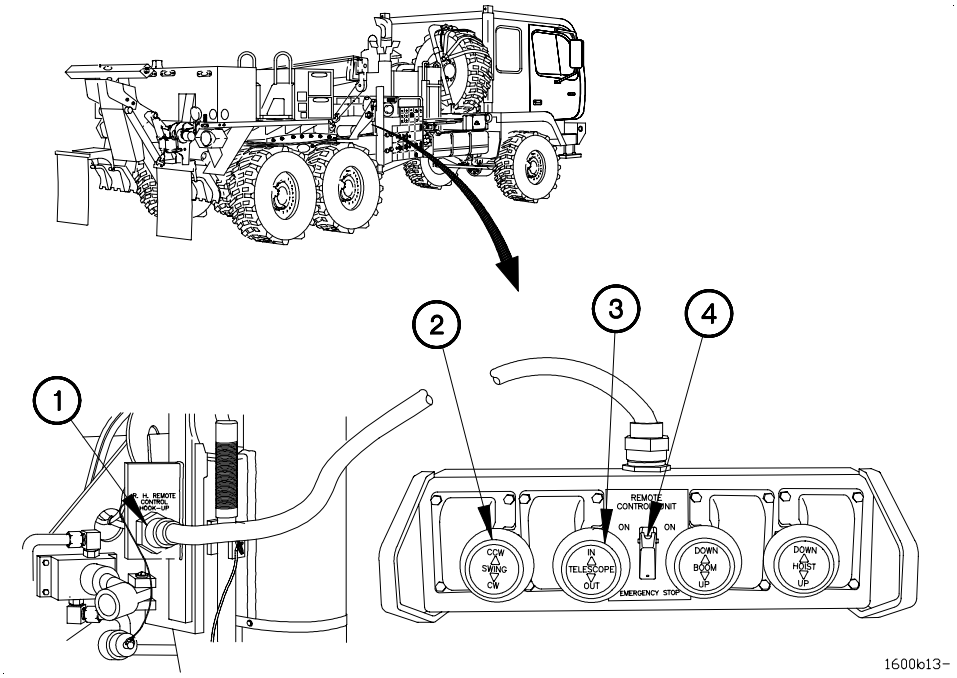


Table 4. REMOTE CONTROL UNIT.

KEY	CONTROL OR INDICATOR	FUNCTION
1	RH REMOTE CONTROL UNIT HOOK-UP receptacle	Used to connect REMOTE CONTROL UNIT.
2	SWING lever	Swings the boom to the right (CW) and the left (CCW) when REMOTE CONTROL UNIT switch is positioned to ON.
3	TELESCOPE lever	Extends and retracts the boom when REMOTE CONTROL UNIT switch is positioned to ON.
4	REMOTE CONTROL UNIT switch	Two-position switch controls power to REMOTE CONTROL UNIT. The POWER switch on the main MHC controls and the REMOTE CONTROL UNIT switch must be positioned to ON before the REMOTE CONTROL UNIT will operate.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

REMOTE CONTROL UNIT - Continued

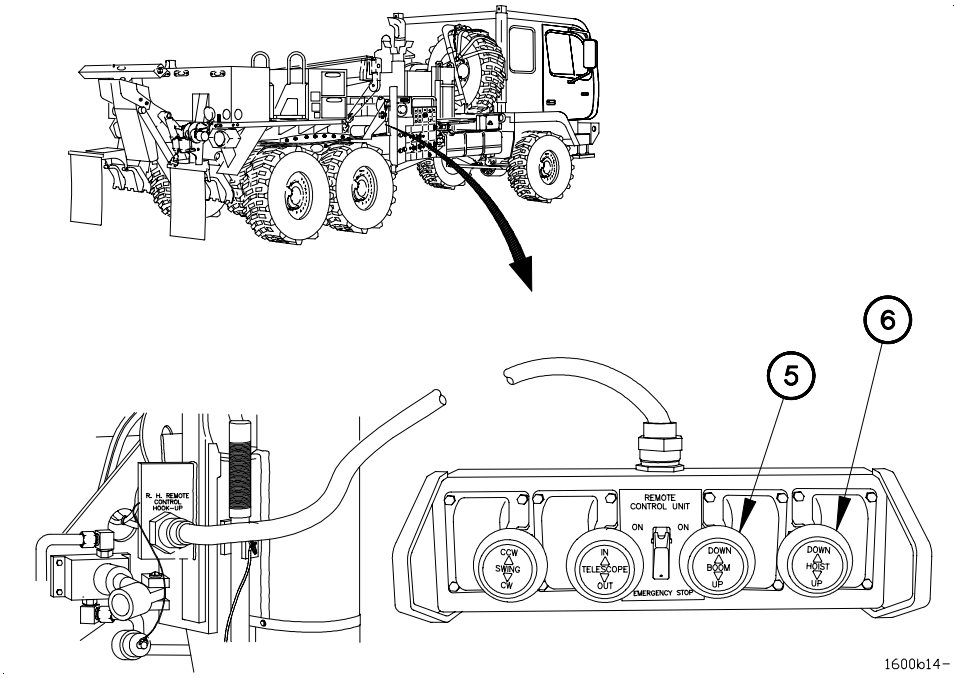


Table 4. REMOTE CONTROL UNIT - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
5	BOOM lever	Raises and lowers the boom when REMOTE CONTROL UNIT switch is positioned to ON.
6	HOIST lever	Pays out and reels in the hoist cable when REMOTE CONTROL UNIT switch is positioned to ON.

WRECKER CONTROLS AND INDICATORS - Continued 0016 00

WRECKER AND MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS

Table 5 describes wrecker and MHC controls and indicators.

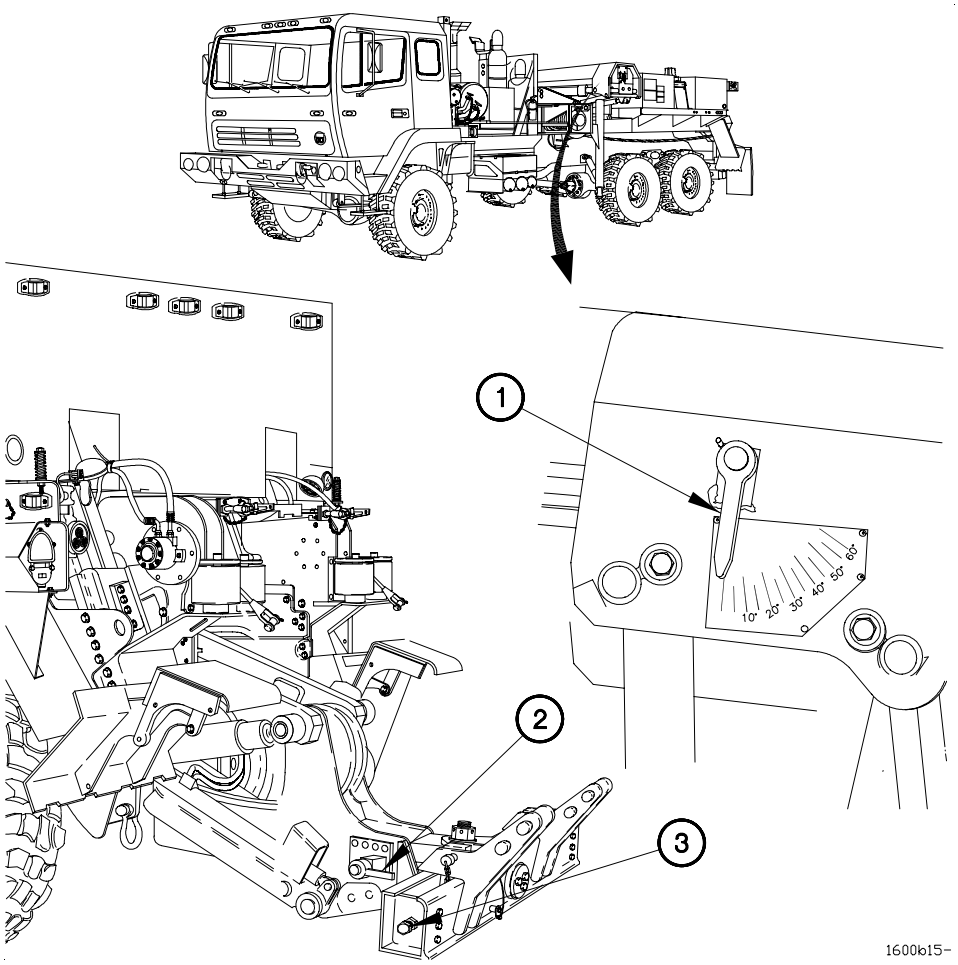


Table 5. Wrecker and Material Handling Crane (MHC) Controls and Indicators.

KEY	CONTROL OR INDICATOR	FUNCTION
1	Boom angle indicator	Indicates the angle of the boom.
2	Stinger cam lock	Locks stinger in position after stinger has been extended or retracted.
3	Lifting bracket control	Controls position of lifting bracket on crossbar. Controls are located on each end of crossbar. Lifting brackets can be positioned separately.

WRECKER AND MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued

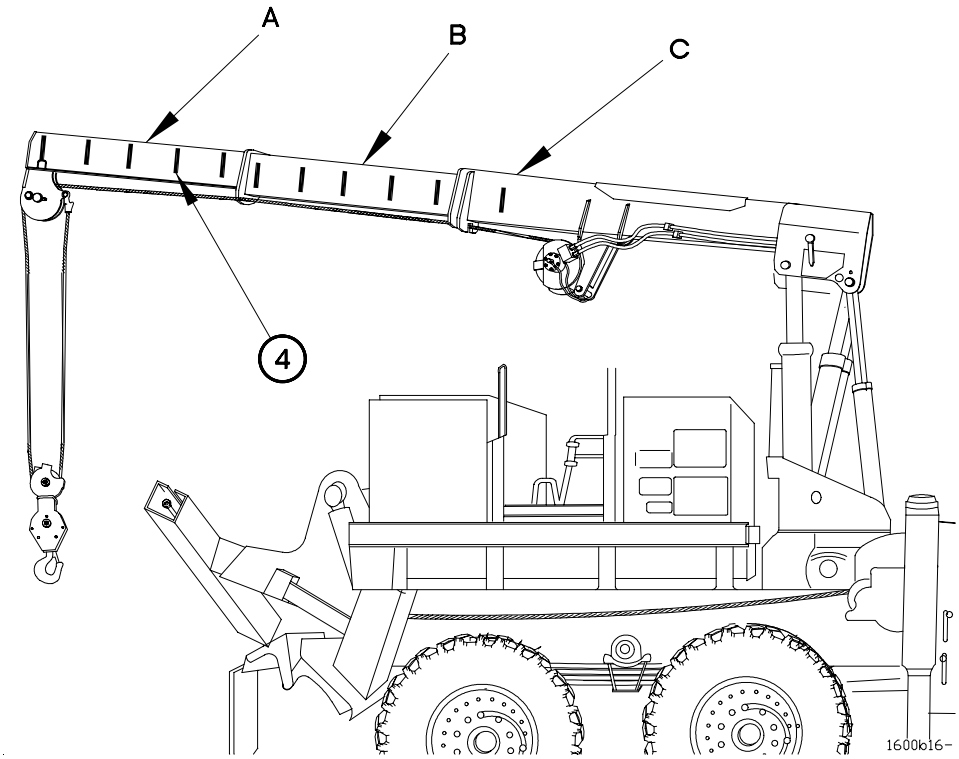


Table 5. Wrecker and Material Handing Crane (MHC) Controls and Indicators - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
	NOTE To determine the extended length of the boom, add the measurement at points A and B to C.	
4	Boom extension indicators	Indicates the boom extension from minimum retraction to maximum extension.

WRECKER AND MATERIAL HANDLING CRANE (MHC) CONTROLS AND INDICATORS - Continued

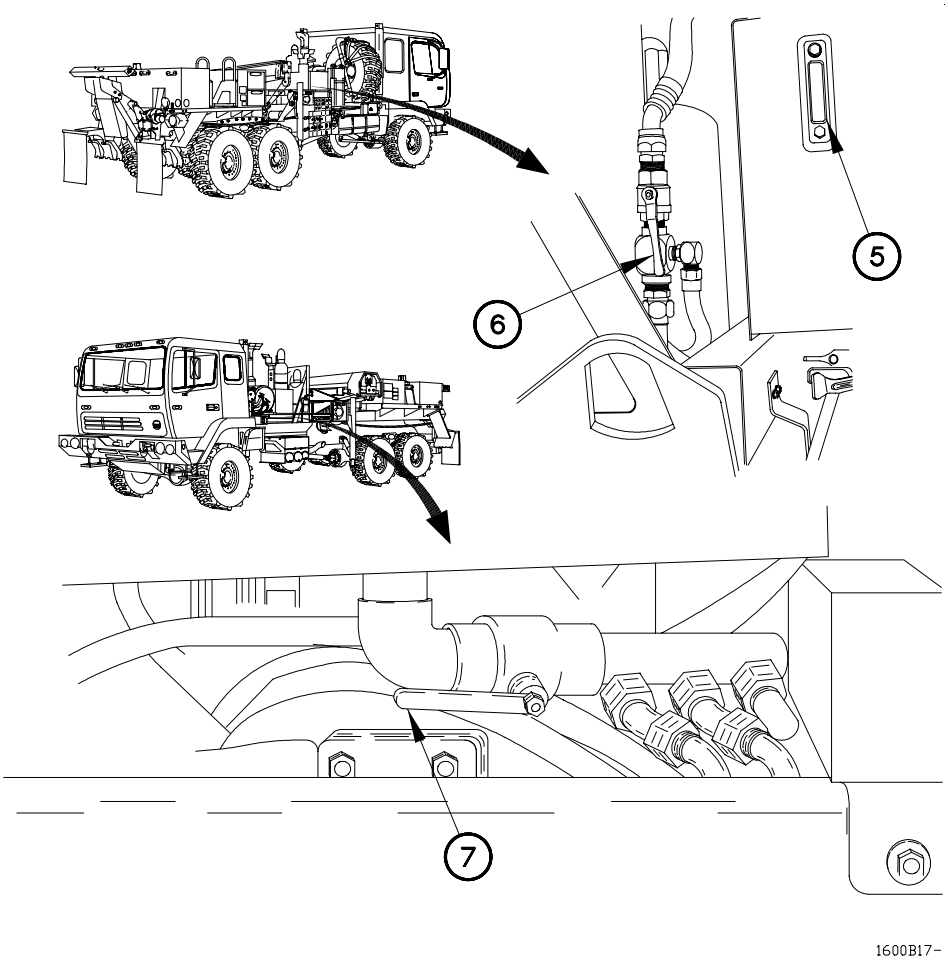


Table 5. Wrecker and Material Handling Crane (MHC) Controls and Indicators - Continued.

KEY	CONTROL OR INDICATOR	FUNCTION
5	Oil level gage	Indicates oil level in hydraulic tank.
6	Return valve	Shuts off return oil to the hydraulic tank.
7	Shutoff valve	Controls flow of oil to the hydraulic pump.

PREPARATION FOR USE 0017 00

INITIAL SETUP:

Maintenance Level
Operator

GENERAL

The vehicle must be properly prepared before each use. The paragraphs in this work package provide the data and procedures to be used by the operator when preparing the vehicle for use. Items covered include Fueling The Vehicle, Changing Bridge Classification Numbers, Adjusting Mirrors, Adjusting Driver's Seat, Adjusting Passenger Seat, Operating Seat Belt, and Operation In Off-Road Conditions.

FUELING VEHICLE

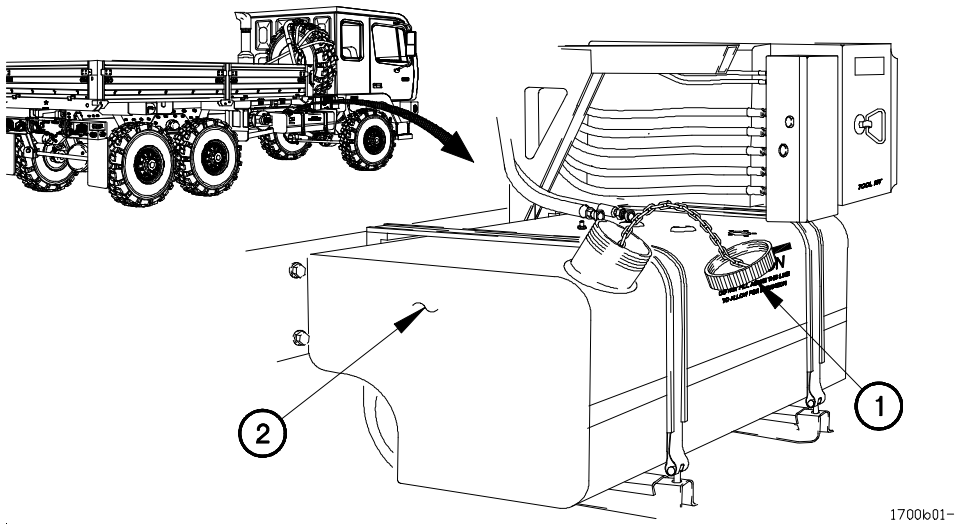
1. Remove fuel cap (1) from fuel tank (2).

WARNING

Diesel fuel is flammable. Do not fill fuel tank with engine running, while smoking, or when near an open flame. Never overfill the tank or spill fuel. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

2. Fill fuel tank (2) with fuel.

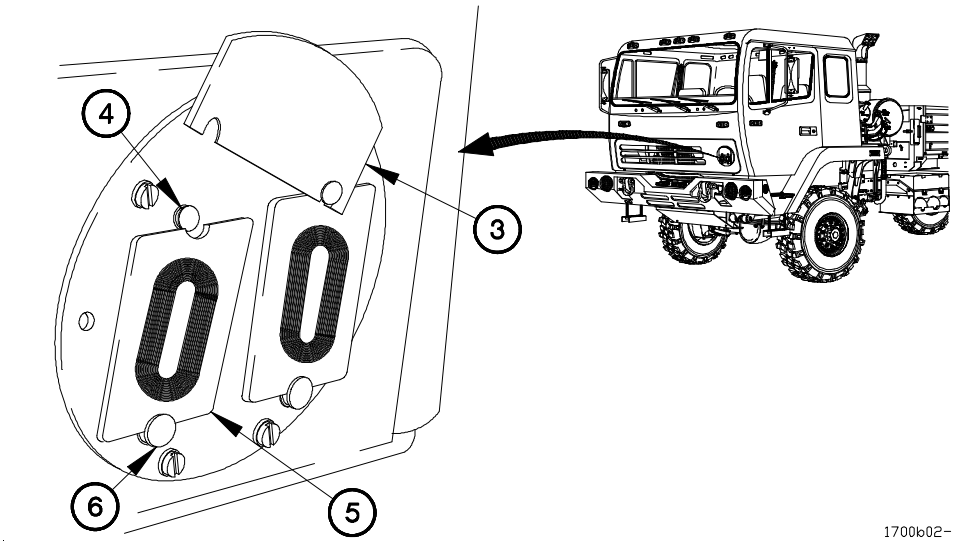
3. Install fuel cap (1) on fuel tank (2).



PREPARATION FOR USE - Continued 0017 00

CHANGING BRIDGE CLASSIFICATION NUMBERS

1. Press in bottom of lockplate (3).
2. Push lockplate (3) up and off one top lockpin (4).
3. Remove number plate (5) from top and bottom lockpins (4 and 6).
4. Place correct number on top of number plates (5).
5. Install number plate (5) on top and bottom lockpins (4 and 6).
6. Perform steps 1 through 5 for remaining number plates.
7. Press in on bottom of lockplate (3).
8. Slide lockplate (3) on two top lockpins (4).



PREPARATION FOR USE - Continued 0017 00

ADJUSTING MIRRORS

CAUTION

Do not attempt to move mirror support. Only cab mirror and convex mirror are adjustable. Failure to comply may result in damage to equipment.

NOTE

Left and right cab mirrors and convex mirrors are adjusted the same way. Left mirror shown.

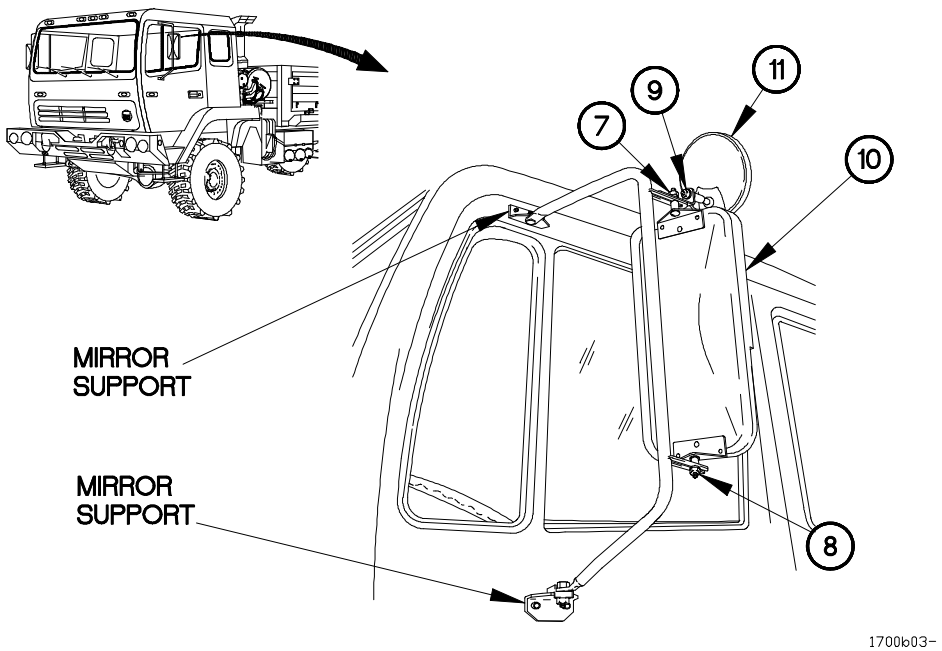
1. Loosen nuts (7 and 8) and bracket (9) on mirror (10).

2. Adjust cab mirror (10) and convex mirror (11) to desired position.

NOTE

Notify Unit Maintenance to tighten nuts to 53-71 lb-in. (6-8 N•m).

3. Tighten nuts (7 and 8).



ADJUSTING DRIVER'S SEAT

1. Driver's Seat Adjustment.

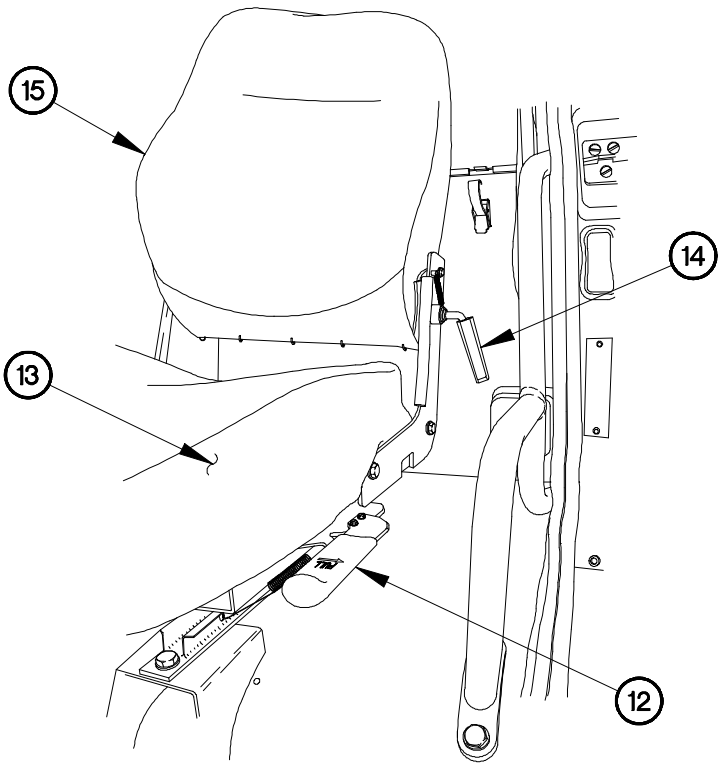
    a. Pull lever (12) outward (towards door) and slide seat (13) forward or backward.

    b. Release lever (12) to lock seat (13) in place.

2. Driver's Seat Fold Down.

    a. Turn knob (14) to release latch on seat back (15).

    b. Fold seat back (15) forward and release knob (14).



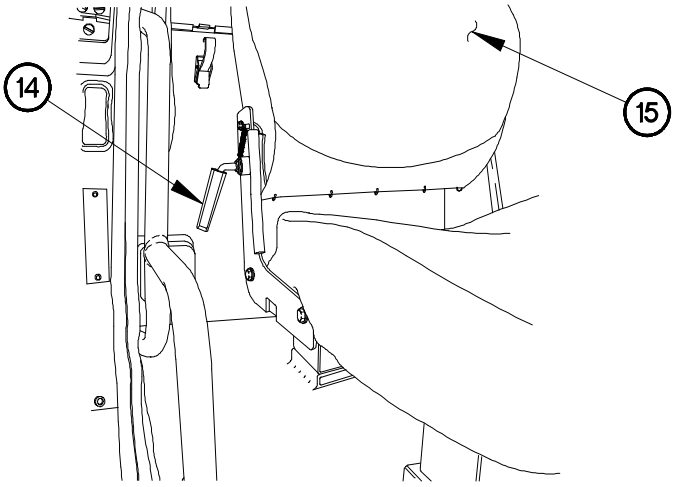
1700b04-

ADJUSTING PASSENGER SEAT (Vehicles S/N 18,549 or Lower)

1. Passenger Seat Fold Down.

    a. Turn knob (14) to release latch on seat back (15).

    b. Fold seat back (15) forward and release knob (14).



ADJUSTING PASSENGER SEAT (Vehicles S/N 18,550 or Higher)

1. Passenger Seat Adjustment.

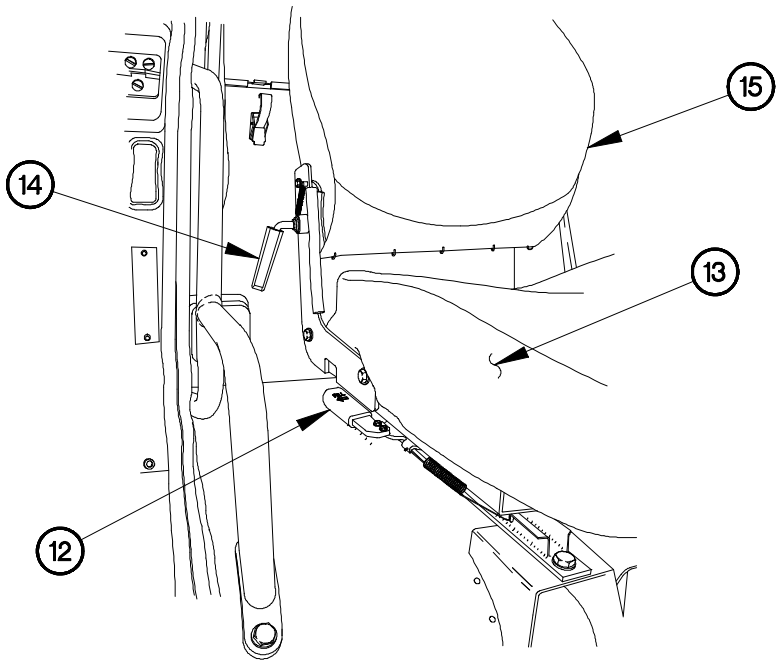
    a. Pull lever (12) outward (towards door) and slide seat (13) forward or backward.

    b. Release lever (12) to lock seat (13) in place.

2. Passenger Seat Fold Down.

    a. Turn knob (14) to release latch on seat back (15).

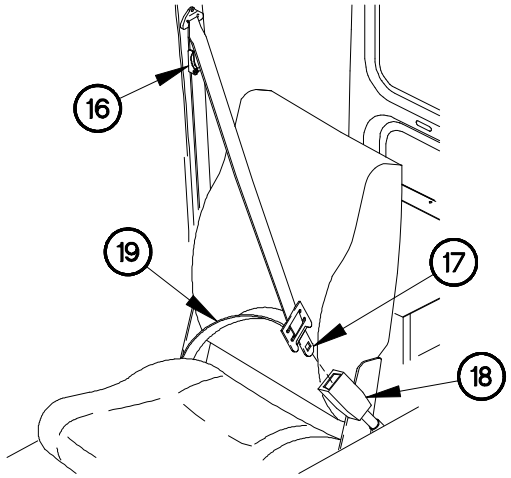
    b. Fold seat back (15) forward and release knob (14).



1700B10-

OPERATING SEAT BELT

1. Unlock comfort latch (16).
2. Insert seat belt flat metal end (17) in buckle (18) until click is heard.
3. Position seat belt (19) as low as possible across hips.



1700b06-

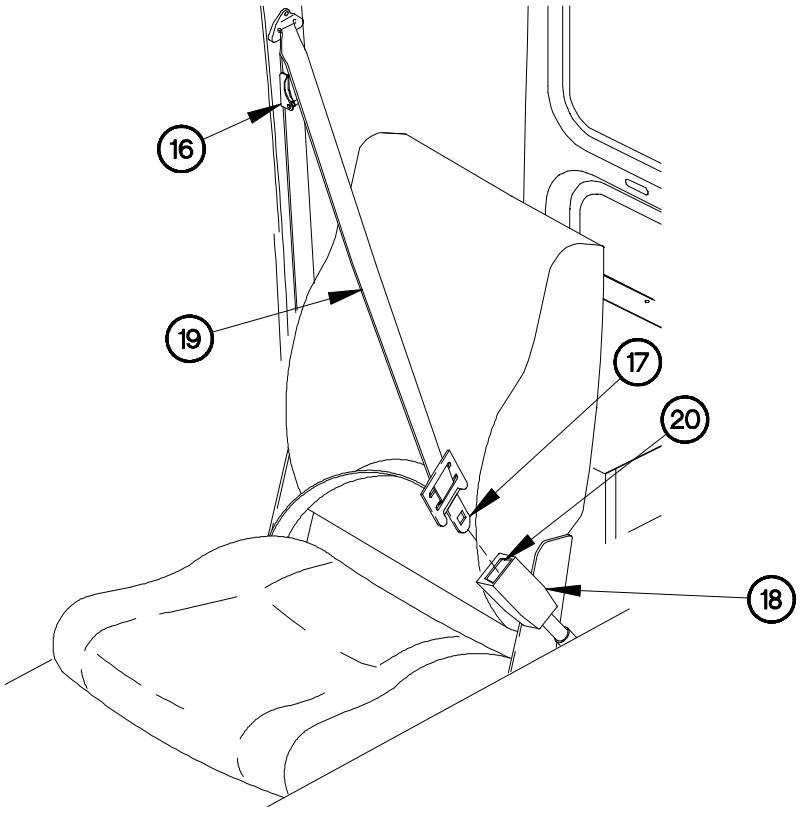
OPERATING SEAT BELT - Continued

WARNING

Do not pull seat belt more than 1 in. (2.54 cm) away from shoulder and lock comfort latch. Seat belt will not be effective if accident occurs. Failure to comply may result in serious injury or death to personnel.

4. Adjust seat belt (19) away from shoulder and lock comfort latch (16).

5. Push button (20) on buckle (18) and pull out seat belt flat metal end (17) to release seat belt (19).

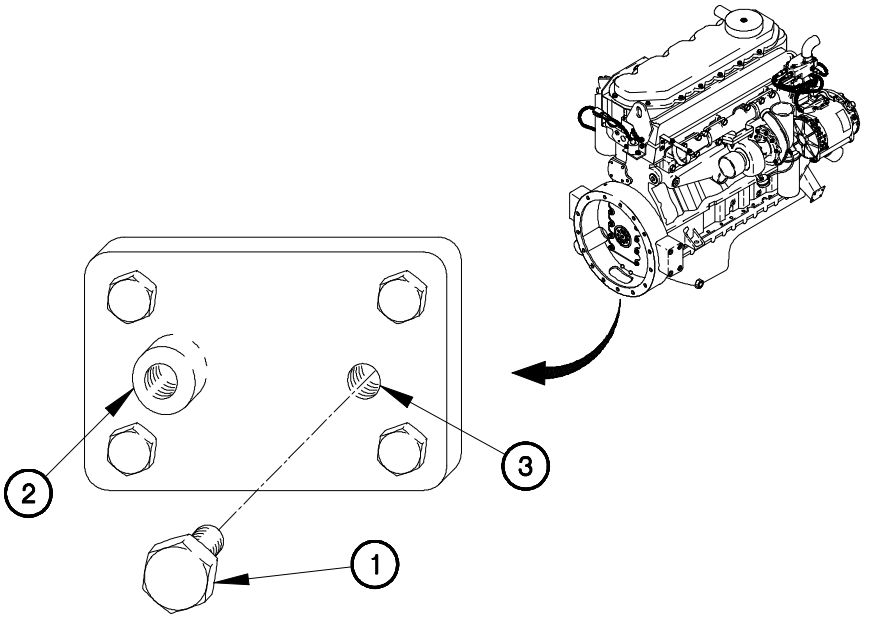


1700b07-

INSTALLING FLYWHEEL HOUSING UNIT VENT PLUG

CAUTION

If vehicle will be operating in water 30 in. (762 mm) or of unknown depth, flywheel housing vent plug must be installed. Failure to comply may result in damage to equipment.



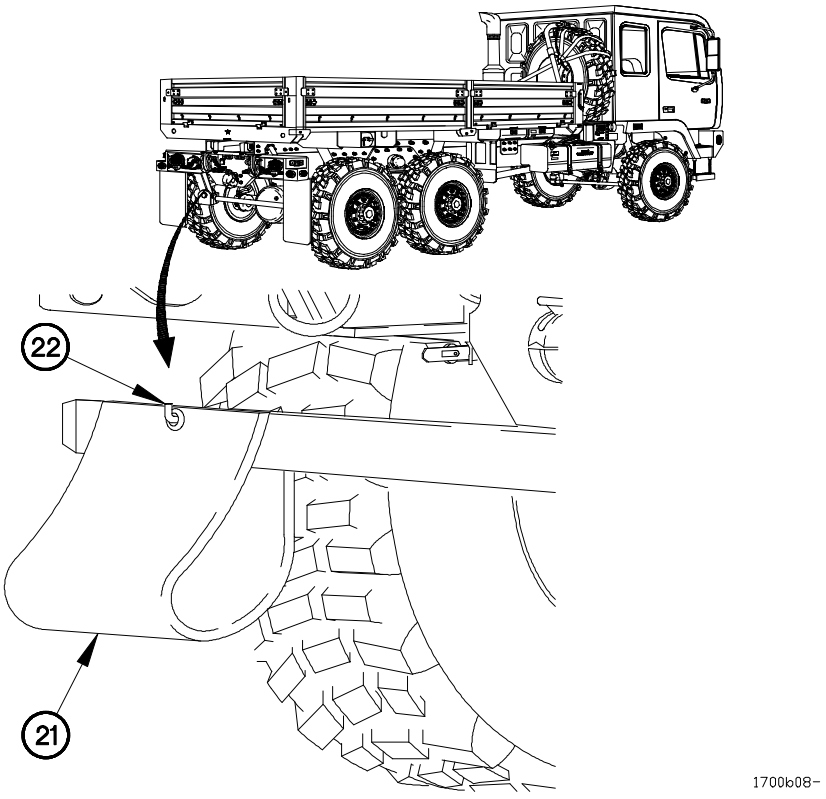
1700B09-

OPERATION IN OFF-ROAD CONDITIONS

CAUTION

Before driving off-road, raise and hook rear mudflaps. Failure to comply may result in damage to equipment.

1. Attach two mudflaps (21) on two hooks (22).



END OF OPERATING PROCEDURE

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) 0018 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)

References
FM 31-70
WP 0022 00
WP 0066 00
WP 0072 00
WP 0081 00

NOTE

If vehicle S/N is 18,550 of higher, use WP 0018 01.

GENERAL

The paragraphs in this work package provide data and procedures to be used by the Operator when performing basic vehicle operation. Items covered include Engine Start, Operate Vehicle Lights, Operate Service Brakes, Select Transmission Operating Range, Shut Down Engine, Park Vehicle, Drain Air Tanks, and Secure Vehicle.

WARNING

Wear arctic clothing when cab temperatures fall and remain below 30° F (-1° C). Cold stress preventative measures in FM 31-70 should be applied when vehicle cab temperatures fall and remain below 30° F (-1° C). Failure to comply may result in serious injury or death to personnel.

CAUTION

Cold weather radiator cover will be installed, if temperatures are consistently below 40° F (4° C). It should be removed if temperatures are above 40° F (4° C), it must be removed if temperatures reach 70° F (21° C). Failure to comply may result in damage to equipment.

NOTE

If cold weather radiator cover has not been installed or needs to be removed Notify Unit Maintenance.

CAUTION

When ambient temperature rises above -25° F (-32° C), the vehicle must not be operated with arctic belts installed. Notify unit maintenance. Failure to comply may result in damage to equipment.

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

ENGINE START

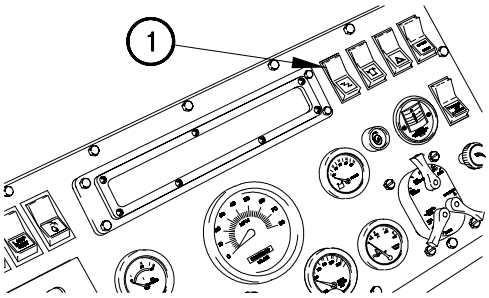
CAUTION

If vehicle is equipped with cab arctic front cover, do not leave vehicle running unattended with flaps fully closed in temperatures above -25° F (-32° C). Operating temperature is 165° F (74° C) to 210° F (100° C). Failure to comply may result in damage to equipment.

NOTE

Refer to WP 0051 00 if outside temperature is between -26° F to -50° F (-32° C to -46° C).

1. Position master power switch (1) to on.



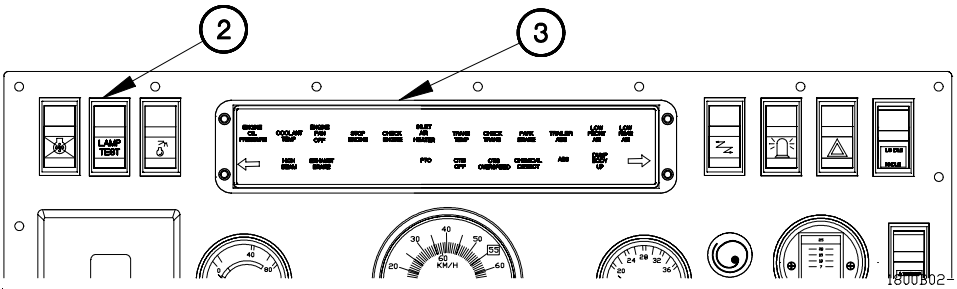
1800b01-

NOTE

ENGINE OIL PRESSURE, CHECK TRANS, PARK BRAKE, ABS, LOW FRONT AIR, and LOW REAR AIR indicators will remain on until operating pressures are achieved or are manually released.

INLET AIR HEATER indicator on lighted indicator display will illuminate for a minimum of 2 seconds regardless of coolant temperature.

2. Press LAMP TEST switch (2) to verify that all warning indicators illuminate on lighted indicator display (3).



1800b02-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

ENGINE START – Continued

NOTE

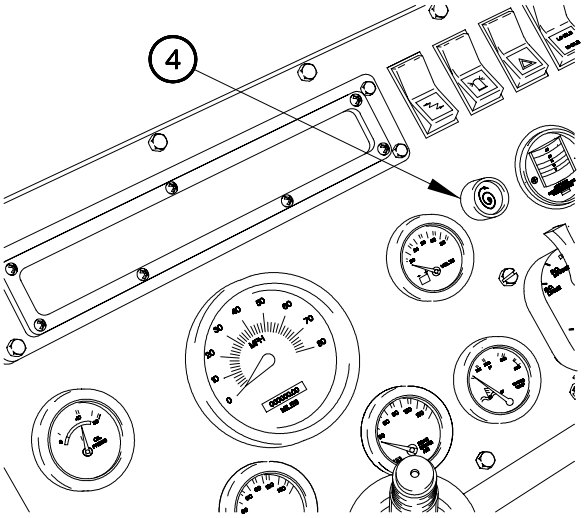
After turning master power switch on and completing lamp test, INLET AIR HEATER indicator may remain on up to 30 seconds, indicating that the inlet air heater is in cold start mode.

Inlet air preheat is complete when INLET AIR HEATER indicator goes out.

It is normal for INLET AIR HEATER indicator to cycle on/off during the cranking operation.

If engine does not start in first 30 seconds of cranking, release starter pushbutton and wait 30 seconds before attempting to start engine again.

3. Press and hold starter pushbutton (4) after INLET AIR HEATER indicator goes out.



1800b03-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

ENGINE START - Continued

CAUTION

Do not press ether start switch unless engine is cranking. Failure to comply may result in damage to equipment.

Do not use ether after engine has reached idle speed and is no longer in danger of stalling. Failure to comply may result in damage to equipment.

NOTE

Perform steps 4 and 5 if outside temperature is 32° F to -25° F (0° C to -32° C).

Ether is not required unless outside temperature is less than 32° F (0° C).

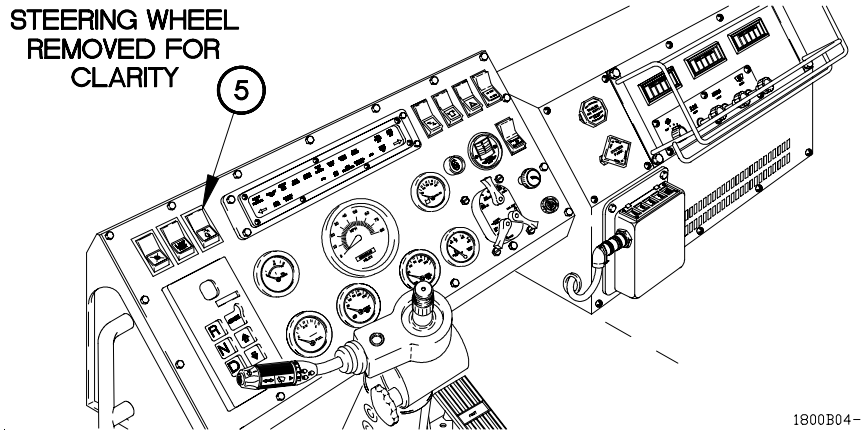
Continue to inject ether if engine has started but will not run without ether.

After engine starts and maintains low idle speed for 2 minutes, engine idle speed may increase. If idle speed increases, engine will maintain increased idle speed until engine reaches a predetermined temperature or after operating for 12 minutes at increased idle speed. Engine speed may be returned to low idle speed to begin vehicle operations by pressing and releasing accelerator pedal.

4. Press and hold ether start switch (5) for 5 seconds.

5. Release ether start switch (5) for 3 seconds.

6. Repeat steps 4 and 5 until engine has started, engine speed has increased over cranking speed, and engine maintains idle speed.



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

ENGINE START - Continued

7. Release starter pushbutton (4) when engine starts or after 30 seconds.

CAUTION

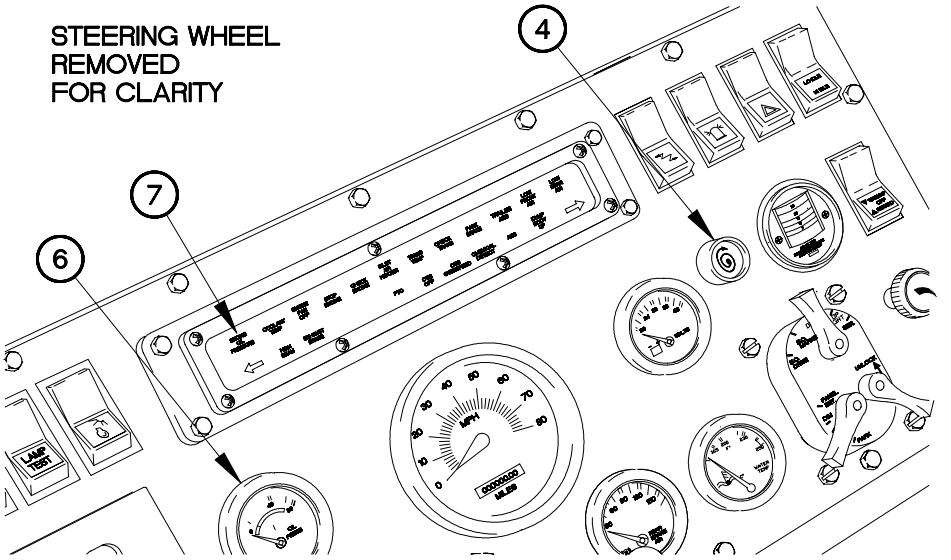
If STOP ENGINE indicator flashes (red) to warn Operator about a potential engine failure, shut down engine immediately (WP 0018 00) and perform Engine System Troubleshooting (WP 0072 00). Failure to comply may result in damage to equipment.

If OIL PRESS gage does not show engine oil pressure of 15-80 psi (103-552 kPa) within 10-15 seconds after starting engine, shut down engine immediately (WP 0018 00) and perform Engine System Troubleshooting (WP 0072 00). Failure to comply may result in damage to equipment.

NOTE

Oil pressure will increase when engine speed increases and will decrease when engine speed decreases.

8. Check that OIL PRESS gage (6) reads between 15-80 psi (103-552 kPa). If OIL PRESS gage reads in red zone and ENGINE OIL PRESSURE indicator (7) is illuminated, shut down engine (WP 0018 00) and perform Engine System Troubleshooting (WP 0072 00).



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

ENGINE START – Continued

WARNING

Do not drive vehicle until windshield is sufficiently clear of frost/ice. Failure to comply may result in severe injury or death to personnel.

9. Operate windshield defrost (WP 0022 00) as required.

10. Operate cab heat (WP 0022 00) as required.

NOTE

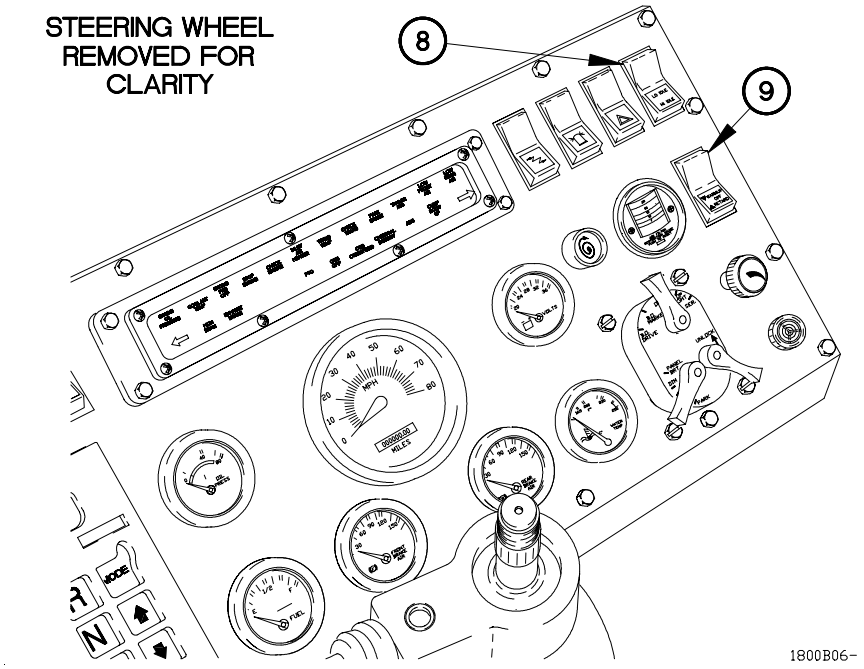
Perform steps 11 through 15 in outside temperatures of 32° F to -25° F (0° C to
-32° C).

11. Press LO IDLE/HI IDLE SWITCH (8) to engage HI IDLE.

NOTE

EXHAUST BRAKE indicator will illuminate when WARMUP/OFF/RETARD switch is positioned to WARMUP.

12. Position WARMUP/OFF/RETARD switch (9) to WARMUP.



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

ENGINE START – Continued

13. Check that WATER TEMP gage (10) reads less than 230° F (110° C). If WATER TEMP gage reads in the red zone or COOLANT TEMP indicator (11) is illuminated, shut down engine (WP 0018 00) and perform Engine System Troubleshooting (WP 0072 00).

NOTE

Perform steps 14 and 15 when windshield is clear of frost/ice and prior to driving vehicle.

14. Position WARMUP/OFF/RETARD switch (9) to OFF.

15. Press LO IDLE/HI IDLE switch (8) to engage LO IDLE.

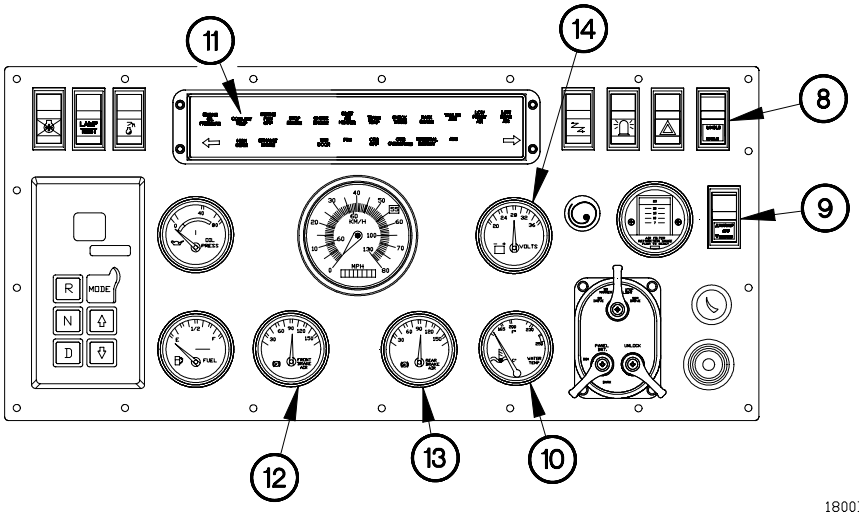
NOTE

If FRONT BRAKE AIR and REAR BRAKE AIR pressure gages do not read between 75-120 psi (517-827 kPa) after engine warms up, shut down engine (WP 0018 00) and perform Air System Troubleshooting (WP 0081 00).

LOW FRONT AIR and LOW REAR AIR indicators will illuminate (red) and audible alarm will sound until air pressure is between 75-85 psi (517-586 kPa).

16. Check that FRONT BRAKE AIR pressure gage (12) and REAR BRAKE AIR pressure gage (13) read between 75-120 psi (517-827 kPa).

17. Check that VOLTS gage (14) reads between 26 and 30 volts.



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

ENGINE START - Continued

18. Check that AIR FILTER RESTRICTION GAUGE (15) reads below 25 in.

    a. Press reset button (16) if AIR FILTER RESTRICTION GAUGE (15) reads greater than 25 in. (in red area).

    b. Shut down engine (WP 0018 00) and service air filter (WP 0089 00) if AIR FILTER RESTRICTION GAUGE (15) still reads greater than 25 in. (in red area).

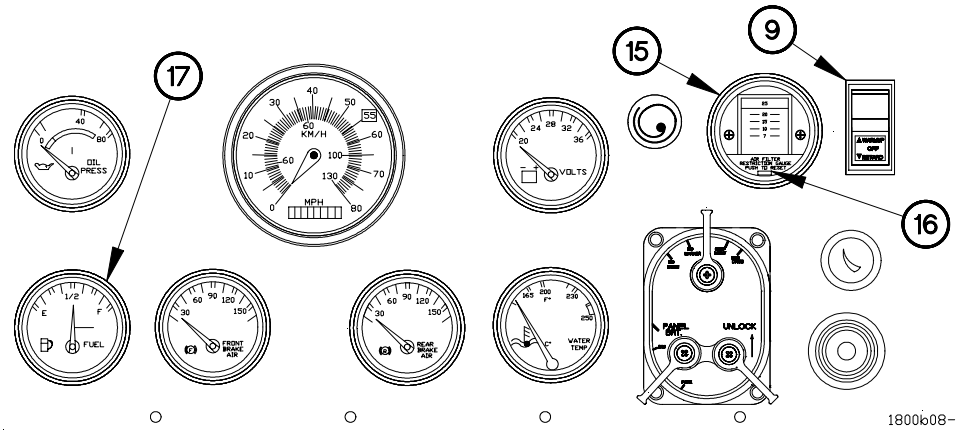
19. Check that FUEL gage (17) shows sufficient fuel to accomplish mission.

WARNING

Do not engage engine exhaust brake feature in icy or slippery conditions. Failure to comply may result in injury to personnel or damage to equipment.

20. Position WARMUP/OF/ RETARD switch (9) to RETARD.

21. Select desired transmission operating range (WP 0018 00).



CAUTION

Water temperature must be maintained at a minimum of 165° F (74° C) for 1 to 3 minutes prior to engine shutdown. Failure to comply may result in damage to equipment.

22. Shut down engine (WP 0018 00).

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

OPERATE VEHICLE LIGHTS

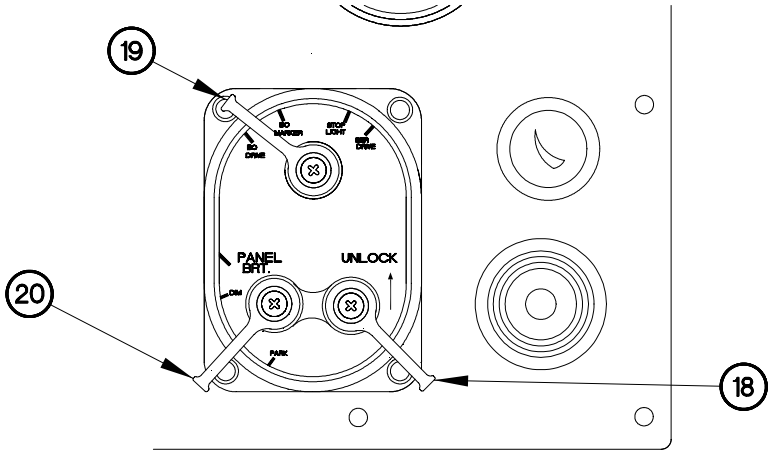
1. Operate Instrument Panel Lights.

   a. Lift up and hold UNLOCK lever (18).

   b. Set main selector lever (19) to any position except OFF.

   c. Release UNLOCK lever (18).

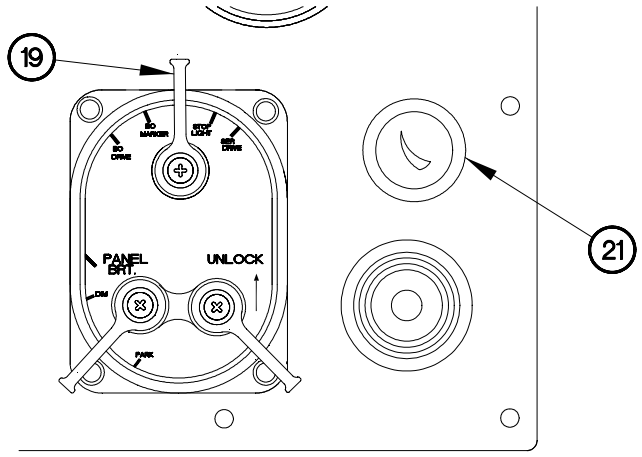
   d. Position auxiliary lever (20) to PANEL BRT.



1800b09-

   e. Turn dimmer switch (21) left to increase brightness or right to decrease brightness.

   f. Set main selector lever (19) to OFF. All vehicle lights will go off.



1800b10-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

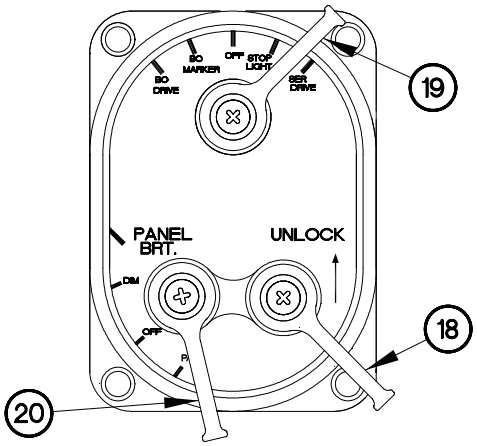
OPERATE VEHICLE LIGHTS - Continued

2. Operate Parking Lights.

   a. Lift up and hold UNLOCK lever (18).

   b. Set main selector lever (19) to SER DRIVE.

   c. Set auxiliary lever (20) to PARK.

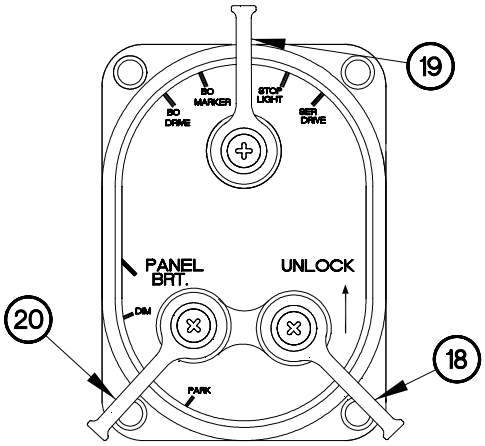


1800b11-

   d. Release UNLOCK lever (18).

   e. Set auxiliary lever (20) to OFF to shut off only parking lights.

   f. Set main selector lever (19) to OFF. All vehicle lights will go off.



1800b12-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

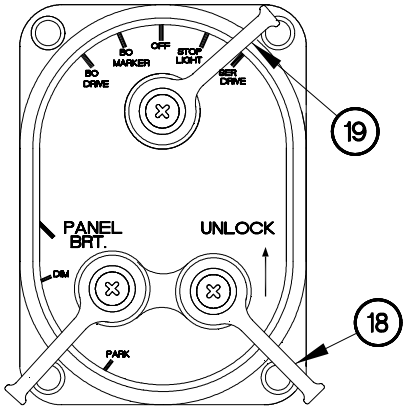
OPERATE VEHICLE LIGHTS - Continued

3. Operate Service Drive and Backup Lights.

   a. Lift up and hold UNLOCK lever (18).

   b. Set main selector lever (19) to SER DRIVE.

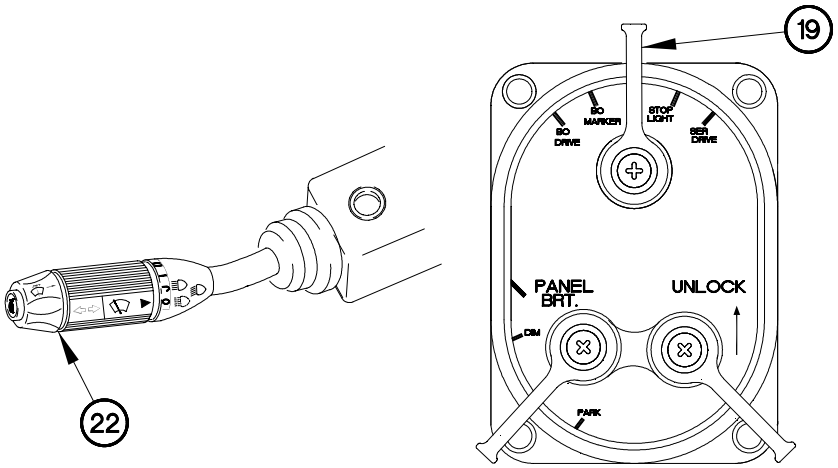
   c. Release UNLOCK lever (18).



1800b13-

   d. Pull turn signal switch (22) to operate headlights at high beam or low beam.

   e. Set main selector lever (19) to OFF.



1800b14-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

OPERATE VEHICLE LIGHTS - Continued

4. Operate Stoplights.

   a. Lift up and hold UNLOCK lever (18).

   b. Set main selector lever (19) to STOP LIGHT.

   c. Release UNLOCK lever (18).

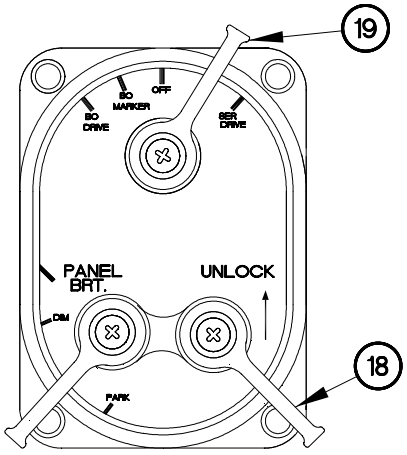
   d. Set main selector lever (19) to OFF. All vehicle lights will go off.

WARNING

Vehicle speed should be reduced to 5-10 mph (8-16 km/h) during blackout conditions. Failure to comply may result in serious injury or death to personnel.

5. Operate Blackout Drive Lights.

   a. Lift up and hold UNLOCK lever (18).



1800b15-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) – Continued 0018 00

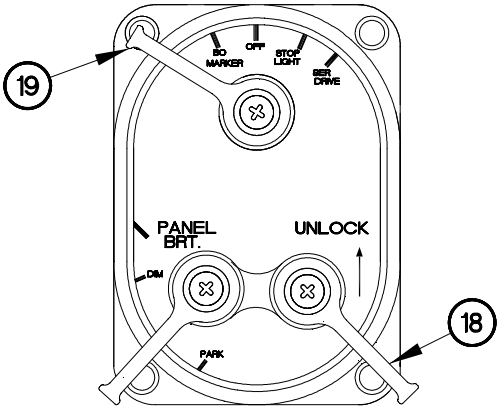
OPERATE VEHICLE LIGHTS - Continued

5. Operate Blackout Drive Lights - Continued.

   b. Set main selector lever (19) to BO DRIVE.

   c. Release UNLOCK lever (18).

   d. Set main selector lever (19) to OFF.

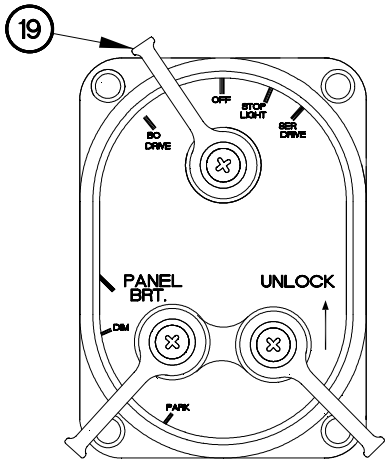


1800b16-

6. Operate Blackout Marker Lights.

   a. Set main selector lever (19) to BO MARKER.

   b. Set main selector lever (19) to OFF.

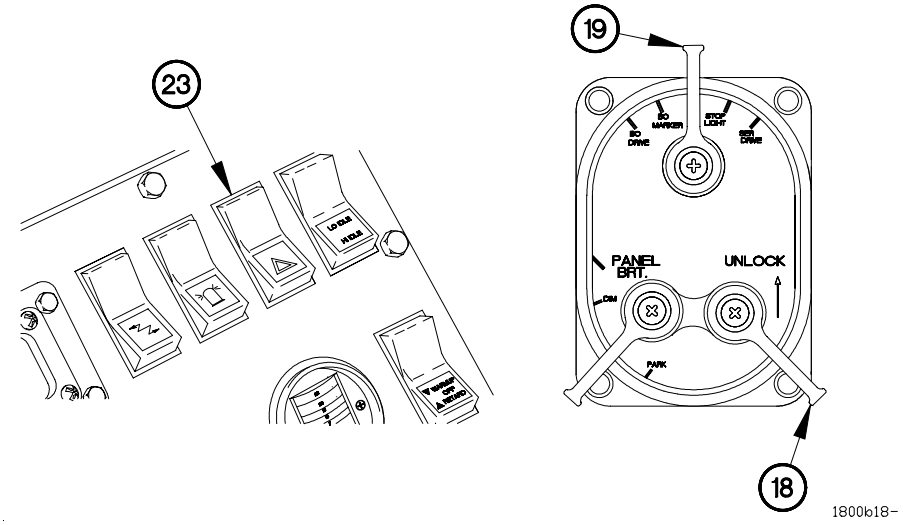


1800b17-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

OPERATE VEHICLE LIGHTS - Continued

7. Operate Warning Light.
   a. Install amber warning light (WP 0066 00).
   b. Lift up and hold UNLOCK lever (18).
   c. Set main selector lever (19) to SER DRIVE or STOP LIGHT.
   d. Release UNLOCK lever (18).
   e. Position warning light switch (23) to on.
   f. Position warning light switch (23) to off.
   g. Set main selector lever (19) to OFF.
8. Operate Worklights.
   a. Lift up and hold UNLOCK lever (18).
   b. Set main selector lever (19) to any position except OFF.
   c. Release UNLOCK lever (18).



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

OPERATE VEHICLE LIGHTS - Continued

8. Operate Worklights - Continued.

NOTE

Perform step 8d only if main selector lever is positioned to BO DRIVE or BO MARKER.

d. Position BLACKOUT OVERRIDE switch (24) to on.

e. Position work lights switch (25) to on.

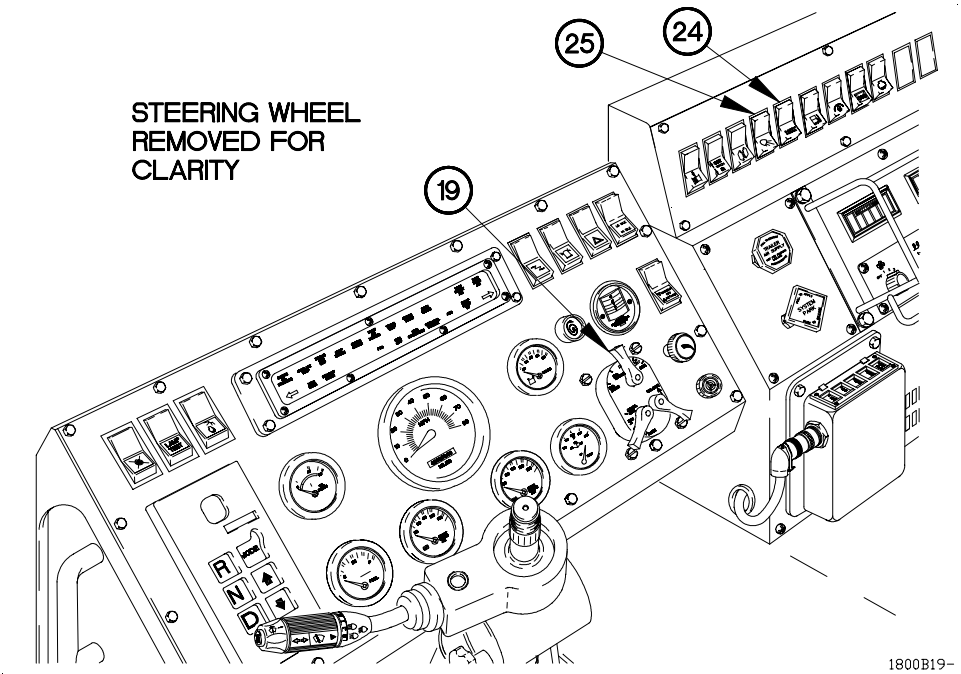
f. Position work lights switch (25) to off.

NOTE

Perform step 8g only if main selector lever is positioned to BO DRIVE or BO MARKER.

g. Position BLACKOUT OVERRIDE switch (24) to off.

h. Set main selector lever (19) to OFF.



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

OPERATE SERVICE BRAKES

WARNING

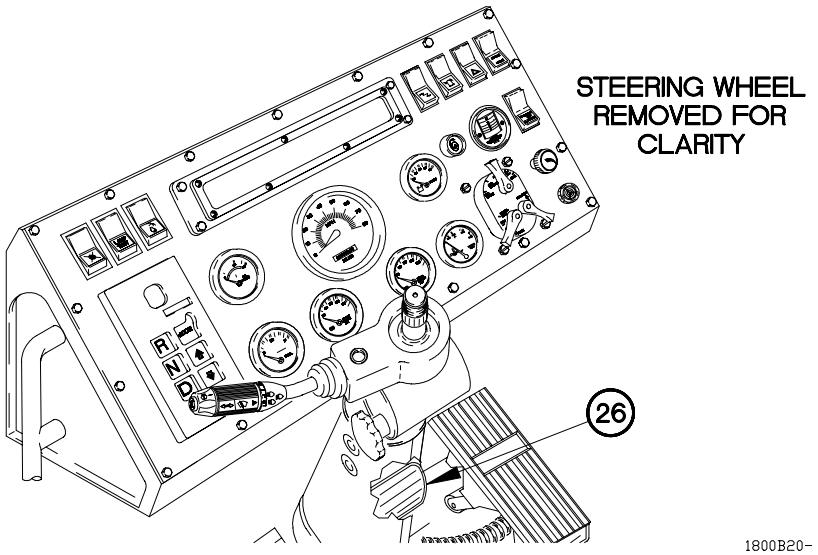
Operating in water or mud causes brake linings to get wet and can impair vehicle braking. Dry brakes by driving vehicle about 500 ft (153 m) while applying service brakes often. If adequate braking is not restored by drying brakes, notify Unit Maintenance. Failure to comply may result in injury to personnel or damage to equipment.

Do not press brake pedal hard three or four times in a row. Air supply will be used up and service brakes will not work until air pressure builds up again. Do not operate vehicle until FRONT and REAR BRAKE AIR pressure reaches at least 100 psi (690 kPa). Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

If ABS indicator, or TRAILER ABS, indicator illuminates, the Anti-Lock Braking System (ABS) ECU has detected a fault. Notify Unit Maintenance upon completion of mission. Failure to comply may result in damage to the equipment.

Push down and hold brake pedal (26) to slow or stop vehicle.



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SELECT TRANSMISSION OPERATING RANGE

1. Start engine (WP 0018 00).

CAUTION

Engine speed must be at idle prior to selecting any forward or reverse operating range. Failure to comply may result in damage to equipment.

Do not allow vehicle to coast in N (Neutral). Failure to comply may result in damage to equipment.

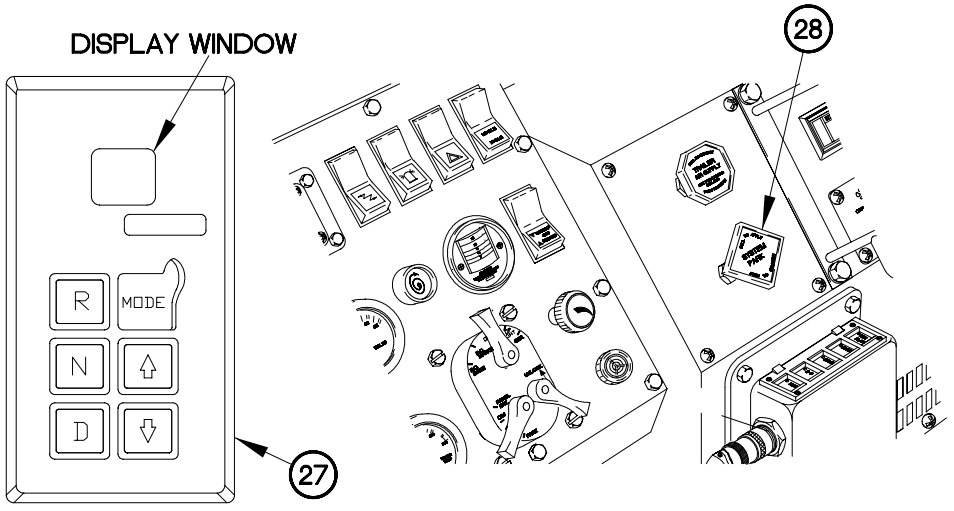
NOTE

When transmission is operating normally, display window of WTEC III TPSS will indicate selected operating range.

When D (Drive) is selected, the default selected operating range is 7.

2. Select desired travel direction (D for Drive or R for Reverse) on WTEC III TPSS (27).

3. Push in SYSTEM PARK control (28).



1800b21-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

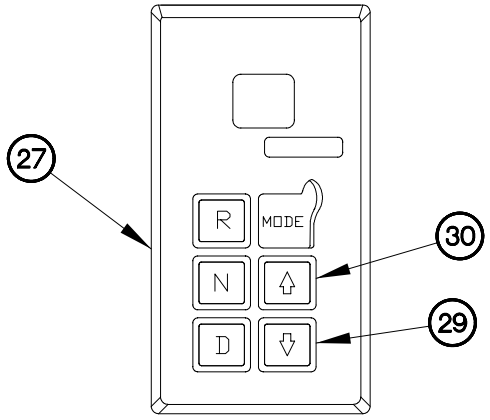
SELECT TRANSMISSION OPERATING RANGE - Continued

WARNING

Transmission incorporates a hold feature to prohibit upshifting above selected gear during normal driving. However, during downhill operation, transmission may upshift above selected gear. On downgrades, vehicle speed may need to be restricted by using service brakes. Failure to comply may result in serious injury or death to personnel or damage to equipment.

4. Press down arrow button (29) on WTEC III TPSS (27) to shift transmission to lower operating range.

5. Press up arrow button (30) on WTEC III TPSS (27) to shift transmission to higher operating range.



1800B22-

CAUTION

If illumination of last selected operating range goes out, WTEC III ECU has detected a problem that needs correcting. Do not attempt to shift transmission to N (Neutral) or any other operating range. Operate vehicle at reduced speed to a safe parking location. Failure to comply may result in damage to equipment.

NOTE

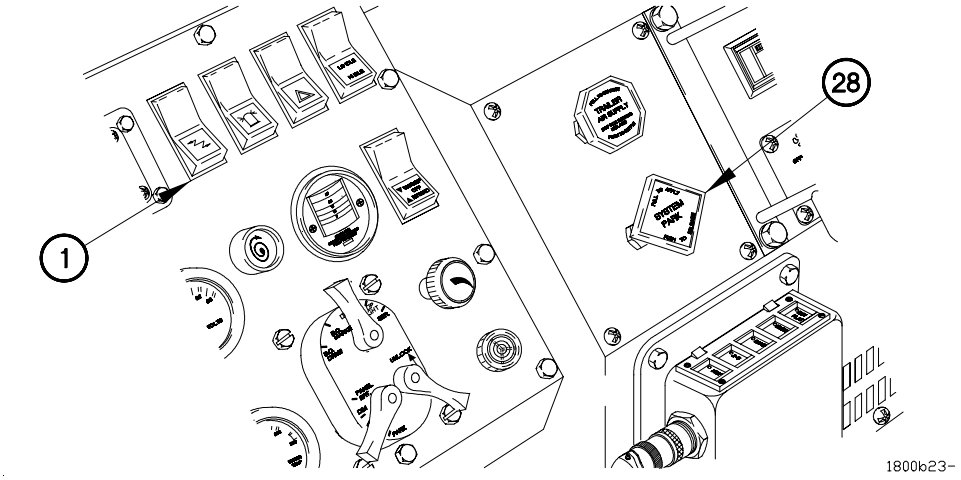
Perform steps 6 through 9 if display window is not showing last selected operating range.

6. Stop vehicle (WP 0018 00).

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

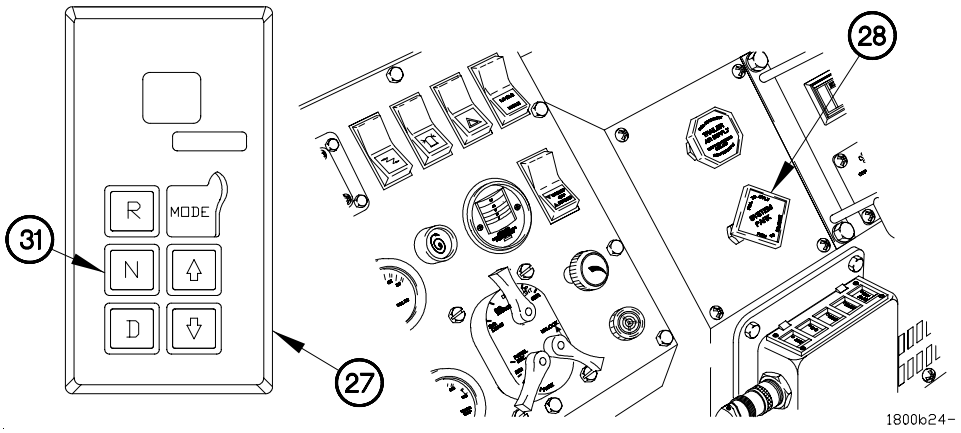
SELECT TRANSMISSION OPERATING RANGE - Continued

7. Position master power switch (1) to off.
8. Pull out SYSTEM PARK control (28).
9. Notify Unit Maintenance.



SHUT DOWN ENGINE

1. Stop vehicle (WP 0018 00).
2. Press N (Neutral) button (31) on WTEC III TPSS (27).
3. Pull out SYSTEM PARK control (28).



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SHUT DOWN ENGINE - Continued

CAUTION

Water temperature must be maintained at a minimum of 165° F (74° C) for 1 to 3 minutes prior to engine shutdown. Failure to comply may result in damage to equipment.

When outside temperatures are below 32° F (0° C), do not continuously operate engine at HI IDLE without WARMUP/OFF/RETARD switch in WARMUP position. Failure to comply may result in damage to equipment.

NOTE

Steps 4 - 7 are only necessary to meet 165° F (74° C) requirements.

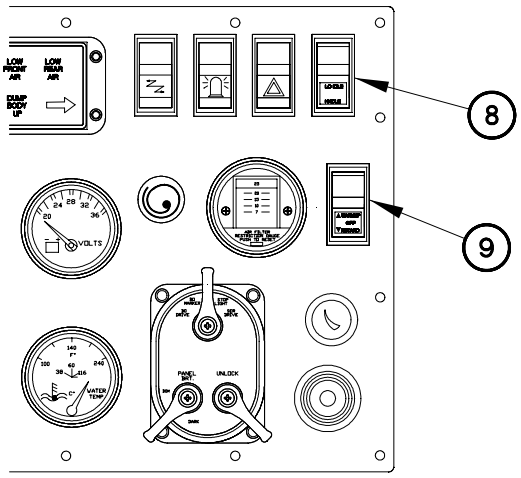
LO IDLE/HI IDLE and WARMUP/OFF/RETARD switches are used until WATER TEMP gage reaches and maintains 165° F (74° C) for 1 to 3 minutes.

4. Press LO IDLE/HI IDLE switch (8) to engage HI IDLE.

NOTE

EXHAUST BRAKE indicator will illuminate when WARMUP/OFF/RETARD switch is positioned to WARMUP.

5. Position WARMUP/OFF/RETARD switch (9) to WARMUP.



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SHUT DOWN ENGINE – Continued

NOTE

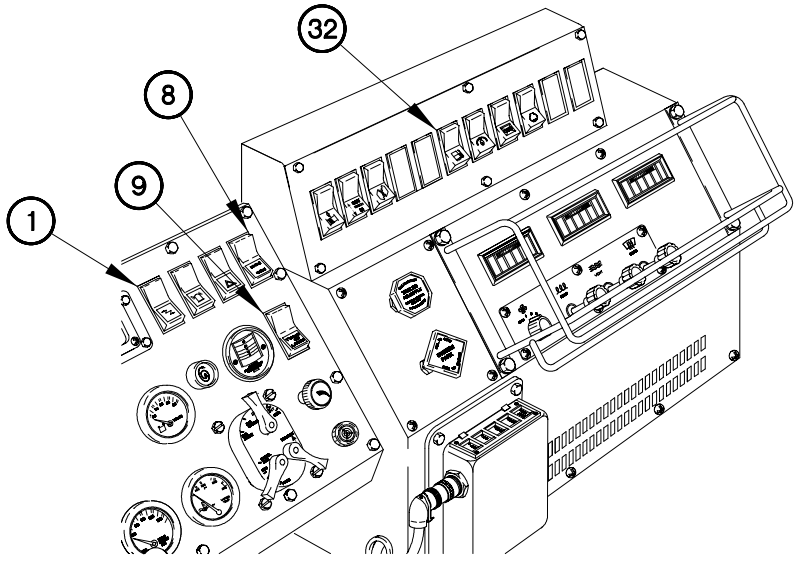
Perform steps 6 and 7 after engine has maintained 165° F (74° C) for 1 to 3 minutes.

6. Position WARMUP/OFF/RETARD switch (9) to OFF.
7. Press LO IDLE/HI IDLE switch (8) to engage LO IDLE.
8. Turn off lights and electrical accessories (WP 0018 00).

NOTE

Perform step 9 in outside temperatures below -25 °F (-32° C).

9. Position fuel preheat switch (32) to off.
10. Position master power switch (1) to off.
11. Chock wheels (WP 0018 00).



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SHUT DOWN ENGINE – Continued

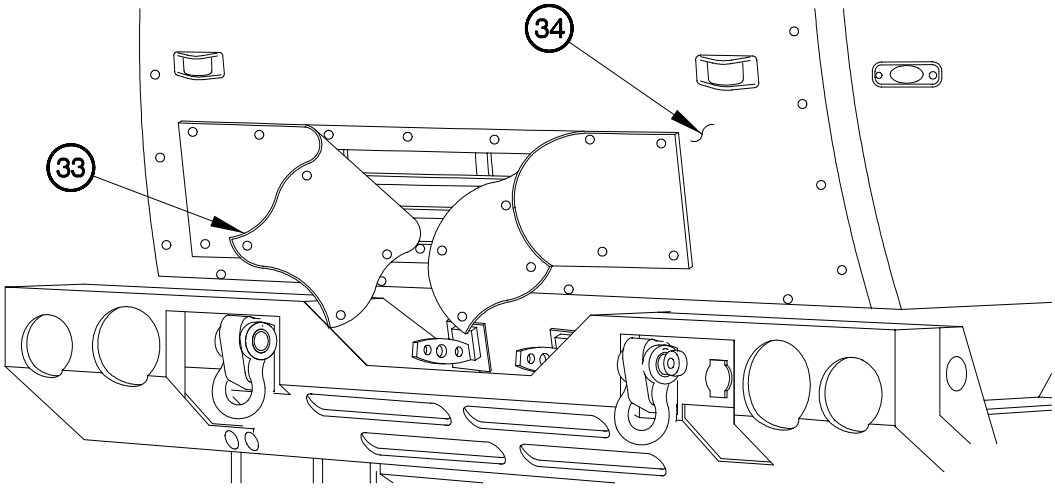
CAUTION

Cab arctic cover may be left on vehicle in temperatures up to 40° F (4° C), except when engine requires maximum cooling such as in extreme off-road conditions or when vehicle is operation fully loaded. Ensure flaps are adjusted so that engine temperature is between 165° F(73° C) and 210° F (99° C) during vehicle operation. Failure to comply may result in damage to equipment.

NOTE

Perform step 12 if vehicle is equipped with an arctic cold front.

12. Close flaps (33) on the cab arctic front cover (34).



1800b27-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

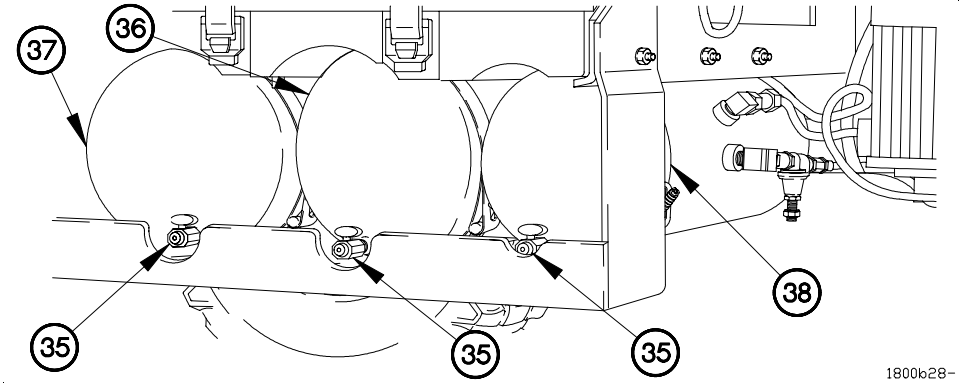
DRAIN AIR TANKS

CAUTION

Drain air tanks when vehicle will not be operated for 12 hours or more, or when operating in temperatures below 50° F (10° C). Failure to comply may result in damage to equipment.

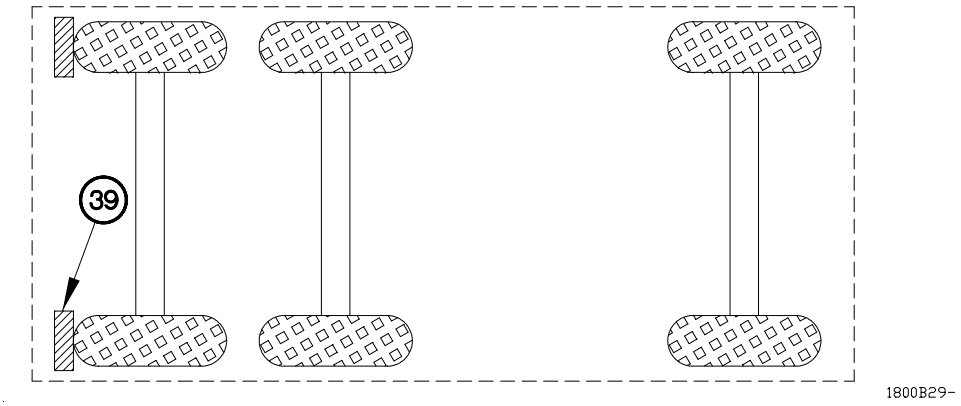
1. Open drain valves (35) on primary air tank (36), secondary air tank (37), and wet tank (38) until air cannot be heard escaping.

2. Close drain valves (35) on primary air tank (36), secondary air tank (37), and wet tank (38).



PARK VEHICLE

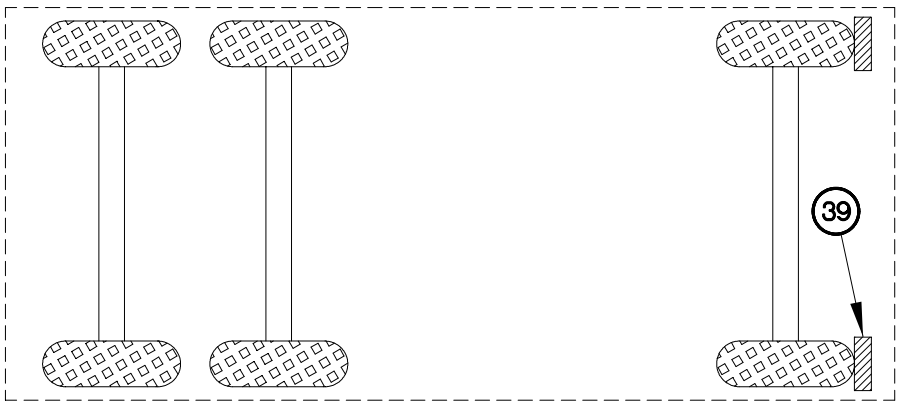
1. Install wheel chocks (39) in back of rear wheels when parked facing uphill.



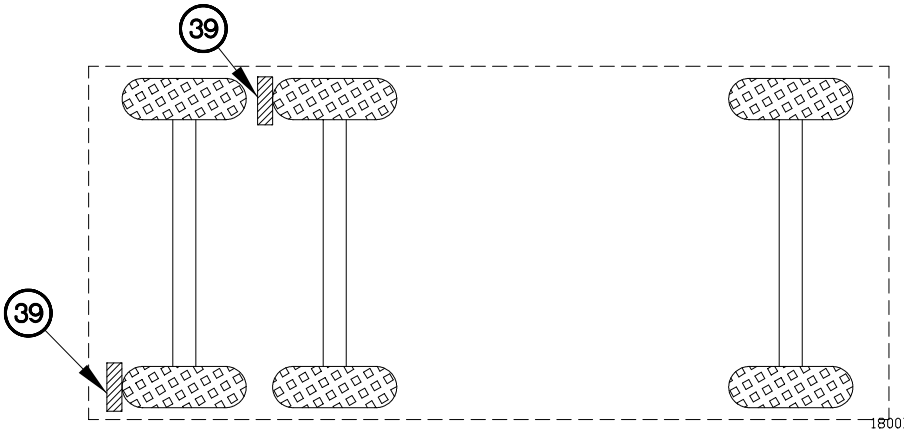
VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

PARK VEHICLE - Continued

2. Install wheel chocks (39) in front of front wheels when parked facing downhill.



3. Install wheel chocks (39) in front of one rear wheel and the second wheel chock in back of the opposite wheel when parked on level ground.

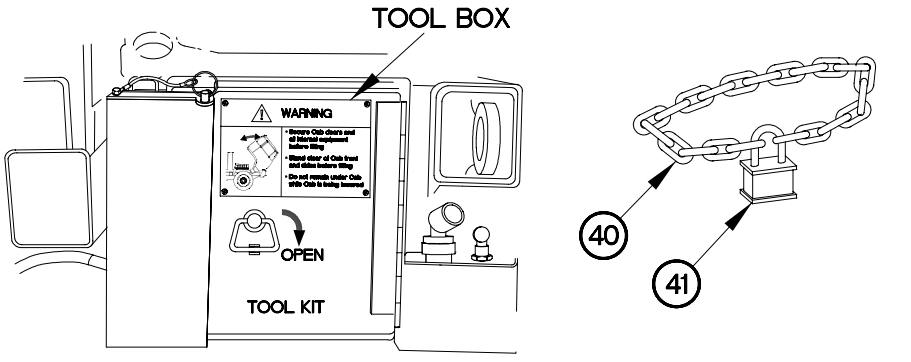


VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SECURE VEHICLE

1. Install Chain.

   a. Remove chain (40) and padlock (41) from tool box.



1800B32-

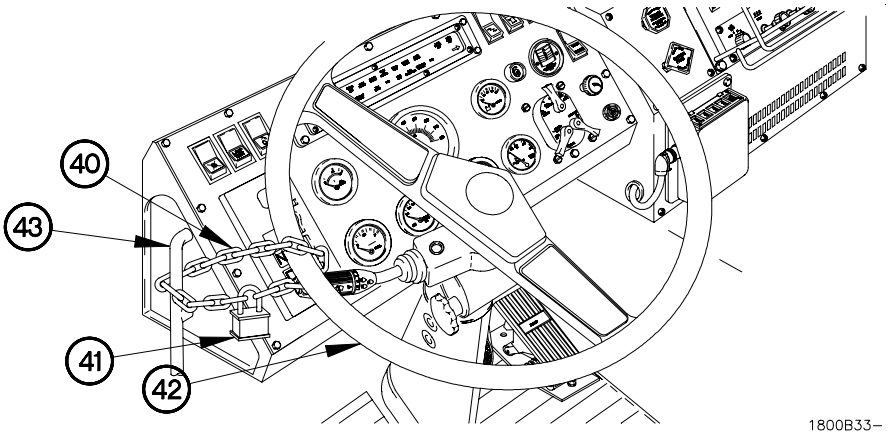
NOTE

Turn steering wheel either full right or full left before installing chain.

   b. Wrap chain (40) around steering wheel (42) and cab handhold (43).

   c. Connect padlock (41) to chain (40).

   d. Lock padlock (41).



1800B33-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

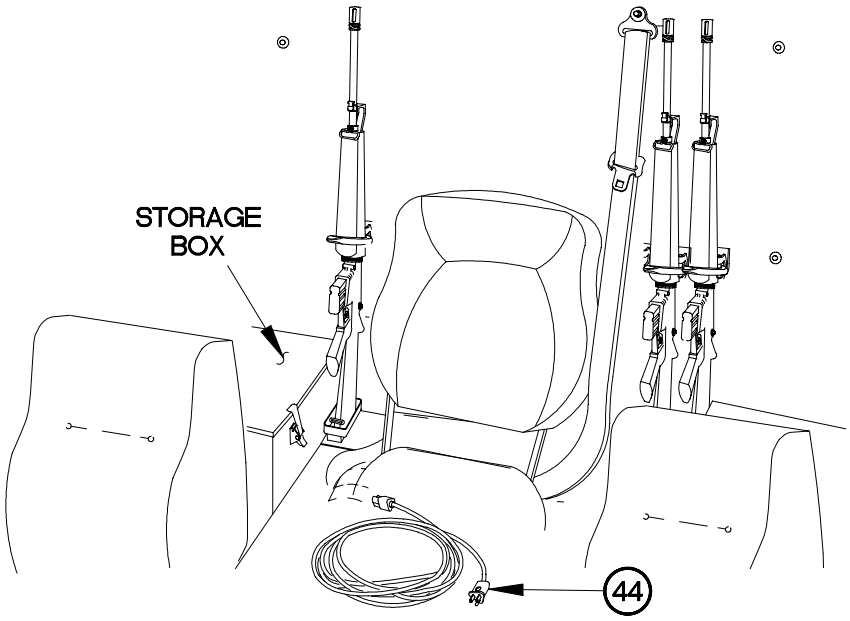
SECURE VEHICLE - Continued

NOTE

Perform step (2) on vehicles equipped with engine block arctic heater.

2. Connect power to engine block arctic heater.

   a. Remove extension cord (44) from CO-DRIVER'S SIDE STORAGE BOX.



1600A35-

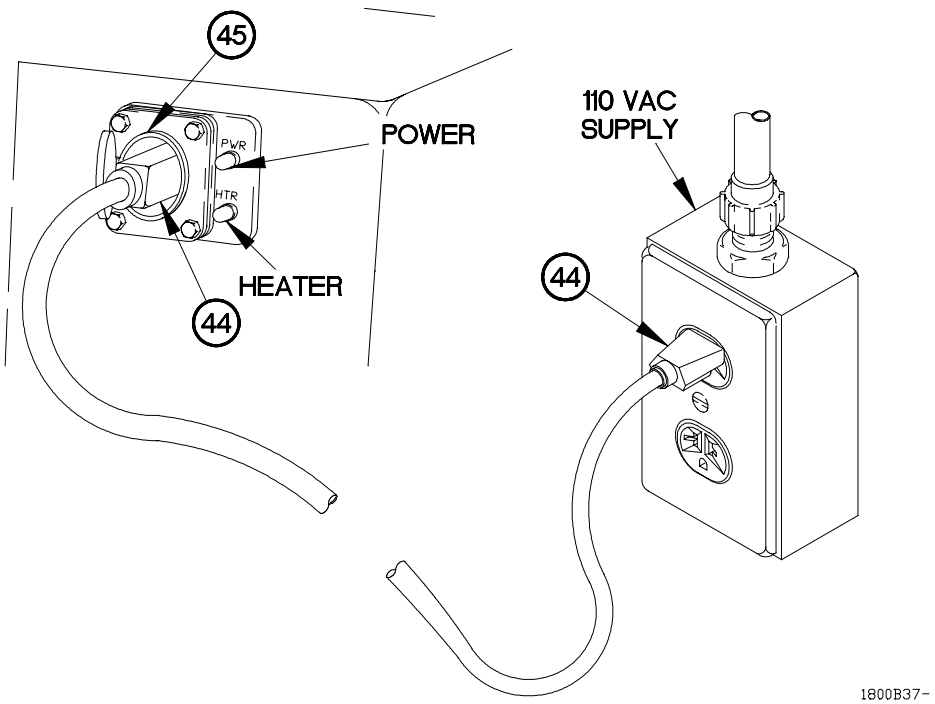
VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SECURE VEHICLE - Continued

b. Connect female connector of extension cord (44) to engine block heater receptacle (45).

c. Connect male connector of extension cord (44) to 110 VAC supply.

d. Note the PWR lamp (green) and HTR lamp (red) are illuminated.



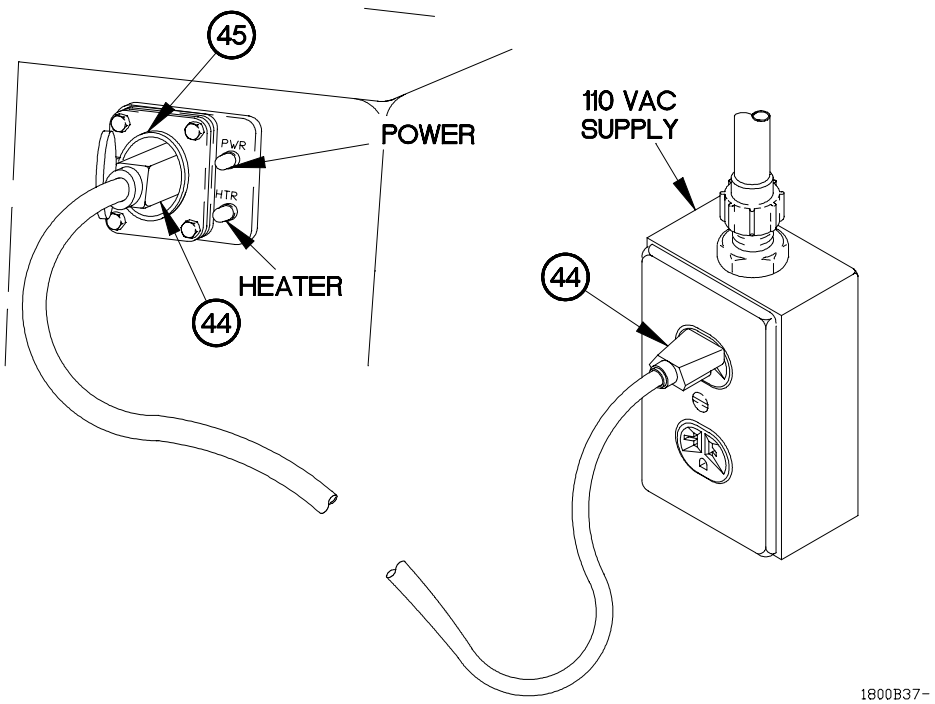
VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SECURE VEHICLE - Continued

3. Disconnect power to engine block arctic heater.

   a. Disconnect male connector of extension cord (44) from 110 VAC supply.

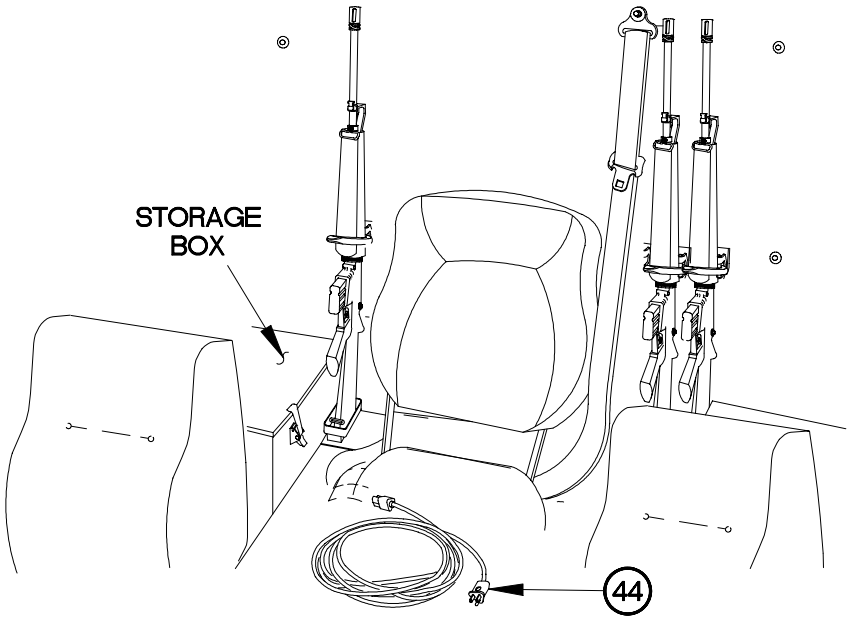
   b. Disconnect female connector of extension cord (44) from ENGINE HEATER receptacle (45).



VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SECURE VEHICLE - Continued

c. Place extension cord (44) in CO-DRIVER'S SIDE STORAGE BOX.



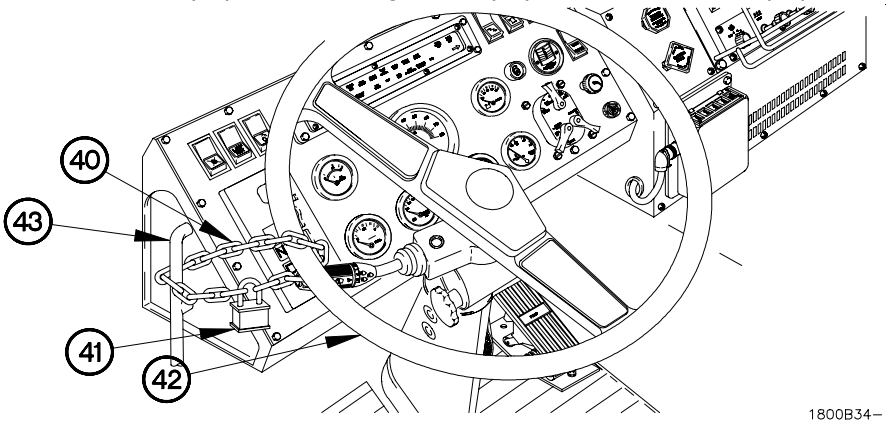
1600A35-

4. Remove Chain.

a. Unlock padlock (41).

b. Remove padlock (41) from chain (40).

c. Remove chain (40) from steering wheel (42) and cab handhold (43).

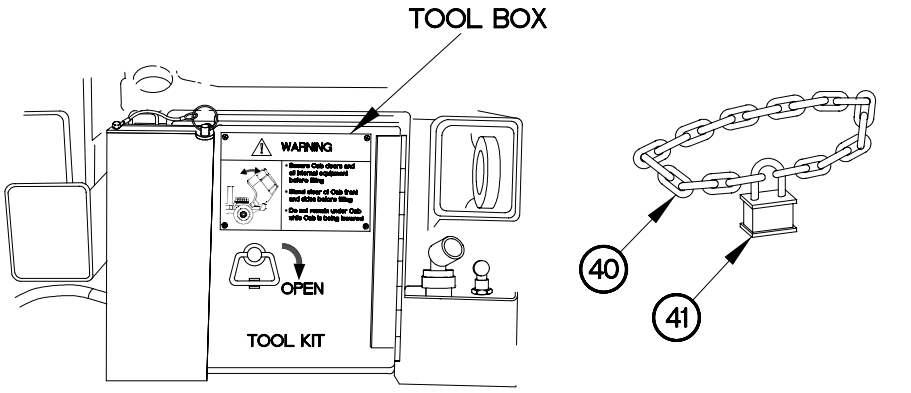


1800B34-

VEHICLE OPERATION (VEHICLE S/N 18,549 OR LOWER) - Continued 0018 00

SECURE VEHICLE - Continued

d. Place chain (40) and padlock (41) in tool box.



1800B35-

END OF OPERATING PROCEDURE

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) 0018 01

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)

References
FM 31-70
WP 0022 00
WP 0066 00
WP 0072 00
WP 0081 00

GENERAL

The paragraphs in this work package provide data and procedures to be used by the Operator when performing basic vehicle operation. Items covered include Engine Start, Operate Vehicle Lights, Operate Service Brakes, Select Transmission Operating Range, Shut Down Engine, Park Vehicle, Drain Air Tanks, and Secure Vehicle.

WARNING

Wear arctic clothing when cab temperatures fall and remain below 30° F (-1° C). Cold stress preventative measures in FM 31-70 should be applied when vehicle cab temperatures fall and remain below 30° F (-1° C). Failure to comply may result in serious injury or death to personnel.

CAUTION

Cold weather radiator cover will be installed, if temperatures are consistently below 40° F (4° C). It should be removed if temperatures are above 40° F (4° C), it must be removed if temperatures reach 70° F (21° C). Failure to comply may result in damage to equipment.

NOTE

If cold weather radiator cover has not been installed or needs to be removed Notify Unit Maintenance.

CAUTION

When ambient temperature rises above -25° F (-32° C), the vehicle must not be operated with arctic belts installed. Notify unit maintenance. Failure to comply may result in damage to equipment.

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

ENGINE START

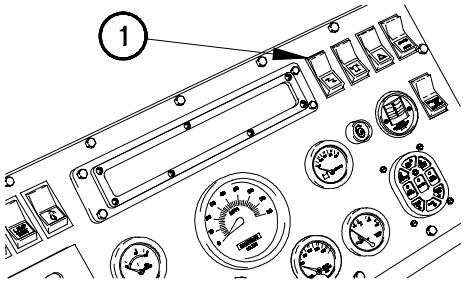
CAUTION

If vehicle is equipped with cab arctic front cover, do not leave vehicle running unattended with flaps fully closed in temperatures above -25° F (-32° C). Operating temperature is 165° F (74° C) to 210° F (100° C). Failure to comply may result in damage to equipment.

NOTE

Refer to WP 0051 00 if outside temperature is between -26° F to -50° F (-32° C to -46° C).

1. Position master power switch (1) to on.



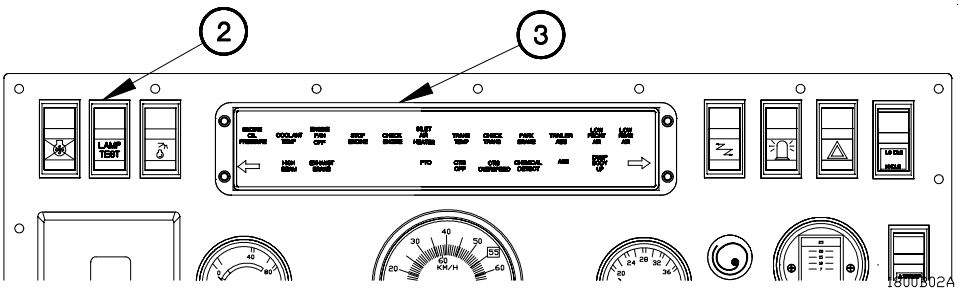
1800B01A

NOTE

ENGINE OIL PRESSURE, CHECK TRANS, PARK BRAKE, ABS, and LOW AIR indicators will remain on until operating pressures are achieved or are manually released.

INLET AIR HEATER indicator on lighted indicator display will illuminate for a minimum of 2 seconds regardless of coolant temperature.

2. Press LAMP TEST switch (2) to verify that all warning indicators illuminate on lighted indicator display (3).



1800B02A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

ENGINE START – Continued

NOTE

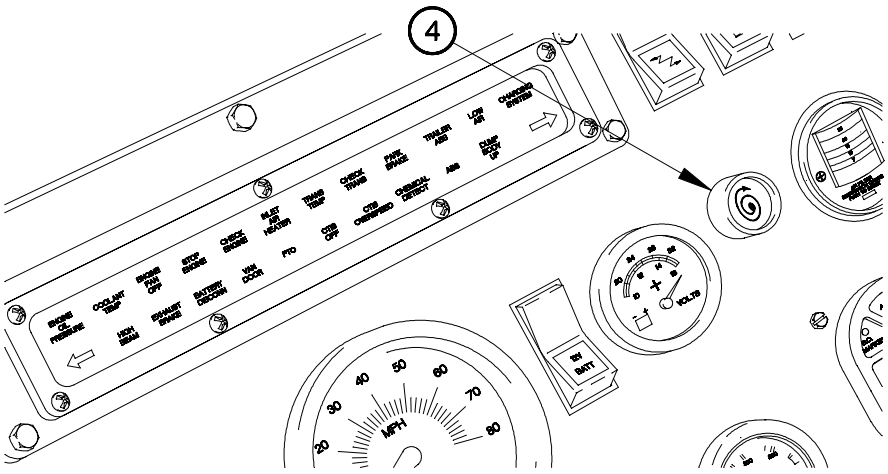
After turning master power switch on and completing lamp test, INLET AIR HEATER indicator may remain on up to 30 seconds, indicating that the inlet air heater is in cold start mode.

Inlet air preheat is complete when INLET AIR HEATER indicator goes out.

It is normal for INLET AIR HEATER indicator to cycle on/off during the cranking operation.

If engine does not start in first 30 seconds of cranking, release starter pushbutton and wait 30 seconds before attempting to start engine again.

3. Press and hold starter pushbutton (4) after INLET AIR HEATER indicator goes out.



1800B03A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

ENGINE START - Continued

CAUTION

Do not press ether start switch unless engine is cranking. Failure to comply may result in damage to equipment.

Do not use ether after engine has reached idle speed and is no longer in danger of stalling. Failure to comply may result in damage to equipment.

NOTE

Perform steps 4 and 5 if outside temperature is 32° F to -25° F (0° C to -32° C).

Ether is not required unless outside temperature is less than 32° F (0° C).

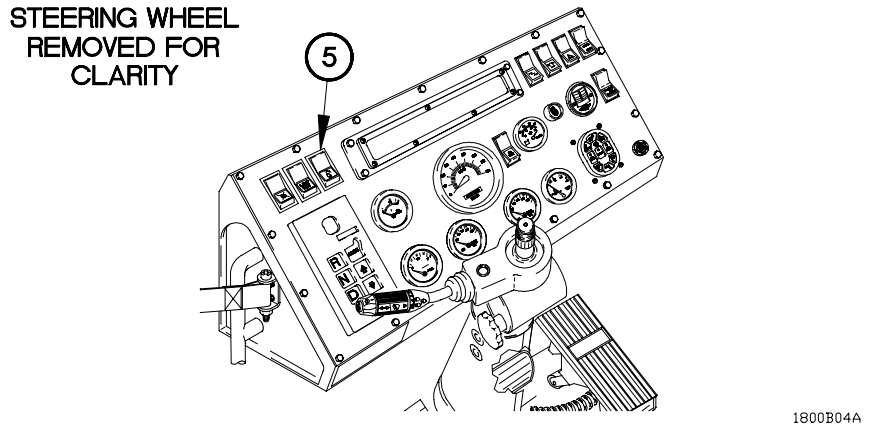
Continue to inject ether if engine has started but will not run without ether.

After engine starts and maintains low idle speed for 2 minutes, engine idle speed may increase. If idle speed increases, engine will maintain increased idle speed until engine reaches a predetermined temperature or after operating for 12 minutes at increased idle speed. Engine speed may be returned to low idle speed to begin vehicle operations by pressing and releasing accelerator pedal.

4. Press and hold ether start switch (5) for 5 seconds.

5. Release ether start switch (5) for 3 seconds.

6. Repeat steps 4 and 5 until engine has started, engine speed has increased over cranking speed, and engine maintains idle speed.



1800B04A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

ENGINE START - Continued

7. Release starter pushbutton (4) when engine starts or after 30 seconds.

CAUTION

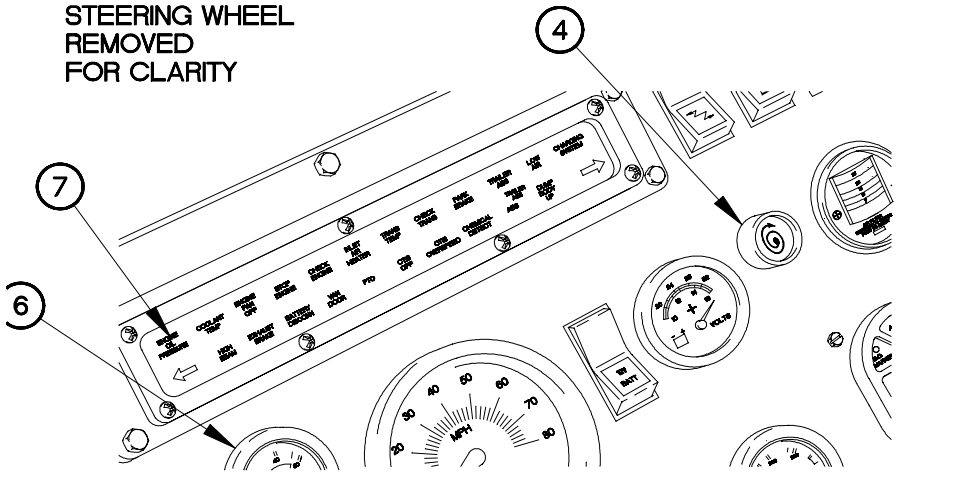
If STOP ENGINE indicator flashes (red) to warn Operator about a potential engine failure, shut down engine immediately (WP 0018 01) and perform Engine System Troubleshooting (WP 0072 00). Failure to comply may result in damage to equipment.

If OIL PRESS gage does not show engine oil pressure of 15-80 psi (103-552 kPa) within 10-15 seconds after starting engine, shut down engine immediately (WP 0018 01) and perform Engine System Troubleshooting (WP 0072 00). Failure to comply may result in damage to equipment.

NOTE

Oil pressure will increase when engine speed increases and will decrease when engine speed decreases.

8. Check that OIL PRESS gage (6) reads between 15-80 psi (103-552 kPa). If OIL PRESS gage reads in red zone and ENGINE OIL PRESSURE indicator (7) is illuminated, shut down engine (WP 0018 01) and perform Engine System Troubleshooting (WP 0072 00).



1800B05A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

ENGINE START – Continued

WARNING

Do not drive vehicle until windshield is sufficiently clear of frost/ice. Failure to comply may result in severe injury or death to personnel.

9. Operate windshield defrost (WP 0022 00) as required.

10. Operate cab heat (WP 0022 00) as required.

NOTE

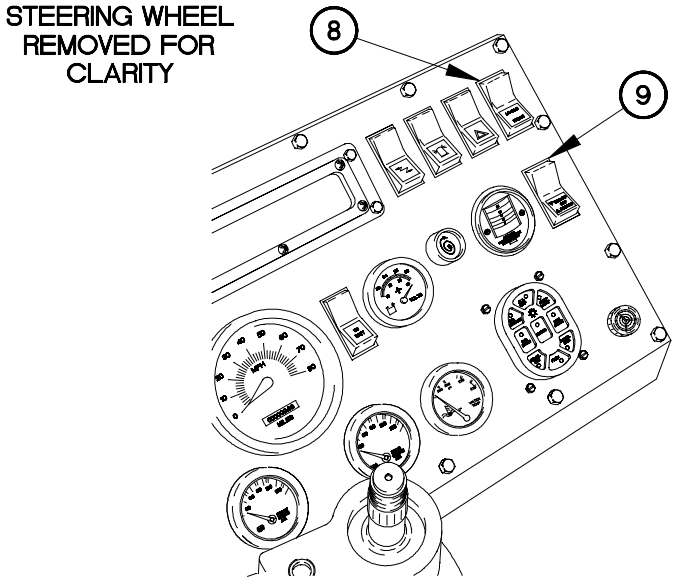
Perform steps 11 through 15 in outside temperatures of 32° F to -25° F (0° C to -32° C).

11. Press LO IDLE/HI IDLE SWITCH (8) to engage HI IDLE.

NOTE

EXHAUST BRAKE indicator will illuminate when WARMUP/OFF/RETARD switch is positioned to WARMUP.

12. Position WARMUP/OFF/RETARD switch (9) to WARMUP.



1800B06A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

ENGINE START – Continued

13. Check that WATER TEMP gage (10) reads less than 230° F (110° C). If WATER TEMP gage reads in the red zone or COOLANT TEMP indicator (11) is illuminated, shut down engine (WP 0018 01) and perform Engine System Troubleshooting (WP 0072 00).

NOTE

Perform steps 14 and 15 when windshield is clear of frost/ice and prior to driving vehicle.

14. Position WARMUP/OFF/RETARD switch (9) to OFF.

15. Press LO IDLE/HI IDLE switch (8) to engage LO IDLE.

NOTE

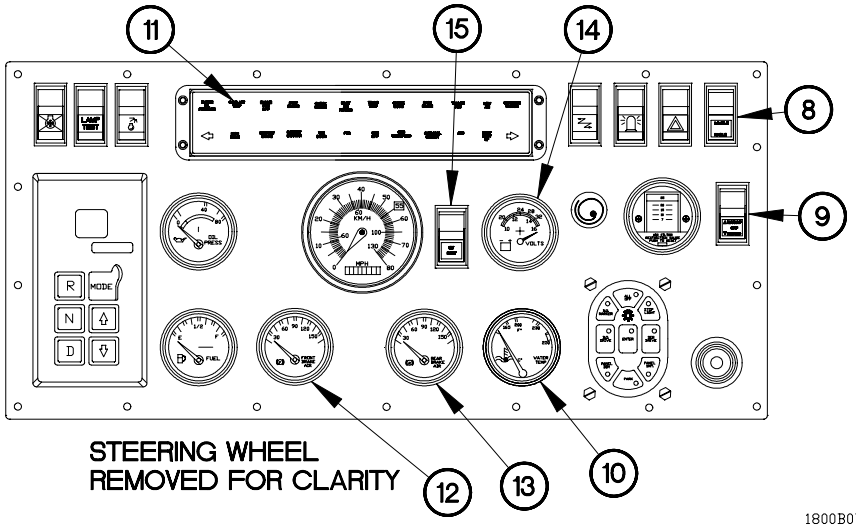
If FRONT BRAKE AIR and REAR BRAKE AIR pressure gages do not read between 75-120 psi (517-827 kPa) after engine warms up, shut down engine (WP 0018 01) and perform Air System Troubleshooting (WP 0081 00).

LOW AIR indicator will illuminate (red) and audible alarm will sound until air pressure is between 75-85 psi (517-586 kPa).

16. Check that FRONT BRAKE AIR pressure gage (12) and REAR BRAKE AIR pressure gage (13) read between 75-120 psi (517-827 kPa).

17. Check that VOLTS gage (14) reads between 24 and 28 volts.

18. Press momentary 12V BAT to switch (15). Check that VOLTS gage (14) reads between 12 and 14 volts.



VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

ENGINE START - Continued

19. Check that AIR FILTER RESTRICTION GAUGE (16) reads below 25 in.

    a. Press reset button (17) if AIR FILTER RESTRICTION GAUGE (16) reads greater than 25 in. (in red area).

    b. Shut down engine (WP 0018 01) and service air filter (WP 0089 00) if AIR FILTER RESTRICTION GAUGE (16) still reads greater than 25 in. (in red area).

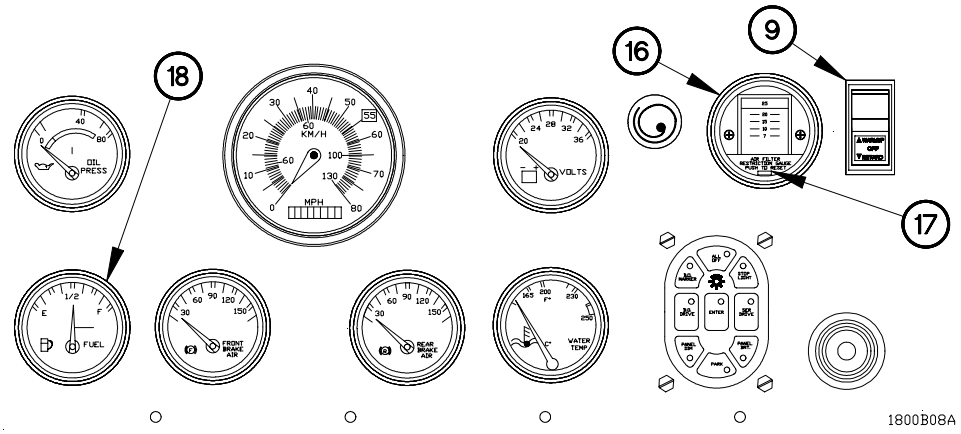
20. Check that FUEL gage (18) shows sufficient fuel to accomplish mission.

WARNING

Do not engage engine exhaust brake feature in icy or slippery conditions. Failure to comply may result in injury to personnel or damage to equipment.

21. Position WARMUP/OF/ RETARD switch (9) to RETARD.

22. Select desired transmission operating range (WP 0018 01).



CAUTION

Water temperature must be maintained at a minimum of 165° F (74° C) for 1 to 3 minutes prior to engine shutdown. Failure to comply may result in damage to equipment.

23. Shut down engine (WP 0018 01).

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

OPERATE VEHICLE LIGHTS

NOTE

Touch any key on keypad to illuminate main light switch before making selection.

Pressing the ENTER key after a selection has been made enters the selected function. If ENTER is not pressed within 5 seconds after the selection has been made, the switch will reset to the previous mode to prevent accidental switching. After making a selection, the indicator keys will flash blue until the enter key is pressed.

If there is no blue indicators illuminated, then no vehicle external lights are turned on. Amber backlight is for the keypad only.

1. Operate Instrument Panel Lights.

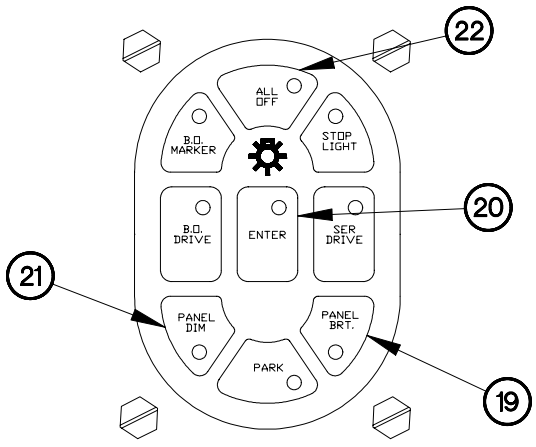
   a. Press PANEL BRT key (19).

   b. Press ENTER key (20).

   c. To dim lights, press PANEL DIM key (21).

   d. Press ALL OFF key (22).

   e. Press ENTER key (20). All vehicles lights will go off.



1800B12A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

OPERATE VEHICLE LIGHTS - Continued

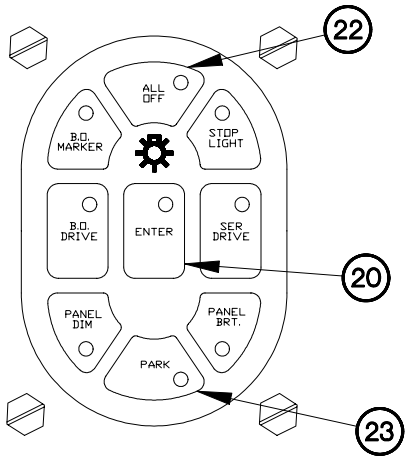
2. Operate Parking Lights.

   a. Press PARK key (23).

   b. Press ENTER key (20).

   c. Press ALL OFF key (22).

   d. Press ENTER key (20). All vehicle lights go off.



1800B13A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

OPERATE VEHICLE LIGHTS - Continued

3. Operate Service Drive Lights.

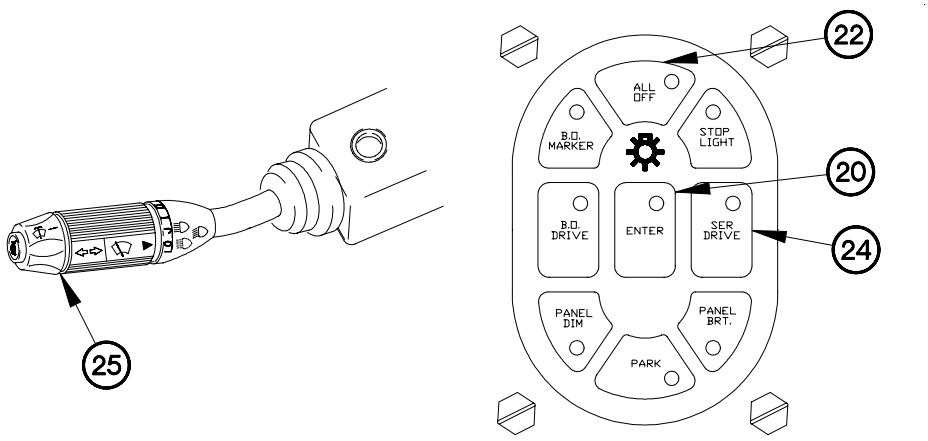
   a. Press SER DRIVE key (24).

   b. Press ENTER key (20).

   c. Pull turn signal switch (25) to operate headlights at high beam or low beam.

   d. Press ALL OFF key (22).

   e. Press ENTER key (20). All vehicle lights will go off.



VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

OPERATE VEHICLE LIGHTS – Continued

WARNING

Vehicle speed should be reduced to 5-10 mph (8-16 km/h) during blackout conditions. Failure to comply may result in serious injury or death to personnel.

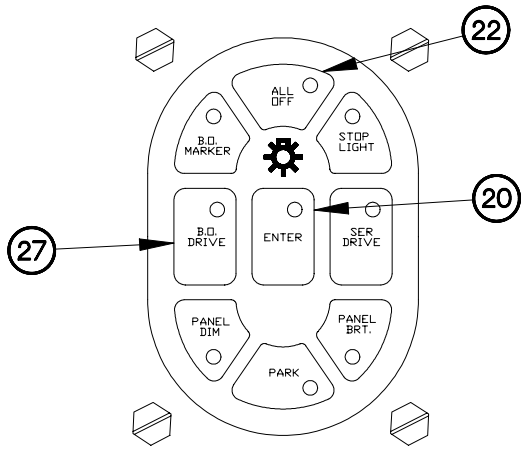
4. Operate Stoplights.

   a. Press B.O. DRIVE key (27).

   b. Press ENTER key (20).

   c. Press ALL OFF key (22).

   d. Press ENTER key (20).



1800B16A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) – Continued 0018 01

OPERATE VEHICLE LIGHTS - Continued

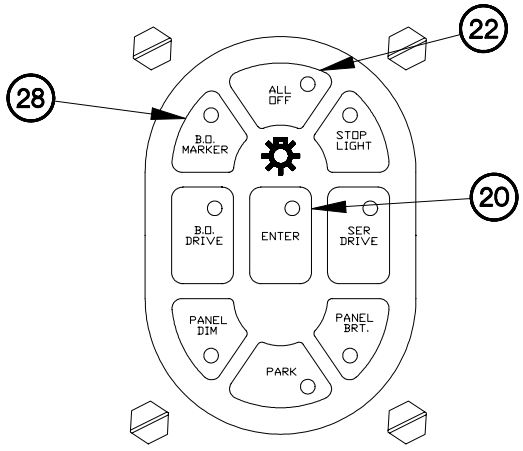
5. Operate Blackout Drive Lights.

   a. Press B.O. MARKER key (28).

   b. Press ENTER key (20).

   c. Press ALL OFF key (22).

   d. Press ENTER key (20).



1800B17A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) – Continued 0018 01

OPERATE VEHICLE LIGHTS - Continued

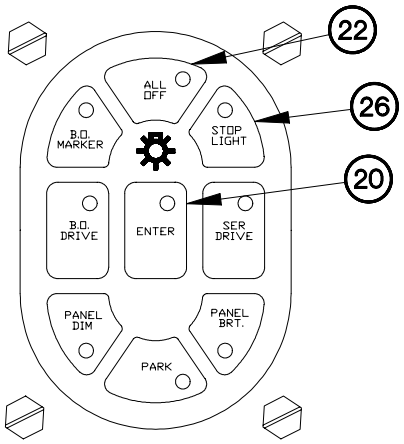
6. Operate Stop Lights.

   a. Press STOP LIGHT key (26).

   b. Press ENTER key (20).

   c. Press ALL OFF key (22).

   d. Press ENTER key (20). All vehicle lights will go off.



1800B15A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

OPERATE VEHICLE LIGHTS - Continued

7. Operate Warning Light.

   a. Install amber warning light (WP 0066 00).

   b. Press SER DRIVE (29) or STOP LIGHT key (30).

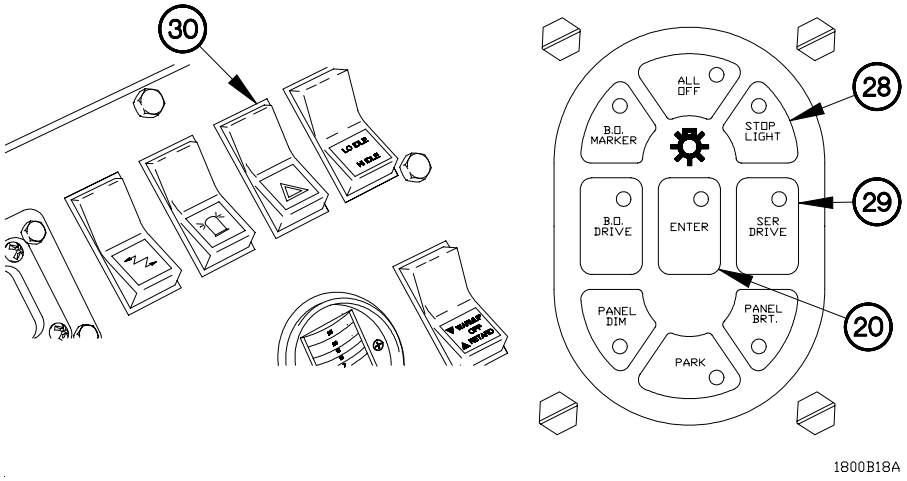
   c. Press ENTER key (20).

   d. Position warning light switch (31) to on.

   e. Position warning light switch (31) to off.

   f. Position ALL OFF key (22).

   g. Press ENTER key (20). All vehicle lights will go off.



VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

OPERATE VEHICLE LIGHTS - Continued

8. Operate Worklights.
   a. Press any light key except ALL OFF (22).
   b. Press ENTER key (20).

NOTE

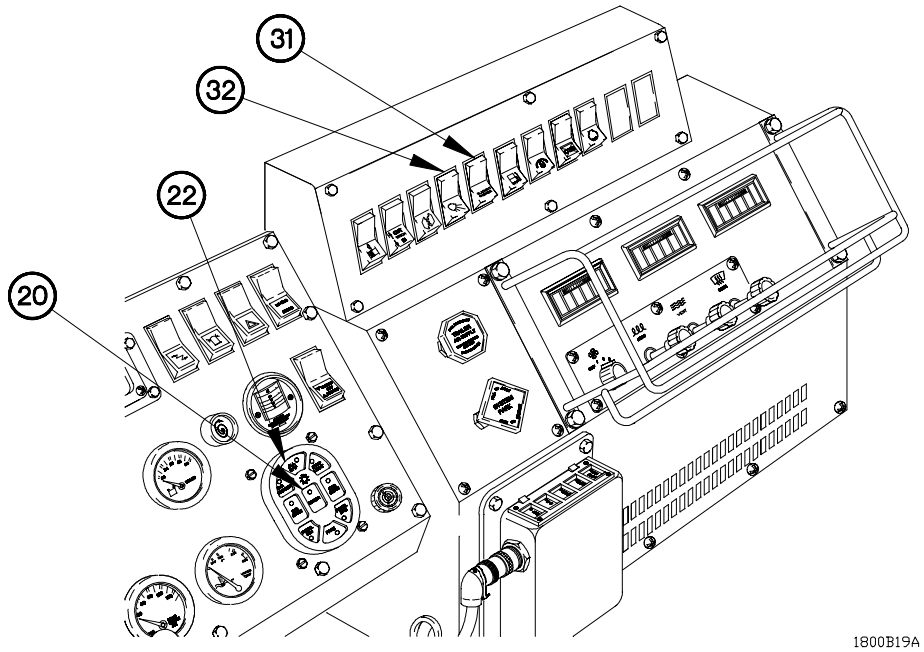
Perform step 8c only if BO DRIVE or BO MARKER has been selected.

   c. Position BLACKOUT OVERRIDE switch (31) to on.
   d. Position work lights switch (32) to on.
   e. Position work lights switch (32) to off.

NOTE

Perform step 8f only if BO DRIVE or BO MARKER has been selected.

   f. Position BLACKOUT OVERRIDE switch (31) to off.
   g. Press ALL OFF key (22).
   h. Press ENTER key (20). All vehicle lights will go off.



VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

OPERATE SERVICE BRAKES

WARNING

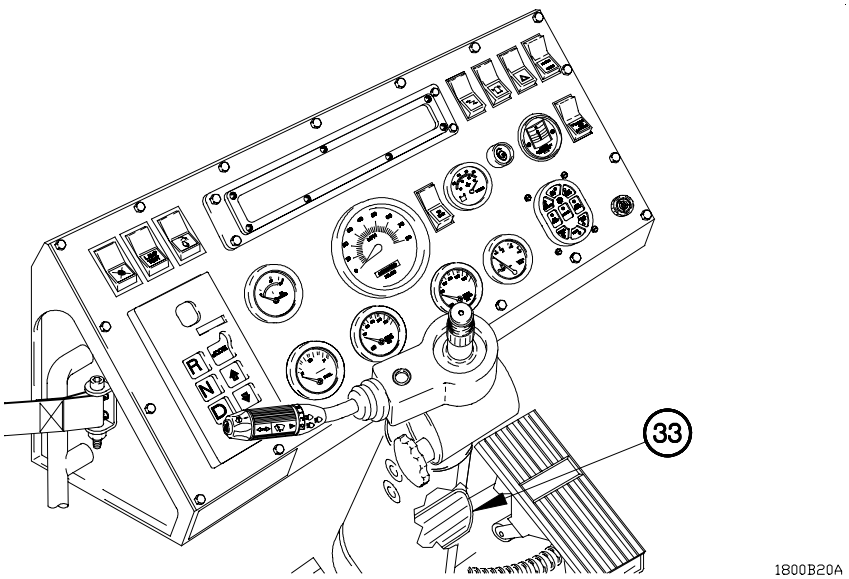
Operating in water or mud causes brake linings to get wet and can impair vehicle braking. Dry brakes by driving vehicle about 500 ft (153 m) while applying service brakes often. If adequate braking is not restored by drying brakes, notify Unit Maintenance. Failure to comply may result in injury to personnel or damage to equipment.

Do not press brake pedal hard three or four times in a row. Air supply will be used up and service brakes will not work until air pressure builds up again. Do not operate vehicle until FRONT and REAR BRAKE AIR pressure reaches at least 100 psi (690 kPa). Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

If ABS indicator, or TRAILER ABS, indicator illuminates, the Anti-Lock Braking System (ABS) ECU has detected a fault. Notify Unit Maintenance upon completion of mission. Failure to comply may result in damage to the equipment.

Push down and hold brake pedal (33) to slow or stop vehicle.



VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SELECT TRANSMISSION OPERATING RANGE

1. Start engine (WP 0018 01).

CAUTION

Engine speed must be at idle prior to selecting any forward or reverse operating range. Failure to comply may result in damage to equipment.

Do not allow vehicle to coast in N (Neutral). Failure to comply may result in damage to equipment.

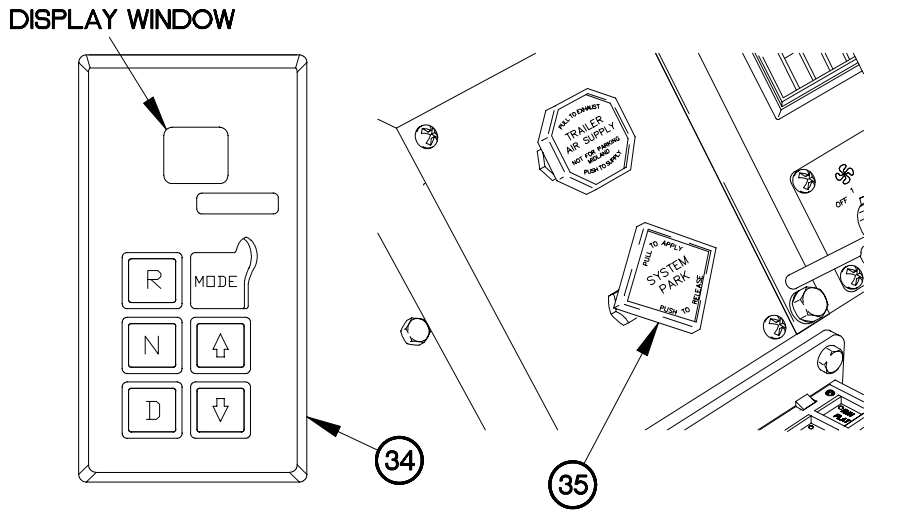
NOTE

When transmission is operating normally, display window of WTEC III TPSS will indicate selected operating range.

When D (Drive) is selected, the default selected operating range is 7.

2. Select desired travel direction (D for Drive or R for Reverse) on WTEC III TPSS (34).

3. Push in SYSTEM PARK control (35).



VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

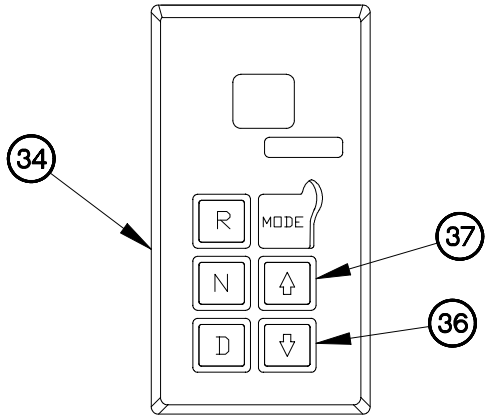
SELECT TRANSMISSION OPERATING RANGE - Continued

WARNING

Transmission incorporates a hold feature to prohibit upshifting above selected gear during normal driving. However, during downhill operation, transmission may upshift above selected gear. On downgrades, vehicle speed may need to be restricted by using service brakes. Failure to comply may result in serious injury or death to personnel or damage to equipment.

4. Press down arrow button (36) on WTEC III TPSS (34) to shift transmission to lower operating range.

5. Press up arrow button (37) on WTEC III TPSS (34) to shift transmission to higher operating range.



1800B22A

CAUTION

If illumination of last selected operating range goes out, WTEC III ECU has detected a problem that needs correcting. Do not attempt to shift transmission to N (Neutral) or any other operating range. Operate vehicle at reduced speed to a safe parking location. Failure to comply may result in damage to equipment.

NOTE

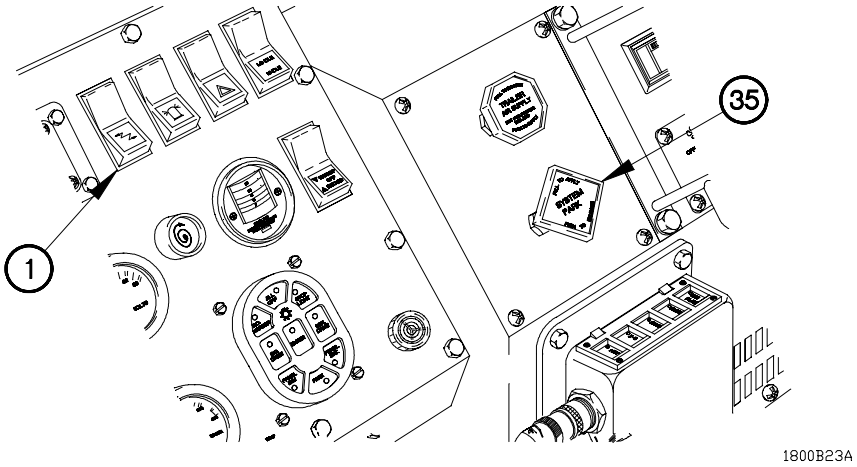
Perform steps 6 through 9 if display window is not showing last selected operating range.

6. Stop vehicle (WP 0018 01).

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SELECT TRANSMISSION OPERATING RANGE - Continued

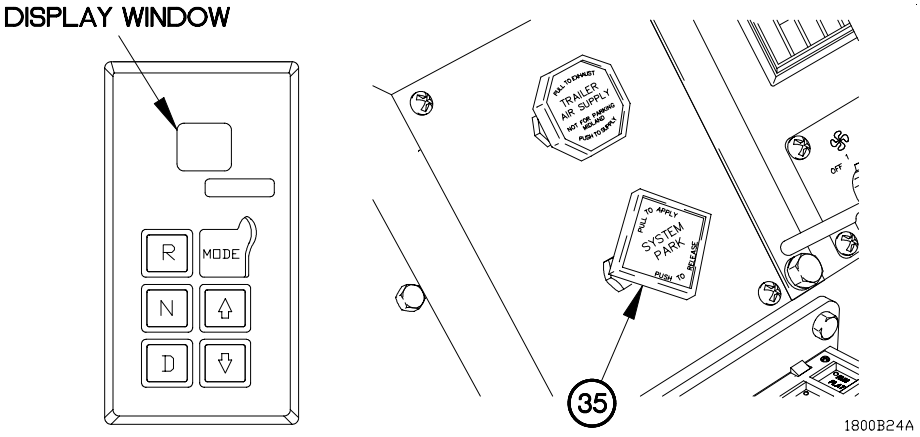
7. Position master power switch (1) to off.
8. Pull out SYSTEM PARK control (35).
9. Notify Unit Maintenance.



1800B23A

SHUT DOWN ENGINE

1. Stop vehicle (WP 0018 01).
2. Press N (Neutral) button (38) on WTEC III TPSS (34).
3. Pull out SYSTEM PARK control (35).



1800B24A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SHUT DOWN ENGINE - Continued

CAUTION

Water temperature must be maintained at a minimum of 165° F (74° C) for 1 to 3 minutes prior to engine shutdown. Failure to comply may result in damage to equipment.

When outside temperatures are below 32° F (0° C), do not continuously operate engine at HI IDLE without WARMUP/OFF/RETARD switch in WARMUP position. Failure to comply may result in damage to equipment.

NOTE

Steps 4 - 7 are only necessary to meet 165° F (74° C) requirements.

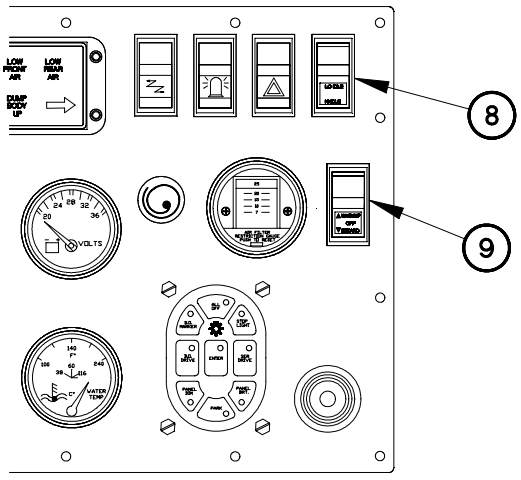
LO IDLE/HI IDLE and WARMUP/OFF/RETARD switches are used until WATER TEMP gage reaches and maintains 165° F (74° C) for 1 to 3 minutes.

4. Press LO IDLE/HI IDLE switch (8) to engage HI IDLE.

NOTE

EXHAUST BRAKE indicator will illuminate when WARMUP/OFF/RETARD switch is positioned to WARMUP.

5. Position WARMUP/OFF/RETARD switch (9) to WARMUP.



1800B25A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SHUT DOWN ENGINE – Continued

NOTE

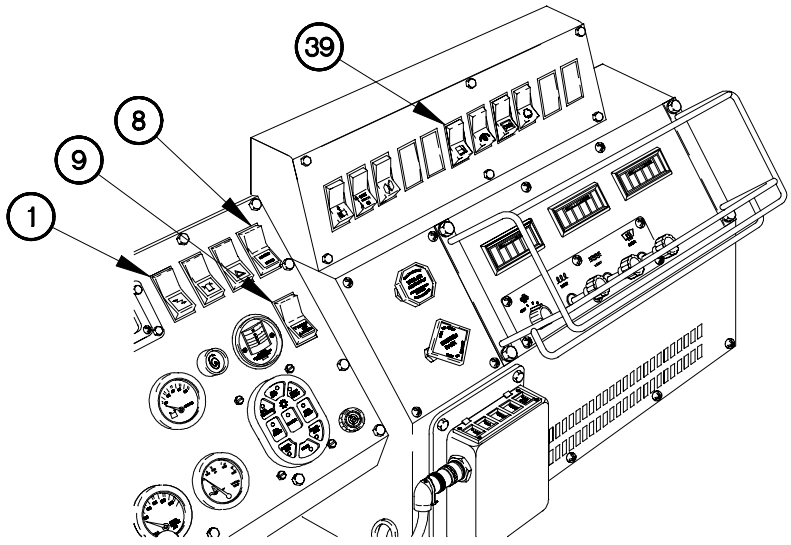
Perform steps 6 and 7 after engine has maintained 165° F (74° C) for 1 to 3 minutes.

6. Position WARMUP/OFF/RETARD switch (9) to OFF.
7. Press LO IDLE/HI IDLE switch (8) to engage LO IDLE.
8. Turn off lights and electrical accessories (WP 0018 01).

NOTE

Perform step 9 in outside temperatures below -25 °F (-32° C).

9. Position fuel preheat switch (39) to off.
10. Position master power switch (1) to off.
11. Chock wheels (WP 0018 01).



1800B26A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SHUT DOWN ENGINE – Continued

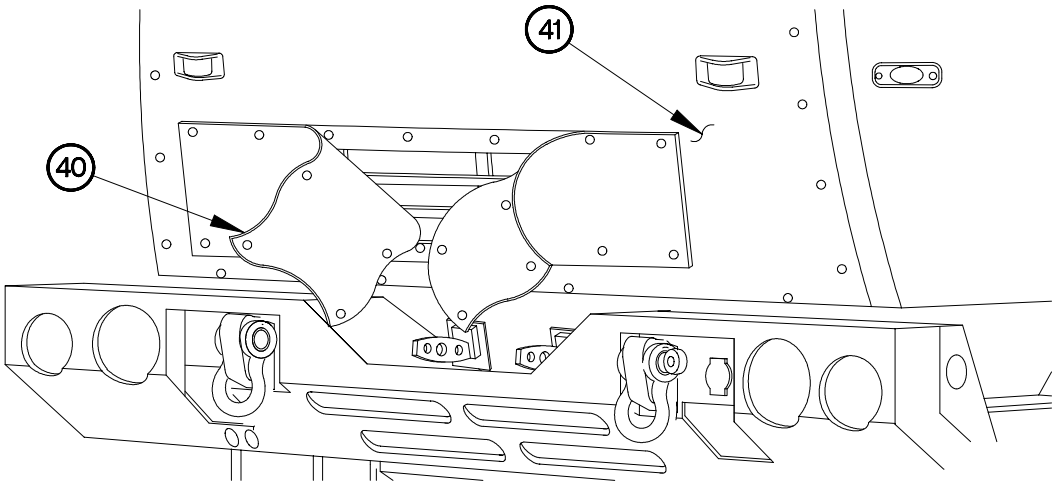
CAUTION

Cab arctic cover may be left on vehicle in temperatures up to 40° F (4° C), except when engine requires maximum cooling such as in extreme off-road conditions or when vehicle is operation fully loaded. Ensure flaps are adjusted so that engine temperature is between 165° F(73° C) and 210° F (99° C) during vehicle operation. Failure to comply may result in damage to equipment.

NOTE

Perform step 12 if vehicle is equipped with an arctic cold front.

12. Close flaps (40) on the cab arctic front cover (41).



1800B27A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

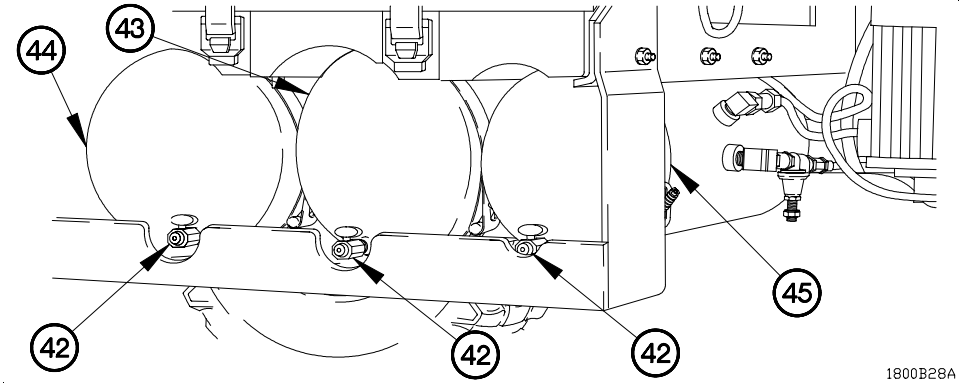
DRAIN AIR TANKS

CAUTION

Drain air tanks when vehicle will not be operated for 12 hours or more, or when operating in temperatures below 50° F (10° C). Failure to comply may result in damage to equipment.

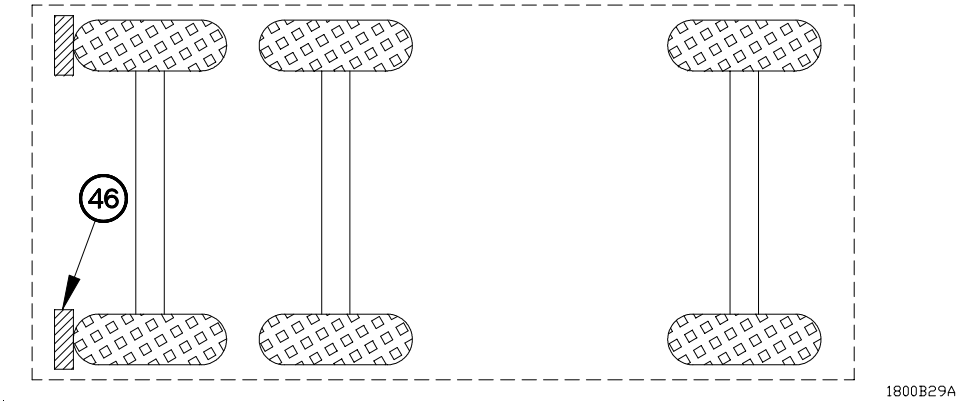
1. Open drain valves (42) on primary air tank (43), secondary air tank (44), and wet tank (45) until air cannot be heard escaping.

2. Close drain valves (42) on primary air tank (43), secondary air tank (44), and wet tank (45).



PARK VEHICLE

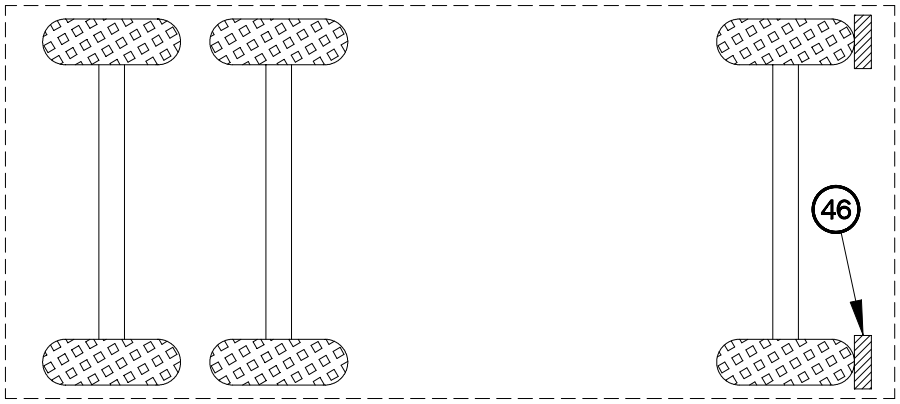
1. Install wheel chocks (46) in back of rear wheels when parked facing uphill.



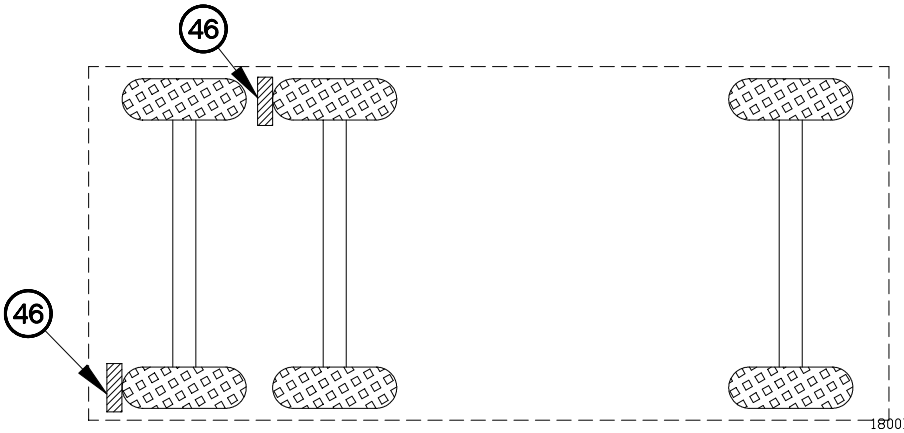
VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

PARK VEHICLE - Continued

2. Install wheel chocks (46) in front of front wheels when parked facing downhill.



3. Install wheel chocks (46) in front of one rear wheel and the second wheel chock in back of the opposite wheel when parked on level ground.

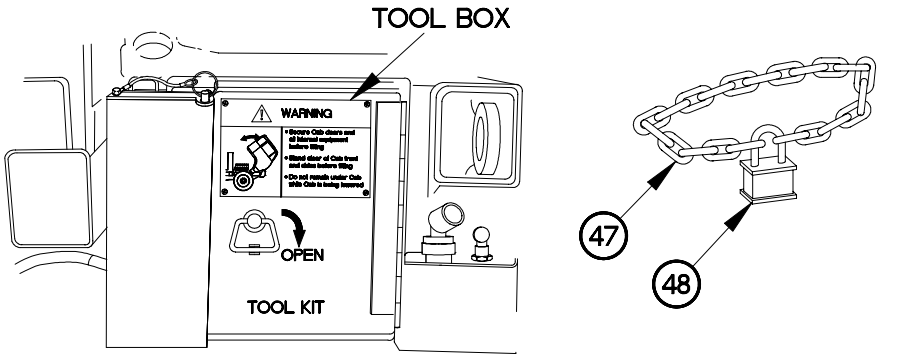


VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SECURE VEHICLE

1. Install Chain.

   a. Remove chain (47) and padlock (48) from tool box.



1800B32A

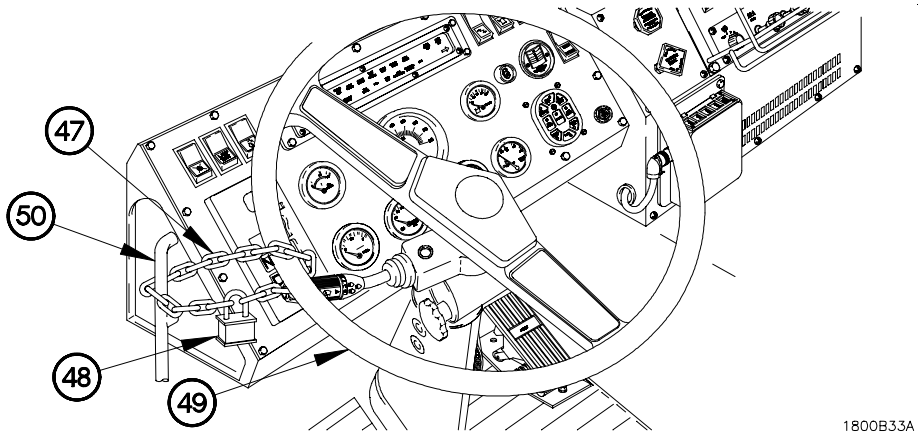
NOTE

Turn steering wheel either full right or full left before installing chain.

   b. Wrap chain (47) around steering wheel (49) and cab handhold (50).

   c. Connect padlock (48) to chain (47).

   d. Lock padlock (48).



1800B33A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

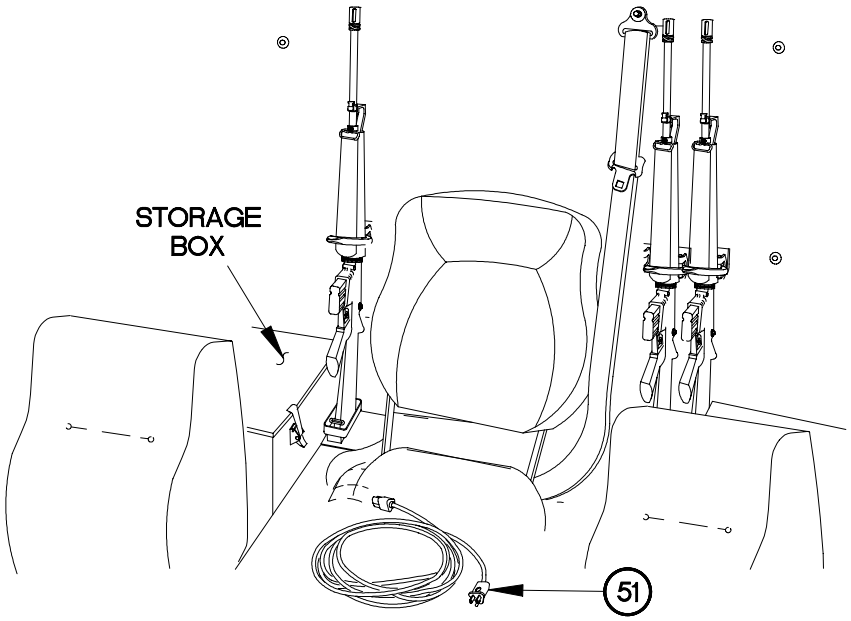
SECURE VEHICLE - Continued

NOTE

Perform step (2) on vehicles equipped with engine block arctic heater.

2. Connect power to engine block arctic heater.

   a. Remove extension cord (51) from CO-DRIVER'S SIDE STORAGE BOX.



1800B36A

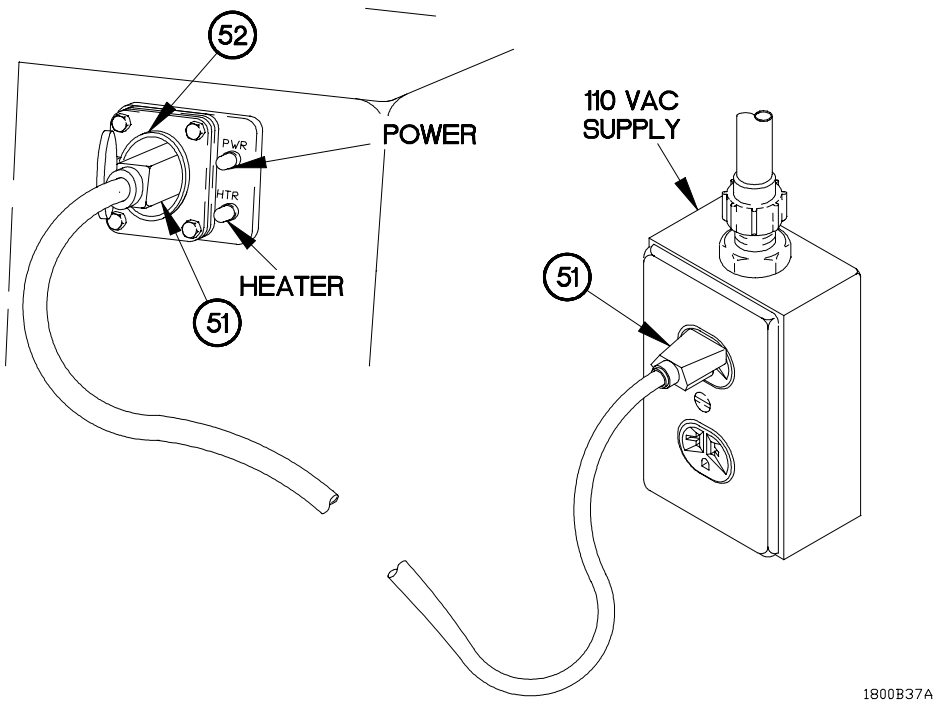
VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SECURE VEHICLE - Continued

b. Connect female connector of extension cord (51) to engine block heater receptacle (52).

c. Connect male connector of extension cord (51) to 110 VAC supply.

d. Note the PWR lamp (green) and HTR lamp (red) are illuminated.



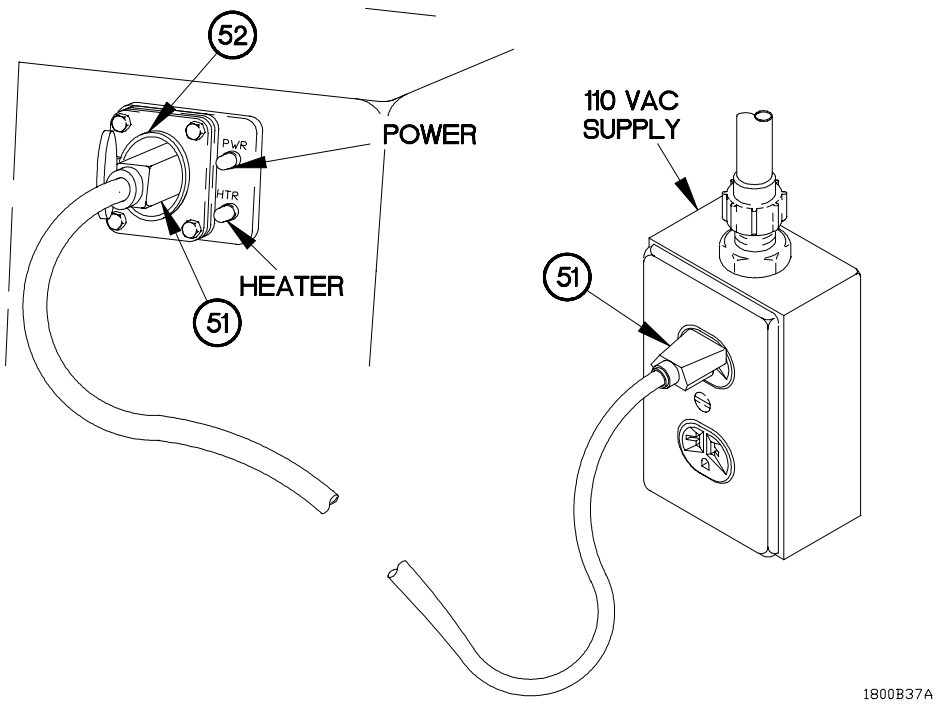
VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SECURE VEHICLE - Continued

3. Disconnect power to engine block arctic heater.

   a. Disconnect male connector of extension cord (51) from 110 VAC supply.

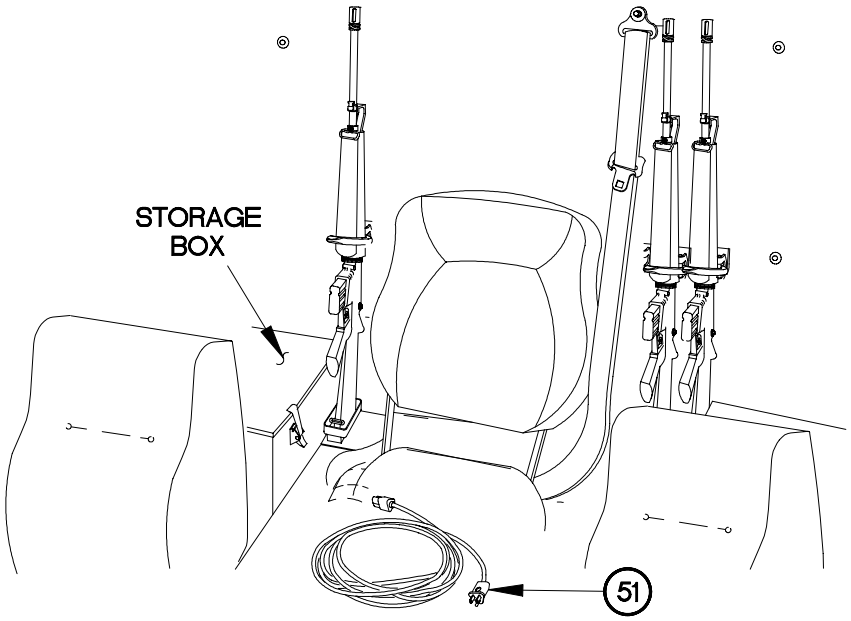
   b. Disconnect female connector of extension cord (51) from ENGINE HEATER receptacle (52).



VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SECURE VEHICLE - Continued

c. Place extension cord (51) in CO-DRIVER'S SIDE STORAGE BOX.



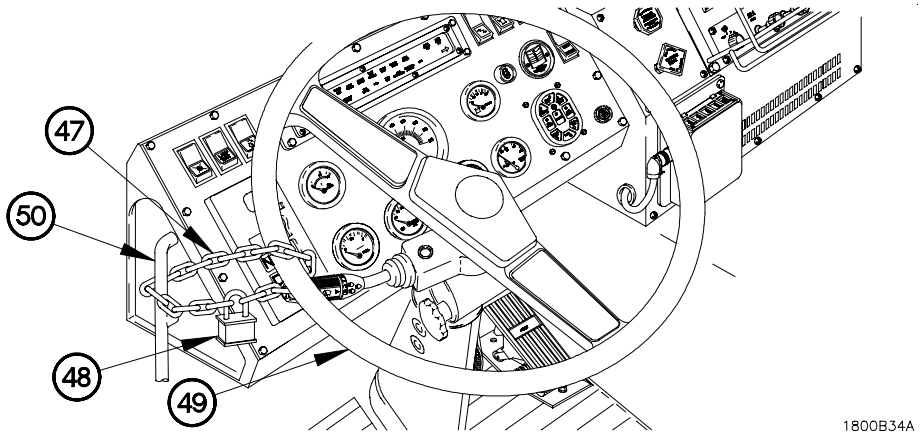
1800B36A

4. Remove Chain.

a. Unlock padlock (48).

b. Remove padlock (48) from chain (47).

d. Remove chain (47) from steering wheel (49) and cab handhold (50).

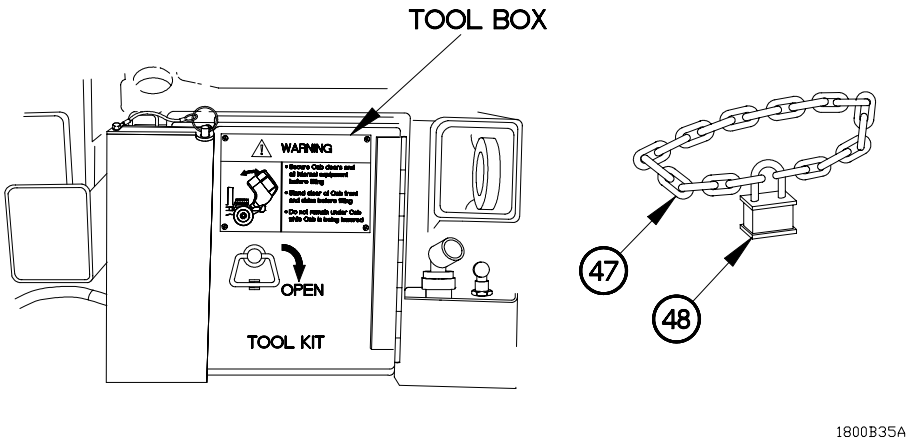


1800B34A

VEHICLE OPERATION (VEHICLE S/N 18,550 OR HIGHER) - Continued 0018 01

SECURE VEHICLE - Continued

d. Place chain (48) and padlock (49) in tool box.



1800B35A

END OF OPERATING PROCEDURE

RAISING/LOWERING CAB 0019 00

INITIAL SETUP:

Maintenance Level	References
Operator	WP 0042 00
	WP 0066 00

GENERAL

This work package provides the data and procedures for Raising Cab and Lowering Cab on the M1083A1 series vehicles.

RAISING CAB

WARNING

Engine compartment and accessories may be extremely hot when engine is running or has been running recently. Use caution around engine when cab is raised. Failure to comply may result in injury to personnel.

Engine compartment contains a partially exposed fan blade. Use extreme caution around front of engine. Failure to comply may result in injury to personnel.

NOTE

Cab will not raise unless system park control is pulled out.

Perform step 1 on M1089A1.

1. Raise amber warning light masts to mid-position (WP 0066 00).

RAISING/LOWERING CAB - Continued 0019 00

RAISING CAB - Continued

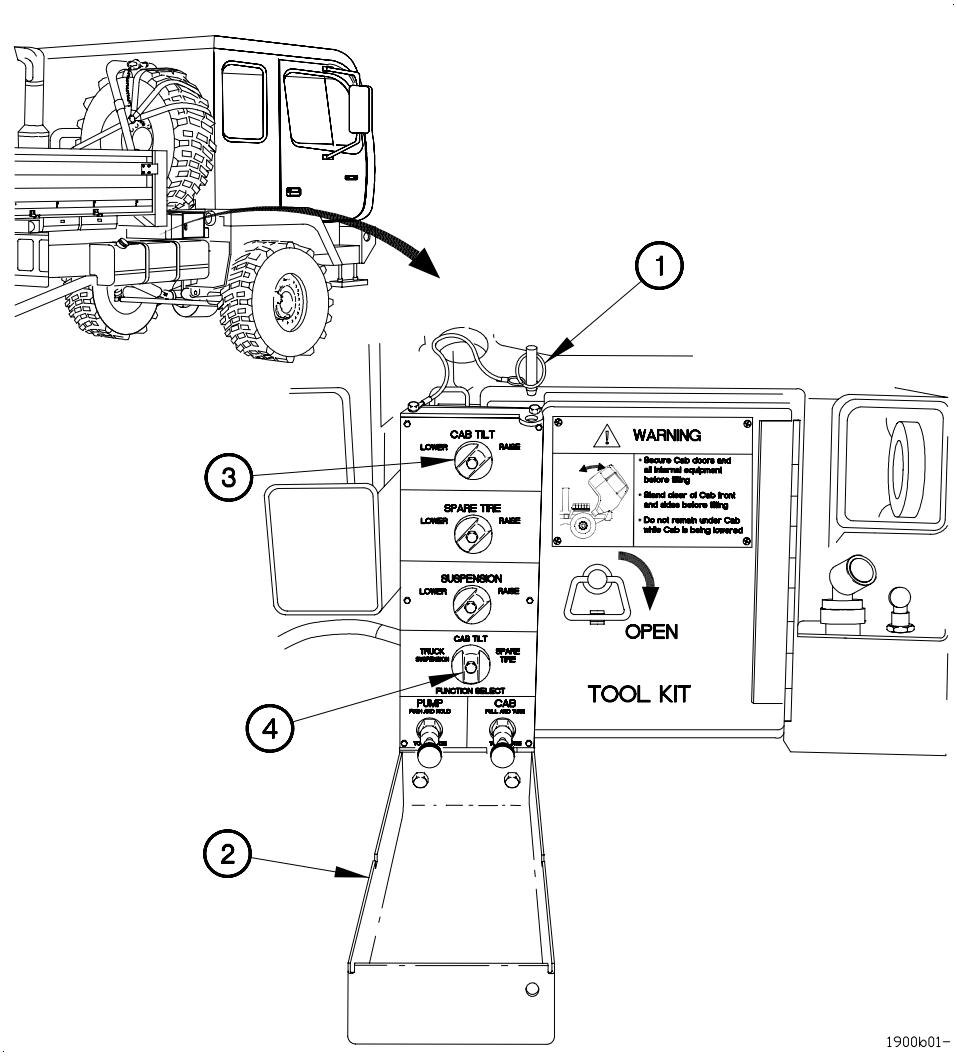
2. Remove pin (1) from hydraulic manifold cover (2).

NOTE

If air tanks are fully charged, cab may be raised and lowered twice without starting engine.

3. Position CAB TILT knob (3) to RAISE.

4. Position FUNCTION SELECT knob (4) to CAB TILT.



RAISING/LOWERING CAB - Continued 0019 00

RAISING CAB - Continued

WARNING

Never raise cab while occupied or parked uphill on a steep grade. Failure to comply may result in serious injury or death to personnel.

Ensure both doors are securely closed before cab is raised. Do not allow personnel near cab when cab is being raised. Cab doors could open. Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

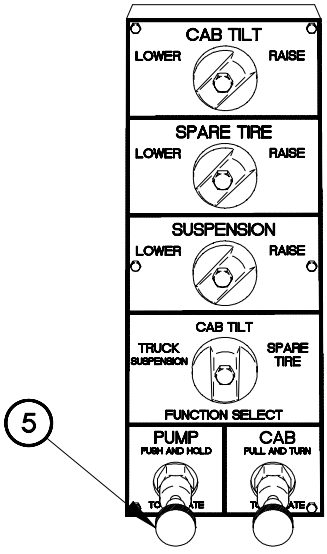
Remove all loose objects from cab before raising cab. Failure to comply may result in damage to equipment.

Cab height when raised is higher than normal. Ensure area above and in front of cab is adequate before raising cab. Failure to comply may result in damage to equipment.

NOTE

Use back-up hydraulic pump (WP 0042 00) if temperature is below -25° F (-32° C) or if pressing PUMP knob does not accomplish step 5.

5. Press and hold PUMP knob (5) until cab is fully raised.



1900B02-

LOWERING CAB

WARNING

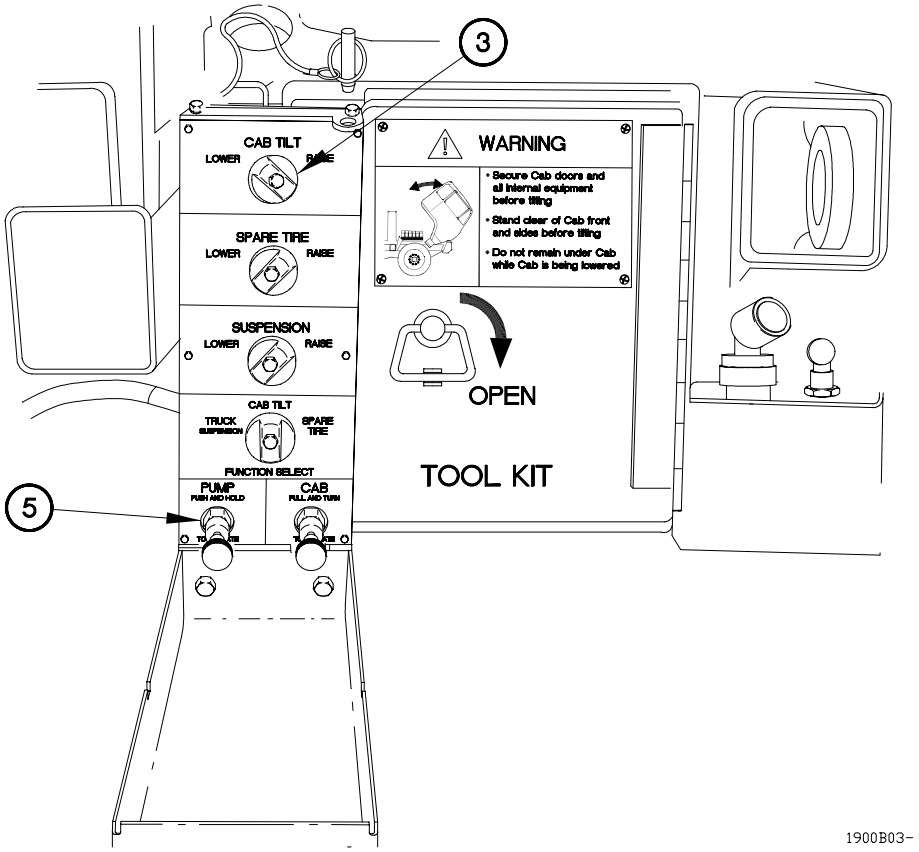
Ensure both doors are securely closed before cab is lowered. Do not allow personnel near cab when cab is being lowered. Cab doors could open. Failure to comply may result in serious injury or death to personnel or damage to equipment.

1. Position CAB TILT knob (3) to LOWER.

NOTE

Use back-up hydraulic pump (WP 0042 00) if temperature is below -25° F (-32° C) or if pressing PUMP knob does not accomplish step 2.

2. Press and hold PUMP knob (5) until cab is fully lowered.



LOWERING CAB - Continued

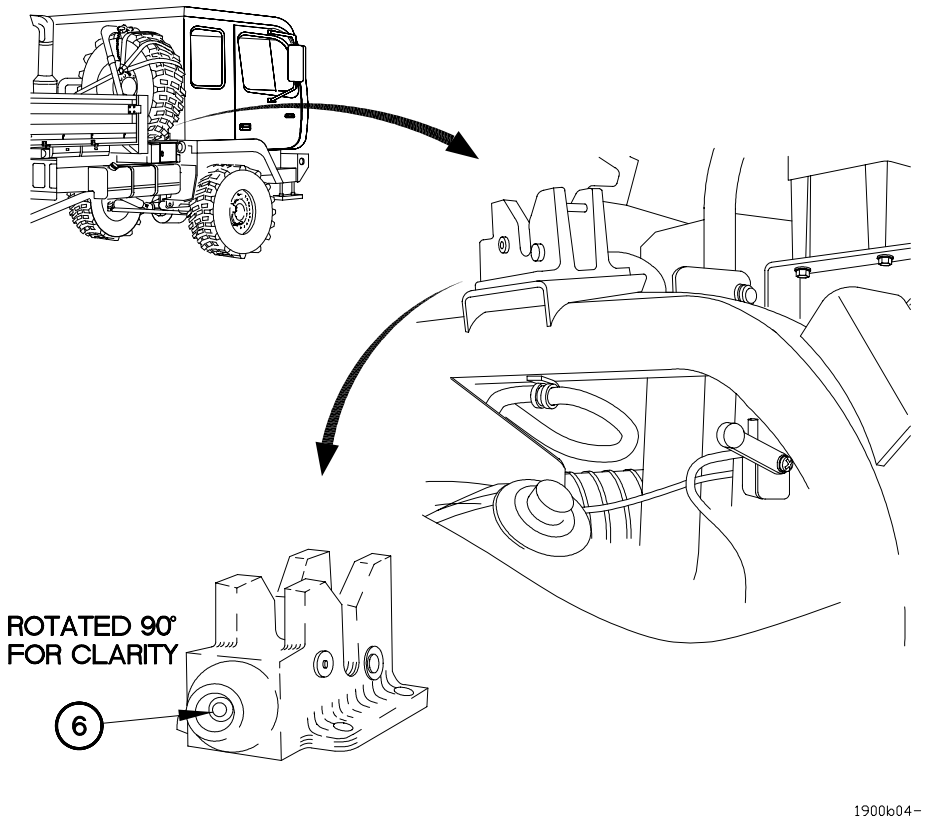
WARNING

Cab hydraulic latch must be locked before driving vehicle. Failure to comply may result in serious injury or death to personnel or damage to equipment.

NOTE

Button on right side end of cab hydraulic latch shows status of latch. Button in shows cab is latched; button out shows cab is not latched.

3. Check button (6) position to confirm cab is latched.



1900b04-

RAISING/LOWERING CAB - Continued 0019 00

LOWERING CAB - Continued

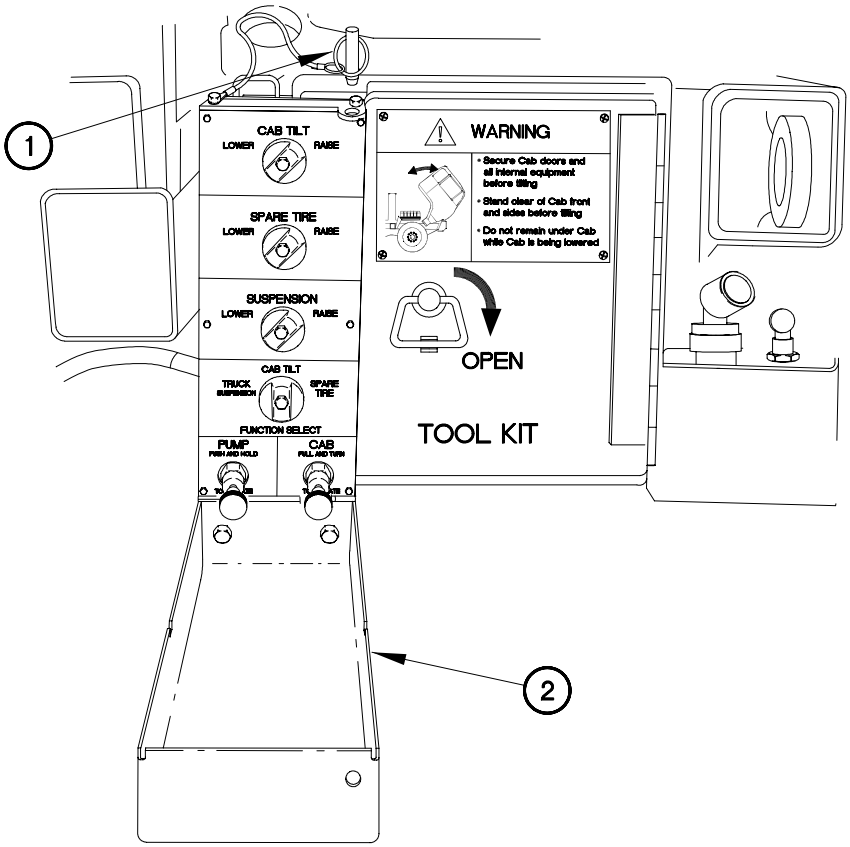
4. Close hydraulic manifold cover (2).

5. Install pin (1) in hydraulic manifold cover (2).

NOTE

Perform step 6 on M1089A1.

6. Lower amber warning light masts (WP 0066 00).



1900B05-

END OF OPERATING PROCEDURE

CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION 0020 00

INITIAL SETUP:

Maintenance Level	References
Operator	WP 0018 00 WP 0050 00 WP 0084 00 WP 0101 00 WP 0102 00

GENERAL

The Central Tire Inflation System (CTIS) allows the Operator to adjust tire pressures to current vehicle operating conditions. This work package provides the data and procedures for operating the CTIS. Items covered include Normal CTIS Operation, Operation In Emergency (EMER) Mode, Operation In RUN FLAT Mode, Operation With Four CTIS ECU Mode Lights Flashing, and Resetting CTIS.

NORMAL CTIS OPERATION

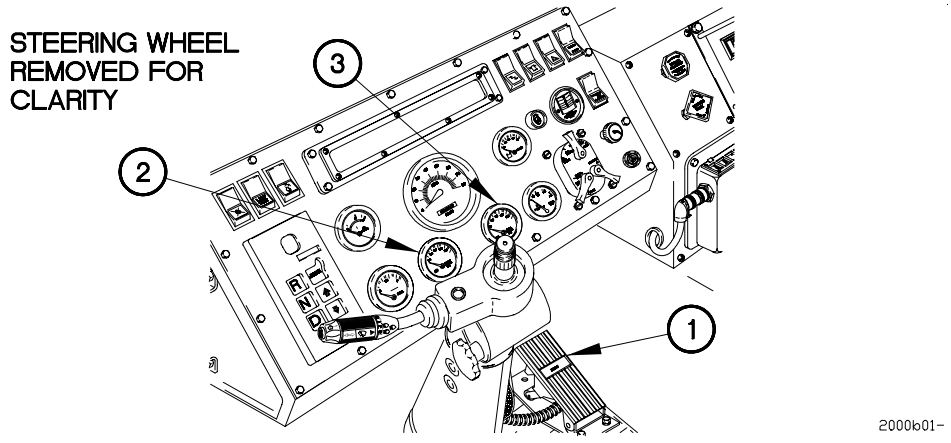
1. Start engine (WP 0018 00).

NOTE

If vehicle is stopped when CTIS mode is changed, it may be necessary to increase engine speed to provide adequate air supply to tires.

CTIS will automatically shut off when air system pressure drops below 74 psi (510 kPa), or when CTIS malfunction occurs.

2. Slowly press down on accelerator pedal (1) if FRONT BRAKE AIR pressure gage (2) and REAR BRAKE AIR pressure gage (3) read less than 100 psi (690 kPa).



CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION - Continued 0020 00

NORMAL CTIS OPERATION - Continued

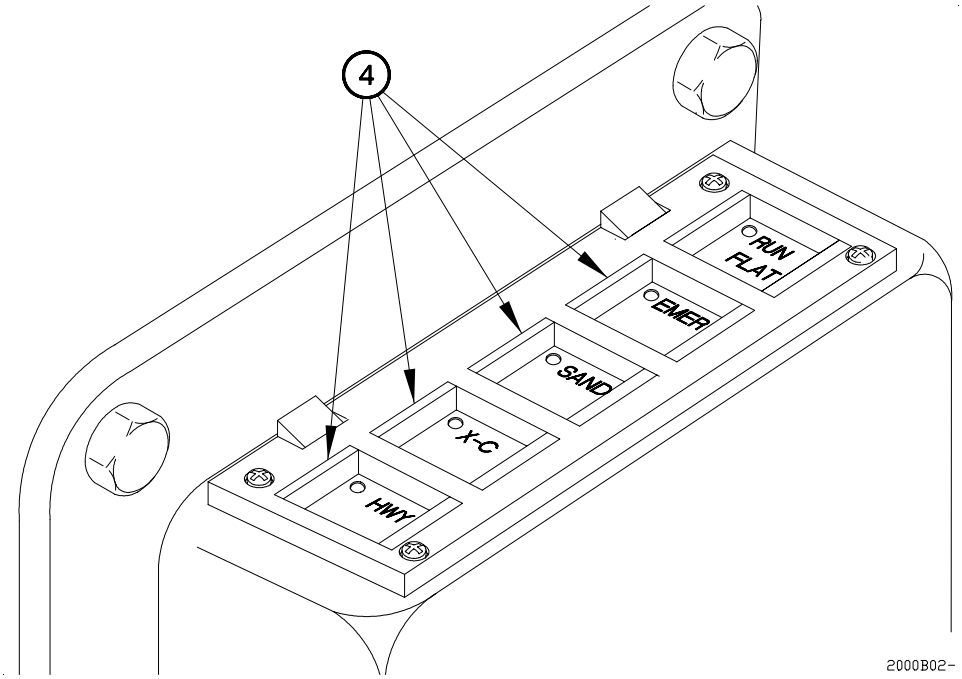
NOTE

Mode light on CTIS ECU will flash when tire pressure is changing to air pressure setting for that mode. Mode light will illuminate steady when tire reaches air pressure setting for that mode.

3. Press appropriate CTIS mode button (4) for vehicle speed and terrain conditions (Refer to Table 1 or Table 2 CTIS Tire Pressures and Restrictions).

Table 1. CTIS Tire Pressures and Restrictions for all Models except M1088A1 and M1089A1.

Operating Mode	Maximum Speed	Time Restriction	Tire Pressure
Highway (HWY)	55 mph (88 km/h)	NONE	60 psi (414 KPa)
Cross-Country (X-C)	40 mph (64 km/h)	NONE	37 psi (255 KPa)
Sand	12 mph (19 km/h)	NONE	22 psi (152 KPa)
Emergency (EMER)	5 mph (8 km/h)	10 MINUTES	16 psi (110 KPa)



CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION - Continued 0020 00

NORMAL CTIS OPERATION - Continued

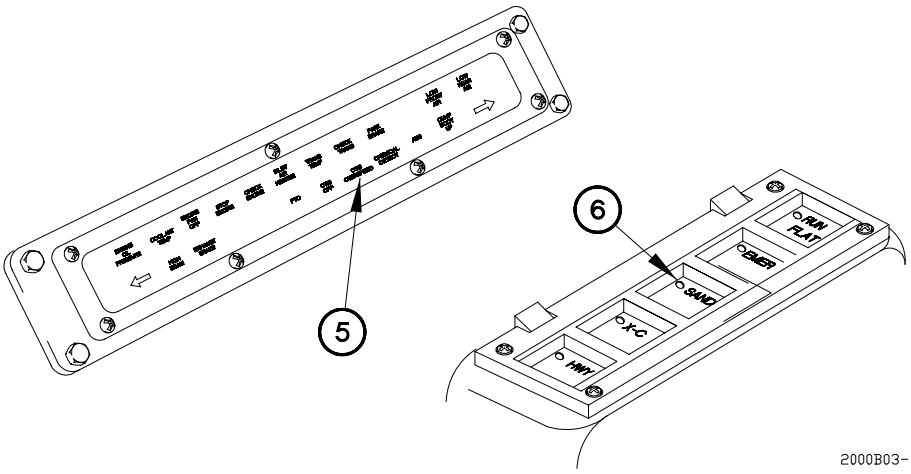
Table 2. CTIS Tire Pressures and Restrictions for M1088A1 and M1089A1 Models.

Operating Mode	Maximum Speed	Time Restriction	Tire Pressure
Highway (HWY)	55 mph (88 km/h) (M1088A1) 40 mph (64 km/h) (M1089A1)	NONE	81 psi (558 KPa)
Cross-Country (X-C)	40 mph (64 km/h)	NONE	54 psi (372 KPa)
Sand	12 mph (19 km/h)	NONE	32 psi (221 KPa)
Emergency (EMER)	5 mph (8 km/h)	10 MINUTES	24 psi (165 KPa)

NOTE

If average speed of vehicle exceeds speed limit of selected CTIS mode for 1 minute, CTIS OVERSPEED indicator will flash. If average speed of vehicle exceeds speed limit of selected CTIS mode for 2 minutes, CTIS will automatically inflate tires to pressure setting of next higher mode.

4. If CTIS OVERSPEED indicator (5) flashes, reduce vehicle speed until CTIS OVERSPEED indicator goes out. Check that CTIS mode light (6) illuminates steady. Steady illumination of CTIS mode light indicates the CTIS mode selected is correct for the vehicle speed.



CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION - Continued 0020 00

OPERATE IN EMERGENCY (EMER) MODE

CAUTION

Do not exceed 5 mph (8 km/h) when CTIS is operating in EMER mode. Operating vehicle in EMER mode is limited to ten minutes. Failure to comply may result in damage to equipment.

Continued operation in EMER mode will result in eventual reduction in tire life. Failure to comply may result in damage to equipment.

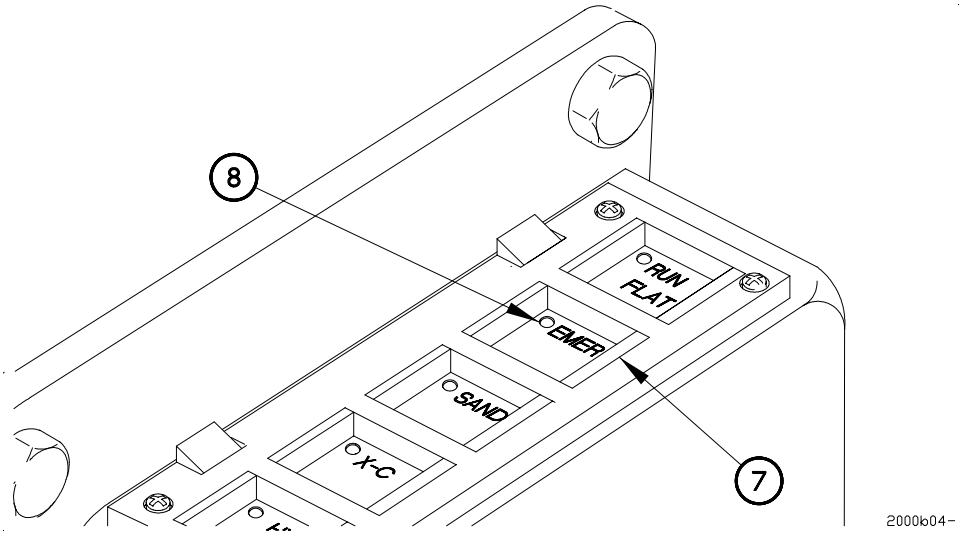
NOTE

CTIS OVERSPEED indicator will flash when in EMER mode, regardless of speed.

CTIS is operated in EMER mode when a lower tire pressure (16 psi. [110 kPa]) is needed to free vehicle from a stuck condition or to travel a short distance over terrain that is known to require tire pressure less than 25 psi (172 kPa). Time at this pressure is limited to 10 minutes after which time inflation to SAND will begin. If Operator still requires EMER mode, then EMER mode button must be pressed again.

1. Press EMER mode button (7). EMER mode light (8) will illuminate while CTIS is operating in EMER mode.

2. If operating CTIS in EMER mode is no longer required, press the mode button you wish to select. EMER mode light (8) will go out.



CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION - Continued 0020 00

OPERATE IN RUN FLAT MODE

CAUTION

Do not use RUN FLAT mode continuously for more than 40 minutes. Using RUN FLAT mode for more than 40 minutes can cause tires to over-inflate. Failure to comply may cause damage to equipment.

NOTE

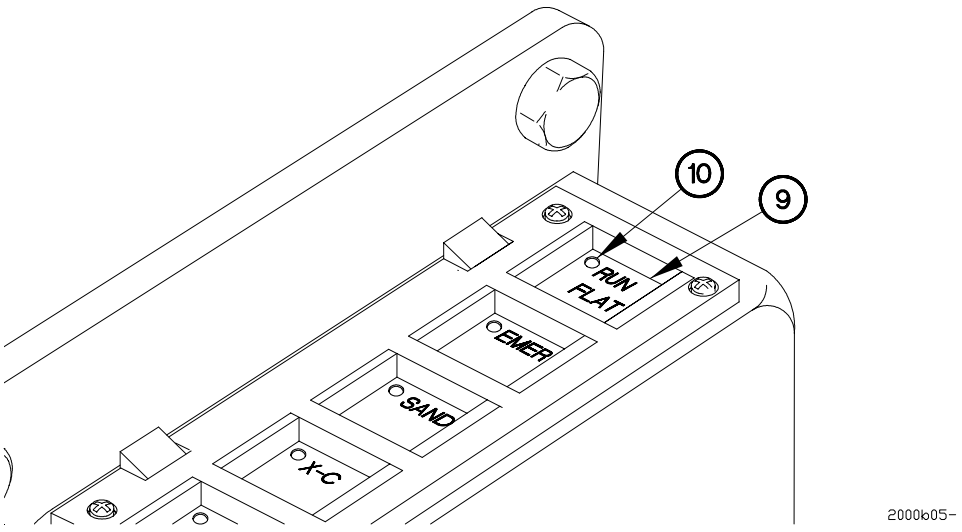
CTIS is operated in RUN FLAT mode when tire(s) have been punctured. RUN FLAT mode causes CTIS to check tire pressure every 15 seconds (normal interval is every 15 minutes). If low air pressure is sensed, CTIS will supply air in wet tank to leaking tire(s) every 15 seconds.

CTIS will begin inflating tires to selected mode pressure after RUN FLAT mode has been operating for 10 minutes. RUN FLAT mode button must be pressed again to continue operating in RUN FLAT mode.

1. Press RUN FLAT mode button (9). RUN FLAT mode light (10) will illuminate when CTIS is operating in RUN FLAT mode.

2. If operating CTIS in RUN FLAT mode is no longer required, press RUN FLAT mode button (9) again. RUN FLAT mode light (10) will go out.

3. Change leaking tire(s) (WP 0101 00) as soon as possible.



CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION - Continued 0020 00

OPERATION WITH FOUR CTIS ECU MODE LIGHTS FLASHING

CAUTION

There is possible tire damage if four CTIS ECU mode lights are flashing. Visually inspect tires and check tire pressure before continuing vehicle operation. Do not use RUN FLAT mode if tire has large chunks missing, large cracks, or other major damage. Failure to comply may result in damage to equipment.

NOTE

If four CTIS ECU mode lights are flashing, perform steps 1 through 5.

If major tire damage is found, change tire (WP 0101 00) before continuing vehicle operation.

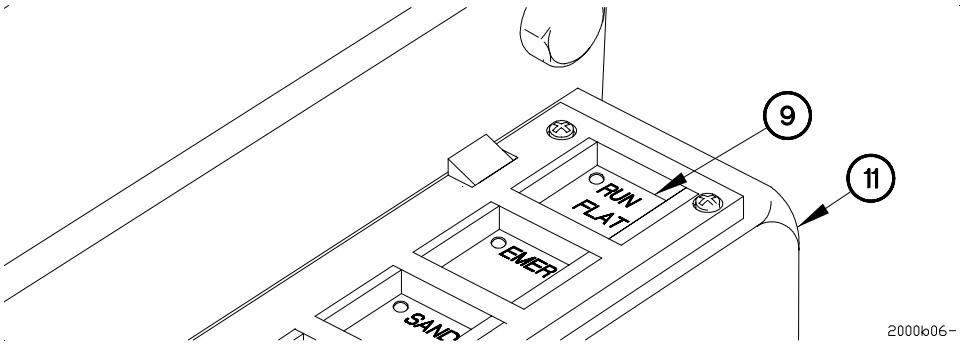
1. Check tire pressure with tire-inflator gage (WP 0102 00).
2. Visually inspect tires for damage.
3. Start engine (WP 0018 00).

NOTE

If four CTIS ECU mode lights continue to flash after RUN FLAT mode button has been pushed, perform CTIS Troubleshooting (WP 0084 00).

If RUN FLAT mode indicator and the selected mode indicator continue to flash after the RUN FLAT mode button has been pushed, an air leak has been detected by CTIS.

4. Press RUN FLAT mode button (9) on CTIS ECU (11).



CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION - Continued 0020 00

OPERATION WITH FOUR CTIS ECU MODE LIGHTS FLASHING - Continued

5. Notify Unit Maintenance to repair air leak.

RESET CTIS

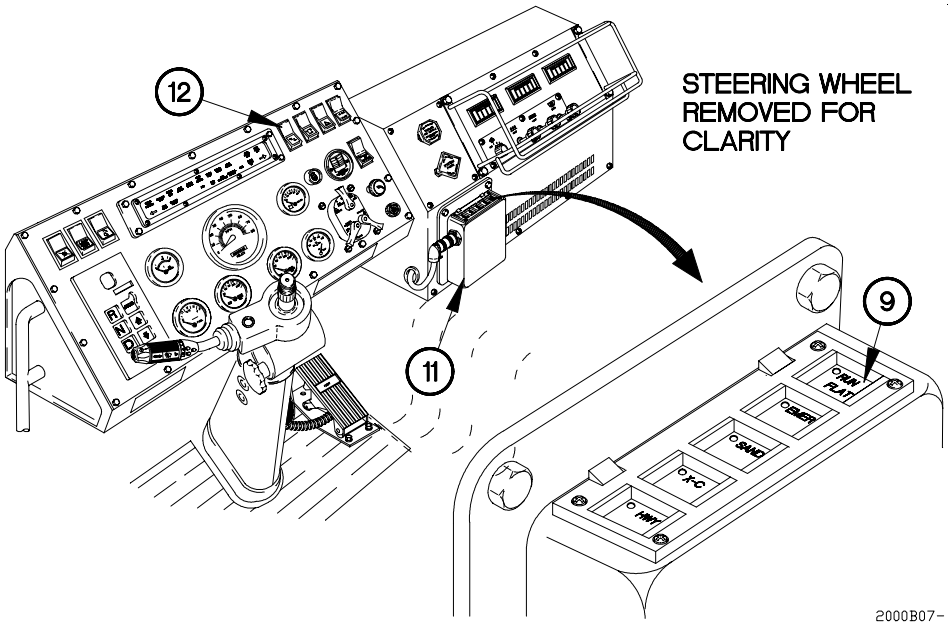
NOTE

If all five CTIS ECU mode lights flash, perform steps 1 through 4.

If temperatures are below -15° F (-26° C) and the CTIS does not return to normal operation after completing CTIS reset procedure, perform steps in WP 0050 00

If all five CTIS ECU mode lights continue to flash, notify Unit Maintenance.

1. Position master power switch (12) to off.
2. Position master power switch (12) to on.
3. Press RUN FLAT mode button (9) on CTIS ECU (11).
4. Start engine (WP 0018 00).



END OF OPERATING PROCEDURE

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION 0021 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel Required
Two

Tools and Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)

References
WP 0018 00

GENERAL

This work package provides the data and procedures to be used by the Operator when performing Light Material Handling Crane (LMHC) operations. Items covered include How To Determine Required LMHC Settings, Reset The Circuit Breaker, Change LMHC Location, Prepare LMHC For Use, Install Long Handle, Raise Boom, Telescope Boom, Swing Boom, Raise And Lower Load, Install Short Handle, and Stow LMHC.

DETERMINE REQUIRED LIGHT MATERIAL HANDLING CRANE (LMHC) SETTINGS

1. Determine the weight of load.

2. Determine the radius from centerline of LMHC rotation to position of load.

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION- Continued

0021 00

DETERMINE REQUIRED LIGHT MATERIAL HANDLING CRANE (LMHC) SETTINGS - Continued

3. To determine boom angle and length required for load being lifted see Table 1 Capacity Chart for LMHC.

Example:

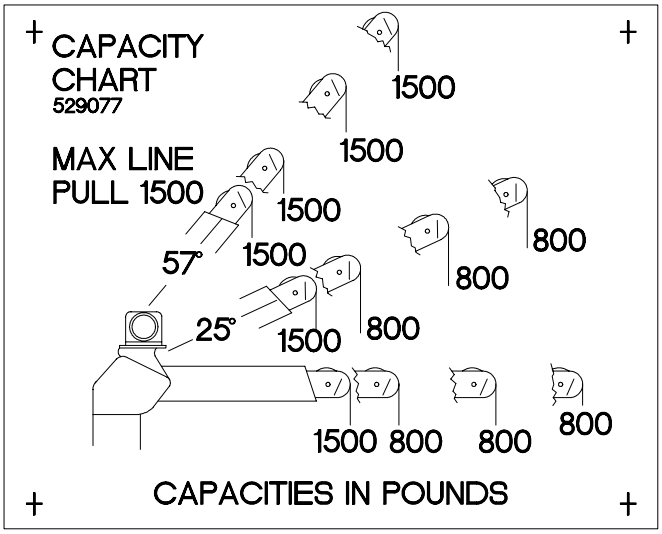
Load to be lifted from ground is at a radius of 48 in. (122cm) from LMHC centerline of rotation and must be placed on cargo bed.

Step 1. Determine the load

Load	=	1,200	lbs (545 kgs)
Sling	=	10	lbs (5 kgs)
Total Load	=	1,210	lbs (549 kgs)

Step 2. Refer to Table 1 Capacity Chart for LMHC to see that load does not exceed ratings.

Table 1. Capacity Chart for LMHC.



2100b01-

LIGHT MATERIAL HANDLING CRANE (LMHC) 0021 00
OPERATION- Continued

RESET CIRCUIT BREAKER

NOTE

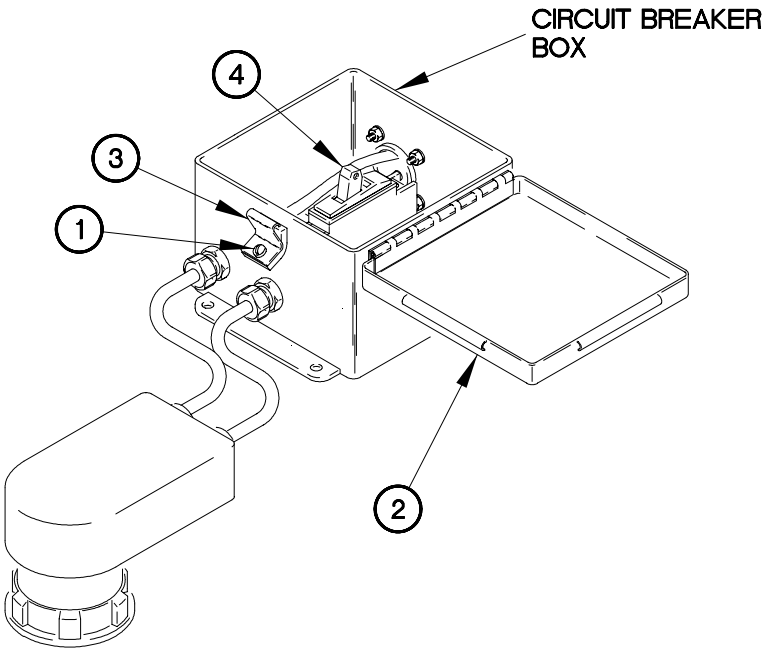
Circuit breaker located inside circuit breaker box will occasionally trip due to sudden high amperage inputs. If circuit breaker trips more than four times during a mission, notify Unit Maintenance.

1. Loosen, but do not remove, three screws (1) securing box cover (2).
2. Rotate three clamps (3) and open box cover (2).

CAUTION

Use care when positioning circuit breaker switch so as not to upset mounting lugs. Failure to comply may result in damage to equipment.

3. Position circuit breaker switch (4) to ON.
4. Close box cover (2) and rotate three clamps (3) back to original position.
5. Tighten three screws (1).



2100b02-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

CHANGING LMHC LOCATION

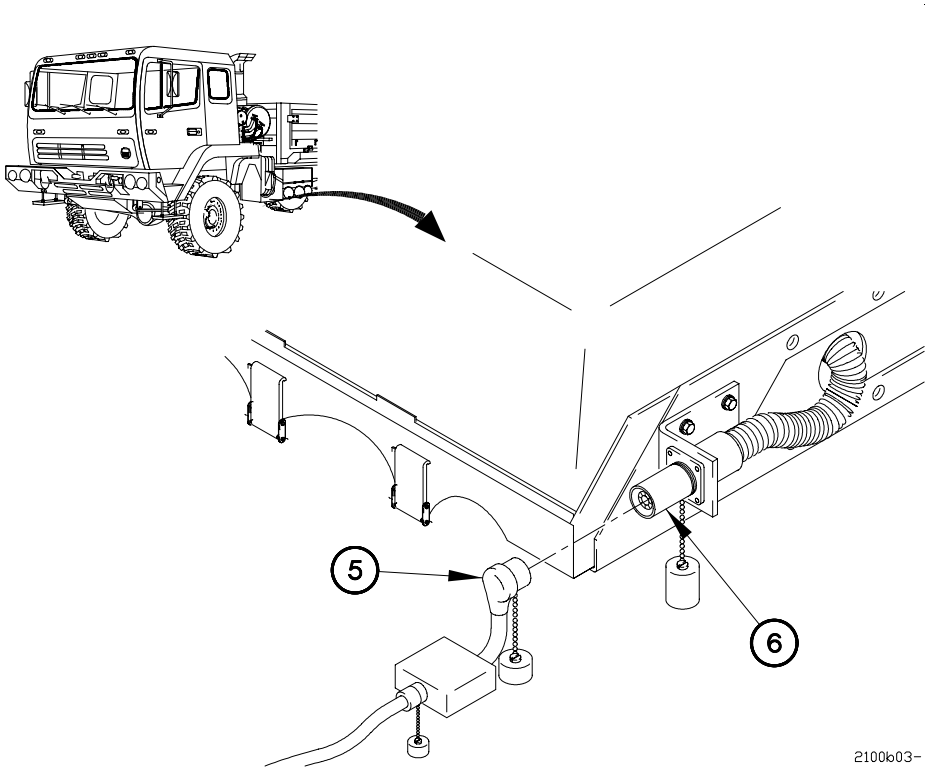
WARNING

Ensure that engine is not running before disconnecting circuit breaker box NATO connector from vehicle NATO connector. Failure to comply may result in injury to personnel.

CAUTION

Ensure that power cable does not come in contact with exhaust pipe. Failure to comply may result in damage to equipment.

1. Disconnect circuit breaker box NATO connector (5) from vehicle NATO connector (6).

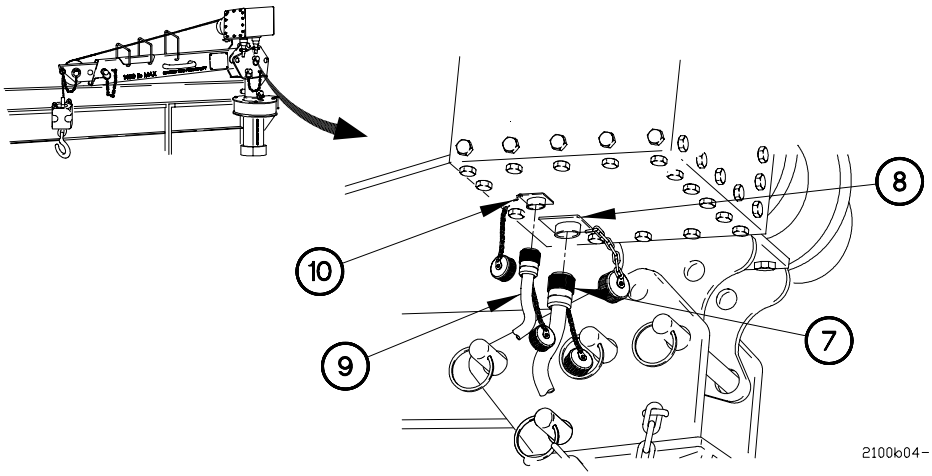


LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

CHANGING LMHC LOCATION - Continued

2. Disconnect power cable connector (7) from winch power cable connector (8).

3. Disconnect remote control connector (9) from winch remote control connector (10).

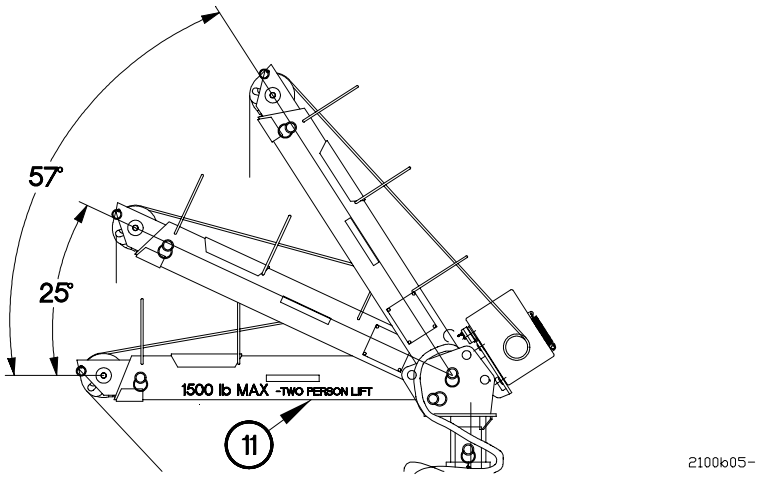


NOTE

Perform steps 4 through 8 if boom was in 25-degree or 57-degree position.

Steps 4 through 8 require the aid of an assistant.

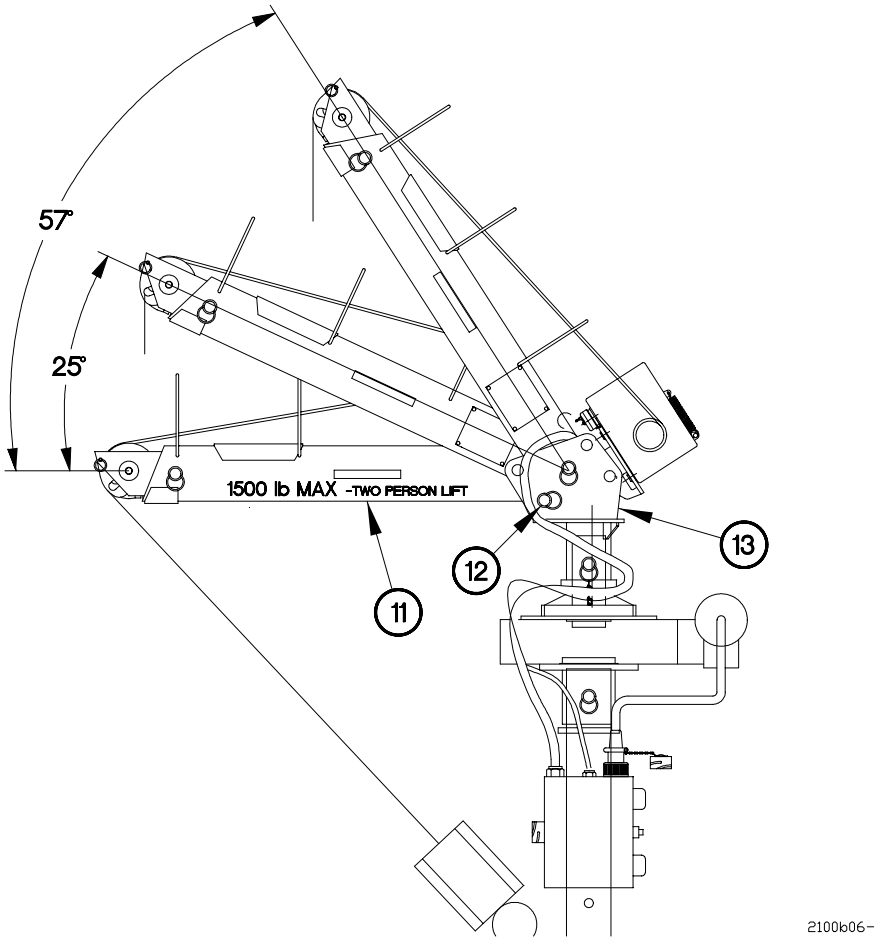
4. Support end of boom (11).



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

CHANGING LMHC LOCATION - Continued

5. Remove quick release pin (12) from turret (13).
6. Lower boom (11) to 0-degree position.
7. Align holes in turret (13) and boom (11).
8. Install quick release pin (12) in turret (13).



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

CHANGING LMHC LOCATION - Continued

9. Remove quick release pins (12) and (14) from turret (13).

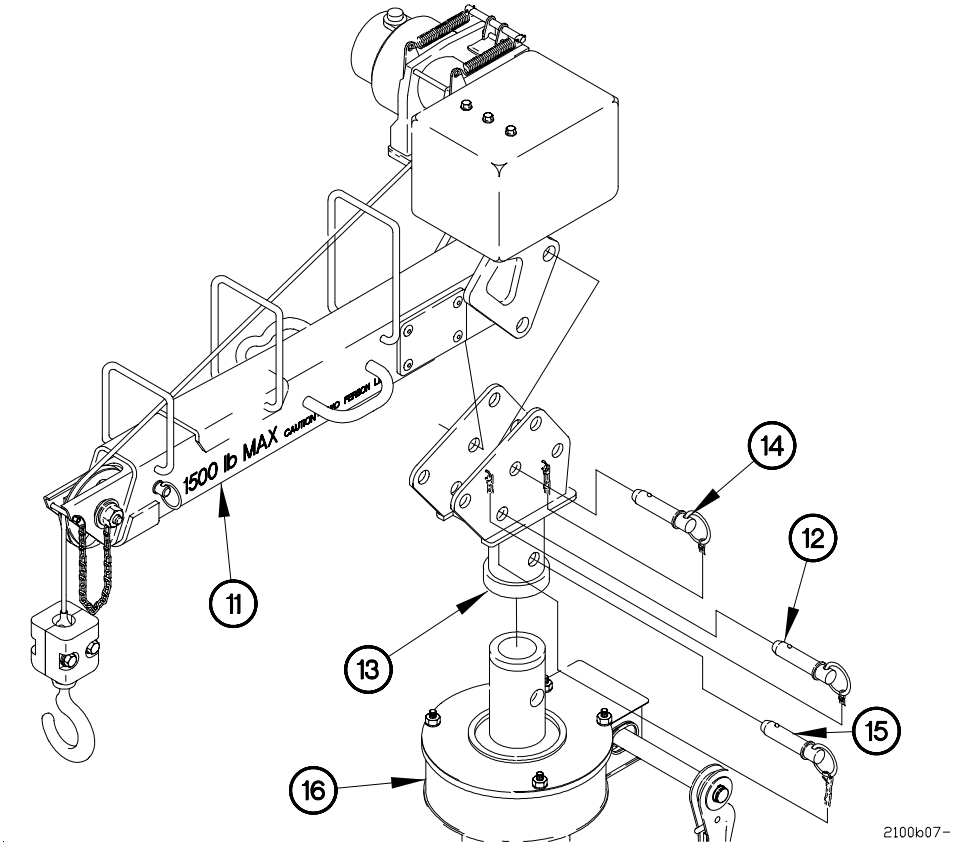
WARNING

Light Material Handling Crane (LMHC) boom and winch weighs approximately 110 lbs (50 kgs). The aid of an assistant is required to remove LMHC boom and winch. Failure to comply may result in injury to personnel.

10. Remove boom (11) from turret (13).

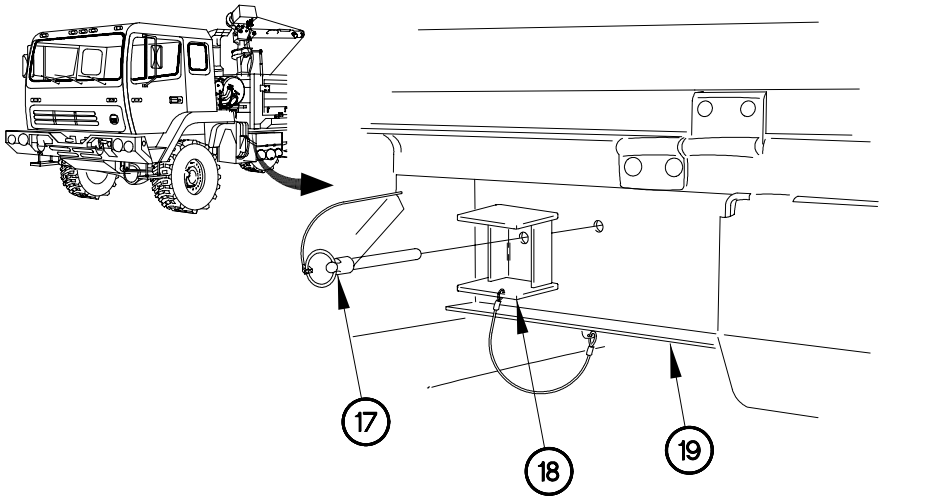
11. Remove quick release pin (15) from turret (13).

12. Remove turret (13) from mast (16).



CHANGING LMHC LOCATION - Continued

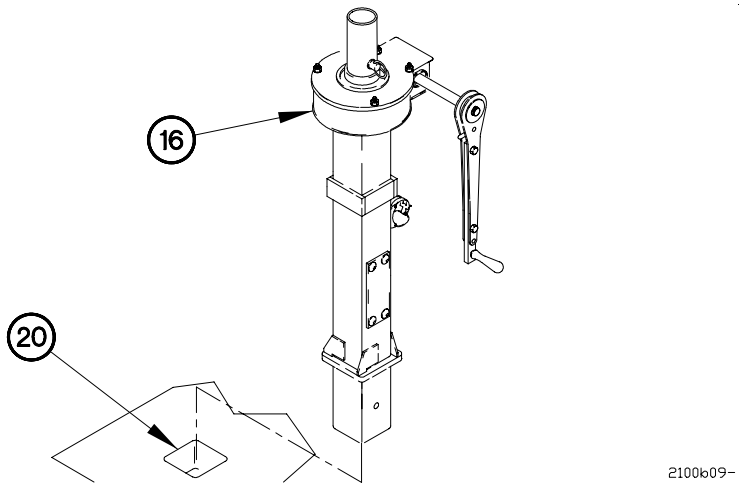
13. Remove quick release pin (17) and plug (18) from cargo bed (19).



WARNING

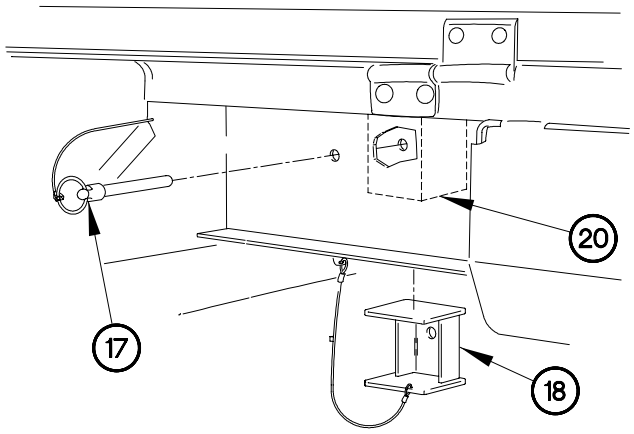
Light Material Handling Crane (LMHC) mast weighs approximately 110 lbs (50 kgs). Use the aid of an assistant to remove mast from cargo bed pocket. Failure to comply may result in injury to personnel.

14. Remove mast (16) from cargo bed pocket (20).



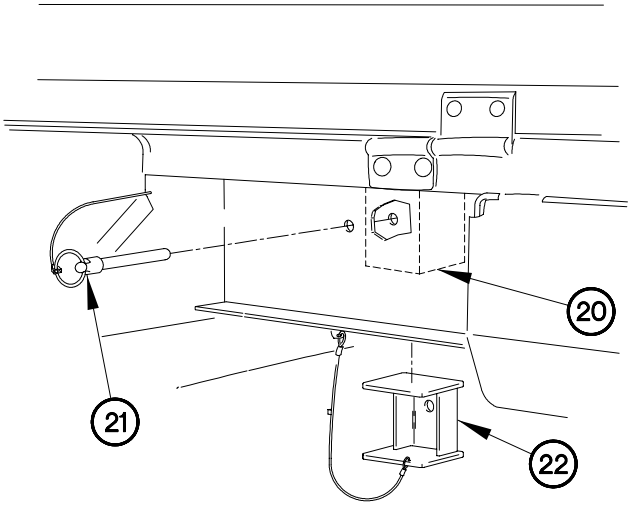
CHANGING LMHC LOCATION - Continued

15. Install plug (18) in cargo bed pocket (20) with quick release pin (17).



2100b10-

16. Remove quick release pin (21) and plug (22) from desired cargo bed pocket (20).



2100b11-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

CHANGING LMHC LOCATION - Continued

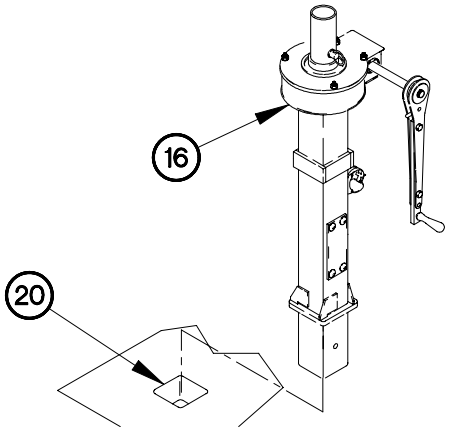
WARNING

Light Material Handling Crane (LMHC) mast weighs approximately 110 lbs (50 kgs). Use the aid of an assistant to install mast in cargo bed pocket. Failure to comply may result in injury to personnel.

NOTE

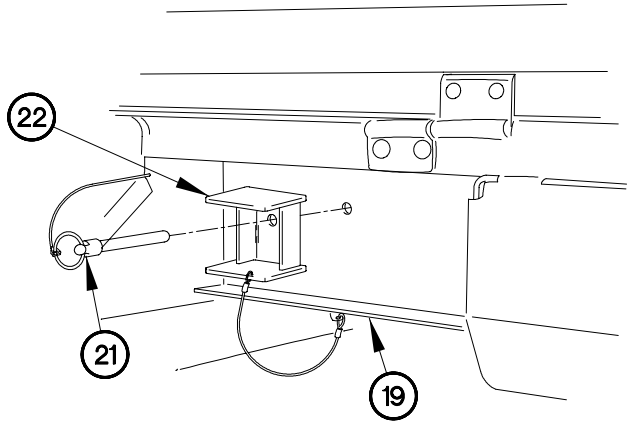
Position mast in cargo bed pocket so handle does not extend over front or rear edge of cargo bed.

17. Install mast (16) in cargo bed pocket (20).



2100b12-

18. Install plug (22) on cargo bed (19) with quick release pin (21).



2100b13-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued

CHANGING LMHC LOCATION - Continued

19. Position turret (13) on mast (16).

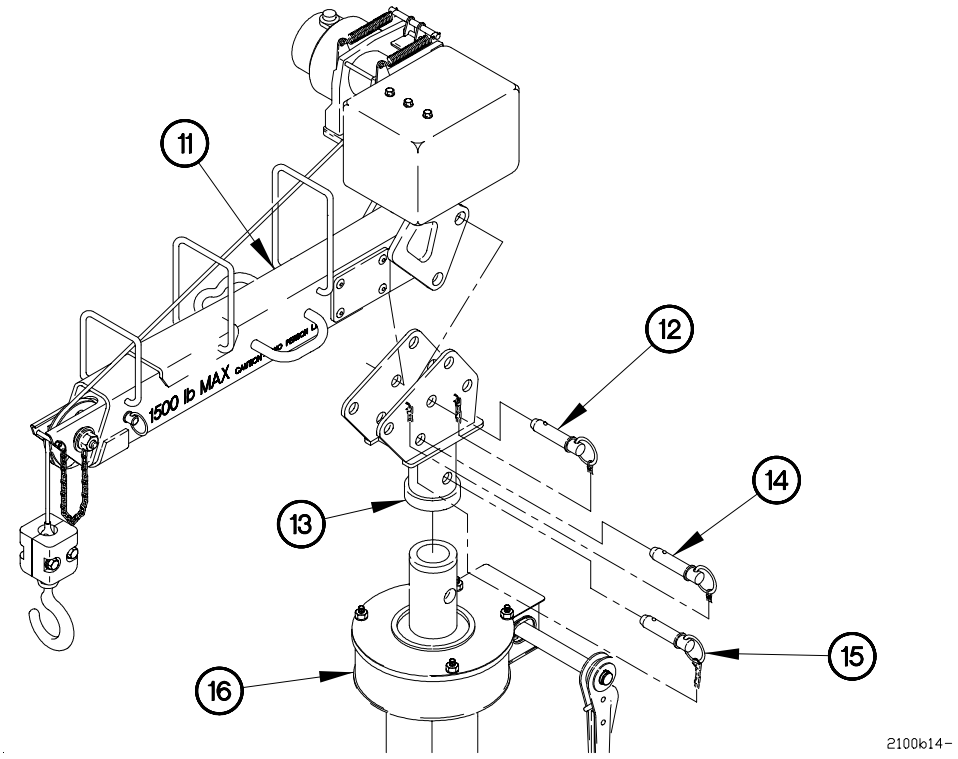
20. Install quick release pin (15) in turret (13).

WARNING

Light Material Handling Crane (LMHC) boom and winch weighs approximately 110 lbs (50 kg). The aid of an assistant is required to install boom and winch. Failure to comply may result in injury to personnel.

21. Position boom (11) on turret (13).

22. Install quick release pins (12) and (14) in turret (13).



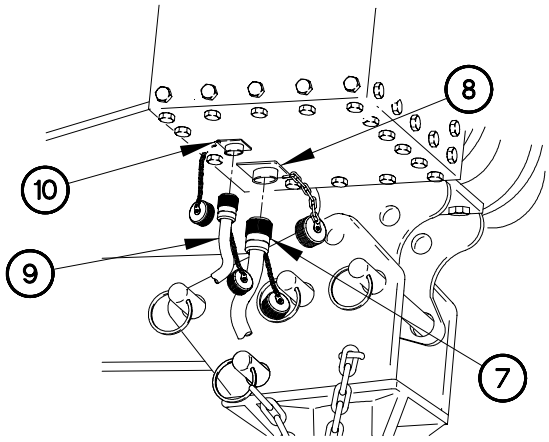
LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued

0021 00

CHANGING LMHC LOCATION - Continued

23. Connect remote control connector (9) on winch remote control connector (10).

24. Connect power cable connector (7) on winch power cable connector (8).



2100b15-

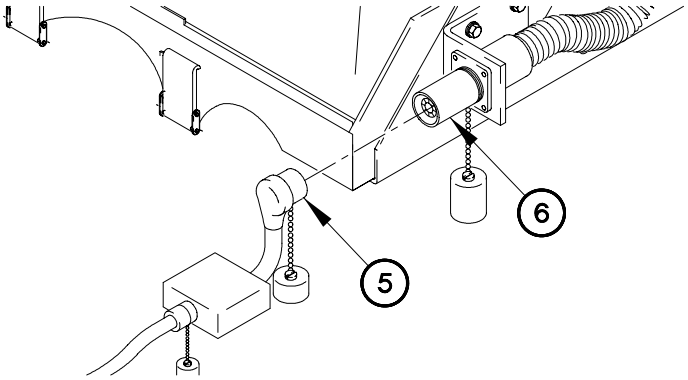
WARNING

Ensure that engine is not running before connecting circuit breaker box NATO connector at vehicle NATO connector. Failure to comply may result in injury to personnel.

CAUTION

Ensure that power cable does not come in contact with exhaust pipe. Failure to comply may result in damage to equipment.

25. Connect circuit breaker box NATO connector (5) to vehicle NATO connector (6).



2100b16-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

PREPARE LIGHT MATERIAL HANDLING CRANE (LMHC) FOR USE

WARNING

Cargo bed is approximately 5 ft (1.5 m) above ground level. Use care during any Light Material Handling Crane (LMHC) operation. Failure to comply may result in injury or death to personnel.

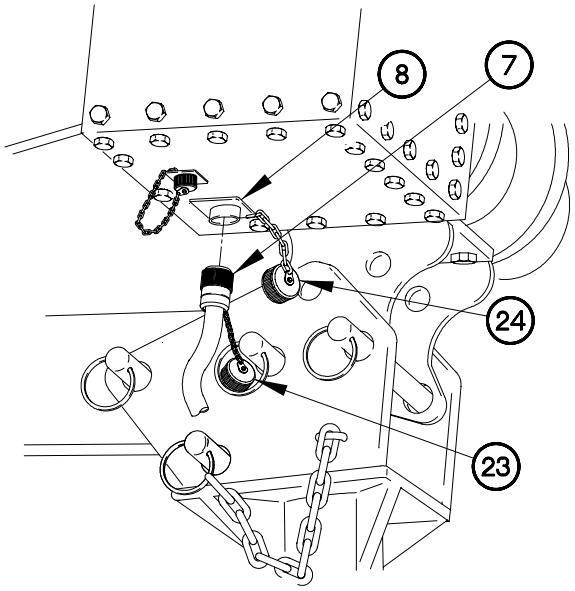
Ensure that wheels are chocked prior to setting up Light Material Handling (LMHC). Failure to comply may result in injury to personnel.

1. Chock wheels (WP 0018 00).

WARNING

Power cable must be connected to Light Material Handling Crane (LMHC) before being connected to circuit breaker box. Failure to comply may result in injury or death to personnel.

2. Remove dust cap (23) from power cable connector (7).
3. Remove dust cap (24) from winch power cable connector (8).
4. Connect power cable connector (7) to winch power cable connector (8).

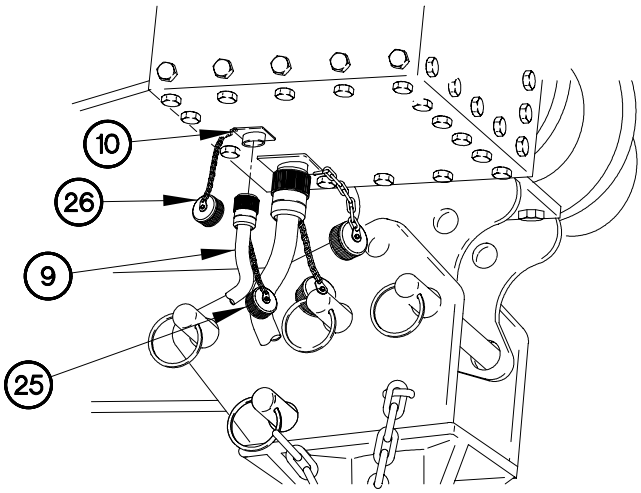


2100b17-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

PREPARE LIGHT MATERIAL HANDLING CRANE (LMHC) FOR USE - Continued

5. Remove dust cap (25) from remote control connector (9).
6. Remove dust cap (26) from winch remote control connector (10).
7. Connect remote control connector (9) to winch remote control connector (10).



2100b18-

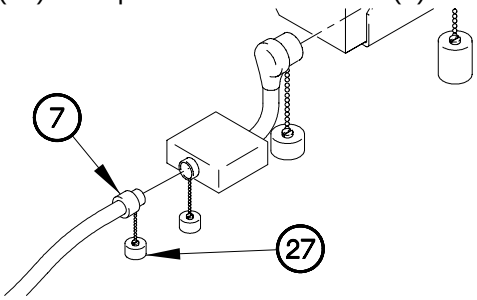
WARNING

Ensure that engine is shut down before connecting power cable at vehicle NATO connector. Failure to comply may result in injury or death to personnel.

CAUTION

Ensure that power cable does not come in contact with hot exhaust pipe. Failure to comply may result in damage to equipment.

8. Remove dust cap (27) from power cable connector (7).

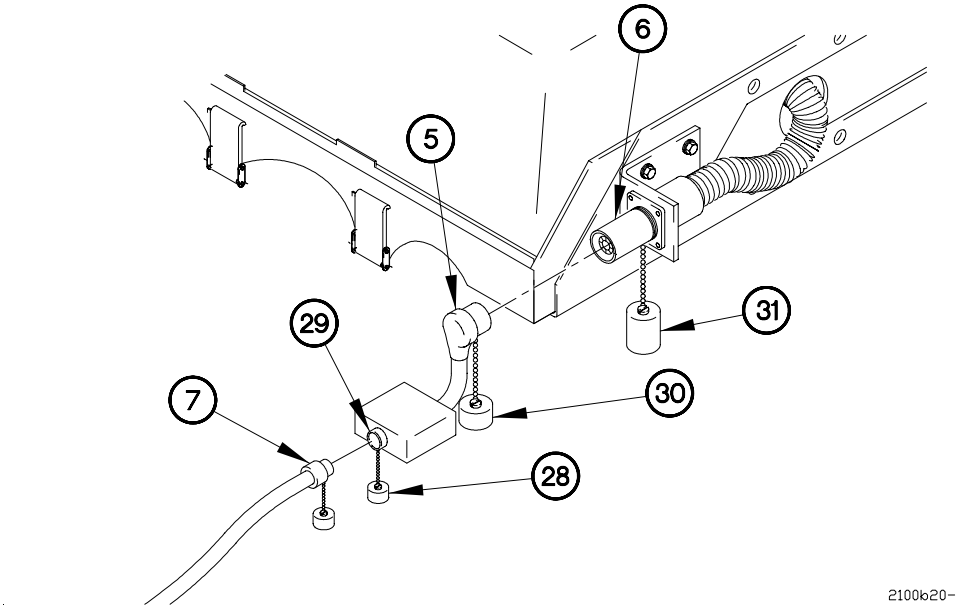


2100b19-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

PREPARE LIGHT MATERIAL HANDLING CRANE (LMHC) FOR USE - Continued

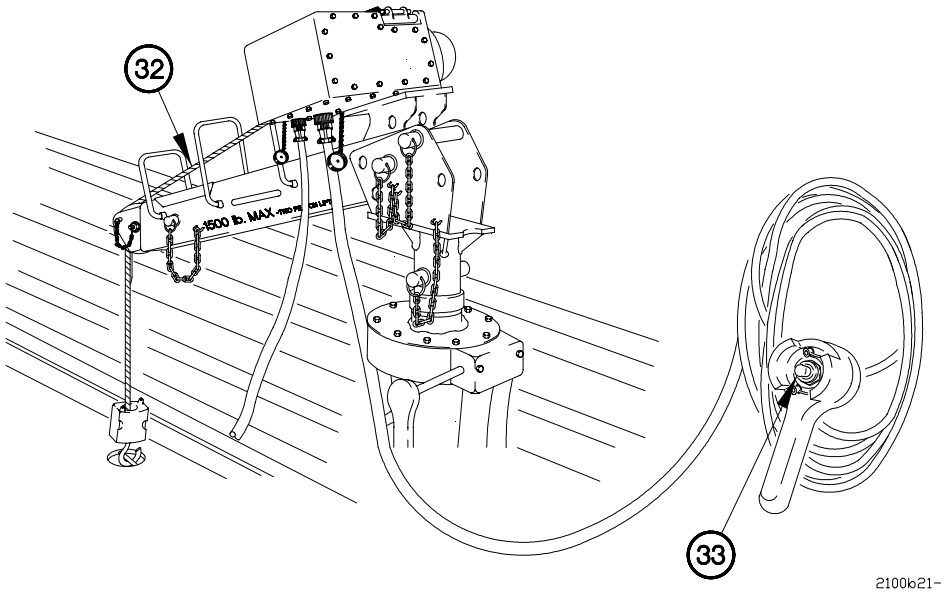
9. Remove dust cap (28) from circuit breaker box connector (29).
10. Connect power cable connector (7) to circuit breaker box connector (29).
11. Remove dust cap (30) from circuit breaker box NATO connector (5).
12. Remove dust cap (31) from vehicle NATO connector (6).
13. Connect circuit breaker box NATO connector (5) to vehicle NATO connector (6).



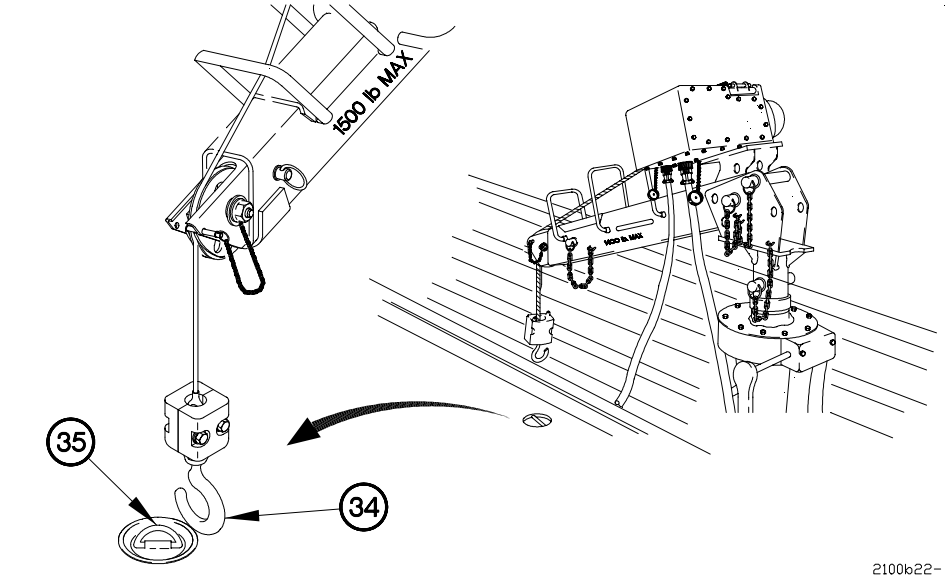
LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued

PREPARE LIGHT MATERIAL HANDLING CRANE (LMHC) FOR USE - Continued

14. To lower cable (22) place hoist control switch (33) in CABLE OUT position.



15. Disconnect hook (34) from cargo bed tie-down ring (35).



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

INSTALLING LONG HANDLE (IF REQUIRED)

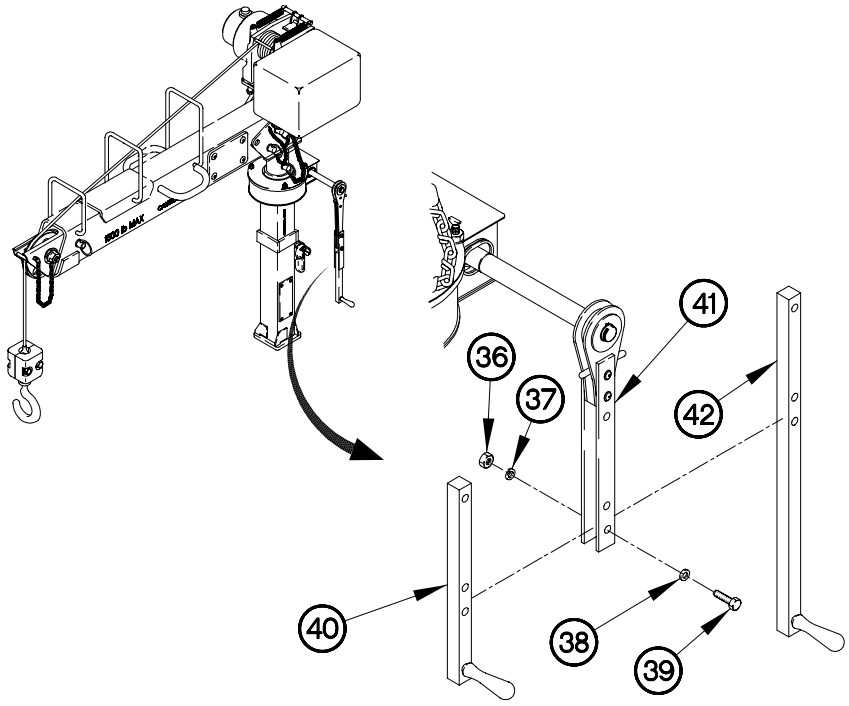
NOTE

The long handle may be installed and used to rotate crane. To remove short handle and install long handle, perform steps 1 and 2.

1. Remove two nuts (36), lockwashers (37), washers (38), screws (39) and short handle (40) from ratchet (41).

2. Install long handle (42) in ratchet (41) with two washers (38), screws (39), lockwashers (37) and nuts (36).

3. Notify Unit Maintenance to replace lockwashers.



2100b23-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

RAISE BOOM

WARNING

Determine required Light Material Handling Crane (LMHC) settings prior to raising boom. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

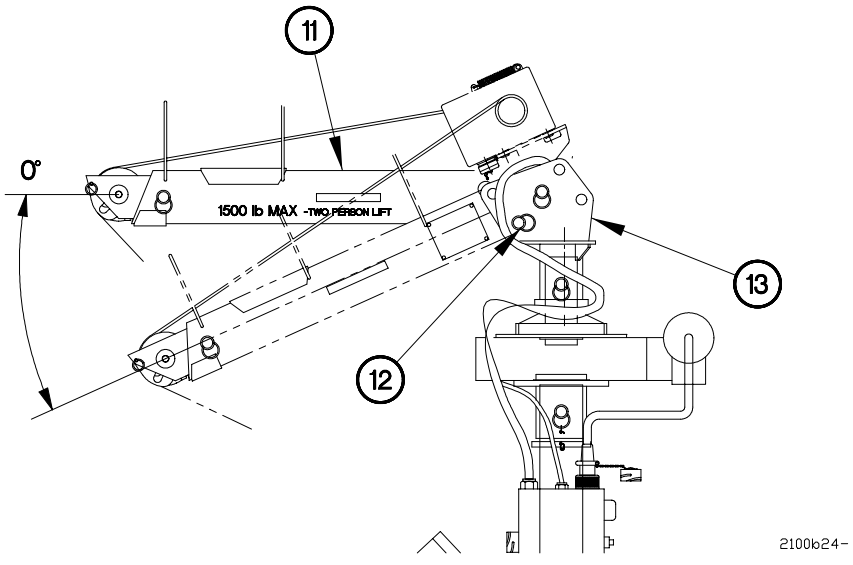
Steps 1 through 8 require the aid of an assistant.

1. Support end of boom (11).

NOTE

Perform steps 2 through 5 to raise the boom to the 0-degree position.

2. Remove quick release pin (12) from turret (13).
3. Raise boom (11) to 0-degree position.
4. Align holes in turret (13) and boom (11).
5. Install quick release pin (12) in turret (13).



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued

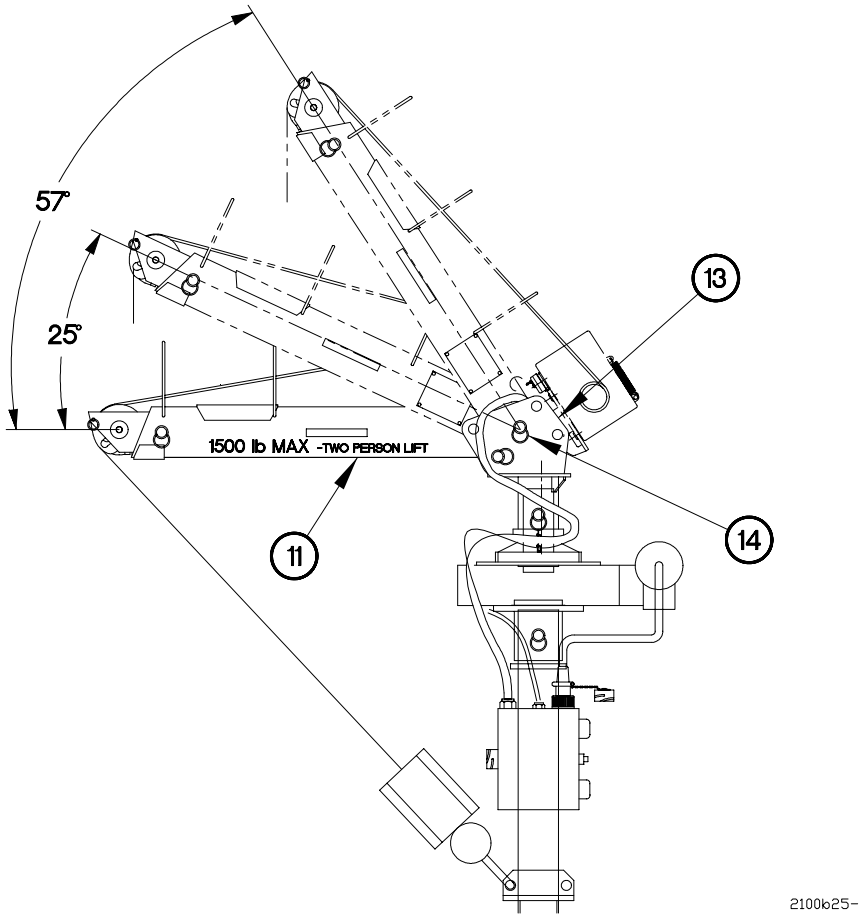
0021 00

RAISE BOOM - Continued

NOTE

Perform steps 6 through 8 to raise boom to 25-degree or 57-degree position.

6. Remove quick release pin (14) from turret (13).
7. Raise boom (11) to desired position.
8. Install quick release pin (14) in turret (13).



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

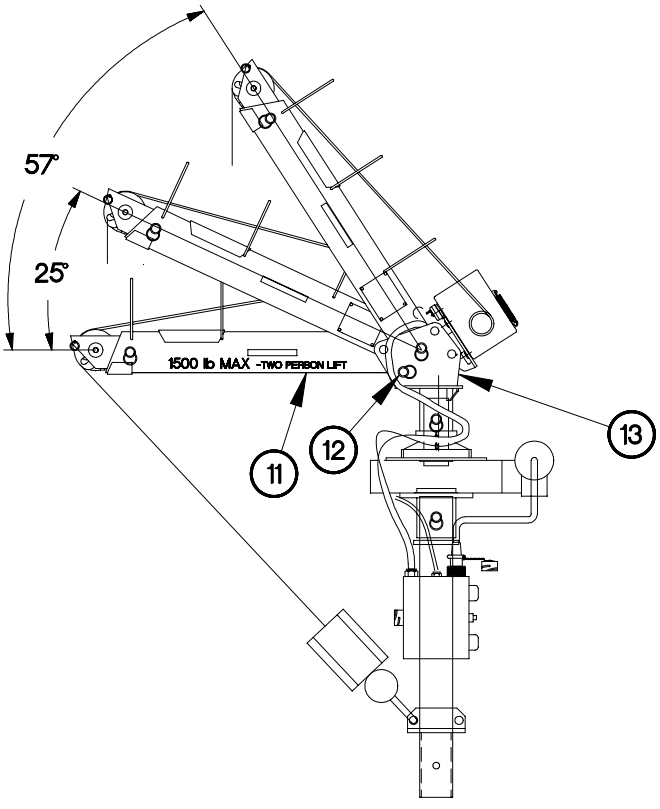
TELESCOPE BOOM

NOTE

Steps 1 through 5 require the aid of an assistant.

Perform steps 1 through 5 if boom was in 25-degree or 57-degree position.

1. Support end of boom (11).
2. Remove quick release pin (12) from turret (13).
3. Lower boom (11) to 0-degree position.
4. Align holes in turret (13) and boom (11).
5. Install quick release pin (12) in turret (13).



2100b26-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

TELESCOPE BOOM - Continued

CAUTION

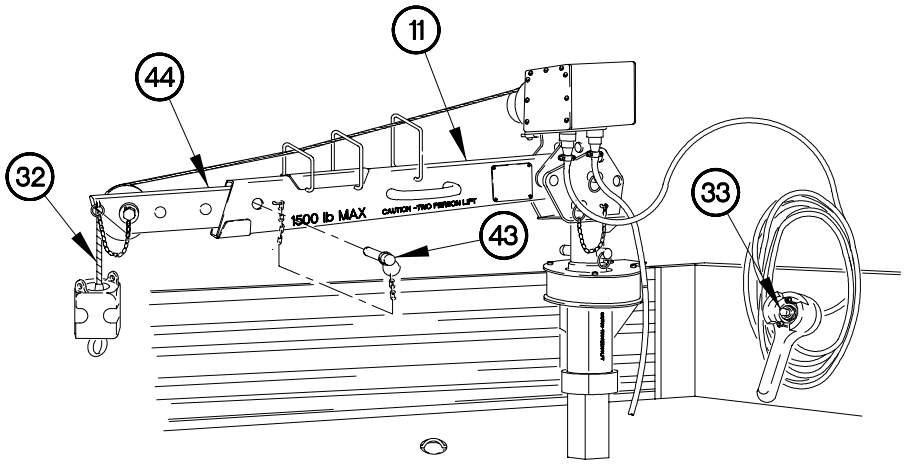
Cable must be lowered to extend boom. Failure to comply may result in damage to equipment.

6. Place hoist control switch (33) in CABLE OUT position to lower cable (32).
7. Remove quick release pin (43) from boom (11).
8. Set boom extension (44) to desired position.

WARNING

Determine required Light Material Handling Crane (LMHC) settings prior to telescoping boom. Failure to comply may result in injury to personnel or damage to equipment.

9. Align holes in boom extension (44) and boom (11).
10. Install quick release pin (43) in boom (11).



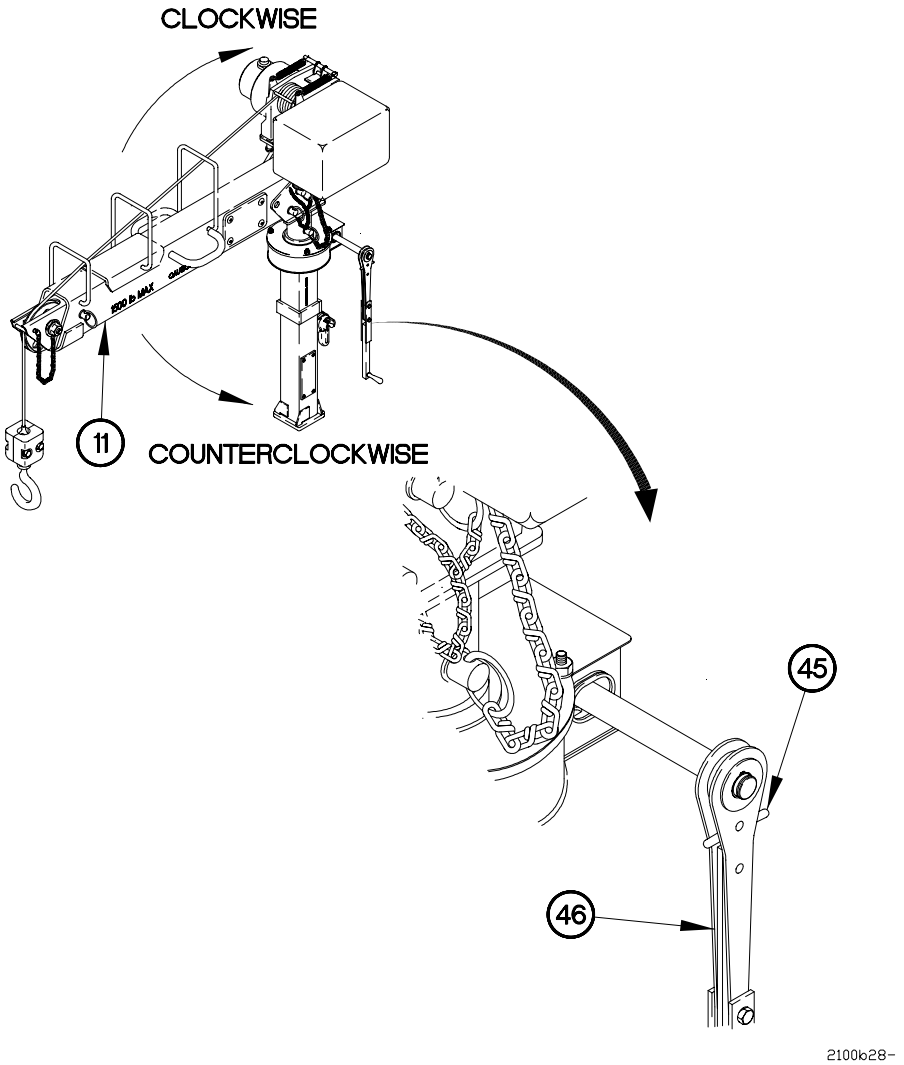
2100b27-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued

0021 00

SWING BOOM

1. Press ratchet lever (45) in.
2. Crank handle (46) to swing boom (11) counterclockwise.
3. Press ratchet lever (45) out.
4. Crank handle (46) to swing boom (11) clockwise.



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

RAISE AND LOWER LOAD

CAUTION

Do not lift load over maximum load rating for Light Material Handling Crane (LMHC). Failure to comply may result in damage to equipment.

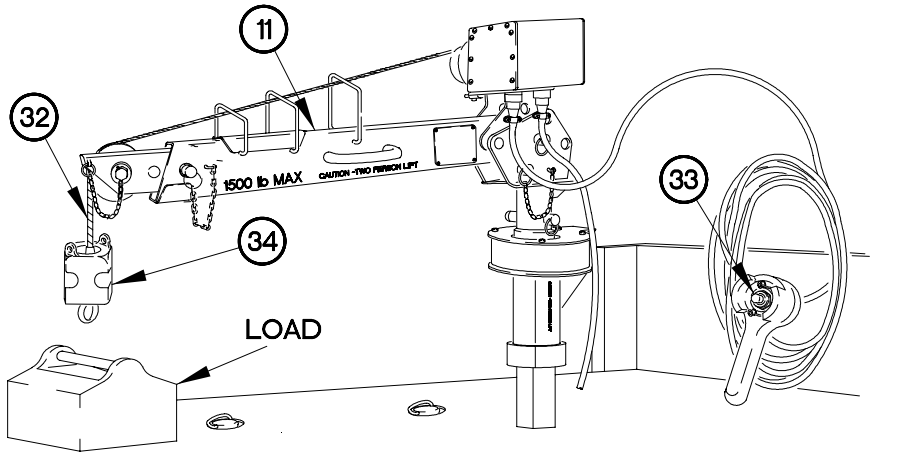
Use only a straight pull when lifting load. Failure to comply may result in damage to equipment.

After performing eight cycles with LMHC, allow 30 minutes to cool down. A cycle is defined as pickup, move, and place a load. A cycle may be from cargo bed of vehicle to ground or ground to cargo bed of vehicle. Failure to comply may result in damage to equipment.

NOTE

Steps 1 through 7 require the aid of an assistant.

1. Adjust boom (11) until end of boom is over load (WP 0021 00).
2. Position hoist control switch (33) to CABLE OUT and lower cable (32).
3. Connect hook (34) to load.



2100b29-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION- Continued 0021 00

RAISE AND LOWER LOAD - Continued

WARNING

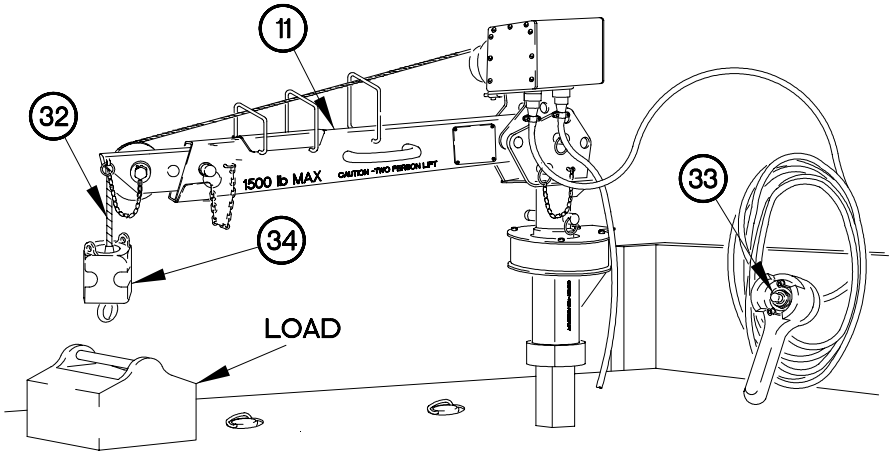
Ensure there are at least two wraps of cable on hoist drum at all times. Cable could come off hoist drum while load is being lifted. Failure to comply may result in injury to personnel or damage to equipment.

CAUTION

If circuit breaker trips while Light Material Handling Crane (LMHC) is operating, allow 30 minutes to cool down. If load is suspended, reset circuit breaker and lower load. If circuit breaker trips again, notify Unit Maintenance. Failure to comply may result in damage to equipment.

Do not jerk hoist control causing load to bounce. Failure to comply may result in damage to equipment.

4. Position hoist control switch (33) to CABLE IN and take in cable (32) and lift load.
5. Swing boom (11) to place load in desired location (WP 0021 00).
6. Position hoist control switch (33) to CABLE DOWN and lower load.
7. Remove hook (34) from load.



2100b30-

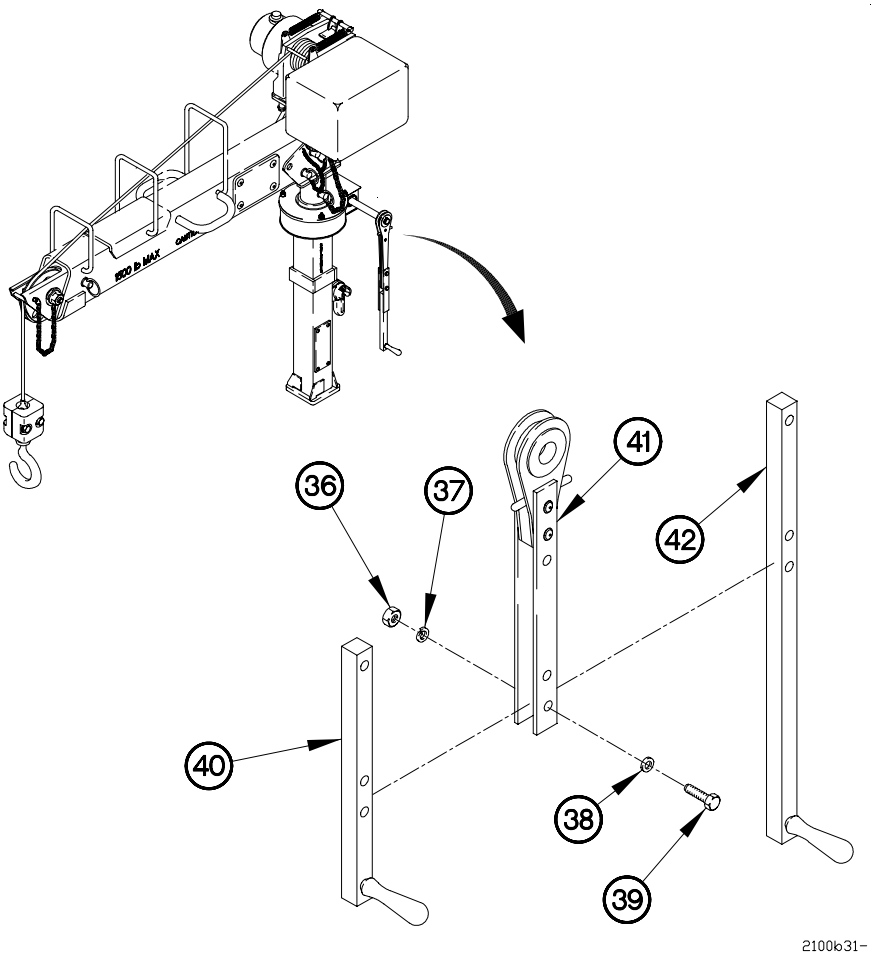
LIGHT MATERIAL HANDLING CRANE (LMHC) 0021 00
OPERATION - Continued

INSTALLING SHORT HANDLE (IF REQUIRED)

1. Remove two nuts (36), lockwashers (37), washers (38), screws (39) and long handle (42) from ratchet (41).

2. Install short handle (40) in ratchet (41) with two washers (38), screws (39), lockwashers (37) and nuts (36).

3. Notify Unit Maintenance to replace lockwashers.



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

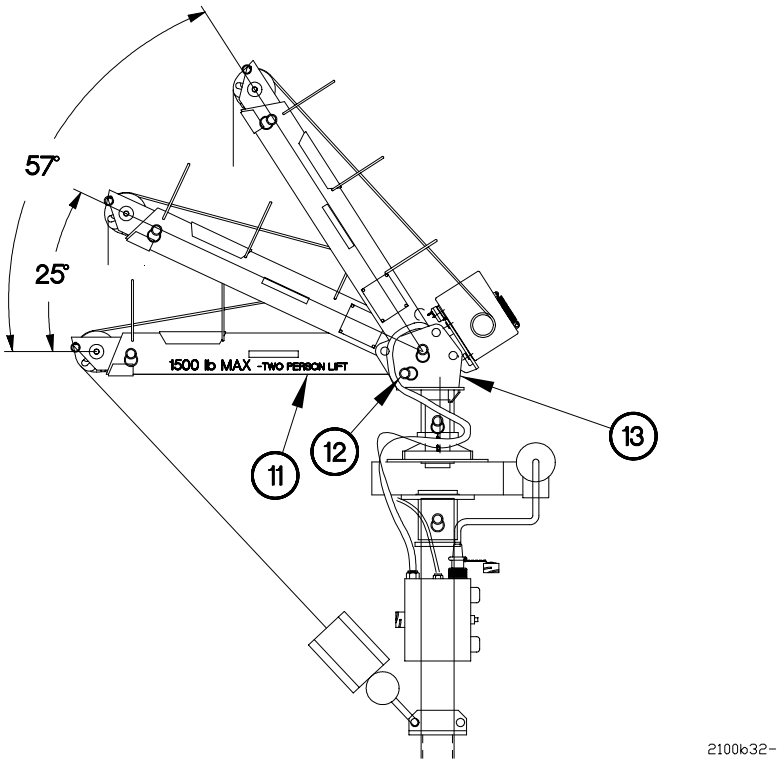
STOW (LMHC)

NOTE

Steps 1 through 13 require the aid of an assistant.

Perform steps 1 through 5 if boom was in 25-degree or 57-degree position.

1. Support end of boom (11).
2. Remove quick release pin (12) from turret (13).
3. Lower boom (11) to 0-degree position.
4. Align holes in turret (13) and boom (11).
5. Install quick release pin (12) in turret (13).



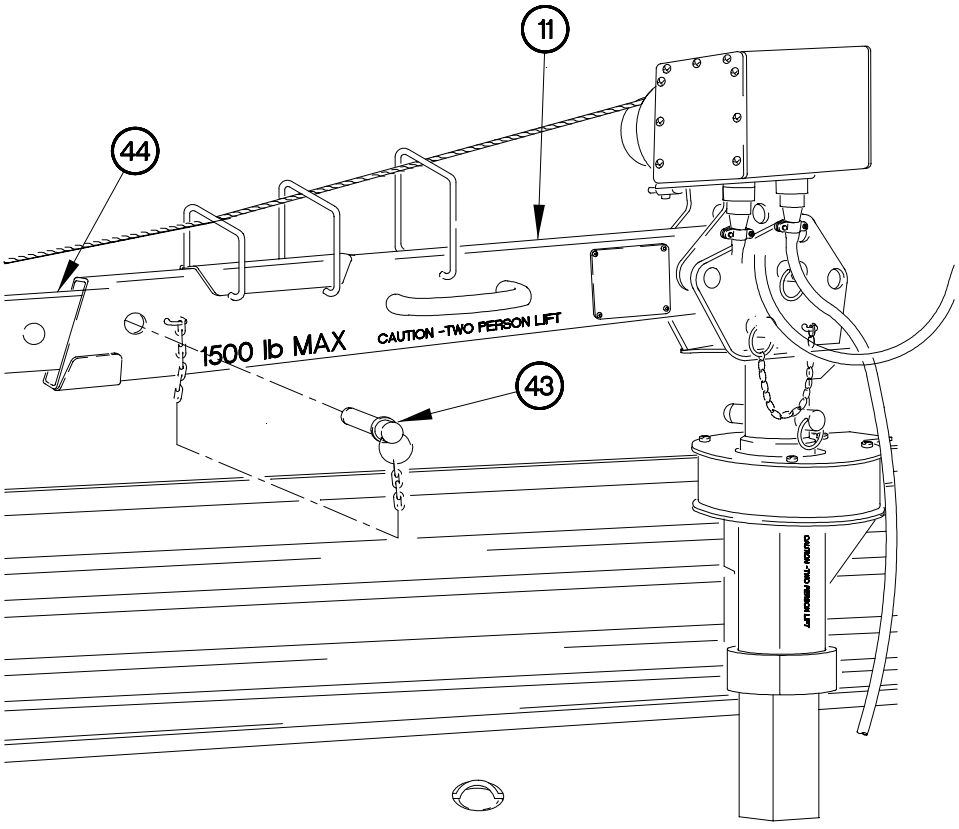
LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

STOW (LMHC) - Continued

NOTE

Perform steps 6 through 9 if boom was extended.

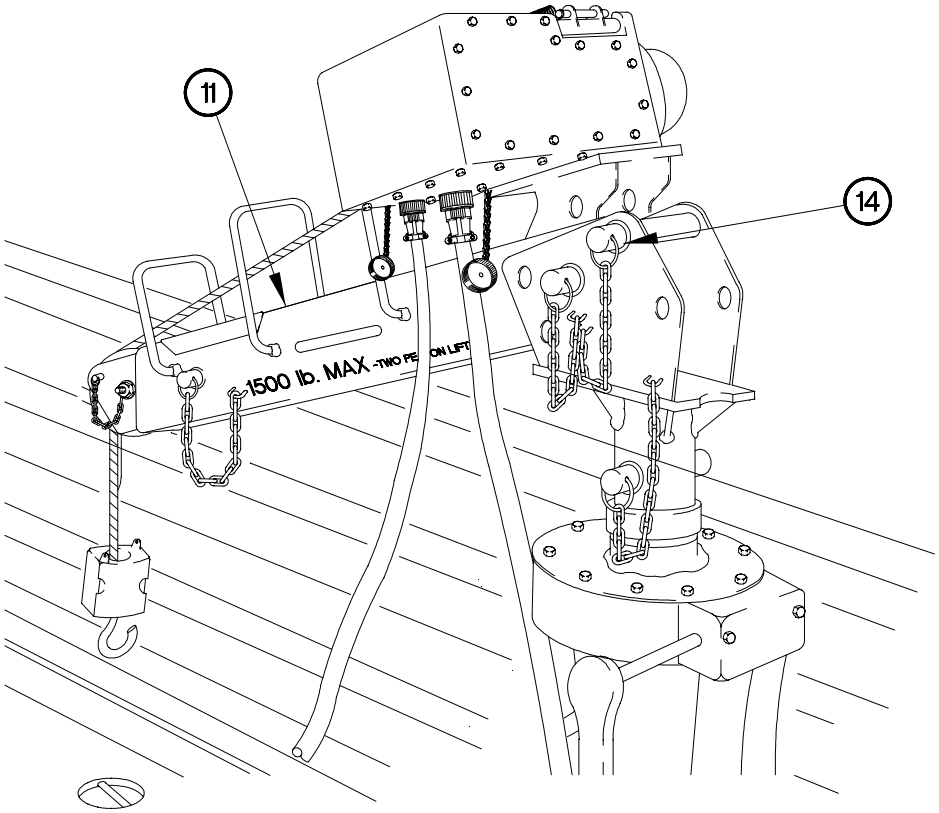
6. Remove quick release pin (43) from boom (11).
7. Push in end of boom extension (44) so that boom (11) is fully retracted.
8. Align hole in boom extension (44) with hole in boom (11).
9. Install quick release pin (43) in boom (11).



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

STOW (LMHC) - Continued

10. Support end of boom (11).
11. Remove quick release pin (14).
12. Lower boom (11) to stowed position.
13. Install quick release pin (14) in one of unused holes.

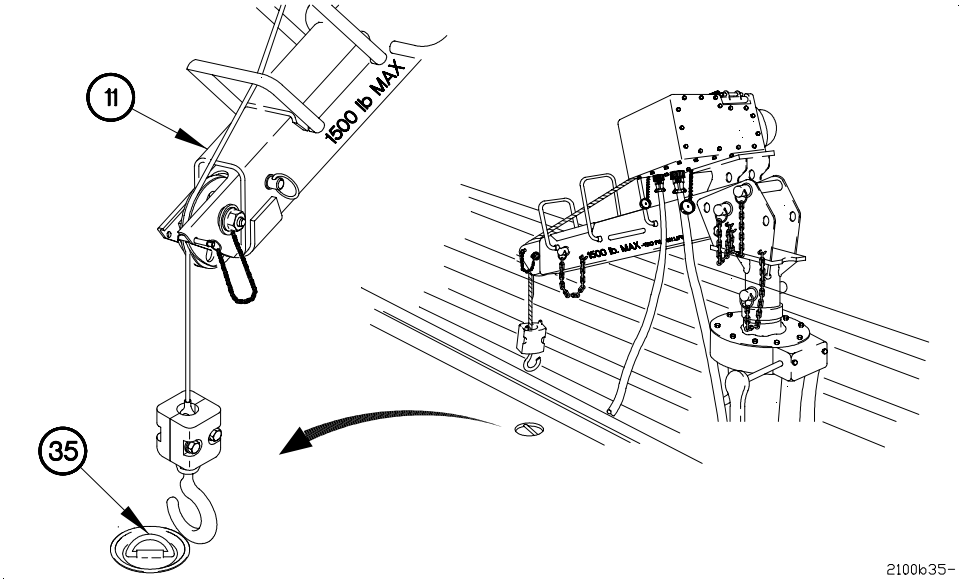


2100b34-

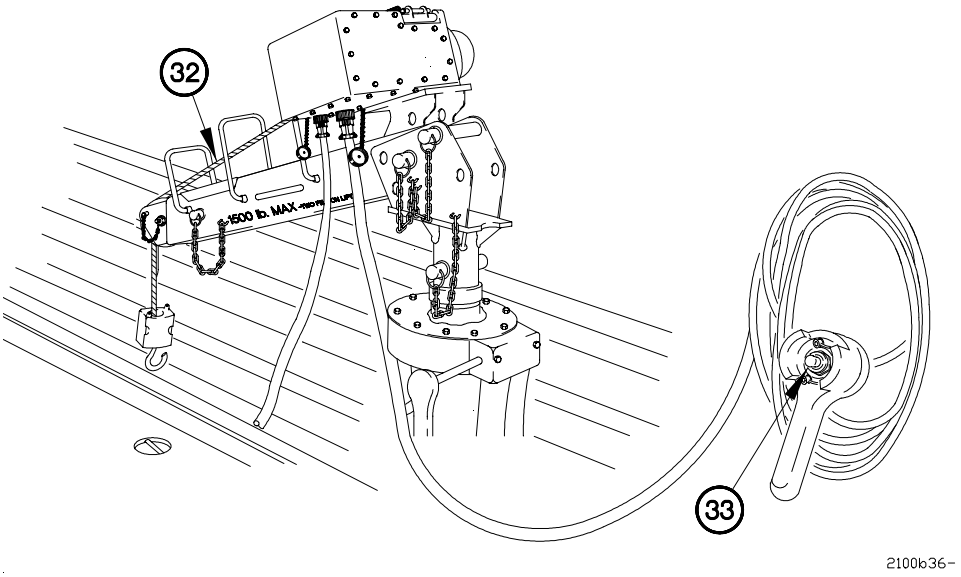
LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

STOW (LMHC) - Continued

14. Adjust boom (11) so that end of boom is in line with cargo bed tiedown ring (35).



15. Position hoist control switch (33) to CABLE DOWN and lower cable (32).



LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

STOW (LMHC) - Continued

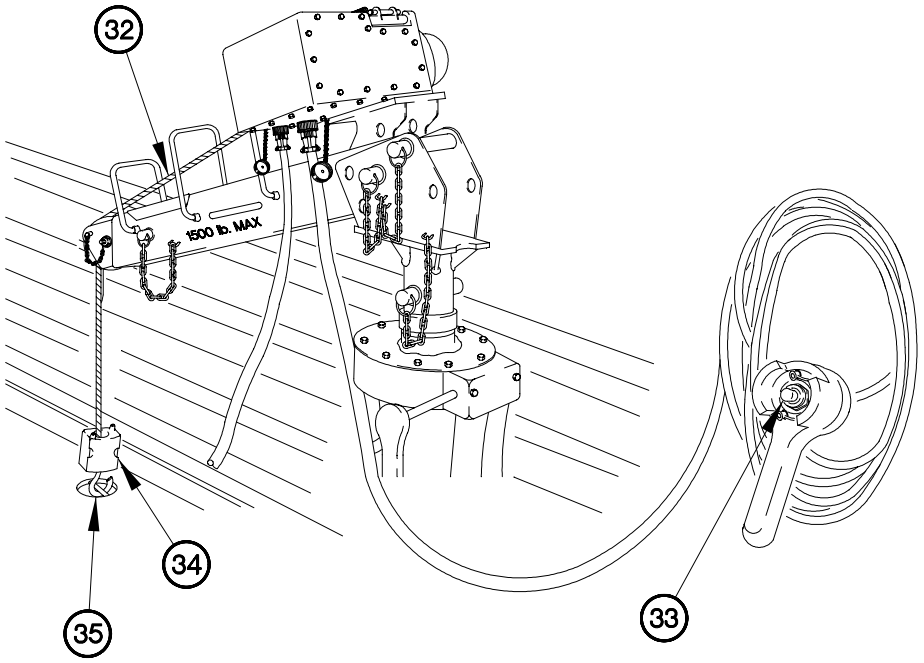
CAUTION

Do not overtighten cable. Failure to comply may result in damage to equipment.

Tension must be maintained on cable to prevent unraveling from spool. Failure to comply may result in damage to equipment.

16. Connect hook (34) to cargo bed tiedown ring (35).

17. Position hoist control switch (33) to CABLE UP and remove slack from cable (32).



2100b37-

LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued

0021 00

STOW (LMHC) - Continued

WARNING

Ensure that engine is not running before disconnecting circuit breaker box NATO connector at vehicle NATO connector. Failure to comply may result in injury or death to personnel.

CAUTION

Ensure that power cable does not come in contact with exhaust pipe. Failure to comply may result in damage to equipment.

18. Disconnect circuit breaker box NATO connector (5) from vehicle NATO connector (6).

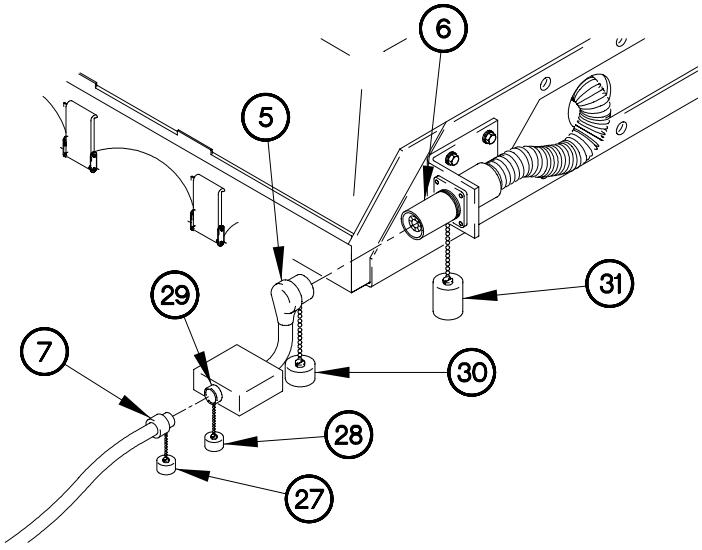
19. Install dust cap (31) on vehicle NATO connector (6).

20. Install dust cap (30) on circuit breaker box NATO connector (5).

21. Disconnect power cable connector (7) from circuit breaker box connector (29).

22. Install dust cap (28) on circuit breaker box connector (29).

23. Install dust cap (27) on power cable connector (7).



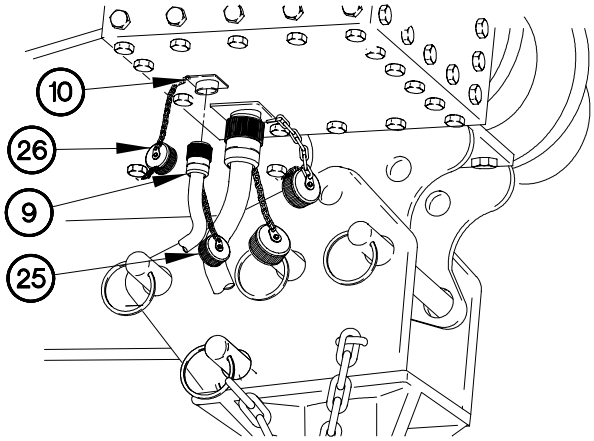
LIGHT MATERIAL HANDLING CRANE (LMHC) OPERATION - Continued 0021 00

STOW (LMHC) - Continued

24. Disconnect remote control connector (9) from winch remote control connector (10).

25. Install dust cap (26) on winch remote control connector (10).

26. Install dust cap (25) on remote control connector (9).

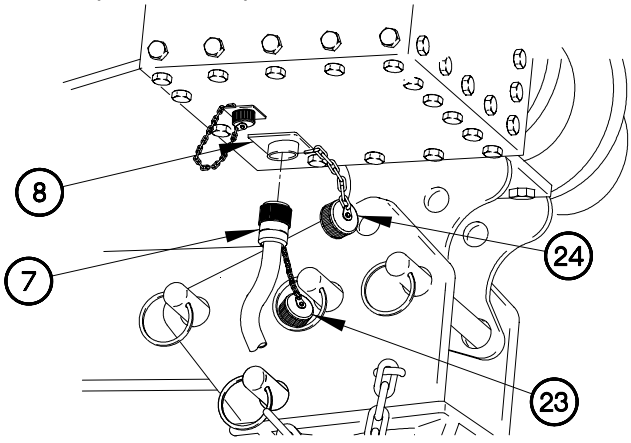


27. Disconnect power cable connector (7) from winch power cable connector (8).

28. Install dust cap (24) on winch power cable connector (8).

29. Install dust cap (23) on power cable connector (7).

30. Remove wheel chocks (WP 0018 00) from rear wheels.



END OF OPERATING PROCEDURE

HEATER/DEFROST OPERATION 0022 00

INITIAL SETUP:

Maintenance Level
Operator

GENERAL

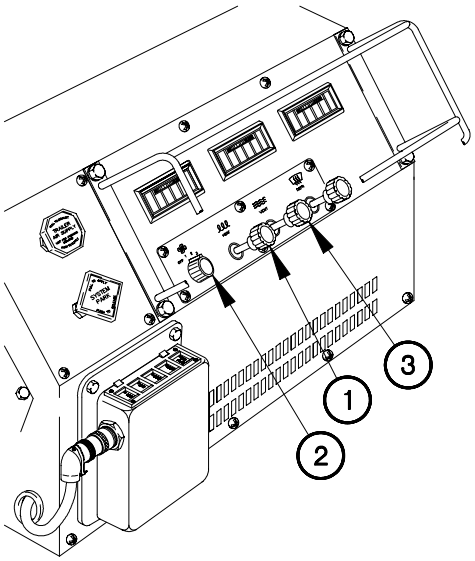
This work package provides the data and procedures for heater/defrost operation in the vehicle. Items covered are Operating Cab Heat and Operating Windshield Defrost.

OPERATE CAB HEAT

NOTE

Heat output increases as HEAT control is pulled farther out.

1. Pull HEAT control (1) to desired setting.
2. Position FAN switch (2) to desired speed.
3. Pull VENT control (3) to allow outside air to enter cab for ventilation.
4. Push in VENT control (3) to stop flow of outside air.
5. Push in HEAT control (1) to turn off heat.
6. Position FAN switch (2) to OFF to turn off fan.



2200B01-

HEATER/DEFROST OPERATION - Continued 0022 00

OPERATE WINDSHIELD DEFROST

NOTE

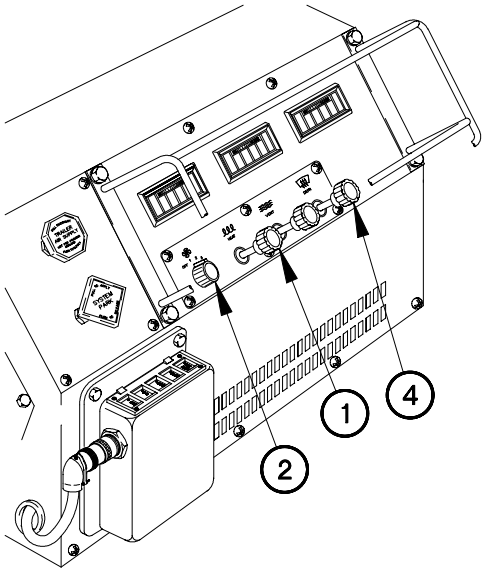
The amount of air directed to cab windshield increases as DEFR control is pulled farther out.

1. Pull DEFR control (4) outward to desired position.

NOTE

Temperature of air output directed to windshield increases as HEAT control is pulled farther out.

2. Pull HEAT control (1) to desired position.
3. Position FAN switch (2) to desired speed.
4. Push in HEAT control (1) to turn heat off.
5. Position FAN switch (2) to OFF to turn fan off.
6. Push in DEFR control (4) to stop directing air on windshield.



2200B02-

END OF OPERATING PROCEDURE

LADDERS, SIDE PANELS, AND STAKES OPERATION 0023 00

INITIAL SETUP:

Maintenance Level
Operator

GENERAL

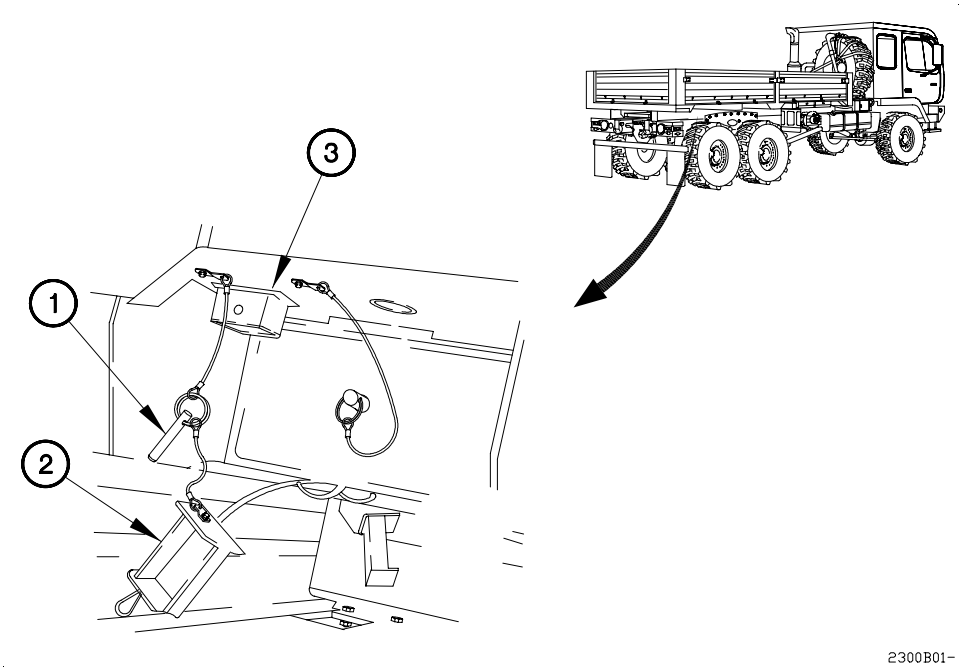
This work package provides the data and procedures for operation of the ladders, side panels, and stakes on models M1083A1, M1084A1, M1085A1, M1086A1, and M1090A1. Items covered include Lower Ladder, Stow Ladder, Lower Cargo Bed Side Panels, Raise Cargo Bed Side Panels, Stow Cargo Bed Side Panels, Install Cargo Bed Side Panels, Cargo Stake Removal, and Cargo Bed Stake Installation.

LOWER LADDER (M1083A1/M1085A1)

CAUTION

Do not use gladhands as a step to access cargo bed. Failure to comply may result in damage to equipment.

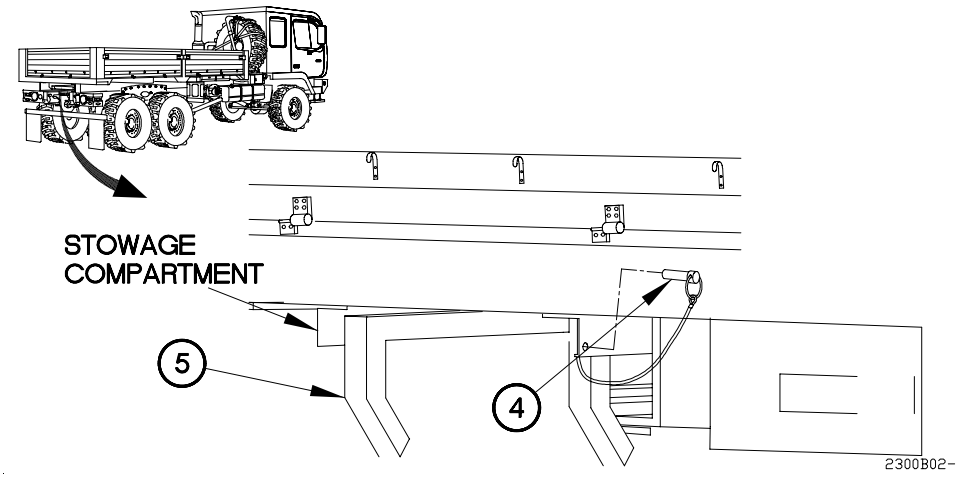
1. Remove two pins (1) and ladder plugs (2) from ladder mounting holes (3).



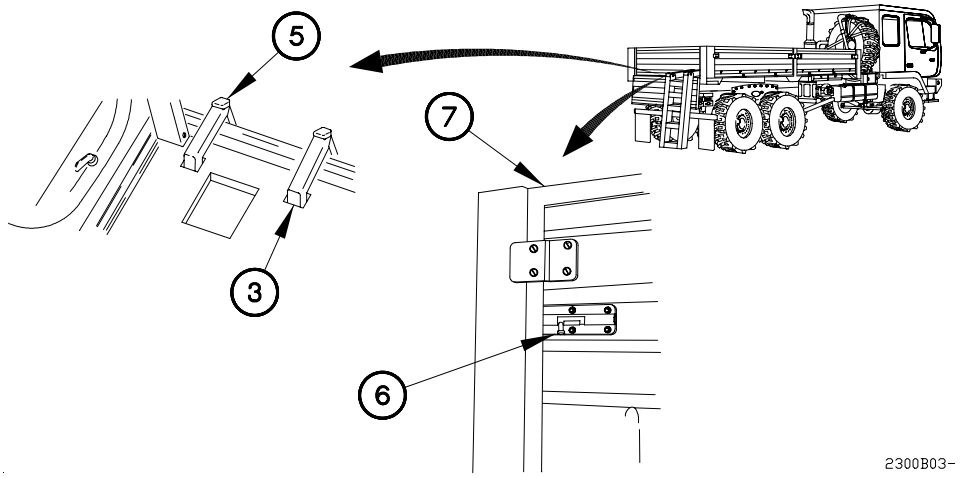
LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

LOWER LADDER (M1083A1/M1085A1) - Continued

2. Remove ladder locking pin (4) from ladder (5).
3. Remove ladder (5) from stowage compartment.



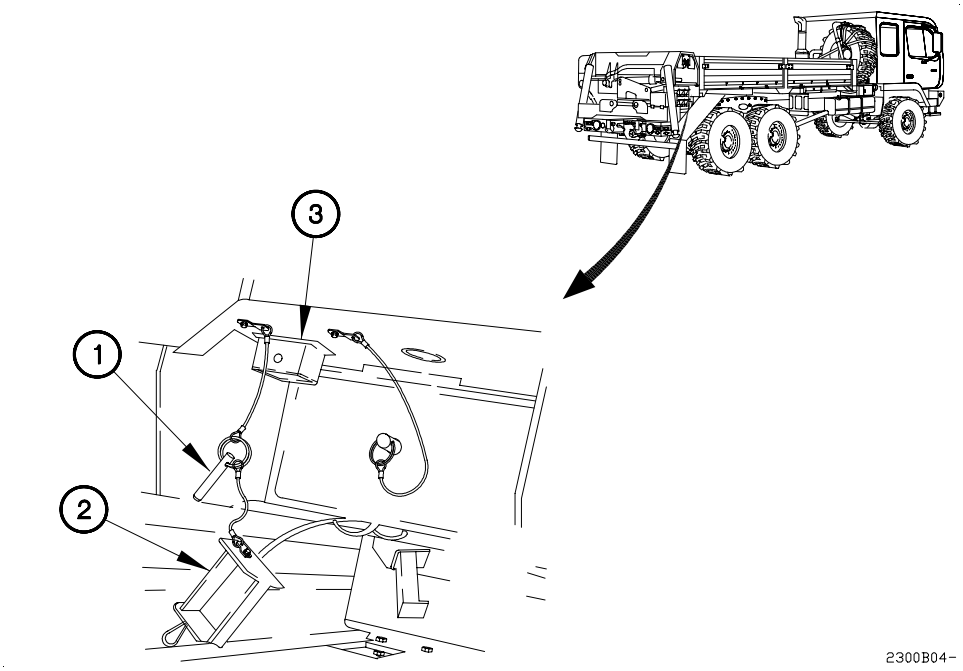
4. Unlatch two latches (6) from tailgate (7).
5. Lower tailgate (7).
6. Mount ladder (5) in two ladder mounting holes (3).



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

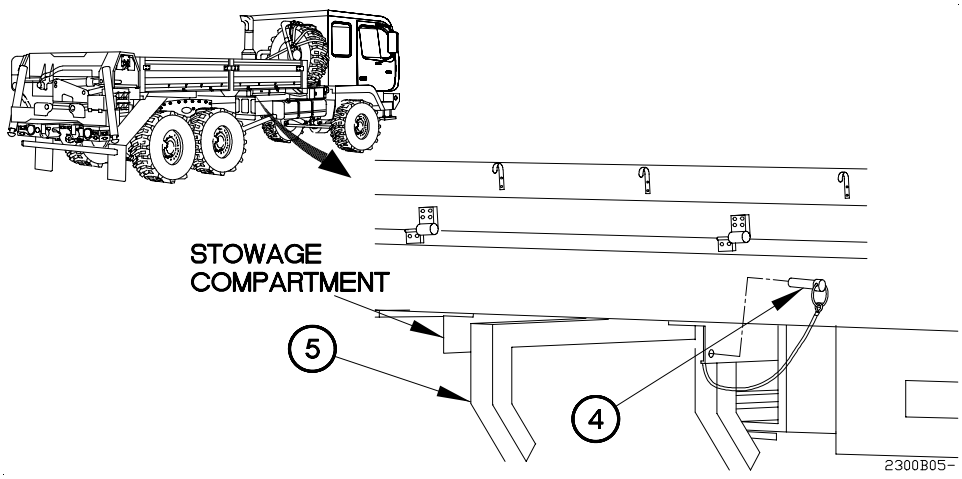
LOWER LADDER (M1084A1/M1086A1)

1. Remove two pins (1) and ladder plugs (2) from ladder mounting holes (3).



2. Remove ladder locking pin (4) from ladder (5).

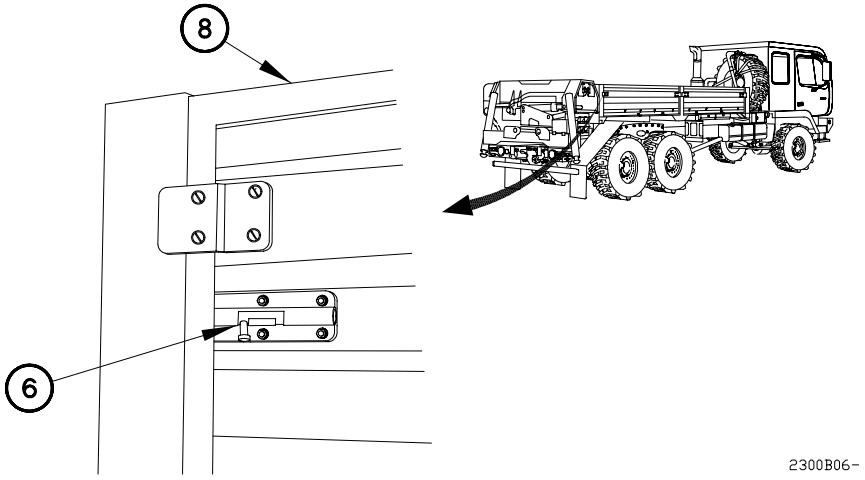
3. Remove ladder (5) from stowage compartment.



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

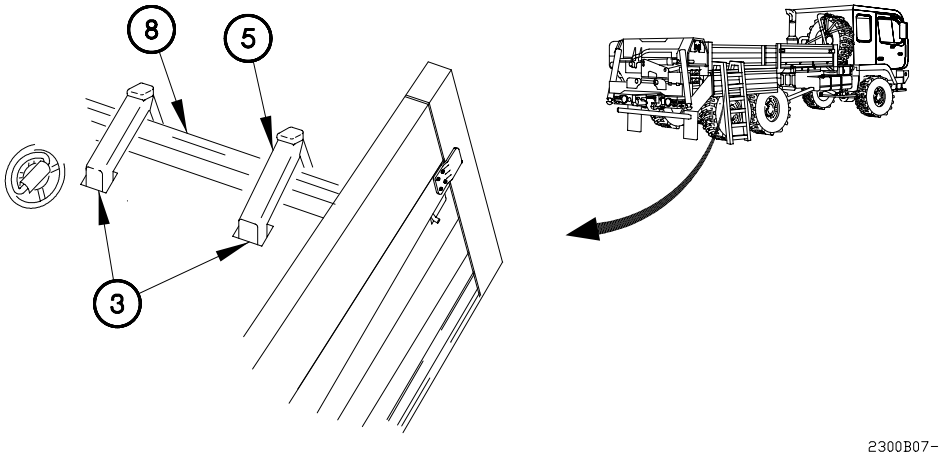
LOWER LADDER (M1084A1/M1086A1) - Continued

4. Unlatch two latches (6) from right side rear cargo bed side panel (8).



5. Lower right side rear cargo bed side panel (8).

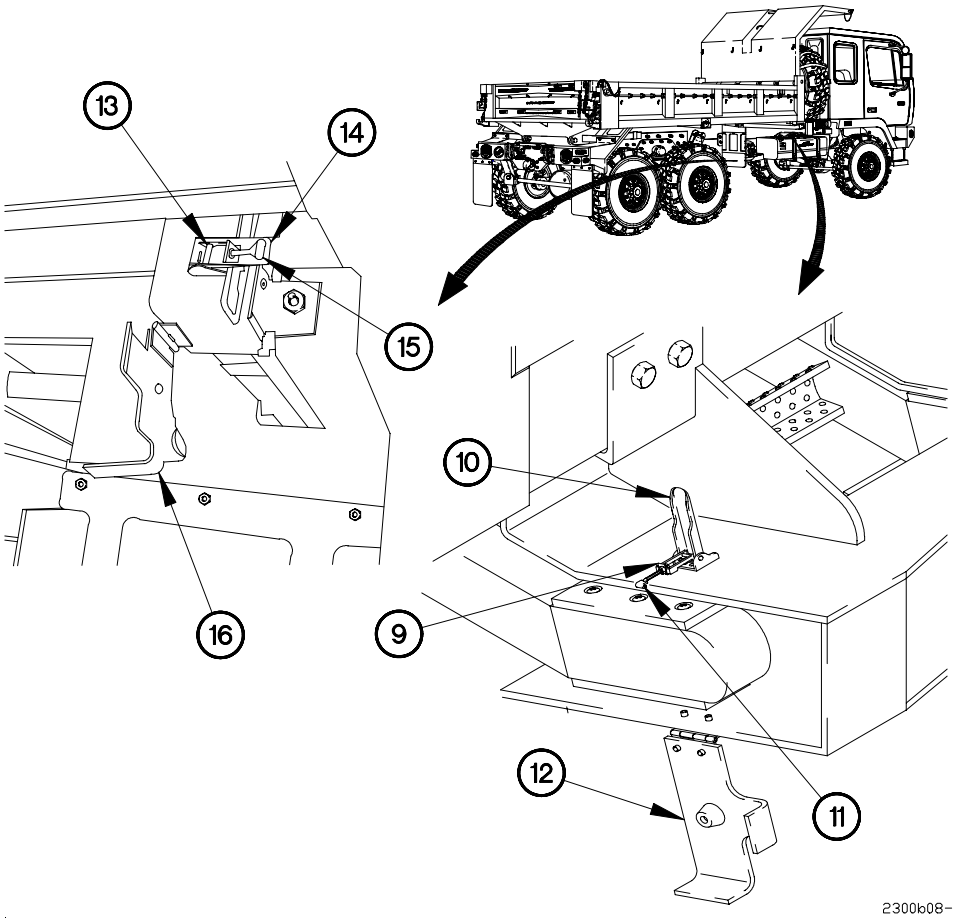
6. Mount ladder (5) in two ladder mounting holes (3).



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

LOWER LADDER (M1090A1)

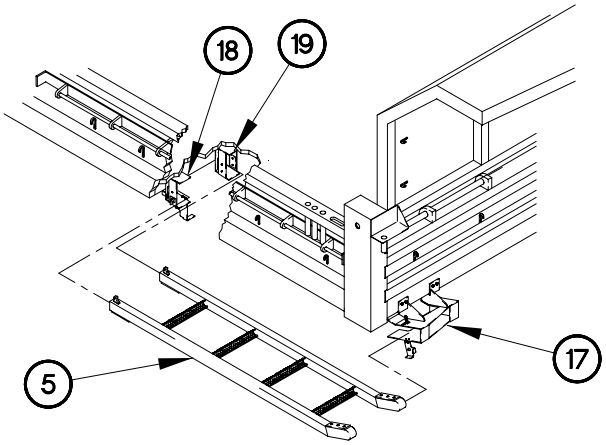
1. Release spring catch (9) and lift latch lever (10).
2. Release latch hook (11) from front ladder bracket door (12).
3. Release spring catch (13) and lift latch lever (14).
4. Release latch hook (15) from rear ladder bracket door (16).



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

LOWER LADDER (M1090A1) - Continued

5. Remove ladder (5) from front ladder bracket (17) and rear ladder brackets (18 and 19).



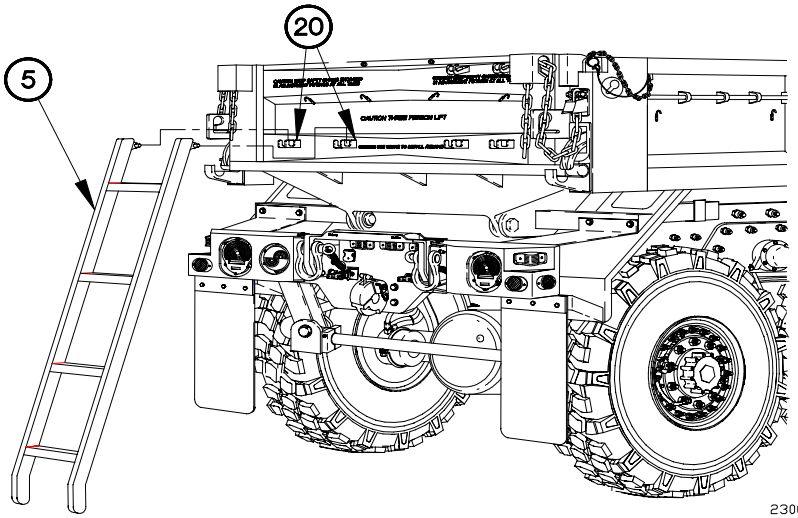
2300B09-

NOTE

M1090A1 ladder may be used with tailgate up or down. With the tailgate up, the ladder may be installed on the LH or RH side, with the tailgate down the ladder may be installed only on the RH side.

Perform step (6) to install the ladder with the tailgate up. Left side shown.

6. Mount ladder (5) in two ladder mounting slots (20).



2300B11-

LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

LOWER LADDER (M1090A1) - Continued

WARNING

Do not press dump TAILGATE RELEASE switch while tailgate is not connected at the top. Tailgate will fall from dump body. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Perform steps (7) through (10) to install ladder on the RH side with the tailgate down.

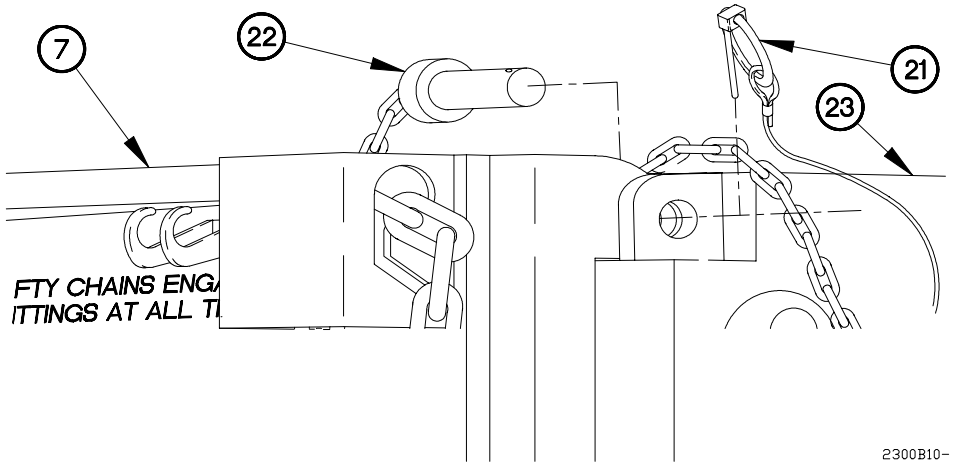
7. Remove two retaining pins (21) from pins (22).

8. Remove two pins (22) from dump body (23).

WARNING

Tailgate assembly weighs approximately 270 lb (123 kgs). Two assistants are required to lower or raise tailgate. Failure to comply may result in injury to personnel or damage to equipment.

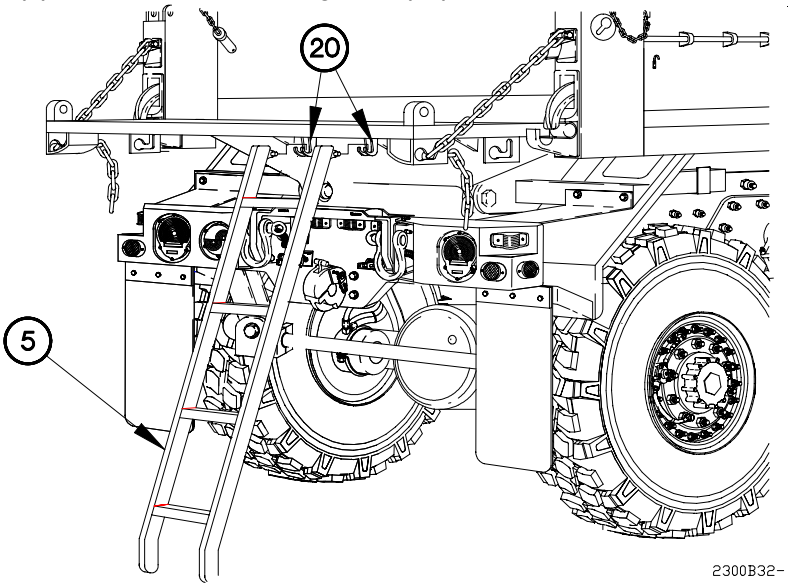
9. Lower tailgate (7). (WP 0029 00)



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

LOWER LADDER (M1090A1) - Continued

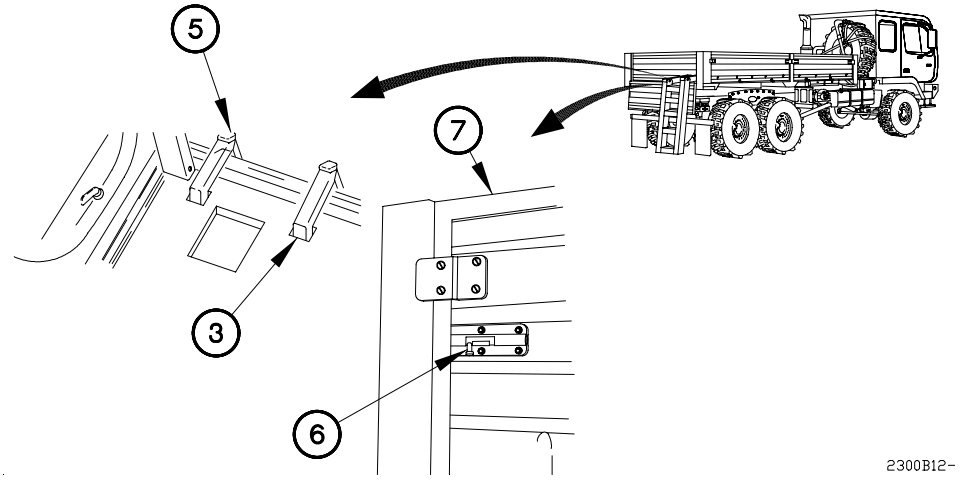
10. Mount ladder (5) in two ladder mounting slots (20).



STOW LADDER (M1083A1/M1085A1)

1. Remove ladder (5) from two ladder mounting holes (3).

2. Raise tailgate (7) and fasten two latches (6).

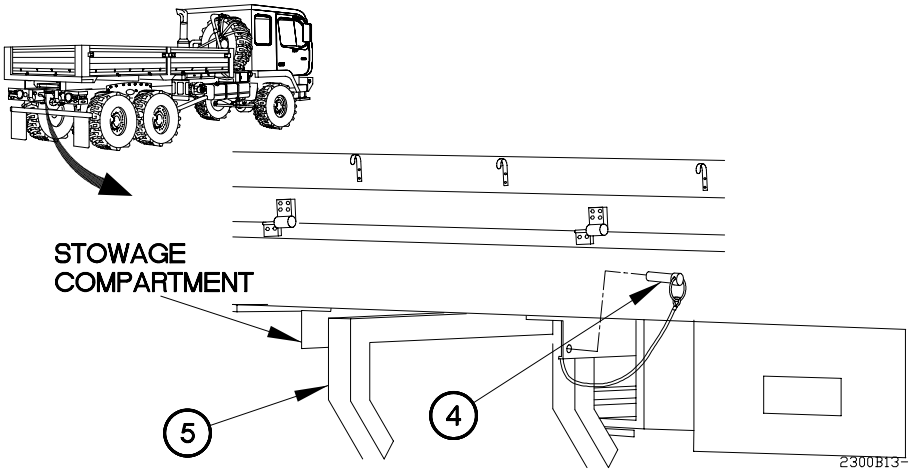


LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

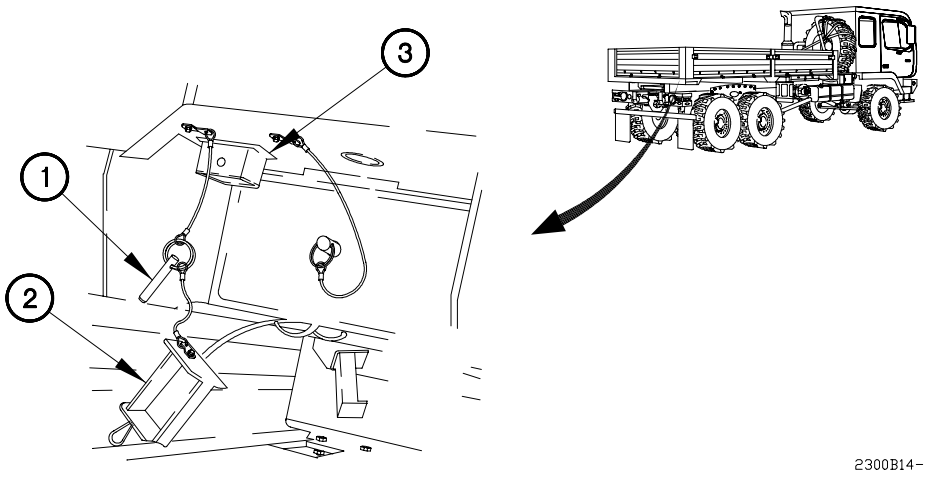
STOW LADDER (M1083A1/M1085A1) - Continued

3. Install ladder (5) in stowage compartment.

4. Install locking pin (4) in ladder (5).



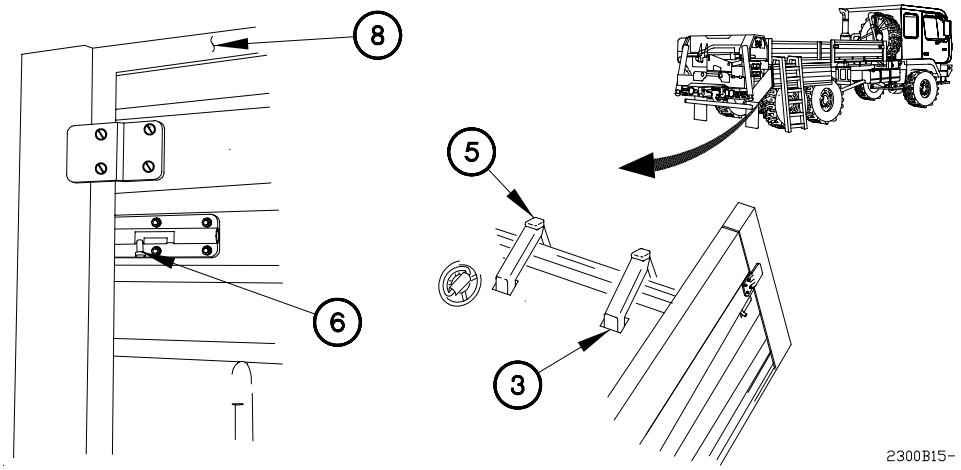
5. Install two ladder plugs (2) in ladder mounting holes (3) with two pins (1).



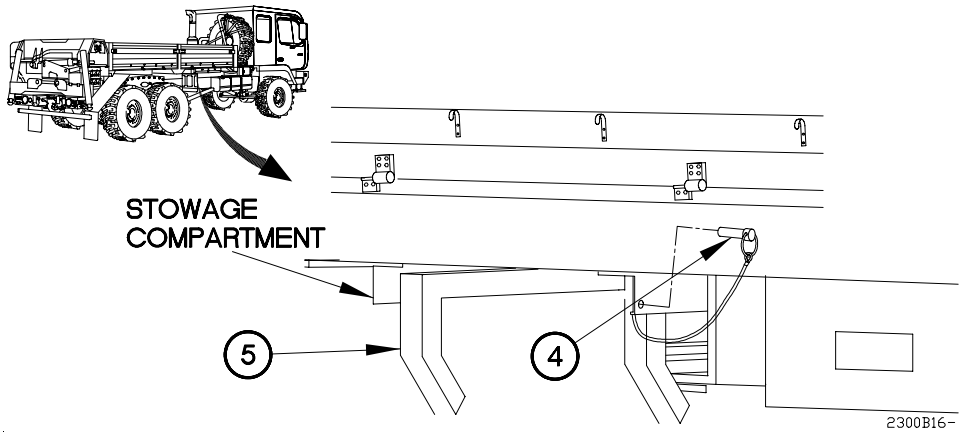
LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

STOW LADDER (M1084A1/M1086A1)

1. Remove ladder (5) from two ladder mounting holes (3).
2. Raise right side cargo bed side panel (8) and fasten two latches (6).



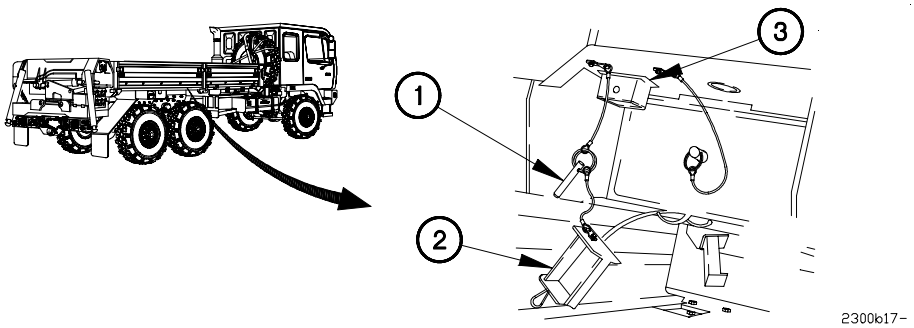
3. Install ladder (5) in stowage compartment.
4. Install locking pin (4) in ladder (5).



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

STOW LADDER (M1084A1/M1086A1) - Continued

5. Install two ladder plugs (2) in ladder mounting holes (3) with two pins (1).



STOW LADDER (M1090A1)

WARNING

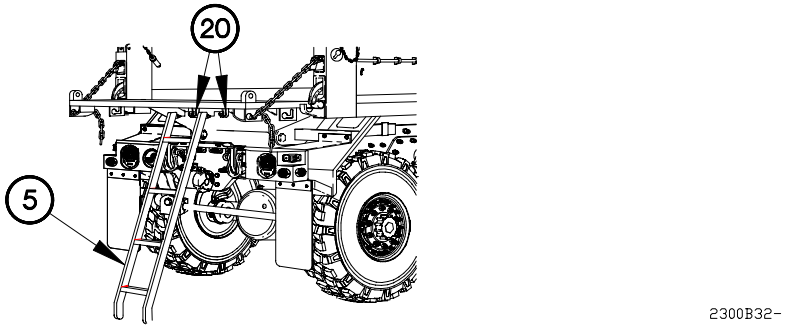
Do not press dump TAILGATE RELEASE switch while tailgate is not connected at the top. Tailgate will fall from dump body. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

The M1090A1 ladder may be used with tailgate up or down. With the tailgate up, the ladder may be installed on the LH or RH side, with the tailgate down the ladder may be installed only on the RH side.

Perform steps (1) through (4) to remove the ladder with the tailgate down.

1. Remove ladder (5) from mounting slots (20).



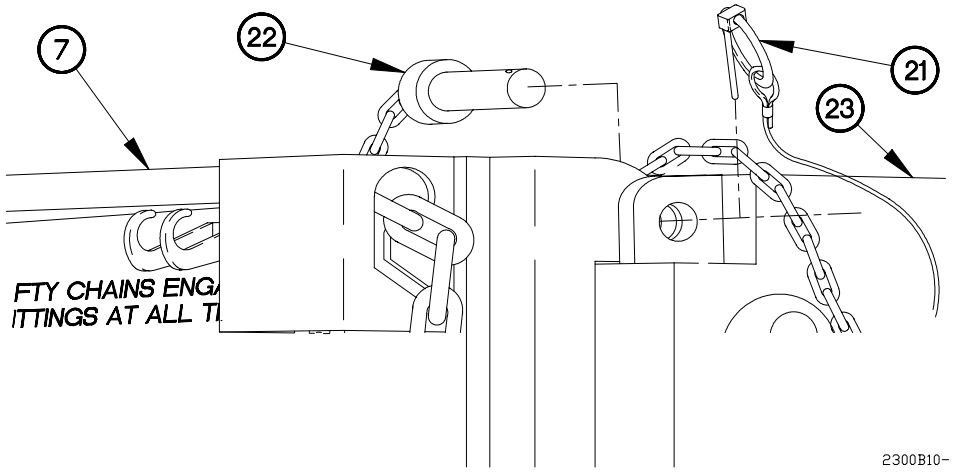
LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

STOW LADDER (M1090A1) - Continued

WARNING

Tailgate assembly weighs approximately 270 lb (123 kgs). Two assistants are required to lower or raise tailgate. Failure to comply may result in injury to personnel or damage to equipment.

2. Raise tailgate (7). (WP 0029 00)
3. Install two pins (22) in dump body (23).
4. Install two retaining pins (21) in pins (22).



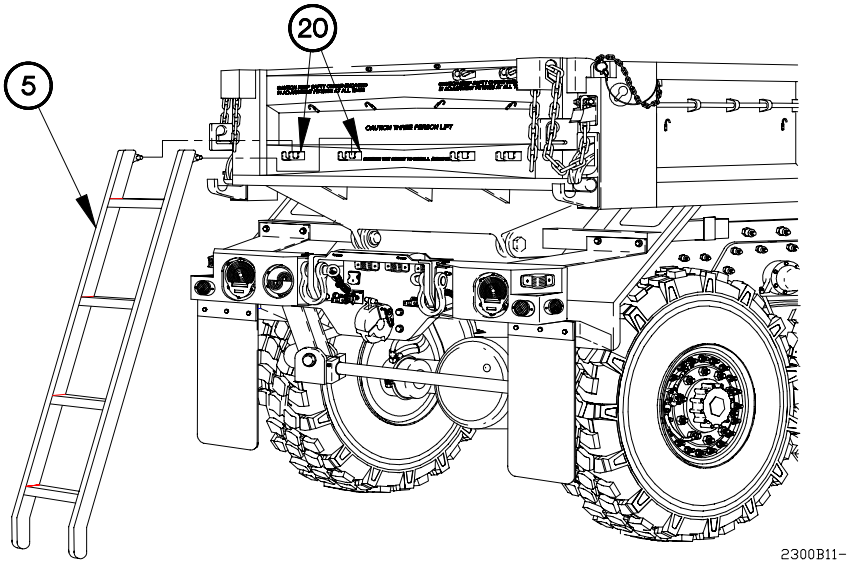
LADDERS, SIDE PANELS, AND STAKES OPERATION - Continued 0023 00

STOW LADDER (M1090A1) - Continued

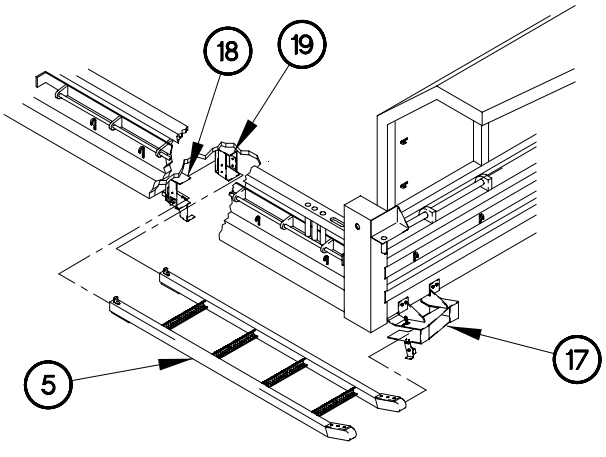
NOTE

Perform step (5) to install the ladder with the tailgate up.

5. Mount ladder (5) in two ladder mounting slots (20).



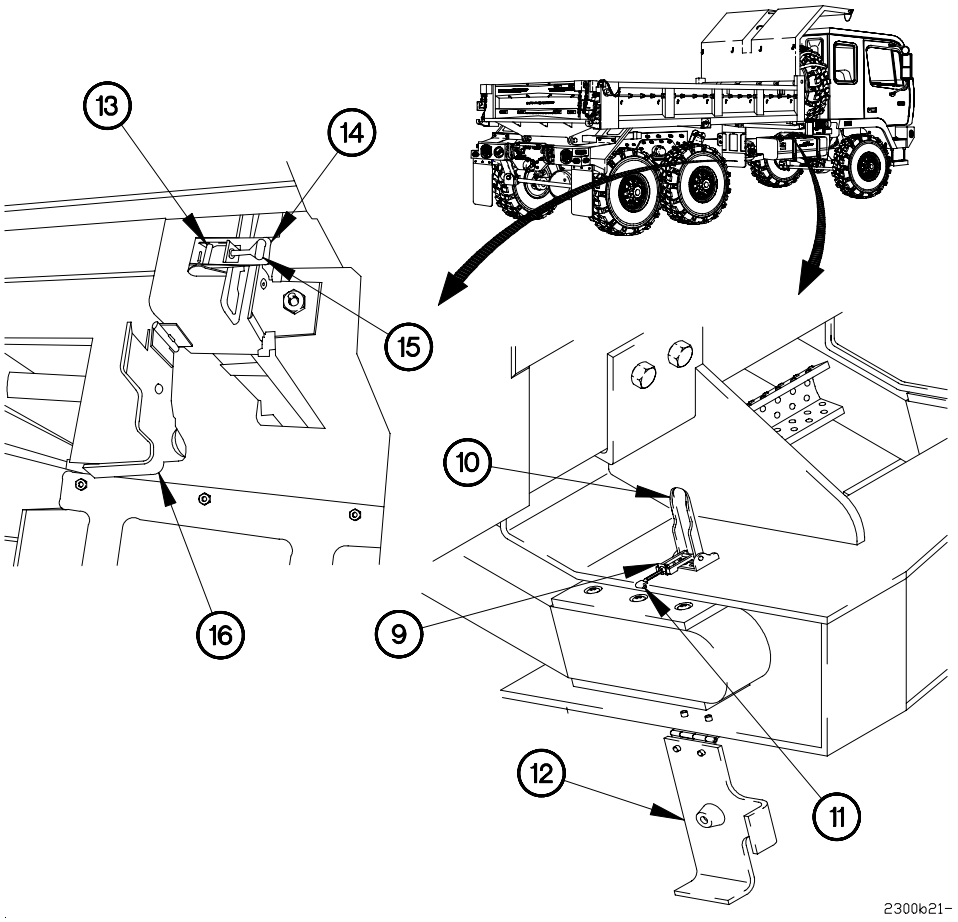
6. Position ladder (5) in rear ladder brackets (18 and 19) and front ladder bracket (17).



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

STOW LADDER (M1090A1) - Continued

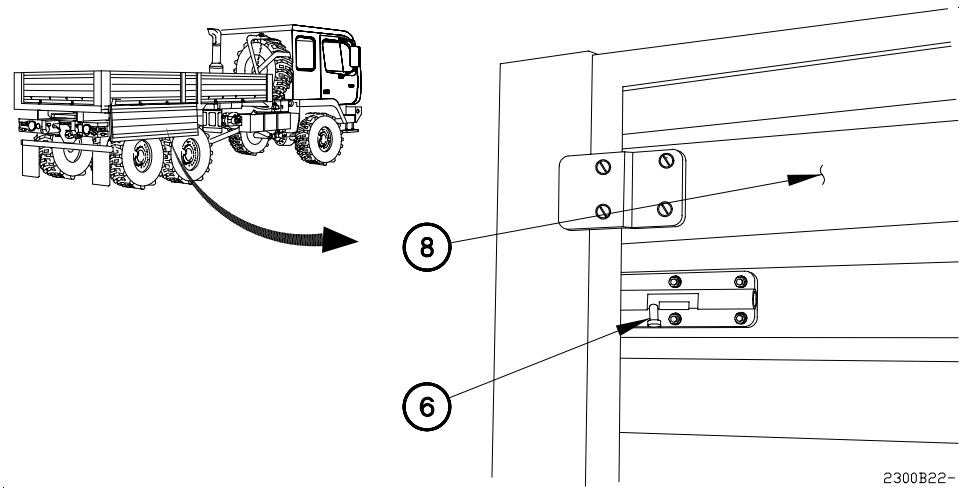
7. Fasten latch hook (15) on rear ladder bracket door (16).
8. Push down on latch lever (14) until spring catch (13) is engaged.
9. Fasten latch hook (11) on front ladder bracket door (12).
10. Push down on latch lever (10) until spring catch (9) is engaged.



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

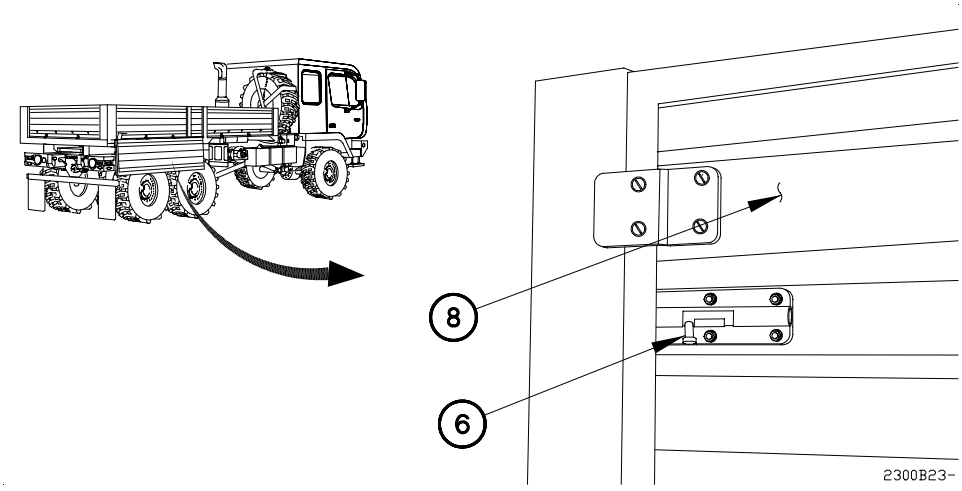
LOWER CARGO BED SIDE PANEL

1. Unlock two latches (6) and lower cargo bed side panel (8).
2. Repeat step 1 for remaining cargo bed side panels (8) as required.



RAISE CARGO BED SIDE PANEL

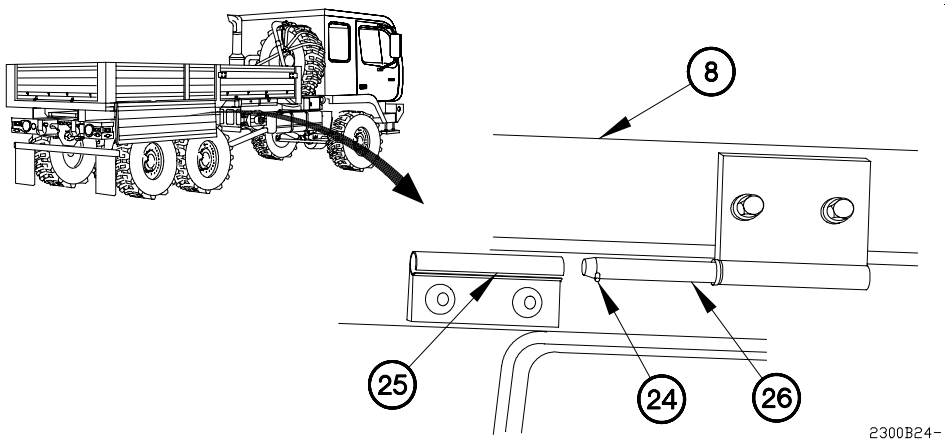
1. Raise cargo bed side panel (6) and latch two latches (8).
2. Repeat step 1 for remaining cargo bed side panels (6) as required.



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

REMOVE CARGO BED SIDE PANEL

1. Lower cargo bed side panel (8) (WP 0023 00).
2. Align pin (24) with slot in lower hinge half (25).
3. Slide hinge shaft (26) out of lower hinge half (25) and remove cargo bed side panel (8) from vehicle.
4. Repeat steps 1 through 3 for remaining cargo bed side panels (8) as required.



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

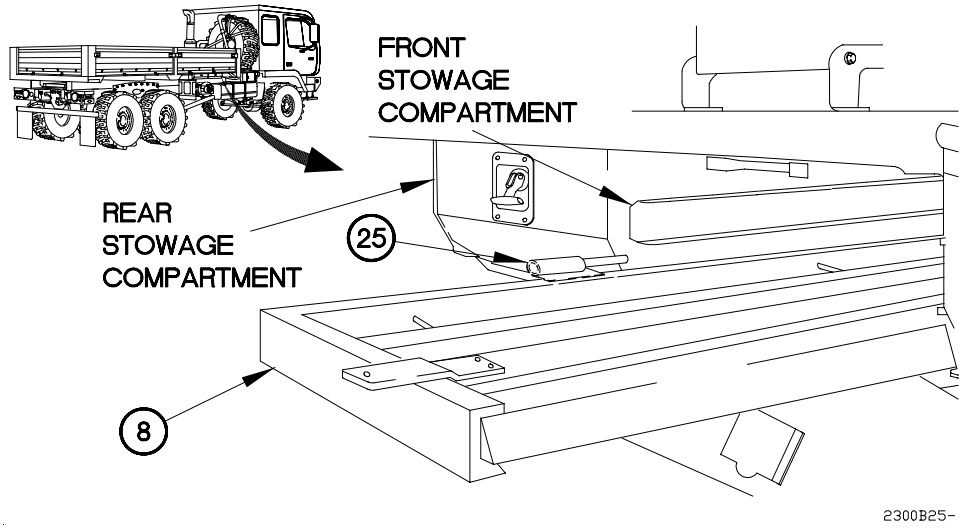
STOW CARGO BED SIDE PANEL (M1083A1/M1084A1)

Table 1. Cargo Bed Side Panel Stowage Information.

Cargo Bed Side Panel Stowed	Stowage Compartment Used	Position of Cargo Bed Side Panel	Shelf Used to Stow Cargo Bed Side Panel
1st side stowed	Front	Hinges on left side of side panel	Bottom shelf
2nd side stowed	Front	Hinges on right side of side panel	Middle shelf
3rd side stowed	Front	Hinges on right side of side panel	Top shelf
4th side stowed	Rear	Hinges on left side of side panel	Top shelf
Tailgate stowed	Rear	Hinges on left side of side panel	Middle shelf

1. Stow cargo bed side panel (8) in stowage compartment with hinge half (25) facing up (refer to Table 1).

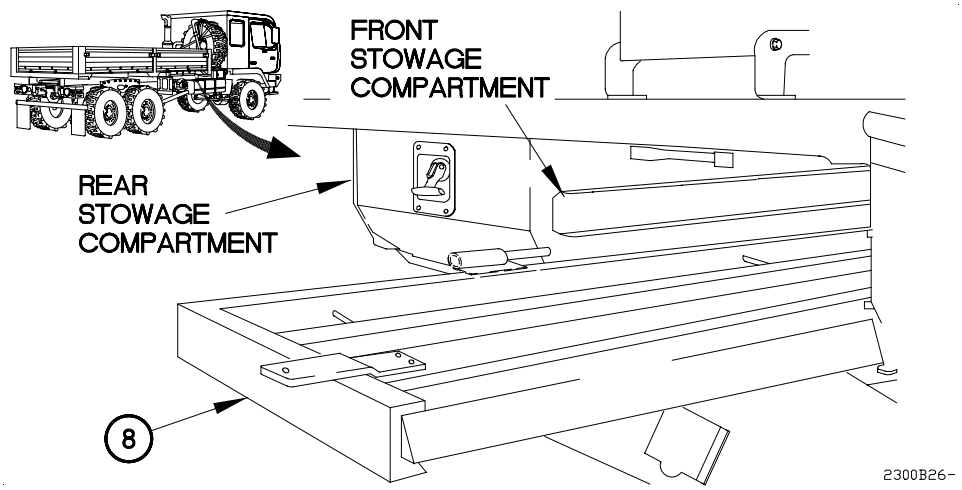
2. Repeat step 1 as required for remaining side panels.



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

INSTALL CARGO BED SIDE PANEL (M1083A1/M1084A1).

1. Remove cargo bed side panel (8) from stowage compartment.

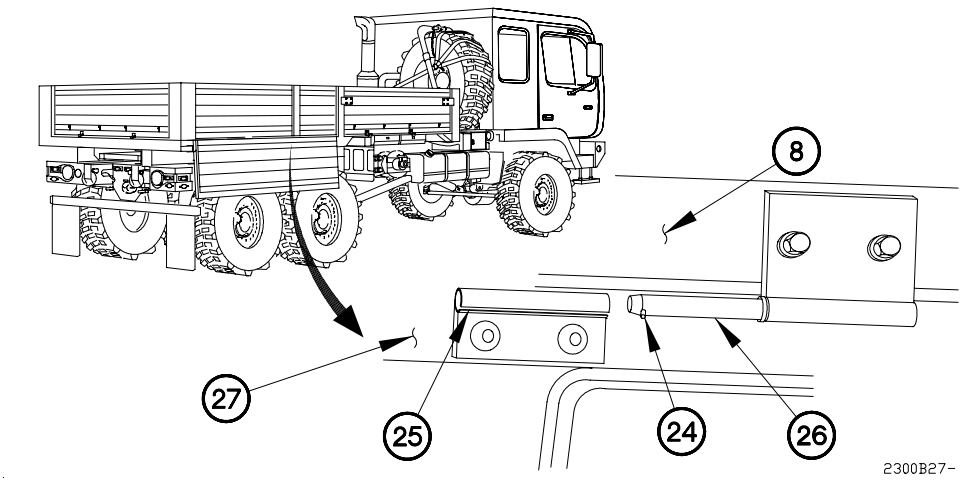


2. Align pin (24) on hinge shaft (26) with slot in lower hinge half (25).

3. Install cargo bed side panel (8) on cargo bed (27) by sliding hinge shaft (26) into lower hinge half (25).

4. Raise cargo bed side panel (8) (WP 0023 00).

5. Repeat steps 1 through 4 for remaining cargo bed side panels (8) as required.



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

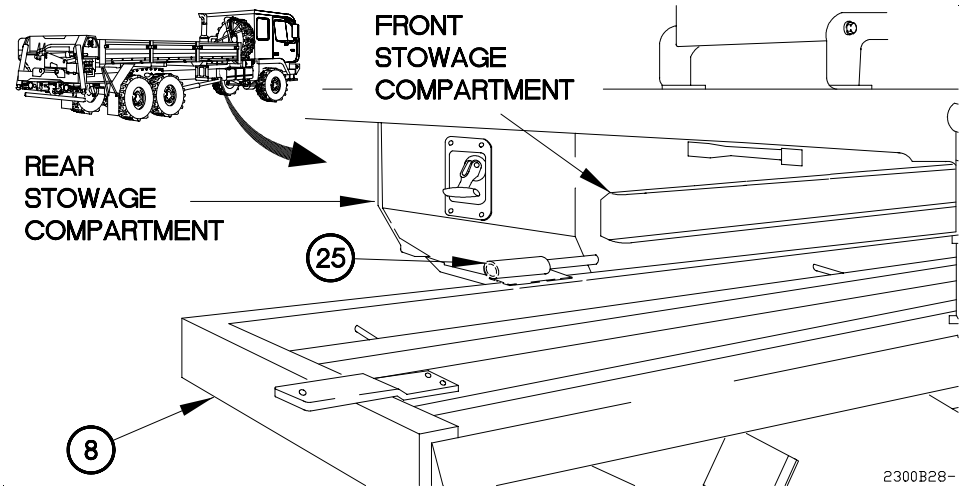
STOW CARGO BED SIDE PANEL (M1085A1/M1086A1)

Table 2. Cargo Bed Side Panel Stowage Information.

Cargo Bed Side Panel Stowed	Stowage Compartment Used	Position of Cargo Bed Side Panel	Shelf Used to Stow Cargo Bed Side Panel
1st side stowed	Front	Hinges on left side of side panel	Bottom shelf
2nd side stowed	Front	Hinges on right side of side panel	Middle shelf
3rd side stowed	Front	Hinges on right side of side panel	Top shelf
4th side stowed	Middle	Hinges on left side of side panel	Top shelf
Tailgate stowed	Middle	Hinges on left side of side panel	Middle shelf
5th side stowed	Rear	Hinges on left side of side panel	Top shelf
6th side stowed	Rear	Hinges on right side of side panel	Bottom shelf

1. Stow cargo bed side panel (8) in stowage compartment with hinge half (25) facing up (refer to Table 2).

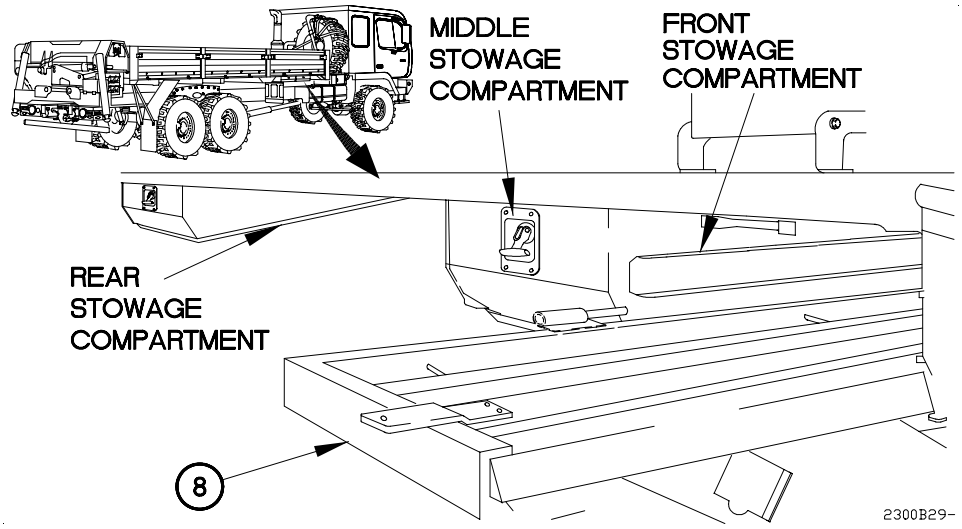
2. Repeat step 1 as required for remaining side panels (8) as required.



LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

INSTALL CARGO BED SIDE PANEL (M1085A1/M1086A1)

1. Remove cargo bed side panel (8) from bed stowage compartment.

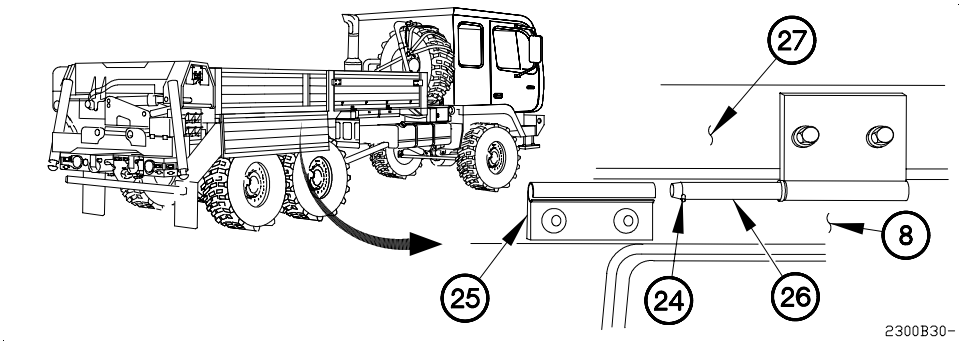


2. Align pin (24) on hinge shaft (26) with slot in lower hinge half (25).

3. Install cargo bed side panel (8) on cargo bed (27) by sliding hinge shaft (26) into lower hinge half (25).

4. Raise cargo bed side panel (8) (WP 0023 00).

5. Repeat steps 1 through 4 for remaining cargo bed side panel (8) as required.



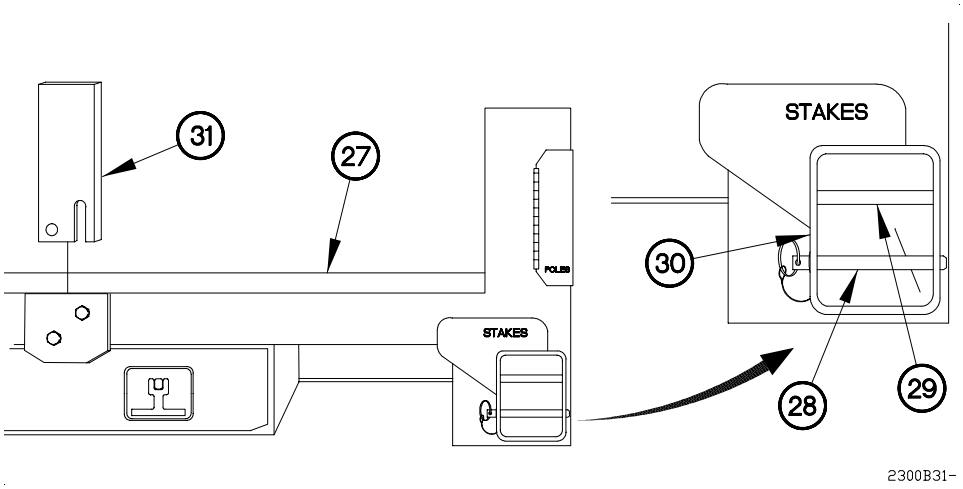
LADDERS, SIDE PANELS, AND STAKES OPERATION - 0023 00 Continued

CARGO BED STAKE REMOVAL

1. Remove detention pins (28 and 29) from stowage compartment (30).
2. Remove cargo bed stake (31) from cargo bed (27).
3. Place cargo bed stake (31) in stowage compartment (30).
4. Perform steps 1 and 2 on remaining cargo bed stakes.
5. Install detention pins (28 and 29) on stowage compartment.

CARGO BED STAKE INSTALLATION

1. Remove detention pins (28 and 29) from stowage compartment (30).
2. Remove cargo bed stake (31) from stowage compartment (30).
3. Install cargo bed stake (31) on cargo bed (27).
4. Perform steps 1 and 2 on remaining cargo bed stakes.
5. Install detention pins (28 and 29) on stowage compartment (30).



END OF OPERATING PROCEDURE

CARGO COVER KIT INSTALLATION/REMOVAL 0024 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel Required
Two

References
WP 0023 00
WP 0101 00

GENERAL

This work package provides the data and procedures for installing and removing the cargo cover kit. Items covered include Soft Top Kit (Steel Bows) Installation, Soft Top (Steel Bows) Installation, Soft Top (Steel Bows) Removal, and Soft Top Kit (Steel Bows) Removal.

M1083A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION

1. Lower ladder (WP 0023 00).

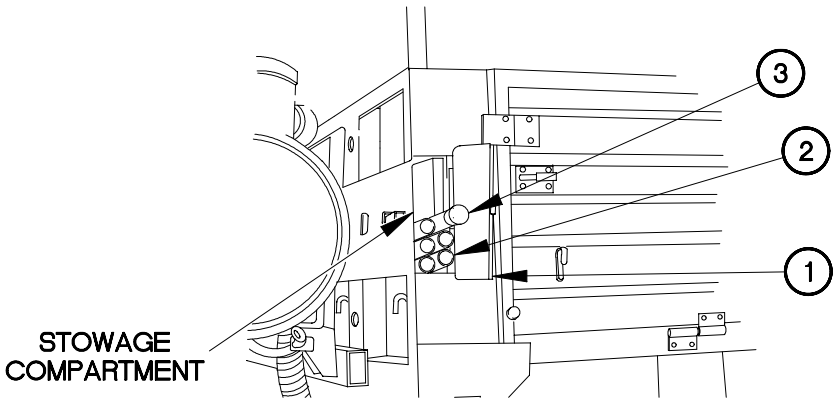
2. Open stowage compartment door (1).

NOTE

Soft top kit is equipped with a total of 10 tubes. Five front tubes are longer than rear tubes.

3. Stow five front tubes (2) and steel pole (3) in stowage compartment.

4. Close stowage compartment door (1).



2400b01-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

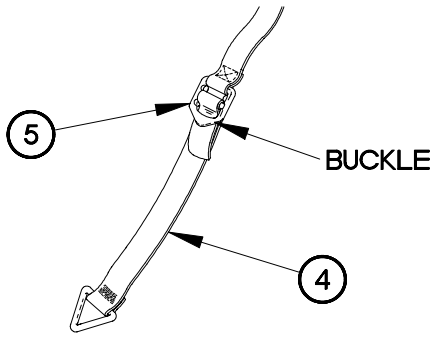
M1083A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

NOTE

Front, center, and rear bows have two bow straps and tiedown straps. All tiedown straps are installed on bow straps the same way. One tiedown strap shown.

5. Install tiedown strap (4) through buckle of bow strap (5).

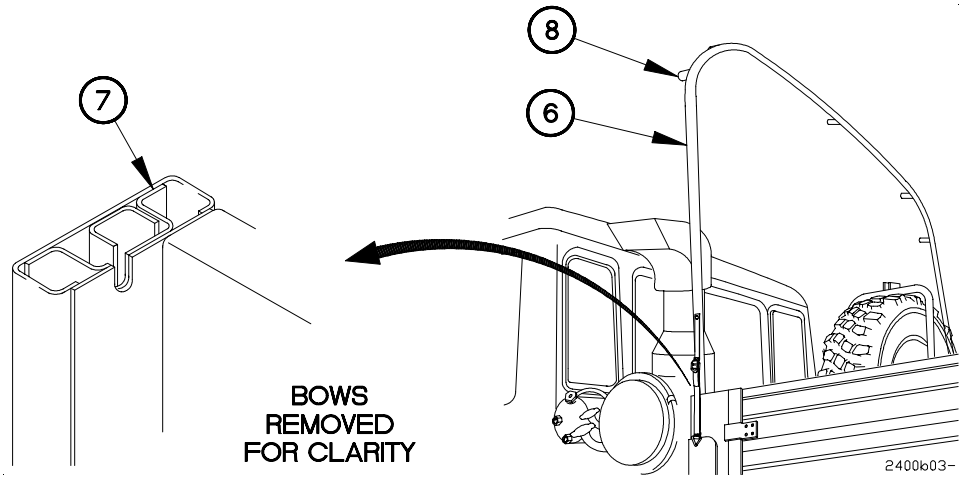
6. Perform step 5 on remaining tiedown straps.



NOTE

Steps 7 through 9 require the aid of an assistant.

7. Position front bow (6) in front cargo bed pockets (7) with front bow brackets (8) toward front of vehicle.

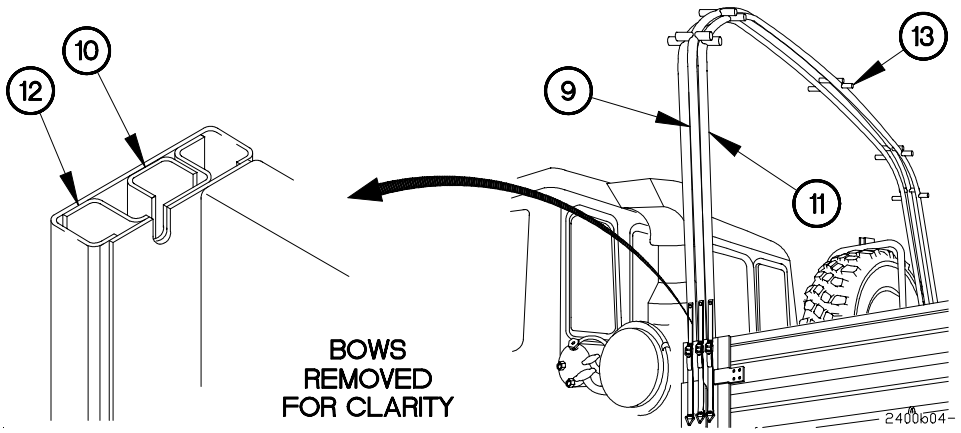


CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

8. Position center bow (9) in center cargo bed pockets (10).

9. Position rear bow (11) in rear cargo bed pockets (12) with rear bow brackets (13) toward rear of vehicle.



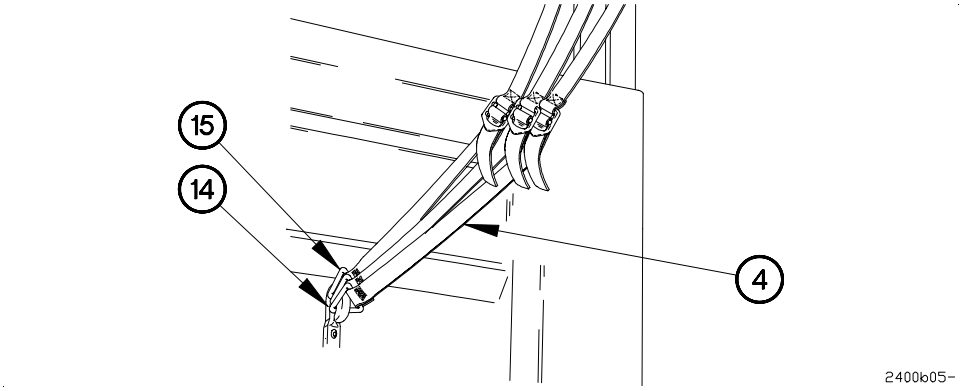
NOTE

Left and right sides of front, center, and rear bows are secured the same way. Right side shown.

10. Position three tiedown straps (4) on J-hook (14) with three tri-rings (15).

11. Tighten three tiedown straps (4).

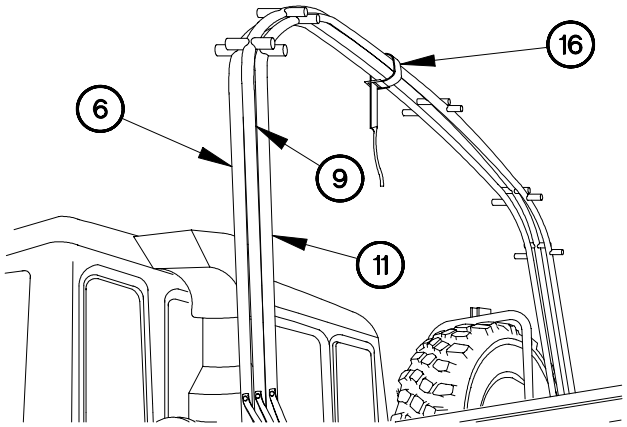
12. Perform steps 10 and 11 on left side tiedown straps.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

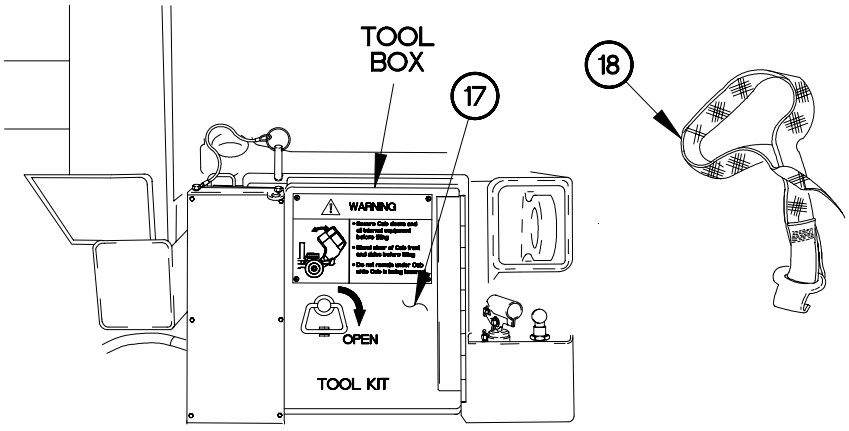
M1083A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

13. Install stowage strap (16) on front bow (6), center bow (9), and rear bow (11).



2400B06-

14. Open door (17) on tool box.
15. Stow three cargo cover tiedowns (18) in tool box.
16. Close door (17) on tool box.



2400B07-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

WARNING

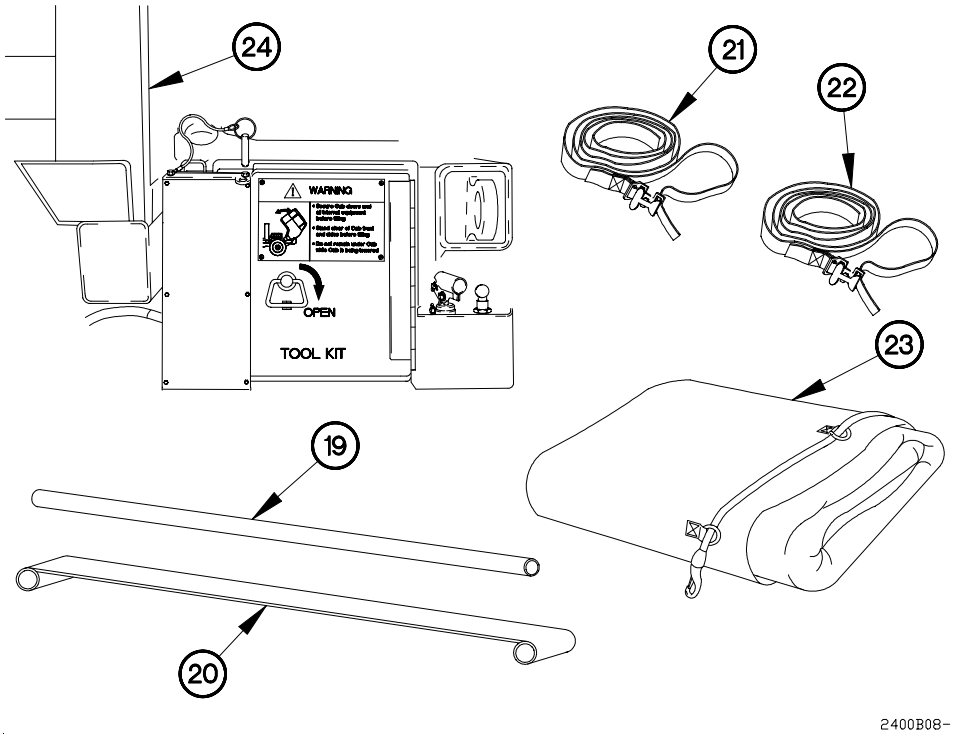
Cargo cover weighs approximately 60 lbs (27 kgs). Arctic cargo cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Step 17 requires the aid of an assistant.

17. Stow five rear tubes (19), four braces (20), left strap support (21), right strap support (22), and cargo cover (23) on cargo bed (24).

18. Stow ladder (WP 0023 00).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION

1. Lower ladder (WP 0023 00).

2. Lower spare tire (WP 0101 00).

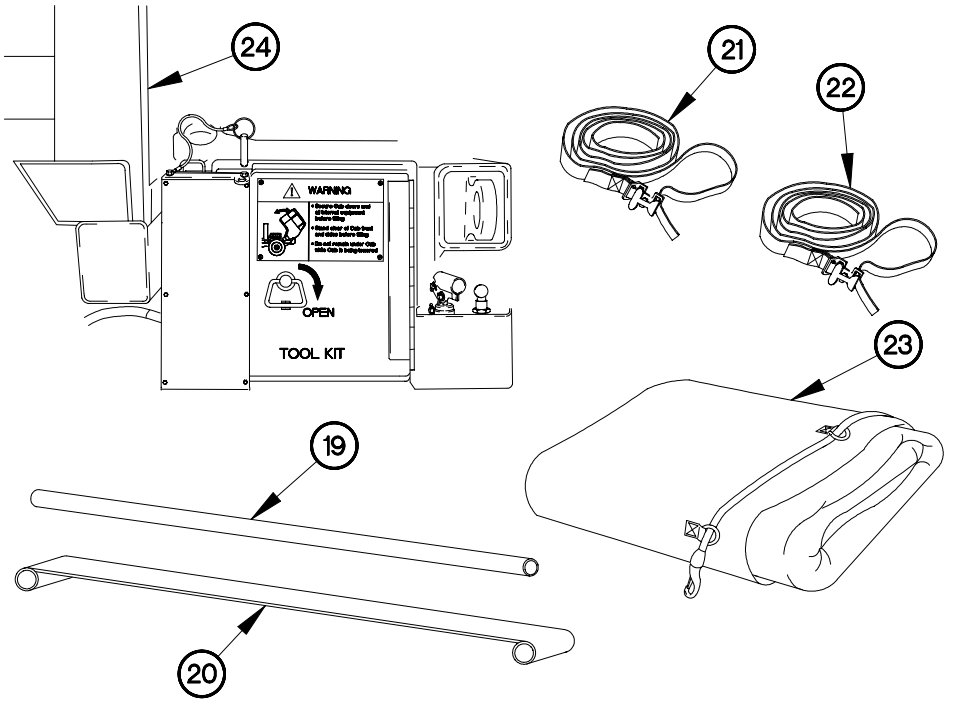
WARNING

Cargo cover weighs approximately 60 lbs (27 kgs). Arctic cargo cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Step 3 requires the aid of an assistant.

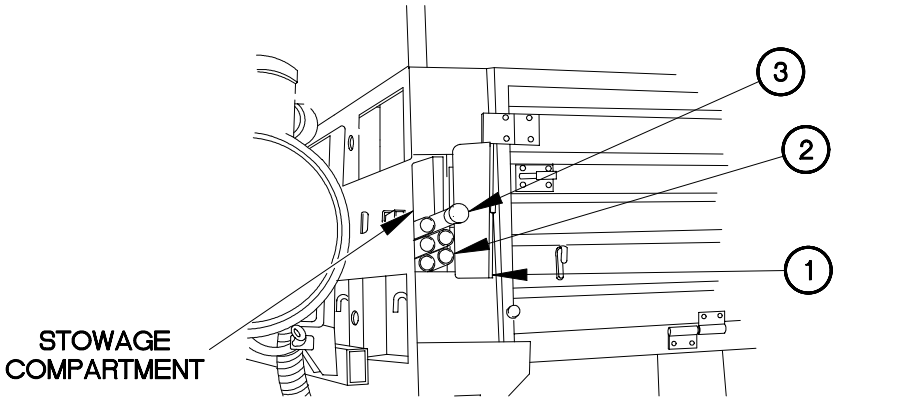
3. Remove five rear tubes (19), four braces (20), left strap support (24), right strap support (26), and cargo cover (22) from cargo bed (23).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

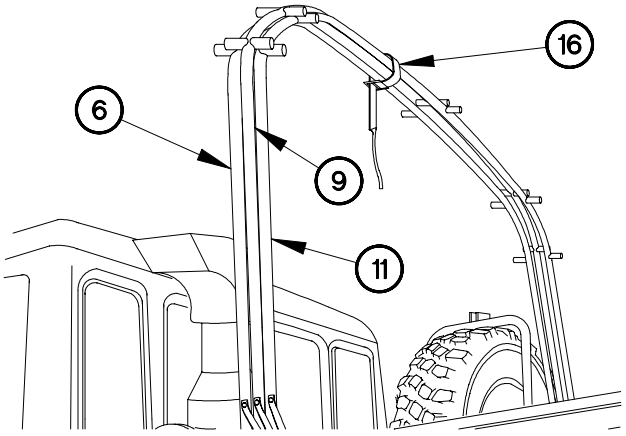
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

4. Open stowage compartment door (1).
5. Remove five front tubes (2) and steel pole (3) from stowage compartment.
6. Close stowage compartment door (1).



2400b10-

7. Remove stowage strap (16) from front bow (6), center bow (9), and rear bow (11).



2400b11-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

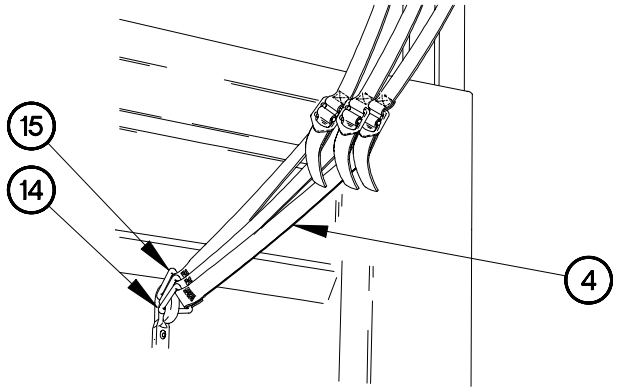
NOTE

Left and right sides of front, center, and rear bows are released the same way. Right side shown.

8. Loosen three tiedown straps (4).

9. Remove three tri-rings (15) on tiedown straps (4) from J-hook (14).

10. Perform steps 8 and 9 on left side.



2400b12-

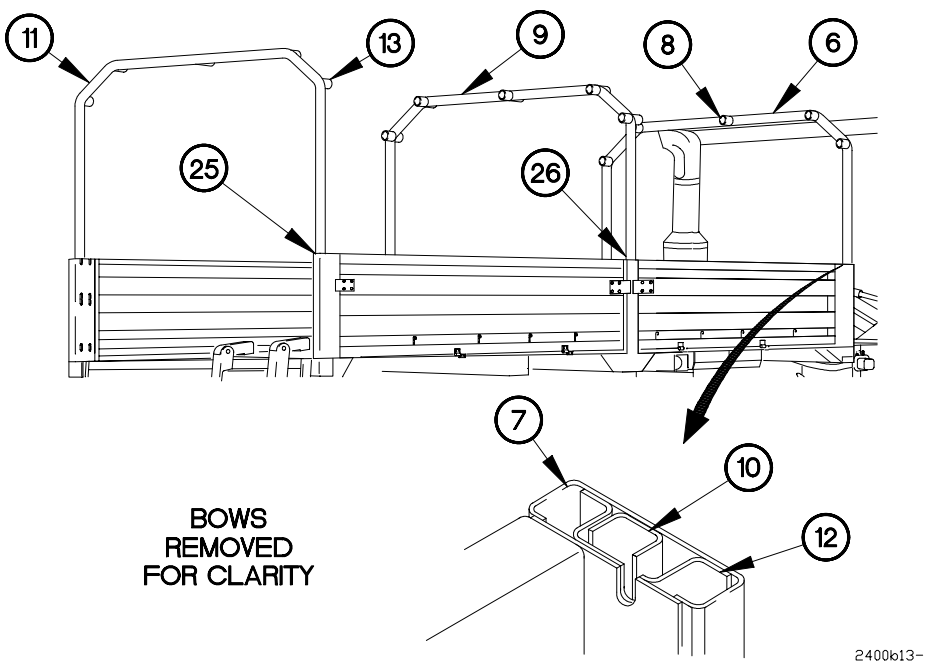
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Steps 11 through 16 require the aid of an assistant.

11. Remove rear bow (11) from rear cargo bed pockets (12).
12. Position rear bow (11) in rear pockets of rear cargo bed stakes (25) with rear bow brackets (13) towards front of vehicle.
13. Remove center bow (9) from middle cargo bed pockets (10).
14. Position center bow (9) in rear pockets of center cargo bed stakes (26).
15. Remove front bow (6) from front cargo bed pockets (7).
16. Position front bow (6) in front cargo bed pockets (7) with front bow brackets (8) toward rear of vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

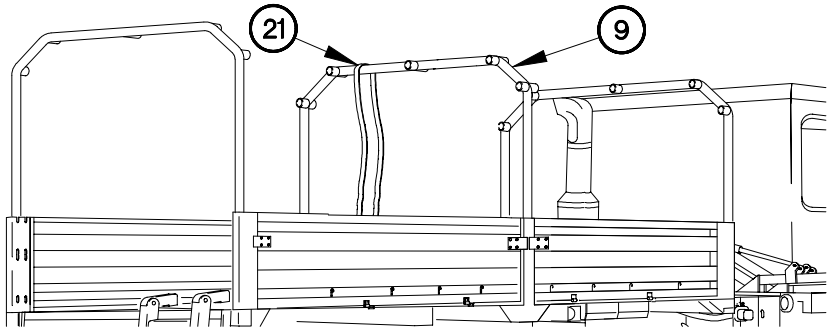
NOTE

Strap support is marked with FRONT and an arrow to indicate front bottom of strap support.

Strap supports are to be centered between center bow brackets and left and right inside of bow brackets.

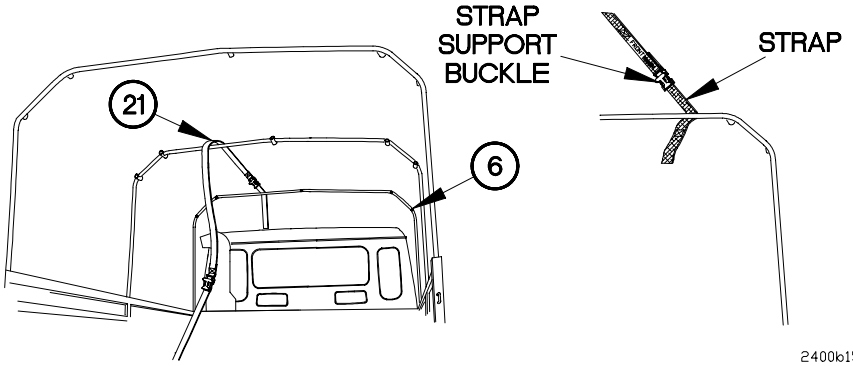
Left and right strap supports are installed the same way. Left strap support shown.

17. Position left strap support (21) over center bow (9).



2400b14-

18. Position left strap support (21) around front bow (6) and through strap support buckle.



2400b15-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

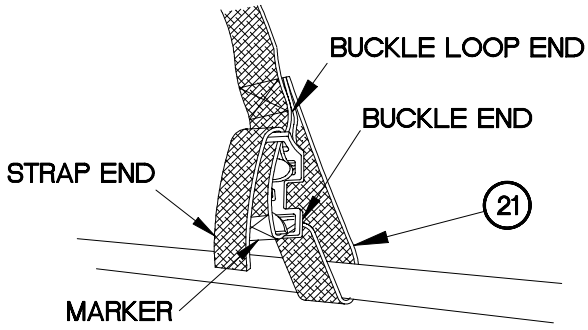
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

19. Tighten left strap support (21) until marker is through the buckle end.

CAUTION

Strap end must be installed in the buckle loop end after strap is tightened. Failure to comply may result in damage to equipment.

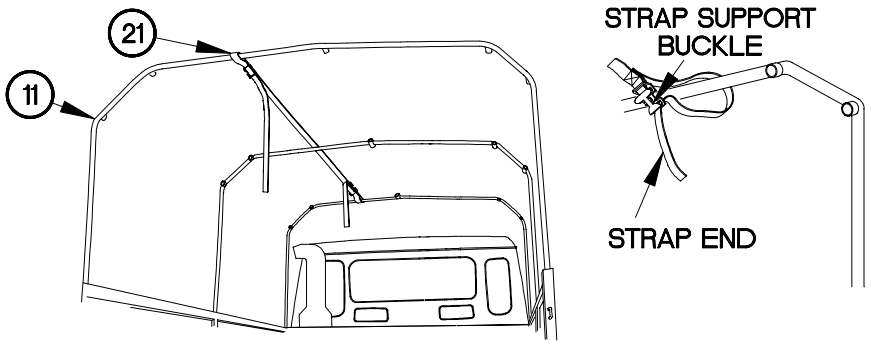
20. Install strap end through buckle loop end on left strap support (21).



2400b16-

21. Position left strap support (21) around rear bow (11) and through strap support buckle.

22. Perform steps 17 through 21 on right strap support.



2400b17-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Steps 23 through 25 require the aid of an assistant.

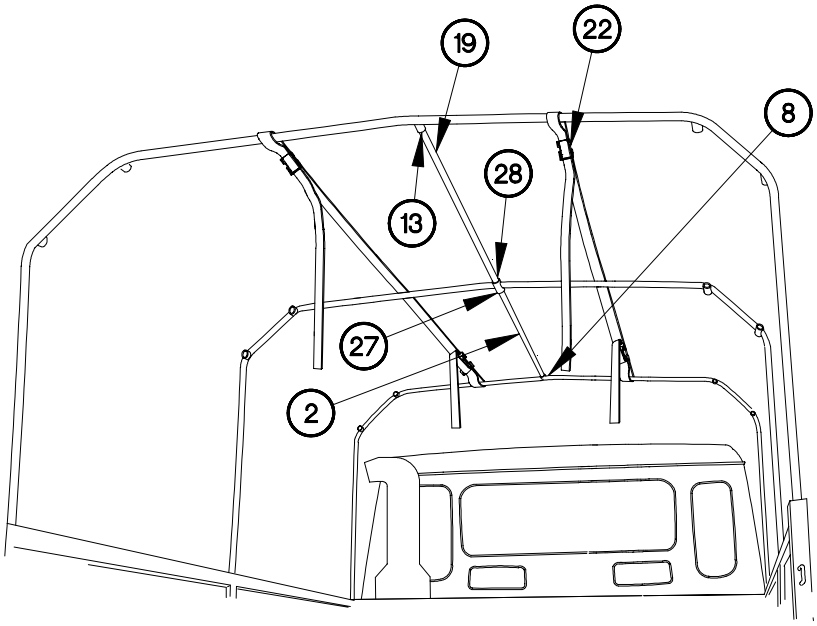
23. Install front tube (2) in front bow bracket (8) and center bow bracket (27).

24. Install rear tube (19) in center bow bracket (27) and rear bow bracket (13).

CAUTION

Strap supports must be aligned straight between front bow and rear bow. Failure to comply may result in damage to equipment.

25. Tighten right rear strap support (22).



2400b18-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

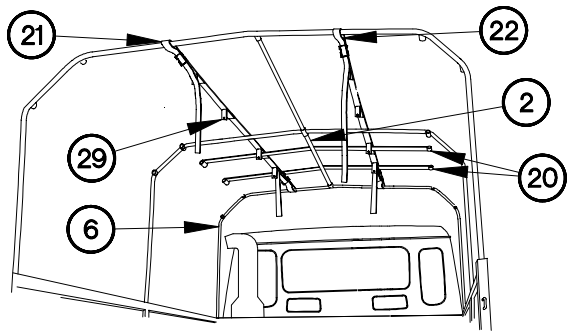
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Left and right strap supports have six flaps. From front to rear of vehicle, perform step 26 on first, second, third, and fifth flaps on each straps on each strap support.

26. Open flaps (29) on left strap support (21) and right strap support (22).

27. Position two braces (20) over front tube (2) and under left strap support (21) and right strap support (22) with approximately 2 feet (0.6 m) between front bow (6) and each brace.



2400b19-

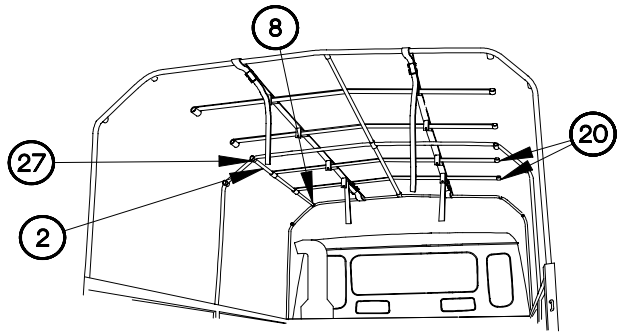
NOTE

Left and right tubes are installed the same way. Left side tubes shown.

Steps 29 through 36 require the aid of an assistant.

28. Position front tube (2) through two braces (20).

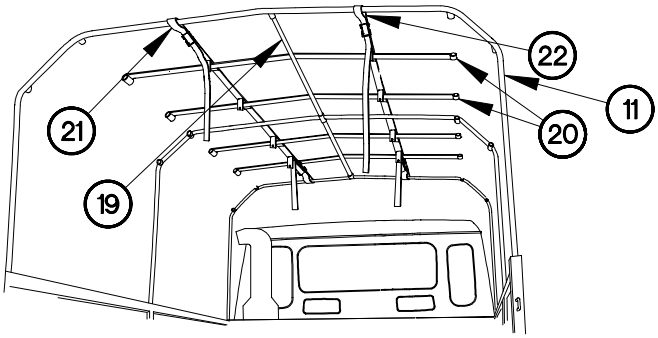
29. Install front tube (2) in front bow bracket (8) and center bow bracket (27).



2400b21-

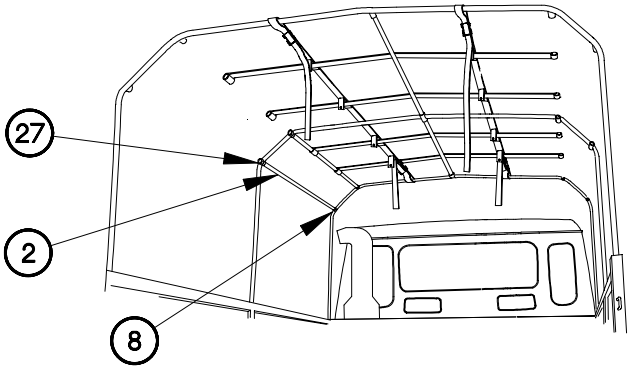
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

30. Position two braces (20) over rear tube (19) and under left strap support (21) and right strap support (22) with approximately 2 feet (0.6 m) between rear bow (11) and each brace.



2400b20-

31. Install front tube (2) in front bow bracket (8) and center bow bracket (27).

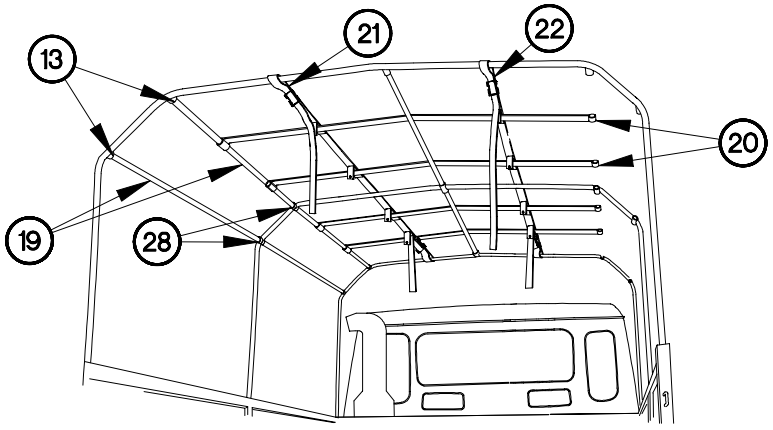


2400b22-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

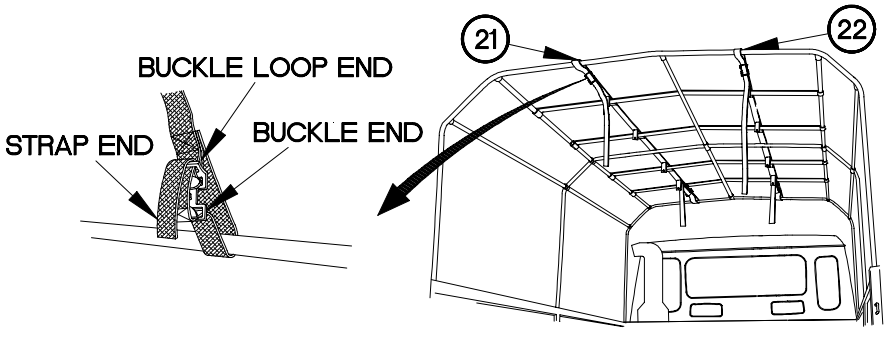
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

32. Install rear tube (19) in rear bow bracket (13) and center bow bracket (28).
33. Position rear tube (19) through two braces (20).
34. Install rear tube (19) in rear bow bracket (13) and center bow bracket (28).
35. Tighten left rear strap support (21).
36. Loosen right rear strap support (22).
37. Perform steps 29 through 34 on right side tubes.



2400b23-

38. Tighten right rear strap support (22).
39. Install two strap ends through buckle loop ends on left strap support (21) and right strap support (22).



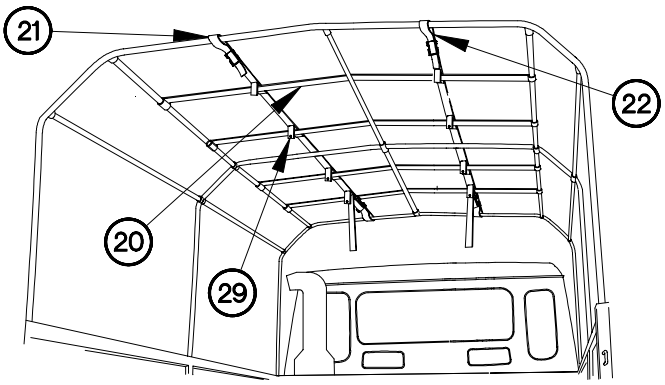
2400b24-

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Adjust braces as needed to snap and attach flaps over braces.

40. Close flaps (29) over braces (20) on left strap support (21) and right strap support (22).



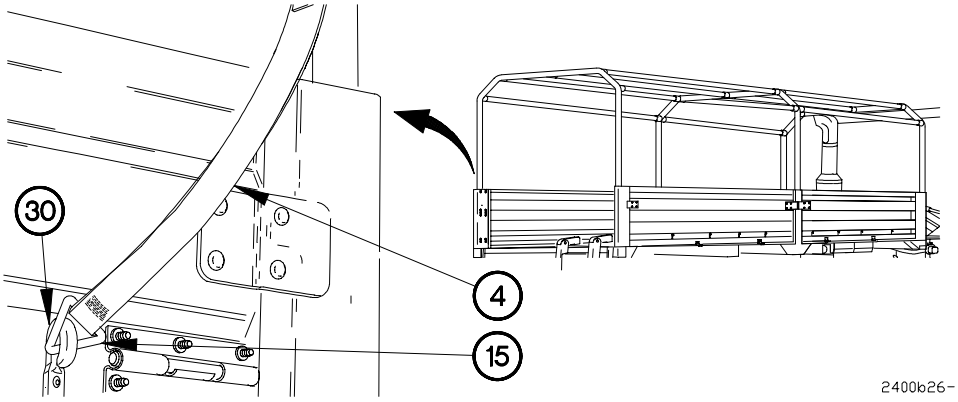
NOTE

Left and right sides of front, center, and rear bows are secured the same way. Rear bow left side shown.

41. Position tiedown strap (4) on J-hook (30) with tri-ring (15).

42. Tighten tiedown strap (4).

43. Perform steps 41 and 42 on remaining tiedown straps.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

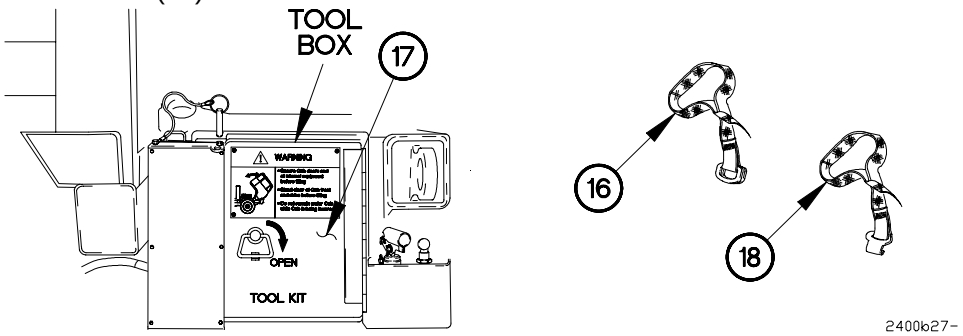
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

44. Open door (17) on tool box.

45. Remove three cargo cover tiedowns (18) from tool box.

46. Stow stowage strap (16) in tool box.

47. Close door (17) on tool box.



WARNING

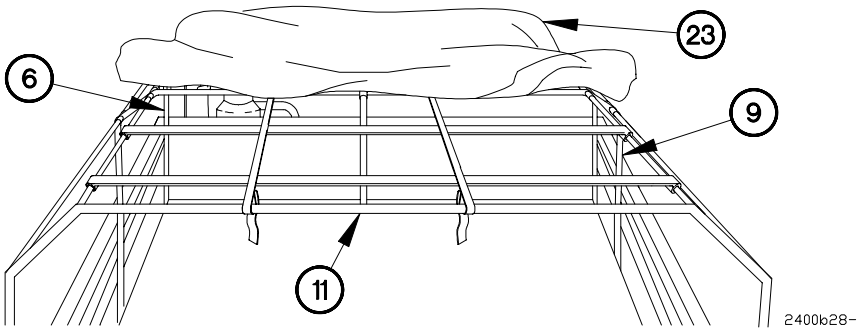
Cargo cover weighs approximately 60 lbs (27 kgs). Long Wheel Base (LWB) cargo Cover weighs approximately 80 lbs (36 kgs). Arctic cargo cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Steps 48 through 71 require the aid of an assistant.

Cargo cover is marked with FRONT on the front flap.

48. Position cargo cover (23) on front bow (6), center bow (9), and rear bow (11).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

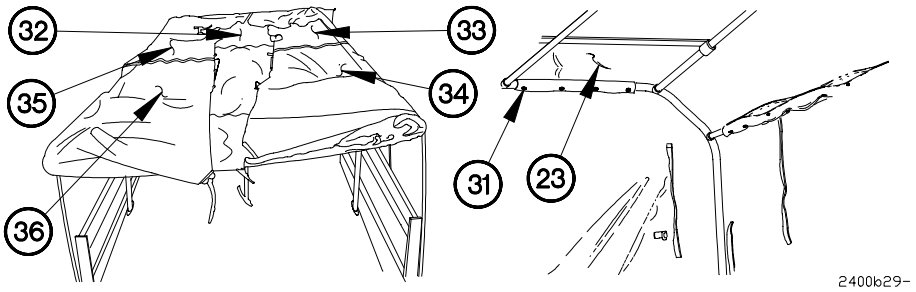
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Use snap extensions as required.

49. Fasten snaps (31) on front, rear, sides, and center of cargo cover (23).

50. Unfold front flap (32), right side front flap (33), right side rear flap (34), left side front flap (35), and left side rear flap (36).

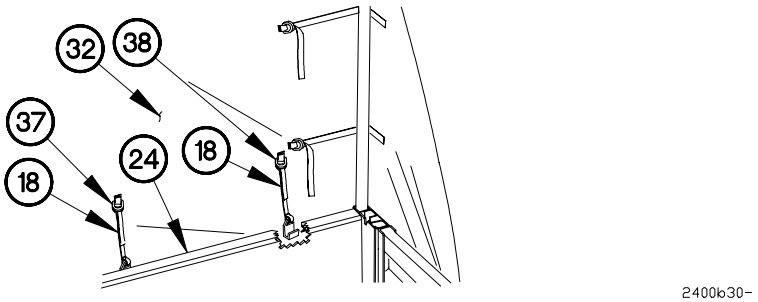


NOTE

Cargo covers are equipped with either D-rings or buckles and D-rings. Cargo cover with D-rings shown.

51. Install cargo cover tiedown (18) in center D-ring (36) on front flap (31) with hook end of strap in outside lip of cargo bed (24).

52. Install cargo cover tiedown (18) in right side D-ring (37) on front flap (31) with hook end of strap in outside lip of cargo bed (24).

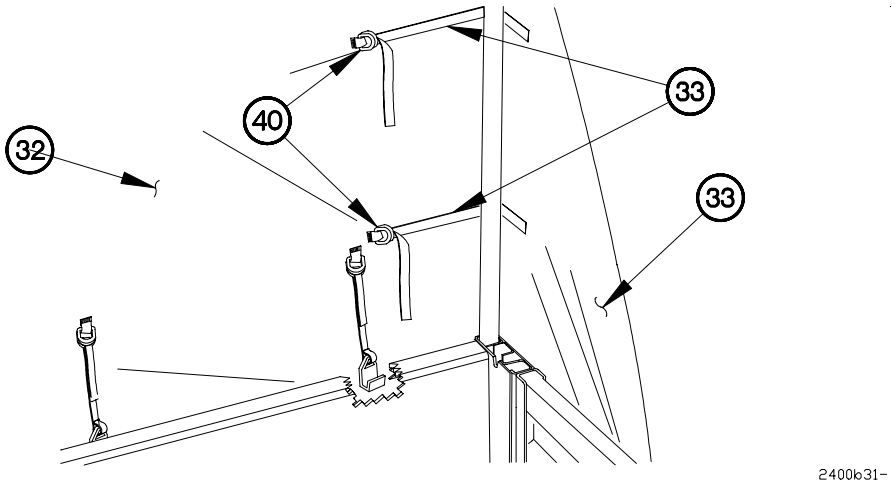


CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

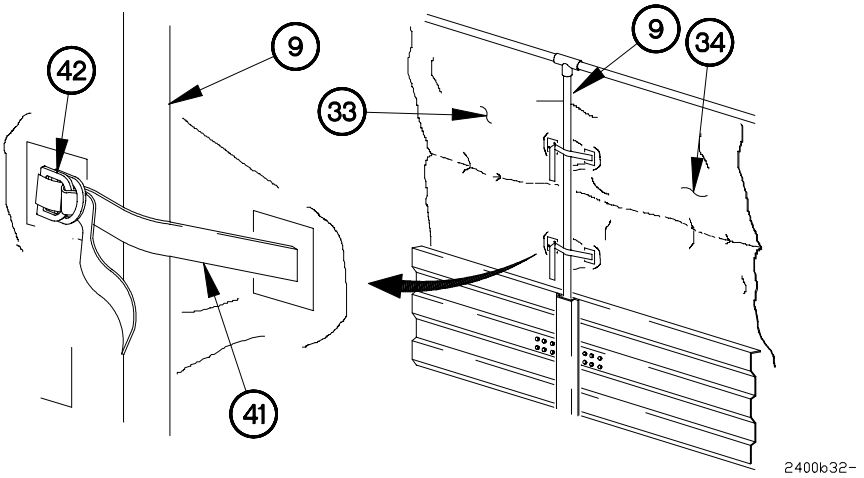
53. Install two straps (38) on right side front flap (32) in two D-rings (39) on front flap (31).

54. Perform steps 52 and 53 on left side front flap.



55. Install two straps (40) from right side rear flap (33) on inside of center bow (9) in two D-rings (41) on right side front flap (32).

56. Perform step 55 on left side of vehicle.



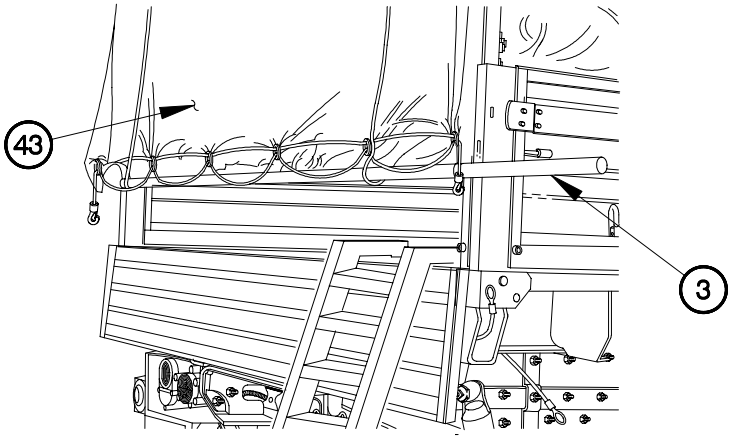
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

57. Unfold rear flap (42).

58. Position steel pole (3) in lower portion of rear flap (42).

59. Stow ladder (WP 0023 00).



NOTE

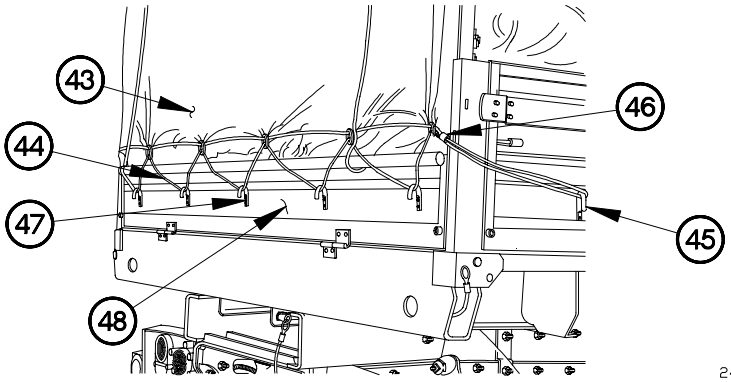
Cargo cover flaps are equipped with either D-rings or buckles and D-rings. Cargo cover flaps with D-rings shown.

D-rings are attach to lower part of flaps with shock cord placed through D-rings. Shock cord is attached to J-hooks on cargo bed to hold flap down.

60. Position shock cord (43) on right side of rear flap (42) on J-hook (44) and D-ring (45).

61. Perform step 60 on left side of vehicle.

62. Install shock cord (43) on five J-hooks (46) on tailgate (47).



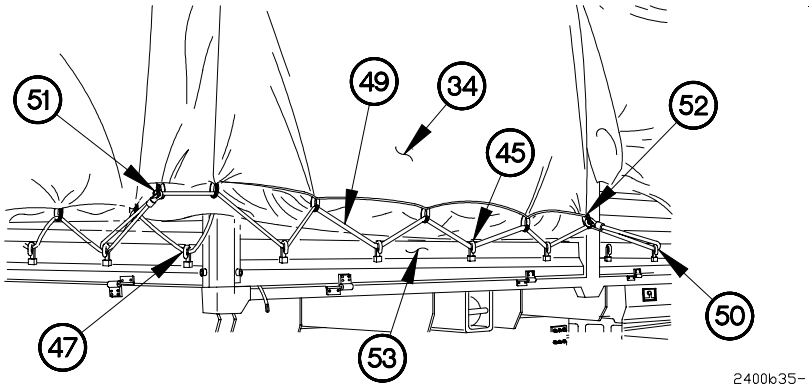
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

63. Position shock cord (48) on right side rear flap (33) on J-hooks (48 and 51) and D-rings (52 and 53).

64. Install shock cord (48) on four J-hooks (44) on right rear side panel (52).

65. Perform steps 63 and 64 on left side of vehicle.

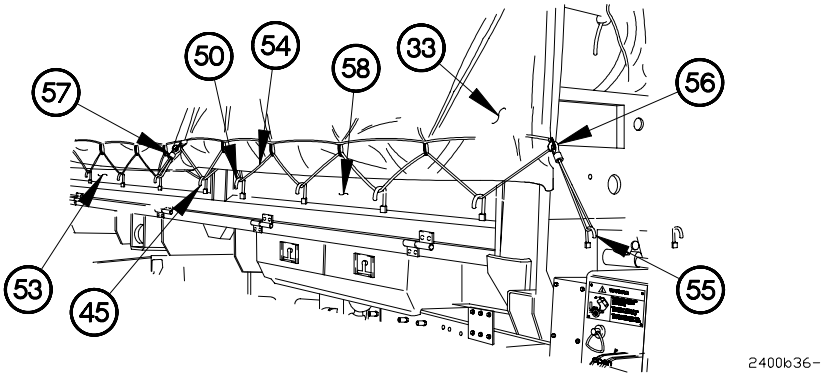


66. Position shock cord (53) on right side front flap (32) on J-hook (54) and D-ring (55).

67. Position shock cord (53) on right side front flap (32) on J-hook (44) and D-ring (56).

68. Install shock cord (53) on four J-hooks (49) on right front side panel (57) and J-hook (44) on right rear side panel (52).

69. Perform steps 66 through 68 on left side of vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

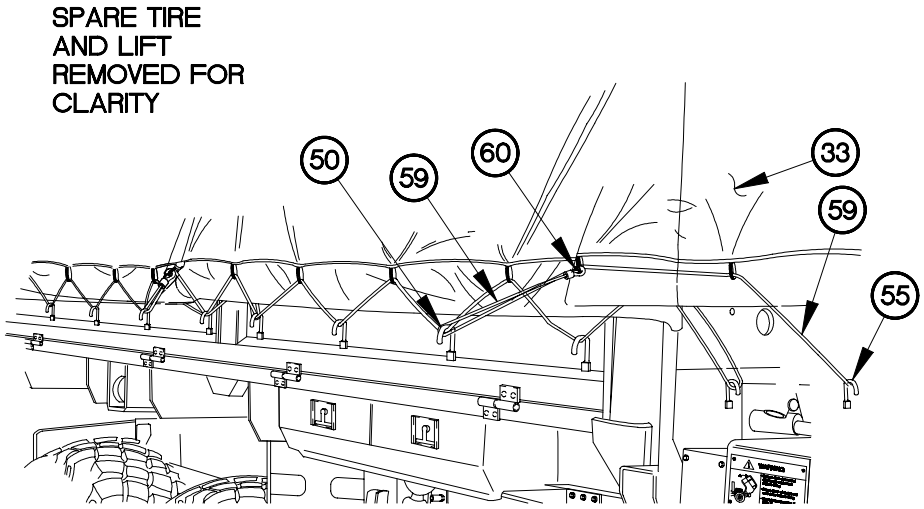
M1083A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

70. Install shock cord (58) on right side of front flap (31) on J-hook (54).

71 Install shock cord (58) on right side of front flap (31) on J-hook (49) and D-ring (59).

72. Perform steps 70 and 71 on left side of vehicle.

73. Raise spare tire (WP 0101 00).



2400b37-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL

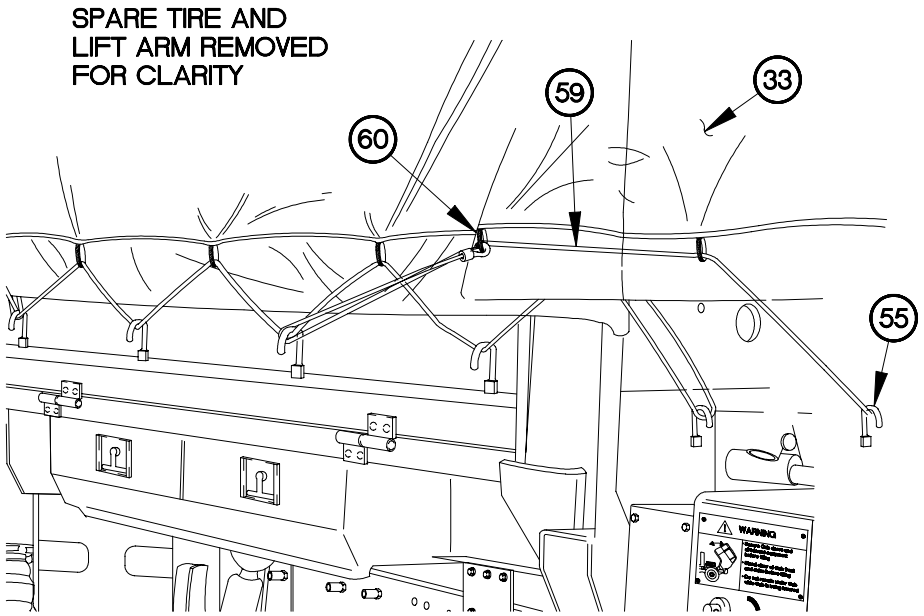
1. Lower spare tire (WP 0101 00).

NOTE

Cargo cover flaps are equipped with either D-rings or loops and D-rings. Cargo cover flaps with D-rings shown.

Steps 2 through 28 require the aid of an assistant.

2. Remove shock cord (59) from D-ring (60) on right side of front flap (33).
3. Remove shock cord (59) from J-hook (55).
4. Perform steps 2 and 3 on left side of front flap.



2400b38-

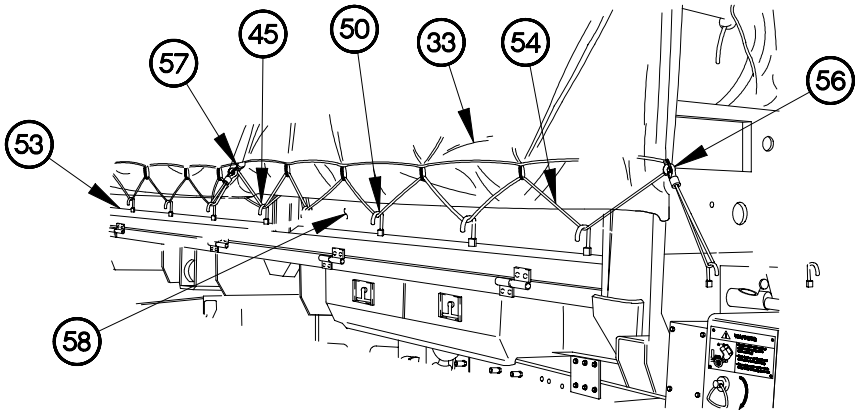
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

5. Remove shock cord (54) from four J-hooks (50) on right front side panel (58) and J-hook (45) on right rear side panel (53).

6. Remove shock cord (54) from D-rings (57 and 56) on right side front flap (33).

7 Perform steps 5 and 6 on left side front flap.

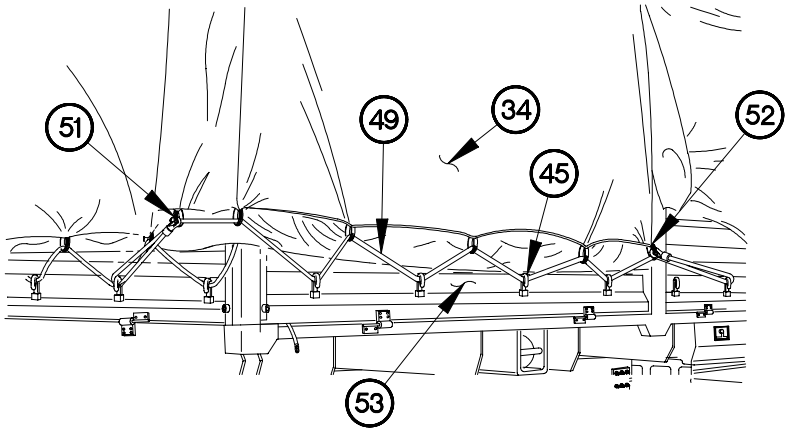


2400b39-

8. Remove shock cord (49) from four J-hooks (45) on right rear side panel (53).

9. Remove shock cord (49) from D-rings (52 and 51) on right side rear flap (34).

10. Perform steps 8 and 9 on left side rear flap.

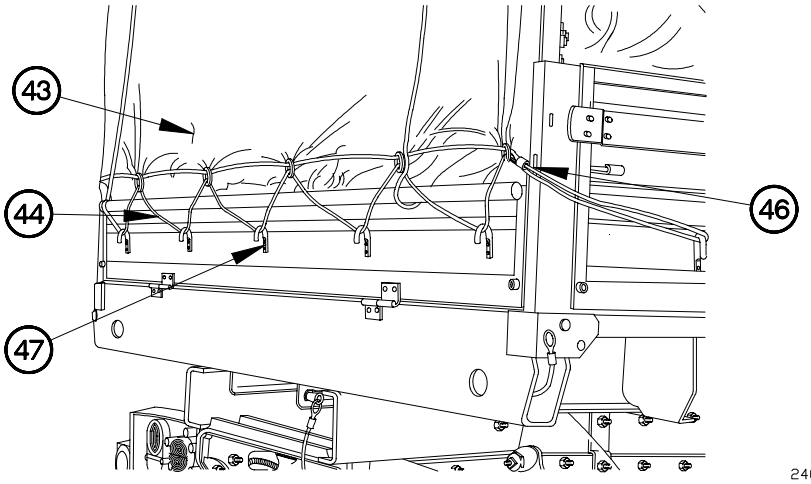


2400b40-

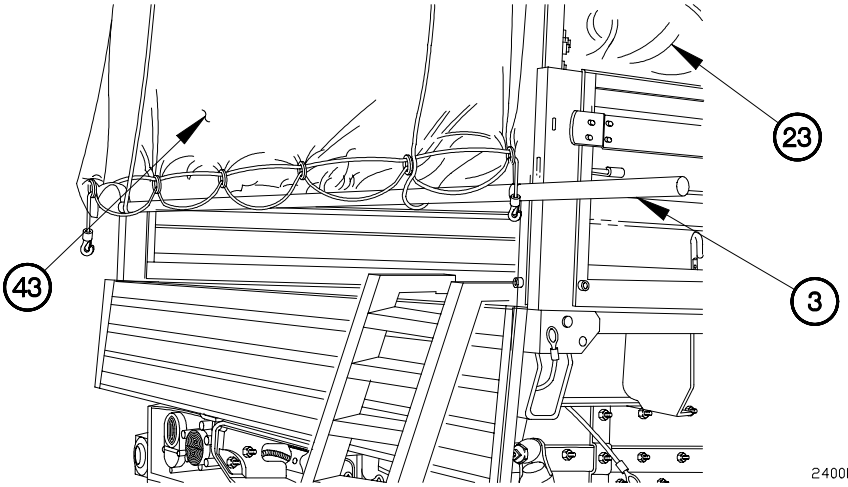
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

11. Remove shock cord (44) from five J-hooks (47).
12. Remove shock cord (44) from D-ring (46) on rear flap (43).
13. Perform step 12 on left side of vehicle.

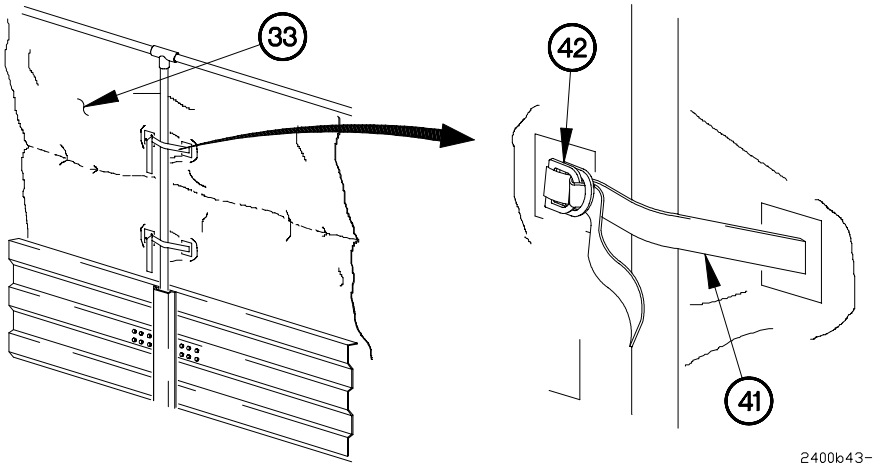


14. Lower ladder (WP 0023 00).
15. Remove steel pole (3) from rear flap (43).
16. Fold rear flap (43) on top of cargo cover (23).

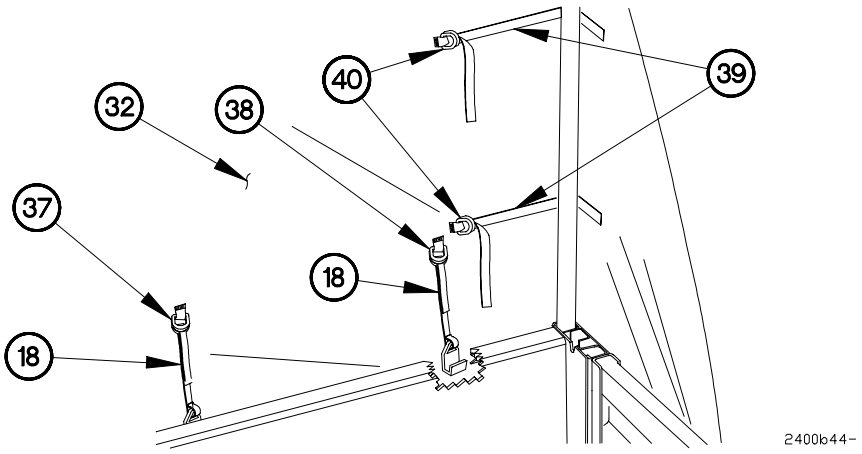


M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

17. Remove two straps (41) from D-rings (42) on center right side front side flap (33).
18. Perform step 17 on left side of vehicle.



19. Remove two straps (39) from D-rings (40) on right side of front flap (32).
20. Remove cargo cover tiedown (18) from right side D-ring (38) on front flap (32).
21. Perform steps 19 and 20 on left side of front flap.
22. Remove cargo cover tiedown (18) from center D-ring (37) on front flap (32).



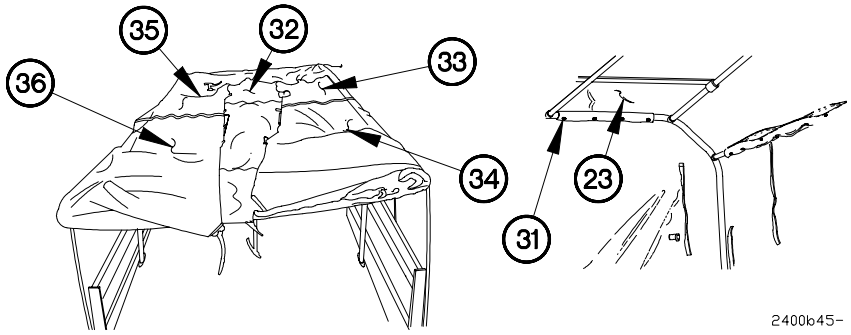
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

23. Fold front flap (32), right side front flap (33), right side rear flap (34), left side front flap (35), and left side rear flap (36) on top of cargo cover (23).

24. Unfasten snaps (31) on front, rear, sides, and center of cargo cover (23).

25. Fold cargo cover (23) to front of vehicle.



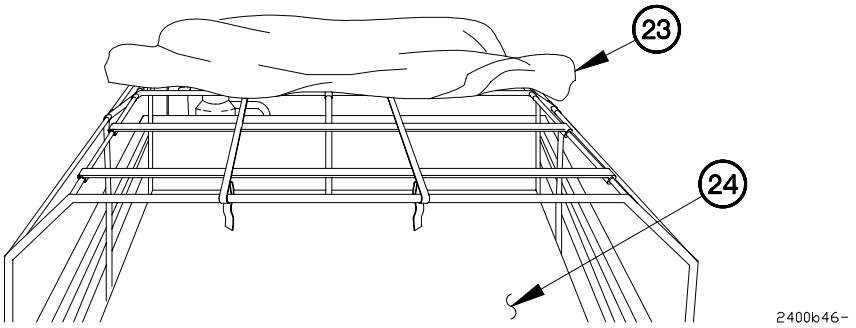
26. Fold right side of cargo cover (23) toward center of cargo bed (24).

27. Fold left side of cargo cover (23) toward center of cargo bed (24).

WARNING

Cargo cover weighs approximately 60 lbs (27 kgs). Long Wheel Base Cover weighs approximately 80 lbs (36 kgs). Arctic cargo cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

28. Remove cargo cover (23) from vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

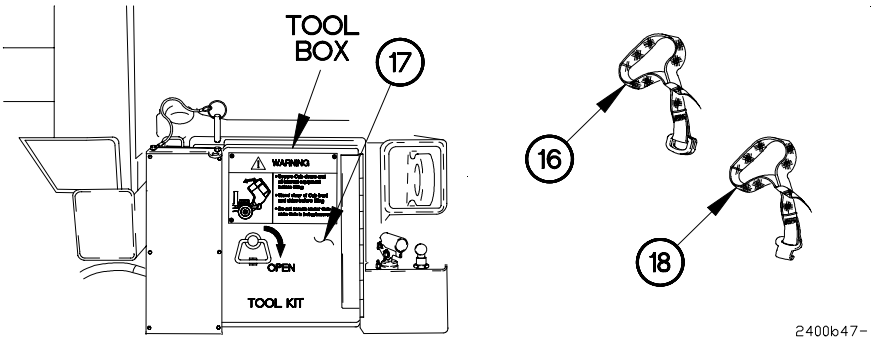
M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

29. Open door (17) on tool box.

30. Remove stowage strap (16) from tool box.

31. Stow three cargo cover tiedowns (18) in tool box.

32. Close door (17) on tool box.



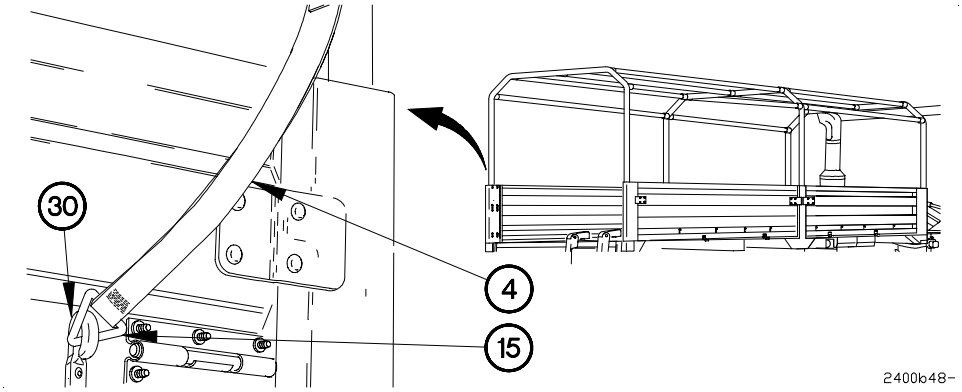
NOTE

Left and right sides of front, center, and rear bows are unsecured the same way. Rear bow left side shown.

33. Loosen tiedown strap (4).

34. Remove tri-ring (15) on tiedown strap (4) from J-hook (30).

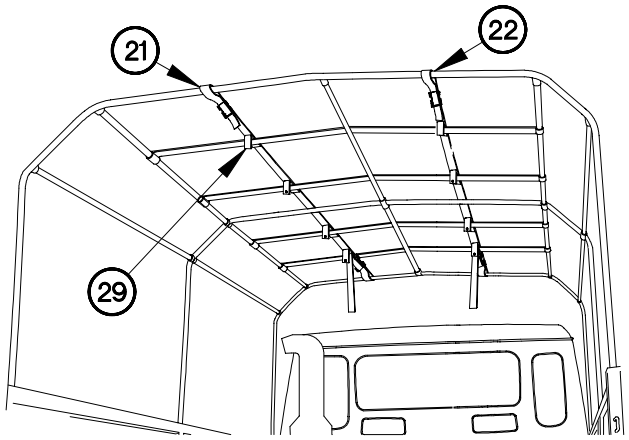
35. Perform steps 33 and 34 on remaining tiedown straps.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

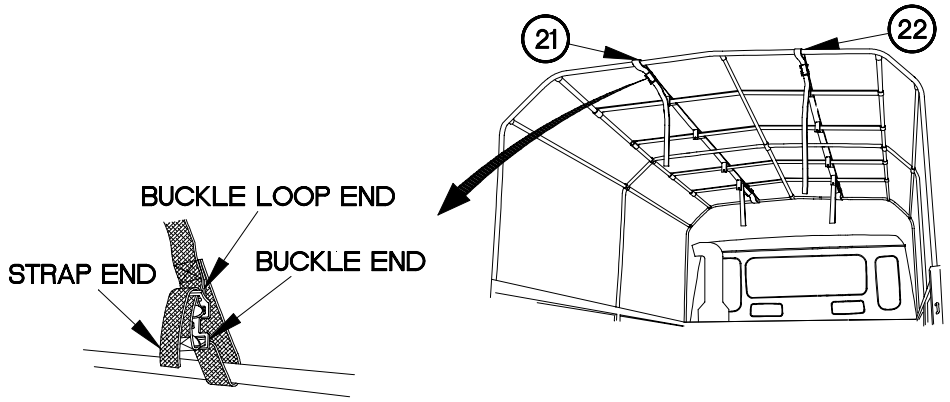
36. Open flaps (29) on left strap support (21) and right strap support (22).



2400b49-

37. Remove two rear strap ends from buckle loop ends on left strap support (21) and right strap support (22).

38. Loosen left rear strap support (21).



2400b50-

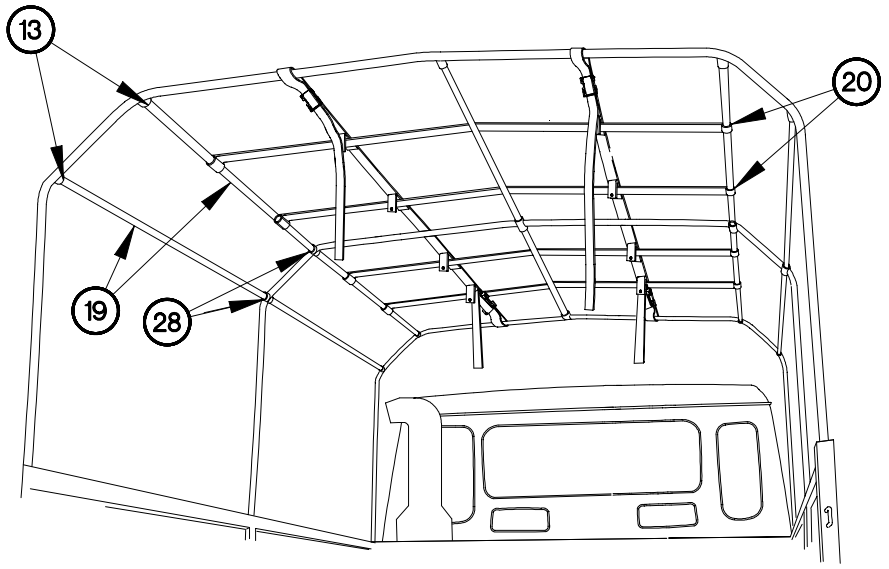
M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

Left and right tubes are removed the same way. Left side tubes shown.

Steps 39 through 46 require the aid of an assistant.

39. Remove rear tube (19) from rear bow bracket (13) and center bow bracket (28).
40. Remove rear tube (19) from center bow bracket (28) and rear bow bracket (13).
41. Remove rear tube (19) from two braces (20).

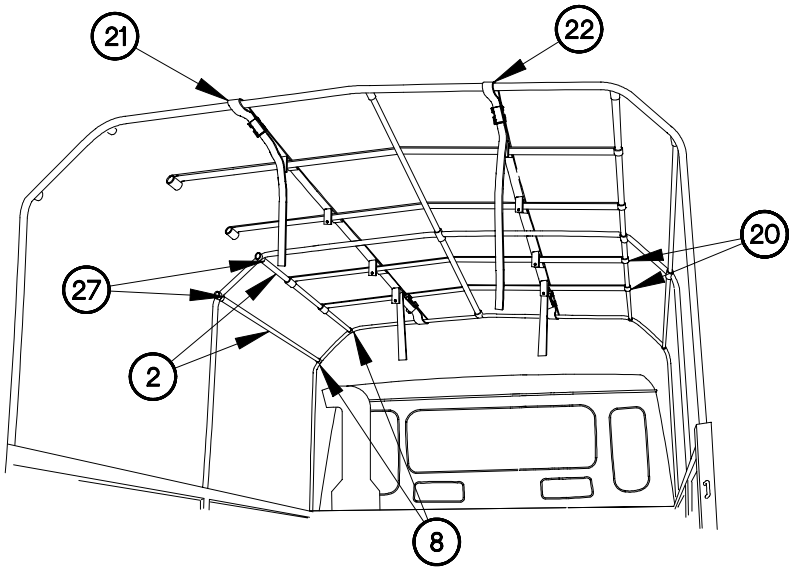


2400b51-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

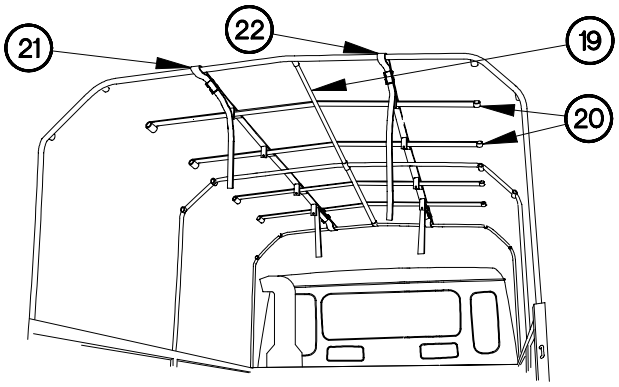
42. Remove front tube (2) from front bow bracket (8) and center bow bracket (27).
43. Remove front tube (2) from front bow bracket (8) and center bow bracket (27).
44. Remove front tube (2) from two braces (20).
45. Tighten left rear strap support (21).
46. Loosen right rear strap support (22).
47. Perform steps 39 through 44 on right side tubes.
48. Tighten right rear strap support (22).



2400b52-

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

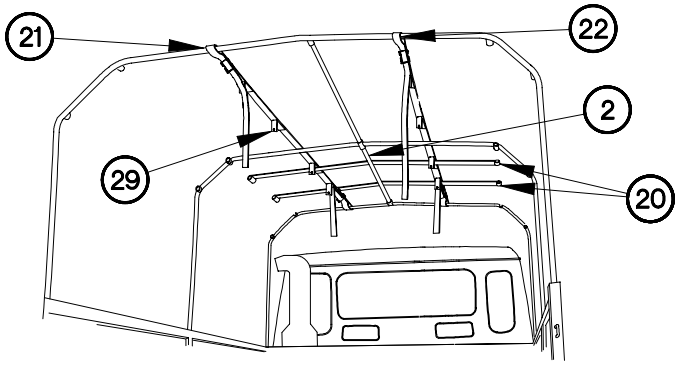
49. Remove two braces (20) from rear tube (19), left strap support (21), and right strap support (22).



2400b53-

50. Remove two braces (20) from front tube (2), left strap support (21), and right strap support (22).

51. Close four flaps (29) on left strap support (21) and right strap support (22).



2400b54-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

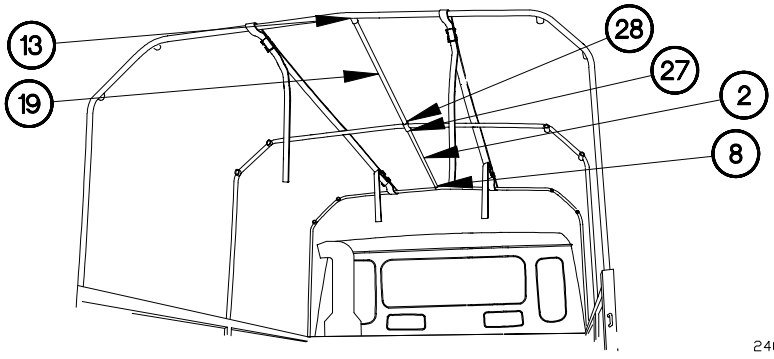
M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

Steps 52 and 53 require the aid of an assistant.

52. Remove rear tube (19) from center bow bracket (28) and rear bow bracket (13).

53. Remove front tube (2) from front bow bracket (8) and center bow bracket (27).

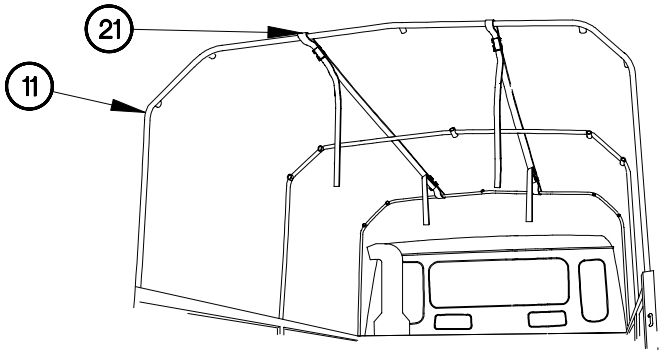


2400b55-

NOTE

Left and right strap supports are removed the same way. Left strap support shown.

54. Remove left strap support (21) from rear bow (11).



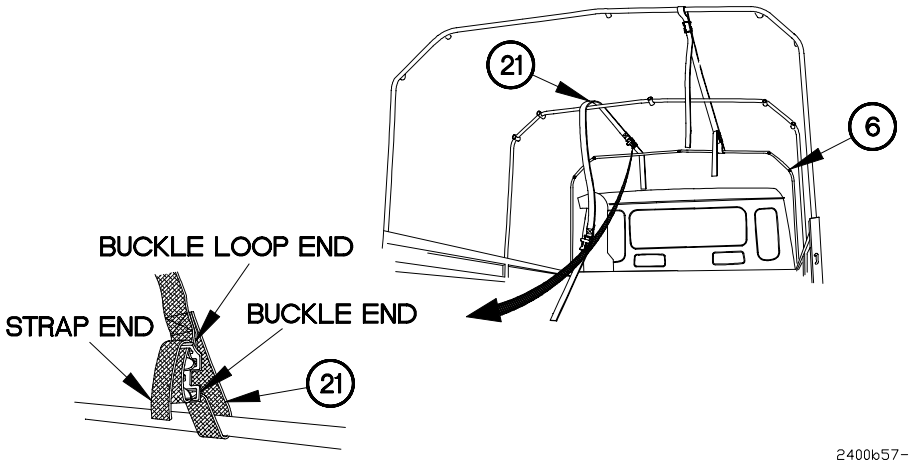
2400b56-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

55. Remove front strap end from buckle loop end on left strap support (21).

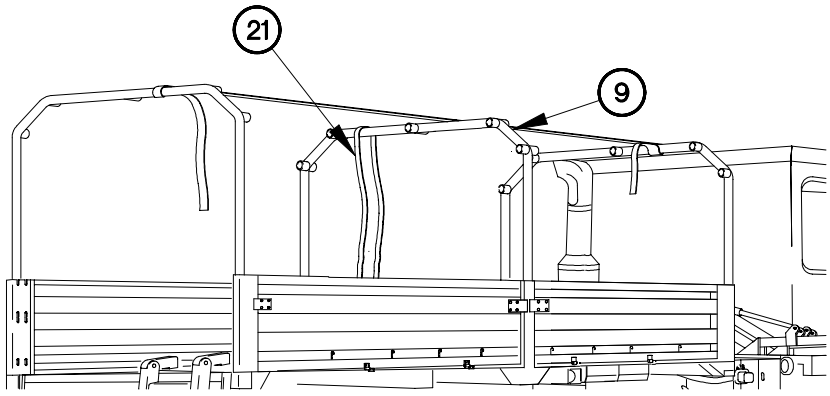
56. Remove left strap support (21) from front bow (6).



2400b57-

57. Remove left strap support (21) from center bow (9).

58. Perform steps 54 through 57 on right strap support.



2400b58-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

Steps 59 through 64 require the aid of an assistant.

59. Remove front bow (6) from front cargo bed pockets (7).

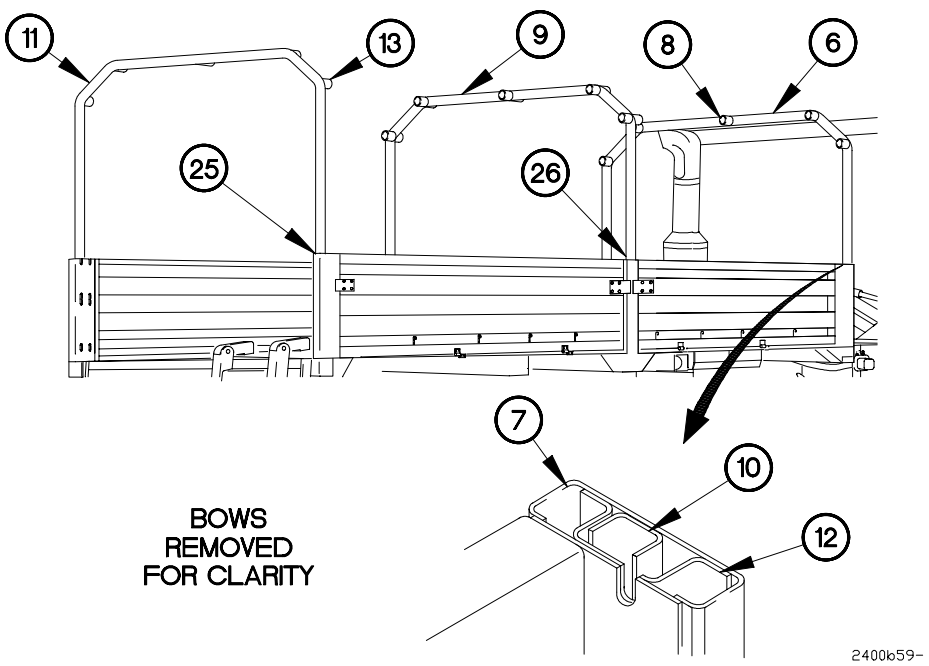
60. Position front bow (6) in front cargo bed pockets (7) with front bow brackets (8) towards front of vehicle.

61. Remove center bow (9) from rear pockets of center cargo bed stakes (26).

62. Position center bow (9) in middle cargo bed pockets (10).

63. Remove rear bow (11) from rear pockets of rear cargo bed stakes (25).

64. Position rear bow (11) in rear cargo bed pockets (12) with rear bow brackets (13) towards rear of vehicle.



M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

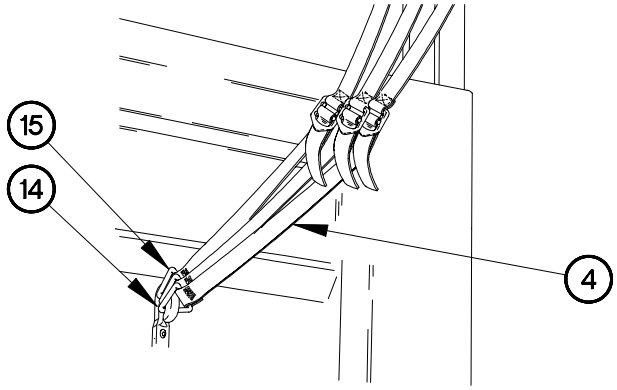
NOTE

Left and right sides of front, center, and rear bows are secured the same way. Right side shown.

65. Position three tiedown straps (4) on J-hook (14) with three tri-rings (15).

66. Tighten three tiedown straps (4).

67. Perform steps 65 and 66 on left side.

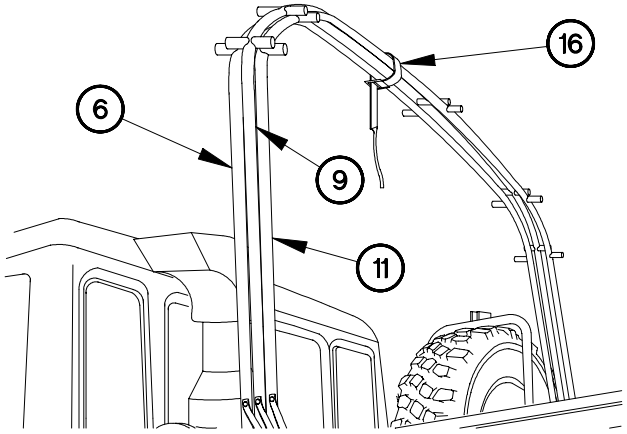


2400b60-

NOTE

Stowage strap should be positioned between center bow brackets and left inside bow brackets.

68. Install stowage strap (16) on front bow (6), center bow (9), and rear bow (11).



2400B61-

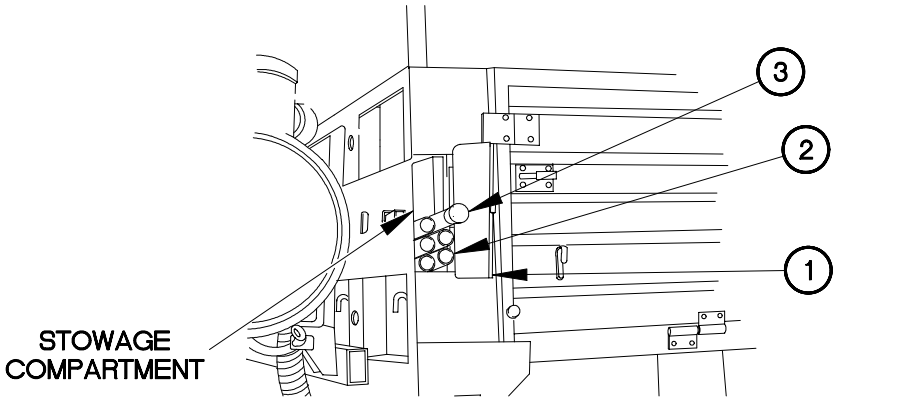
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

69. Open stowage compartment door (1).

70. Stow five front tubes (2) and steel pole (3) in stowage compartment.

71. Close stowage compartment door (1).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

WARNING

Cargo cover weighs approximately 60 lbs (27 kgs). Arctic cargo cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

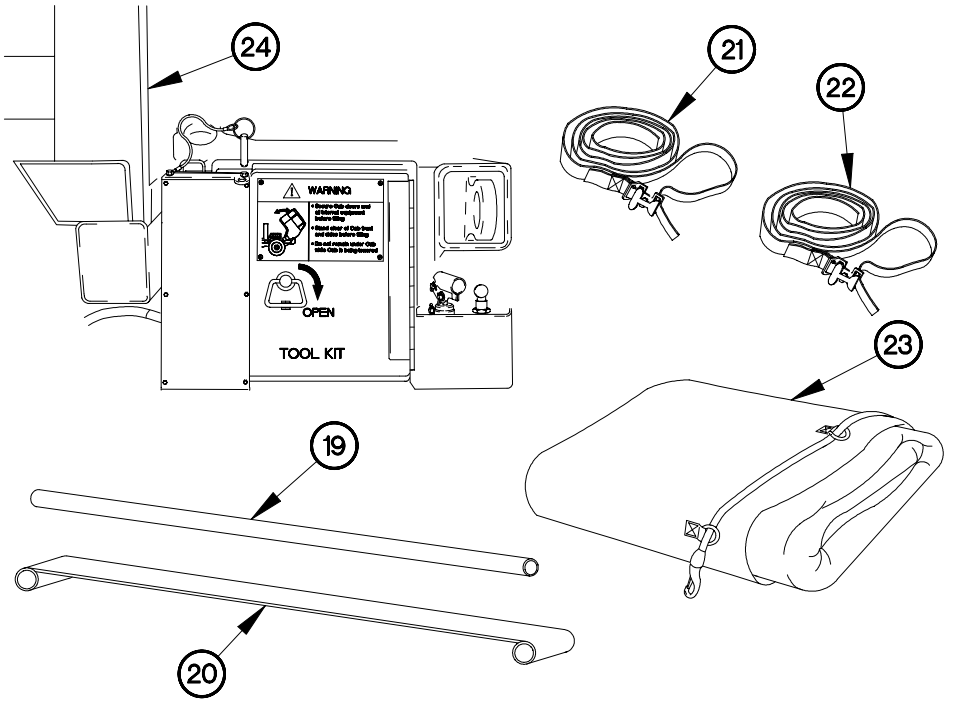
NOTE

Step 72 requires the aid of an assistant.

72. Stow five rear tubes (19), four braces (20), left strap support (21), right strap support (22), and cargo cover (23) on cargo bed (24).

73. Raise spare tire (WP 0101 00).

74. Stow ladder (WP 0023 00).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP KIT (STEEL BOWS) REMOVAL

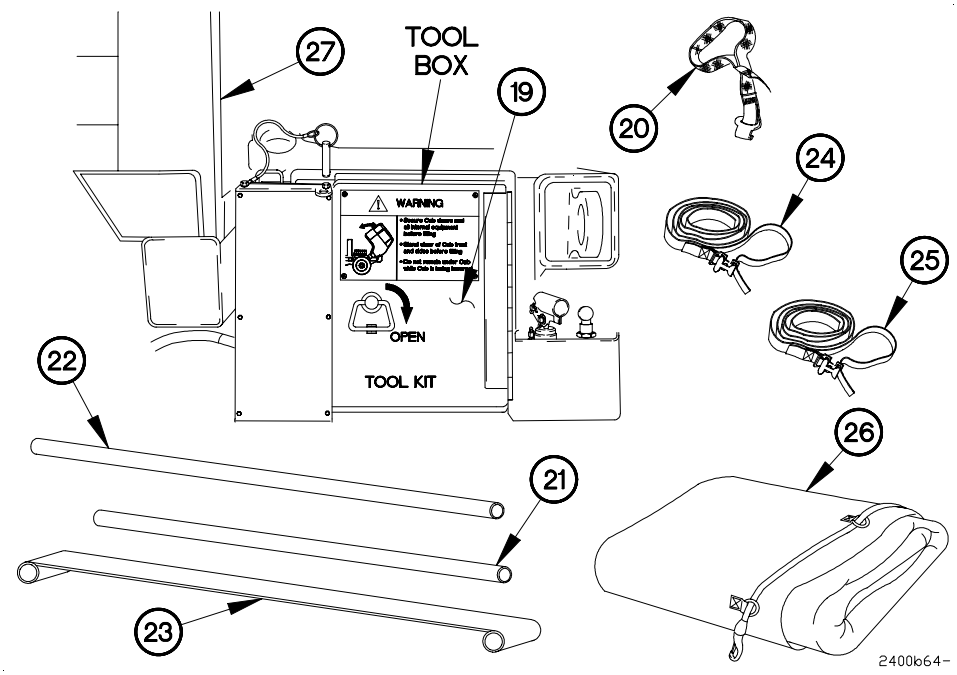
WARNING

Cargo cover weighs approximately 60 lbs (27 kgs). Arctic cargo cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Step 1 requires the aid of an assistant.

1. Lower ladder (WP 0023 00).
2. Remove five rear tubes (21), four braces (22), left strap support (23), left right strap support (24), right strap support (25), and cargo cover (26) from cargo bed (27).
3. Open door (19) on tool box.
4. Remove three cargo cover tiedowns (20) from tool box.
5. Close door (19) on tool box.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP KIT (STEEL BOWS) REMOVAL - Continued

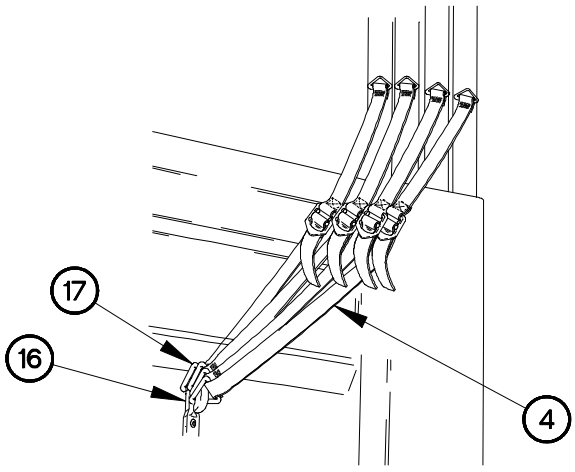
NOTE

Left and right sides of front, center, and rear bows are unsecured the same way. Right side shown.

6. Loosen three tiedown straps (4).

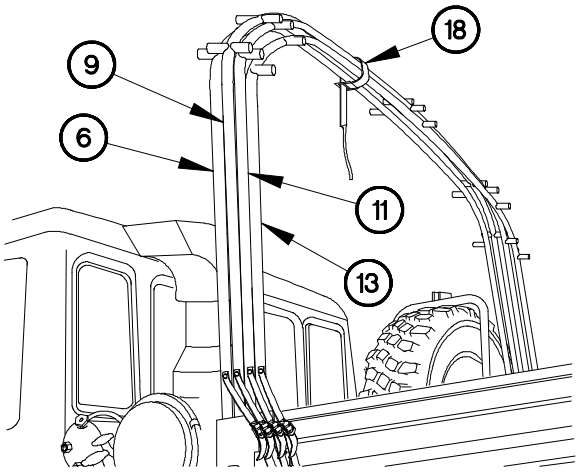
7. Remove three tri-rings (17) on tiedown straps (4) from J-hook (16).

8. Perform steps 7 and 8 on left side.



2400b65-

9. Remove stowage strap (18) from front bow (6), front center bow (9), rear center bow (11), and rear bow (13).



2400b66-

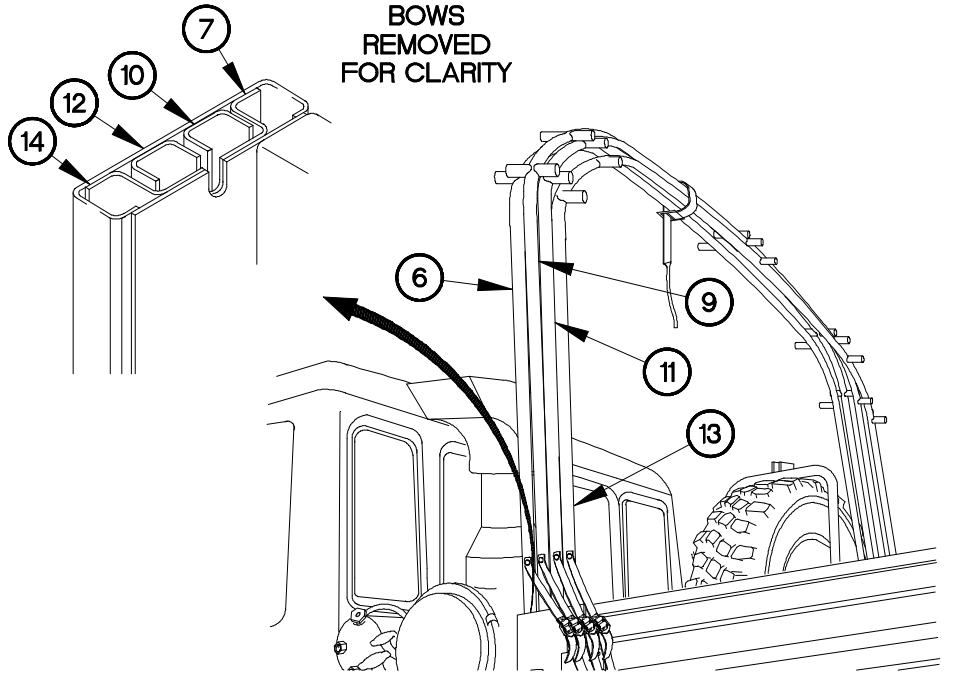
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) REMOVAL -Continued

NOTE

Steps 10 through 12 require the aid of an assistant.

10. Remove rear bow (13) from rear cargo bed pockets (14).
11. Remove rear center bow (11) from rear center cargo bed pockets (12).
12. Remove front center bow (9) from front center cargo bed pockets (10).
13. Remove front bow (6) from front cargo bed pockets (7).

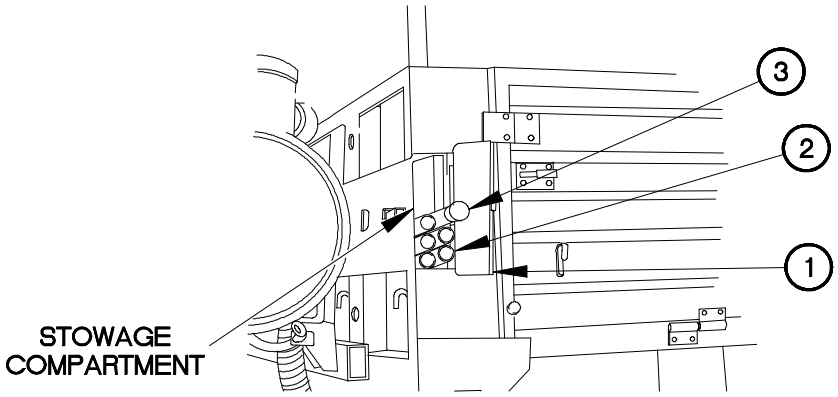


2400b67-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1083A1 SOFT TOP (STEEL BOWS) Removal - Continued

14. Open stowage compartment door (1).
15. Remove five front tubes (2) and steel pole (3) from stowage compartment.
16. Close stowage comportment door (1).
17. Stow ladder (WP 0023 00).

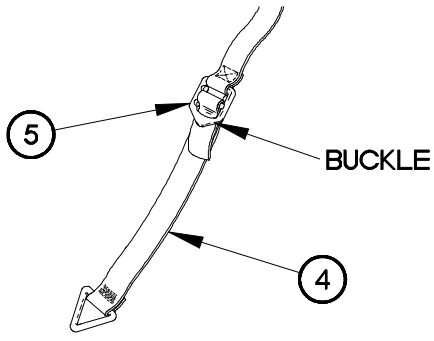


2400b68-

NOTE

Front, front center, rear center, and rear bows have two bow straps and tiedown straps. All tiedown straps are removed from bow straps the same way. One shown.

18. Remove tiedown strap (4) from buckle on bow strap (5).
19. Perform step 18 on remaining tiedown straps.



2400b69-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

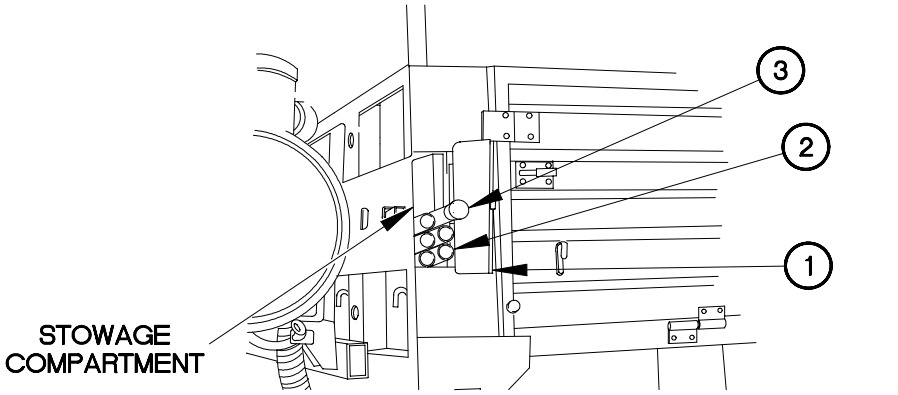
M1085A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION

1. Lower ladder (WP 0023 00).
2. Open stowage compartment door (1).

NOTE

Soft top kit is equipped with a total of 15 tubes. Five rear tubes are the longest, followed by the front and then the center tubes.

3. Stow five front tubes (2) and steel pole (3) in stowage compartment.
4. Close stowage compartment door (1).



2400b70-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

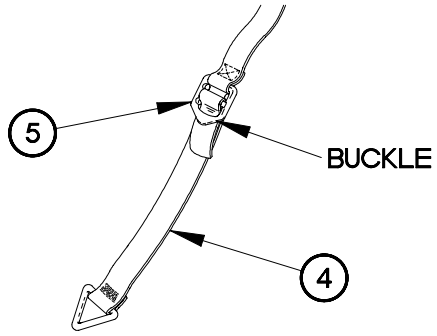
M1085A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

NOTE

Front, front center, rear center, and rear bows have two bow straps and tiedown straps. All tiedown straps are removed from bow straps the same way. One shown.

5. Install tiedown strap (4) through buckle of bow strap (5).

6. Perform step (5) on remaining tiedown straps.



2400b71-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

NOTE

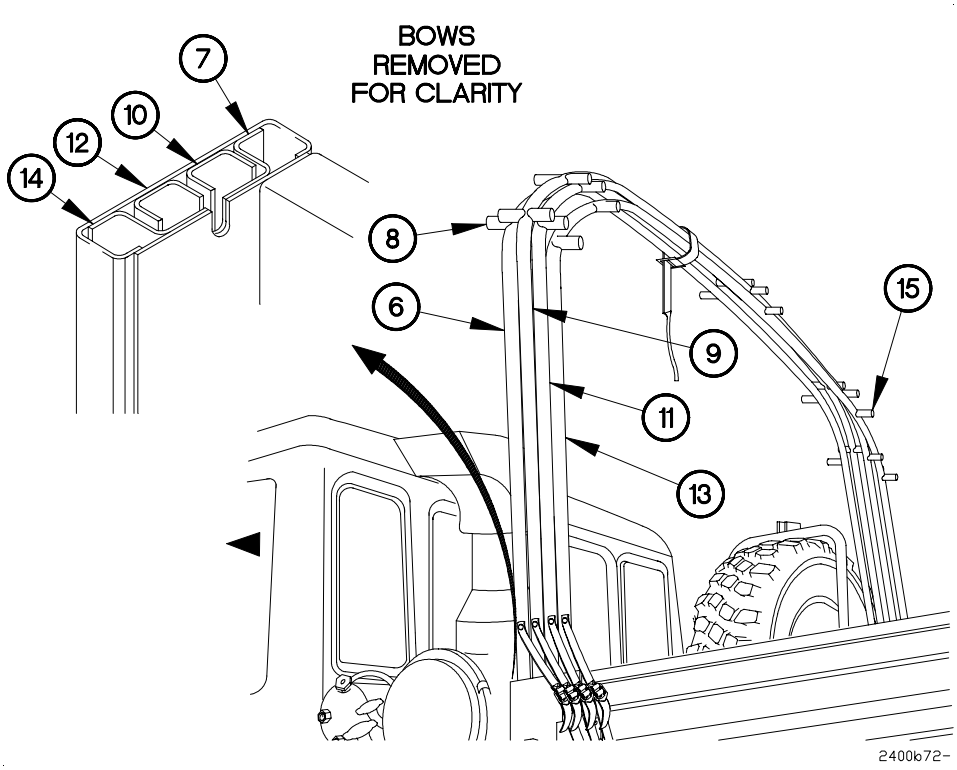
Step (7) through (10) require the aid of an assistant.

7. Position front bow (6) in front cargo bed pockets (7) with front bow brackets (8) toward front of vehicle.

8. Position front center bow (9) in front center cargo bed pockets (10).

9. Position rear center bow (11) in rear center cargo bed pockets (12).

10. Position rear bow (13) in rear cargo bed pockets (14) with rear bow brackets (15) toward rear of vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

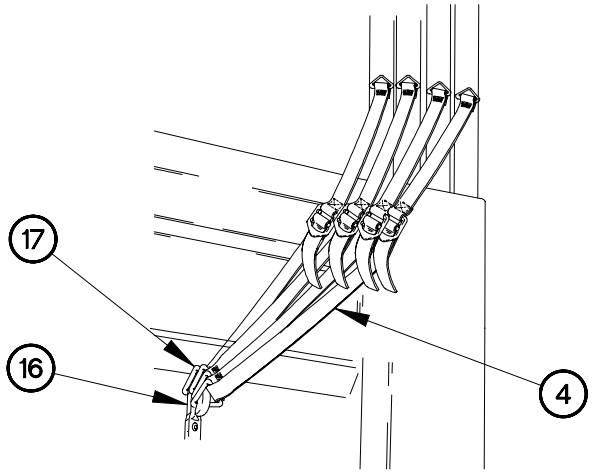
NOTE

Left and right sides of front, front center, rear center, and rear bows are secured the same way. Right side shown.

11. Position four tiedown straps (4) on J-hook (16) with four tri-rings (17).

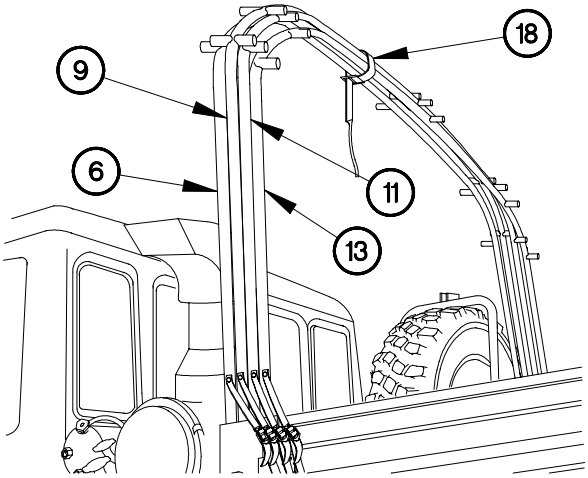
12. Tighten four tiedown straps (4).

13. Perform steps (11) and (12) on left side.



2400b73-

14. Install stowage strap (18) on front bow (6), front center bow (9), rear center bow (11) and rear bow (13).



2400b74-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

15. Open door (19) on tool box.

16. Stow three cargo cover tiedowns (20) in tool box.

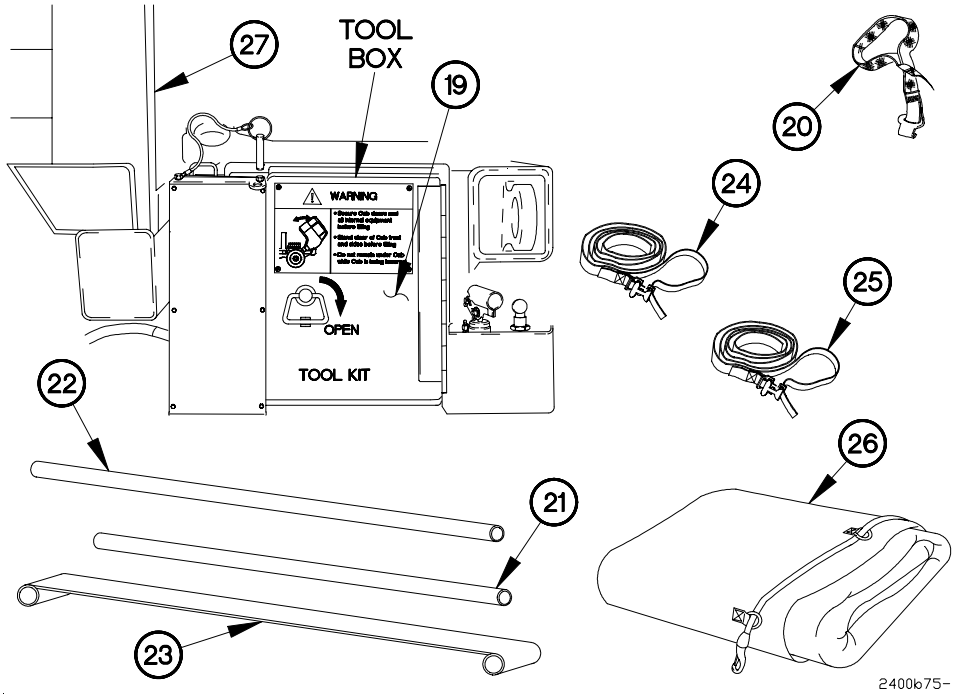
17. Close door (19) on tool box.

WARNING

Long Wheel Base (LWB) cargo cover weighs approximately 80 lbs (36 kgs). LWB arctic cargo cover weighs approximately 120 lbs (55 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

18. Stow five center tubes (21), rear tubes (22), six braces (23), left strap support (24), right strap support (25), and cargo cover (26) in cargo bed (27).

19. Stow ladder (WP 0023 00).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP KIT (STEEL BOWS) REMOVAL

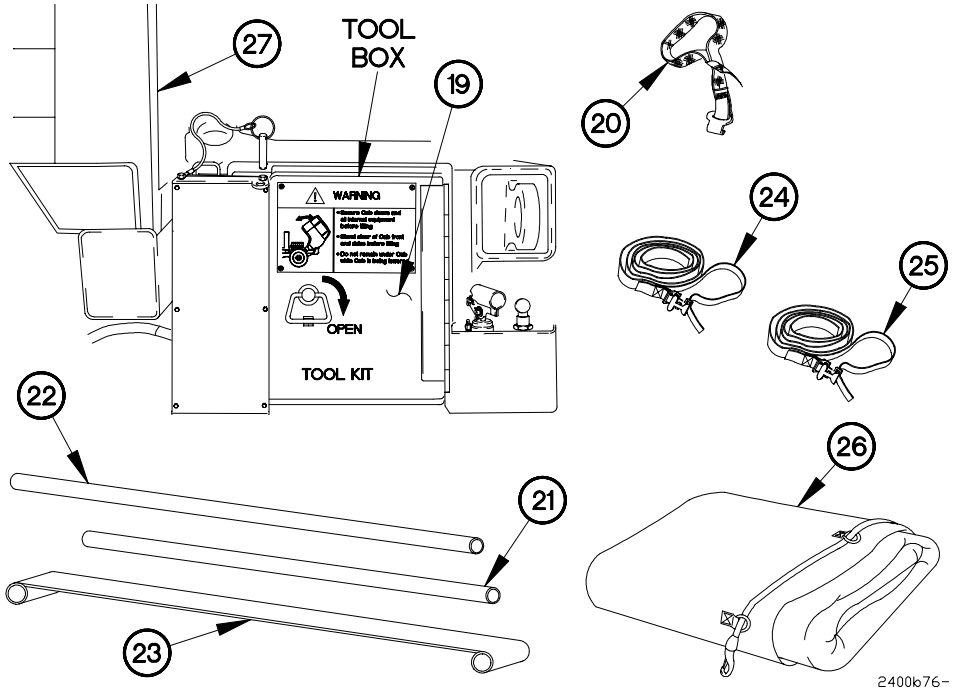
WARNING

Long Wheel Base (LWB) cargo cover weighs approximately 80 lbs (36 kgs). LWB arctic cargo cover weighs approximately 120 lbs (55 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Step (1) requires the aid of an assistant.

1. Lower ladder (WP 0023 00).
2. Remove five center tubes (21), rear tubes (22), six braces (23), left strap support (24), right strap support (25), and cargo cover (26) from cargo bed (27).
3. Open door (19) on tool box.
4. Remove three cargo cover tiedowns (20) from tool box.
5. Close door (19) on tool box.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP KIT (STEEL BOWS) REMOVAL - Continued

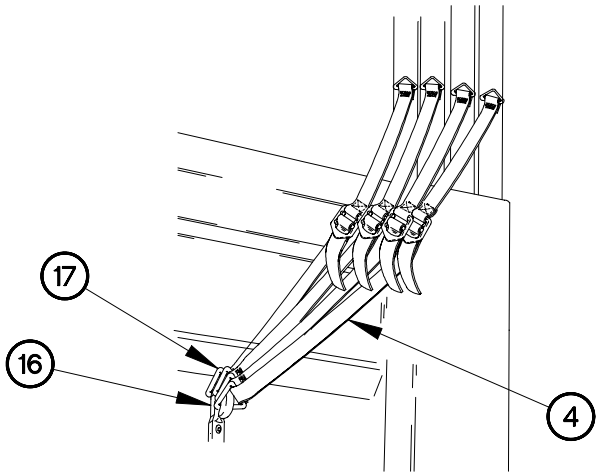
NOTE

Left and right sides of front, front center, rear center, and rear bows are unsecured the same way. Right side shown.

6. Loosen four tiedown straps (4).

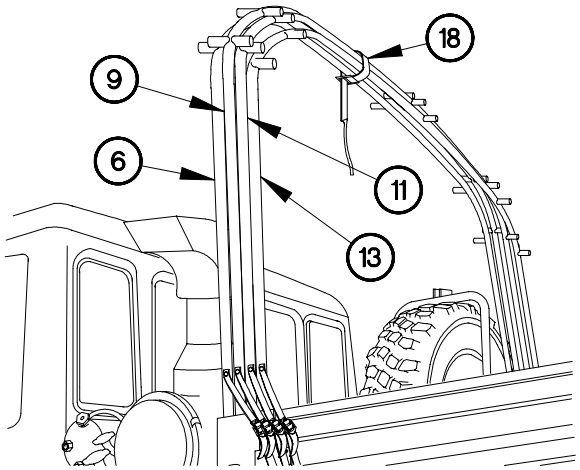
7. Remove four tri-rings (17) on tiedown straps (4) from J-hook (16).

8. Perform steps (7) and (8) on left side tiedown straps.



2400b77-

9. Remove stowage strap (18) from front bow (6), front center bow (9), rear center bow (11), and rear bow (13).



2400b78-

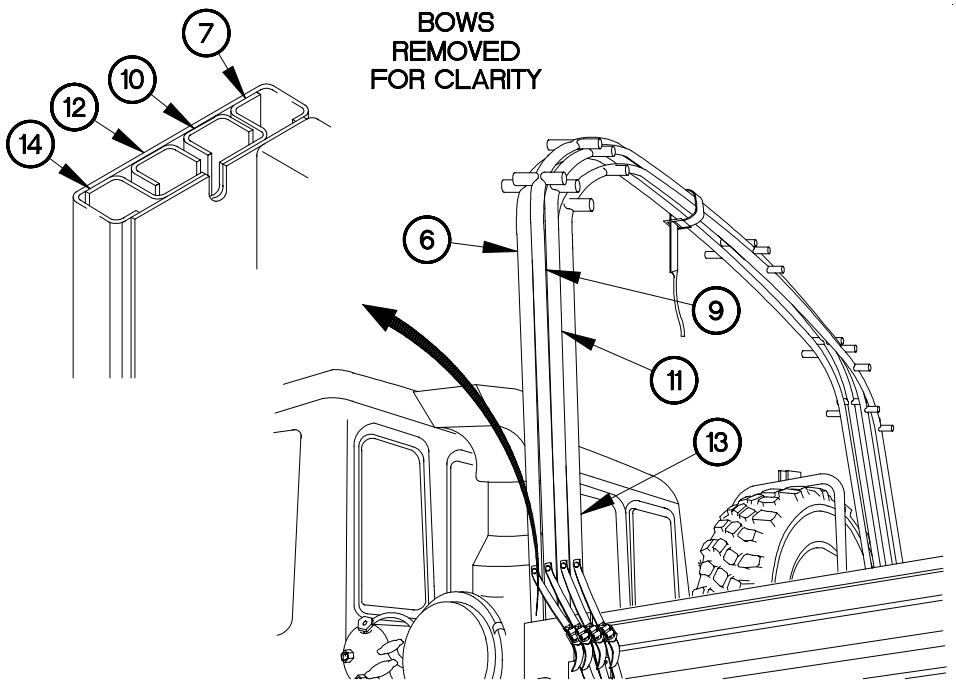
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP KIT (STEEL BOWS) REMOVAL - Continued

NOTE

Steps (10) through (13) require the aid of an assistant.

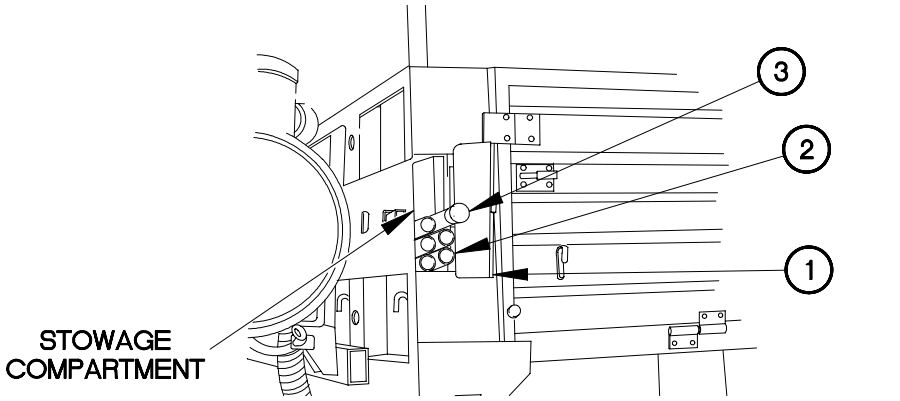
10. Remove rear bow (13) from rear cargo bed pockets (14).
11. Remove rear center bow (11) from rear center cargo bed pockets (12).
12. Remove front center bow (9) from front center cargo bed pockets (10).
13. Remove front bow (6) from front cargo bed pockets (7).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP KIT (STEEL BOWS) REMOVAL - Continued

14. Open stowage compartment door (1).
15. Remove five front tubes (2) and steel pole (3) from stowage compartment.
16. Close stowage compartment door (1).
17. Stow ladder (WP 0023 00).

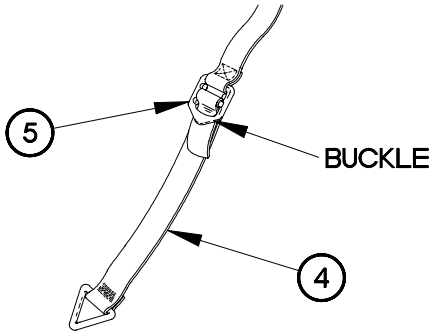


2400b80-

NOTE

Front, front center, rear center, and rear bows have two bow straps and tiedown straps. All tiedown straps are removed from bow straps the same way. One shown.

18. Remove tiedown strap (4) from buckle on bow strap (5).
19. Perform step (18) on remaining tiedown straps.



2400b81-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION

1. Lower ladder (WP 0023 00).

2. Lower spare tire (WP 00 00).

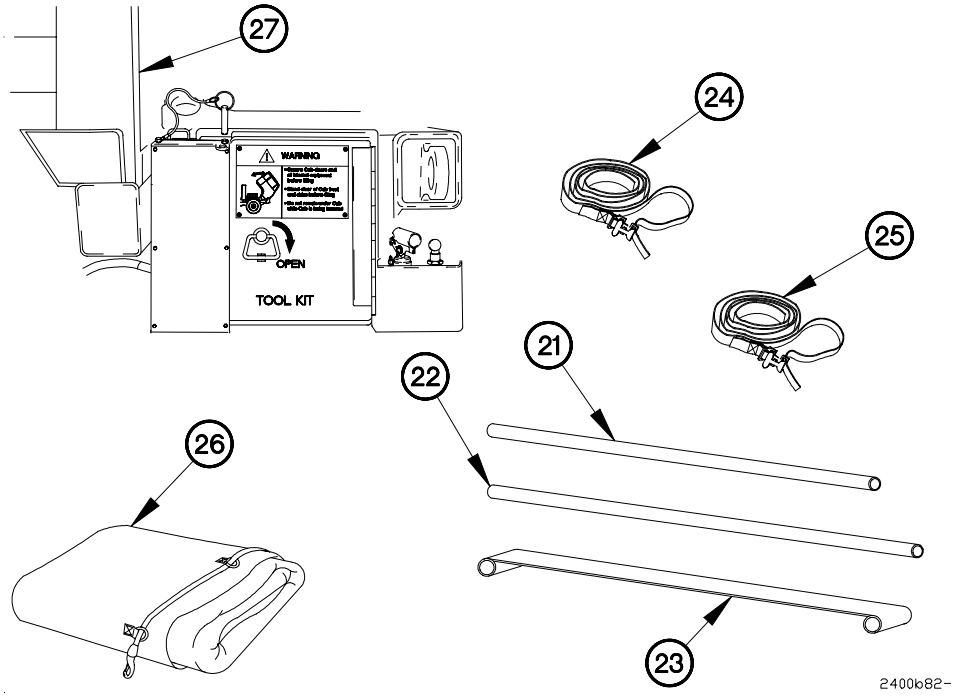
WARNING

Long Wheel Base (LWB) cargo cover weighs approximately 80 lbs (36 kgs). LWB arctic cargo cover weighs approximately 120 lbs (55 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Steps (3) require the aid of an assistant.

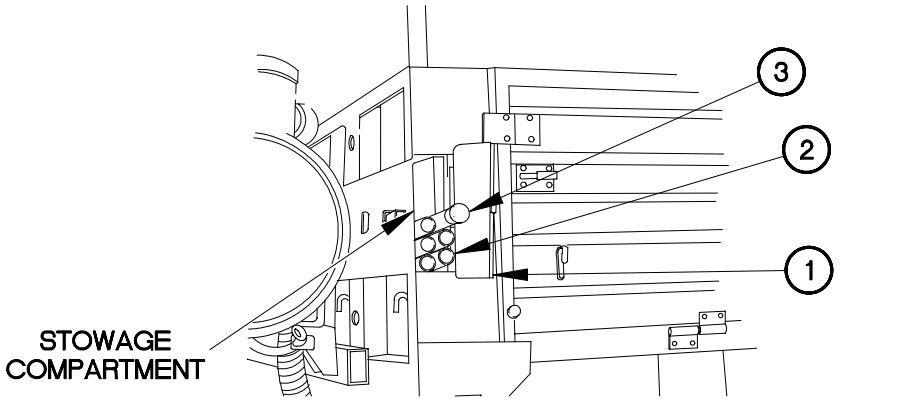
3. Remove five center tubes (21), rear tubes (22), six braces (23), left strap support (24), right strap support (25), and cargo cover (26) from cargo bed (27).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

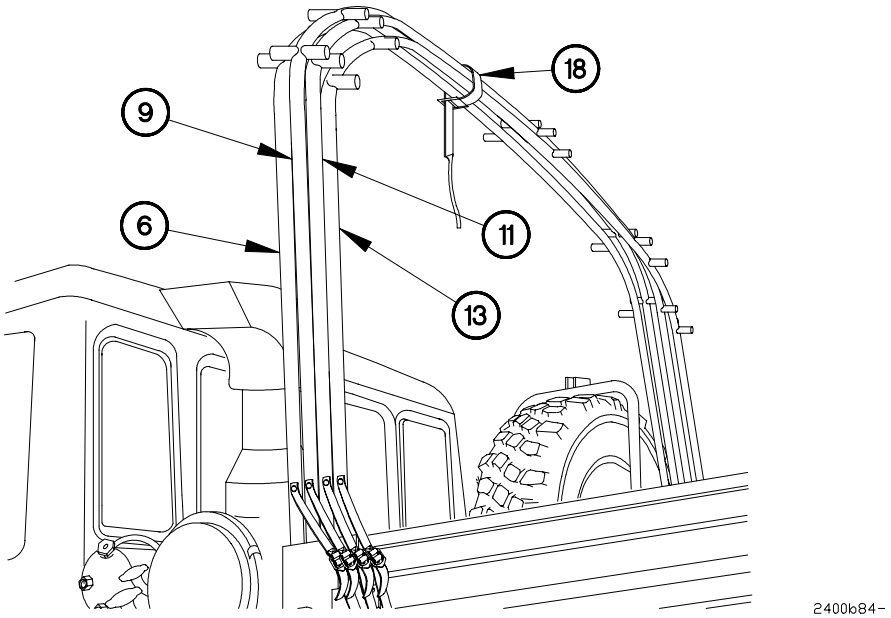
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

4. Open stowage compartment door (1).
5. Remove five front tubes (2) and steel pole (3) from stowage compartment.
6. Close stowage compartment door (1).



2400b83-

7. Remove stowage strap (18) from front bow (6), front center bow (9), rear center bow (11), and rear bow (13).



2400b84-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

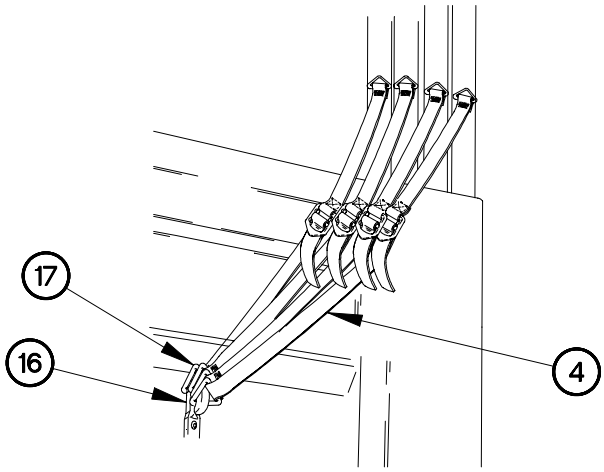
NOTE

Left and right sides of front, front center, rear center, and rear bows are released the same way. Right side shown.

8. Loosen four tiedown straps (4).

9. Remove four tri-rings (17) on tiedown straps (4) from J-hook (16).

10. Perform steps (8) and (9) on left side.



2400b85-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

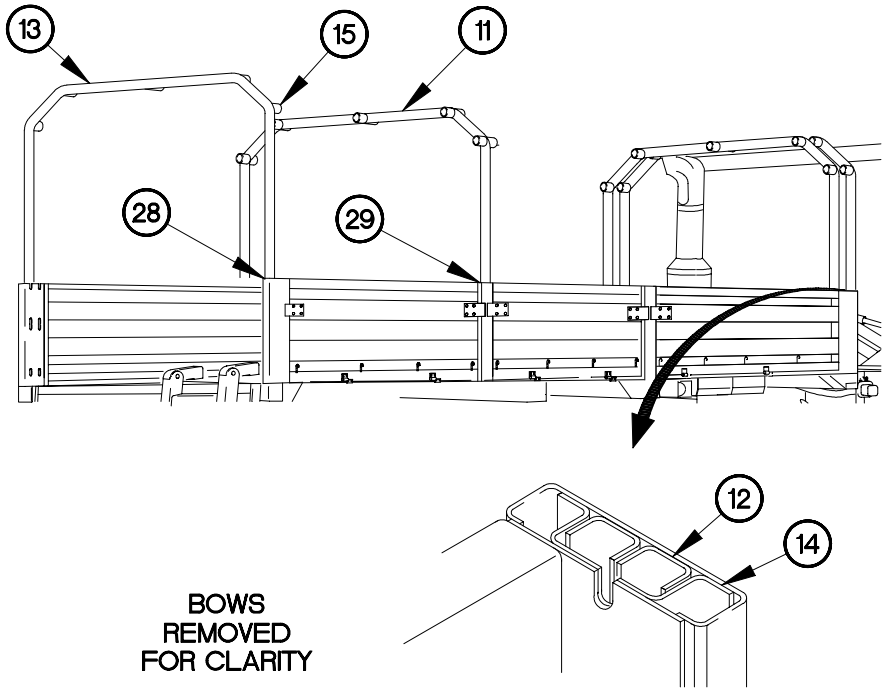
Steps (11) through (18) require the aid of an assistant.

11. Remove rear bow (13) from rear cargo bed pockets (14).

12. Position rear bow (13) in rear pockets of rear cargo bed stakes (28) with rear bow brackets (15) towards front of vehicle.

13. Remove rear center bow (11) from rear center cargo bed pockets (12).

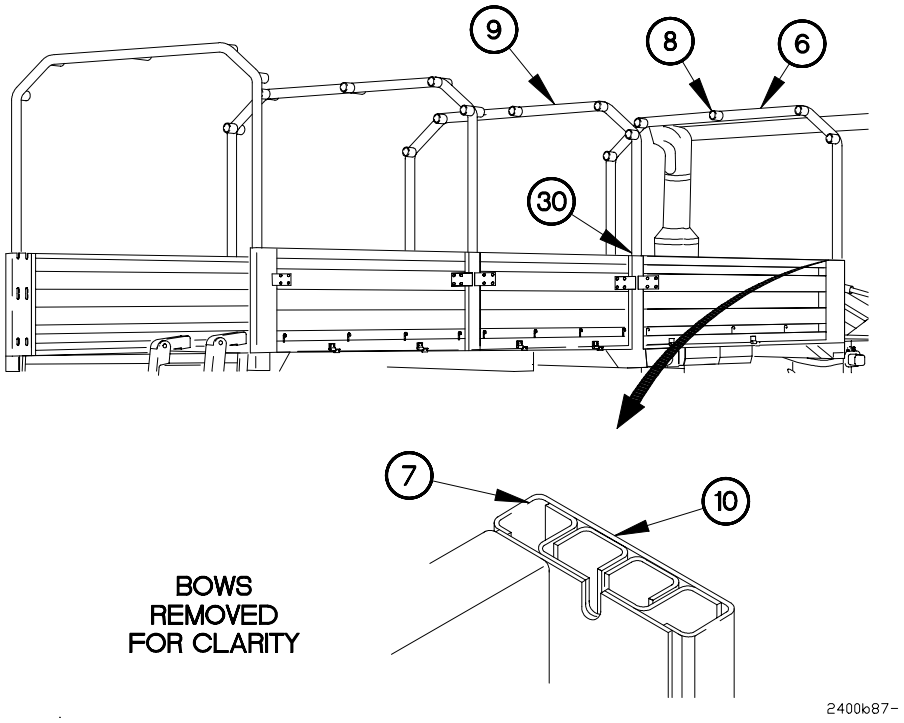
14. Position rear center bow (11) in front pockets of rear center cargo bed stakes (29).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

15. Remove front center bow (9) from front center cargo bed pockets (10).
16. Position front center bow (9) in front pockets of front center cargo bed stakes (30).
17. Remove front bow (6) from front cargo bed pockets (7).
18. Position front bow (6) in front cargo bed pockets (7) with front bow brackets (8) toward rear of vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

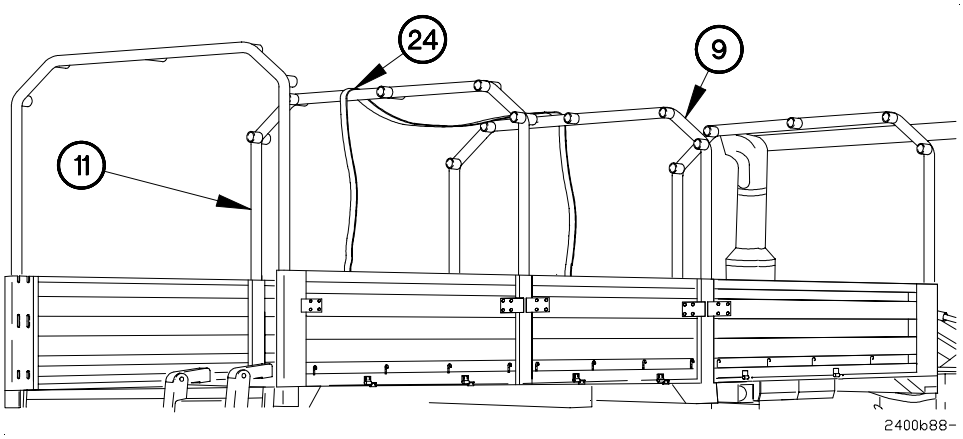
NOTE

Strap support is marked with FRONT and an arrow to indicate front bottom of strap support.

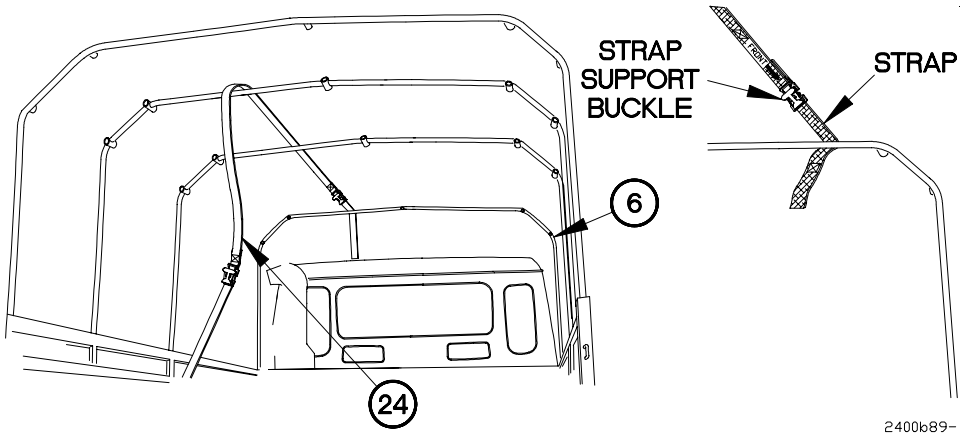
Strap supports are to be centered between front and rear center bow brackets and left and right inside bow brackets.

Left and right strap supports are installed the same way. Left strap support shown.

19. Position left strap support (24) over front center bow (9) and rear center bow (11).



20. Position left strap support (24) around front bow (6) and through strap support buckle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

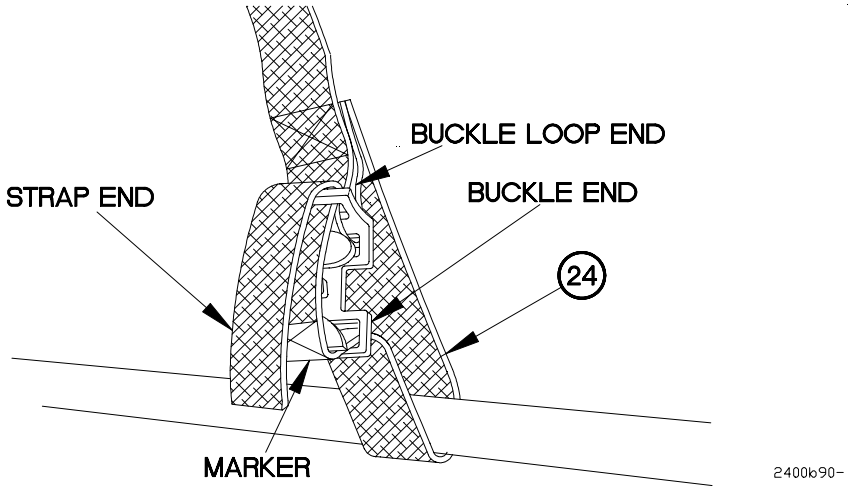
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

21. Tighten left strap support (24) until marker is through the buckle end.

CAUTION

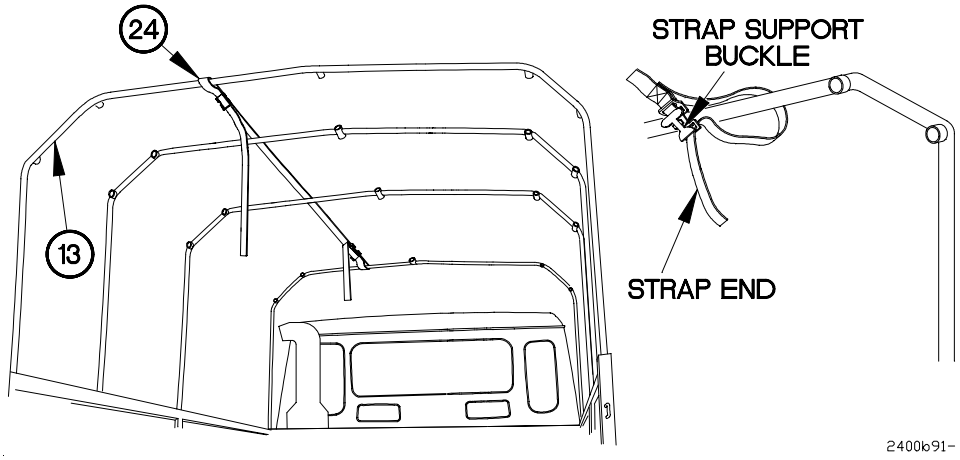
Strap end must be installed in the buckle loop end after strap is tightened. Failure to comply may result in damage to equipment.

22. Install strap end through buckle loop end on left strap support (24).



23. Position left strap support (24) around rear bow (13) and through strap support buckle.

24. Perform steps 19 through 23 on right strap support.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Steps 25 through 28 require the aid of an assistant.

25. Install front tube (2) in front bow bracket (8) and front center bow bracket (31).

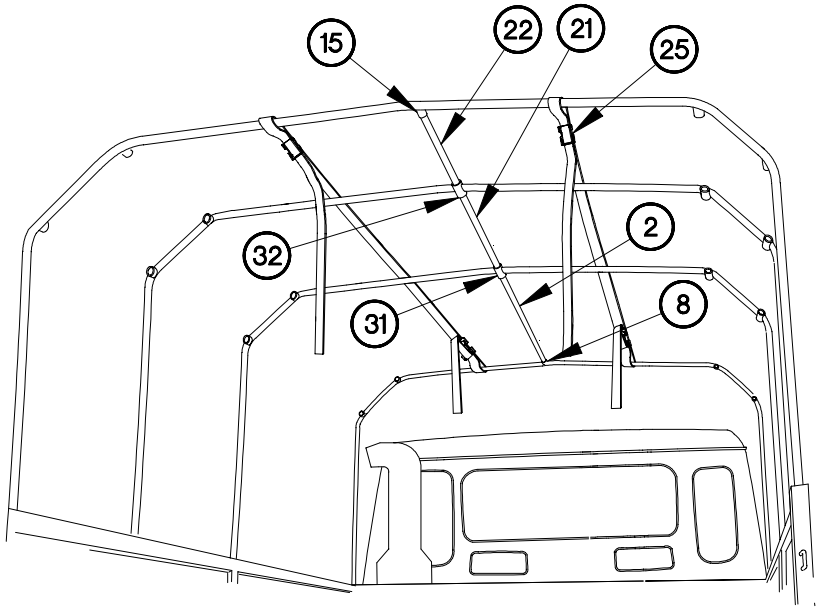
26. Install center tube (21) in front center bow bracket (31) and rear center bow bracket (32).

27. Install rear tube (22) in rear center bow bracket (32) and rear bow bracket (15).

CAUTION

Strap supports must be aligned straight between front bow and rear bow. Failure to comply may result in damage to equipment.

28. Tighten right rear strap support (25).

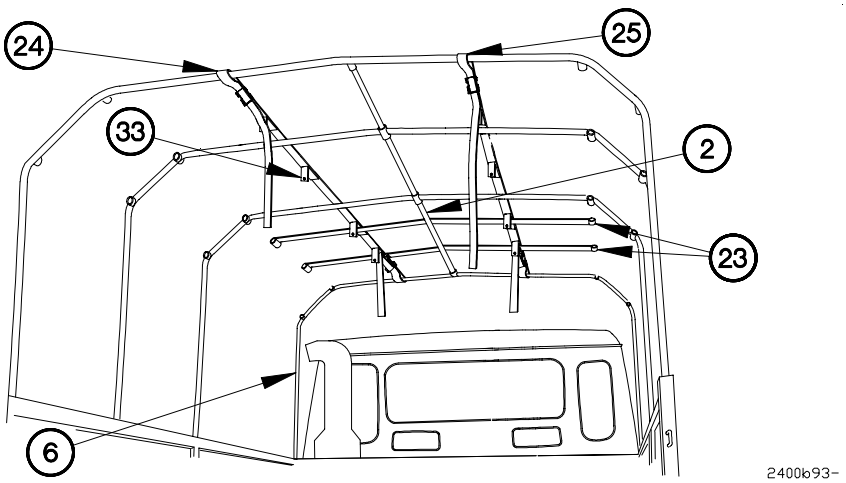


2400b92-

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

29. Open six flaps (33) on left strap support (24) and right strap support (25).

30. Position two braces (23) over front tube (2) and under left strap support (24) and right strap support (25) with approximately two ft (0.6 m) between front bow (6) and each brace.

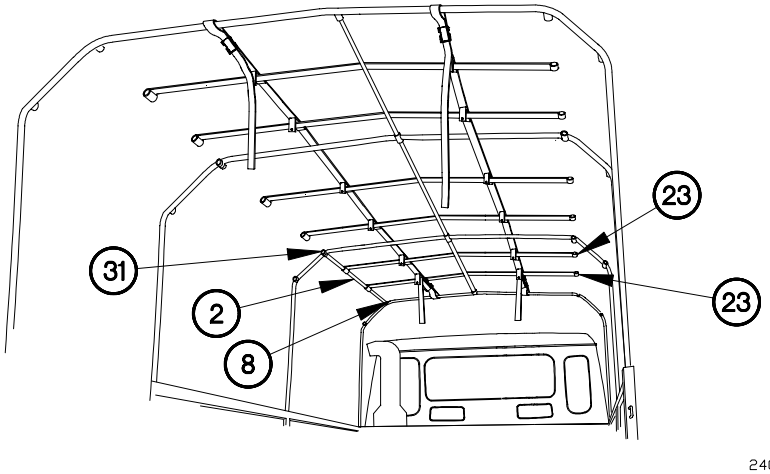


NOTE

Steps 31 through 36 require the aid of an assistant.

31. Position front tube (2) through two braces (23).

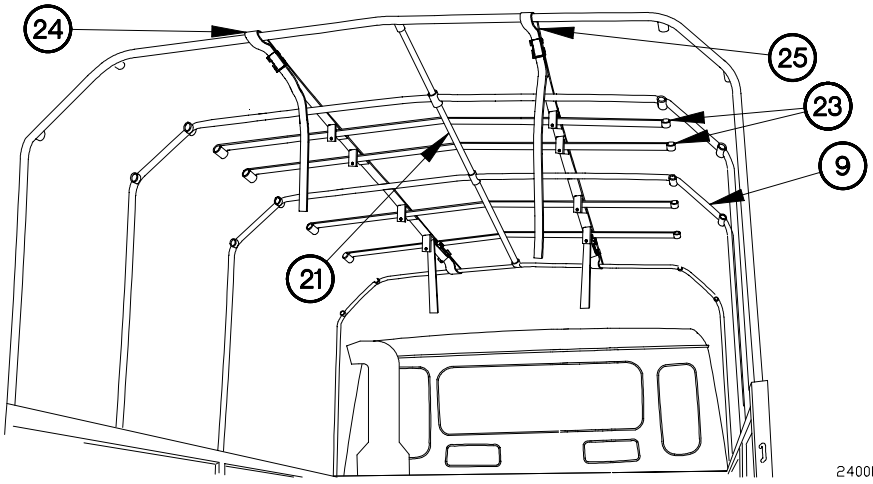
32. Install front tube (2) in front bow bracket (8) and front center bow bracket (31).



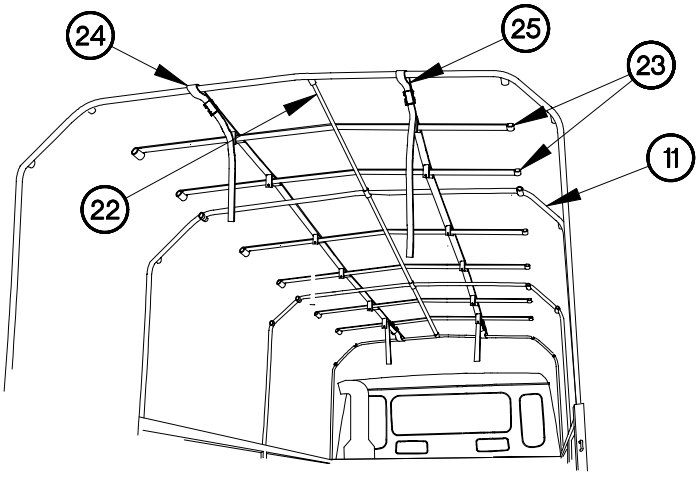
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

33. Position two braces (23) over center tube (21) and under left strap support (24) and right strap support (25) with approximately two ft (0.6 m) between front center bow (9) and each brace.



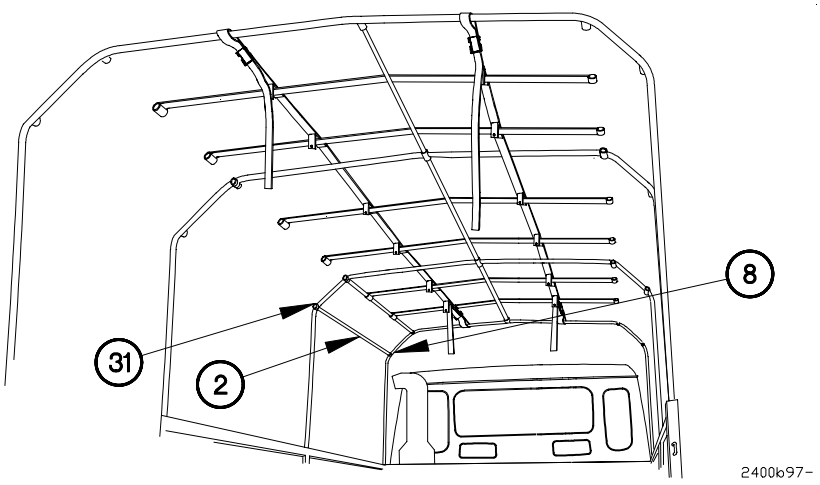
34. Position two braces (23) over rear tube (22) and under left strap support (24) and right strap support (25) with approximately two ft (0.6 m) between rear center bow (11) and each brace.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

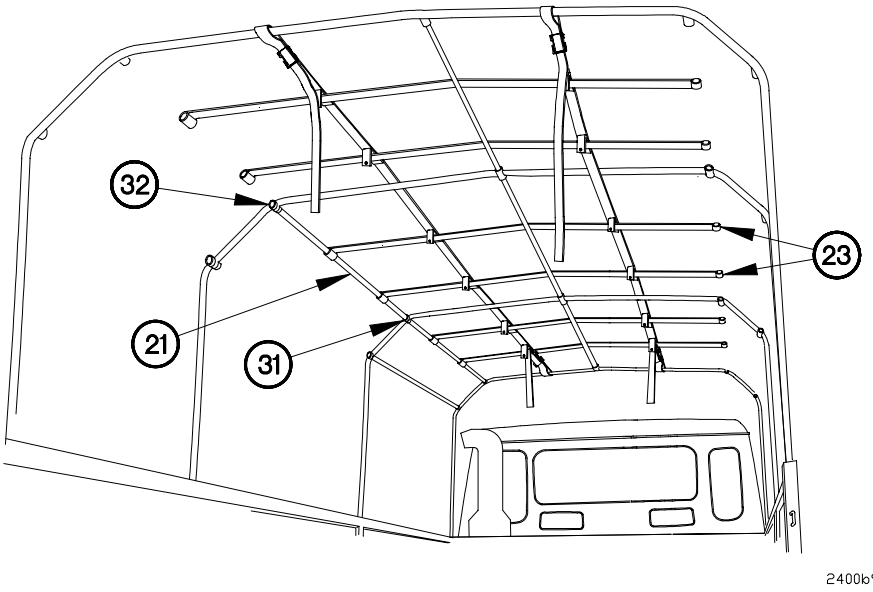
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

35. Install front tube (2) in front bow bracket (8) and front center bow bracket (31).



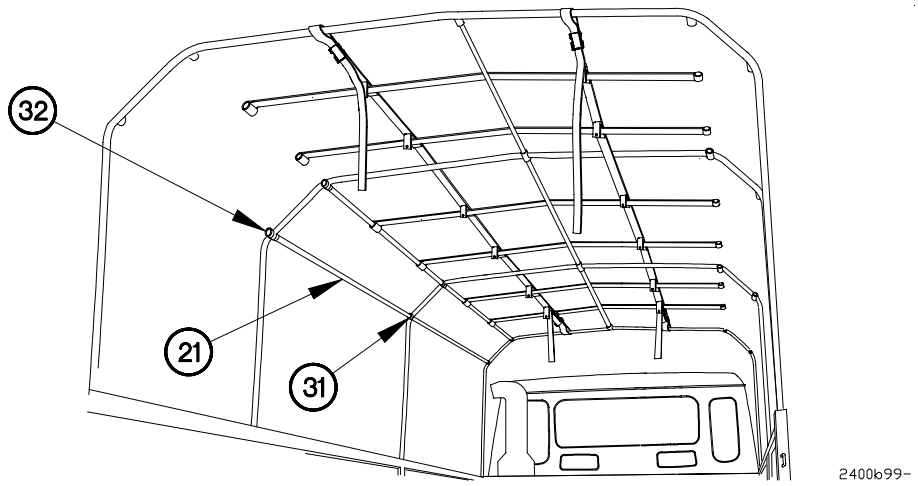
36. Position center tube (21) through two braces (23).

37. Install center tube (21) in front center bow bracket (31) and rear center bow bracket (32).



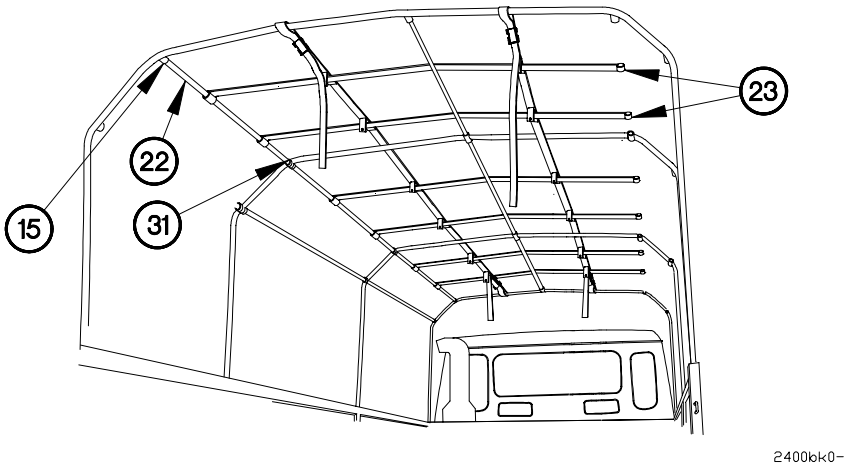
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

38. Install center tube (21) in front center bow bracket (31) and rear center bow bracket (32).



39. Position rear tube (22) through two braces (23).

40. Install rear tube (22) in rear center bow bracket (31) and rear bow bracket (15).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

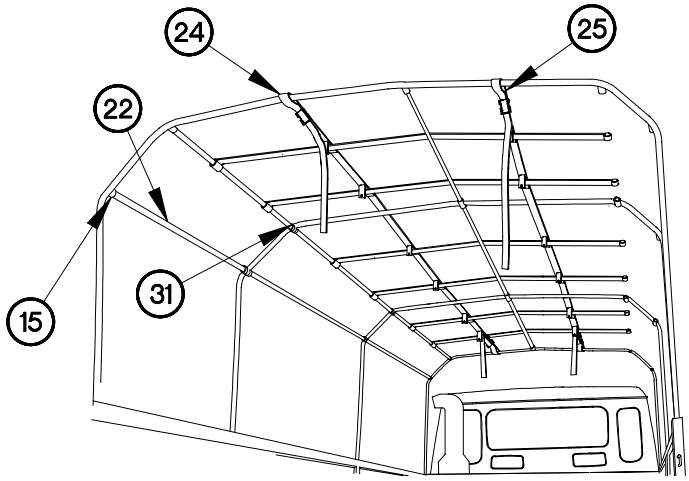
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

41. Install rear tube (22) in rear center bow bracket (31) and rear bow bracket (15).

42. Tighten left rear strap support (24).

43. Loosen right rear strap support (5).

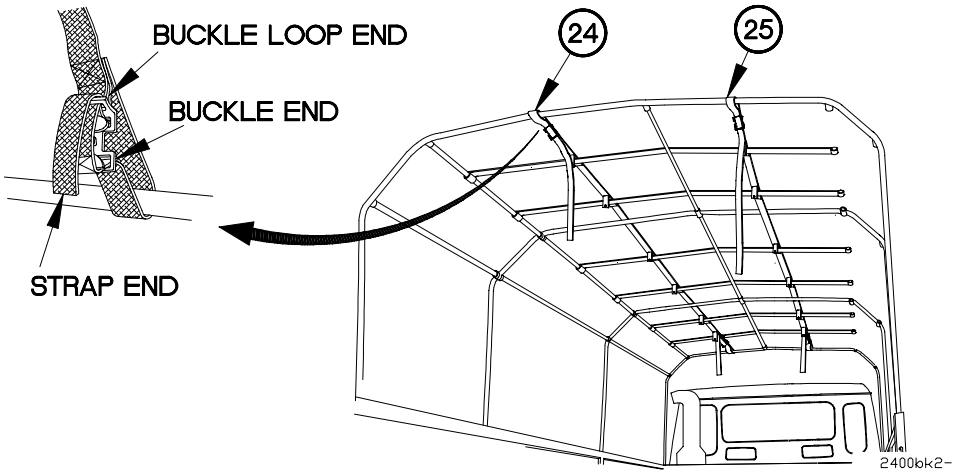
44. Perform steps (32) through (40) on right side tubes.



2400bk1-

45. Tighten right rear strap support (25).

46. Install two strap ends through buckle loop ends on left strap support (24) and right strap support (25).



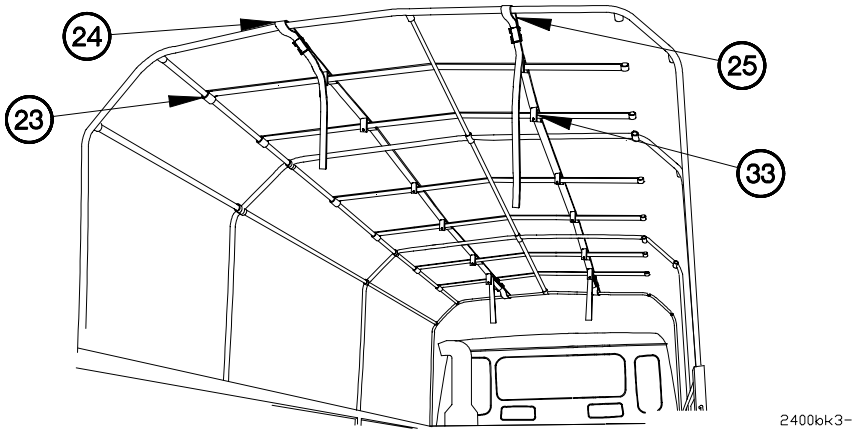
2400bk2-

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Adjust braces as needed to snap and attach flaps over braces.

47. Close six flaps (33) over braces (23) on left strap support (24) and right strap support (25).



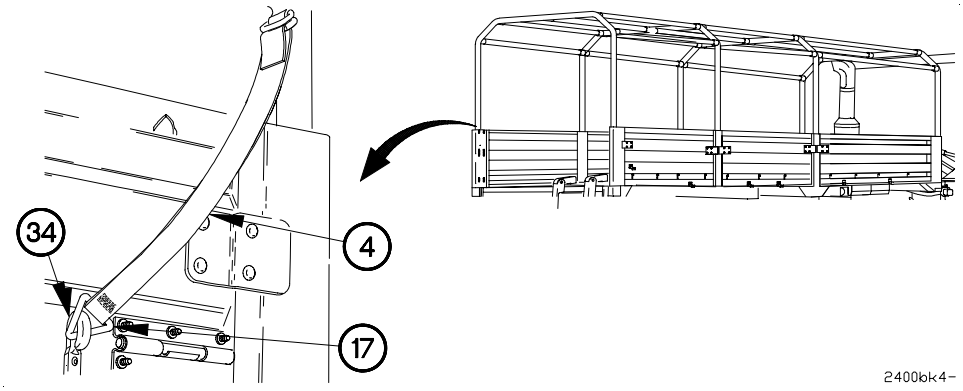
NOTE

Left and right sides of front, front center, and rear center, rear bows are secured the same way. Rear bow left side shown.

48. Position tiedown strap (4) on J-hook (34) with tri-ring (17).

49. Tighten tiedown strap (4).

50. Perform steps (48) and (49) on remaining tiedown straps.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

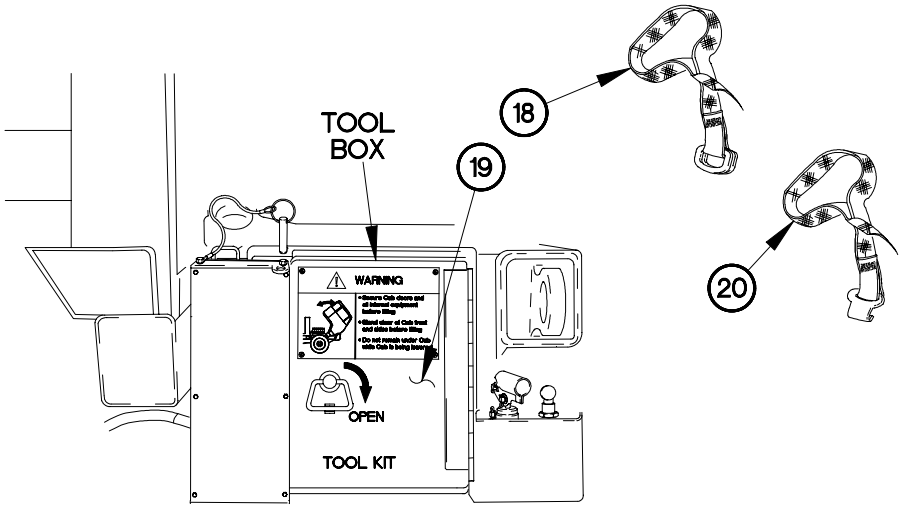
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

51. Open door (19) on tool box.

52. Remove three cargo cover tiedowns (20) from tool box.

53. Stow stowage strap (18) in tool box.

54. Close door (19) on tool box.



2400bk5-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

WARNING

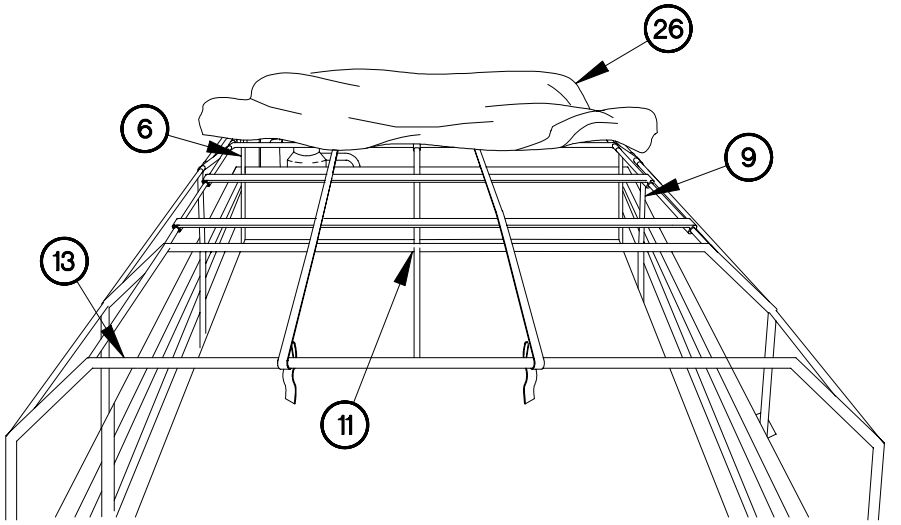
Long Wheel Base (LWB) cargo cover weighs approximately 80 lbs (36 kgs). LWB arctic cargo cover weighs approximately 120 lbs (55 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Step (54) through (56) require the aid of an assistant.

Cargo cover is marked with FRONT on the front flap.

55. Position cargo cover (26) on front bow (6), front center bow (9), rear center bow (11), and rear bow (13).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

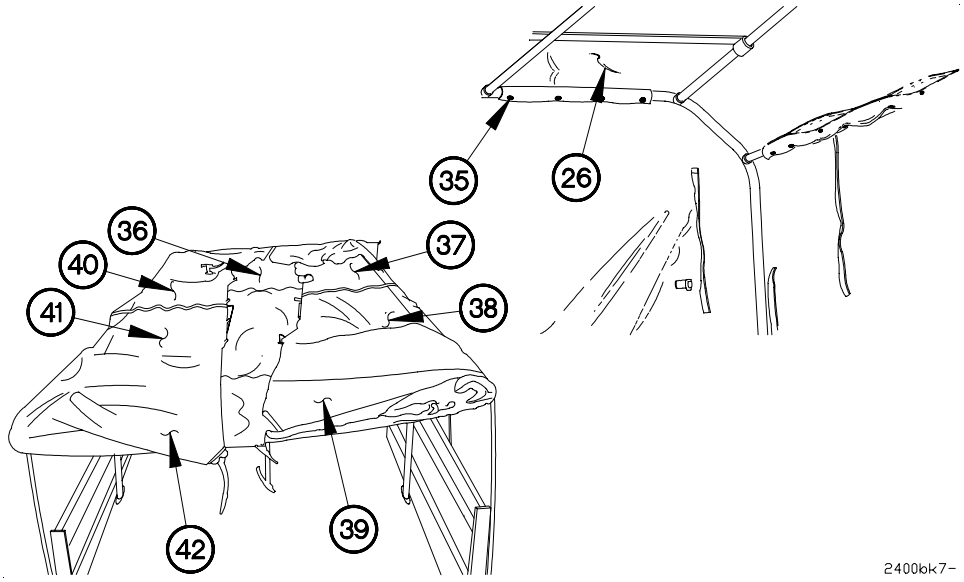
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Use snap extension as required.

56. Fasten snaps (35) on front, rear, sides, and center of cargo cover (26).

57. Unfold front flap (36), right side front flap (37), right side center flap (38), right side rear flap (39), left side front flap (40), left side center flap (41), and left side rear flap (42).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

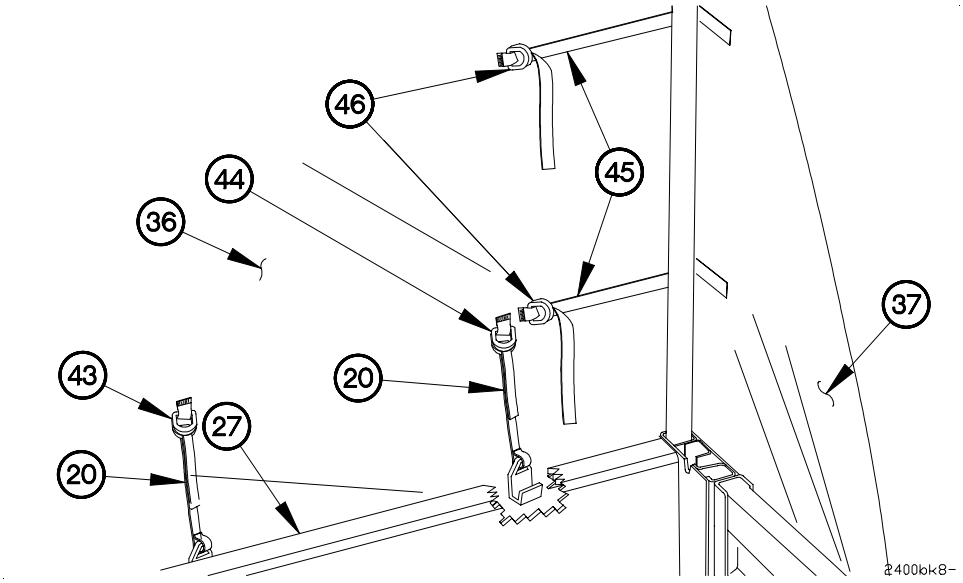
Cargo covers are equipped with either D-rings or buckles and D-rings. Cargo cover with D-ring shown.

58. Install cargo cover tiedown (20) in center D-ring (43) on front flap (36) with hook end of strap in outside lip of cargo bed (27).

59. Install cargo cover tiedown (20) in right side D-ring (44) on front flap (36) with hook end of strap in outside lip of cargo bed (27).

60. Install two straps (45) on right side front flap (37) in two D-rings (46) on front flap (36).

61. Perform steps 59 and 60 on left side front flap.



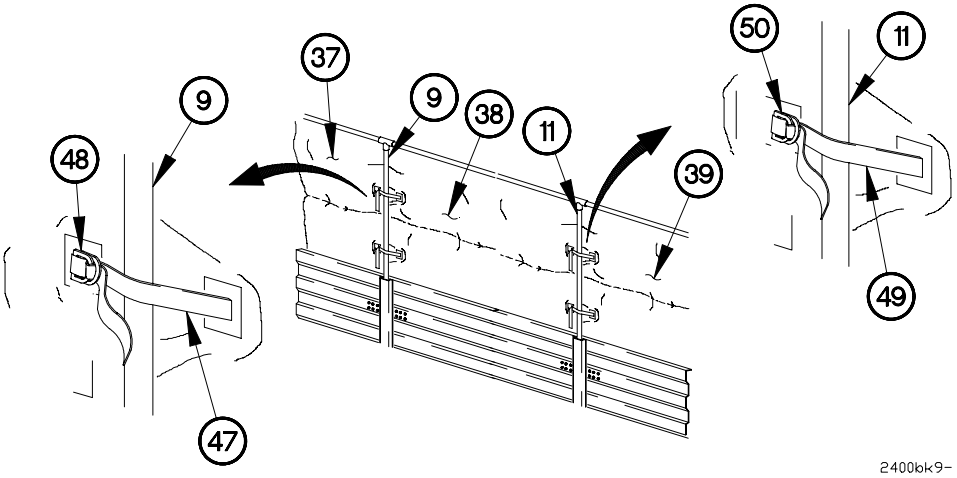
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

62. Install two straps (47) from right side center flap (38) on inside of front center bow (9) in two D-rings (48) on right side front flap (37).

63. Install two straps (49) from right side rear flap (39) on inside of rear center bow (11) in two D-rings (50) on right side center flap (38).

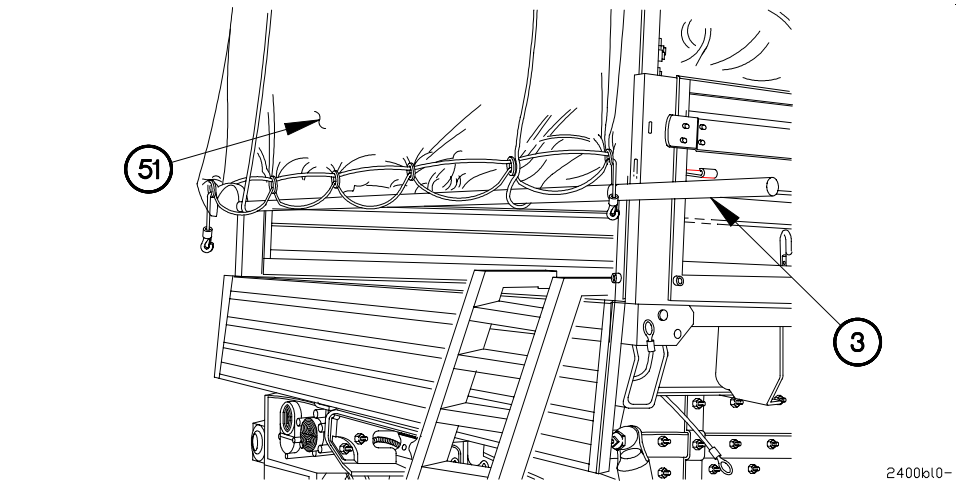
64. Perform steps 62 and 63 on left side of vehicle.



65. Unfold rear flap (51).

66. Position steel pole (3) in lower portion of rear flap (51).

67. Stow ladder (WP 0023 00).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

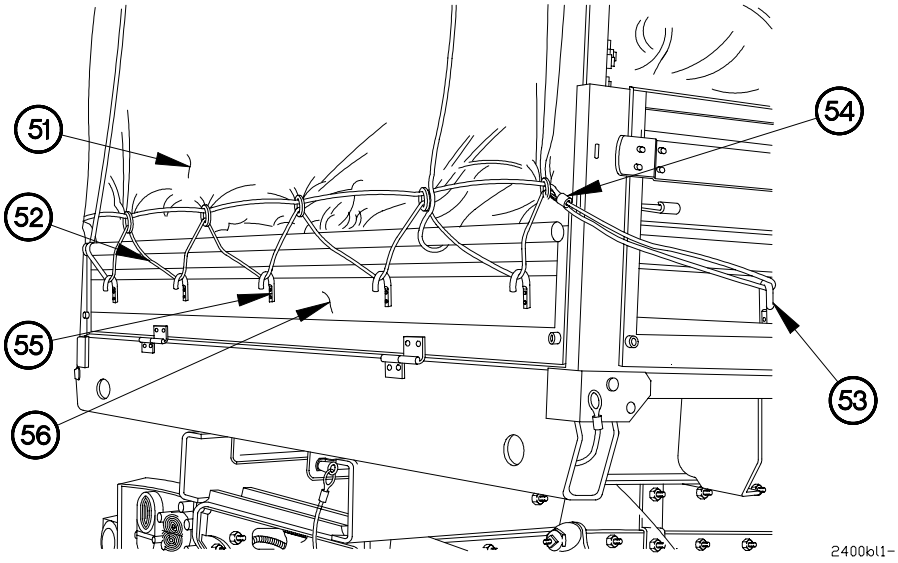
Cargo covers flaps are equipped with either D-rings or loops and D-rings. Cargo cover flaps with D-rings shown.

D-rings are attach to lower part of flaps with shock cord placed through D-rings. Shock cord is attached to J-hooks on cargo bed to hold flap down.

68. Position shock cord (52) on righ side of rear flap (51) on J-hook (53) and D-ring (54).

69. Perform step 68 on left side of vehicle.

70. Install shock cord (52) on five J-hooks (55) on tailgate (56).



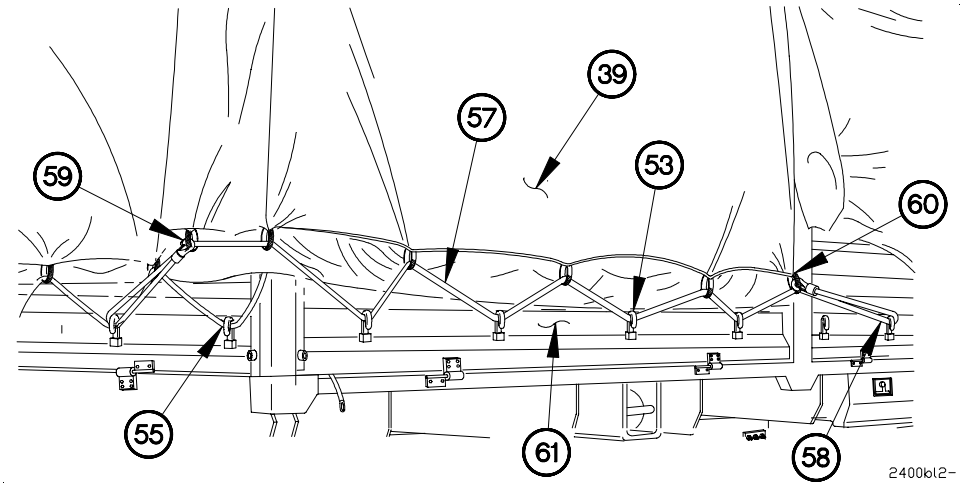
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

71. Position shock cord (57) on right side rear flap (39) on J-hooks (55 and 58) and D-rings (59 and 60).

72. Install shock cord (57) on four J-hooks (53) on right rear side panel (61).

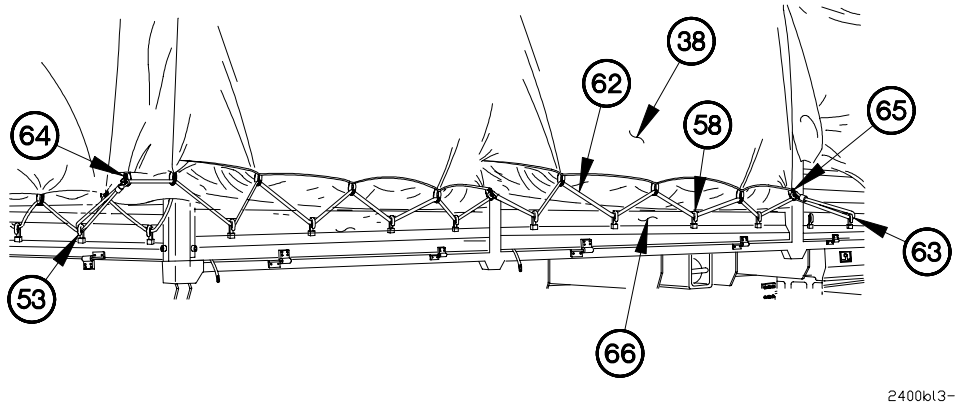
73. Perform steps (71) and (72) on left side of vehicle.



74. Position shock cord (62) on right side center flap (38) on J-hooks (53 and 63) and D-rings (64 and 65).

75. Install shock cord (62) on four J-hooks (58) on right center side panel (66).

76. Perform steps (74) and (75) on left side of vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

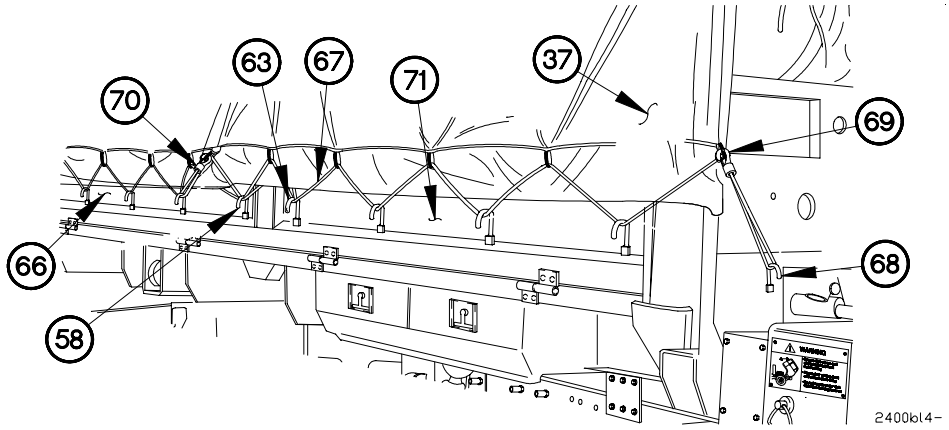
M1085A1 SOFT TOP (STEEL BOWS) INSTALLATION - Continued

77. Position shock cord (67) on right side front flap (37) on J-hook (68) and D-ring (69).

78. Position shock cord (67) on right side front flap (37) on J-hook (58) and D-ring (70).

79. Install shock cord (67) on four J-hooks (63) on right front side panel (71) and J-hook (58) on right center side panel (66).

80. Perform steps 77 through 79 on left side of vehicle.

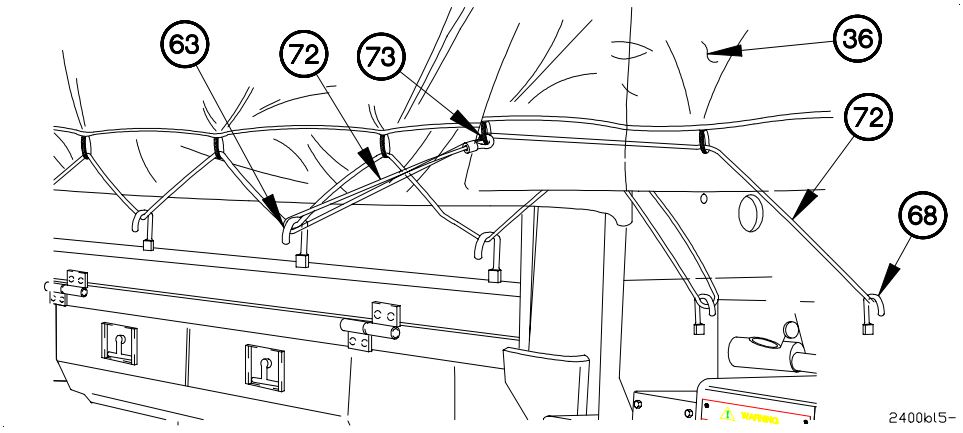


81. Install shock cord (72) on right side of front flap (36) on J-hook (68).

82. Install shock cord (72) on right side of front flap (36) on J-hook (63) and D-ring (73).

83. Perform steps 81 and 82 on left side of vehicle.

84. Raise spare tire (WP 002300).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL

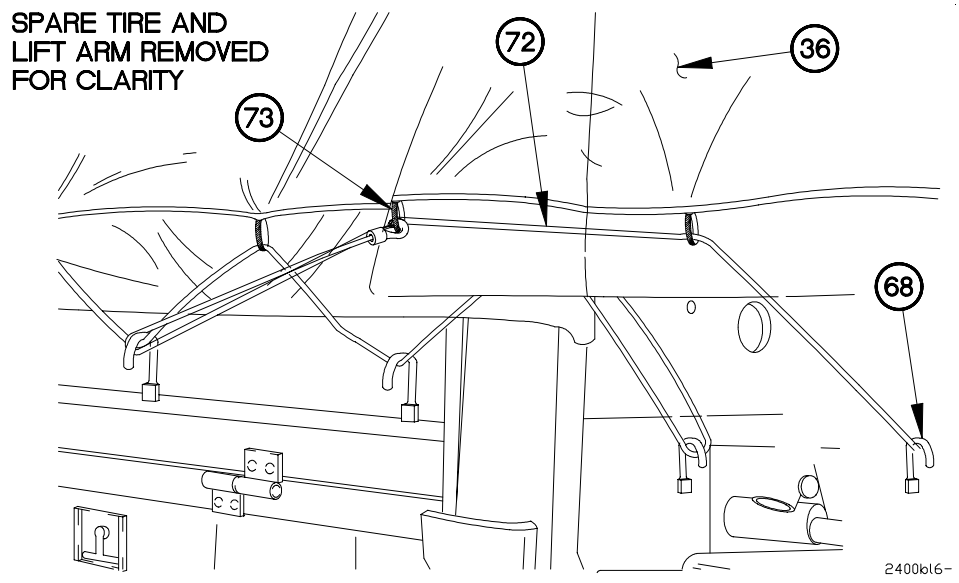
1. Lower spare tire (WP 0023 00).

NOTE

Cargo cover flaps are equipped with either D-rings or loops and D-rings. Cargo cover flaps with D-rings shown.

Steps 2 through 32 require the aid of an assistant.

2. Remove shock cord (72) from D-ring (73) on right side of front flap (36).
3. Remove shock cord (72) from J-hook (68).
4. Perform steps 2 and 3 on left side of front flap.



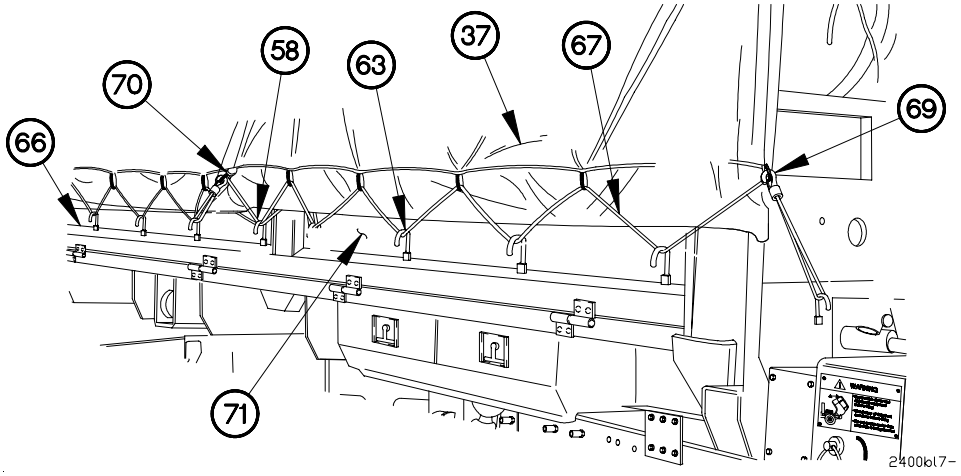
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

5. Remove shock cord (67) from four J-hooks (63) on right front side panel (71) and J-hook (58) on right center side panel (66).

6. Remove shock cord (67) from D-rings (70 and 69) on right side front flap (37).

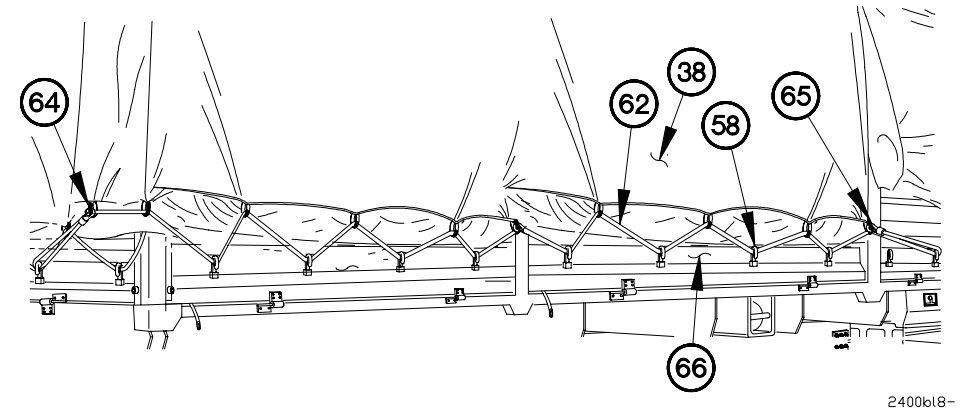
7. Perform steps 5 and 6 on left side front flap.



8. Remove shock cord (62) from four J-hooks (58) on right center side panel (66).

9. Remove shock cord (62) from D-rings (65 and 64) on right side center flap (38).

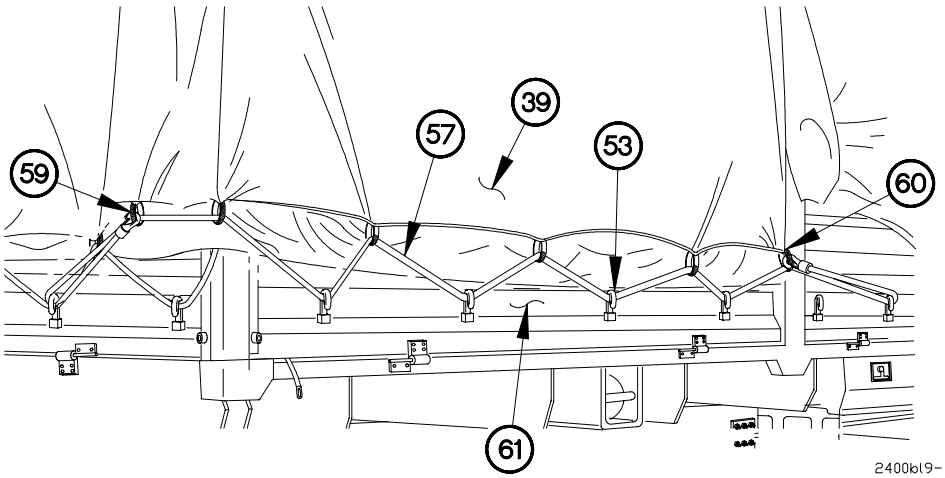
10. Perform steps 8 and 9 on left side center flap.



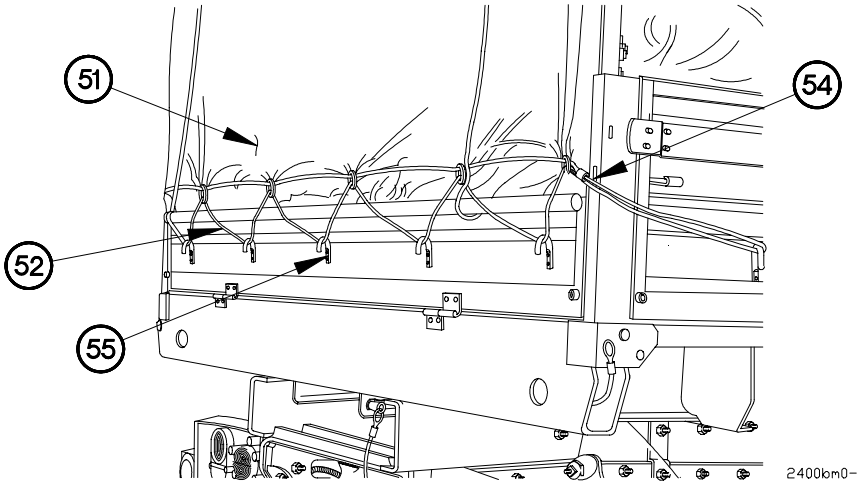
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

11. Remove shock cord (57) from four J-hooks (53) on right rear side panel (61).
12. Remove shock cord (57) from D-rings (60 and 59) on right side rear flap (39).
13. Perform steps 11 and 12 on left side rear flap.



14. Remove shock cord (52) from five J-hooks (55).
15. Remove shock cord (52) from D-ring (54) on rear flap (51).
16. Perform step 15 on left side of vehicle.

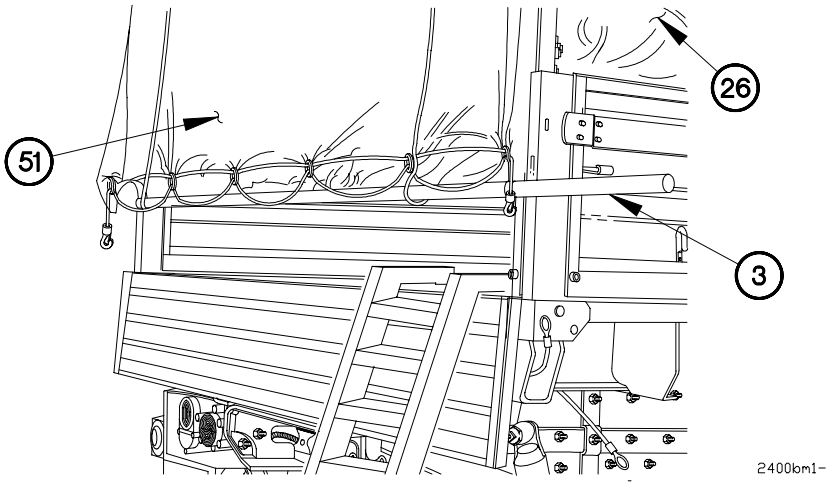


M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

17. Lower ladder (WP 0023 00).

18. Remove steel pole (3) from rear flap (51).

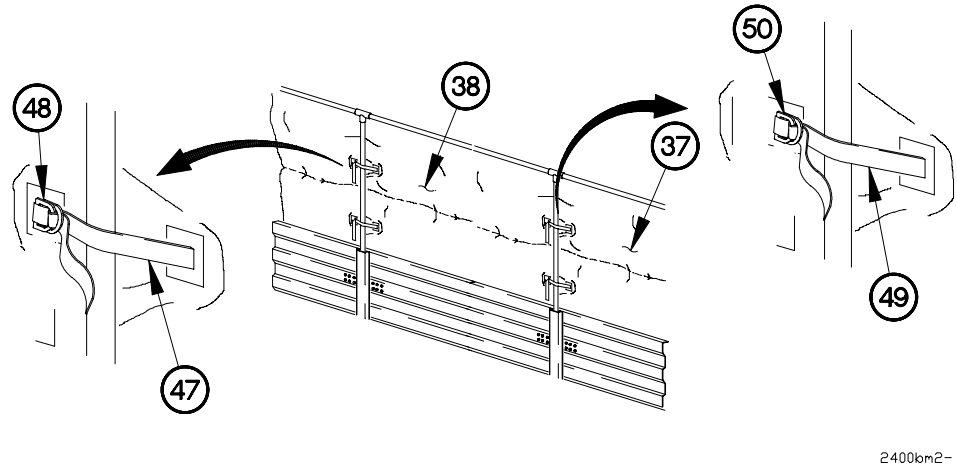
19. Fold rear flap (51) on top of cargo cover (26).



20. Remove two straps (47) from D-rings (48) on right side front flap (37).

21. Remove two straps (49) from D-rings (50) on right side center flap (38).

22. Perform steps 20 and 21 on left side of vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

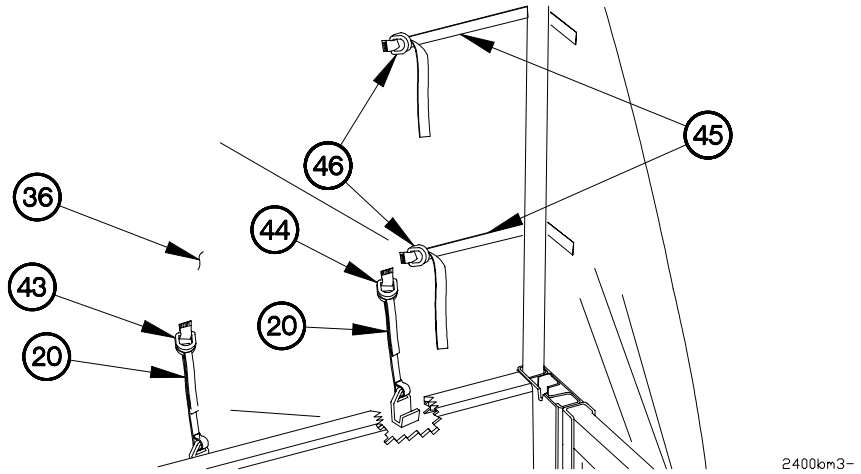
M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

23. Remove two straps (45) from D-rings (46) on right side of front flap (36).

24. Remove cargo cover tiedown (20) from right side D-ring (44) on front flap (36).

25. Perform steps 23 and 24 on left side of front flap.

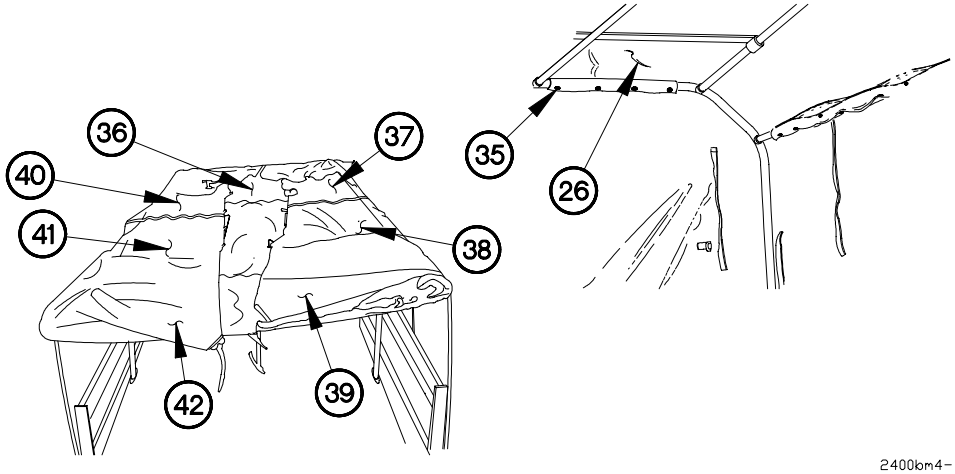
26. Remove cargo cover tiedown (20) from center D-ring (43) on front flap (36).



27. Fold front flap (36), right side front flap (37), right side center flap (38), right side rear flap (39), left side front flap (40), left side center flap (41), and left side rear flap (42) on top of cargo cover (26).

28. Unfasten snaps (35) on front, rear, sides, and center of cargo cover (26).

29. Fold cargo cover (26) to front of vehicle.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

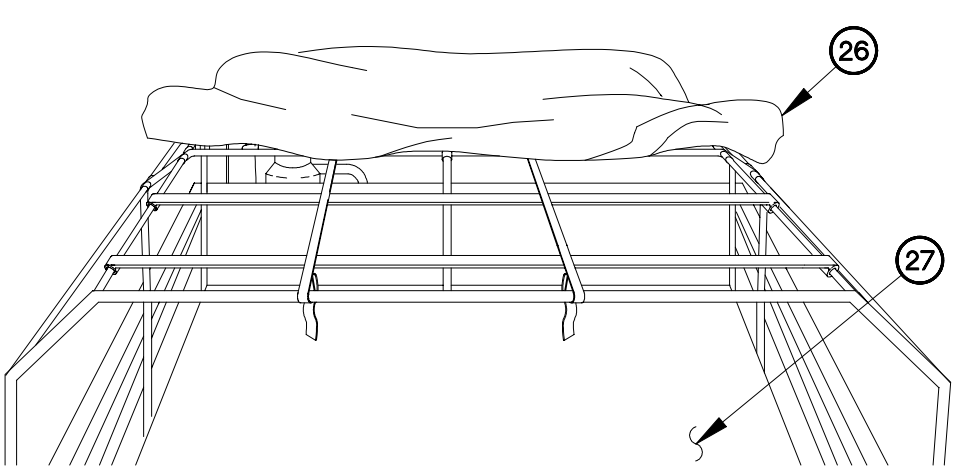
30. Fold right side of cargo cover (26) toward center of cargo bed (27).

31. Fold left side of cargo cover (26) toward center of cargo bed (27).

WARNING

Long Wheel Base (LWB) cargo cover weighs approximately 80 lbs (36 kgs). LWB arctic cargo cover weighs approximately 120 lbs (55 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

32. Remove cargo cover (26) from vehicle.



2400bm5-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

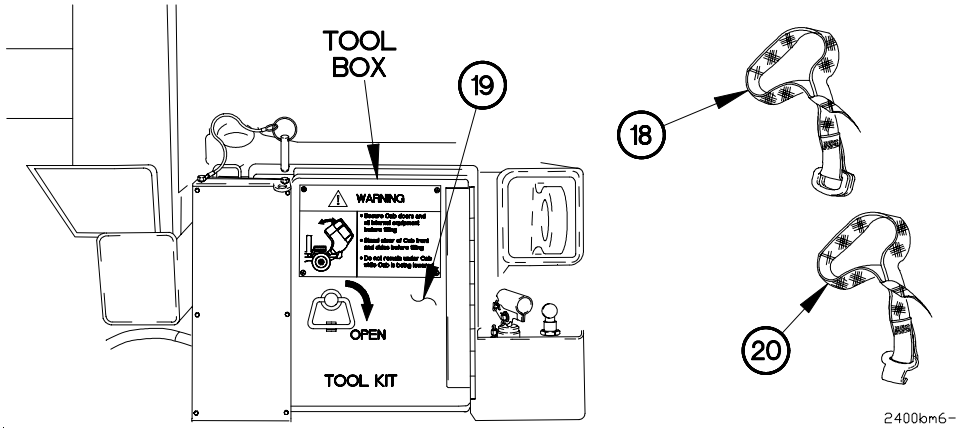
M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

33. Open door (19) on tool box.

34. Remove stowage strap (18) from tool box.

35. Stow three cargo cover tiedowns (20) in tool box.

36. Close door (19) on tool box.



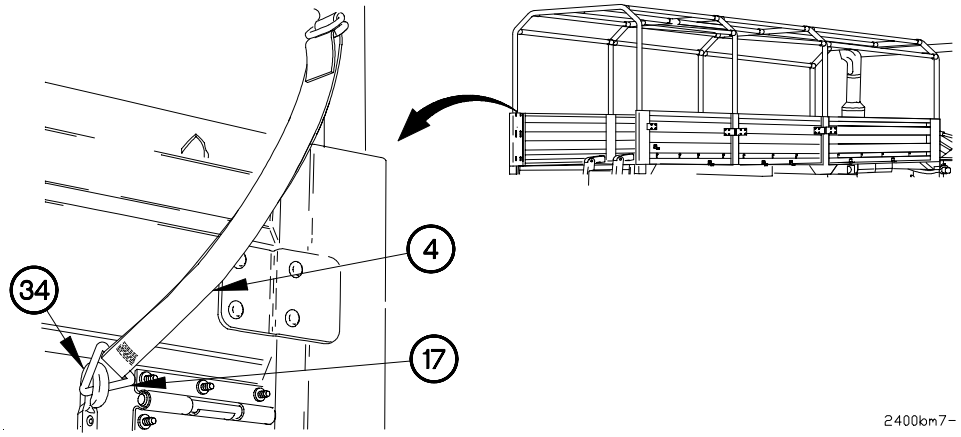
NOTE

Left and right sides of front, front center, rear center, and rear bows are unsecured the same way. Rear bow left side shown.

37. Loosen tiedown strap (4).

38. Remove tri-ring (17) on tiedown strap (4) from J-hook (34).

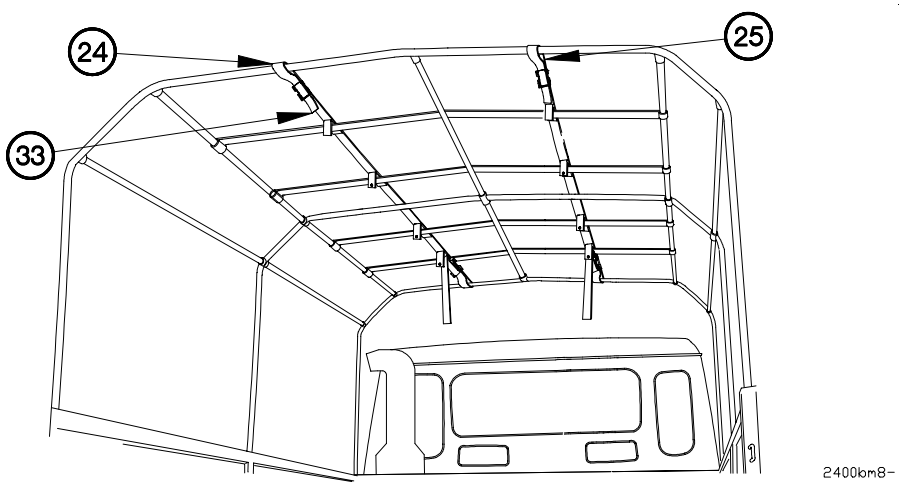
39. Perform steps 37 and 38 on remaining tiedown straps.



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

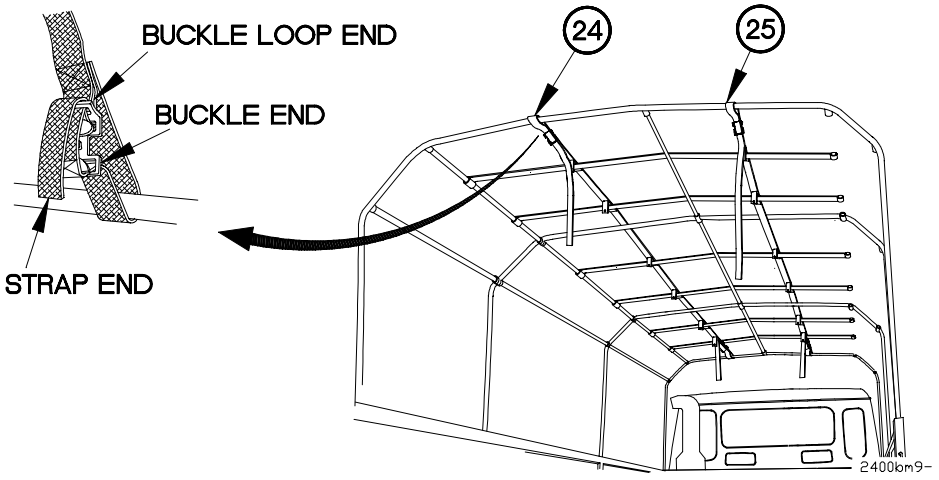
M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

40. Open six flaps (33) on left strap support (24) and right strap support (25).



41. Remove two rear strap ends from buckle loop ends on left strap support (24) and right strap support (25).

42. Loosen left rear strap support (24).



M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

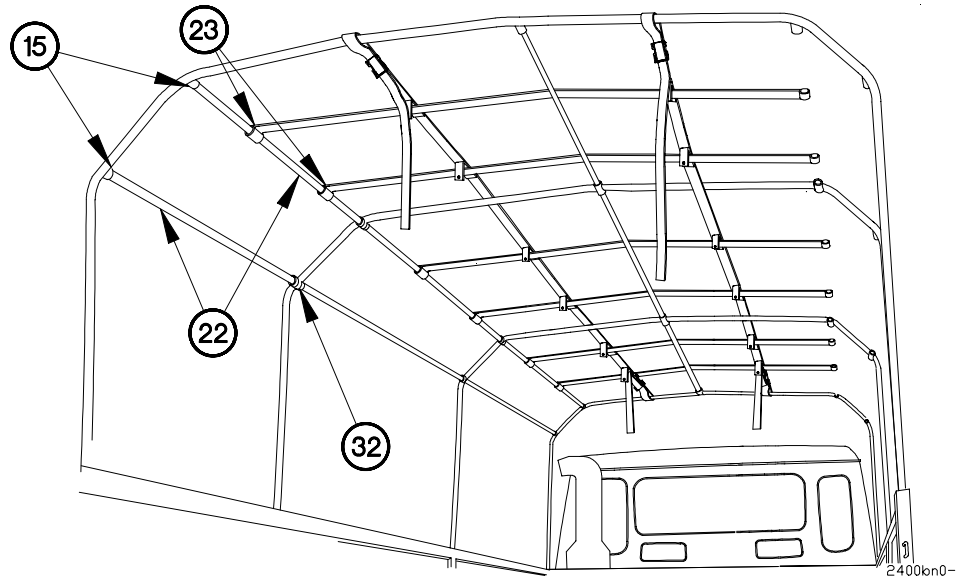
Left and right tubes are removed the same way. Left side tubes shown.

Steps 43 through 53 require the aid of an assistant.

43. Remove rear tube (22) from rear bow bracket (15) and rear center bow bracket (32).

44. Remove rear tube (22) from rear bow bracket (15) and rear center bow bracket (32).

45. Remove rear tube (22) from two braces (23).



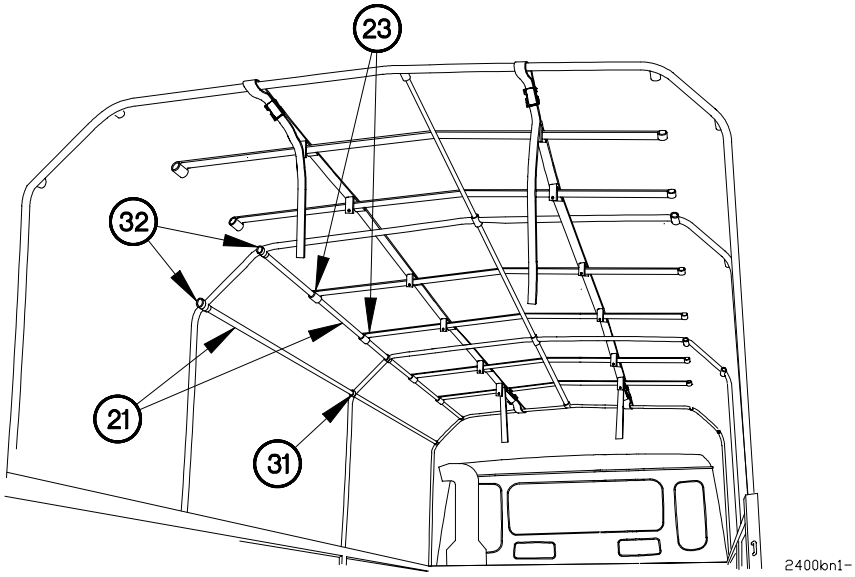
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

46. Remove center tube (21) from rear center bow bracket (32) and front center bow bracket (31).

47. Remove center tube (21) from rear center bow bracket (32) and front center bow bracket (31).

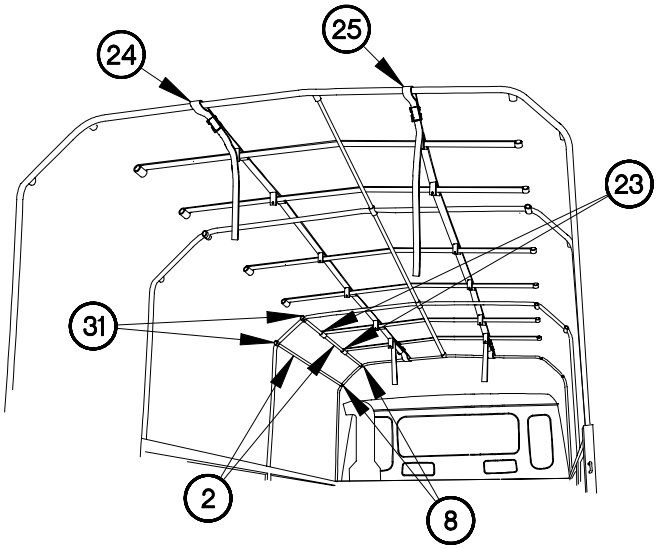
48. Remove center tube (21) from two braces (23).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

49. Remove front tube (2) from front bow bracket (8) and front center bow bracket (31).
50. Remove front tube (20 from front bow bracket (8) and front center bow bracket (31).
51. Remove front tube (2) from tow braces (23).
52. Tighten left rear strap support (24).
53. Loosen right rear strap support (25).
54. Perform steps 43 through 53 on right side tubes.
55. Tighten right rear strap support (25).

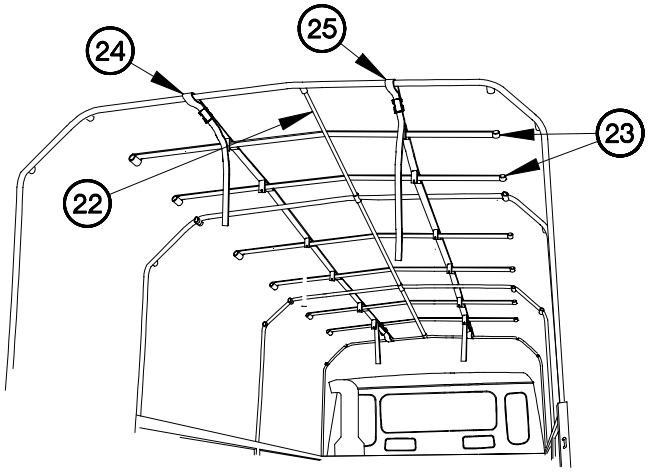


2400kn2-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

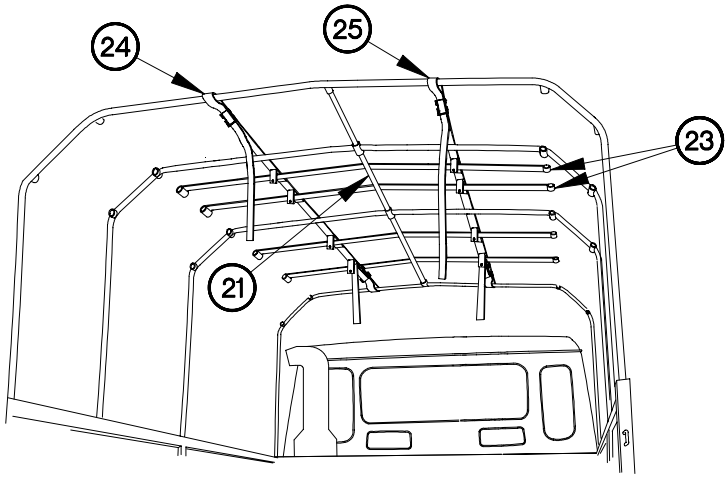
M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

56. Remove two braces (23) from rear tube (22), left strap support (24), and right strap support (25).



2400kn3-

57. Remove two braces (23) from center tube (21), left strap support (24), and right strap support (25).



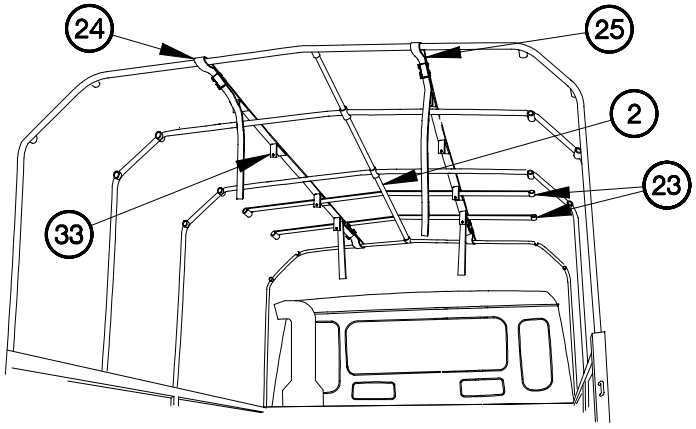
2400kn4-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

58. Remove two braces (23) from front tube (2), left strap support (24), and right strap support (25).

59. Close six flaps (33) on left strap support (24) and right strap support (25).



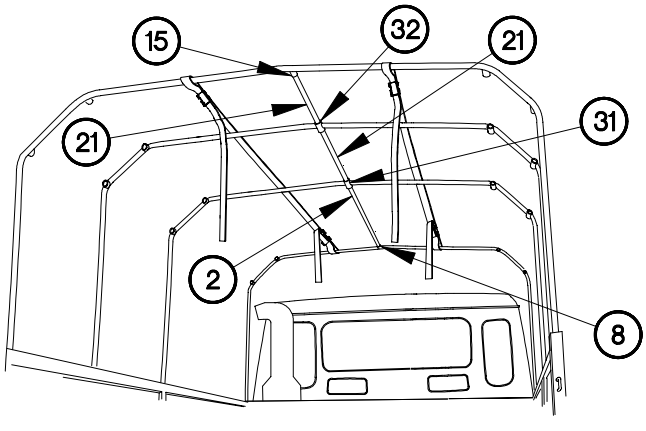
NOTE

Steps 60 through 62 require the aid of an assistant.

60. Remove rear tube (22) from rear bow bracket (15) and rear center bow bracket (32).

61. Remove center tube (21) from rear center bow bracket (32) and front center bow bracket (31).

62. Remove front tube (2) from front center bow bracket (31) and front bow bracket (8).

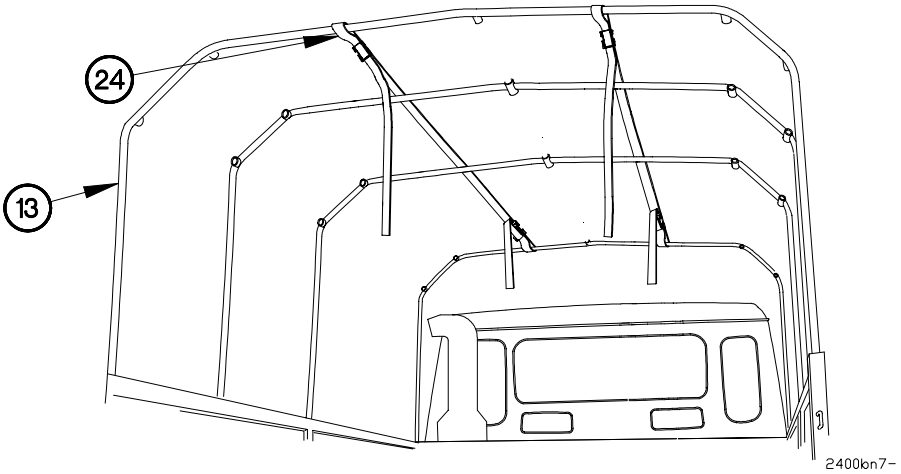


M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

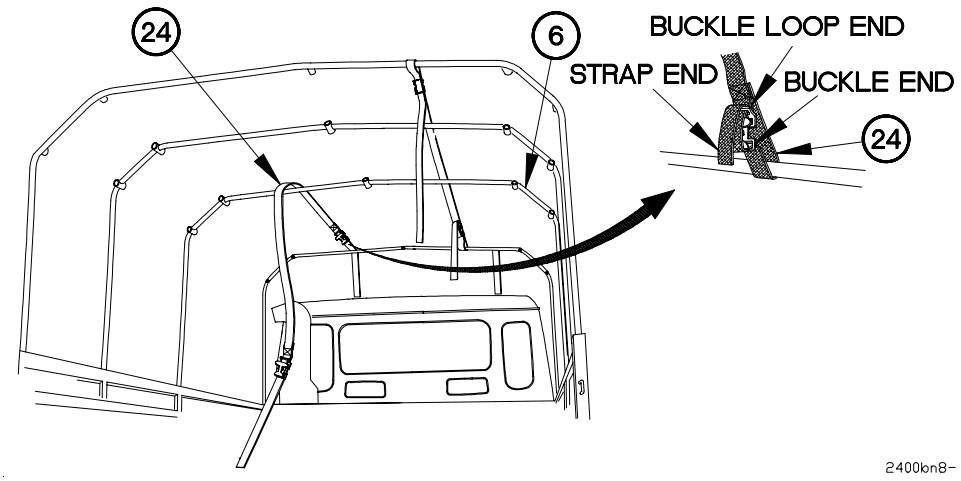
Left and right strap supports are removed the same way. Left strap support shown.

63. Remove left strap support (24) from rear bow (13).



64. Remove front strap end from buckle loop end on left strap support (24).

65. Remove left strap support (24) from front bow (6).

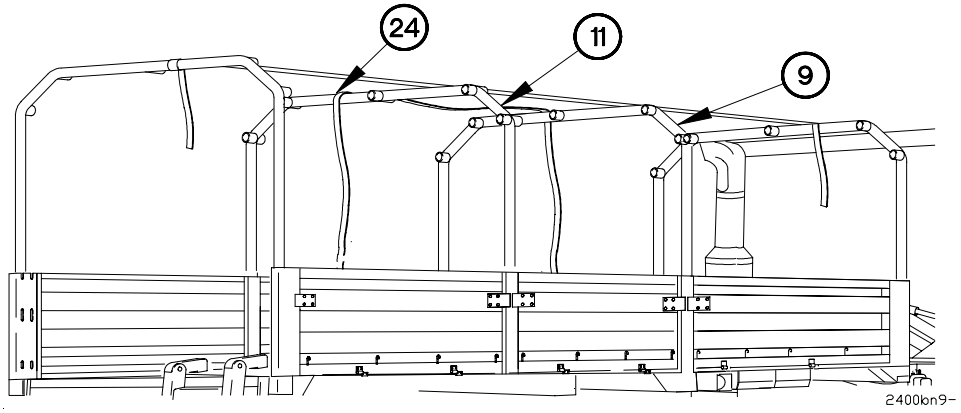


CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

66. Remove left strap support (24) from rear center bow (11) and front center bow (9).

67. Perform steps 63 through 66 on right strap support.



NOTE

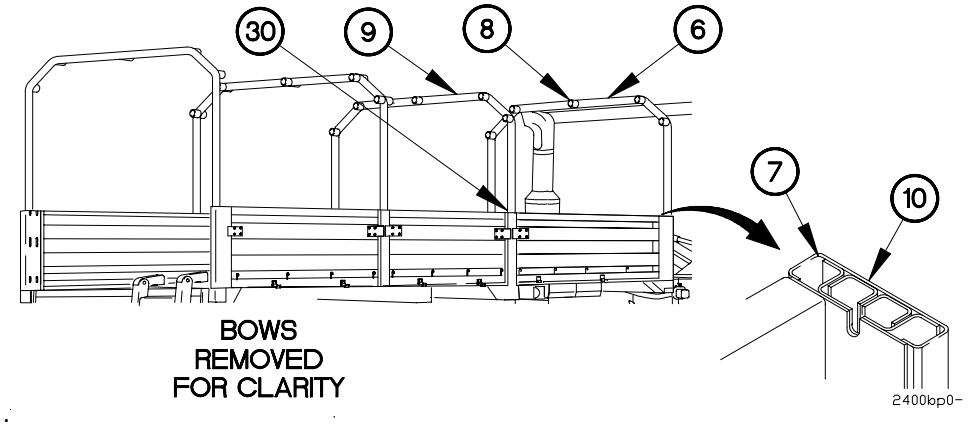
Steps 68 through 75 require the aid of an assistant.

68. Remove front bow (6) from front cargo bed pockets (7).

69. Position front bow (6) in front cargo bed pockets (7) with front bow brackets (8) towards front of vehicle.

70. Remove front center bow (9) from front pockets of front center cargo bed stakes (30).

71. Position front center bow (9) in front center cargo bed pockets (10).



CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

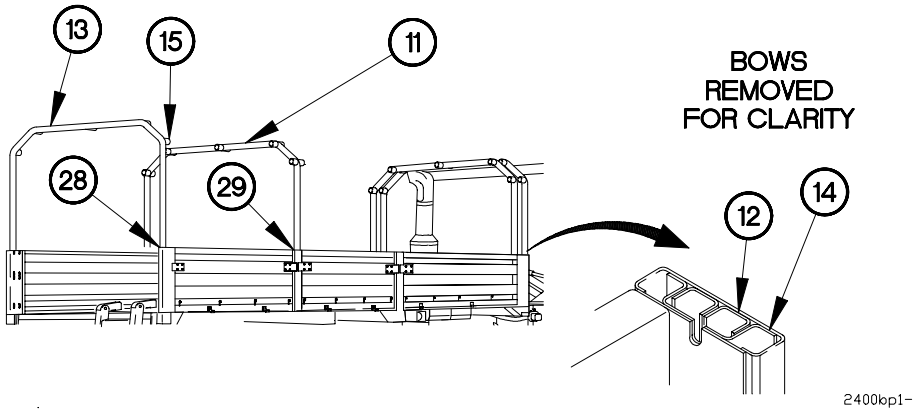
M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

72. Remove rear center bow (11) from front pockets of rear center cargo bed stakes (29).

73. Position rear center bow (11) in rear center cargo bed pockets (12).

74. Remove rear bow (13) from rear pockets or rear cargo bed stakes (28).

75. Position rear bow (13) in rear cargo bed pockets (14) with rear bow brackets (15) towards rear of vehicle.



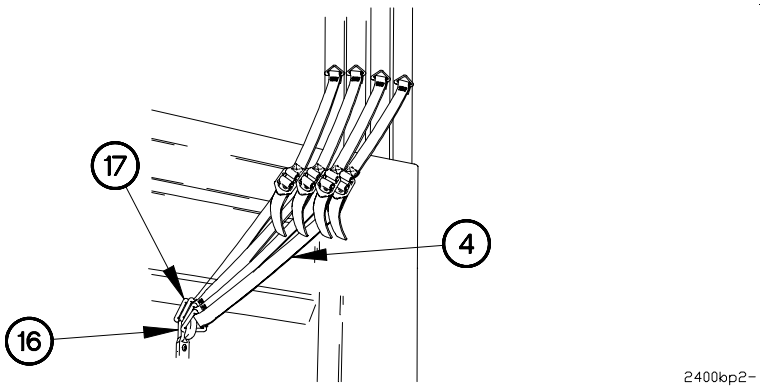
NOTE

Left and right sides of front, front center, rear center, and rear bows are secured the same way. Right side shown.

76. Position four tiedown straps (4) on J-hook (16) with four tri-rings (17).

77. Tighten four tiedown straps (4).

78. Perform steps 76 and 77 on left side.



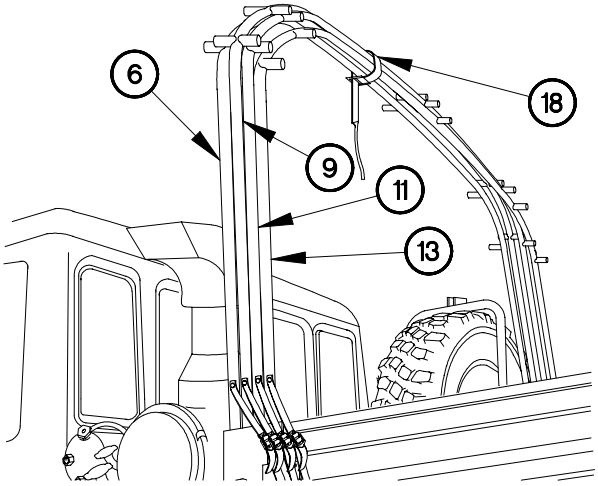
CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

Stowage strap should be positioned between center bow brackets and left inside bow brackets.

79. Install stowage strap (18) on front bow (6), front center bow (9), rear center bow (11), and rear bow (13).

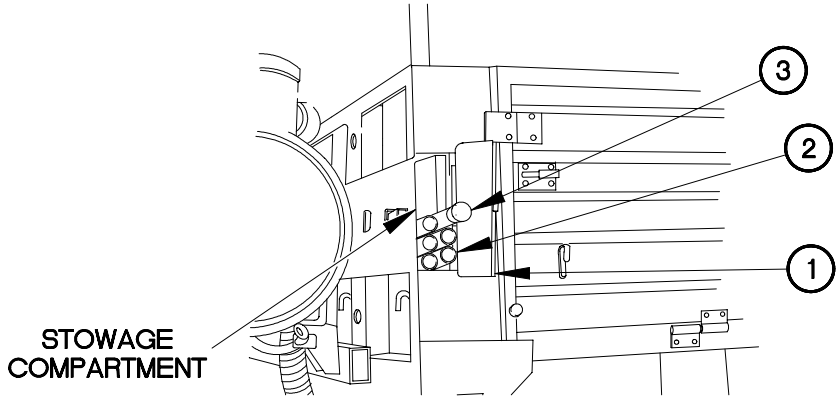


2400bp3-

80. Open stowage compartment door (1).

81. Stow five front tubes (2) and steel pole (3) in stowage compartment.

82. Close stowage compartment door (1).



2400bp4-

CARGO COVER KIT INSTALLATION/REMOVAL - Continued 0024 00

M1085A1 SOFT TOP (STEEL BOWS) REMOVAL - Continued

WARNING

Long Wheel Base (LWB) cargo cover weighs approximately 80 lbs (36 kgs). LWB arctic cargo cover weighs approximately 120 lbs (55 kgs). An assistant is required to lift cargo cover. Failure to comply may result in injury to personnel or damage to equipment.

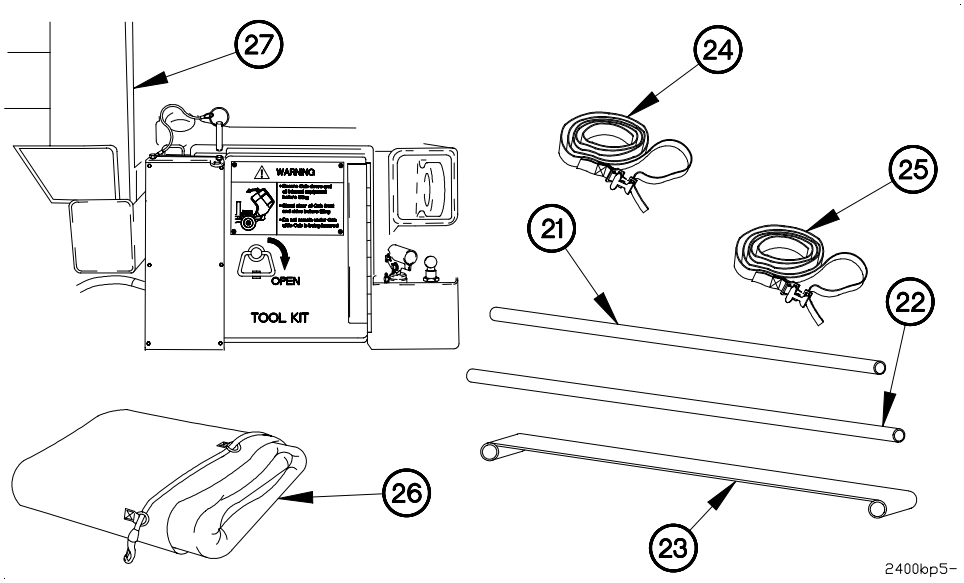
NOTE

Step 83 requires the aid of an assistant.

83. Stow five rear tubes (22), center tubes (21), six braces (23), left strap support (24), right strap support (25), and cargo cover (26) in cargo bed (27).

84. Raise spare tire (WP 0023 00).

85. Stow ladder (WP 0023 00).



END OF OPERATING PROCEDURE

CARGO COVER FLAP OPERATION 0025 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0023 00

Personnel Required
Three

GENERAL

This work package provides the data and procedures for cargo cover flap operation. Items covered include Raising Rear Flap, Lowering Rear Flap, Raising Side Flaps, and Lowering Side Flaps.

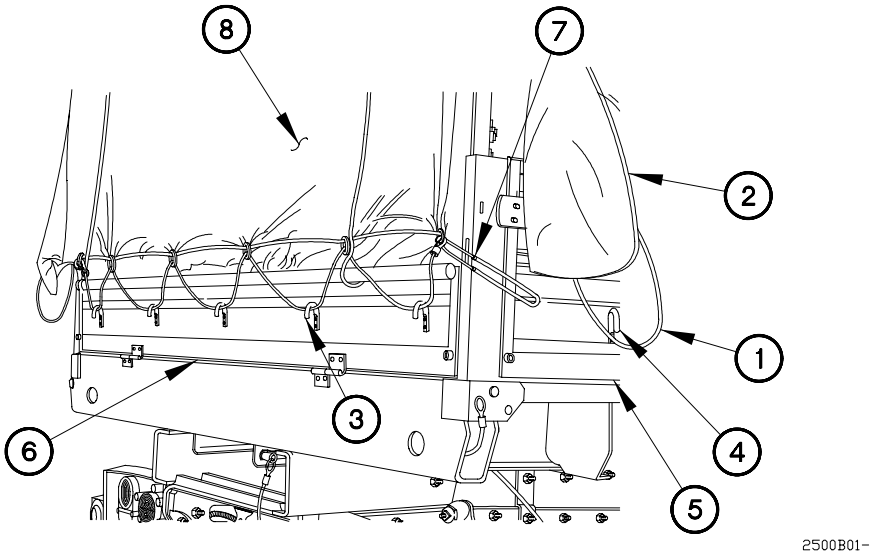
RAISING REAR FLAP

NOTE

Left and right side rear flaps are disconnected the same way. Right side rear flap shown.

1. Remove shock cord (1) on right side rear flap (2) from two J-hooks (3 and 4) on right side rear panel (5) and tailgate (6).

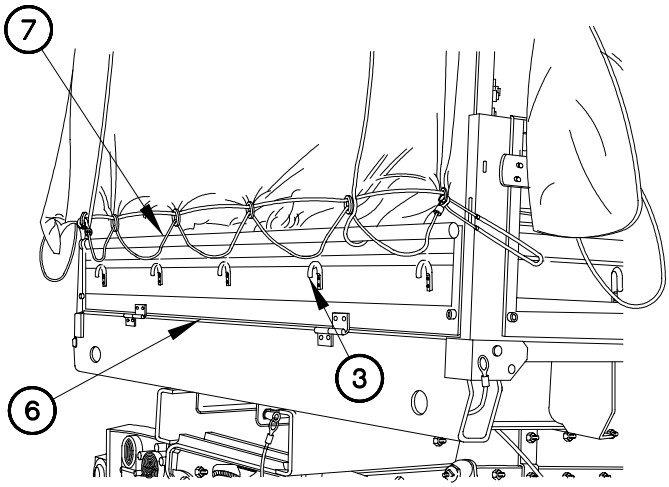
2. Remove shock cord (7) on right side of rear flap (8) from J-hook (4) on right side rear panel (5).



CARGO COVER FLAP OPERATION - Continued 0025 00

RAISING REAR FLAP - Continued

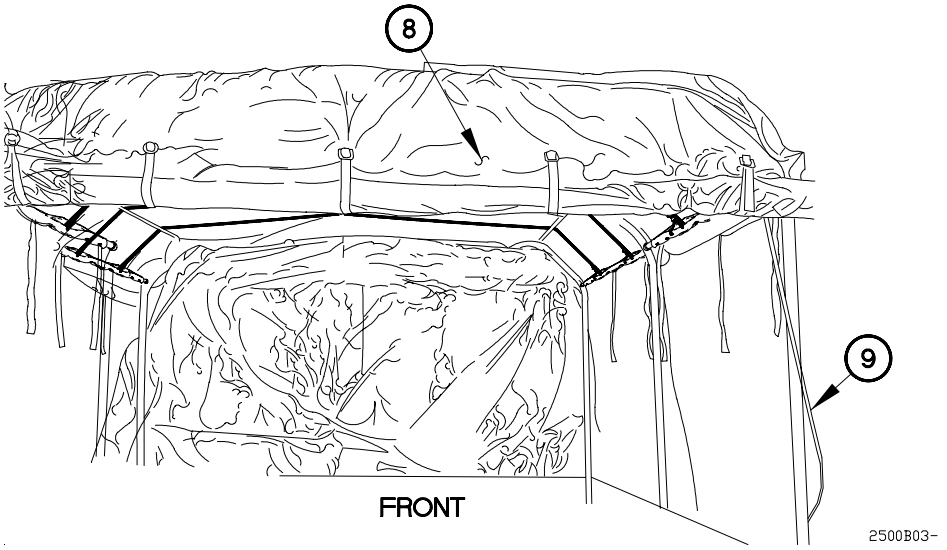
3. Perform steps 1 and 2 on left side of rear flap.
4. Remove shock cord (7) from five J-hooks (3) on tailgate (6).
5. Lower ladder (WP 0023 00).



NOTE

Steps 6 through 9 are performed from inside cargo bed.

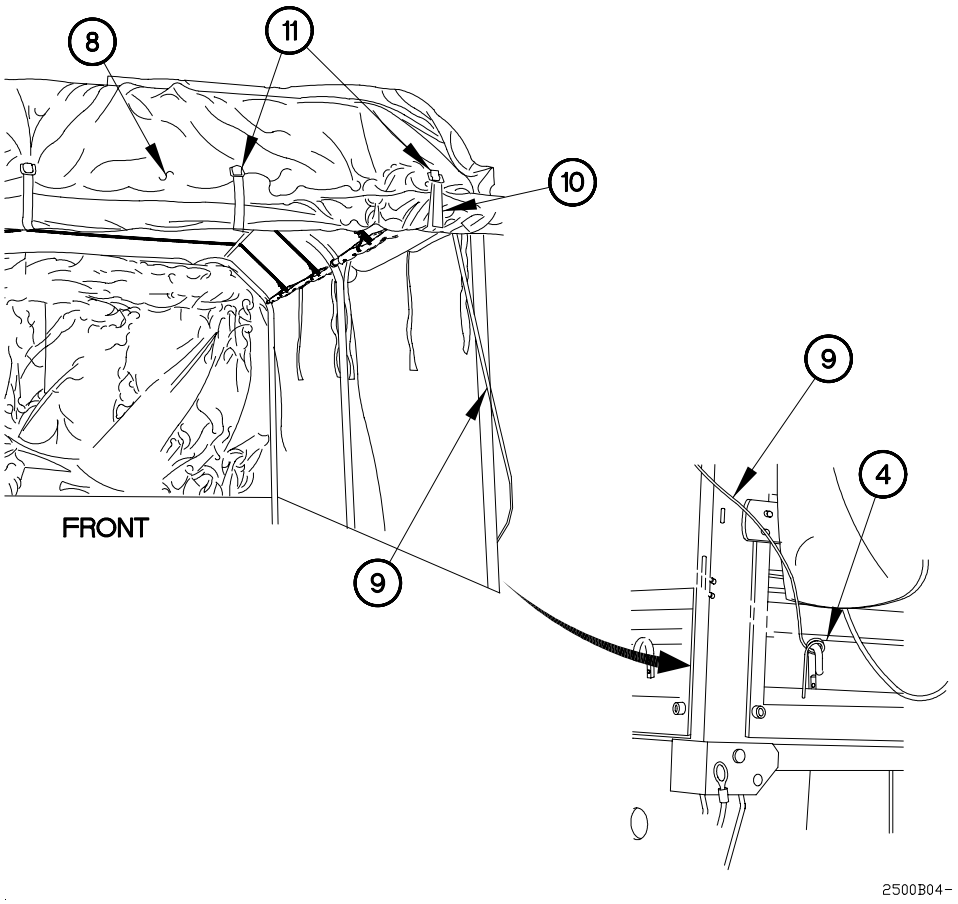
6. Pull draw string (9) to raise rear flap (8).



CARGO COVER FLAP OPERATION - Continued 0025 00

RAISING REAR FLAP - Continued

7. Tie draw string (9) to J-hook (4).
8. Install five straps (10) around rear flap (8) to five D-rings (11).
9. Stow ladder (WP 0023 00).



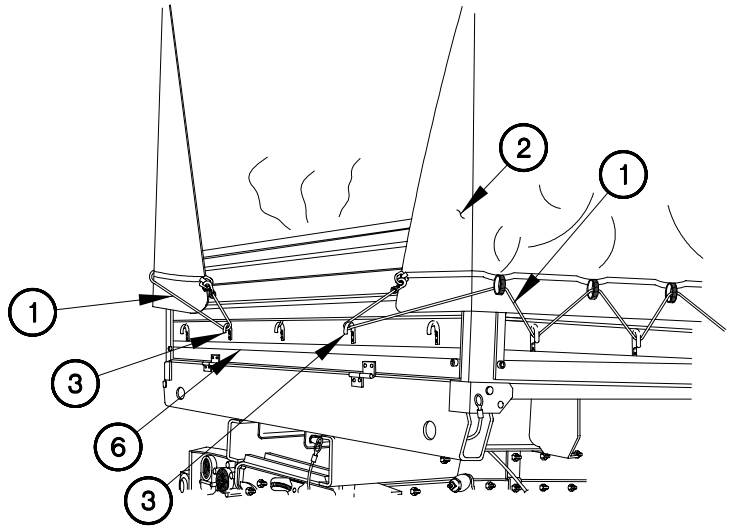
CARGO COVER FLAP OPERATION - Continued 0025 00

RAISING REAR FLAP - Continued

10. Pull right side rear flap (2) over tailgate (6).

11. Position shock cord (1) on J-hook (3).

12. Perform steps 10 and 11 on left side of rear flap.

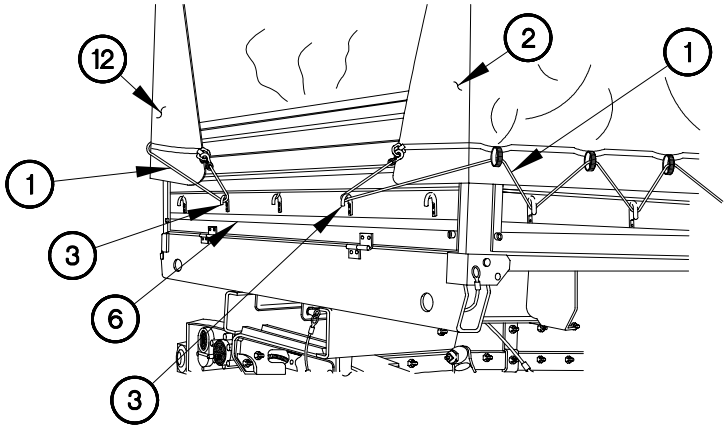


2500B05-

LOWERING REAR FLAP

1. Remove two shock cords (1) on right and left side rear flaps (2 and 12) from two J-hooks (3) on tailgate (6).

2. Lower ladder (WP 0023 00).



2500B06-

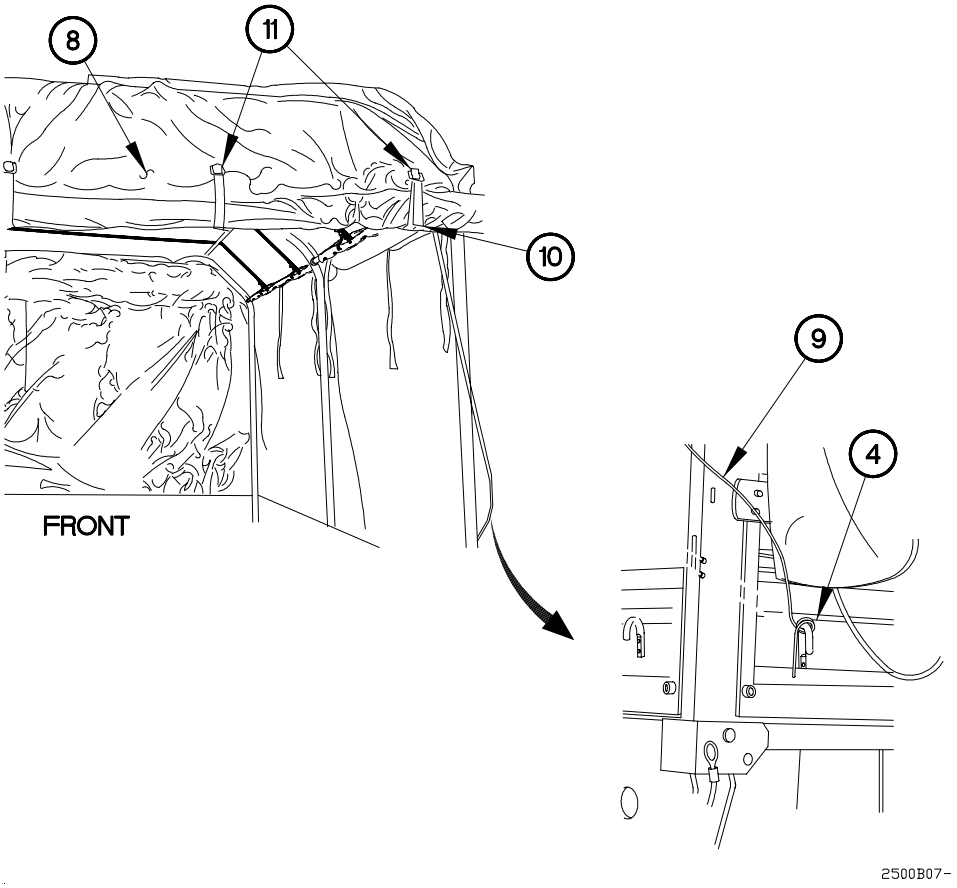
CARGO COVER FLAP OPERATION - Continued 0025 00

LOWERING REAR FLAP - Continued

NOTE

Steps 3 through 5 are performed inside cargo bed.

3. Disconnect five straps (10) from D-rings (11).
4. Remove draw string (9) from J-hook (4).
5. Lower rear flap (8) with draw string (9).
6. Stow ladder (WP 0023 00).



CARGO COVER FLAP OPERATION - Continued 0025 00

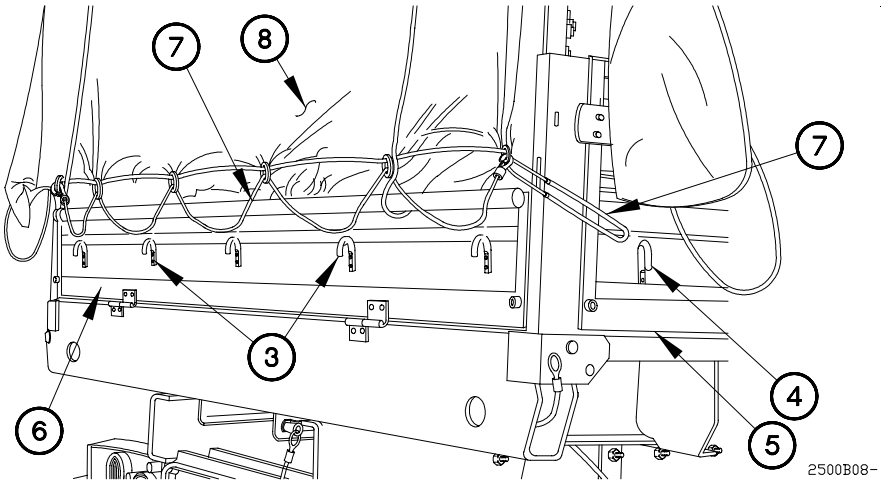
LOWERING REAR FLAP - Continued

NOTE

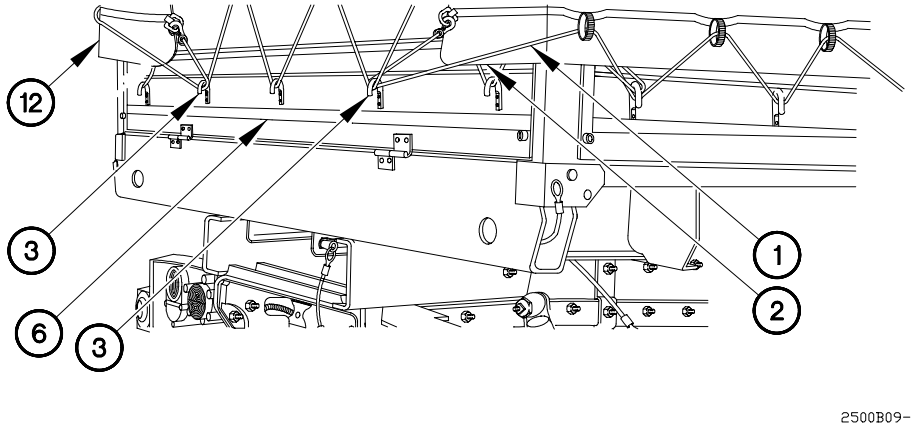
Right and left side rear flaps are installed the same way. Right side rear flap shown.

7. Install shock cord (7) on rear flap (8) to J-hook (4) on right and left side rear panels (5).

8. Install shock cord (7) on five J-hooks (3) on tailgate (6).



9. Install shock cord (1) from right and left side rear flaps (2 and 12) on two J-hooks (3) on tailgate (6).



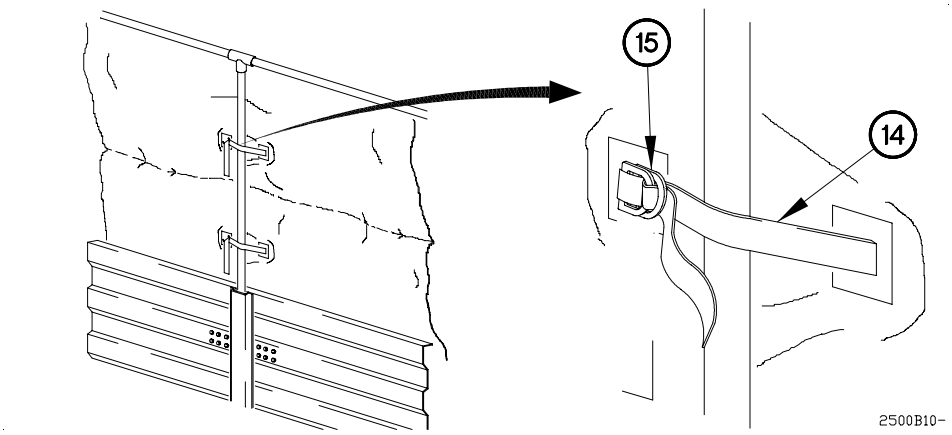
RAISING SIDE FLAPS

1. Lower ladder (WP 0023 00).
2. Raise rear flap (WP 0023 00).

NOTE

All side flaps are raised the same way. Right side rear flap shown.

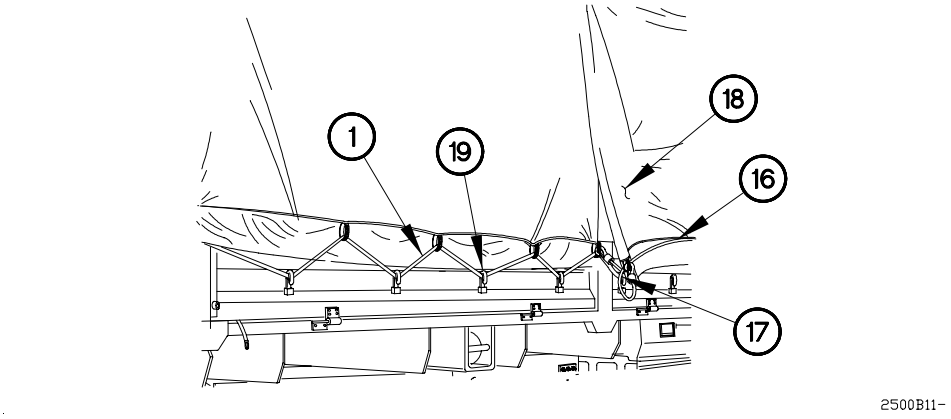
3. Disconnect two straps (14) from D-rings (15).



NOTE

Steps 4 through 8 require the aid of two assistants.

4. Remove shock cord (16) from two J-hooks (17) on right side of front flap (18).
5. Remove shock cord (1) from five J-hooks (19).



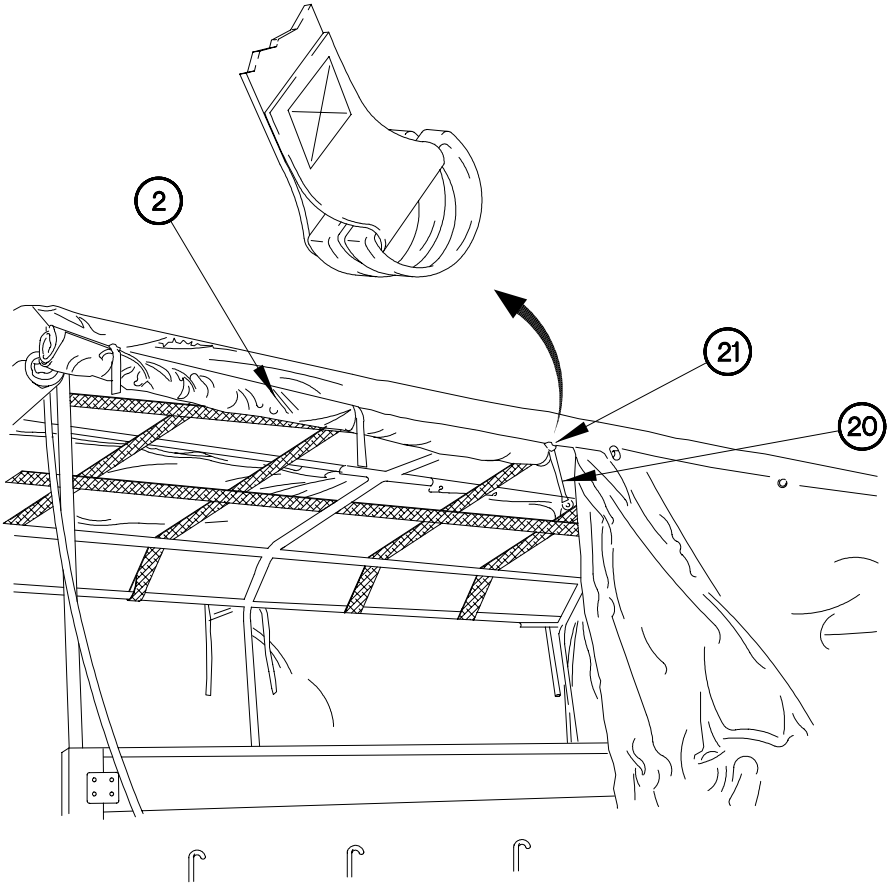
CARGO COVER FLAP OPERATION - Continued 0025 00

RAISING SIDE FLAPS - Continued

NOTE

Steps 6 through 8 are performed from inside cargo bed.

6. Roll up right side rear flap (2).
7. Wrap three straps (20) around right side rear flap (2).
8. Install three straps (20) through D-rings (21).
9. Raise ladder (WP 0023 00).



2500B12-

CARGO COVER FLAP OPERATION - Continued 0025 00

LOWERING SIDE FLAPS

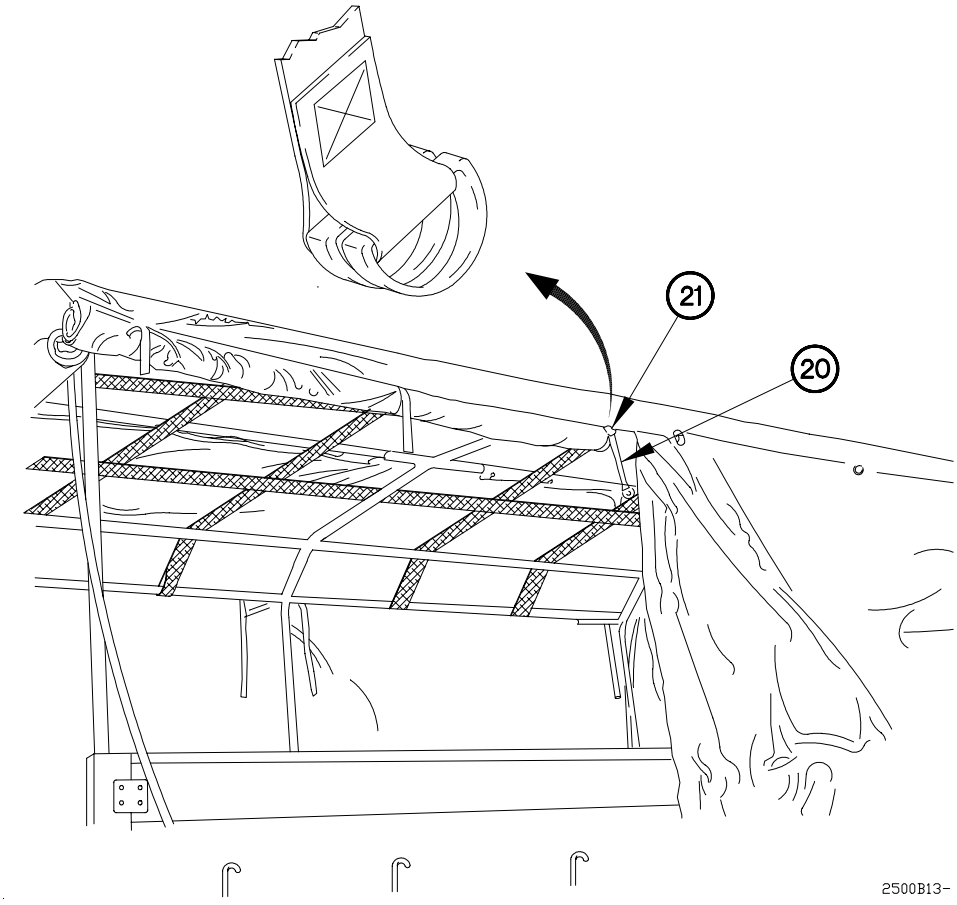
1. Lower ladder (WP 0023 00).

NOTE

All side flaps are lowered the same way. Right side rear flap shown.

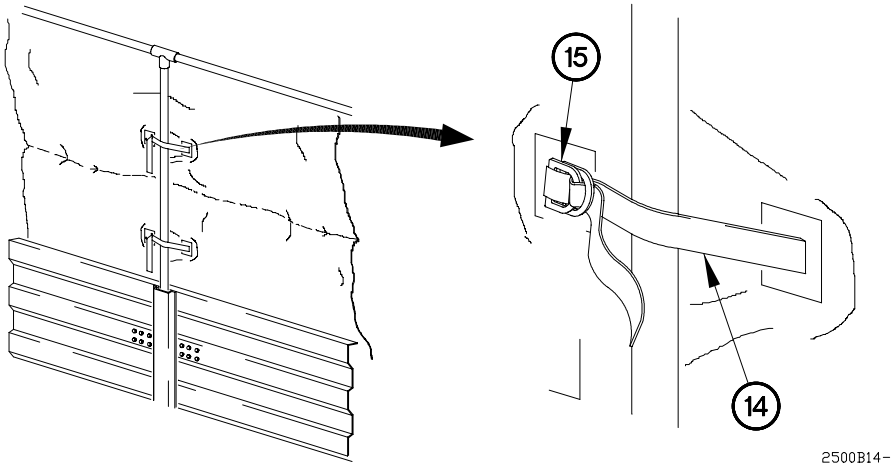
Step 2 is performed from inside the cargo bed.

2. Remove three straps (20) from D-rings (21).



LOWERING SIDE FLAPS

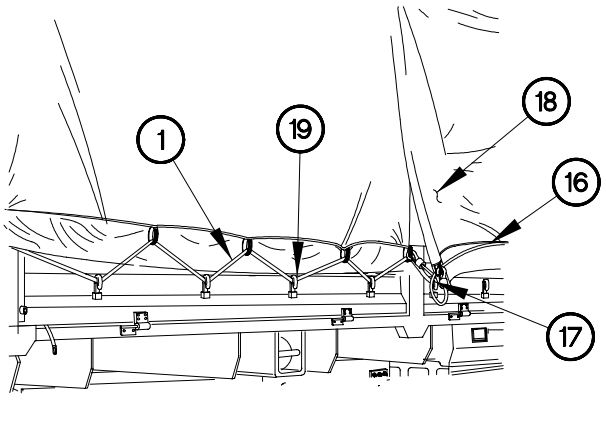
3. Connect two straps (14) to D-rings (15).



4. Install shock cord (1) on five J-hooks (19).

5. Install shock cord (16) on two J-hooks (17) on right side rear flap.

6. Lower rear flaps (WP 0023 00).



END OF OPERATING TASK

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL

0026 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel Required
Two

References
WP 0023 00
WP 0029 00
WP 0101 00

GENERAL

This work package provides the data and procedures for installing and removing the dump cover kit. Items covered include Soft Top Kit (Steel Bows) Installation, Soft Top (Steel Bows) Installation, Raising Rear Flap, Lowering Rear Flap, Raising Side Flaps, Lowering Side Flaps, Soft Top (Steel Bows) Removal, and Soft Top Kit (Steel Bows) Removal.

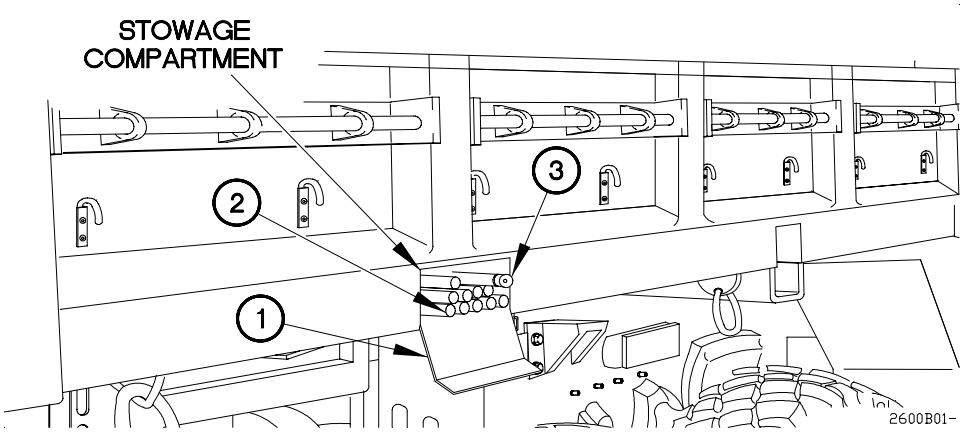
SOFT TOP KIT (STEEL BOWS) INSTALLATION

1. Lower ladder (WP 0023 00).
2. Open stowage compartment door (1).

NOTE

Soft top kit is equipped with a total of 10 tubes. Five rear tubes are longer than front tubes.

3. Stow ten tubes (2) and steel pole (3) in stowage compartment.
4. Close stowage compartment door (1).



M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

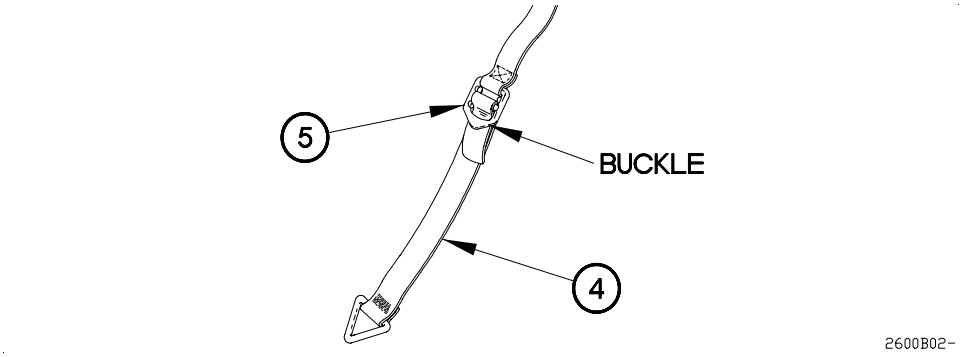
SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

NOTE

Front, center, and rear bows have two bow straps and tiedown straps. All tiedown straps are installed on bow straps the same way. One tiedown strap shown.

5. Install tiedown strap (4) through buckle of bow strap (5).

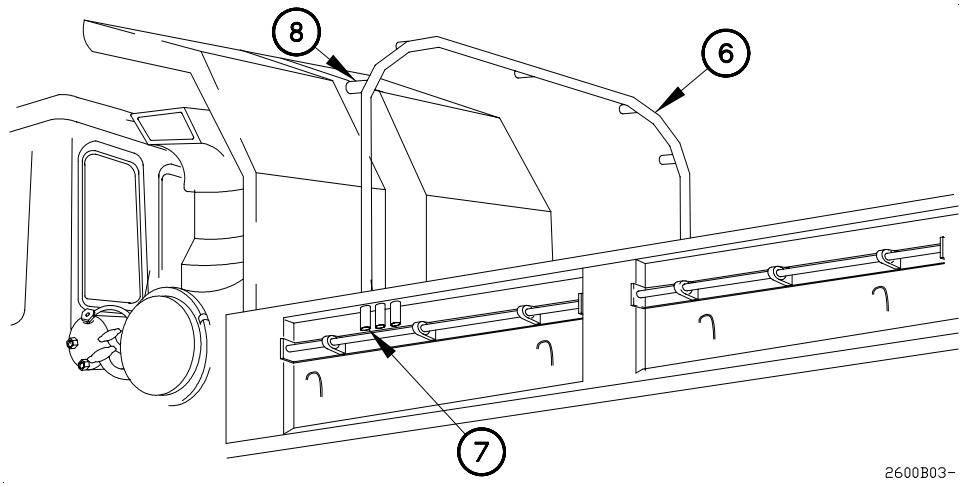
6. Perform step 5 on remaining tiedown straps.



NOTE

Steps 7 through 9 require the aid of an assistant.

7. Position front bow (6) in front dump body pockets (7) with front bow brackets (8) toward front of vehicle.



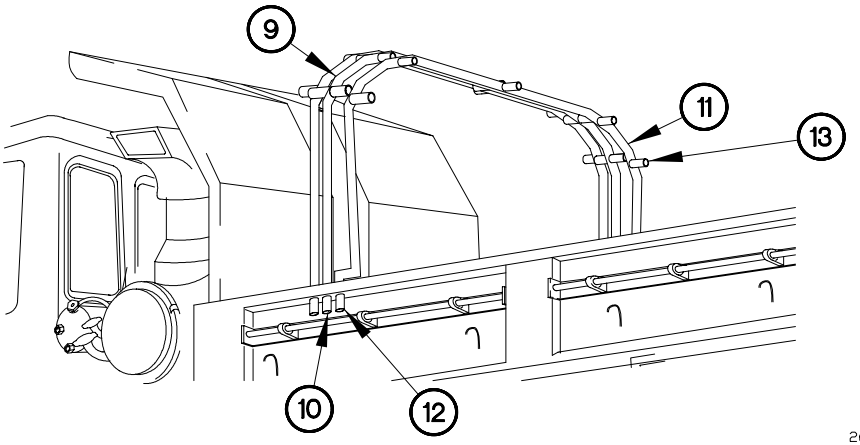
M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

8. Position center bow (9) in center dump body pockets (10).

9. Position rear bow (11) in rear dump body pockets (12) with rear bow brackets (13) facing toward rear of vehicle.



2600B04-

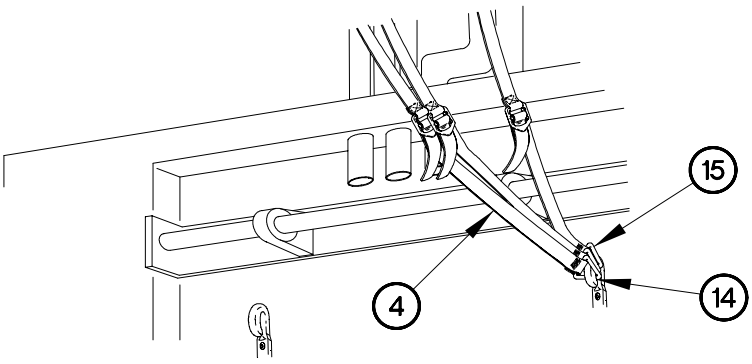
NOTE

Left and right sides of front, center, and rear bows are secured the same way. Right side shown.

10. Position three tiedown straps (4) on J-hook (14) with three tri-rings (15).

11. Tighten three tiedown straps (4).

12. Perform steps 10 and 11 on left side.

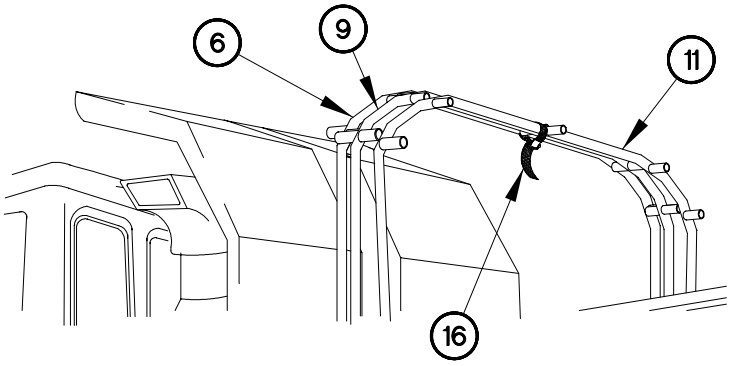


2600B05-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued 0026 00

SOFT TOP KIT (STEEL BOWS) INSTALLATION - Continued

13. Install stowage strap (16) on front bow (6), center bow (9), and rear bow (11).



2600B06-

WARNING

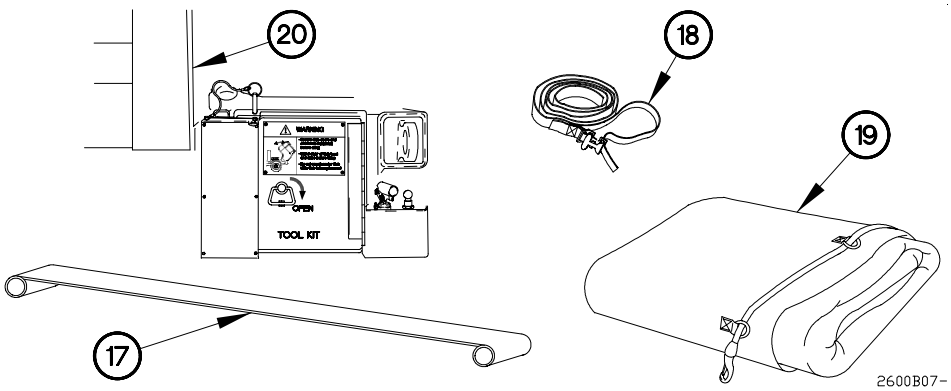
Dump cover weighs approximately 60 lbs (27 kgs). Arctic dump cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift dump cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Step 14 requires the aid of an assistant.

14. Stow four braces (17), two strap supports (18), and dump cover (19) on dump body (20).

15. Stow ladder (WP 0023 00).



2600B07-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) INSTALLATION

1. Lower ladder (WP 0023 00).
2. Lower spare tire (WP 0101 00).
3. Raise cab protector (WP 0029 00).

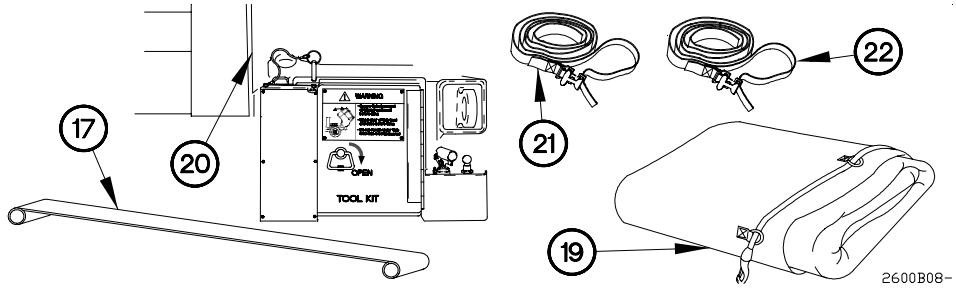
WARNING

Dump cover weighs approximately 60 lbs (27 kgs). Arctic dump cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift dump cover. Failure to comply may result in injury to personnel or damage to equipment.

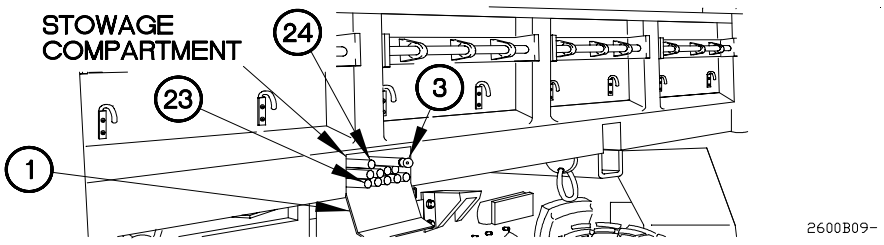
NOTE

Step 4 requires the aid of an assistant.

4. Remove four braces (17), left strap support (21), right strap support (22), and dump cover (19) from dump body (20).

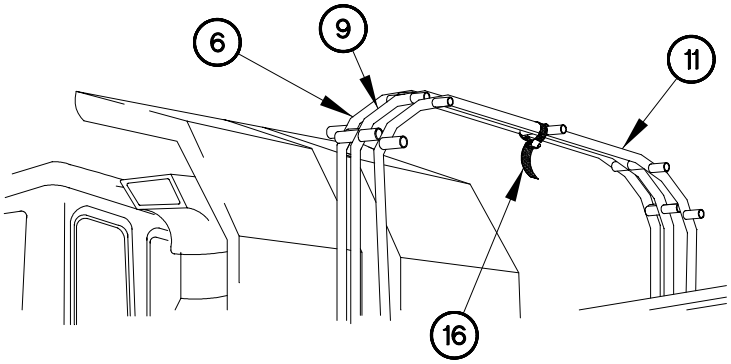


5. Open stowage compartment door (1).
6. Remove five front tubes (23), five rear tubes (24) and steel pole (3) from stowage compartment.
7. Close stowage compartment door (1).



SOFT TOP (STEEL BOWS) INSTALLATION - Continued

8. Remove stowage strap (16) from front bow (6), center bow (9), and rear bow (11).



2600B10-

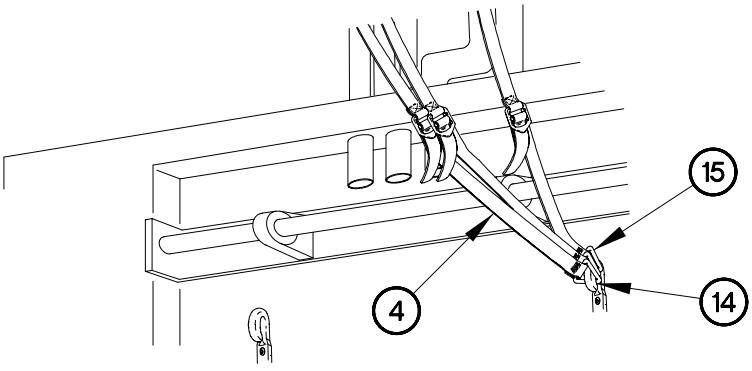
NOTE

Left and right sides of front, center, and rear bows are released the same way. Right side shown.

9. Loosen three tiedown straps (14).

10. Remove three tri-rings (15) on tiedown straps (4) from J-hook (14).

11. Perform steps 9 and 10 on left side.



2600B11-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

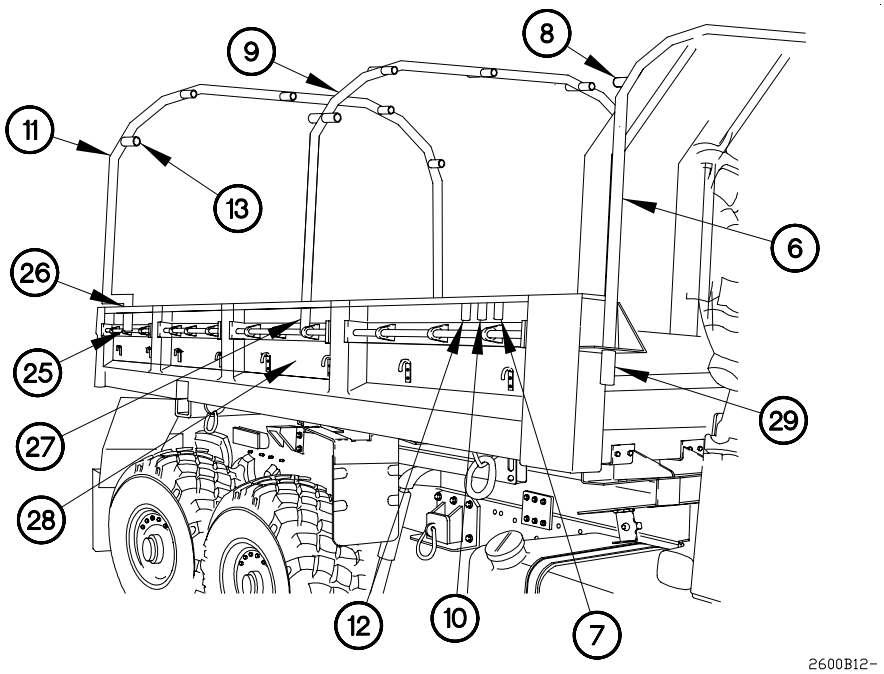
Steps 12 through 17 require the aid of an assistant.

12. Remove rear bow (11) from rear dump body pockets (12).
13. Position rear bow (11) in rear pocket (25) of the rear dump body panel (26) with rear bow brackets (13) towards front of vehicle.
14. Remove center bow (9) from center dump body pockets (10).
15. Position center bow (9) in rear pockets (27) of center dump body panel (28).
16. Remove front bow (6) from front dump body pockets (7).

NOTE

Place front bow in forward most hole.

17. Position front bow (6) in front dump body pockets (29) with front bow brackets (8) toward rear of vehicle.



SOFT TOP (STEEL BOWS) INSTALLATION - Continued

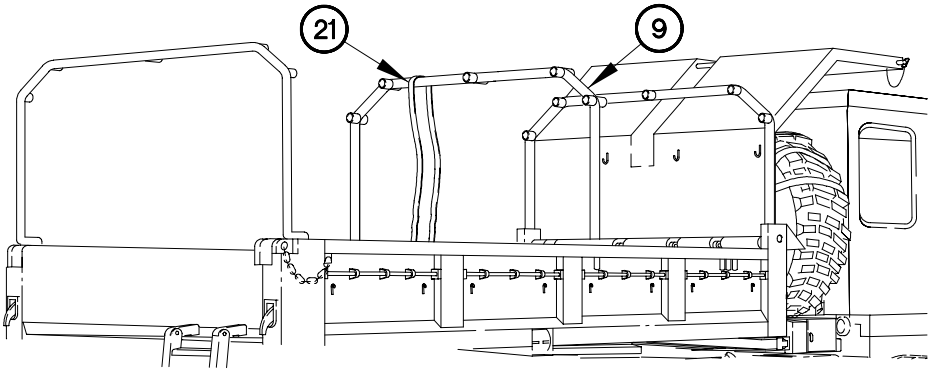
NOTE

Strap support is marked with FRONT and an arrow to indicate front bottom of strap support.

Strap supports are to be centered between center bow brackets and left and right inside of bow brackets.

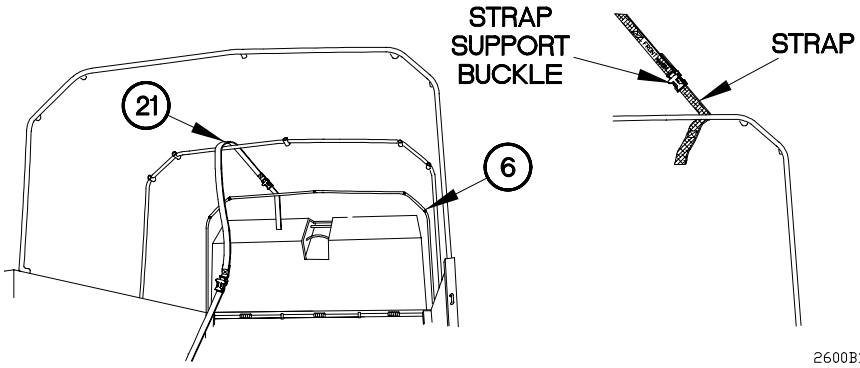
Left and right strap supports are installed the same way. Left strap support shown.

18. Position left strap support (21) over center bow (9).



2600B13-

19. Position left strap support (21) around front bow (6) and through strap support buckle.



2600B14-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

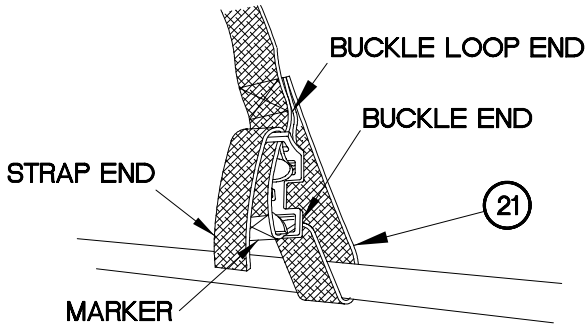
SOFT TOP (STEEL BOWS) INSTALLATION - Continued

20. Tighten left strap support (21) until marker is through the buckle end.

CAUTION

Strap end must be installed in the buckle loop end after strap is tightened. Failure to comply may result in damage to equipment.

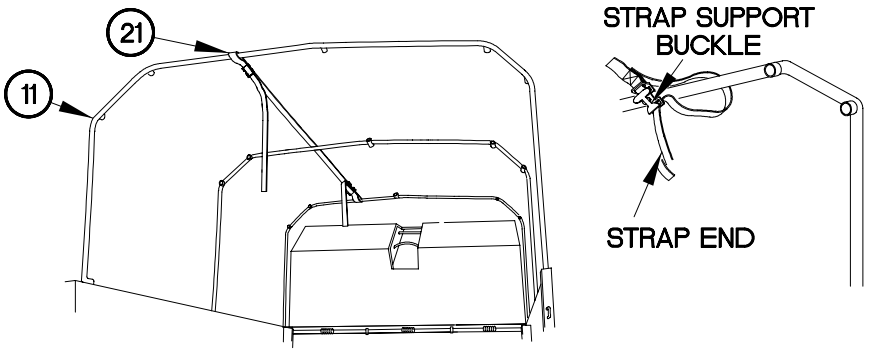
21. Install strap end through buckle loop end on left strap support (21).



2600B15-

22. Position left strap support (21) around rear bow (11) and through strap support buckle.

23. Perform steps 18 through 22 on right strap support.



2600B16-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Steps 24 through 26 require the aid of an assistant.

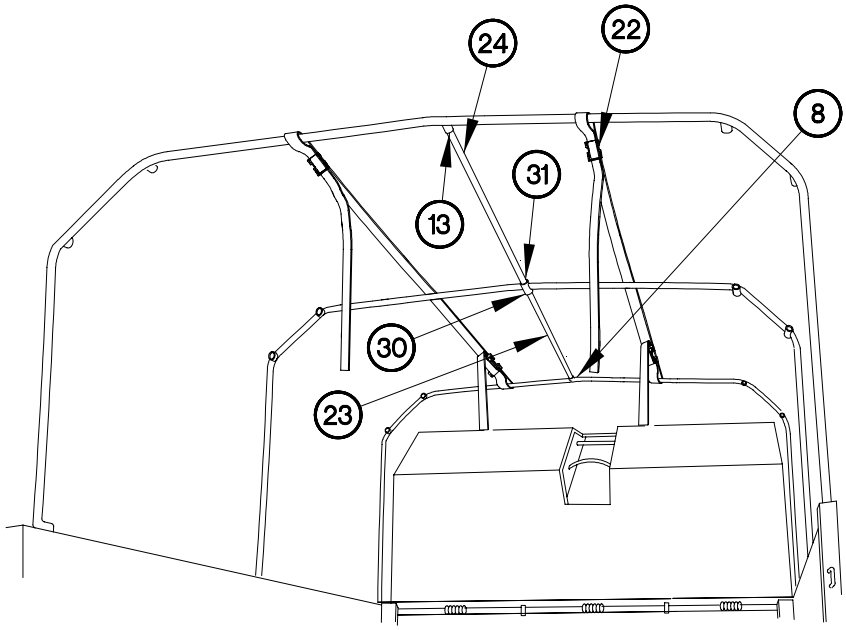
24. Install front tube (23) in front bow bracket (8) and center bow bracket (30).

25. Install rear tube (24) in center bow bracket (31) and rear bow bracket (13).

CAUTION

Strap supports must be aligned straight between front bow and rear bow. Failure to comply may result in damage to equipment.

26. Tighten right rear strap support (22).



2600B17-

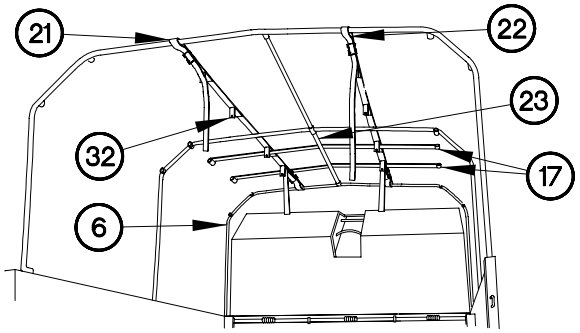
SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Left and right strap supports have six flaps. From front to rear of vehicle, perform step 27 on first, second, third, and fifth straps on each strap support.

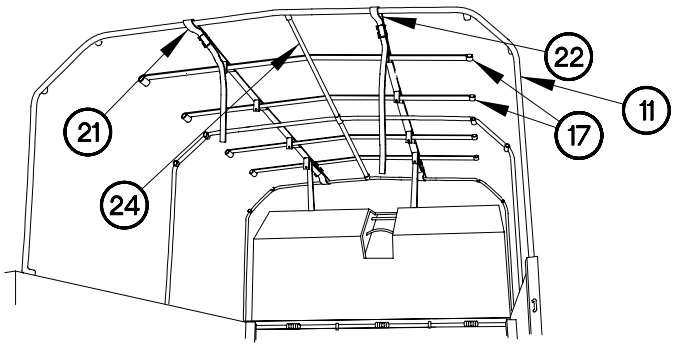
27. Open four flaps (32) on left strap support (21) and right strap support (22).

28. Position two braces (17) over front tube (23) and under left strap support (21) and right strap support (22) with approximately 2 feet (0.6 m) between front bow (6) and each brace (17).



2600B18-

29. Position two braces (17) over rear tube (24) and under left strap support (21) and right strap support (22) with approximately 2 feet (0.6 m) between rear bow (11) and each brace (17).



2600B19-

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

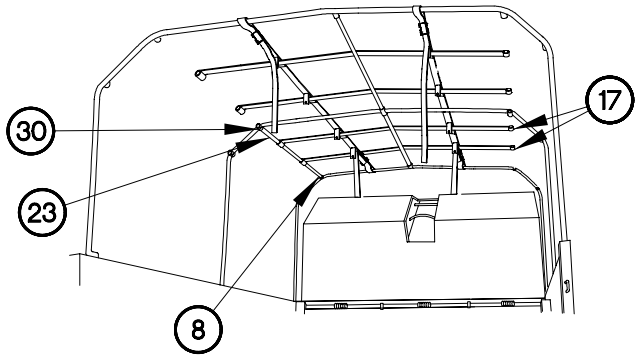
NOTE

Left and right tubes are installed the same way. Left side tubes shown.

Steps 30 through 37 require the aid of an assistant.

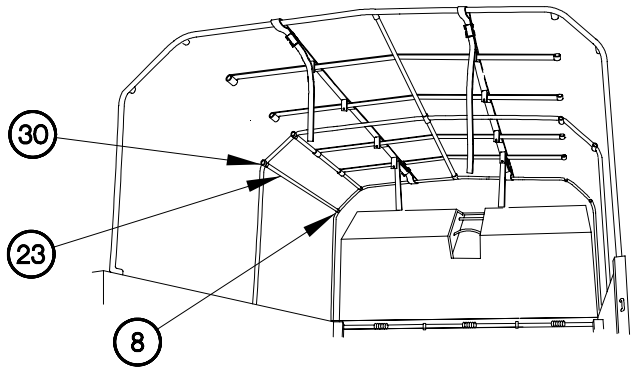
30. Position front tube (23) through two braces (17).

31. Install front tube (23) in front bow bracket (8) and center bow bracket (30).



2600B20-

32. Install front tube (23) in front bow bracket (8) and center bow bracket (30).

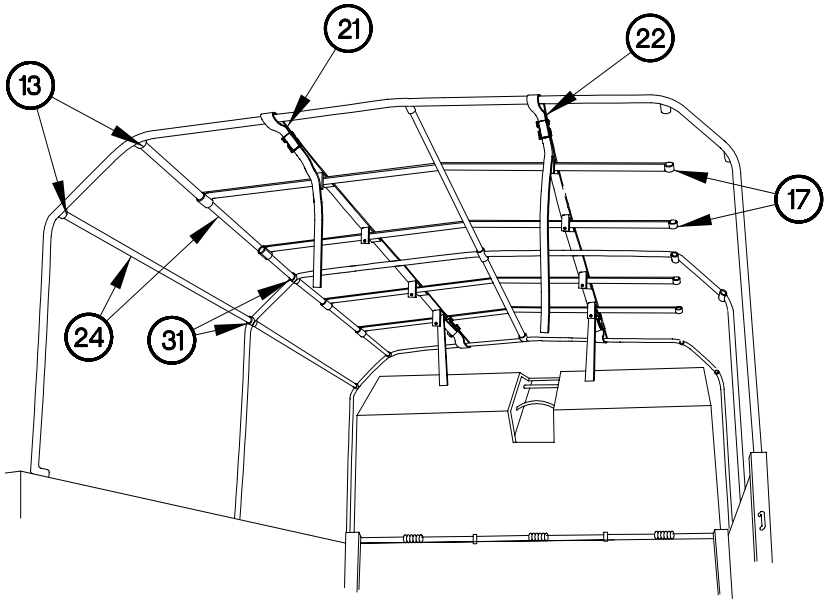


2600B21-

M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

33. Install rear tube (24) in rear bow bracket (13) and center bow bracket (31).
34. Position rear tube (24) through two braces (17).
35. Install rear tube (24) in rear bow bracket (13) and center bow bracket (31).
36. Tighten left rear strap support (21).
37. Loosen right rear strap support (22).
38. Perform steps 29 through 34 on right side tubes.



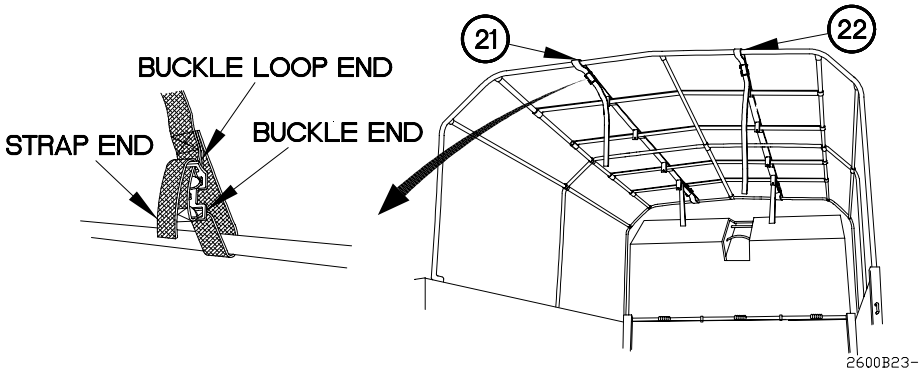
2600B22-

M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

39. Tighten right rear strap support (22).

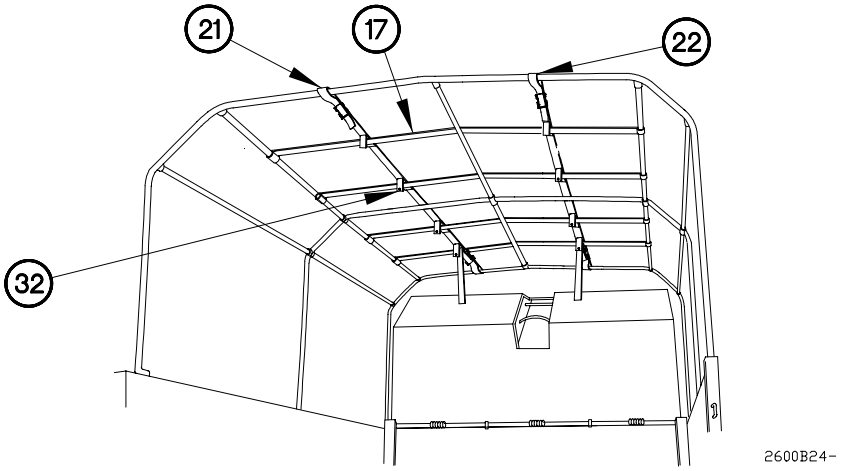
40. Install two strap ends through buckle loop ends on left strap support (21) and right strap support (22).



NOTE

Adjust braces as needed to snap and attach flaps over braces.

41. Close four flaps (32) over four braces (17) on left strap support (21) and right strap support (22).



M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

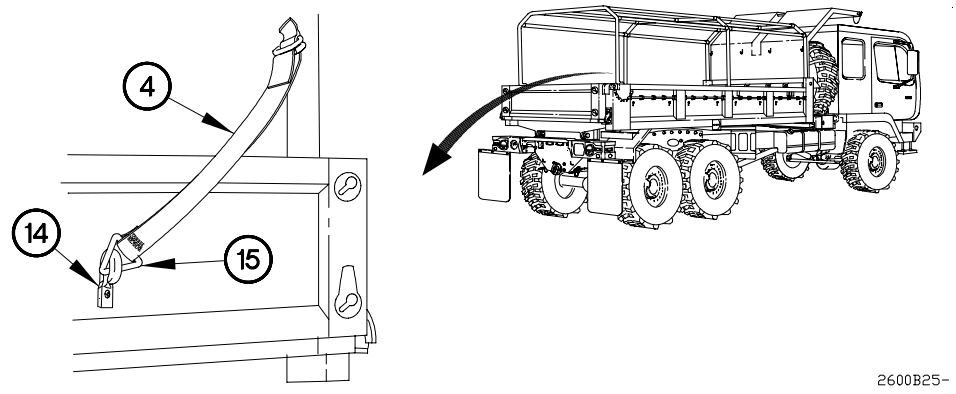
NOTE

Left and right sides of front, center, and rear bows are secured the same way. Rear bow left side shown.

42. Position tiedown strap (4) on J-hook (14) with tri-ring (15).

43. Tighten tiedown strap (4).

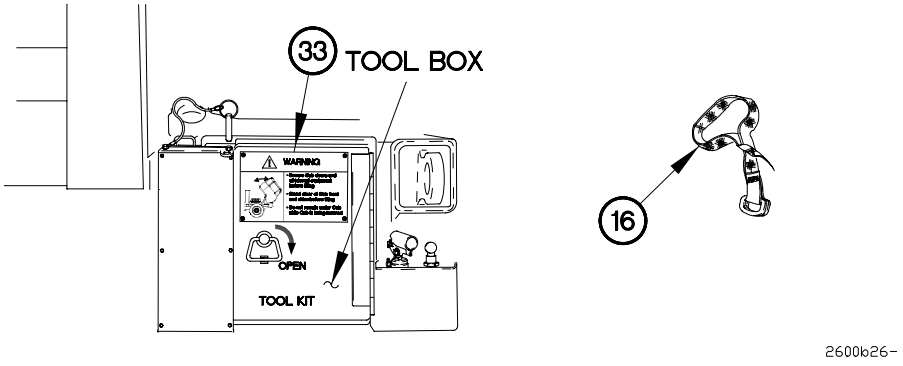
44. Perform steps 42 and 43 on remaining tiedown straps.



45. Open door (33) on tool box.

46. Stow stowage strap (16) in tool box.

47. Close door (33) on tool box.



M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

WARNING

Dump cover weighs approximately 60 lbs (27 kgs). Arctic dump cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift dump cover. Failure to comply may result in injury to personnel or damage to equipment.

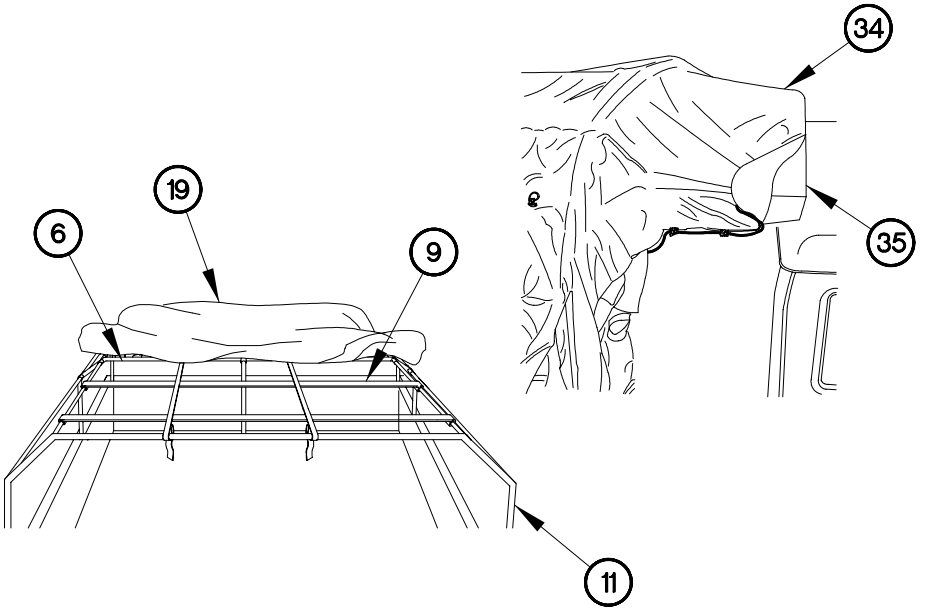
NOTE

Steps 48 through 72 require the aid of an assistant.

Dump cover is marked with FRONT on the front flap.

48. Position dump cover (19) on front bow (6), center bow (9), and rear bow (11).

49. Position front flap (34) over cab protector (35).



2600b27-

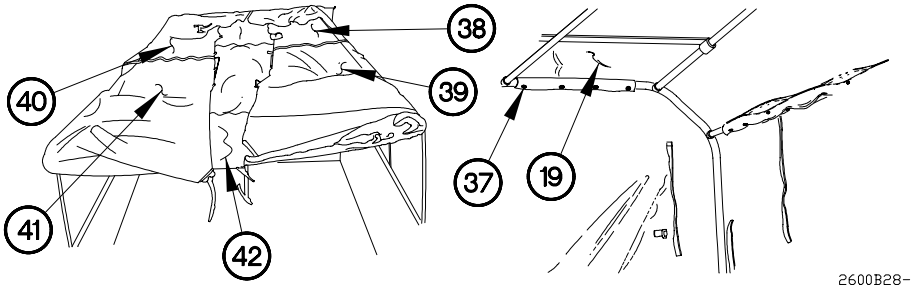
SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

Use snap extensions as required.

50. Fasten snaps (36) on front, rear, sides, and center of dump cover (19).

51. Unfold right side front flap (37), right side rear flap (38), left side front flap (39), and left side rear flap (40) and rear flap (41).



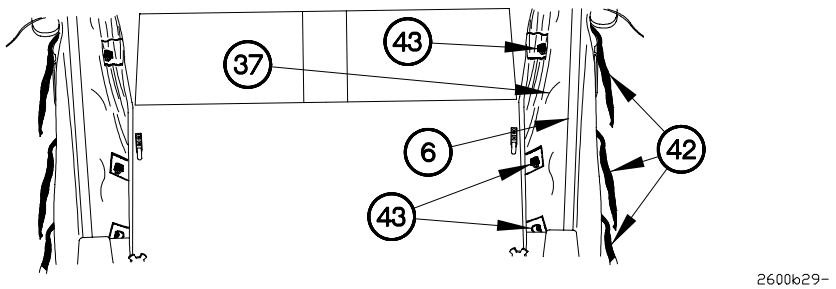
NOTE

Dump covers are equipped with either D-rings or buckles and D-rings. Dump cover with D-rings shown.

Straps located on front inside corner of right and left side flap connect to D-ring on front flap.

52. Position three straps (42) behind front bow (6) to D-Rings (43) on right side front flap (37).

53. Perform step 52 on left side.



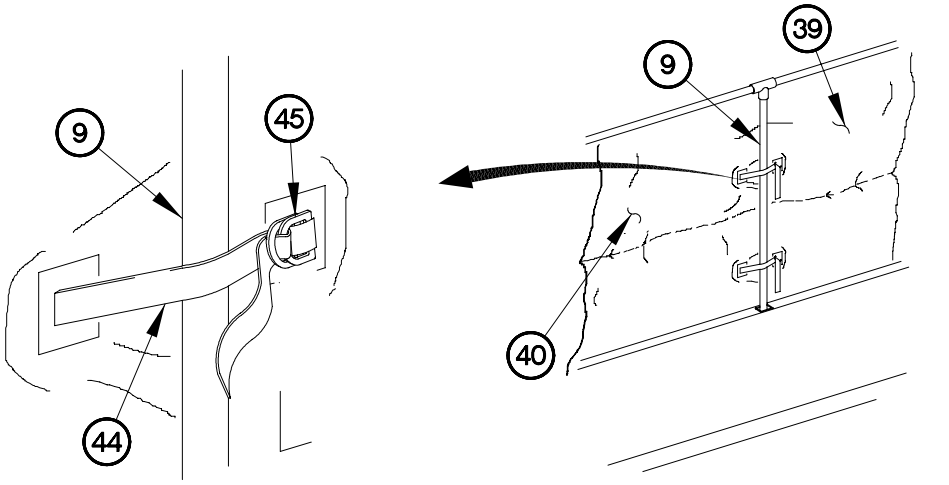
M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

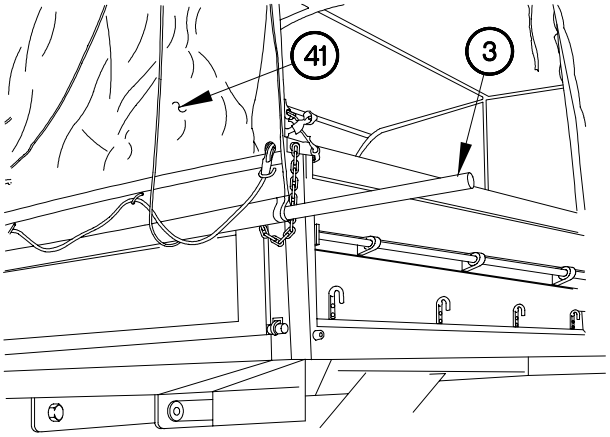
54. Position straps (44) from left side rear flap (40) behind center bow (9) and through D-rings (45) and left side front flap (39), then pull tight.

55. Perform step 54 on right side.



2600b30-

56. Position steel pole (3) in lower portion of rear flap (41).



2600b31-

M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

NOTE

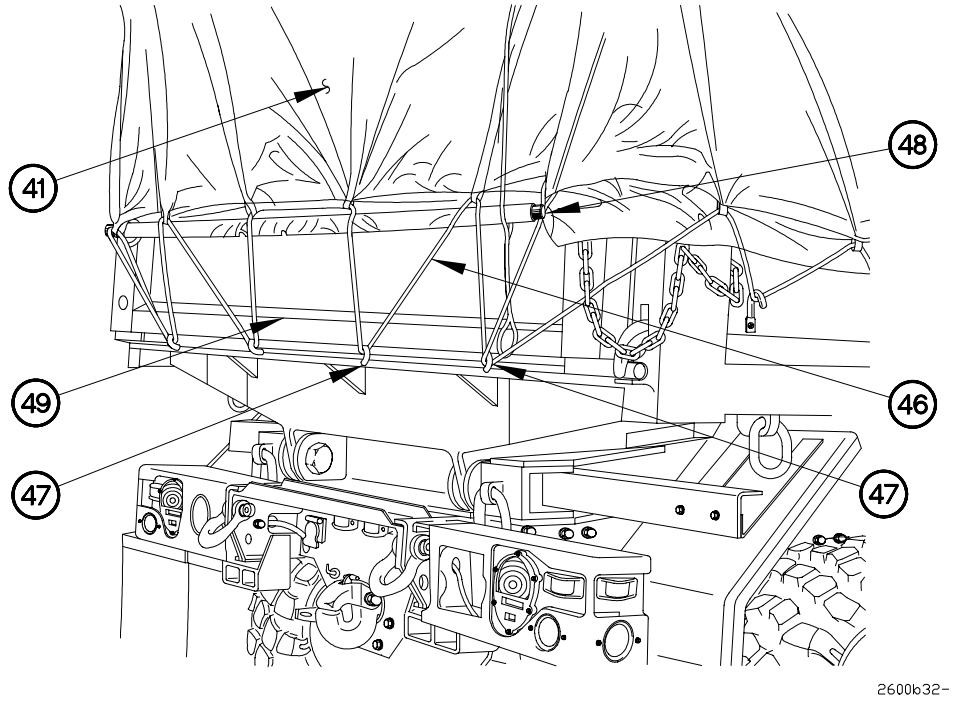
Dump cover flaps are equipped with either D-rings or loops and D-rings. Dump cover flaps with D-rings shown.

D-rings are attached to lower part of flaps with shock cord placed through D-rings. Shock cord is attached to J-hooks on dump body to hold flap down. The attachment sequence is rear flap, right rear flap, rear left flap, front right flap, front left flap, and front flap.

57. Position shock cord (46) on right side of rear flap (41) on J-hook (47) and D-rings (48).

58. Perform step 57 on left side of vehicle.

59. Install shock cord (46) on five J-hooks (47) on tailgate (49).



2600b32-

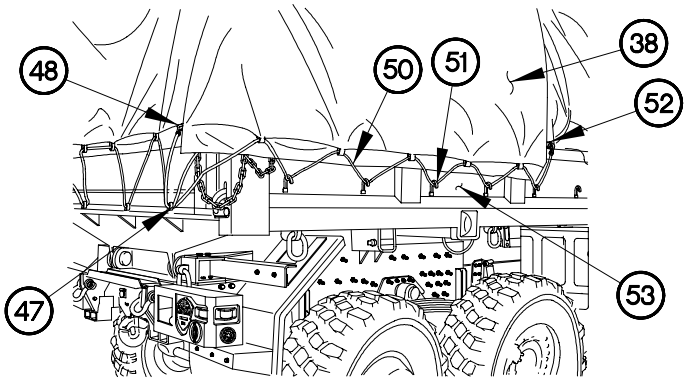
M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

60. Position shock cord (50) on right side rear flap (38) on J-hooks (47 and 51) and D-rings (48 and 52).

61. Install shock cord (50) on four J-hooks (51) on right rear panel (53).

62. Perform steps 60 and 61 on left side rear flap.

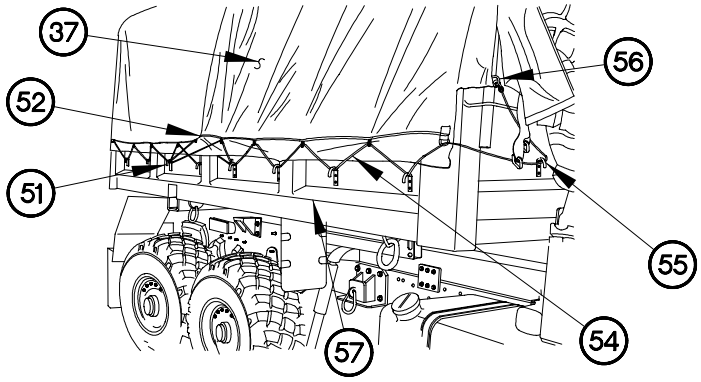


2600b33-

63. Position shock cord (54) on right side front flap (37) on J-hooks (51 and 55) and D-rings (52 and 56).

64. Hook shock cord (54) to four J-hooks (55) on front side panel (57).

65. Perform steps 63 and 64 on left side front flap.



2600b34-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) INSTALLATION - Continued

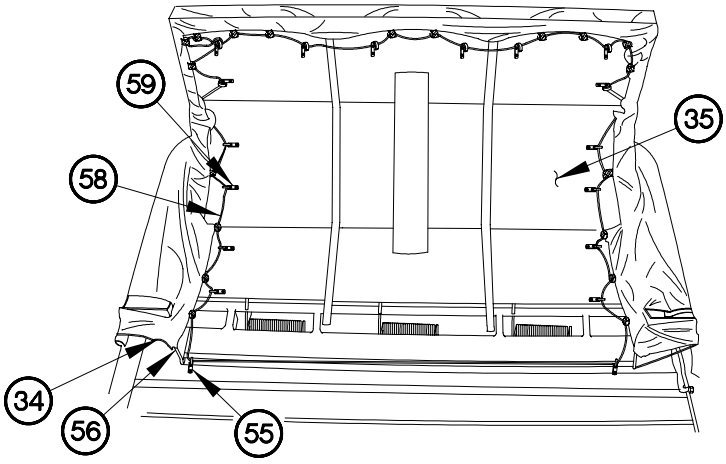
66. Position shock cord (58) on right side of front flap (34) around J-hooks (55) and D-rings (56).

67. Perform step 66 on left side of vehicle.

68. Hook shock cord (58) to J-hooks (59) on cab protector (35).

69. Raise spare tire (WP 0101 00).

70. Raise ladder (WP 0023 00).

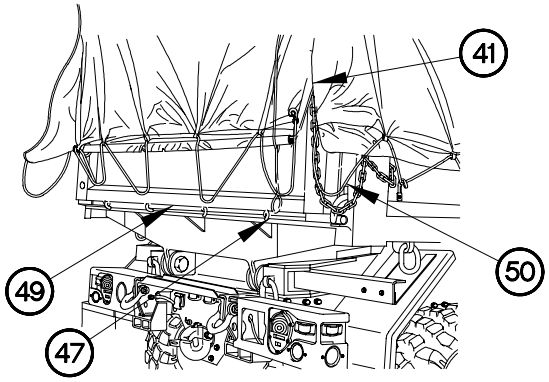


2600b35-

RAISING REAR FLAP

1. Remove shock cord (50) on right side of rear flap (41) from J-hooks (47) on tailgate (49).

2. Perform step 1 on left side.



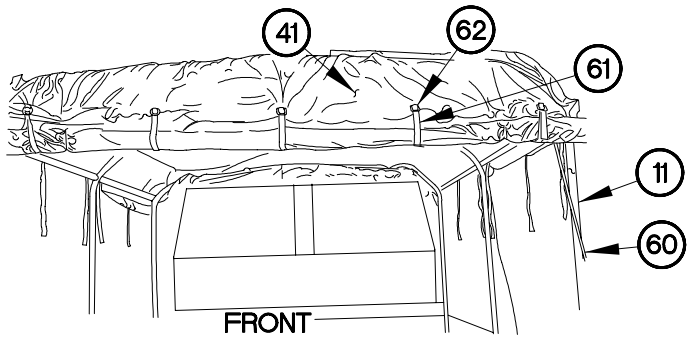
2600b36-

RAISING REAR FLAP - Continued

NOTE

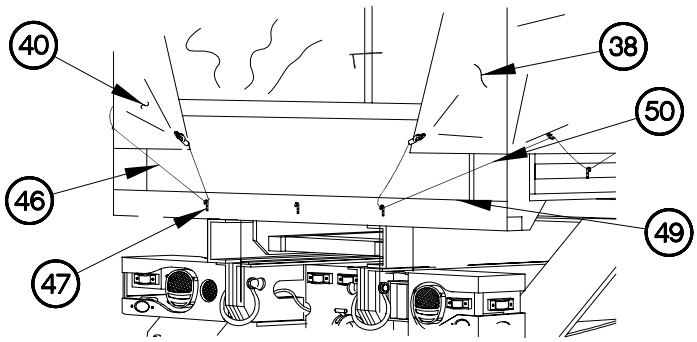
Steps 3 through 8 are performed from inside dump body.

3. Pull drawstring (60) to raise rear flap (41).
4. Wrap strap (61) around rear flap (41).
5. Position strap (61) through D-rings (62).
6. Adjust strap (61) as required.
7. Repeat steps 4 through 6 for remaining four straps.
8. Tie drawstring (60) to rear bow (11).



2600b37-

9. Pull left side rear flap (40) over tailgate (49) and install shock cord (46) on J-hooks (47).
10. Pull right side rear flap (38) over tailgate (49) and install shock cord (50) on J-hooks (547.



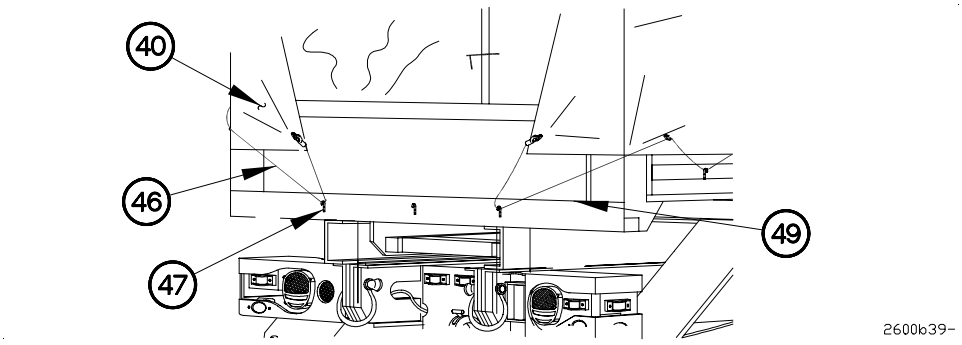
2600b38-

M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

LOWERING REAR FLAP

1. Remove shock cord (46) on left side rear flap (40) from J-hooks (47) on tailgate (49).

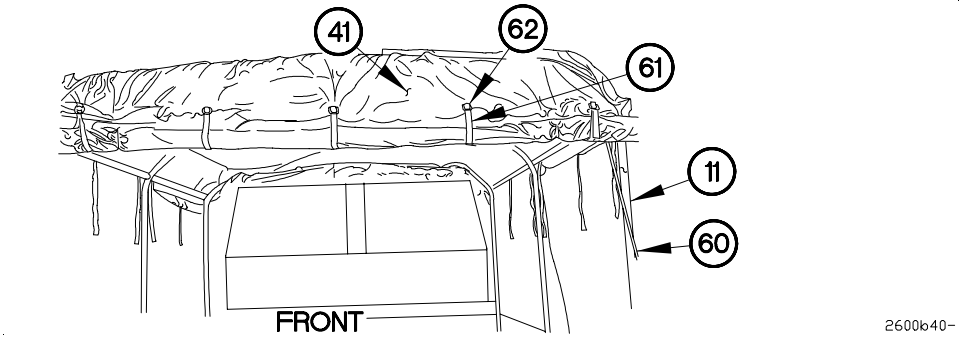
2. Perform step 1 on the right side.



3. Disconnect five straps (61) from five sets of D-rings (62).

4. Loosen drawstring (60) from rear bow (11).

5. Lower rear flap (41) with drawstring (60).



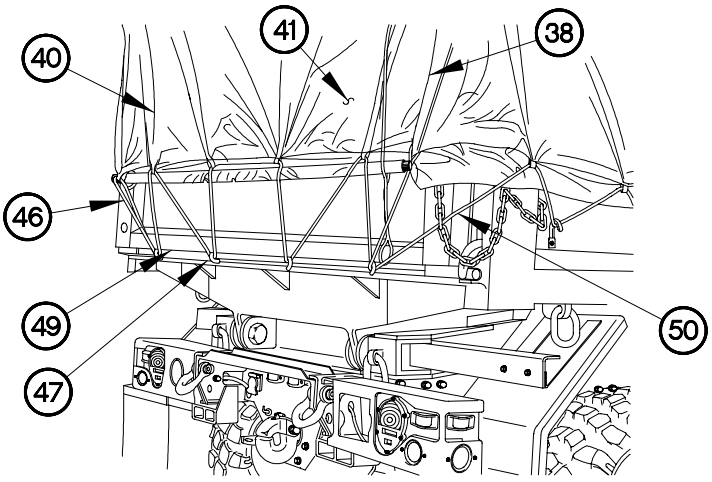
M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

LOWERING REAR FLAP - Continued

6. Install shock cord (50) on rear flap (41) around J-hooks (47) on tailgate (49).

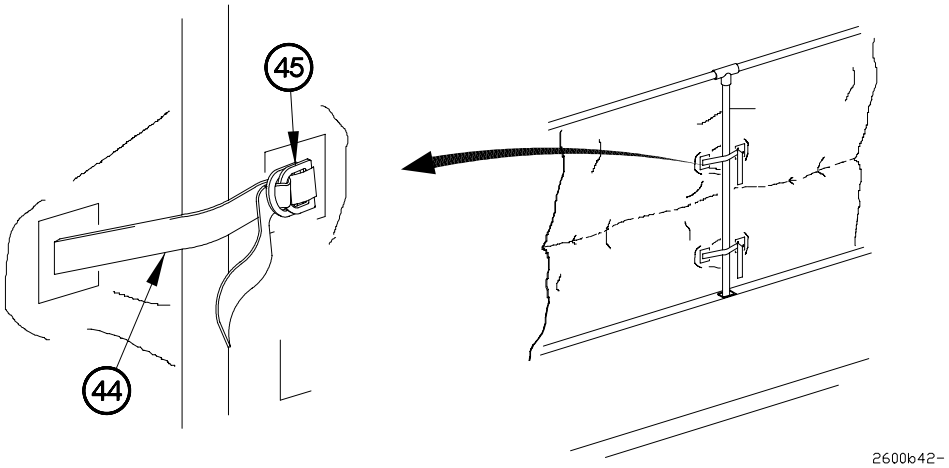
7. Install shock cord (46) from left side rear flap (40) around J-hooks (47) on tailgate (49).

8. Install shock cord (50) from right side rear flap (38) around J-hooks (47) on tailgate (49).



RAISING SIDE FLAPS

1. Disconnect straps (44) from D-rings (45).



M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

RAISING SIDE FLAPS - Continued

NOTE

Right and left side flaps are raised and lowered the same way.

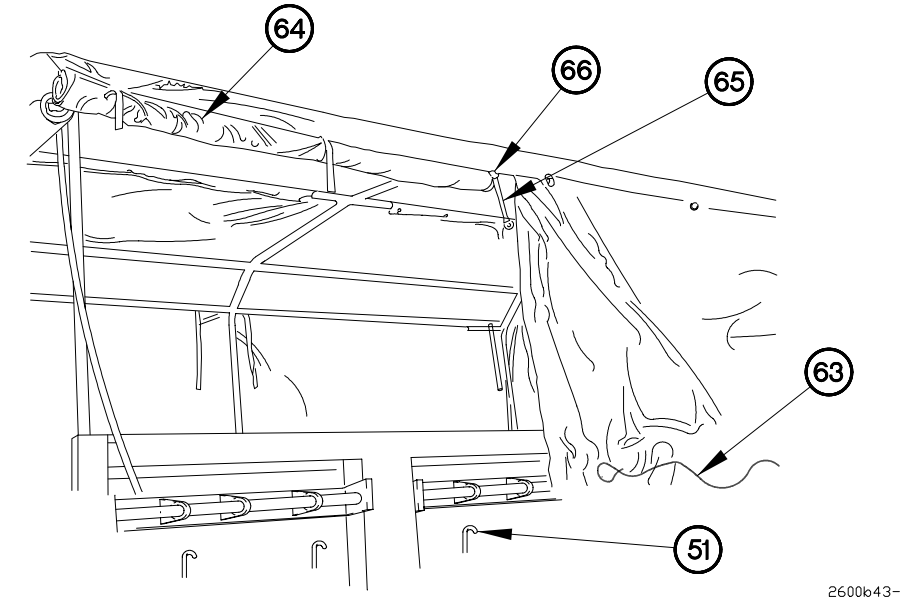
There are six straps and six sets of D-rings attached to cover for holding side flaps in open position.

2. Remove shock cord (63) from J-hooks (51).

NOTE

Steps 3 through 6 are performed from inside dump body.

3. Roll up side flap (64).
4. Wrap strap (65) around side flap (64).
5. Install strap (65) through D-rings (66).
6. Adjust length of strap (65) as required.
7. Perform steps 4 through 6 on remaining five straps.



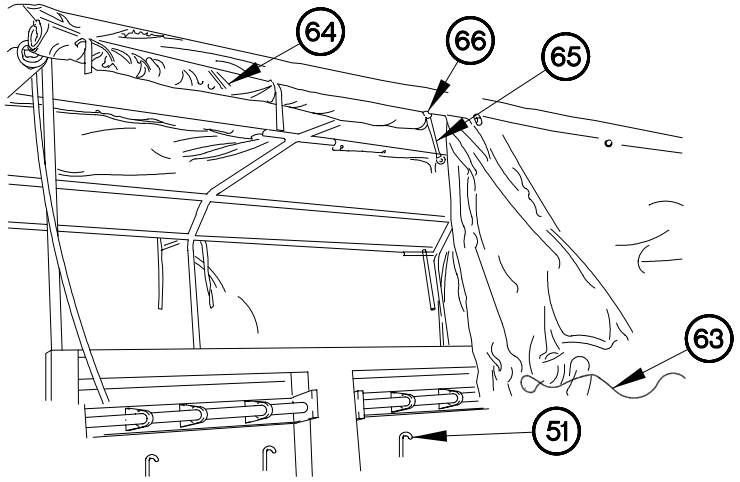
M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

LOWERING SIDE FLAPS

NOTE

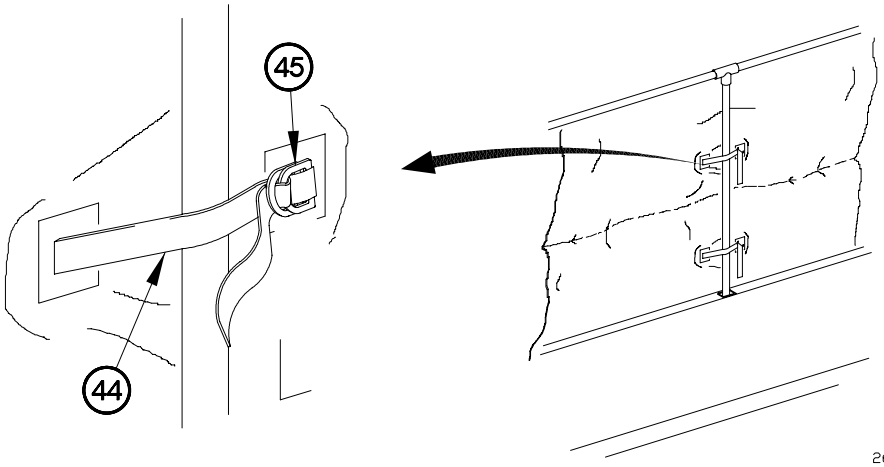
Step 1 is performed from inside dump body.

1. Disconnect straps (65) from D-rings (66) on side flaps (64).
2. Lower side flap (64).
3. Attach shock cord (63) to J-hooks (51).



2600b44-

4. Connect straps (44) to D-rings (45).



2600b45-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) REMOVAL

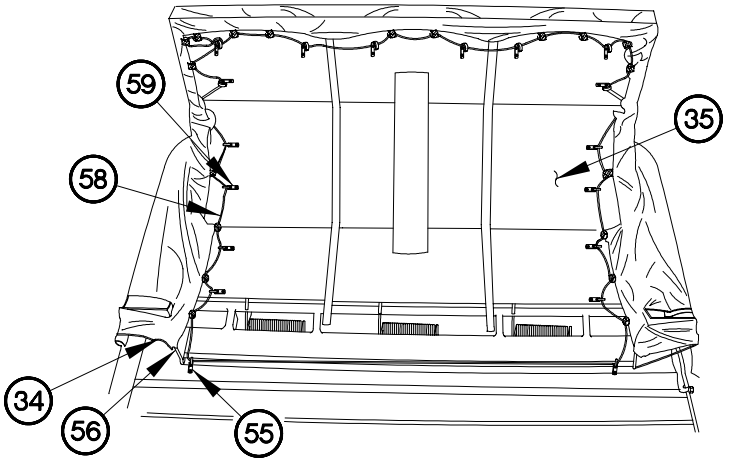
1. Lower spare tire (WP 0101 00).

NOTE

Dump cover flaps are equipped with either D-rings or loops and D-rings. Dump cover flaps with D-rings shown.

Steps 2 through 29 require the aid of an assistant.

2. Remove shock cord (58) from J-hooks (59) on cab protector (35).
3. Remove shock cord (58) from D-ring (56) on right side of front flap (34).
4. Remove shock cord (58) from J-hook (55).
5. Perform steps 2 through 4 on left side of front flap.

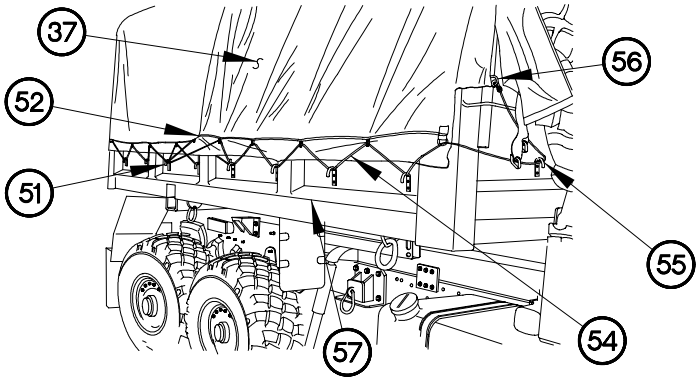


M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

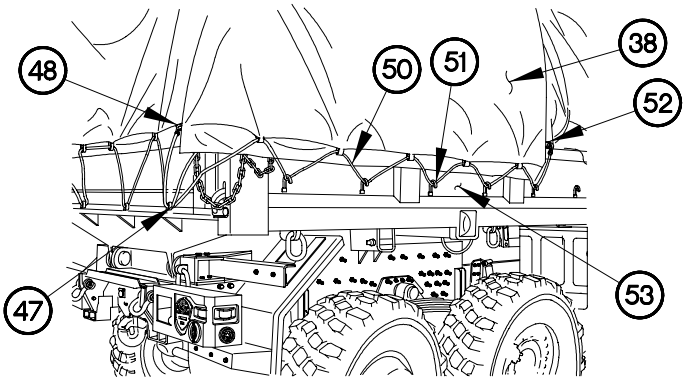
SOFT TOP (STEEL BOWS) REMOVAL - Continued

6. Remove shock cord (54) from four J-hooks (55) on right front side panel (57).
7. Remove shock cord (54) on right side front flap (37) from D-rings (52 and 56) and J-hooks (51 and 55).
8. Perform steps 6 and 7 on left side front flap.



2600b47-

9. Remove shock cord (50) from four J-hooks (51) on right rear panel (53).
10. Remove shock cord (50) on right side rear flap (38) from D-rings (48 and 52) and J-hooks (47 and 51).
11. Perform steps 9 and 10 on left side rear flap.

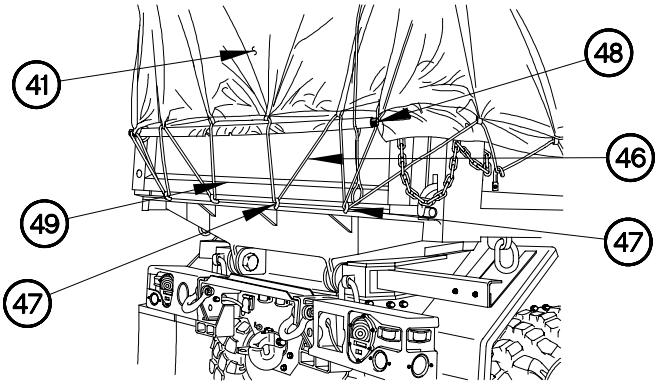


2600b48-

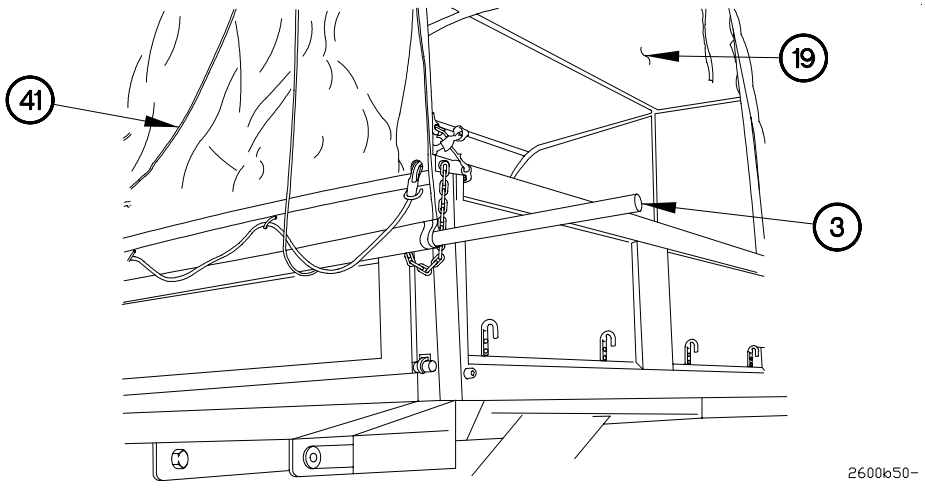
M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) REMOVAL - Continued

12. Remove shock cord (46) from five J-hooks (47) on tailgate (49).
13. Remove shock cord (46) right side of rear flap (41) from D-ring (48) and J-hooks (47).
14. Perform step 13 on left side of vehicle.



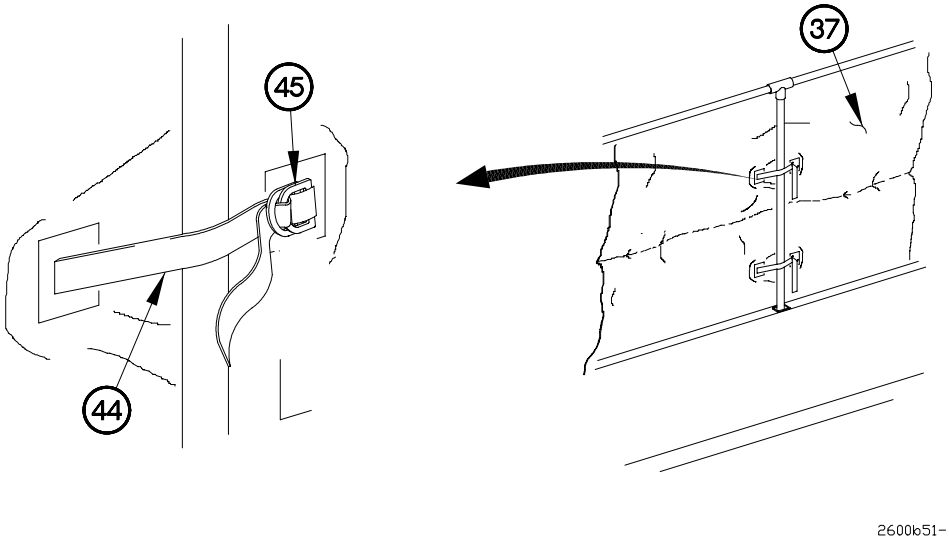
15. Lower ladder (WP 0023 00).
16. Remove steel pole (3) from rear flap (41).
17. Fold rear flap (41) on top of dump cover (19).



SOFT TOP (STEEL BOWS) REMOVAL - Continued

18. Remove two straps (44) from D-rings (45) on center right side front side flap (37).

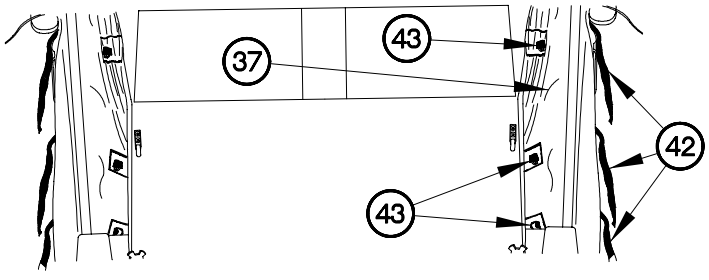
19. Perform step 18 on left side of vehicle.



2600b51-

20. Disconnect three straps (42) from D-rings (43) from right side front flap (37).

21. Perform step 20 on left side of left side of front flap.



2600b52-

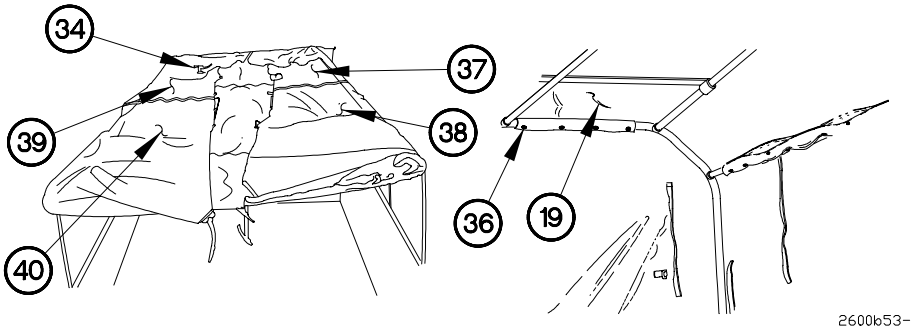
M1090A1 DUMP COVER KIT 0026 00
INSTALLATION/REMOVAL - Continued

SOFT TOP (STEEL BOWS) REMOVAL - Continued

22. Fold front flap (34), right side front flap (37), right side rear flap (38), left side front flap (39), and left side rear flap (40) on top of dump cover (19).

23. Unfasten snaps (36) on front, rear, sides, and center of dump cover (19).

24. Fold dump cover (19) to front of vehicle.



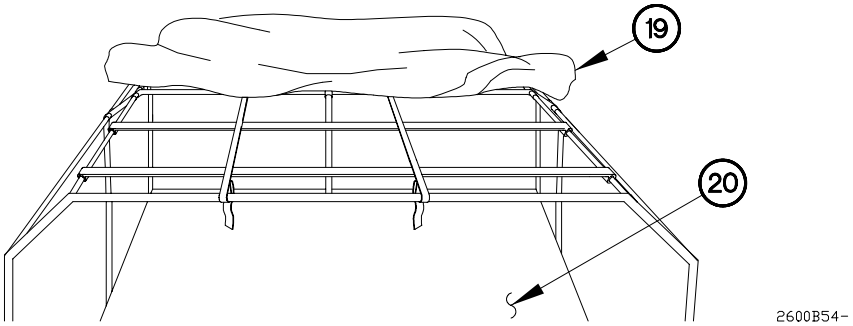
25. Fold right side of dump cover (19) toward center of dump body (20).

26. Fold left side of dump cover (19) toward center of dump body (20).

WARNING

Dump cover weighs approximately 60 lbs (27 kgs). Arctic dump cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift dump cover. Failure to comply may result in injury to personnel or damage to equipment.

27. Remove dump cover (19) from vehicle.



M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

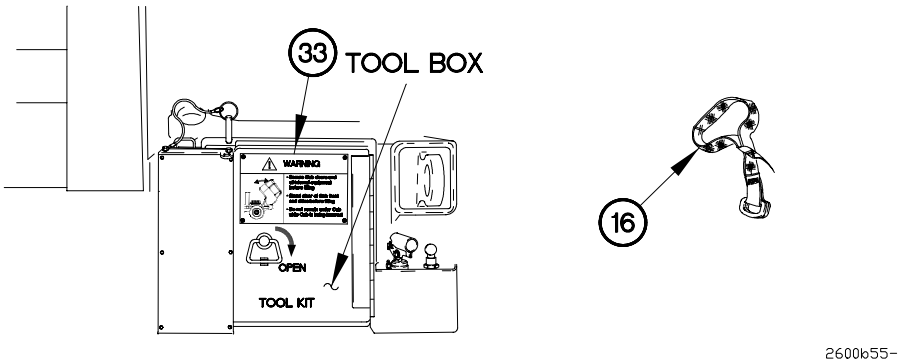
0026 00

SOFT TOP (STEEL BOWS) REMOVAL - Continued

28. Open door (33) on tool box.

29. Remove stowage strap (16) from tool box.

30. Close door (33) on tool box.



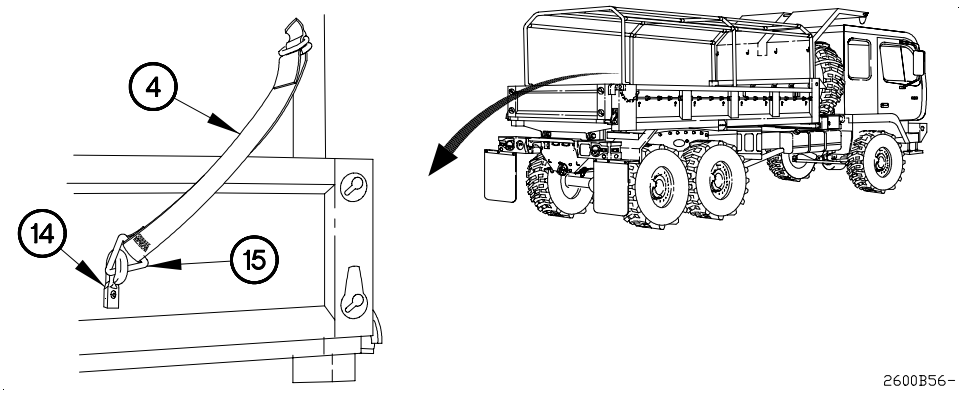
NOTE

Left and right sides of front, center, and rear bows are unsecured the same way. Rear bow left side shown.

31. Loosen tiedown strap (4).

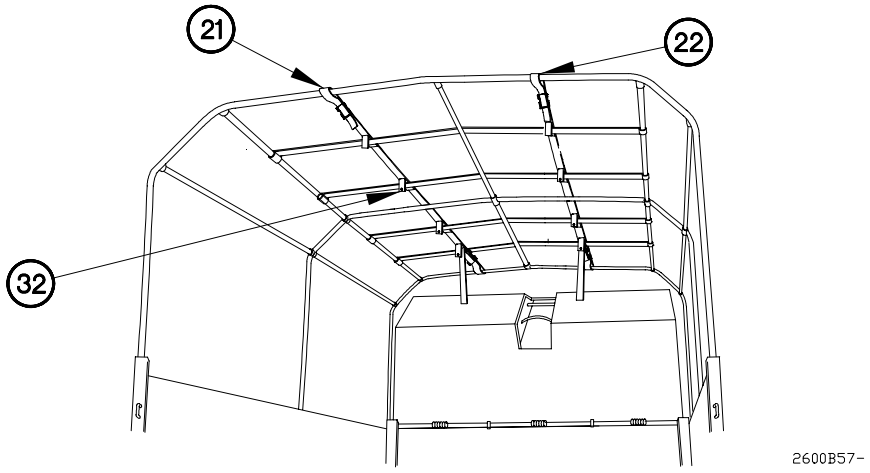
32. Remove tri-ring (15) on tiedown strap (4) from J-hook (14).

33. Perform steps 30 and 31 on remaining tiedown straps.



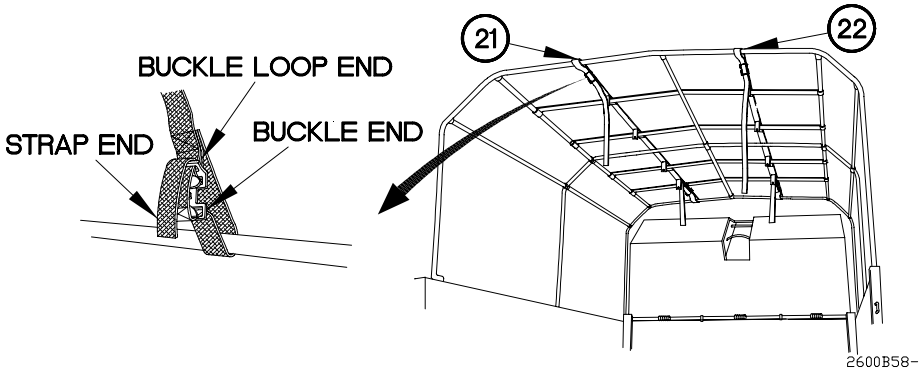
SOFT TOP (STEEL BOWS) REMOVAL - Continued

34. Open four flaps (32) on left strap support (21) and right strap support (22).



35. Remove two rear strap ends from buckle loop ends on left strap support (21) and right strap support (22).

36. Loosen left rear strap support (21).



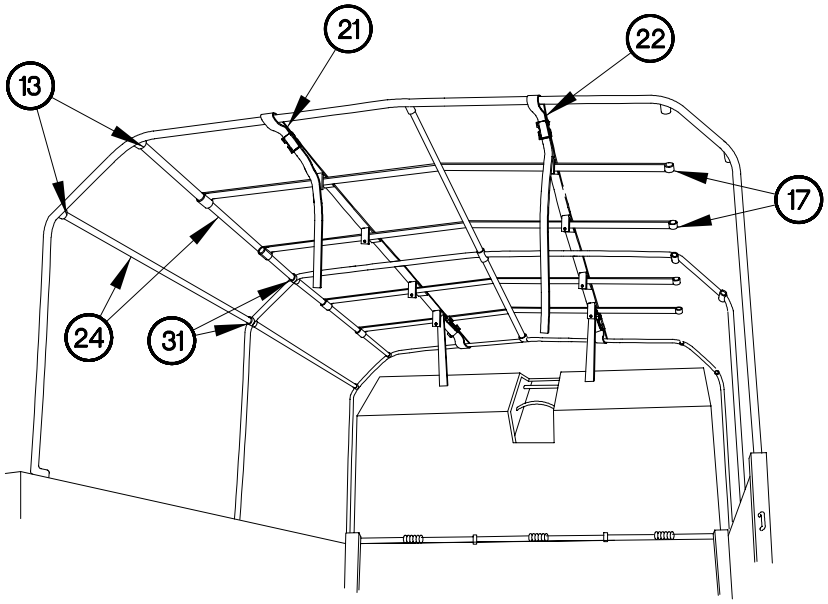
SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

Left and right tubes are removed the same way. Left side tubes shown.

Steps 37 through 46 require the aid of an assistant.

37. Remove rear tube (24) from rear bow bracket (13) and center bow bracket (31).
38. Remove rear tube (24) from center bow bracket (31) and rear bow bracket (13).
39. Remove rear tube (24) from two braces (17).



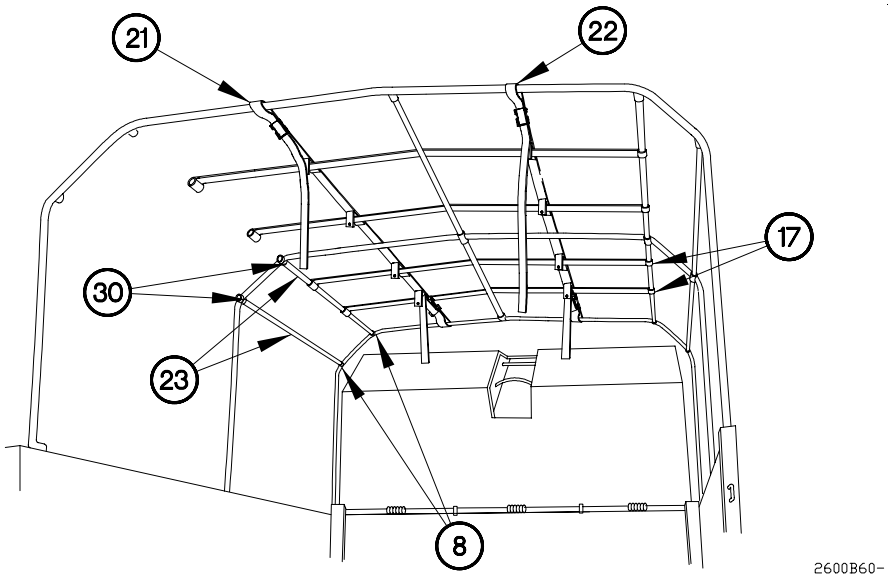
2600B59-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

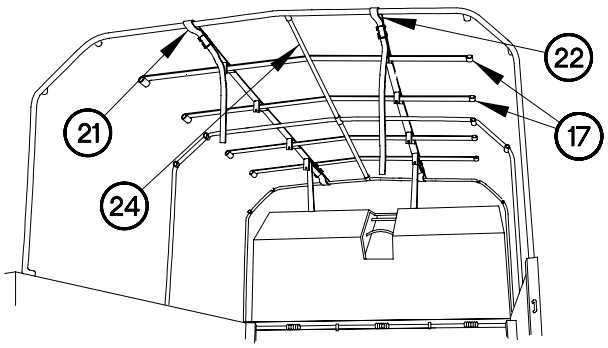
SOFT TOP (STEEL BOWS) REMOVAL - Continued

40. Remove front tube (23) from front bow bracket (8) and center bow bracket (30)
41. Remove front tube (23) from front bow bracket (8) and center bow bracket (30).
42. Remove front tube (23) from two braces (17).
43. Tighten left rear strap support (21).
44. Loosen right rear strap support (22).
45. Perform steps 40 through 44 on right side tubes.
46. Tighten right rear strap support (22).



SOFT TOP (STEEL BOWS) REMOVAL - Continued

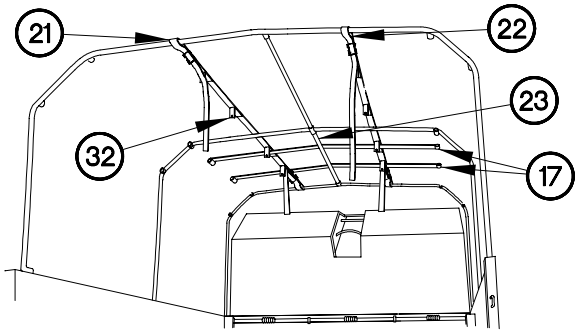
47. Remove two braces (17) from rear tube (24), left strap support (21), and right strap support (22).



2600B61-

48. Remove two braces (17) from front tube (23), left strap support (21), and right strap support (22).

49. Close four flaps (32) on left strap support (21) and right strap support (22).



2600B62-

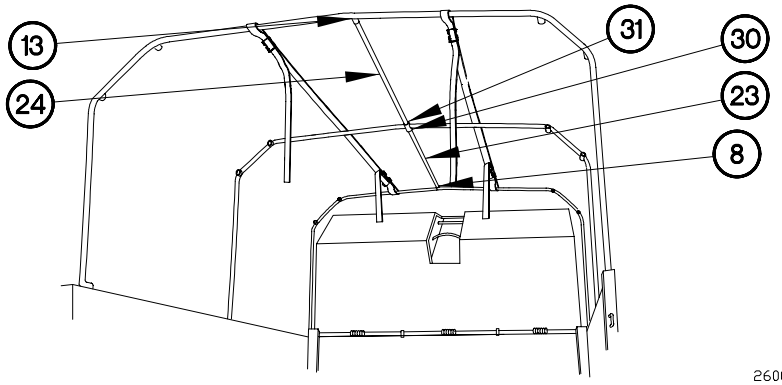
SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

Steps 50 and 51 require the aid of an assistant.

50. Remove rear tube (24) from center bow bracket (31) and rear bow bracket (13).

51. Remove front tube (23) from front bow bracket (8) and center bow bracket (30).

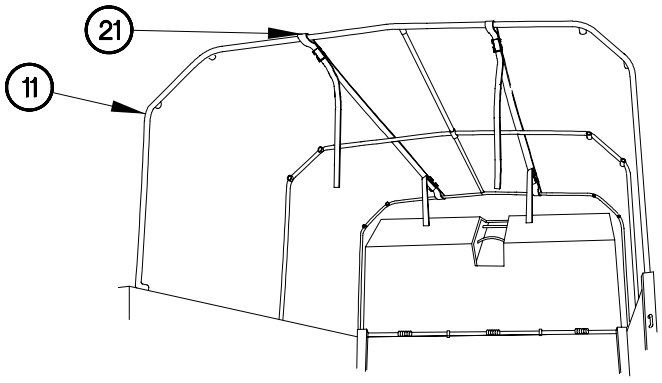


2600B63-

NOTE

Left and right strap supports are removed the same way. Left strap support shown.

52. Remove left strap support (21) from rear bow (11).

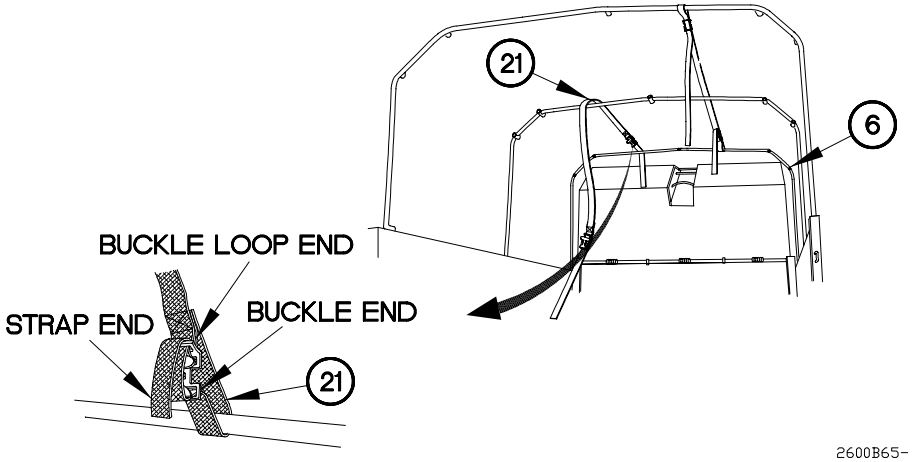


2600B64-

SOFT TOP (STEEL BOWS) REMOVAL - Continued

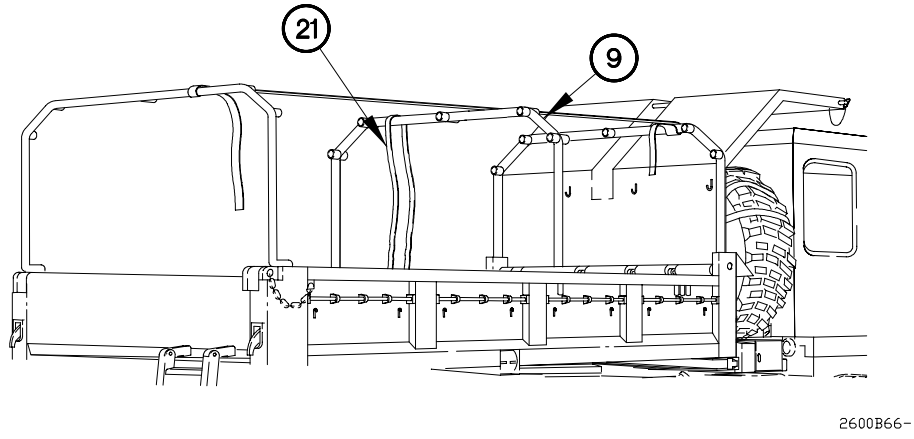
53. Remove front strap end from buckle loop end on left strap support (21).

54. Remove left strap support (21) from front bow (6).



55. Remove left strap support (21) from center bow (9).

56. Perform steps 52 through 55 on right strap support.



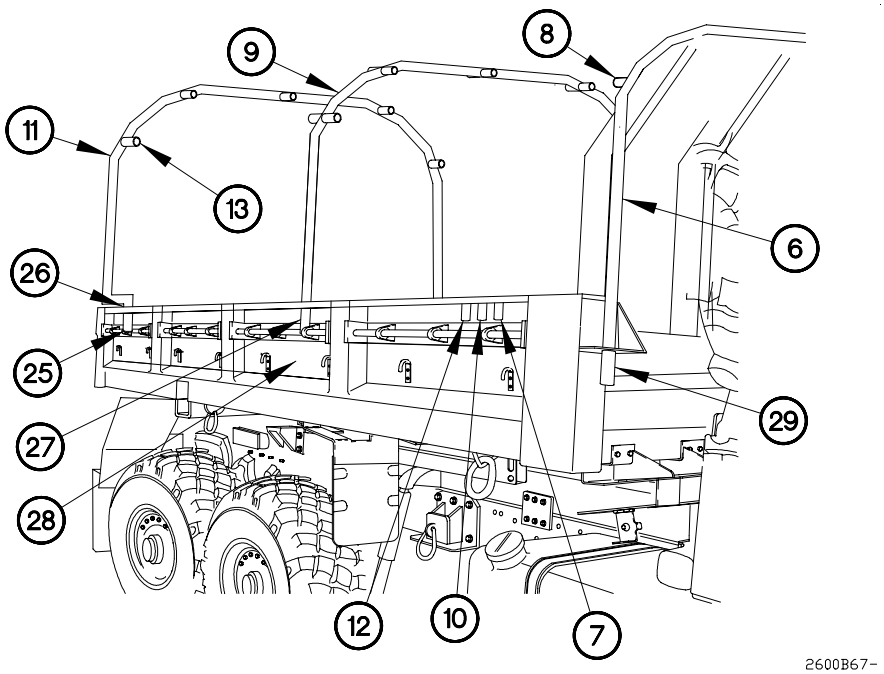
M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued 0026 00

SOFT TOP (STEEL BOWS) REMOVAL - Continued

NOTE

Steps 57 through 62 require the aid of an assistant.

57. Remove front bow (6) from front dump body pockets (29).
58. Position front bow (6) in front dump body pockets (7) with front bow brackets (8) towards front of vehicle.
59. Remove center bow (9) from rear pockets (27) of center dump body panel (28).
60. Position center bow (9) in center dump body pockets (10).
61. Remove rear bow (11) from rear pockets (26) of rear dump body panel (26).
62. Position rear bow (11) in rear dump body pockets (12) with rear bow brackets (13) towards rear of vehicle.



SOFT TOP (STEEL BOWS) REMOVAL - Continued

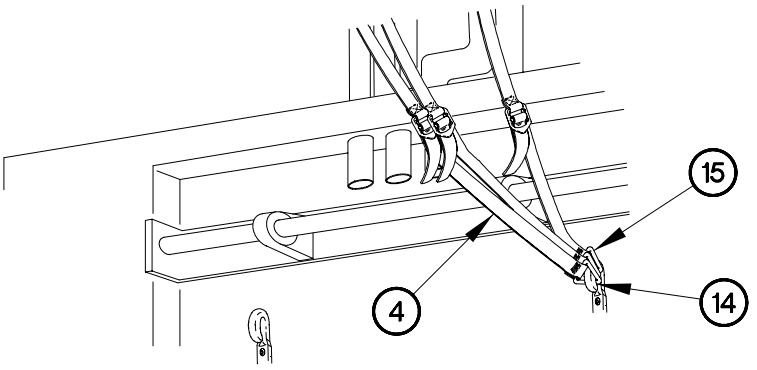
NOTE

Left and right sides of front, center, and rear bows are secured the same way. Right side shown.

63. Position three tiedown straps (4) on J-hook (14) with three tri-rings (15).

64. Tighten three tiedown straps (4).

65. Perform steps 63 and 64 on left side.

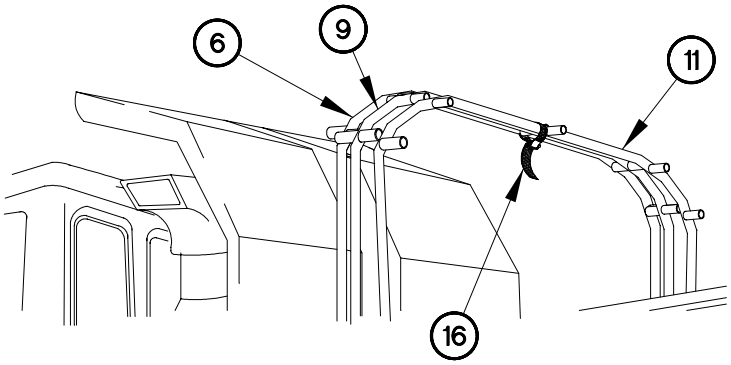


2600B68-

NOTE

Stowage strap should be positioned between center bow brackets and left inside bow brackets.

66. Install stowage strap (16) on front bow (6), center bow (9), and rear bow (11).



2600B69-

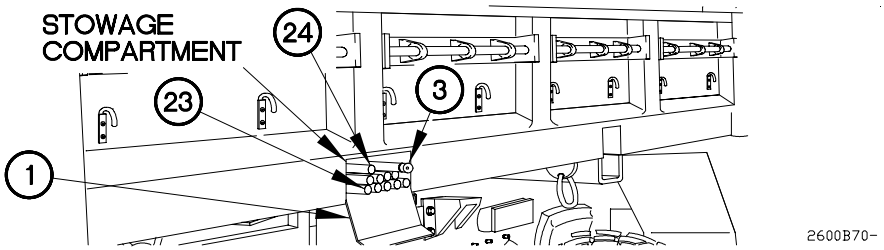
M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued 0026 00

SOFT TOP (STEEL BOWS) REMOVAL - Continued

67. Open stowage compartment door (1).

68. Stow five front tubes (23), five rear tubes (24), and steel pole (3) in stowage compartment.

69. Close stowage compartment door (1).



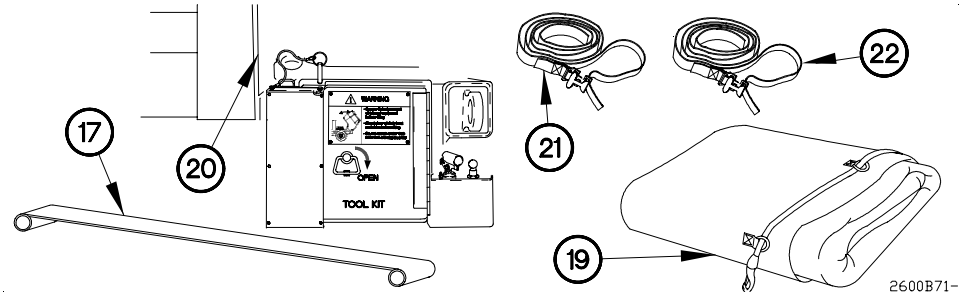
WARNING

Dump cover weighs approximately 60 lbs (27 kgs). Arctic dump cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift dump cover. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Step 70 requires the aid of an assistant.

70. Stow four braces (17), left strap support (21), right strap support (22), and dump cover (19) on dump body (20).



M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

0026 00

SOFT TOP (STEEL BOWS) REMOVAL - Continued

71. Raise spare tire (WP 0101 00).

72. Lower cab protector (WP 0029 00).

73. Stow ladder (WP 0023 00).

SOFT TOP KIT (STEEL BOWS) REMOVAL

WARNING

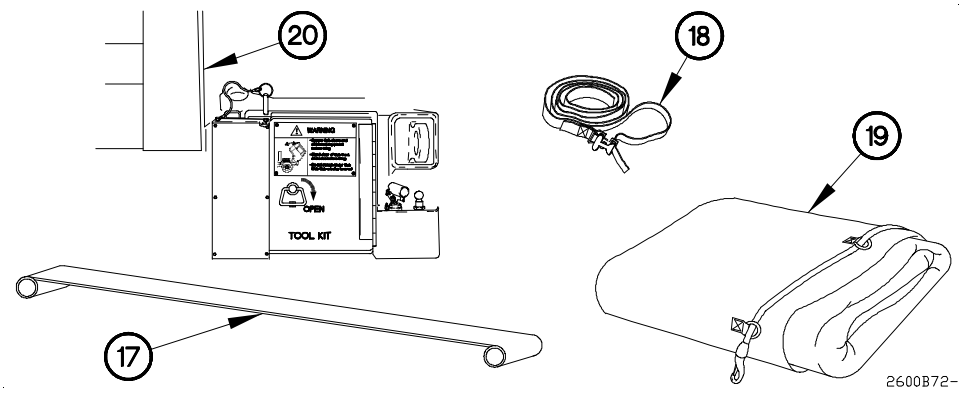
Dump cover weighs approximately 60 lbs (27 kgs). Arctic dump cover weighs approximately 100 lbs (45 kgs). An assistant is required to lift dump cover. Failure to comply may result in injury to personnel or damage to equipment.

1. Lower ladder (WP 0023 00).

NOTE

Step 2 requires the aid of an assistant.

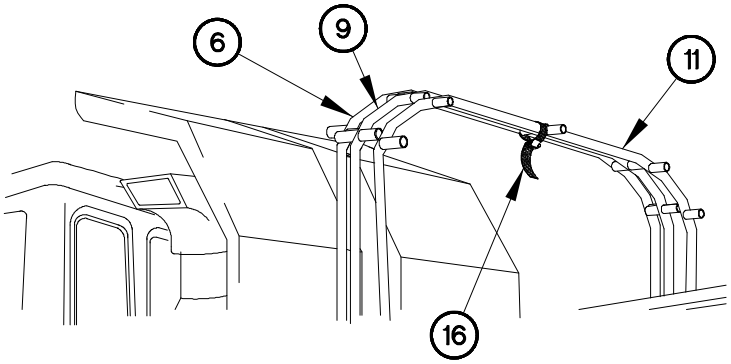
2. Remove four braces (17), two strap supports (18), and dump cover (19) from dump body (20).



M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued 0026 00

SOFT TOP KIT (STEEL BOWS) REMOVAL - Continued

3. Remove stowage strap (9) from front bow (10), center bow (11), and rear bow (12).



2600B73-

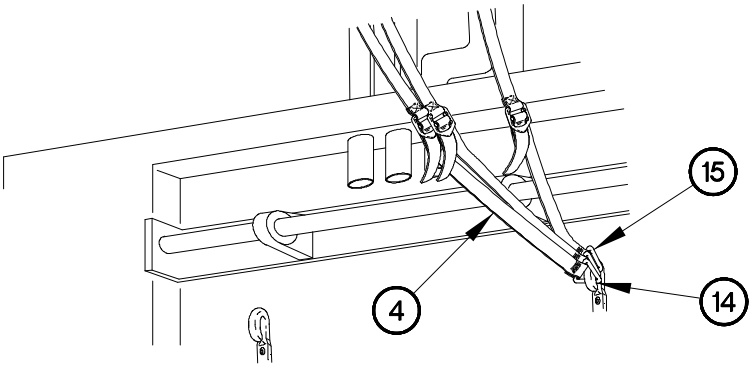
NOTE

Left and right sides of front, center, and rear bows are unsecured the same way. Right side shown.

4. Loosen three tiedown straps (4).

5. Remove three tri-rings (15) on tiedown straps (4) from J-hook (14).

6. Perform steps 4 and 5 on left side.



2600B74-

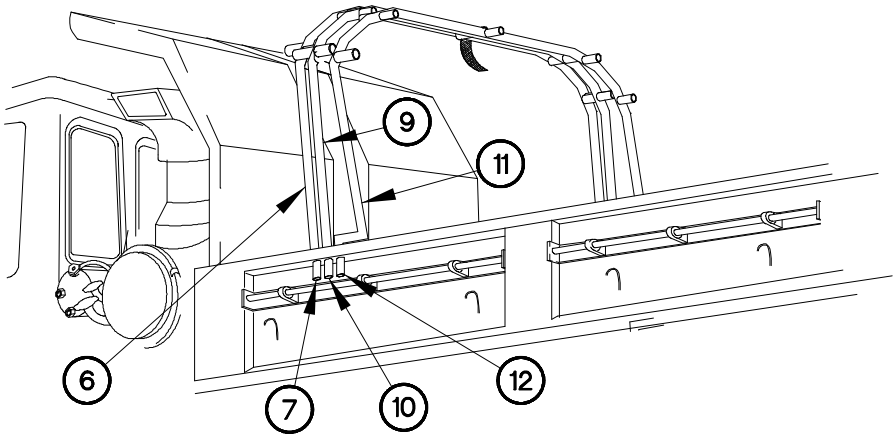
M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

SOFT TOP KIT (STEEL BOWS) REMOVAL - Continued

NOTE

Steps 7 through 9 require the aid of an assistant.

7. Remove rear bow (11) from rear dump body pockets (12).
8. Remove center bow (9) from center dump body pockets (10).
9. Remove front bow (6) from front dump body pockets (7).

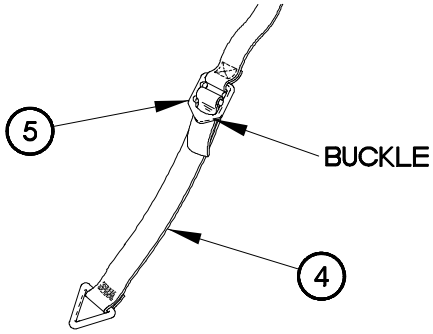


2600B75-

NOTE

Front, center, and rear bows have two bow straps and tiedown straps. All tiedown straps are removed from bow straps the same way. One shown.

10. Remove tiedown strap (4) from buckle on bow strap (5).
11. Perform step 10 on remaining tiedown straps.

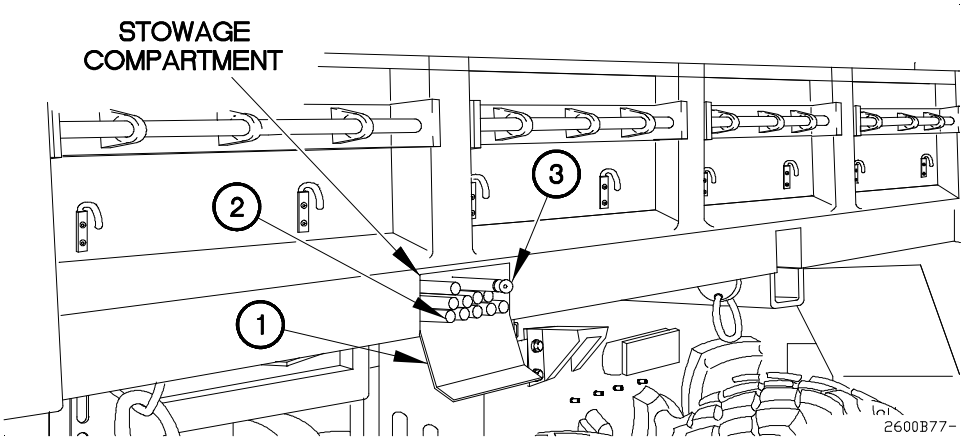


2600B76-

M1090A1 DUMP COVER KIT INSTALLATION/REMOVAL - Continued

SOFT TOP KIT (STEEL BOWS) REMOVAL - Continued

12. Open stowage compartment door (1).
13. Remove ten tubes (2) and steel pole (3) from stowage compartment.
14. Close stowage compartment door (1).
15. Raise ladder (WP 0023 00).



END OF OPERATING PROCEDURE

TROOPSEAT KIT LOWERING/RAISING 0027 00

INITIAL SETUP:

Maintenance Level	Reference
Operator	WP 0023 00

GENERAL

This work package provides the data and procedures for troopseat kit operation on the vehicle. Items covered include Lowering Troopseats and Raising Troopseats.

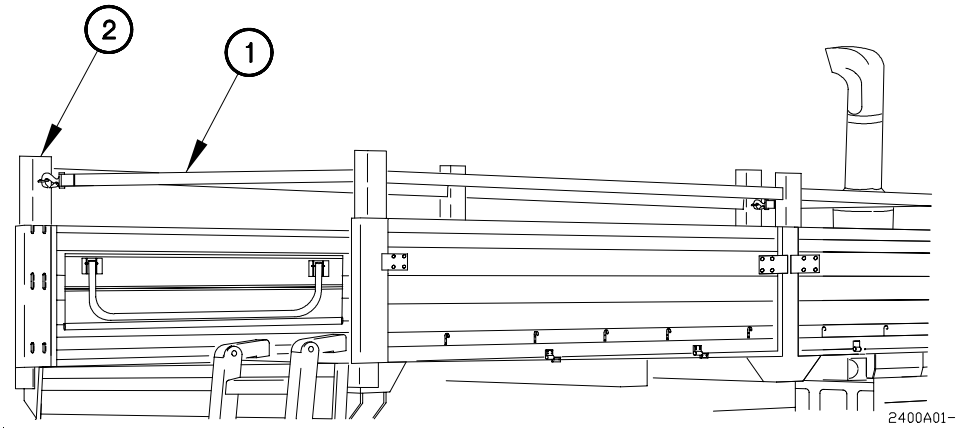
NOTE

Troopseats have two ways to secure seats in raised position. One of the ways is with a strap the other is with a holding bracket and budgie cord assembly.

LOWERING TROOPSEATS WITH STRAP.

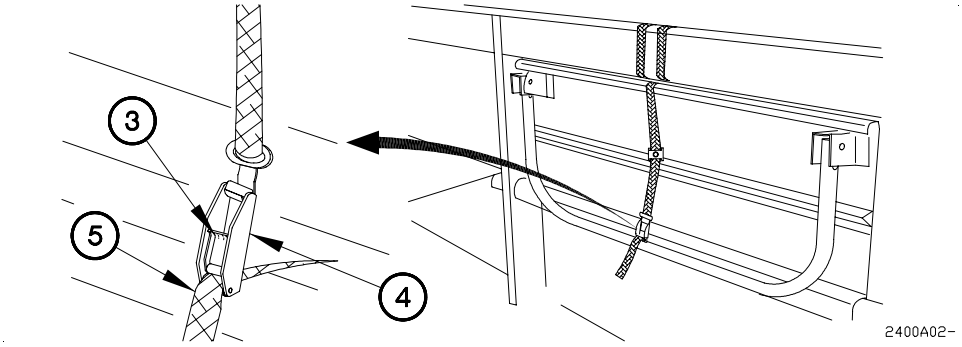
1. Lower ladder (WP 0023 00).

2. Disconnect safety strap (1) from left rear seat post (2).

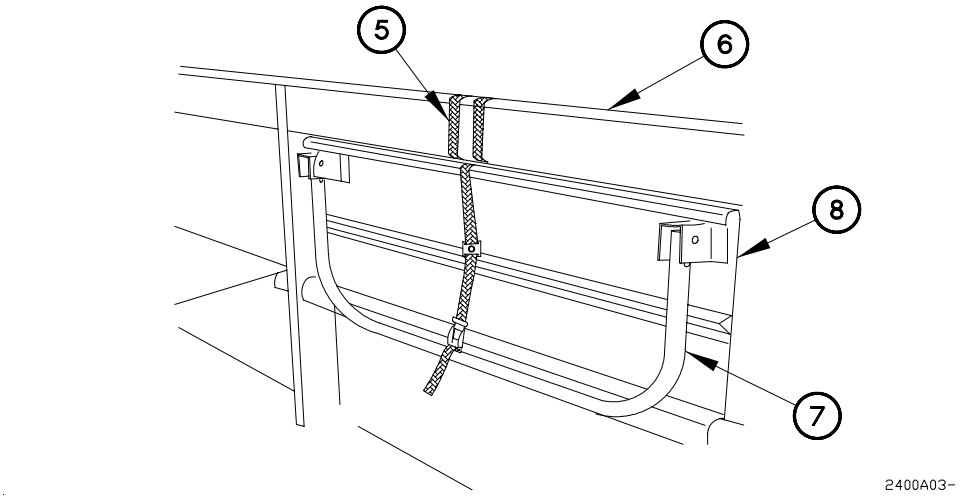


LOWERING TROOPSEATS WITH STRAP – Continued

3. Push release tab (3) on buckle (4).
4. Pull out on buckle (4) to loosen strap (5).
5. Unhook strap (5) from buckle (4).

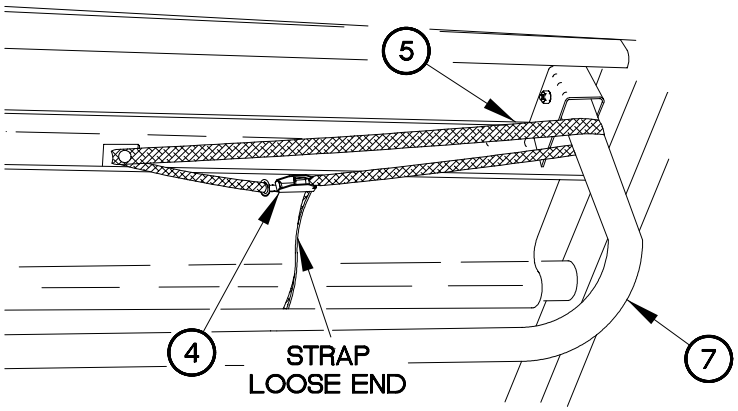


6. Unwrap strap (5) from backrest (6).
7. Unfold drop leg (7) from seat panel (8).
8. Lower seat panel (8) until drop leg (7) contacts floor of cargo bed.



LOWERING TROOPSEATS WITH STRAP - Continued

9. Wrap long end of strap (5) around drop leg (7).
10. Hook strap (5) to buckle (4).
11. Tighten strap (5) by pulling on loose end of strap.

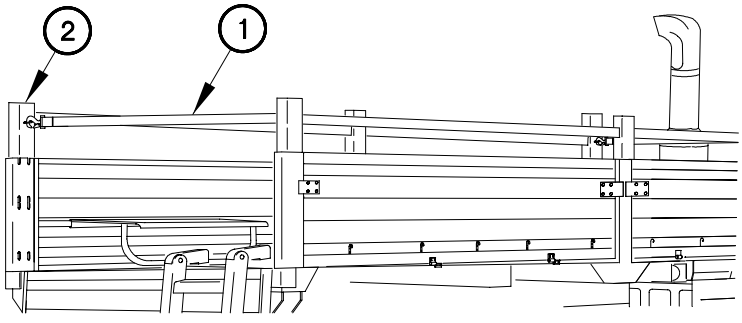


2400A04-

WARNING

Ensure safety strap is fastened across back and front of vehicle before transporting troops. Failure to comply may result in serious injury or death to personnel.

12. Connect safety strap (1) to left rear seat post (2).
13. Stow ladder (WP 0023 00).

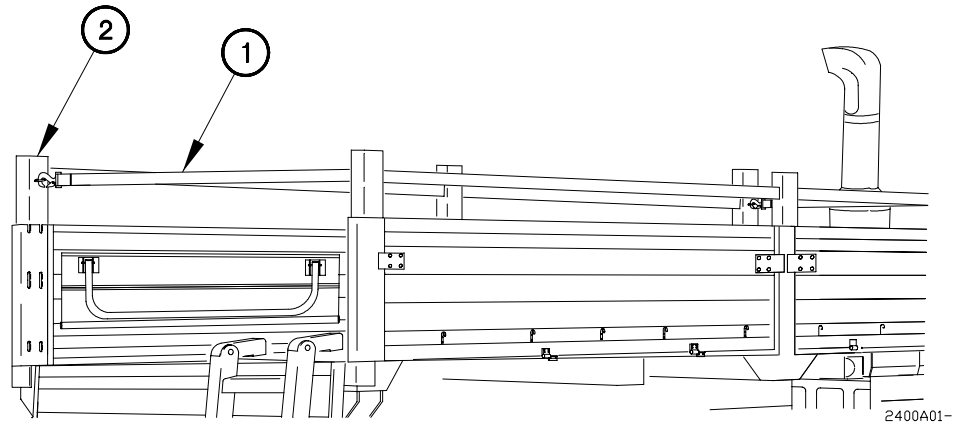


2400A05-

LOWERING TROOPSEATS WITH HOLDING BRACKET.

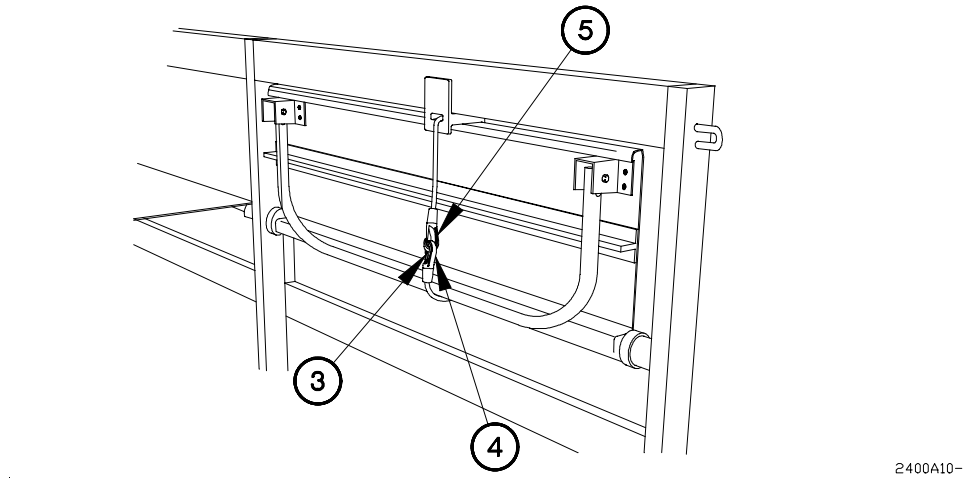
1. Lower ladder (WP 0023 00).

2. Disconnect safety strap (1) from left rear seat post (2).



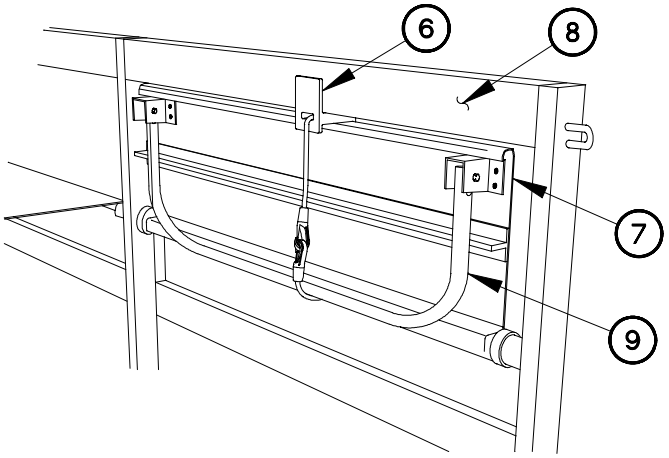
3. Press down on tab (3) on hook (4).

4. Remove lower hook (4) from upper hook (5).



LOWERING TROOPSEATS WITH HOLDING BRACKET - Continued.

5. Slide holding bracket (6) until holding bracket is slid off seat panel (7).
6. Remove holding bracket (6) from backrest (8).
7. Unfold drop leg (9) from seat panel (7).
8. Lower seat panel (7) until drop leg (9) contacts floor of cargo bed.



2400A11-

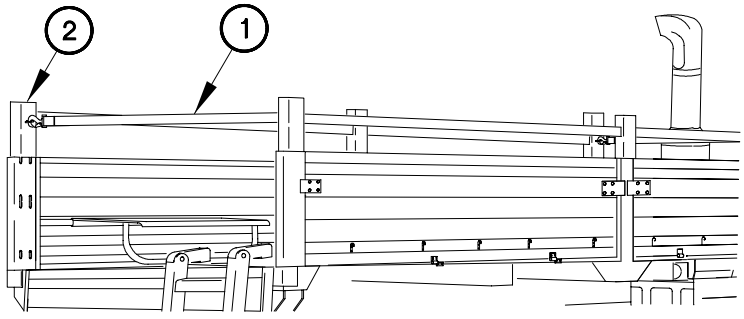
LOWERING TROOPSEATS WITH HOLDING BRACKET - Continued.

WARNING

Ensure safety strap is fastened across back and front of vehicle before transporting troops. Failure to comply may result in serious injury or death to personnel.

9. Connect safety strap (1) to left rear seat post (2).

10. Stow ladder (WP 0023 00).

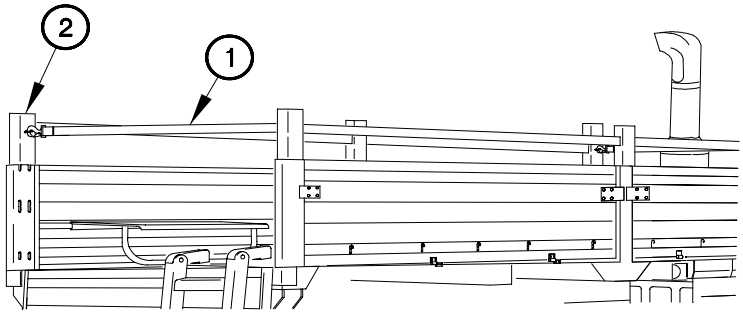


2400A05-

RAISING TROOPSEATS WITH HOLDING BRACKET.

1. Lower ladder (WP 0023 00).

2. Disconnect safety strap (1) from left rear seat post (2).



2400A06-

RAISING TROOPSEATS WITH HOLDING BRACKET – Continued

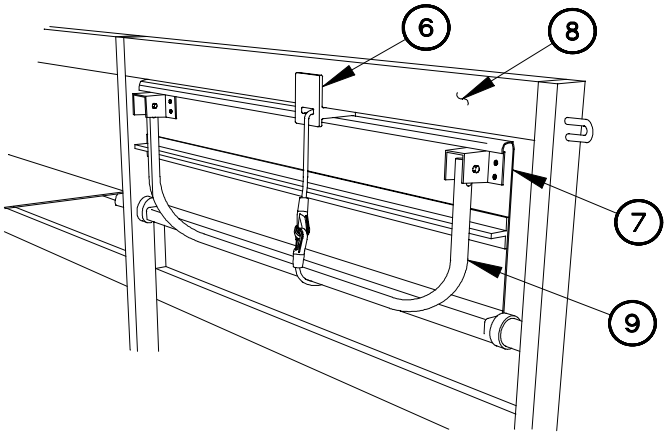
CAUTION

Troopseats must be stowed in the raised position when not in use. Failure to comply may result in damage to equipment.

3. Raise seat panel (7) up until edge of seat panel is under backrest (8).

4. Fold drop leg (9) down to seat panel (7).

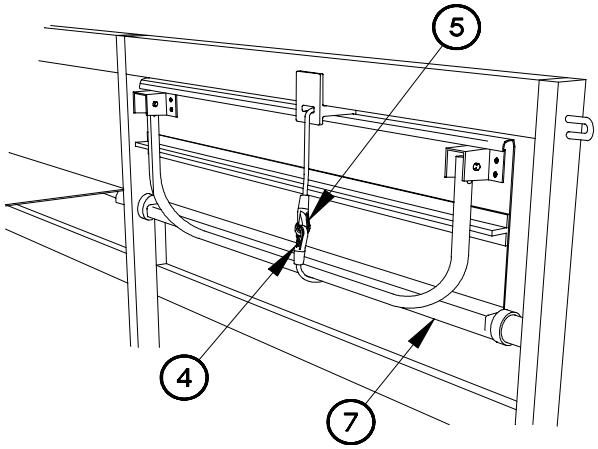
5. Slide holding bracket (6) on backrest (8) and seat panel (7) until holding bracket (6) is centered on seat panel (7).



2400A11-

6. Pull hook and budgie cord (4) around and under bottom of seat panel (7).

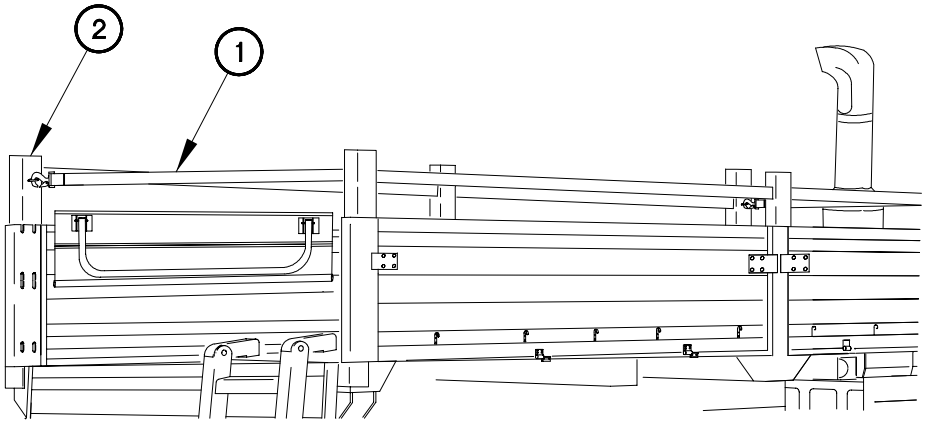
7. Pull up on hook and budgie cord (4) while pushing down on hook and budgie cord (5) until the two hooks can connect.



2400A12-

RAISING TROOPSEATS WITH HOLDING BRACKET - Continued

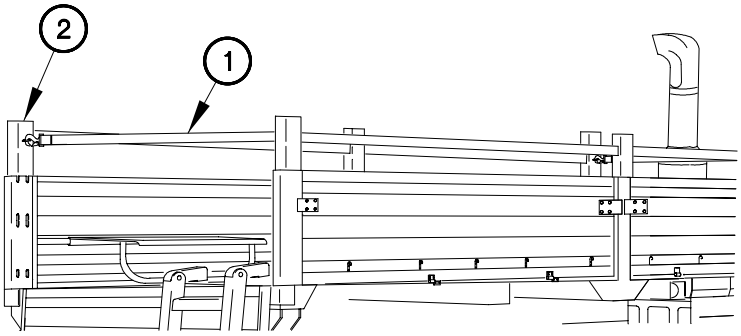
8. Connect safety strap (1) to left rear seat post (2).
9. Stow ladder (WP 0023 00).



2400A09-

RAISING TROOPSEATS WITH STRAP

1. Lower ladder (WP 0023 00).
2. Disconnect safety strap (1) from left rear seat post (2).



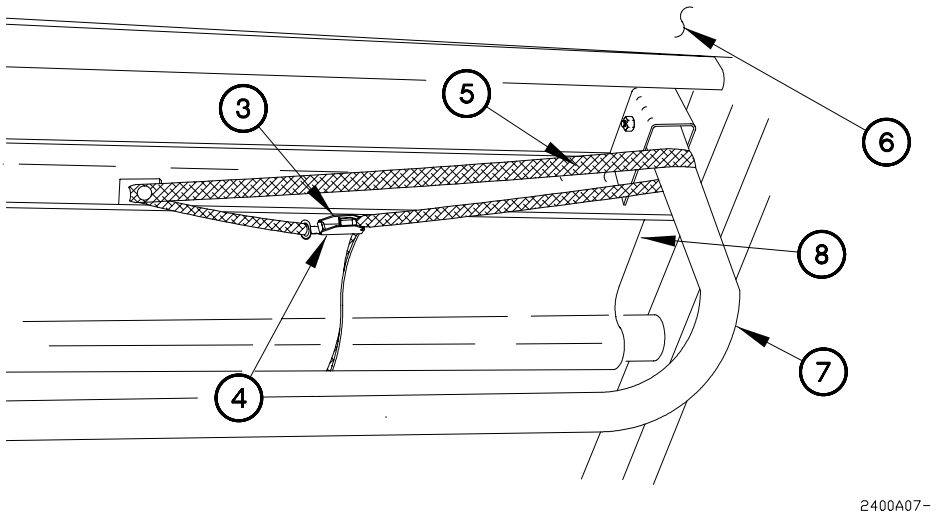
2400A06-

RAISING TROOPSEATS WITH STRAP – Continued.

CAUTION

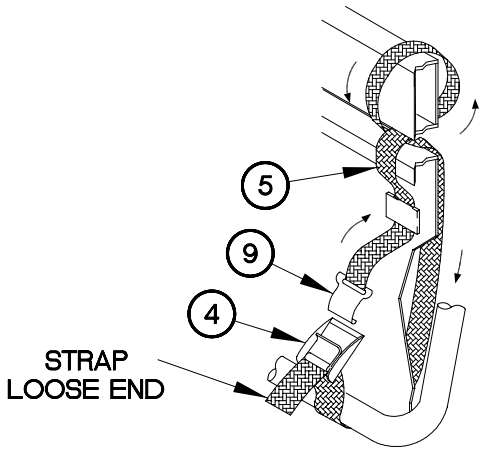
Troopseats must be stowed in the raised position when not in use. Failure to comply may result in damage to equipment.

3. Push release tab (3) on buckle (4).
4. Unhook strap (5) from drop leg (7).
5. Raise seat panel (8) up until edge of seat panel is under backrest (6).
6. Fold drop leg (7) down to seat panel (8).



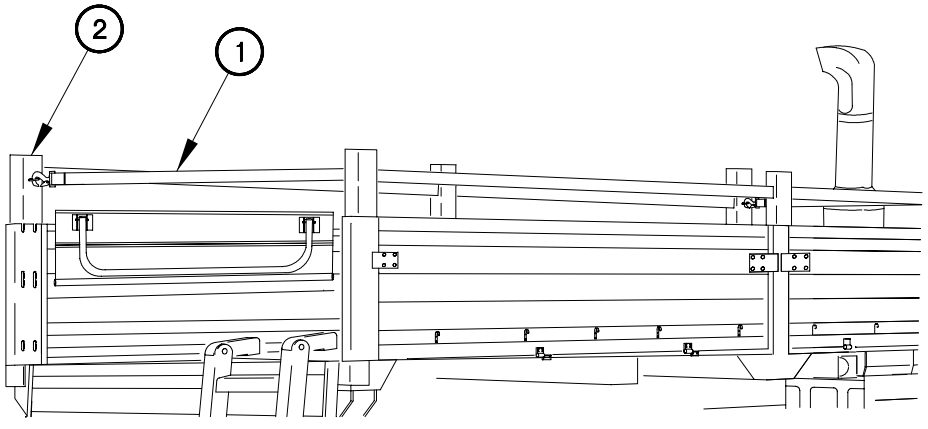
RAISING TROOPSEATS WITH STRAP – Continued.

7. Position hook (9) of strap (5) down.
8. Wrap strap (5), as shown, to connect to buckle (4).
9. Tighten strap (5) by pulling on loose end of strap.



2400A08-

10. Connect safety strap (1) to left rear seat post (2).
11. Stow ladder (WP 0023 00).



2400A09-

END OF OPERATING PROCEDURE

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION 0028 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0018 00

Tools/Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)
Gloves, Leather (Item 9, WP 0114 00)
Goggles, Industrial (Item 10, Table 2 WP 0112 00)

GENERAL

This work package provides the data and procedures for safe operation of the MHC. Items covered include Determining MHC Settings From Range Diagram, Preparing MHC For Use, Setting Up Outriggers, Raising Boom To Operating Position, Connecting REMOTE CONTROL UNIT, Rotating And Telescoping Boom, Raising And Lowering Load, Stow MHC, Disconnecting REMOTE CONTROL UNIT, Stowing Outriggers and Shutting Down MHC.

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

DETERMINE MHC SETTINGS FROM RANGE DIAGRAM

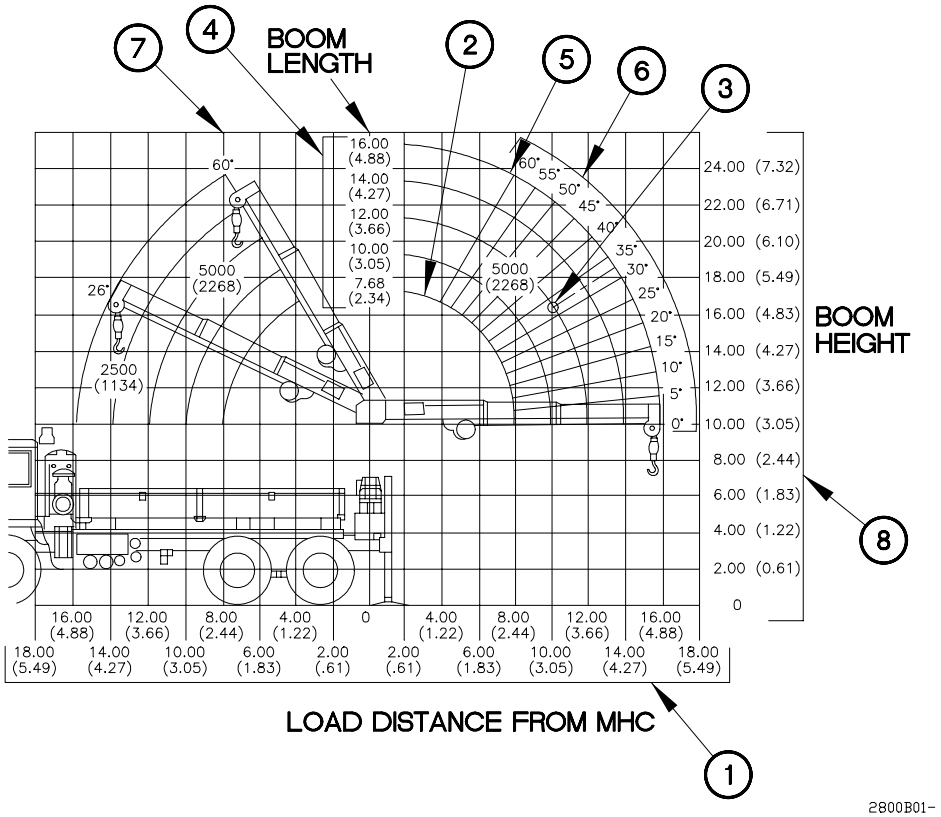
1. Determine load distance from MHC and locate dimension along bottom horizontal line (1). (Example: Load is 10 ft (3.1 m) from MHC.)

2. Follow line vertically up graph until it intersects with boom length arc (2). Mark intersection point (3).

3. Follow line along arc and make note of boom length (4). (Example: If load distance is 10 ft (3.1 m) from MHC, boom length is 12 ft (3.7 m).)

4. Return to intersection point (3). Follow diagonal line (5) to determine boom angle setting (6). (Example: Boom angle setting is 33 degrees from intersection point.)

5. Return to intersection point (3). Follow horizontal line (7) to determine boom height (8). (Example: Boom height is 16 ft (4.9 m) from intersection point.)



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

DETERMINE MHC SETTINGS FROM RANGE DIAGRAM - Continued

6. Locate load distance from MHC in Table 1, MHC Range Diagram Summary.

7. Locate boom angle that was determined in step 4. Follow horizontally across table to verify height of boom and to determine maximum load. (Example: Boom height is 16 ft (4.8 m) and maximum MHC is 3,500 lb. (1,589 kg).)

Table 1. MHC Range Diagram Summary.

LOAD DISTANCE FROM MHC	BOOM ANGLE	HEIGHT OF BOOM	MAXIMUM LOAD
16 ft (4.9 m)	0 degrees	10 ft (3.1 m)	2,200 lb. (999 kg)
15 ft (4.6 m)	15 degrees	14 ft (4.3 m)	2,200 lb. (999 kg)
14 ft (4.3 m)	25 degrees	16.5 ft (5.0 m)	2,500 lb. (1,135 kg)
13 ft (4.0 m)	35 degrees 20 degrees	19 ft (5.8 m) 14.5 ft (4.4 m)	2,700 lb. (1,226 kg) 2,700 lb. (1,226 kg)
12 ft (3.7 m)	38 degrees 27 degrees	19.5 ft (5.9 m) 16 ft (4.9 m)	2,900 lb. (1,317 kg) 2,900 lb. (1,317 kg)
11 ft (3.4 m)	44 degrees 35 degrees 15 degrees	21 ft (6.4 m) 17.5 ft (5.3 m) 13 ft (4.0 m)	3,200 lb. (1,453 kg) 3,200 lb. (1,453 kg) 3,200 lb. (1,453 kg)
10 ft (3.1 m)	50 degrees 42 degrees 29 degrees	22 ft (6.7 m) 19 ft (5.8 m) 15.5 ft (4.7 m)	3,500 lb. (1,589 kg) 3,500 lb. (1,589 kg) 3,500 lb. (1,589 kg)
9 ft (2.7 m)	55 degrees 48 degrees 37 degrees 20 degrees	23 ft (7.0 m) 20 ft (6.1 m) 17 ft (5.2 m) 13 ft (4.0 m)	3,900 lb. (1,771 kg) 3,900 lb. (1,771 kg) 3,900 lb. (1,771 kg) 3,900 lb. (1,771 kg)
8 ft (2.4 m)	57 degrees 53 degrees 45 degrees 33 degrees	23.5 ft (7.2 m) 21 ft (6.4 m) 18 ft (5.5 m) 15 ft (4.6 m)	3,900 lb. (1,771 kg) 4,370 lb. (1.984 kg) 4,370 lb. (1.984 kg) 4,370 lb. (1.984 kg)
7 ft (2.1 m)	57 degrees 41 degrees 10 degrees	21 ft (6.4 m) 16 ft (4.9 m) 11 ft (3.4 m)	5,000 lb. (2,270 kg) 5,000 lb. (2,270 kg) 5,000 lb. (2,270 kg)

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

DETERMINE MHC SETTINGS FROM RANGE DIAGRAM - Continued

Table 1. MHC Range Diagram Summary - Continued.

LOAD DISTANCE FROM MHC	BOOM ANGLE	HEIGHT OF BOOM	MAXIMUM LOAD
6 ft (1.8 m)	58 degrees 50 degrees 33 degrees	20 ft (6.1 m) 17.5 ft (5.3 m) 14 ft (4.3 m)	5,000 lb. (2,270 kg) 5,000 lb. (2,270 kg) 5,000 lb. (2,270 kg)
5 ft (1.5 m)	57 degrees 45 degrees	18 ft (5.5 m) 15 ft (4.6 m)	5,000 lb. (2,270 kg) 5,000 lb. (2,270 kg)
4 ft (1.2 m)	55 degrees	16 ft (4.9 m)	5,000 lb. (2,270 kg)

PREPARE MHC FOR USE

WARNING

Operator must keep load in sight at all times while operating Material Handling Crane (MHC). Load may unexpectedly shift. Failure to comply may result in serious injury or death to personnel.

Do not operate Material Handling Crane (MHC) and 15K Self-Recovery Winch (SRW) at the same time. Failure to comply may result in serious injury or death to personnel.

Wheels must always be chocked before operating Material Handling Crane (MHC). Vehicle may move or load may shift. Failure to comply may result in serious injury to personnel or damage to equipment.

Goggles must be worn while operating Material Handling Crane (MHC) controls. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

NOTE

MHC will not operate unless outriggers are lowered.

1. Start engine (WP 0018 00).

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

PREPARE MHC FOR USE

NOTE

MHC can operate on a side slope of up to 5 degrees.

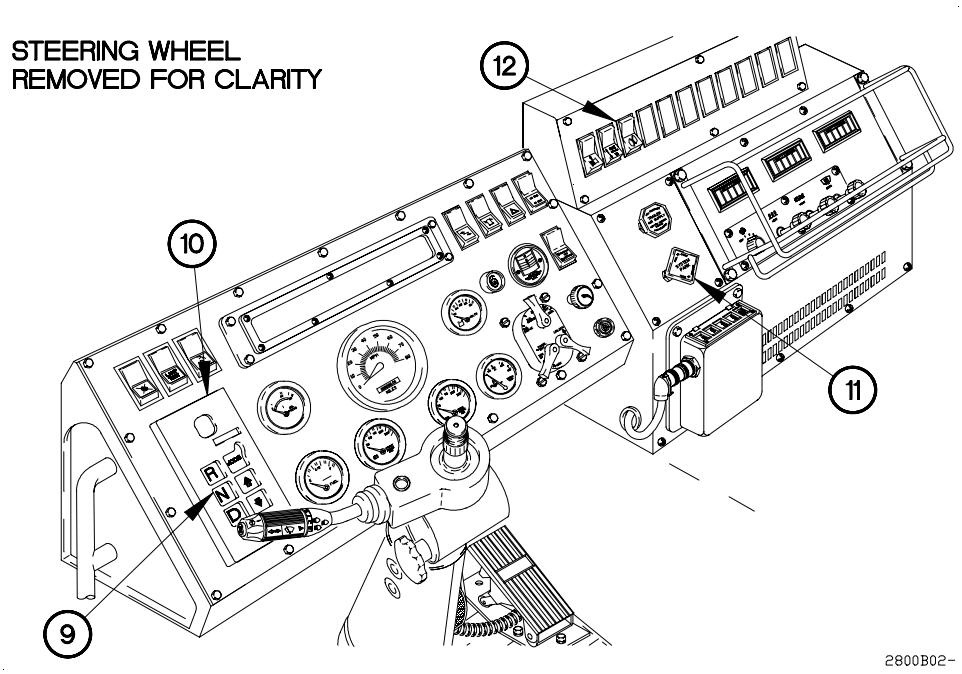
2. Position vehicle on level ground so all loading and unloading can be done from one position.

3. Chock wheels (WP 0018 00).

4. Press N (Neutral) button (9) on WTEC III transmission pushbutton selector (10).

5. Pull out SYSTEM PARK control (11).

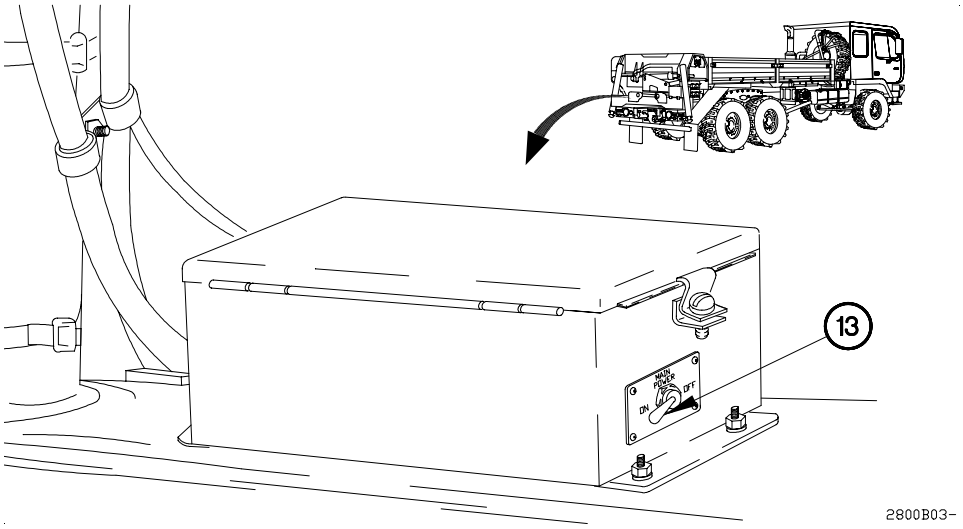
6. Position PTO switch (12) to on.



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

PREPARE M1084A1/M1086A1 MHC FOR USE - Continued

7. Position MAIN POWER ON/OFF switch (13) to ON.

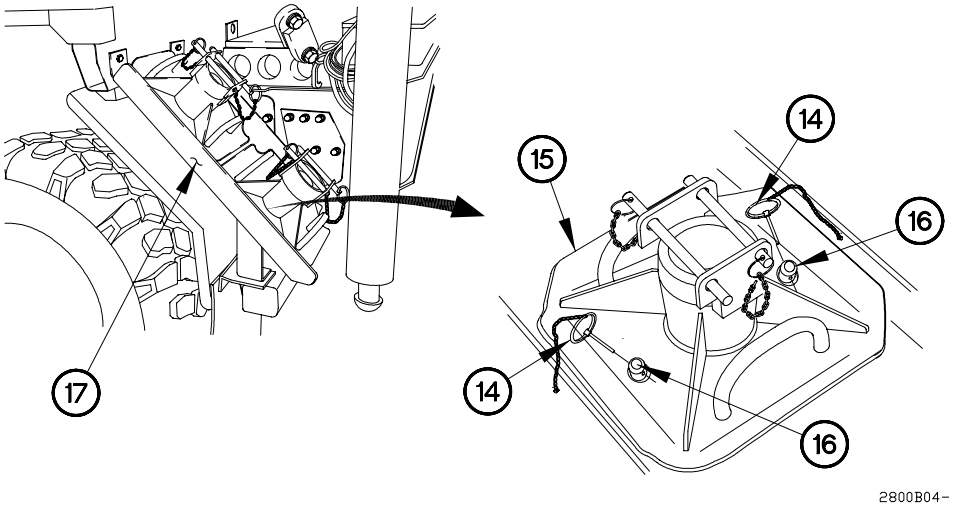


SET UP OUTRIGGERS

NOTE

Both outrigger pads are removed the same way. Left side shown.

1. Remove two pins (13) and outrigger pad (15) from two studs (16) on stowage bracket (17).



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

SET UP OUTRIGGERS - Continued

NOTE

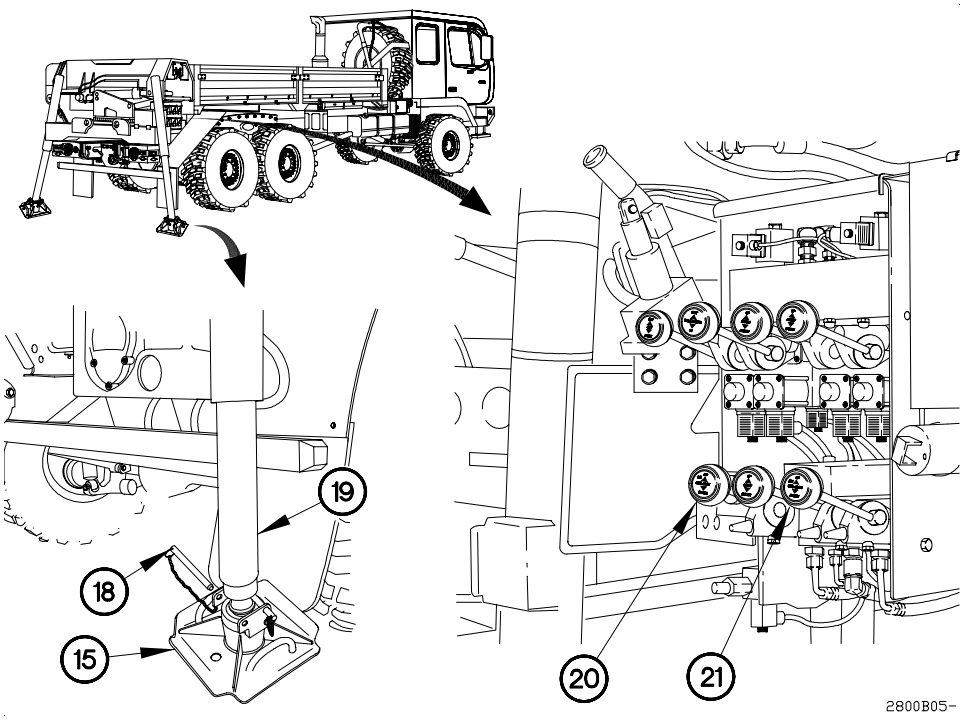
Both outrigger pads are installed on outriggers the same way. Right side shown.

2. Remove pin (18) from outrigger pad (15).
3. Clean all dirt and debris from outrigger pad (15) and from end of outrigger (19).
4. Place outrigger pad (15) on bottom of outrigger (19).
5. Install pin (18) in outrigger pad (15).

WARNING

Keep hands and feet clear of the outriggers during operation. Failure comply may result in injury to personnel.

6. Position LH O/R JACK lever (20) to DOWN until outrigger pad (15) is on ground.
7. Position RH O/R JACK lever (21) to DOWN until outrigger pad (15) is on ground.



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

SET UP OUTRIGGERS - Continued

WARNING

Do not raise vehicle tires off ground with outriggers. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

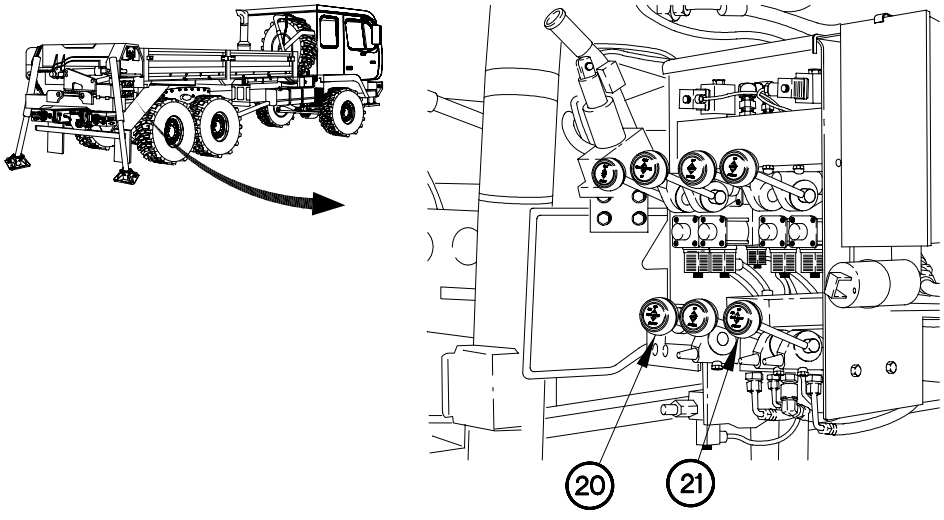
Outriggers must be positioned so that Material Handling Crane (MHC) is level from side to side. Use of Material Handling Crane (MHC) when vehicle is not level can cause vehicle to roll over. Failure to comply may result in serious injury or death to personnel.

NOTE

Operate LH O/R JACK lever and RH O/R JACK lever at the same time.

Outriggers should be lowered just enough so that all tires have firm contact with that ground but do not bulge from weight. Left outrigger or right outrigger may need to be lowered slightly more than the other to level MHC from side to side.

8. Position LH O/R JACK lever (20) and RH O/R JACK lever (21) to DOWN until vehicle weight is off rear tires.



2800B06-

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

RAISE BOOM TO OPERATING POSITION

WARNING

Wear heavy leather-palmed work gloves when handling cable. Cables can become frayed or contain broken wires. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury to personnel.

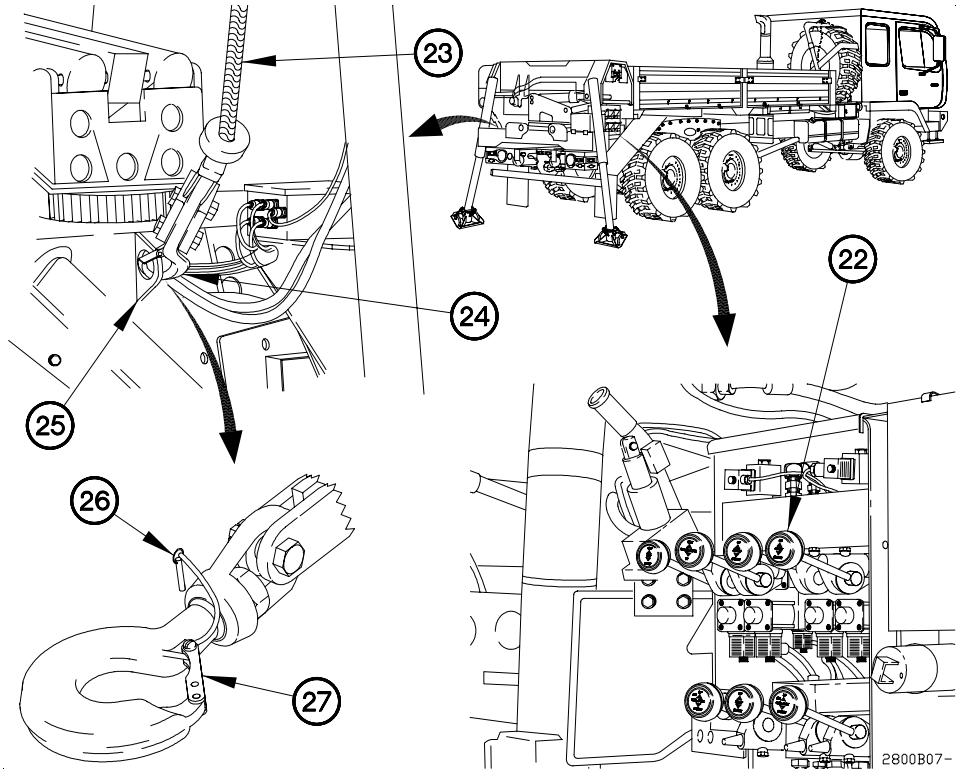
CAUTION

When disconnecting hook assembly from stowage ring, do not allow excessive slack to build-up when paying out cable. Cable may get tangled on drum. Failure to comply may result in damage to equipment.

1. Position HOIST lever (22) to DOWN until there is enough slack in cable (23) to disconnect hook assembly (24) from stowage ring (25).

2. Remove safety pin (26) from hook assembly latch (27).

3. Disconnect hook assembly (24) from stowage ring (25).



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

RAISE BOOM TO OPERATING POSITION - Continued

WARNING

Keep boom clear of all electrical lines and other obstacles while operating Material Handling Crane (MHC). Failure to comply may result in serious injury or death to personnel.

CAUTION

Never telescope boom or lift load unless mast is fully raised. Failure to comply may result in damage to equipment.

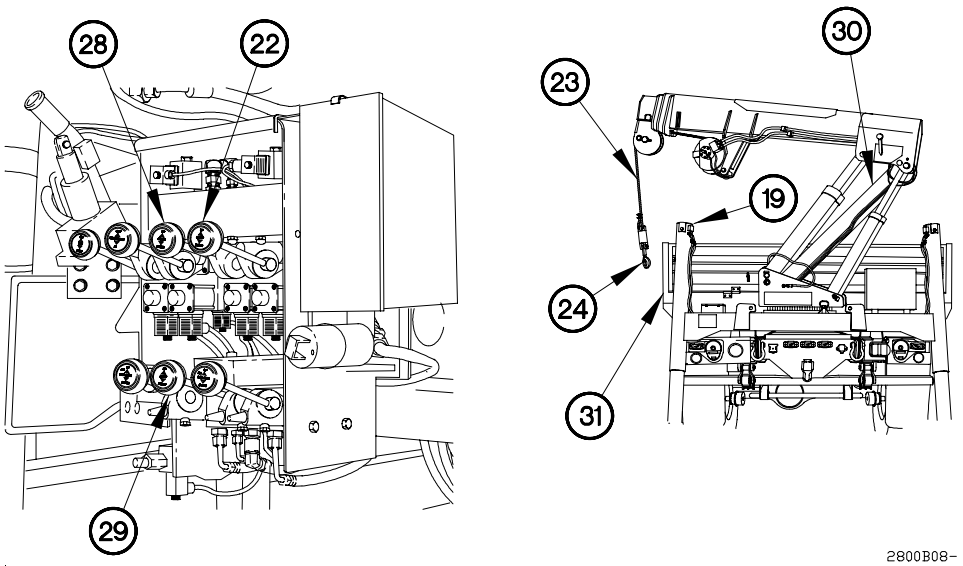
Retract cable as required so that hook assembly does not contact cargo bed sides or outrigger while raising mast. Failure to comply may result in damage to equipment.

NOTE

BOOM lever and MAST lever are operated at the same time to maintain boom at approximately a 45-degree angle.

4. Position BOOM lever (28) and MAST lever (29) to UP until mast (30) is fully raised.

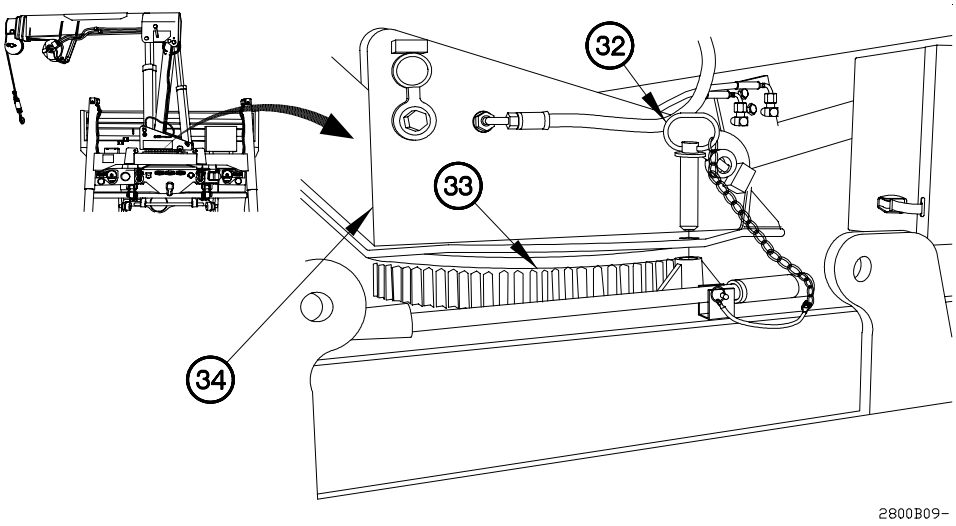
5. Position HOIST lever (22) to UP retract cable (23) so that hook assembly (24) clears cargo bed sides (31) and outrigger (19) as mast (30) is being raised.



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

RAISE BOOM TO OPERATING POSITION - Continued

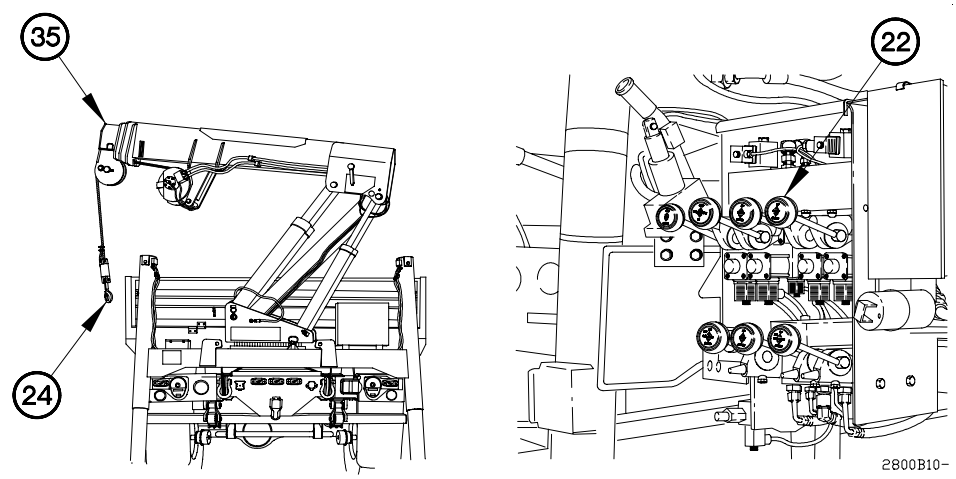
6. Remove pin (32) from turntable bearing (33) to allow turntable (34) to rotate.



7. Perform the following pre-operational checks on the MHC Overload Shutdown System (OSS):

   a. Position HOIST lever (22) in UP position until hook assembly (24) is against boom nose (35).

   b. Continue to hold HOIST lever (22) in UP position until hydraulic system is heard to by-pass.



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

RAISE BOOM TO OPERATING POSITION - Continued

NOTE

There should be no movement of the MHC during this check. If there is movement in the MHC, notify Unit Maintenance.

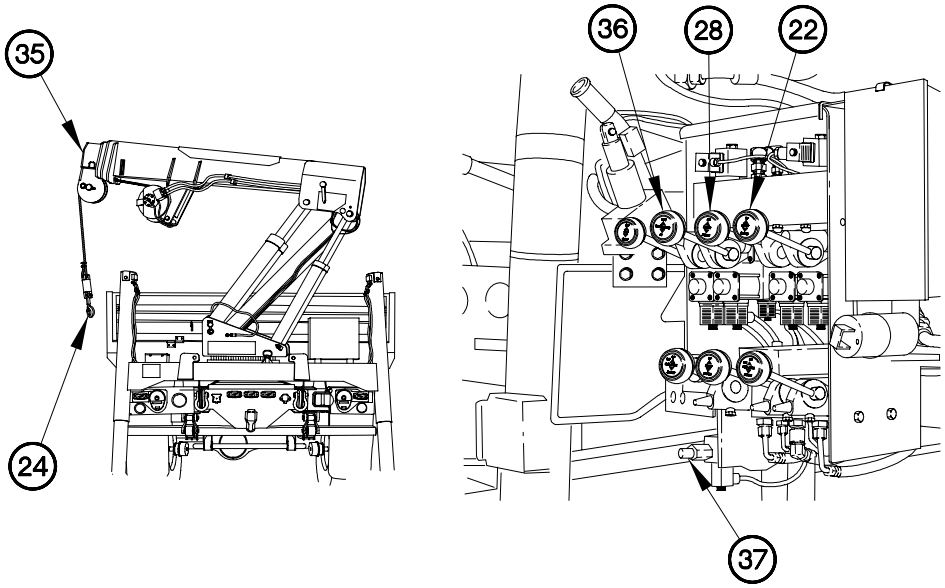
c. Continue holding HOIST lever (22) in UP position while positioning TELESCOPE lever (36) to OUT and BOOM lever (28) first to UP and then to DOWN.

NOTE

Approximately six seconds should elapse before OSS resets and boom responds to down movement. If no movement occurs, notify Unit Maintenance.

d. While holding BOOM lever (28) in the DOWN position, pay out hook assembly (24) so no contact is made with boom nose (35).

e. Press MANUAL OVERRIDE switch (37) to reset.



2800B11-

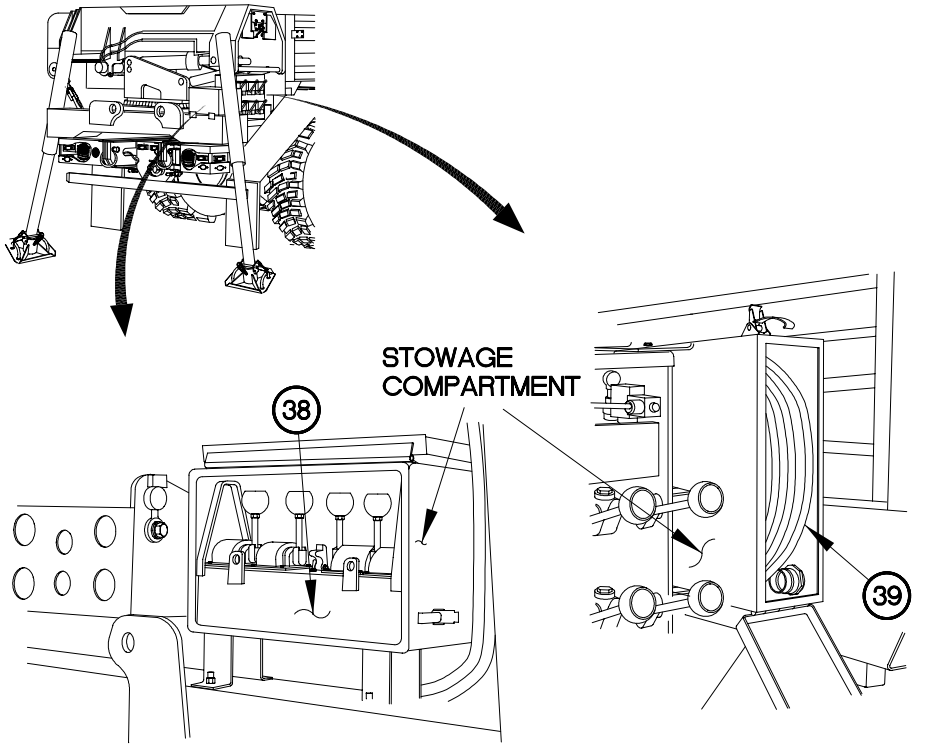
M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

CONNECT REMOTE CONTROL UNIT

WARNING

Material Handling Crane (MHC) must be operated with REMOTE CONTROL UNIT if Operator is not able to keep load in sight at all times during operation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

1. Remove REMOTE CONTROL UNIT (38) from stowage compartment.
2. Remove remote control cable (39) from stowage compartment.

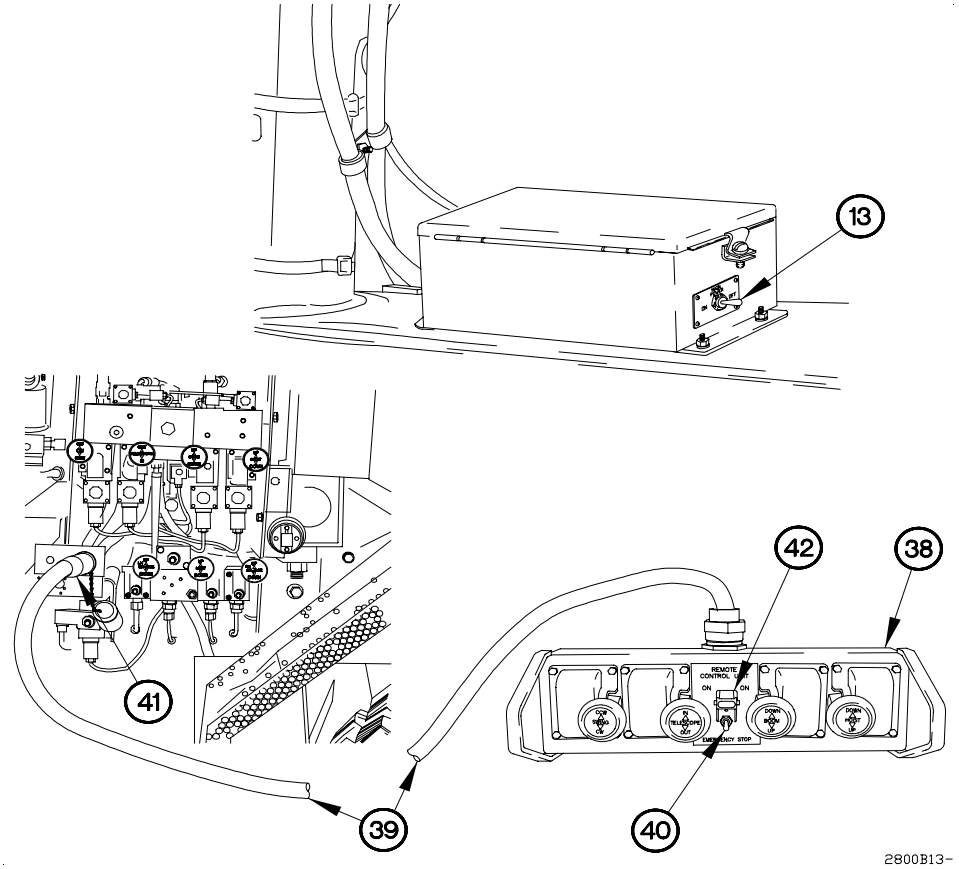


2800B12-

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

CONNECT REMOTE CONTROL UNIT - Continued

3. Position MAIN POWER ON/OFF switch (13) to OFF.
4. Position toggle switch (42) on REMOTE CONTROL UNIT (38) to OFF.
5. Connect remote control cable (39) to REMOTE CONTROL UNIT (38).
6. Connect other end of remote control cable (39) to REMOTE CONTROL HOOK UP receptacle (41).
7. Position MAIN POWER ON/OFF switch (13) to ON.
8. Lift guard (42) on toggle switch (40).
9. Position toggle switch (42) on REMOTE CONTROL UNIT (38) to ON.



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

ROTATE AND TELESCOPE BOOM

WARNING

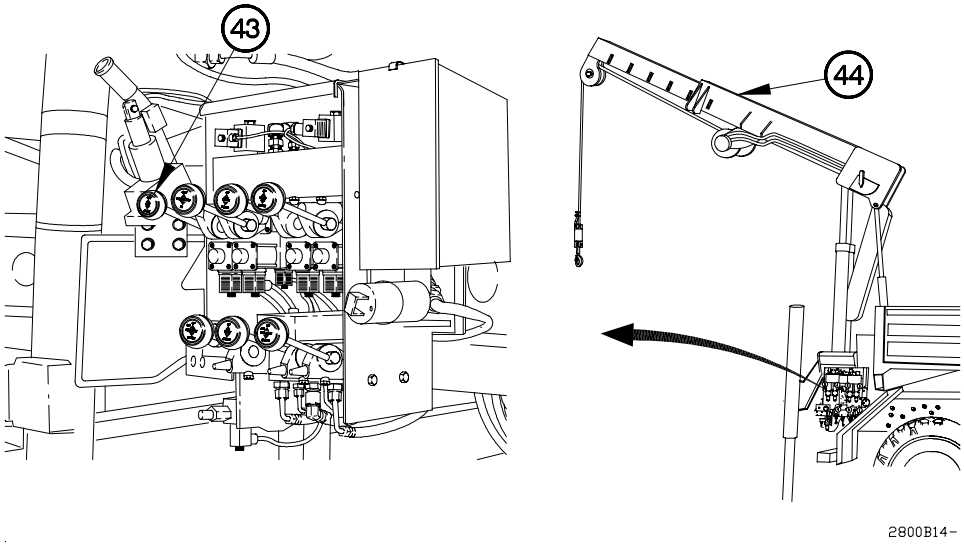
Keep boom clear of all electrical lines and other obstacles while operating Material Handling Crane (MHC). Failure to comply may result in serious injury or death to personnel.

Area must be clear of personnel before operating swing or telescoping boom. Boom must be rotated and telescoped slowly enough so Operator has control of load. If Operator cannot see load during operation, operate Material Handling Crane (MHC) with REMOTE CONTROL UNIT. Failure to comply may result in serious injury or death to personnel.

NOTE

Operate MHC control levers using even pressure. Moving lever slightly will cause slow movement of MHC. Moving lever to full travel will cause faster movement of MHC.

1. Position SWING lever (43) to CW to move boom (44) to the right.
2. Position SWING lever (43) to CCW to move boom (44) to the left.



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

ROTATE AND TELESCOPE BOOM - Continued

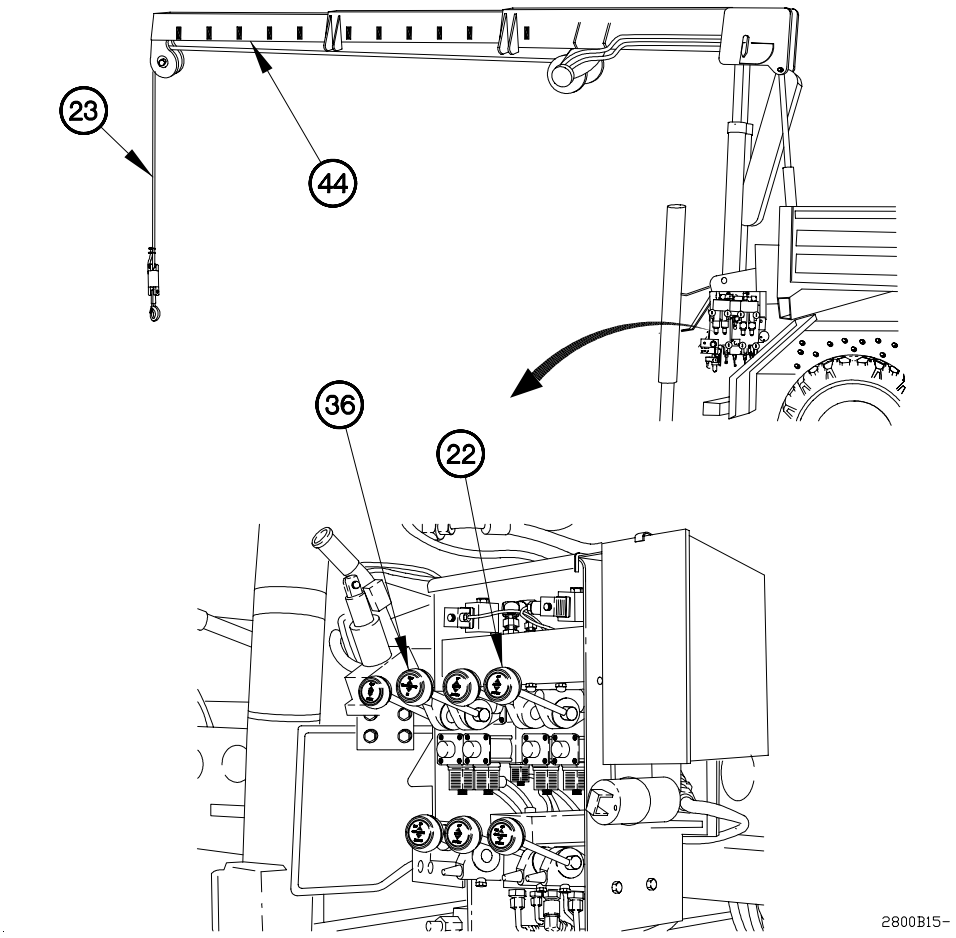
CAUTION

Keep hook assembly at least 2 ft (0.6 m) from end of boom. If hook assembly hits end of boom, Material Handling Crane (MHC) will lose power for several seconds. Failure to comply may result in damage to equipment.

NOTE

Operate HOIST lever and TELESCOPE lever at the same time.

3. Position HOIST lever (22) to DOWN to pay out cable (23) and TELESCOPE lever (36) to OUT to extend boom (44).



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

RAISE AND LOWER LOAD

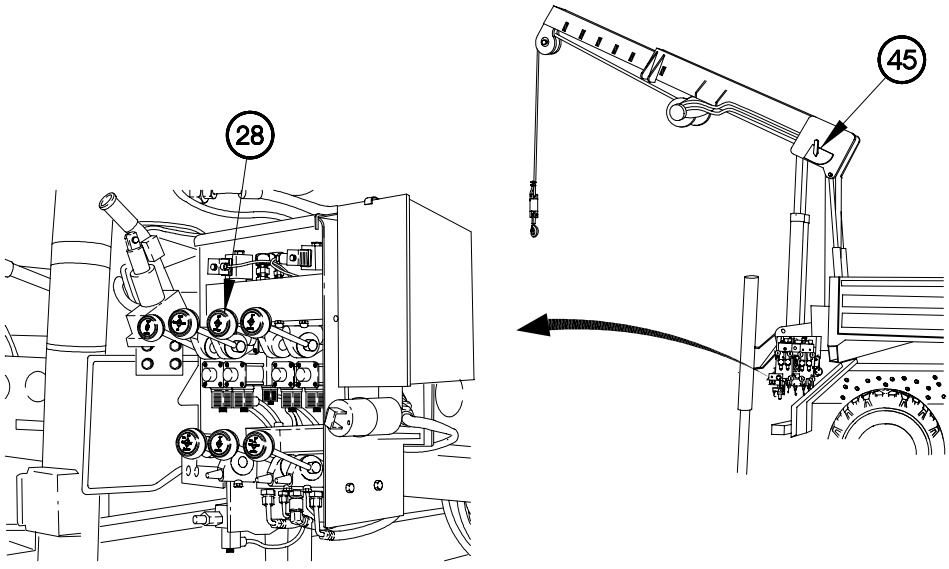
WARNING

Area must be clear of personnel before operating swing or telescoping boom. Boom must be rotated and telescoped slowly enough so Operator has control of load. If Operator cannot see load during operation, operate Material Handling Crane (MHC) with REMOTE CONTROL UNIT. Failure to comply may result in serious injury or death to personnel or damage to equipment.

Attach guide lines to load to keep control of load at all times. Failure to comply may result in serious injury or death to personnel or damage to equipment.

1. Refer to range diagram (WP 0028 00) or to Table 1 to determine correct boom angle.

2. Position BOOM lever (28) to UP until boom angle indicator (45) shows correct reading.



2800B16-

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

RAISE AND LOWER LOAD - Continued

3. Operate SWING lever (43) and TELESCOPE lever (36) to center end of boom (44) directly over load.

CAUTION

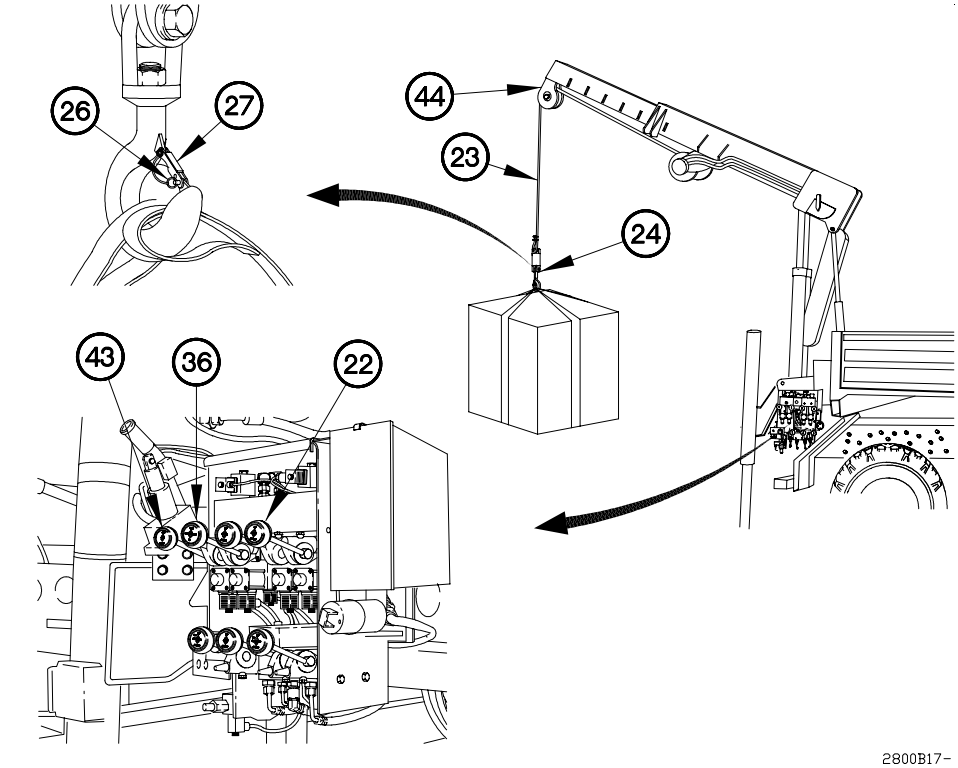
Ensure boom and load are clear of vehicle sides when loading and unloading cargo. Failure to comply may result in damage to equipment.

Use only a straight pull when lifting a load. Failure to comply may result in damage to equipment.

4. Operate HOIST lever (22) to pay out or reel in cable (23) and to connect hook assembly (24) to load.

5. Connect hook assembly (24) to load.

6. Install safety pin (26) in hook assembly latch (27).



2800B17-

M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

RAISE AND LOWER LOAD - Continued

WARNING

Ensure that there are at least five wraps of cable on hoist drum at all times. Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

Do not lift load heavier than maximum rating for Material Handling Crane (MHC) 5,000 lb. (2,268 kg). Failure to comply may result in damage to equipment.

Do not allow excessive slack to build-up when paying out cable. Cable may get tangled on drum. Failure to comply may result in damage to equipment.

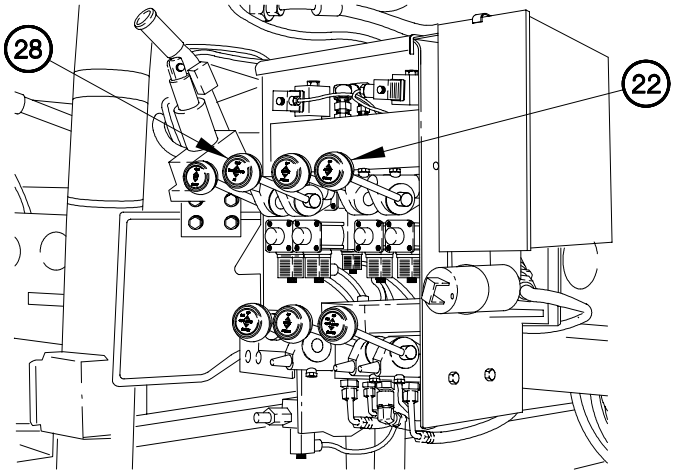
Do not jerk HOIST lever. Load may bounce and cause load to separate from hook assembly. Failure to comply may result in damage to equipment.

7. Position HOIST lever (22) to UP to lift load.

8. Position BOOM lever (28) to UP to lift load higher as required.

9. Position HOIST lever (22) to DOWN to lower load.

10. Position BOOM lever (28) to DOWN to lower load further as required.



2800B18-

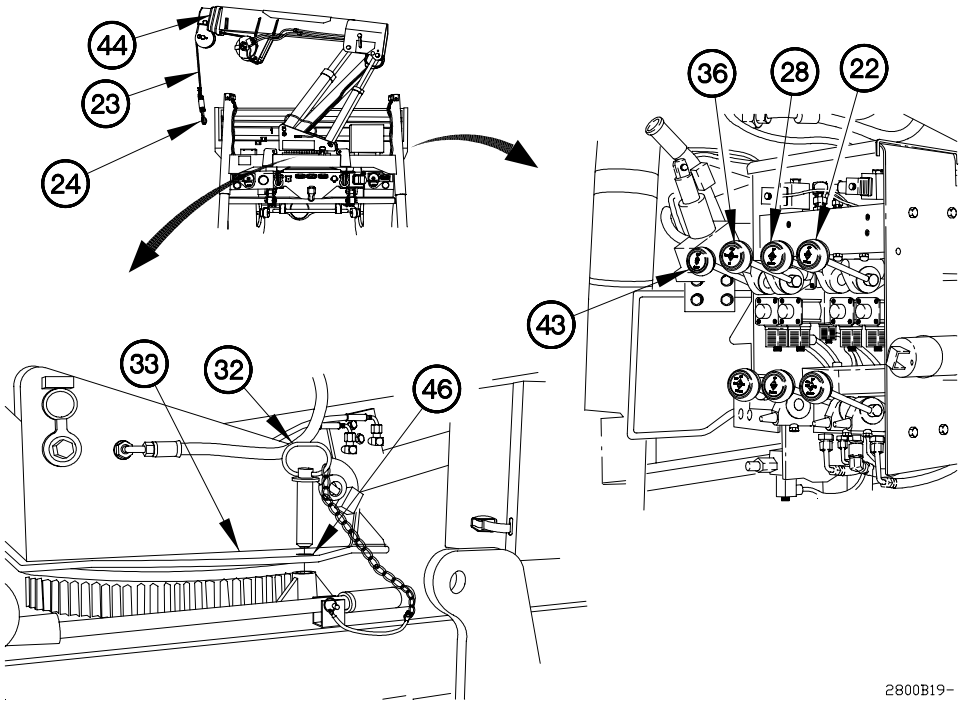
M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

STOW MHC

NOTE

HOIST lever and TELESCOPE lever are operated at the same time.

1. Position HOIST lever (22) to UP to reel in cable (23) until approximately 2.0 ft (0.6 m) of cable hangs from boom (44).
2. Position TELESCOPE lever (36) to IN to retract boom (44) so that cable (23) and hook assembly (5) are on Operator's side of vehicle.
3. Operate SWING lever (43) to align lock pin holes (46) in turntable bearing (33).
4. Install pin (32) in turntable bearing (33).
5. Operate BOOM lever (28) so that boom angle is approximately 45 degrees.
6. Position TELESCOPE lever (36) to IN to retract boom (44) completely.



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

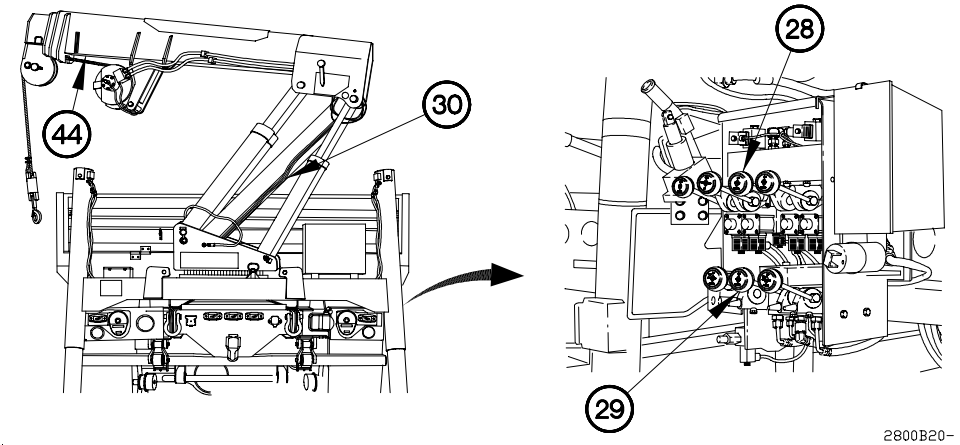
STOW MHC - Continued

NOTE

BOOM lever and MAST lever are operated at the same time to maintain boom at approximately a 45-degree angle.

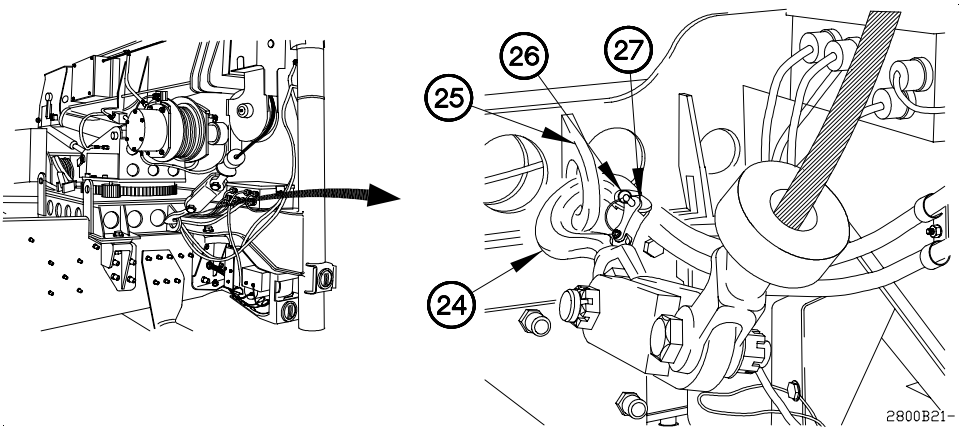
7. Position BOOM lever (28) and MAST lever (29) to DOWN until mast (30) is fully lowered.

8. Position BOOM lever (28) to DOWN until boom (44) is fully lowered.



9. Connect hook assembly (24) to stowage ring (25).

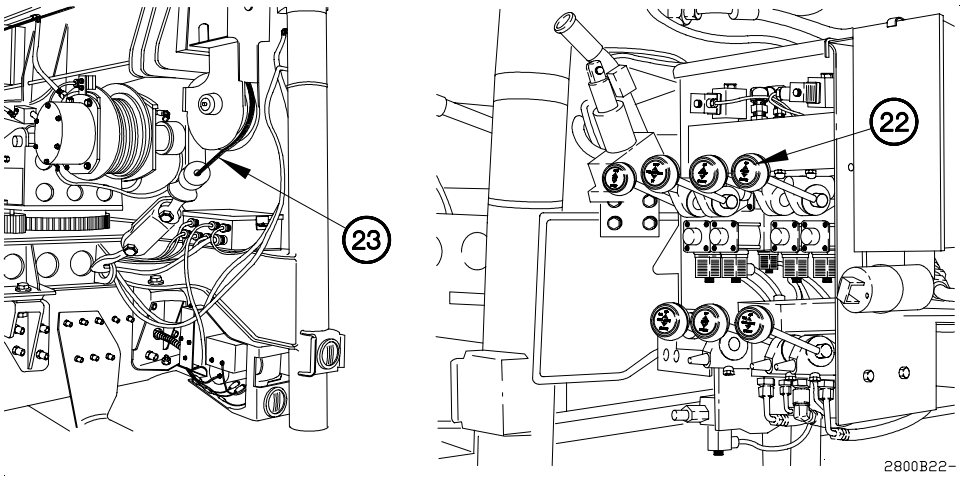
10. Install safety pin (26) in hook assembly latch (27).



M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

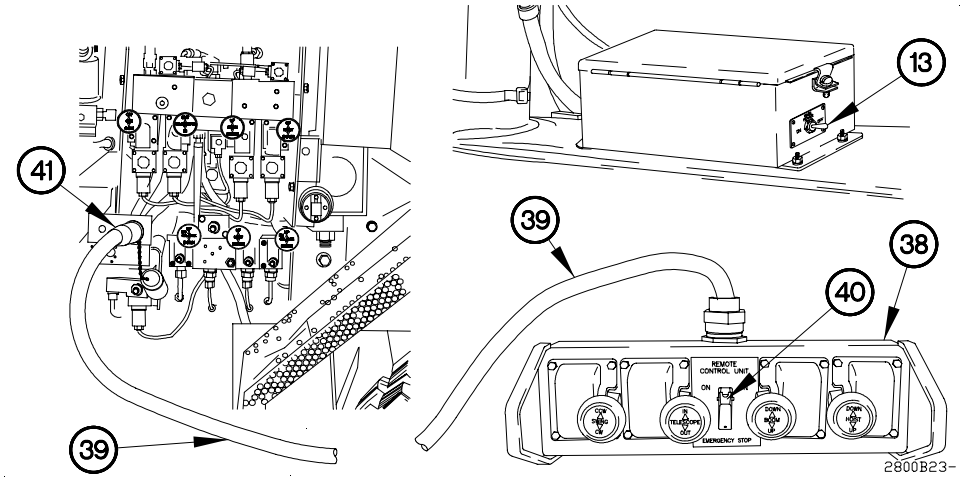
STOW MHC - Continued

11. Position HOIST lever (22) to UP to remove all slack from cable (23).



DISCONNECT REMOTE CONTROL UNIT

1. Position toggle switch (40) on REMOTE CONTROL UNIT (38) to OFF.
2. Position MAIN POWER ON/OFF switch (13) to OFF.
3. Disconnect remote control cable (39) from REMOTE CONTROL HOOK UP receptacle (41).
4. Disconnect remote control cable (39) from REMOTE CONTROL UNIT (38).

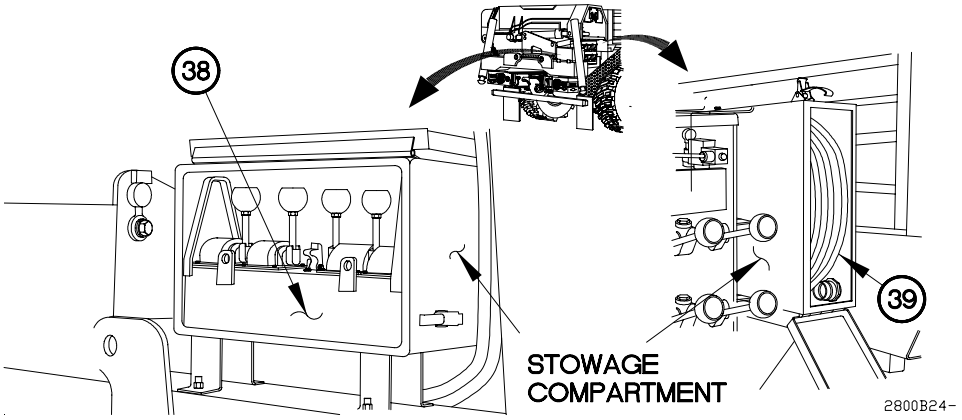


M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

DISCONNECT REMOTE CONTROL UNIT- Continued

5. Stow remote control cable (39) in stowage compartment.

6. Stow REMOTE CONTROL UNIT (38) in stowage compartment.



STOW OUTRIGGERS AND SHUT DOWN MHC

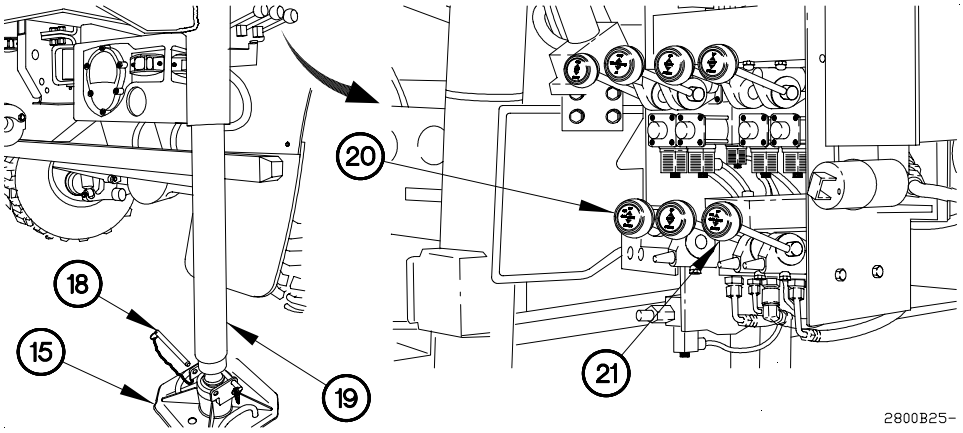
1. Remove pin (18) from each outrigger pad (15).

NOTE

Operate LH O/R JACK and RH O/R JACK lever at the same time.

2. Position LH O/R JACK lever (20) and RH O/R JACK lever (21) to UP until outriggers (19) are fully retracted.

3. Install pin (18) in each outrigger pad (15).



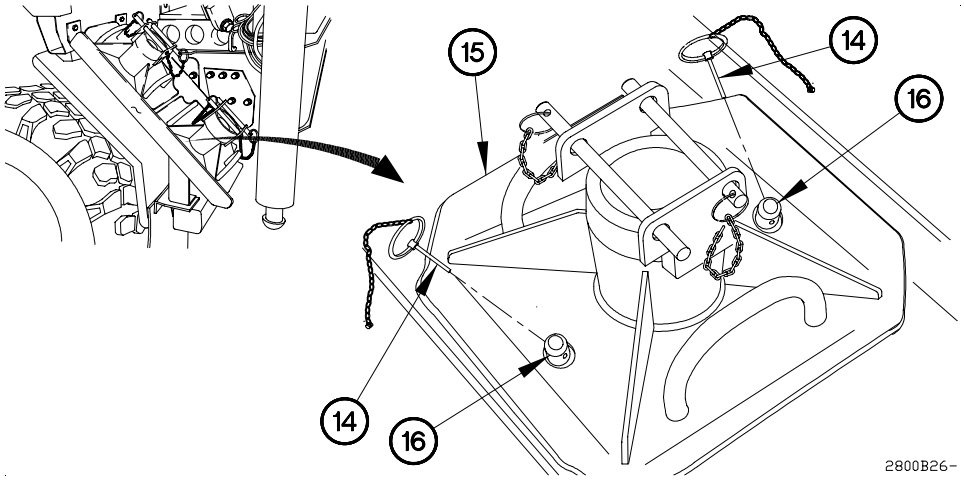
M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

STOW OUTRIGGERS AND SHUT DOWN MHC - Continued

NOTE

Both outrigger pads are installed on stowage bracket the same way.

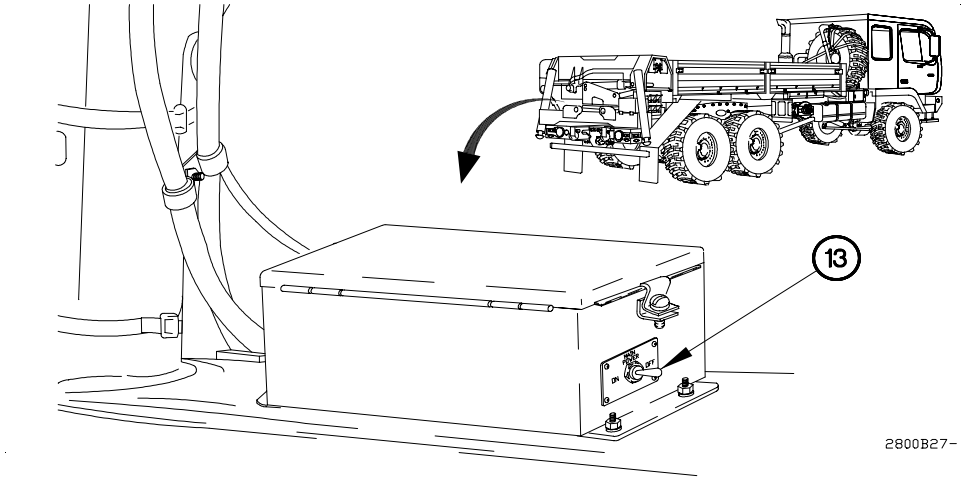
4. Install outrigger pad (15) on two studs (16) with pins (14).



CAUTION

MAIN POWER ON/OFF switch must be positioned to OFF when MHC is not in use. Failure to comply may result in damage to equipment.

5. Position MAIN POWER ON/OFF switch (13) to OFF.

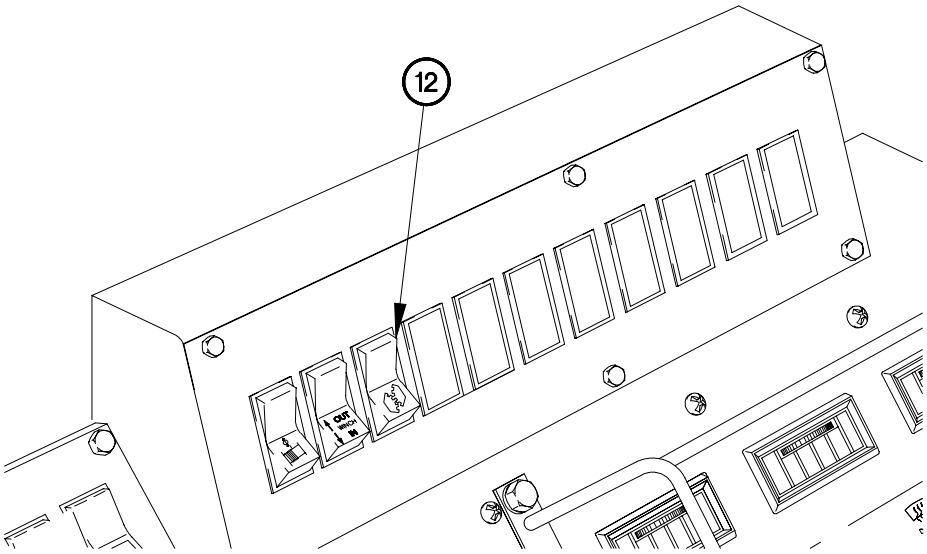


M1084A1/M1086A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0028 00

STOW OUTRIGGERS AND SHUT DOWN MHC - Continued

6. Position PTO switch (12) to off.

7. Shut down engine (WP 0018 00).



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END OF OPERATING PROCEDURE

DUMP TRUCK OPERATION 0029 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0018 00
WP 0063 00

Personnel Required
Three

GENERAL

This work package provides the data and procedures for safe operation of the M1090A1 dump truck. Items covered include Raising Cab Protector, Lowering Cab Protector, Preparing Dump Body For Operation, Tailgate Operation, Raising Dump Bed, Lowering Dump Bed, Preparing Dump Truck For Movement, Debris Cover Installation, Debris Cover Removal, Raising Dump Body To Maintenance Position, and Lowering Dump Body After Maintenance.

Payload capacity for M1090A1 dump truck is 10,000 lbs (4,540 kgs). Table 1 provides a weight chart for typical materials. Shaded values indicate loads that are more than rated payload capacity of M1090A1 dump truck.

WARNING

Do not exceed rated payload of vehicle. Failure to comply may result in injury to personnel, inability to raise bed, or damage to equipment.

Table 1. Material Weight by Volume.

MATERIAL	WEIGHT OF MATERIAL (lbs)		CAPACITY		MAXIMUM FUNCTIONAL LOAD (cu-yd) THAT DOES NOT OVERLOAD TRUCK
			LEVEL FULL = 5.19 cu-yd or 140.17 cu-ft	HEAPING FULL = 7.78 cu-yd or 210.12 cu-ft	
	Per cu-ft	Per cu-yd (kgs per cu-M)	Loaded Weight lbs (kgs)	Loaded Weight lbs (kgs)	
Ashes	43	1,161 (689)	6,026 (2,734)	9,033 (4,098)	

DUMP TRUCK OPERATION - Continued 0029 00

GENERAL - Continued

Table 1. Material Weight by Volume - Continued.

MATERIAL	WEIGHT OF MATERIAL (lbs)		CAPACITY		MAXIMUM FUNCTIONAL LOAD (cu-yd) THAT DOES NOT OVERLOAD TRUCK
			LEVEL FULL = 5.19 cu-yd or 140.17 cu-ft	HEAPING FULL = 7.78 cu-yd or 210.12 cu-ft	
	Per cu-ft	Per cu-yd (kgs per cu-M)	Loaded Weight lbs (kgs)	Loaded Weight lbs (kgs)	
Cinders	46	1,242 (737)	6,446 (2,924)	9,663 (4,384)	
Clay, dry loose	77	2,079 (1,234)	10,790 (4,895)	16,175 (7,338)	4.5
Clay, wet	110	2,970 (1,762)	15,414 (6,993)	23,107 (10,483)	3.0
Clay and gravel	110	2,970 (1,762)	15,414 (6,993)	23,107 (10,483)	3.0
Coal, anthracite (hard)	54	1,458 (865)	7,567 (3,433)	11,343 (5,146)	6.5
Coal, bituminous (soft)	81	2,187 (1,298)	11,351 (5,149)	17,015 (7,719)	4.5
Coke	28	756 (449)	3,924 (1,780)	5,882 (2,668)	
Concrete	138	3,726 (2,211)	19,338 (8,773)	28,988 (13,151)	2.5
Concrete mix, wet	124	3,348 (1,986)	17,375 (7,883)	26,047 (11,817)	3.0
Earth, dry loose	75	2,025 (1,202)	10,510 (4,768)	15,755 (7,147)	4.5

DUMP TRUCK OPERATION - Continued 0029 00

GENERAL - Continued

Table 1. Material Weight by Volume - Continued.

MATERIAL	WEIGHT OF MATERIAL (lbs)		CAPACITY		MAXIMUM FUNCTIONAL LOAD (cu-yd) THAT DOES NOT OVERLOAD TRUCK
			LEVEL FULL = 5.19 cu-yd or 140.17 cu-ft	HEAPING FULL = 7.78 cu-yd or 210.12 cu-ft	
	Per cu-ft	Per cu-yd (kgs per cu-M)	Loaded Weight lbs (kgs)	Loaded Weight lbs (kgs)	
Earth, moist packed	95	2,565 (1,522)	13,312 (6,039)	19,956 (9,053)	3.5
Earth and gravel, dry loose	100	2,700 (1,602)	14,013 (6,357)	21,006 (9,530)	3.5
Garbage, dry	37	999 (593)	5,185 (2,352)	7,772 (3,526)	
Garbage, wet	47	1,269 (753)	6,586 (2,988)	9,873 (4,479)	
Gravel	110	2,970 (1,762)	15,414 (6,993)	23,107 (10,483)	3.0
Gravel and sand, dry loose	95	2,565 (1,522)	13,312 (6,039)	19,956 (9,053)	3.5
Gravel and sand, wet	120	3,240 (1,922)	16,816 (7,629)	25,207 (11,436)	3.0
Limestone, crushed	100	2,700 (1,602)	14,013 (6,357)	21,006 (9,530)	3.5
Mud, wet	120	3,240 (1,922)	16,816 (7,828)	25,207 (11,436)	3.0
Rock and stone, crushed	95	2,565 (1,522)	13,312 (6,039)	19,958 (9,053)	3.5

DUMP TRUCK OPERATION - Continued 0029 00

GENERAL - Continued

Table 1. Material Weight by Volume - Continued.

MATERIAL	WEIGHT OF MATERIAL (lbs)		CAPACITY		MAXIMUM FUNCTIONAL LOAD (cu-yd) THAT DOES NOT OVERLOAD TRUCK
			LEVEL FULL = 5.19 cu-yd or 140.17 cu-ft	HEAPING FULL = 7.78 cu-yd or 210.12 cu-ft	
	Per cu-ft	Per cu-yd (kgs per cu-M)	Loaded Weight lbs (kgs)	Loaded Weight lbs (kgs)	
Salt, fine	50	1,350 (801)	7,007 (3,179)	10,503 (4,785)	7.0
Sand, dry loose	98	2,646 (1,570)	13,733 (6,230)	20,586 (9,339)	3.5
Sand, dry packed	110	2,970 (1,762)	15,414 (6,993)	23,107 (10,483)	3.0
Sand, moist loose	120	3,240 (1,922)	16,816 (7,629)	25,207 (11,436)	3.0
Slag, crushed	75	2,025 (1,202)	10,510 (4,768)	15,755 (7,147)	4.5
Snow, moist packed	50	1,350 (801)	7,007 (3,179)	10,503 (4,765)	7.0
Stone, crushed	100	2,700 (1,602)	14,013 (6,357)	21,008 (9,530)	3.5
Stone, loose	95	2,565 (1,522)	13,312 (6,039)	19,956 (9,053)	3.5

Loaded weight exceeds rated payload

Maximum Functional Load = Maximum load rounded to the nearest half cubic yard for ease in measurement.

DUMP TRUCK OPERATION - Continued 0029 00

RAISING CAB PROTECTOR

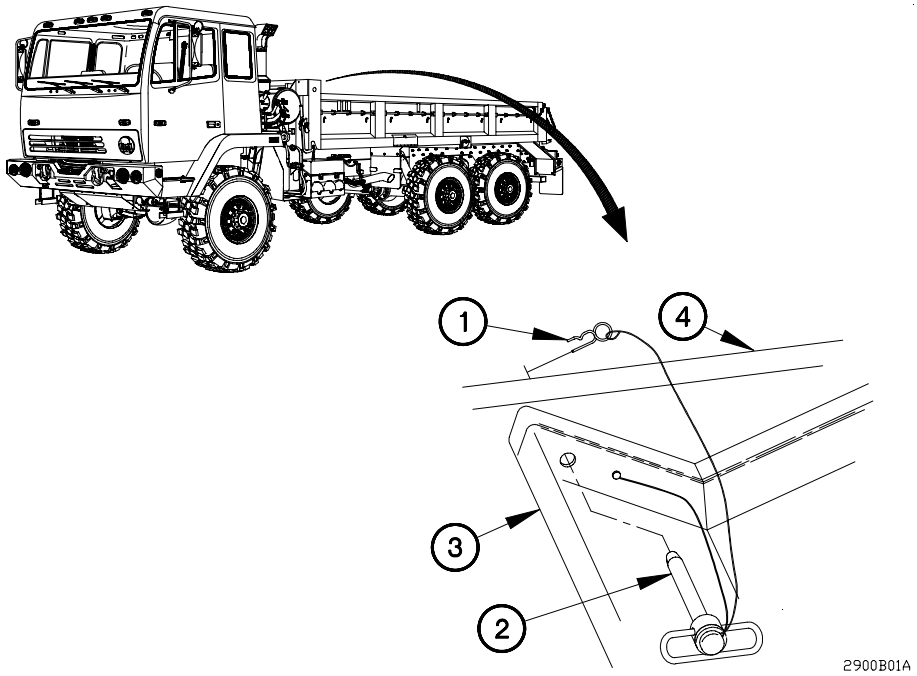
WARNING

Cab protector is spring loaded and weighs approximately 180 lbs (82 kgs). Hold cab protector down before removing pins. Slowly allow cab protector to raise to vertical position after pins are removed. Failure to comply may result in injury to personnel.

NOTE

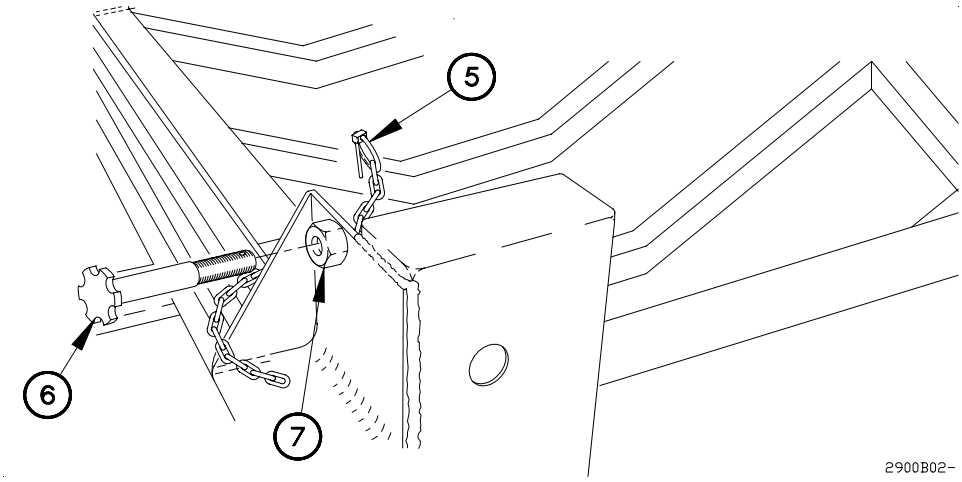
This task applies to both sides of cab protector. Left side shown.

1. Remove safety pin (1) from hitch pin (2).
2. Remove hitch pin (2) from cab protector (3) and dump body (4).
3. Install hitch pin (2) and safety pin (1) in cab protector (3).



RAISING CAB PROTECTOR - Continued

4. Remove safety pin (5) and turn bolt (6) from nut (7).



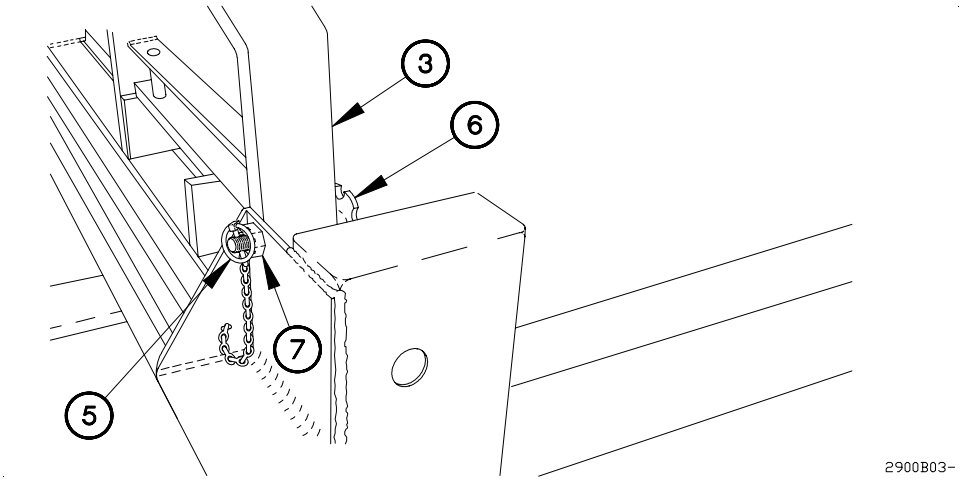
NOTE

Step (5) requires the aid of an assistant.

5. Raise cab protector (3).

6. Install turn bolt (6) through cab protector (3) and nut (7).

7. Install safety pin (5) in turn bolt (6).

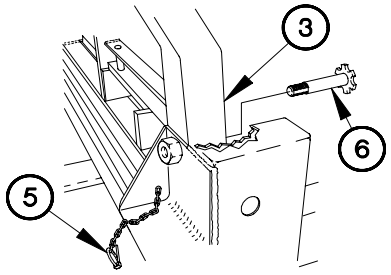


LOWERING CAB PROTECTOR

NOTE

This task applies to both sides of cab protector. Left side shown.

1. Remove safety pin (5) and turn bolt (6) from cab protector (3).



2900B04-

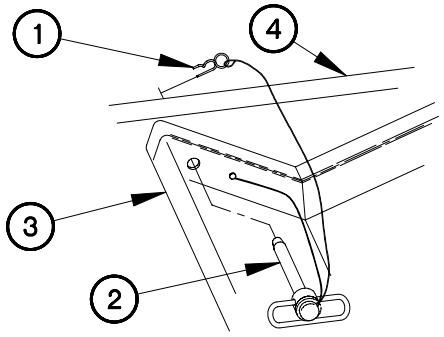
WARNING

Cab protector is spring loaded and weighs approximately 180 lbs (82 kgs). Keep pressure on cab protector when lowering and when installing pins. Failure to comply may result in injury to personnel.

NOTE

Step (2) requires the aid of an assistant.

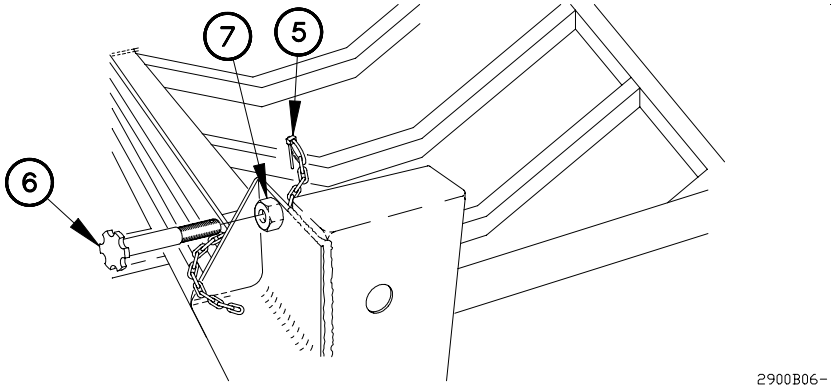
2. Lower cab protector (3) into dump body (4).
3. Remove safety pin (1) and hitch pin (2) from cab protector (3).
4. Install hitch pin (2) through cab protector (3) and dump body (4).
5. Install safety pin (1) in hitch pin (2).



2900B05-

LOWERING CAB PROTECTOR - Continued

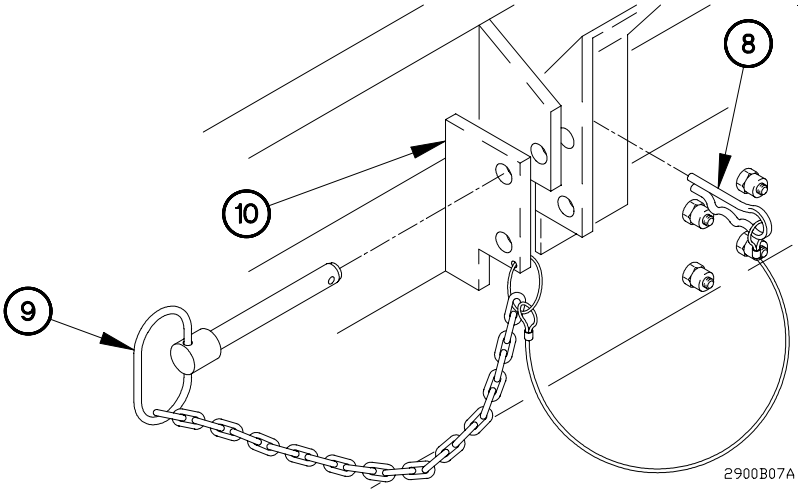
6. Install turn bolt (6) and safety pin (5) in nut (7).



PREPARING DUMP BODY FOR OPERATION

1. Remove safety pin (8) from lock pin (9).

2. Remove lock pin (9) from suspension bracket (10).



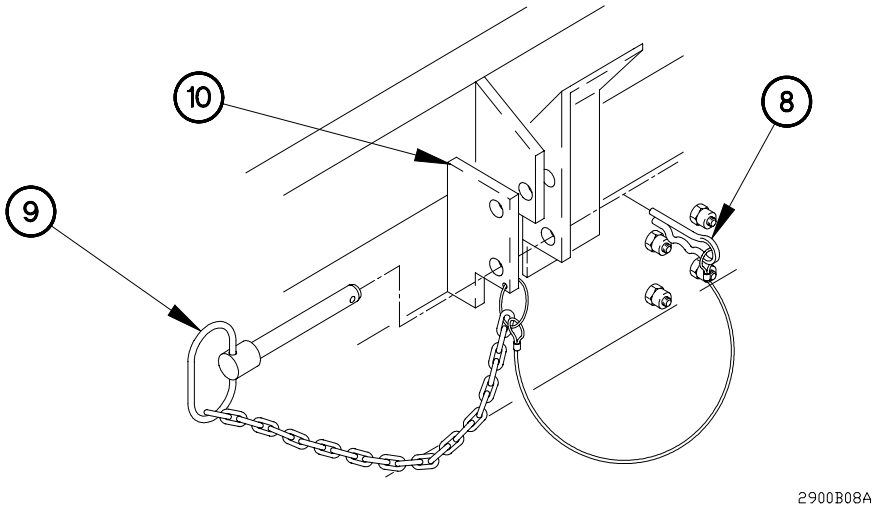
PREPARING DUMP BODY FOR OPERATION-Continued

NOTE

Dump body is unlocked when lock pin is installed in lower hole of suspension bracket.

3. Install lock pin (9) in suspension bracket (10).

4. Install safety pin (8) in lock pin (9).



PREPARING DUMP BODY FOR OPERATION-Continued

CAUTION

Prior to pneumatic dump truck tailgate operations the flagged safety pin must be removed. Failure to comply will result in damage to equipment.

5. Remove flagged safety pin (11) from manual tailgate release rod (12).

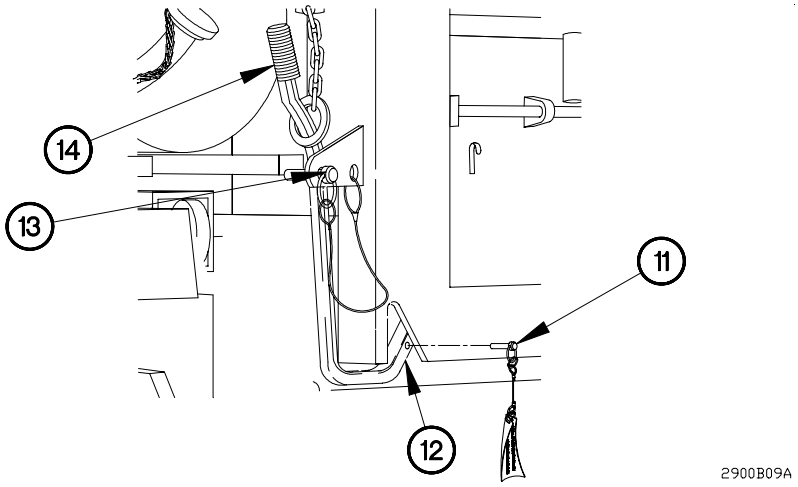
6. Stow flagged safety pin (11) in cab.

CAUTION

Prior to manual tailgate release, the flagged safety pin must be installed.

7. Install flagged safety pin (11) in manual tailgate release rod (12).

8. Remove safety pin (13) from manual tailgate release handle (14).



TAILGATE OPERATION, GENERAL

WARNING

Flagged safety pin is only removed for pneumatic operation of tailgate. It will remain installed at all other times. Failure to comply may result in injury to personnel or damage to equipment.

TAILGATE OPERATION, GENERAL-Continued

WARNING

Tailgate may be hinged from the top or bottom depending on mission requirements. Use care during positioning. Failure to comply may result in injury to personnel.

NOTE

Dump body is unlocked when lock pin is installed in lower hole of suspension bracket.

Two adjustment fittings are provided on tailgate left and right hand side. The upper adjustment fittings are used during hinge bottom operation. The lower adjustment fittings are used during hinge top operations. This allows positioning between 0 to 90 degrees, based on chain placement in adjustment fittings.

Both sides of tailgate are positioned the same way. Left side shown.

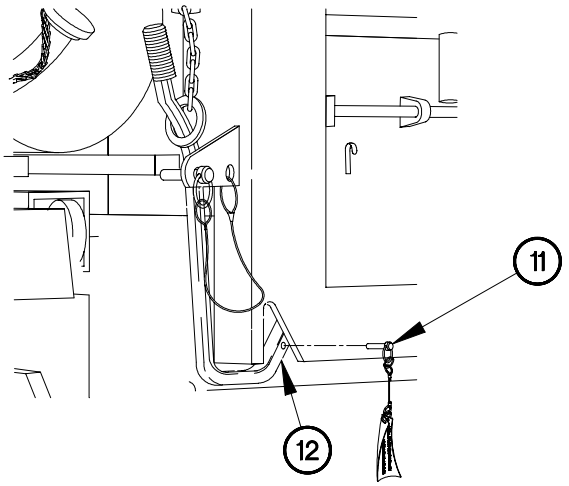
TAILGATE , HINGE TOP, OPENING

CAUTION

Prior to pneumatic dump truck tailgate operations, the flagged safety pin must be removed. Failure to comply will result in damage to equipment.

1. Remove flagged safety pin (11) from manual tailgate release rod (12).

2. Stow flagged safety pin (11) in cab.



2900B10A

TAILGATE , HINGE TOP, OPENING-Continued

NOTE

Both sides of tailgate are opened the same way. Left side shown.

Tailgate chains are stowed in upper adjustment fitting and chain guide.

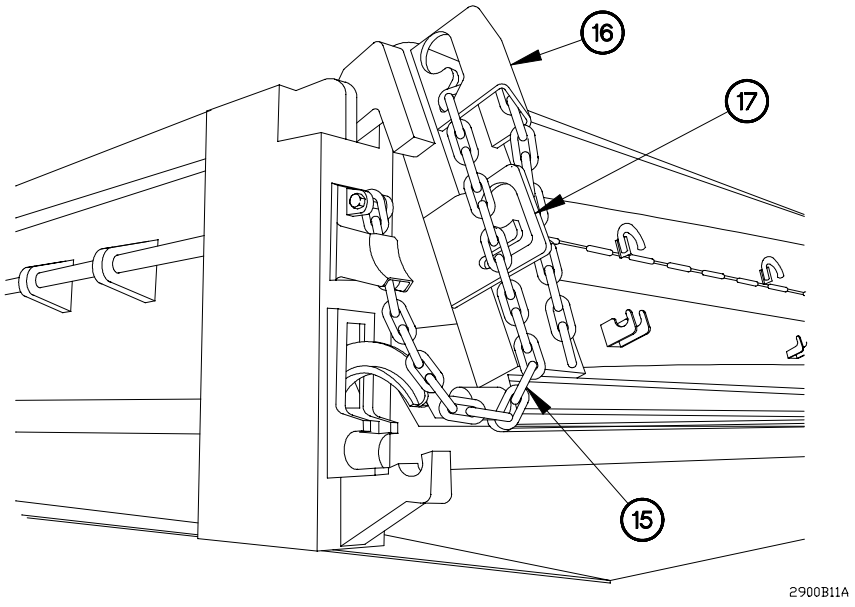
3. Remove chain (15) from upper adjustment fitting (16).

NOTE

Approximately four links from chain attach point will allow 25 degree movement of tailgate when dump bed is raised.

4. Position chain (15) in lower adjusting fitting (17).

5. Perform steps (3) and (4) on RH side.



DUMP TRUCK OPERATION - Continued 0029 00

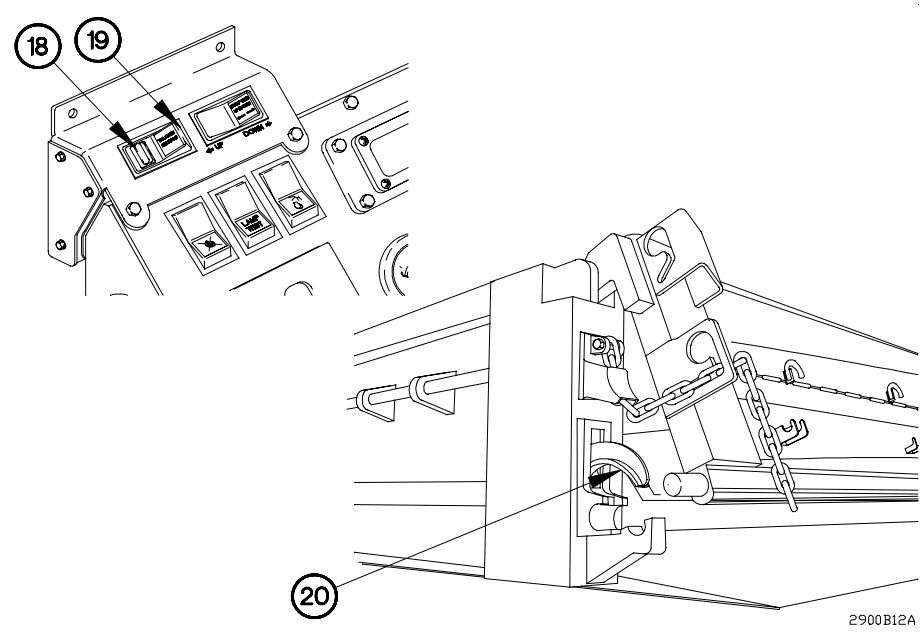
TAILGATE , HINGE TOP, OPENING-Continued

NOTE

In order to let tailgate swing free, raising the dump body is required in combination with operating tailgate release switch.

6. Press and hold TAILGATE RELEASE SWITCH lock (18).

7. Press and hold TAILGATE RELEASE switch (19) to open hinges (20).



TAILGATE , HINGE TOP, CLOSING

NOTE

Both sides of tailgate are closed the same way. Left side shown.

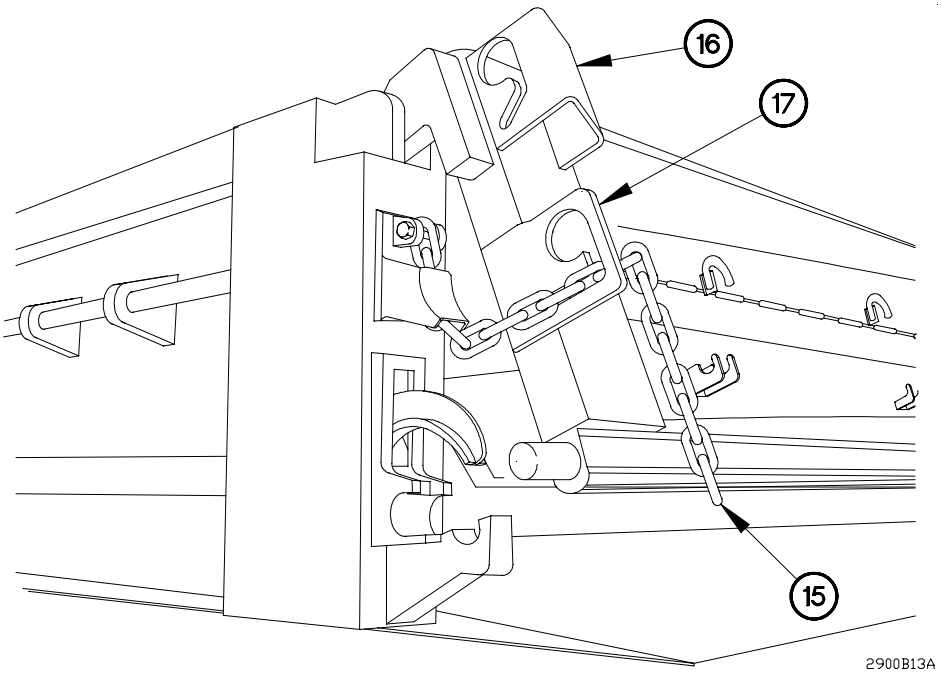
1. Remove chain (15) from lower adjusting fitting (17).

CAUTION

Use care when stowing tailgate chains. They can interfere with tailgate hinge operation. Failure to comply may result in damage to equipment.

2. Stow chain (15) in upper adjustment fitting (16).

3. Perform steps (1) and (2) on RH side.



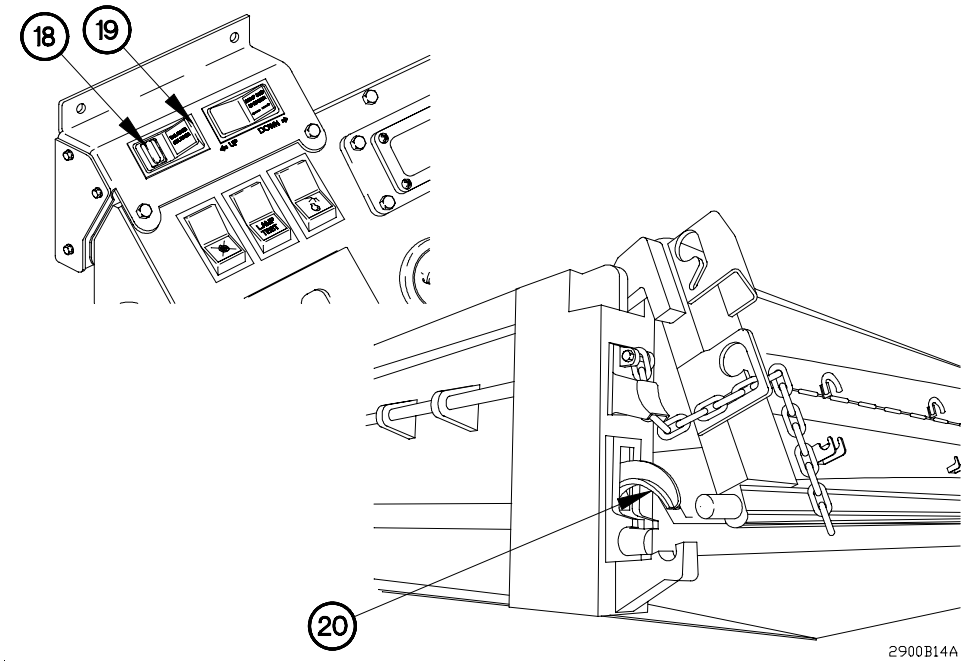
TAILGATE , HINGE TOP, CLOSING-Continued

NOTE

In order to let tailgate swing free lowering the dump body is required in combination with operating tailgate release switch.

4. Press and hold TAILGATE RELEASE switch lock (17).

5. Press and hold TAILGATE RELEASE switch (18) to open hinges (20).

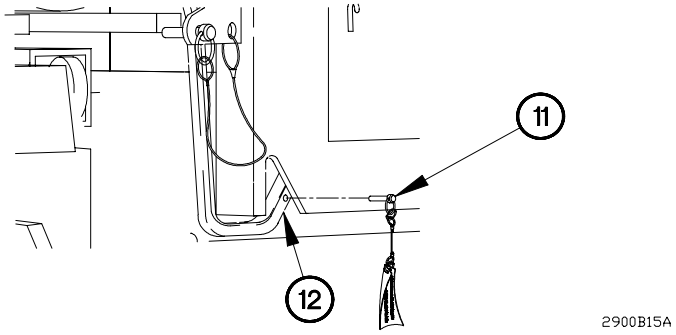


WARNING

Prior to normal driving, the flagged safety pin must be installed. Failure to comply may result in injury to personnel or damage to equipment.

TAILGATE , HINGE TOP, CLOSING-Continued

6. Install flagged safety pin (11) in manual tailgate release rod (12).

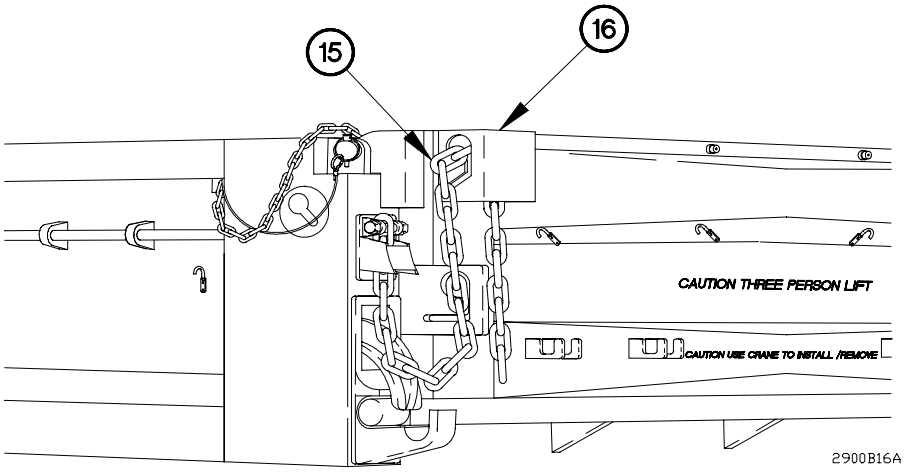


CAUTION

Use care when stowing tailgate chains. They can interfere with tailgate hinge operation. Failure to comply may result in damage to equipment.

7. Stow chain (15) in upper adjustment fitting (16).

8. Perform steps (4) through (7) on RH side.



TAILGATE , HINGE BOTTOM, OPENING

WARNING

Ensure flagged safety pin and manual release handle pin are installed prior to using bottom hinge option. Failure to comply may result in injury to personnel.

TAILGATE , HINGE BOTTOM, OPENING-Continued

WARNING

Tailgate weighs approximately 270 lbs. (123 kgs). Use care when handling. Three people are required to lower or raise tailgate. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Both sides of tailgate are opened the same way. Left side shown.

1. Remove chain (15) from upper adjustment fitting (16).
2. Remove chain (15) from chain guide (21).

NOTE

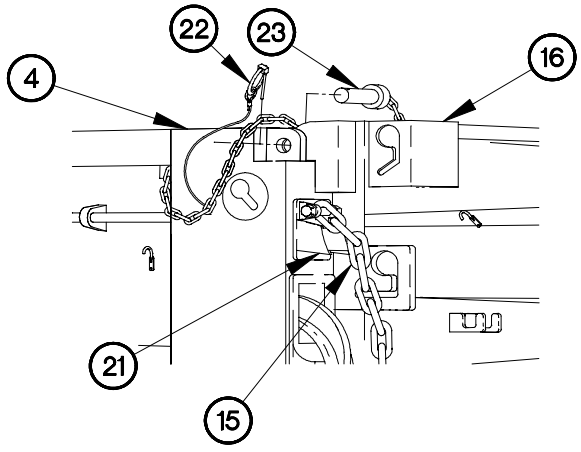
Tailgate may be positioned as desired. Approximately 14 chain links from chain attach point will result in 90 degree tailgate travel.

3. Position chain (15) in upper adjustment fitting (16).

NOTE

Steps (4) through (7) requires the aid of two assistants.

4. Remove safety pin (22) from pin (23).
5. Remove pin (23) from dump body (4).

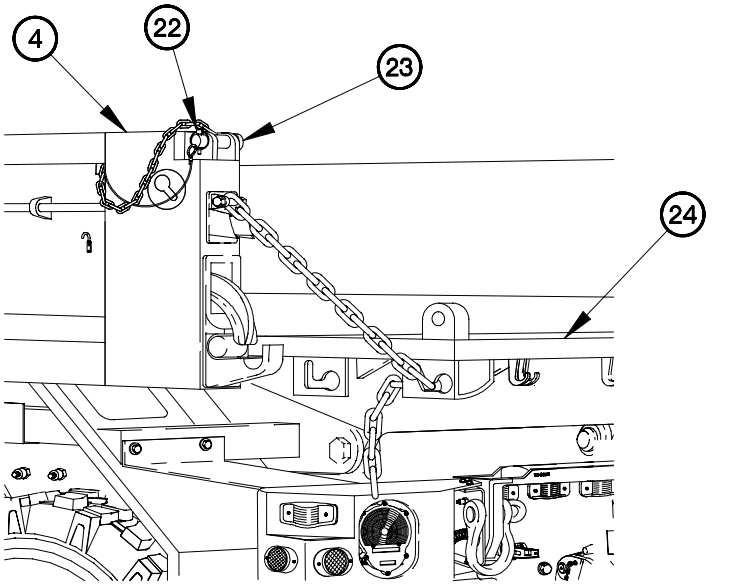


2900B17A

DUMP TRUCK OPERATION - Continued 0029 00

TAILGATE , HINGE BOTTOM, OPENING-Continued

5. Perform steps (1) through (4) on RH side.
6. Lower tailgate (24).
7. Install pin (23) in dump bed (4) with safety pin (21).
8. Perform step (8) on RH side.



TAILGATE , HINGE BOTTOM, CLOSING

WARNING

Tailgate weighs approximately 270 lbs. (123 kgs). Use care when handling. Three people are required to lower or raise tailgate. Failure to comply may result in injury to personnel or damage to equipment.

Ensure flagged safety pin and manual release handle pin are installed prior to using bottom hinge option. Failure to comply may result in injury to personnel.

NOTE

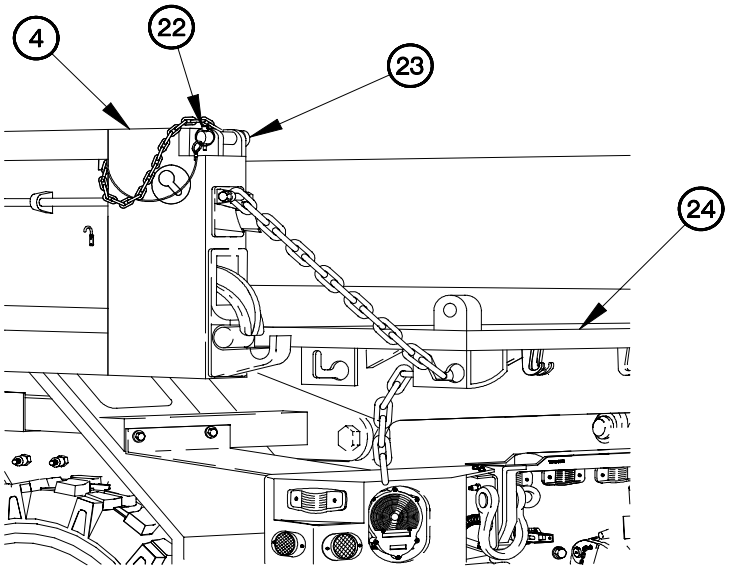
Both sides of tailgate are closed the same way. Left side shown.

1. Remove safety pin (22) from pin (23).
2. Remove pin (23) from dump bed (4).

NOTE

Steps (3) through (8) requires the aid of two assistants.

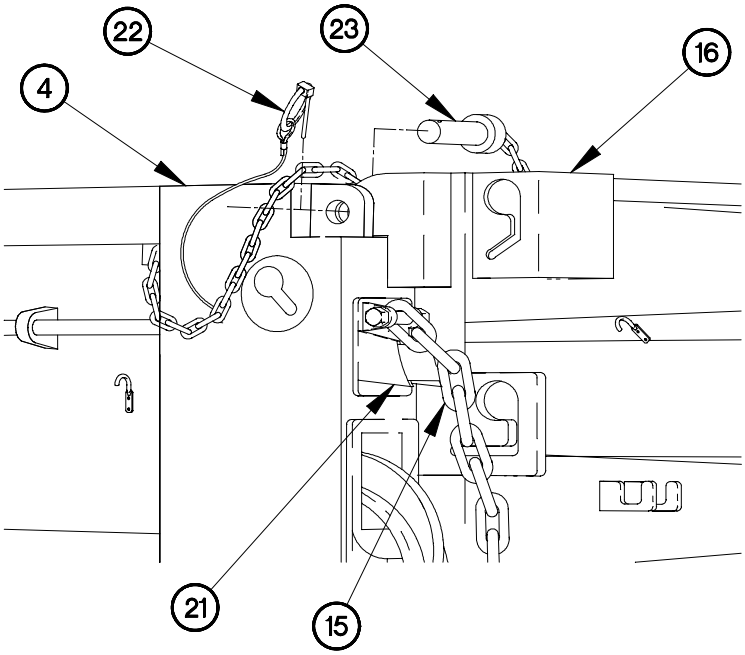
3. Raise tailgate (24).



2900B19A

TAILGATE , HINGE BOTTOM, CLOSING

4. Install pin (23) in dump bed (4) with safety pin (22).
5. Remove chain (15) from upper adjustment fitting (18).
6. Position chain (15) in chain guide (21).



TAILGATE-FIXED LINK INSTALLATION

NOTE

Fixed links provide a tailgate, hinged bottom, opening to a fixed 45 degree position.

Steps (1) through (10) require the aid of two assistants.

Both fixed links are installed the same way. Left side shown.

TAILGATE-FIXED LINK INSTALLATION-Continued

NOTE

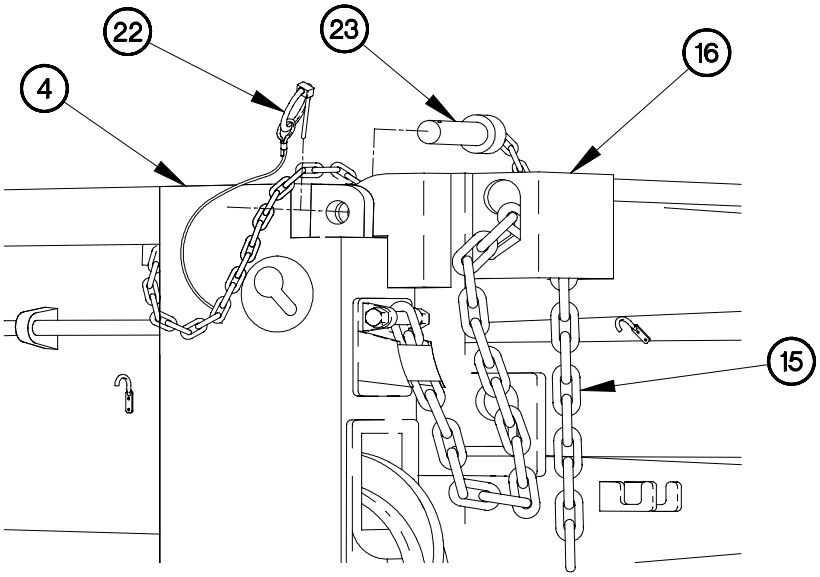
Approximately 8 chain links from chain attach point will result in 45 degree tailgate travel.

1. Position chain (15) in upper adjustment fitting (16).
2. Remove safety pin (22) from pin (23).

WARNING

Tailgate weighs approximately 270 lbs. (123 kgs). Use care when lowering or raising. Failure to comply may result in injury to personnel.

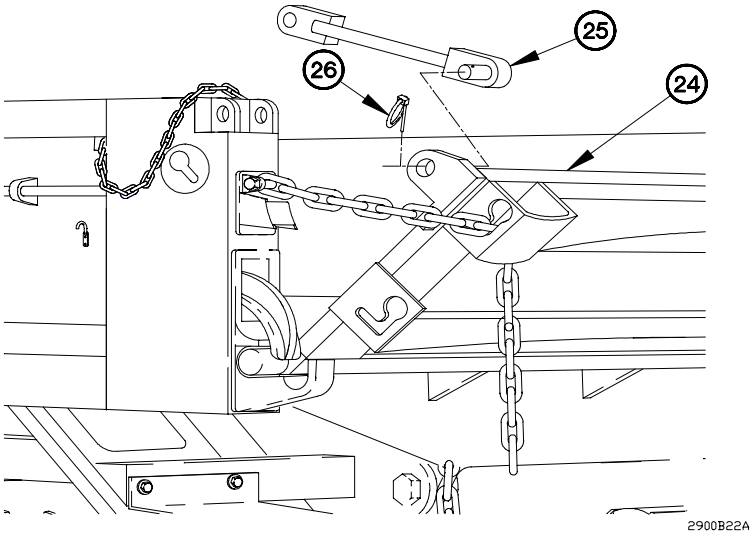
3. Remove pin (23) from dump bed (4).
4. Perform steps (2) and (3) on RH side.



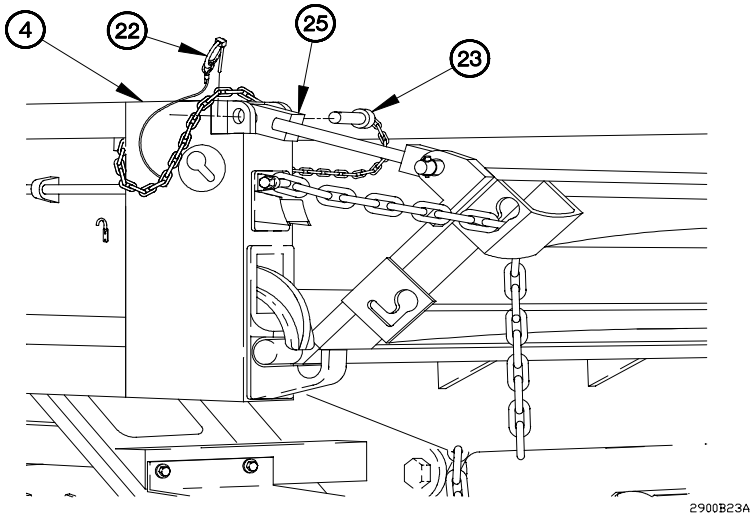
2900B21A

TAILGATE-FIXED LINK INSTALLATION-Continued

5. Lower tailgate (24) to approximately 45 degrees.
6. Install fixed link (25) in tailgate (24) with safety pin (26).
7. Perform steps (5) and (6) on RH side.



8. Position fixed links (25) in dump body (4) with pins (23).
9. Install safety pin (22) in pin (23).
10. Perform steps (8 and 9) on RH side.



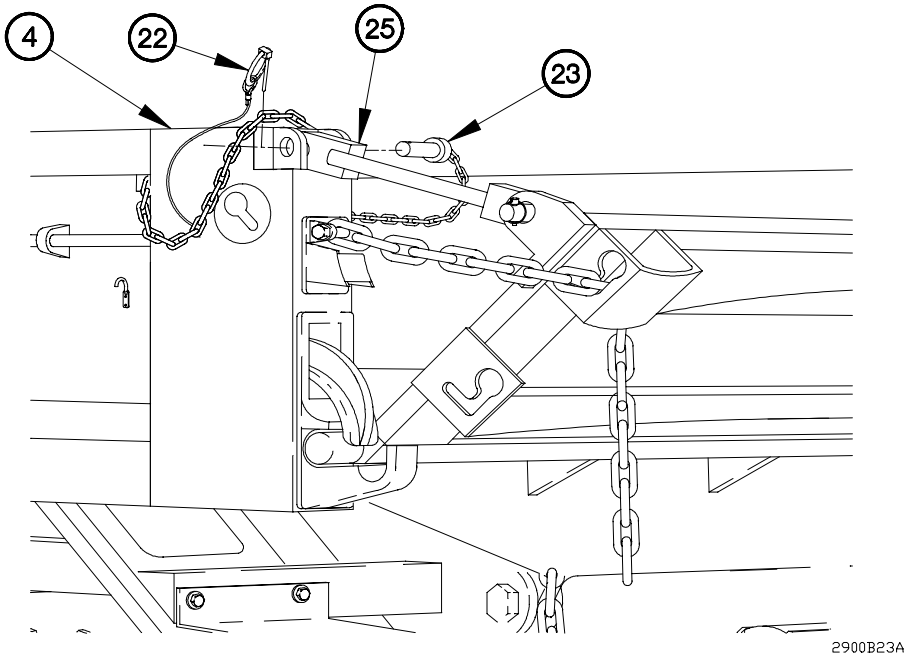
TAILGATE-FIXED LINK REMOVAL

NOTE

Both fixed links are removed the same way. Left side shown.

Steps (1) through (12) require the aid of two assistants.

1. Remove safety pin (22) from pin (23).
2. Remove pin (23) from dump bed (4).
3. Perform steps (1) and (2) on RH side.

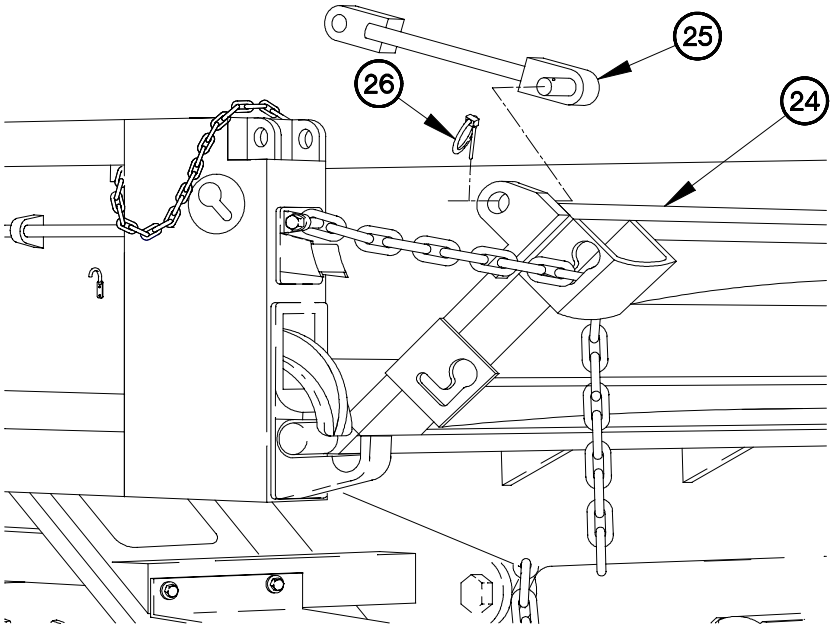


TAILGATE-FIXED LINK REMOVAL-Continued

WARNING

Tailgate weighs approximately 270 lbs. (123 kgs). Use care when lowering or raising. Failure to comply may result in injury to personnel.

4. Lower tailgate(24).
5. Remove safety pin (26) from fixed link (25).
6. Remove fixed link (25) from tailgate (24).
7. Perform steps (5) and (6) on RH side.
8. Stow fixed links (25).

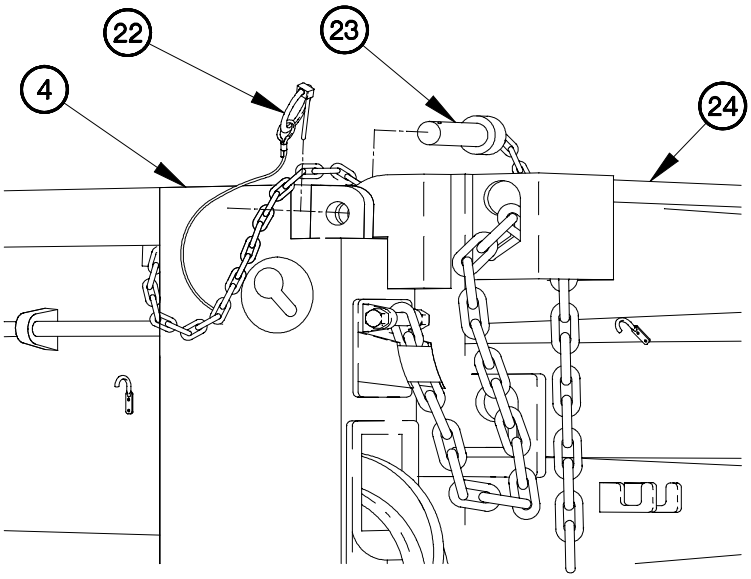


TAILGATE-FIXED LINK REMOVAL

WARNING

Tailgate weighs approximately 270 lbs. (123 kgs). Use care when lowering or raising. Failure to comply may result in injury to personnel.

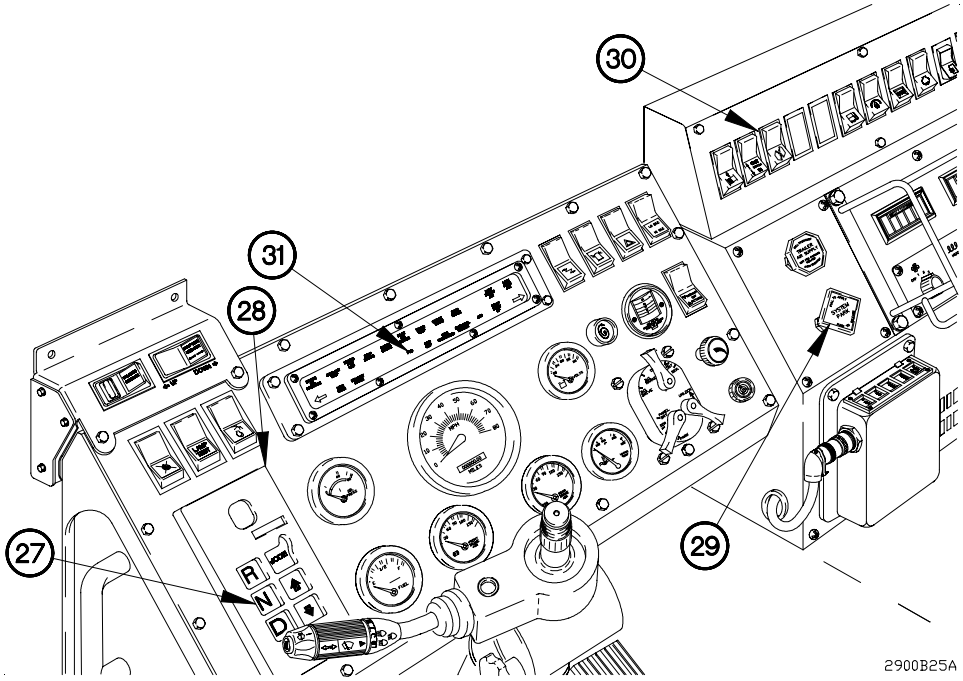
9. Raise tailgate (24) to closed position.
10. Install pin (23) in dump bed (4).
11. Install safety pin (22) in pin (23).
12. Perform steps (10) and (11) on RH side.



2900B24A

RAISING DUMP BED

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (27) on WTEC III TPSS (28).
3. Pull out SYSTEM PARK control (29).
4. Position PTO switch (30) to on.
5. Check that PTO indicator (31) illuminates.



RAISING DUMP BED - Continued

WARNING

Ensure no one is behind tailgate before dump body is raised. Failure to comply may result in serious injury or death to personnel.

NOTE

Perform step (6) if opening tailgate without a load or partial load.

Perform step (7) if opening tailgate with full load.

If tailgate does not release when TAILGATE RELEASE switch is operated, refer to Dump Truck Manual Release (WP 0062 00).

6. Press and hold TAILGATE RELEASE switch lock (17).

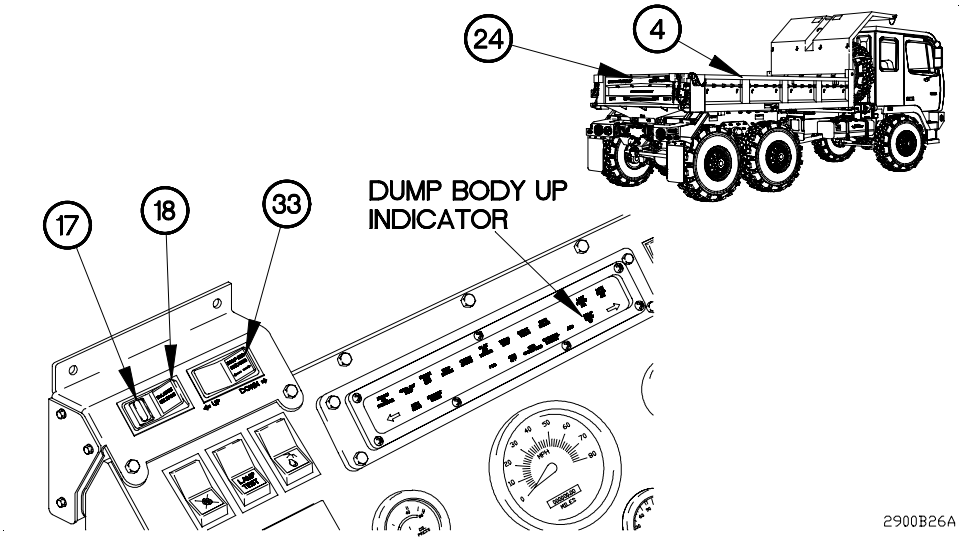
7. Press and hold TAILGATE RELEASE switch (18) to open tailgate (22).

NOTE

DUMP BODY UP indicator will illuminate when dump body is raised.

8. Press and hold DUMP BED UP/DOWN switch (33) in UP position.

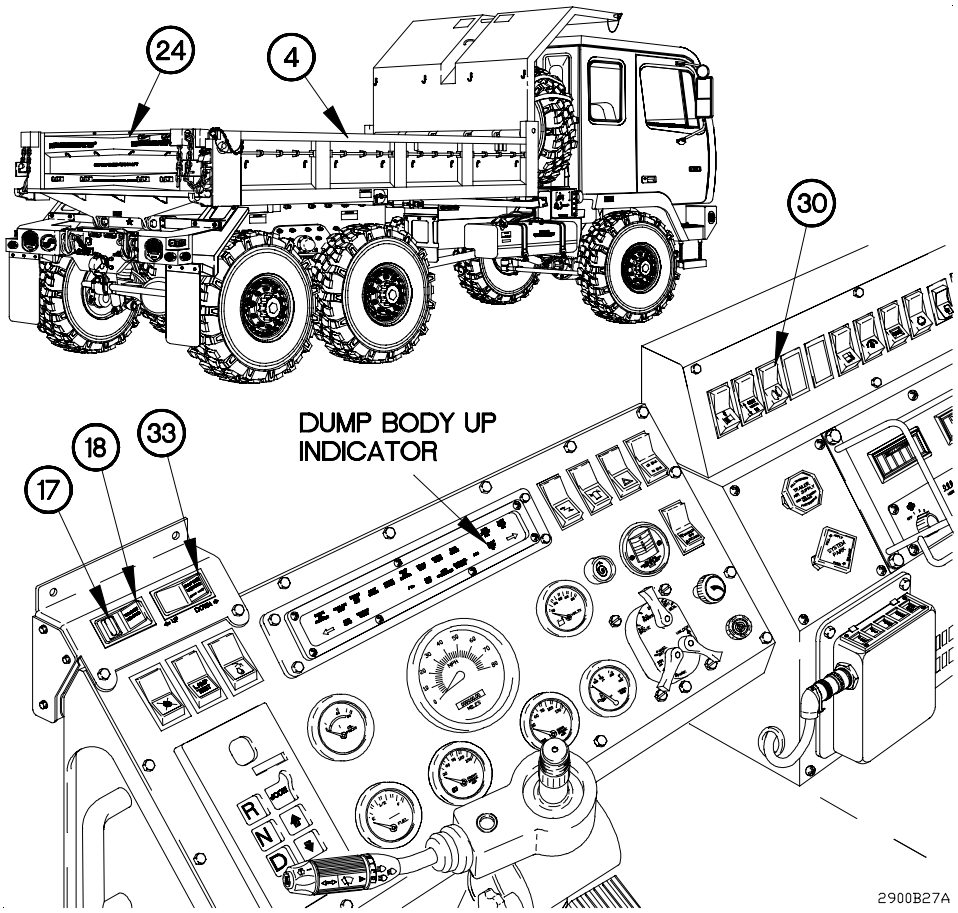
9. Release DUMP BED UP/DOWN switch (33) when dump body (4) is in required position.



DUMP TRUCK OPERATION - Continued 0029 00

LOWER DUMP BED

1. Press and hold DUMP BED UP/DOWN switch (33) in DOWN position.
2. Release DUMP BED UP/DOWN switch (33) when dump body (4) is completely lowered.
3. Check that DUMP BODY UP indicator is not illuminated.
4. Press and hold TAILGATE RELEASE lock (17).
5. Press and release TAILGATE RELEASE (18) to lock tailgate (24).
6. Position PTO switch (30) to off.
7. Shut down engine (WP 0018 00).



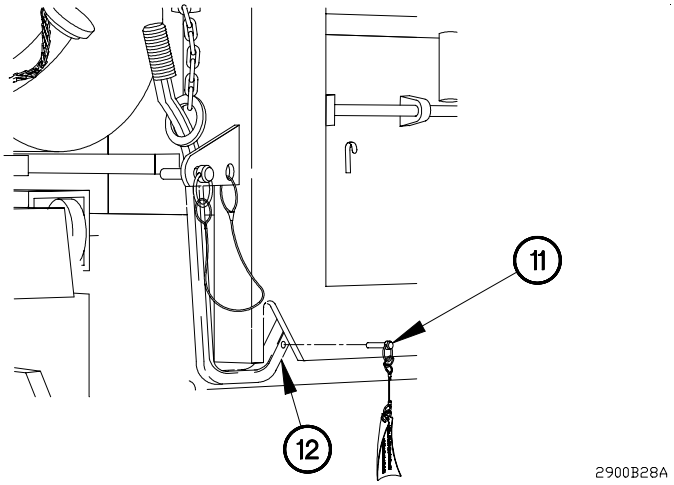
DUMP TRUCK OPERATION - Continued 0029 00

PREPARE DUMP TRUCK FOR MOVEMENT

CAUTION

Flagged safety pin must be installed prior to dump truck movement. Failure to comply may result in damage to equipment.

1. Install flagged safety pin (11) in manual tailgate release rod (12).



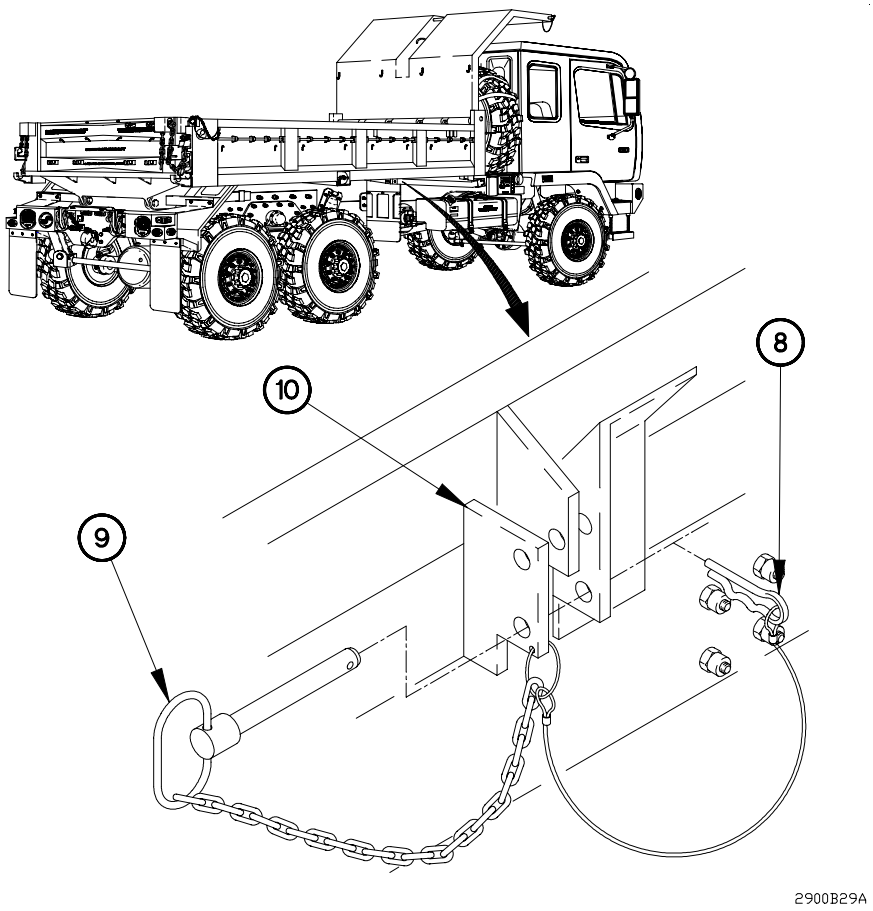
PREPARE DUMP TRUCK FOR MOVEMENT

CAUTION

Dump body must be locked down before vehicle is moved. Failure to comply may result in damage to equipment.

2. Remove safety pin (8) from lock pin (9) in suspension bracket (10).

3. Remove lock pin (9) from suspension bracket (10).



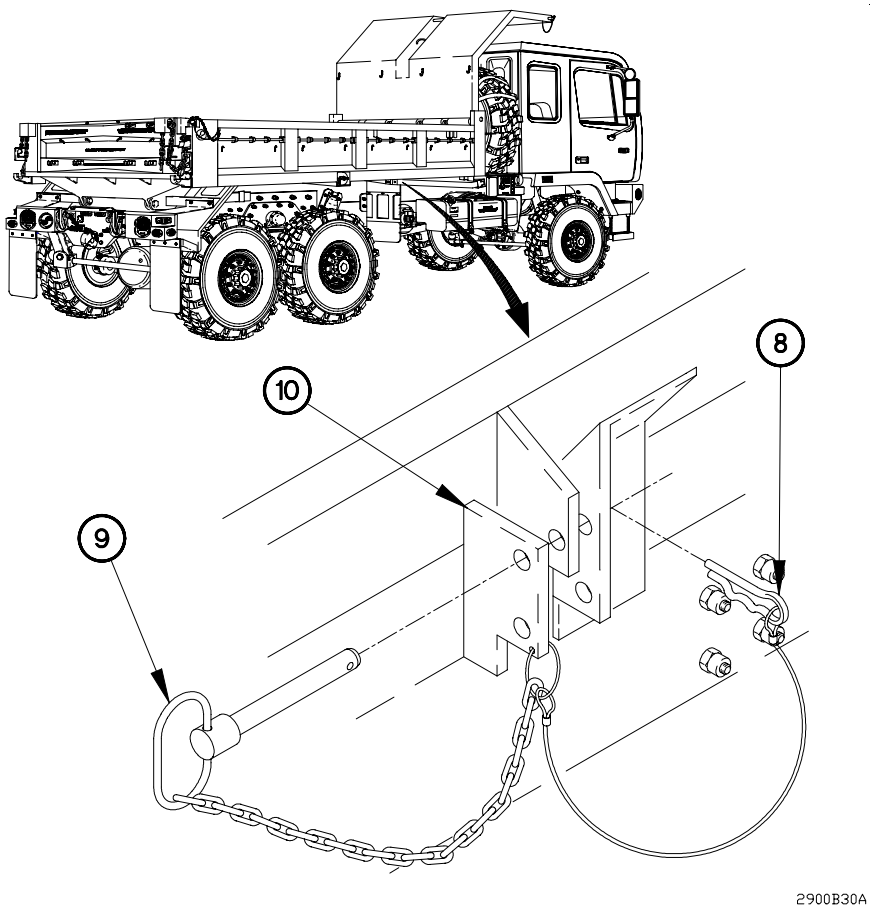
PREPARE DUMP TRUCK FOR MOVEMENT - Continued

NOTE

Lock pin is locked when lock pin is installed in top hole of suspension bracket.

5. Install lock pin (9) in suspension bracket (10).

6. Install safety pin (8) in lock pin (9).



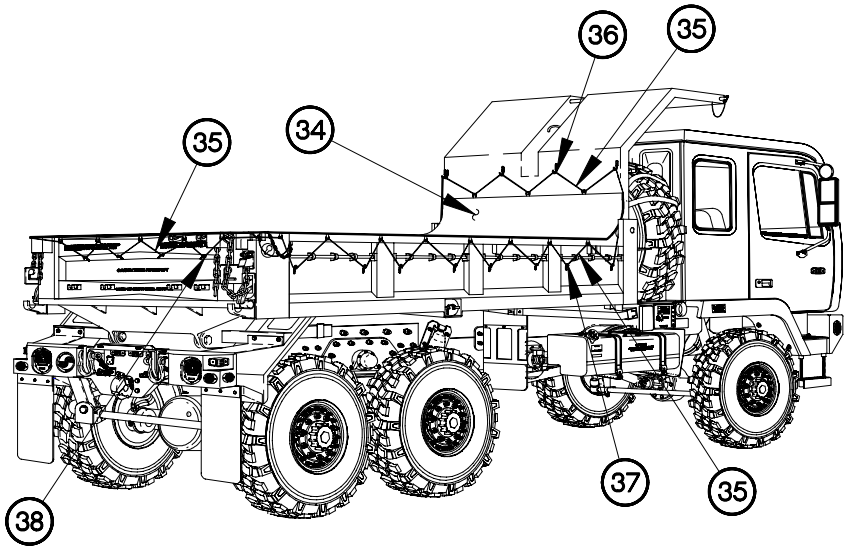
DUMP TRUCK OPERATION - Continued 0029 00

DEBRIS COVER INSTALLATION

CAUTION

Debris cover must be removed before offloading payload. Failure to comply may result in damage to equipment.

1. Unfold debris cover (34) evenly over cargo.
2. Attach shock cord (35) to cab protector J-hooks (36).
3. Attach shock cord (35) to dump body J-hooks (37).
4. Repeat step 3 on opposite side of dump body.
5. Pull rear of debris cover (34) tight and attach shock cord (35) to tailgate J-hooks (38).

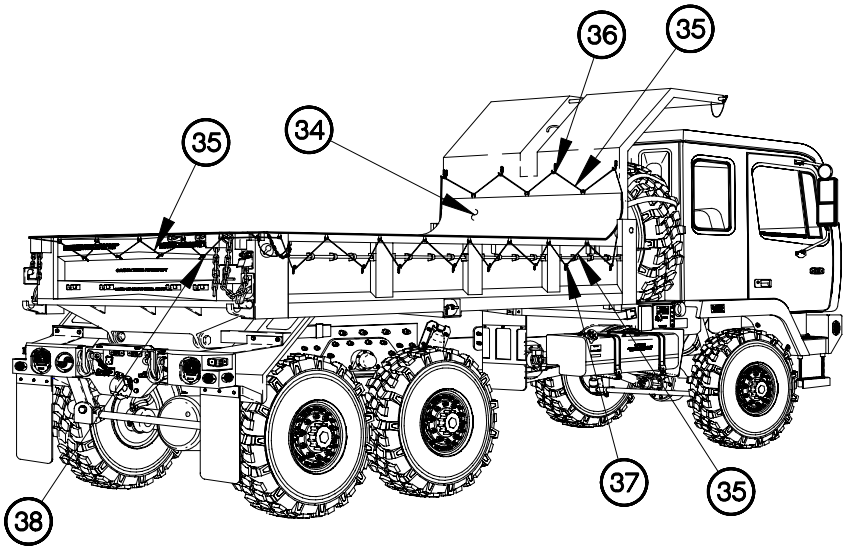


2900B31A

DUMP TRUCK OPERATION - Continued 0029 00

DEBRIS COVER REMOVAL

1. Remove shock cord (35) from tailgate J-hooks (38).
2. Remove shock cord (35) from dump body J-hooks (37).
3. Repeat step 2 on opposite side of dump body.
4. Remove shock cord (35) from cab protector J-hooks (36).
5. Fold debris cover (34).
6. Stow debris cover (34).



2900B31A

RAISING DUMP BODY TO MAINTENANCE POSITION

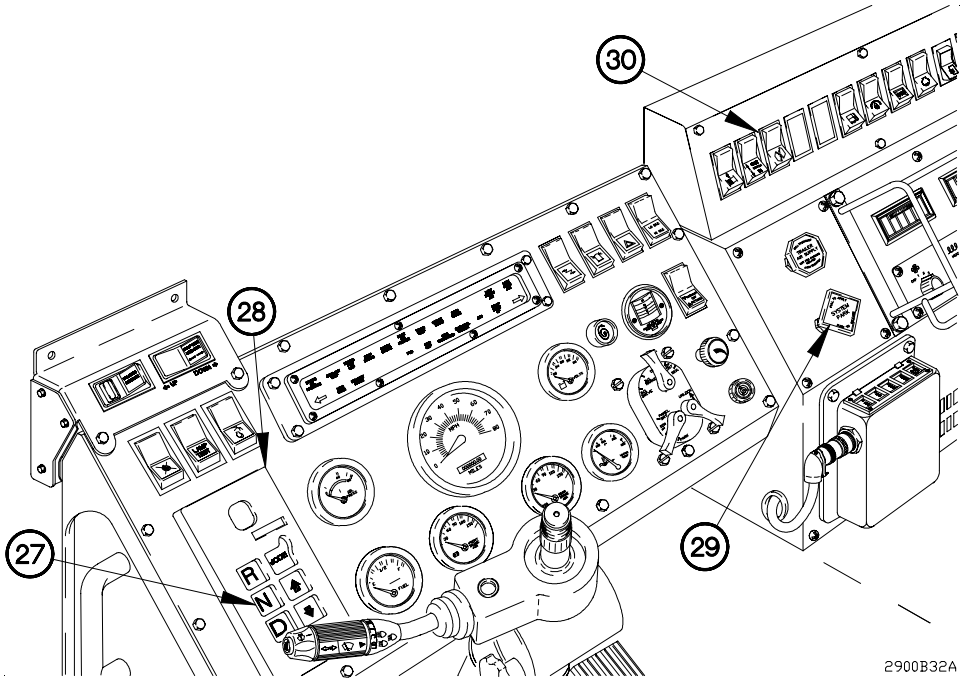
WARNING

Dump body must be supported by maintenance legs at any time that maintenance is performed with dump body up. Failure to comply may result in serious injury or death to personnel or damage to equipment.

NOTE

The recommended parking configuration is with dump body in maintenance position.

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (27) on WTEC III TPSS (28).
3. Pull out SYSTEM PARK control (29).
4. Position PTO switch (30) to on.



DUMP TRUCK OPERATION - Continued 0029 00

RAISING DUMP BODY TO MAINTENANCE POSITION - Continued

5. Press and hold DUMP BED UP/DOWN switch (33) in UP position until dump body (4) is completely raised.

NOTE

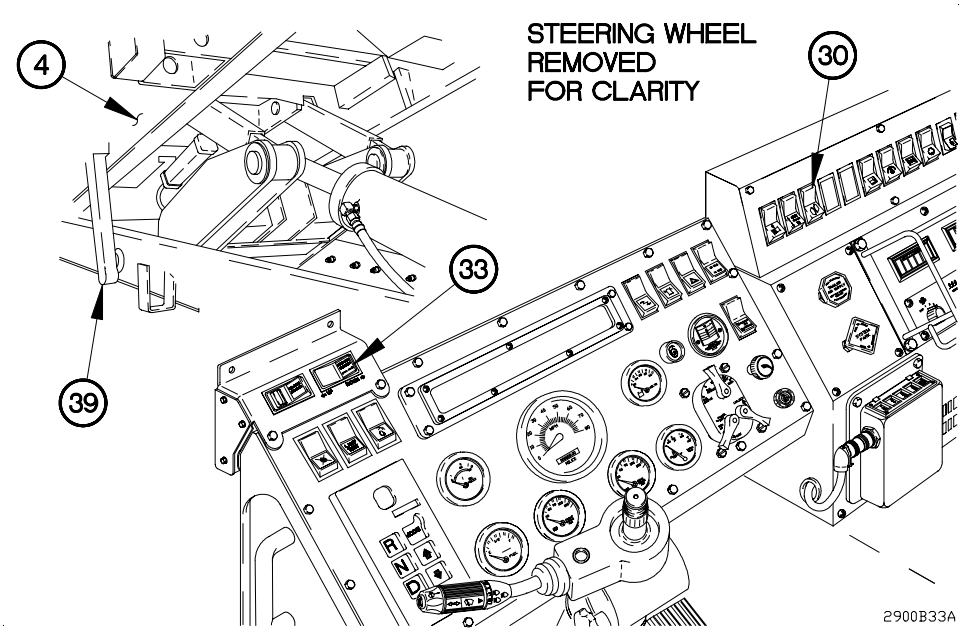
Step (6) requires the aid of an assistant.

6. Raise maintenance legs (39) to upright position.

7. Press and hold DUMP BED UP/DOWN switch (33) in DOWN position until maintenance legs (39) support dump body (4).

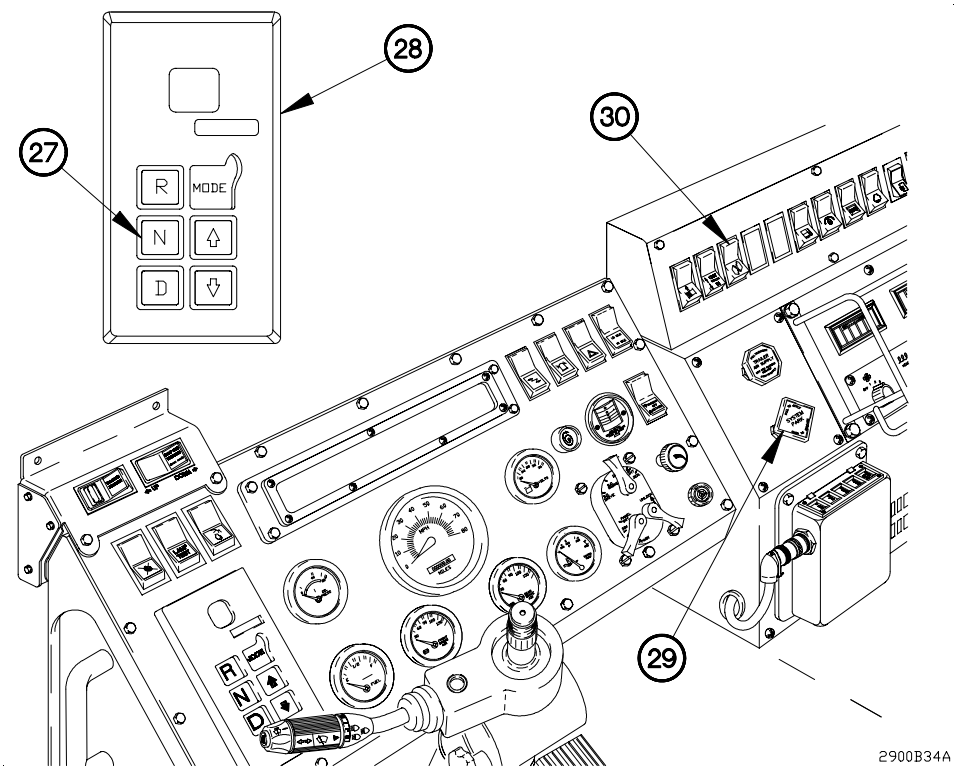
8. Position PTO switch (30) to off.

9. Shut down engine (WP 0018 00).



LOWERING DUMP BODY AFTER MAINTENANCE

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (27) on WTEC III TPSS (28).
3. Pull out SYSTEM PARK control (29).
4. Position PTO switch (30) to on.



LOWERING DUMP BED AFTER MAINTENANCE - Continued

5. Press and hold DUMP BED UP/DOWN switch (33) in UP position until dump body (4) clears maintenance legs (39).

WARNING

Assistant must stand clear when dump body is being lowered. Failure to comply may result in injury to personnel.

NOTE

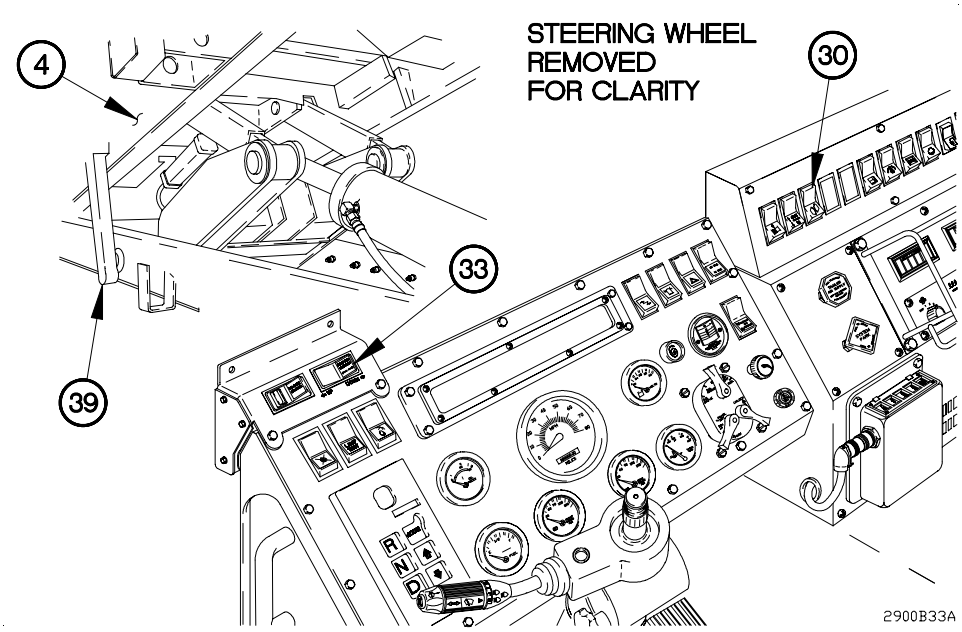
Step (6) requires the aid of an assistant.

6. Lower maintenance legs (39) to stowed position.

7. Press and hold DUMP BED UP/DOWN switch (33) in DOWN position until dump body (4) is completely lowered.

8. Position PTO switch (30) to off.

9. Shut down engine (WP 0018 00).



END OF OPERATING PROCEDURE

M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING

0030 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel Required
Two

Tools/Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)

References
WP 0017 00
WP 0018 00
WP 0031 00
WP 0056 00

GENERAL

This work package provides the data and procedures for Coupling An M1088A1 Tractor To A Trailer and Uncoupling An M1088A1 Tractor From A Trailer.

COUPLING M1088A1 TRACTOR TO TRAILER

CAUTION

The sliding fifth wheel must be locked in the most forward position on the fifth wheel base prior to coupling/uncoupling any trailer and during towing of any trailer. Failure to comply may result in damage to equipment.

NOTE

Refer to M1088A1 Tractor Preparation for Air or Ship Transport (WP 0056 00) for sliding fifth wheel instructions.

The M1088A1 Tractor is capable of pulling the following trailers:

M127A2C, M128A2C, M129A2C, M129A4
M172, M172A1
M373A2, M373A2C
M871, M871A1, M871A2
M967, M967A1, M969, M969A1, M970, M970A1, M969A2
MILVAN
M270A1
XM1098 (Shop Equipment, General Purpose Repair, Semi-Trailer Mounted (Model SEGPRSM))
* M146 (Modified IAW TB 43-0001-39-2, 1 Apr '87)

* Limited to highway operations only.

M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

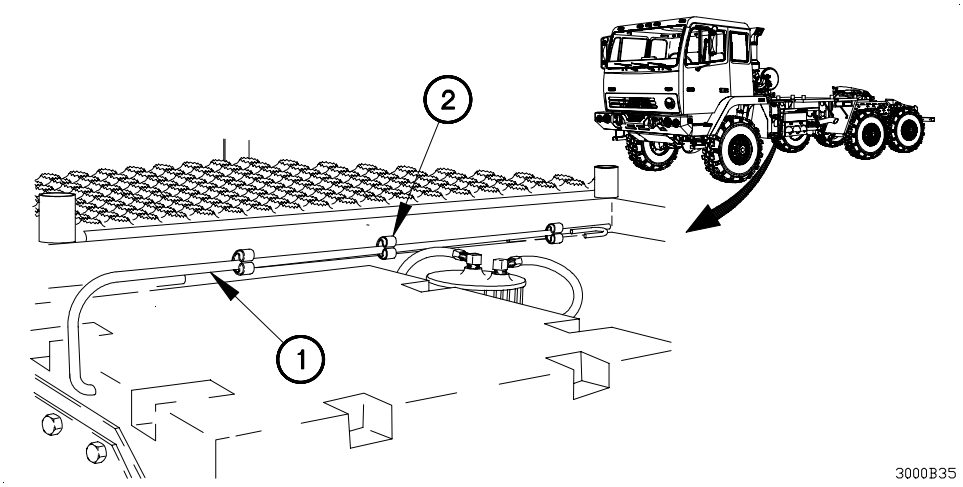
0030 00

COUPLING M1088A1 TRACTOR TO TRAILER - Continued

NOTE

Perform the following five steps if towing M900 series or XM1098 trailer.

1. Remove release tool (1) from stowage brackets (2).



2. Pull slide latch release lever (3) to the locked open position with release tool (1).

CAUTION

When positioning the fifth wheel three notches rearward listen for three distinct and loud clicking sounds. When the third clicking sound is heard you are in the correct position to tow M900 series or XM1098 trailer. Failure to comply may result in damage to equipment.

When in the third notch rearward one tooth of the rack will be exposed. Failure to comply may result in damage to equipment.

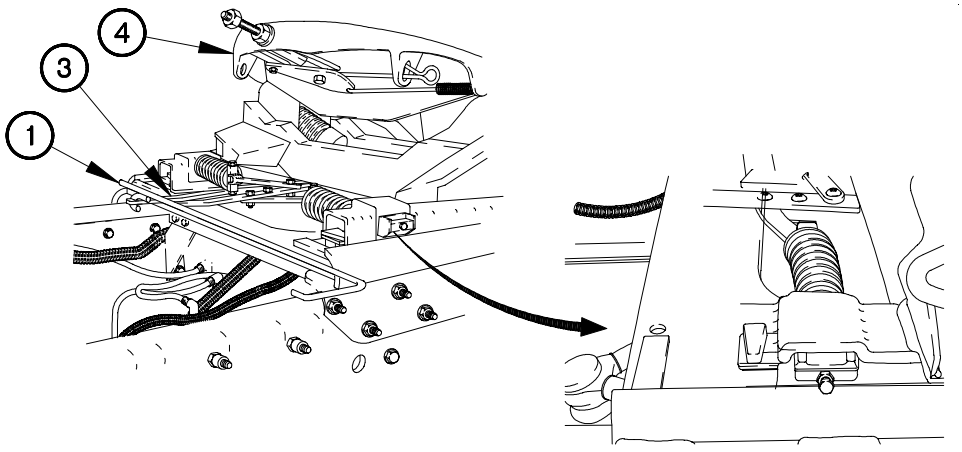
NOTE

The following step requires the aid of an assistant.

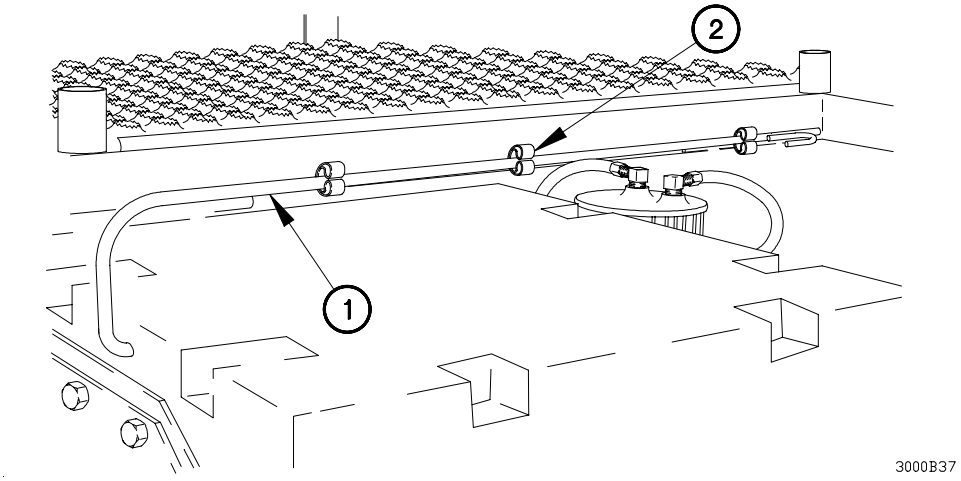
3. Position fifth wheel (4) in third notch as shown.

4. Release slide latch release lever (3) with release tool (1).

COUPLING M1088A1 TRACTOR TO TRAILER – Continued



5. Install release tool (1) in stowage brackets (2).

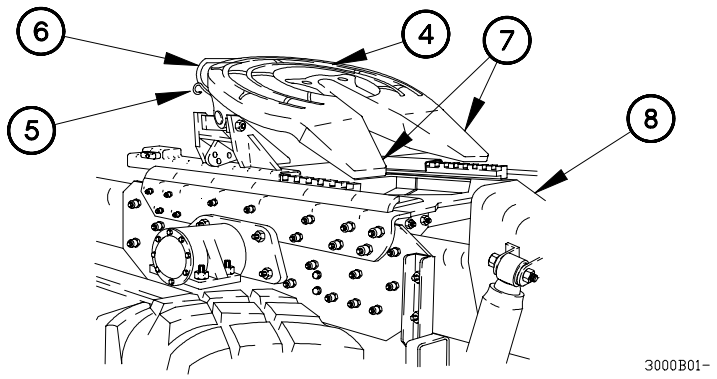


6. Pull secondary lock release handle (5) completely out and hook in out position.

7. Pull out primary lock release handle (6).

8. Push down on fifth wheel (4) so that tail ramps (7) are below top surface of guide ramps (8).

COUPLING M1088A1 TRACTOR TO TRAILER - Continued



WARNING

Trailer wheels must be chocked before coupling/uncoupling with fifth wheel. Trailer wheels may roll if they are not chocked. Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

Fifth wheel, ramps, and trailer kingpin must be coated with grease. Failure to comply may result in damage to equipment.

Trailer landing gear must not be set too low or too high. If trailer landing gear is set too low, tractor guide ramps will damage front of trailer when tractor is backed up. If trailer landing gear is set too high, trailer kingpin may overrun fifth wheel. Failure to comply may result in damage to equipment.

NOTE

M146 landing leg feet must be removed.

9. Prepare trailer for coupling (refer to Operator's Manual for specific trailer).

M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

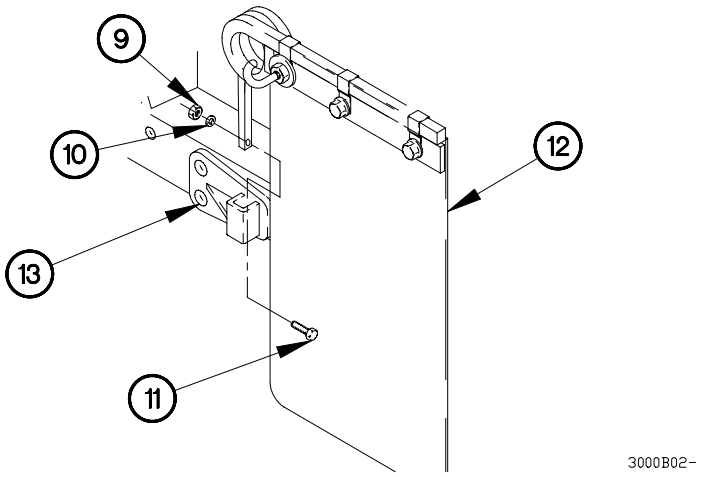
0030 00

COUPLING M1088A1 TRACTOR TO TRAILER - Continued

NOTE

Left and right mudflaps are removed the same way. Right side shown.

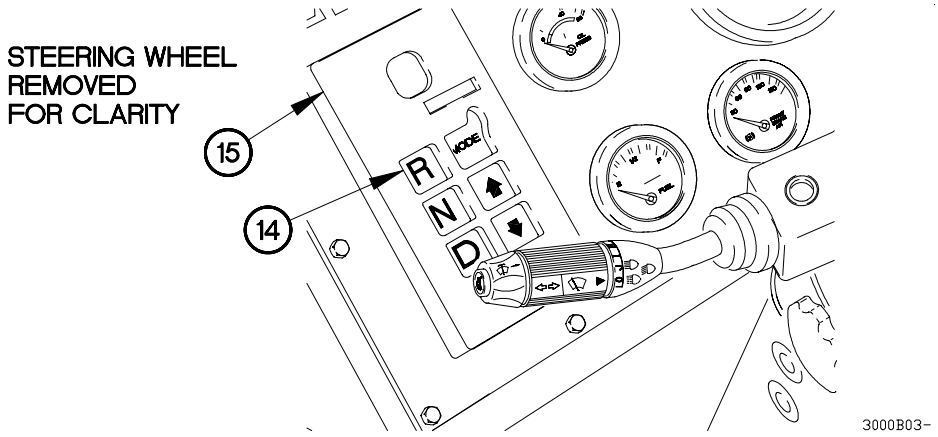
10. Remove self-locking nut (9), washer (10), screw (11), and mudflap (12) from mounting bracket (13).



11. Start engine (WP 0018 00).

12. Adjust side mirrors for best visibility (WP 0017 00).

13. Press R (Reverse) button (14) on WTEC III TPSS (15).



COUPLING M1088A1 TRACTOR TO TRAILER - Continued

WARNING

Position of assistant must be known at all times. Do not allow anyone to stand between trailer, behind trailer, or under trailer neck during coupling of tractor to trailer. Failure to comply may result in serious injury or death to personnel.

CAUTION

Ground guide is required to guide vehicle backing up. Failure to comply may result in injury to personnel or damage to equipment.

NOTE

Steps 14 through 16 require the aid of an assistant.

14. Back up slowly and pay close attention to signals of ground guide.

CAUTION

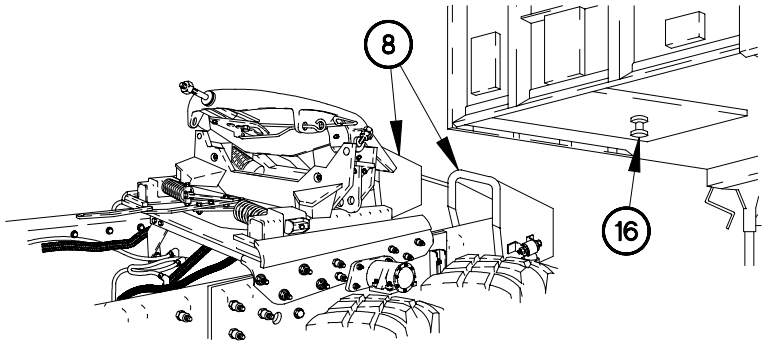
M1088A1 tractor and trailer coupling must be accomplished with M1088A1 tractor and trailer in a straight line. Failure to comply may result in damage to equipment.

NOTE

Guide ramps should be approximately 4-6 in. (10-15 cm) below front of trailer.

15. Position tractor with trailer kingpin (16) centered between tractor guide ramps (8).

16. Back tractor until guide ramps (8) are approximately 1 ft (0.3 m) from front of trailer.

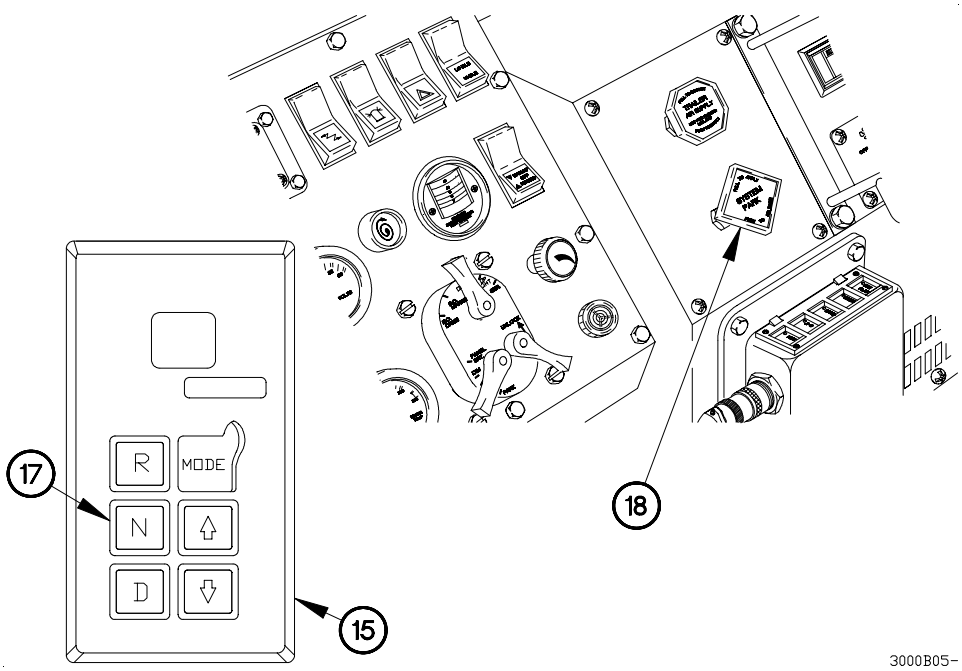


3000B04-

COUPLING M1088A1 TRACTOR TO TRAILER - Continued

17. Press N (Neutral) button (17) on WTEC III TPSS (15).

18. Pull out SYSTEM PARK control (18).



COUPLING M1088A1 TRACTOR TO TRAILER - Continued

CAUTION

Hose clamp hook must be disconnected from snap ring before connecting to trailer. Failure to comply may result in damage to equipment.

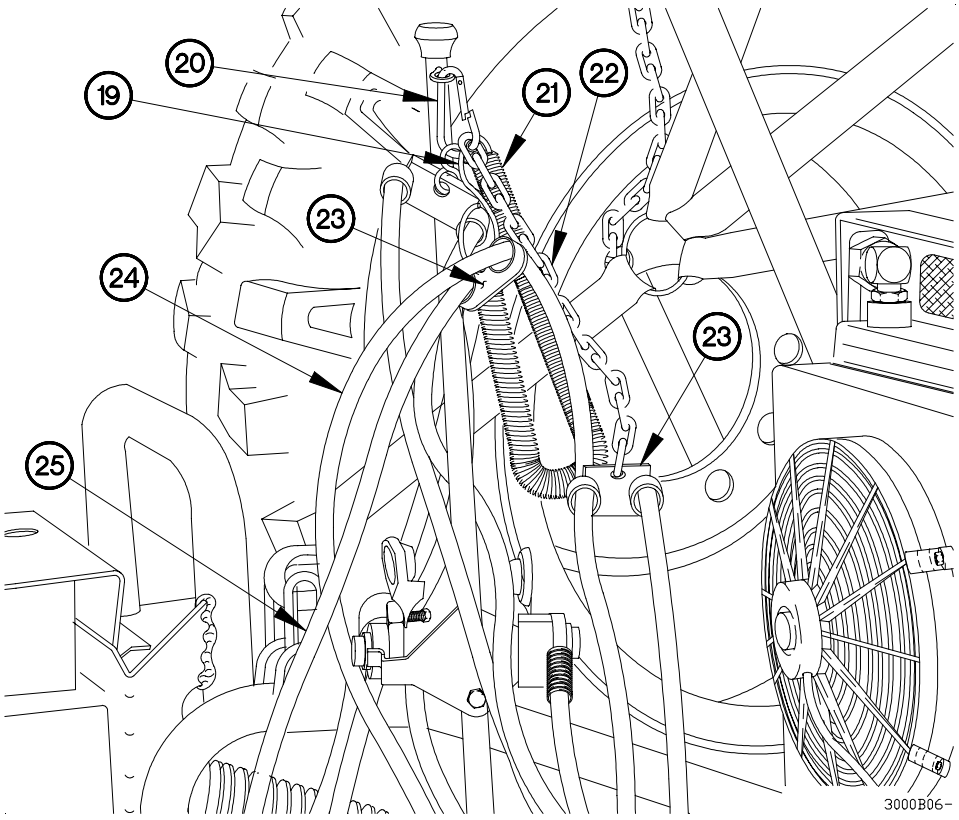
19. Disconnect hose clamp hook (19) from snap ring (20).

NOTE

If cables need to extend beyond normal length, perform steps 20 through 22.

20. Unhook spring (21) and chain (22) from snap ring (20).

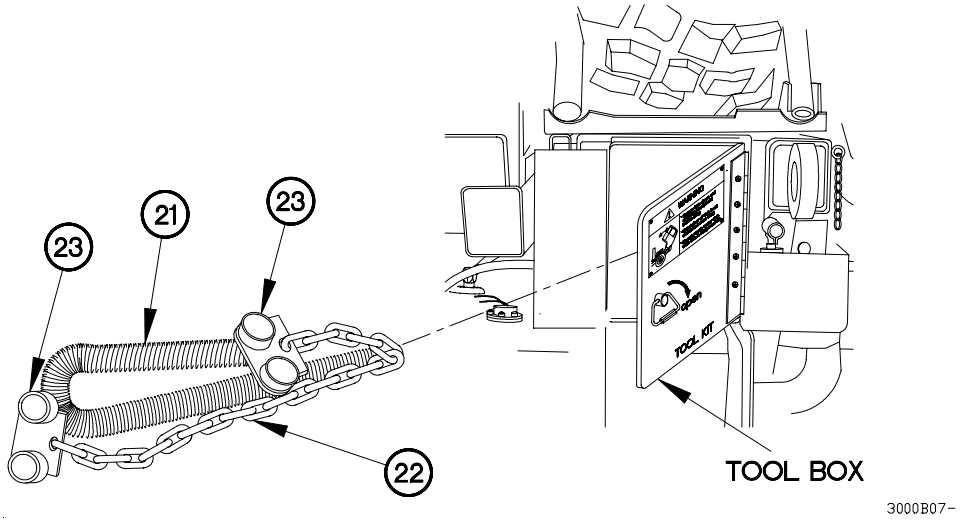
21. Remove two clamps (23) from air brake hoses (24 and 25).



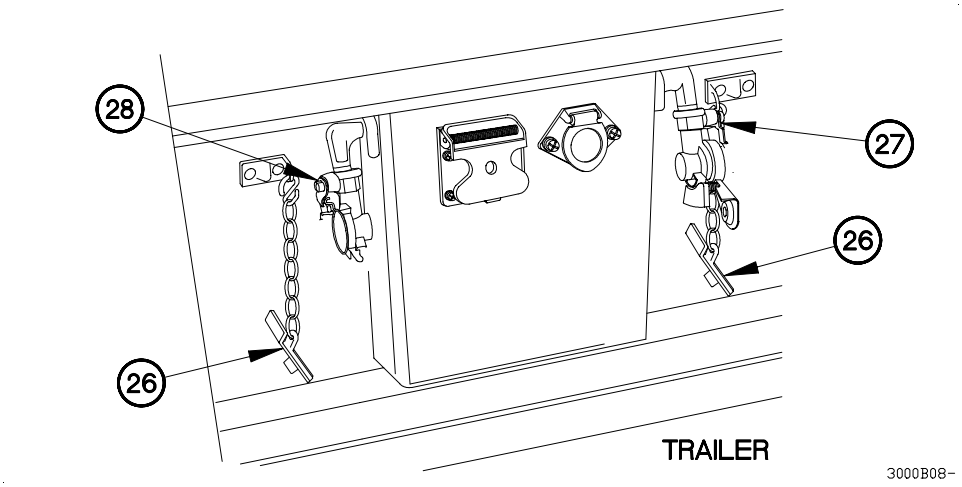
M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued 0030 00

COUPLING M1088A1 TRACTOR TO TRAILER - Continued

22. Place spring (21), chain (22), and clamps (23) in tool box.



23. Disconnect two dummy couplings (26) from SERVICE gladhand (27) and EMERGENCY gladhand (28) on trailer.



M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

0030 00

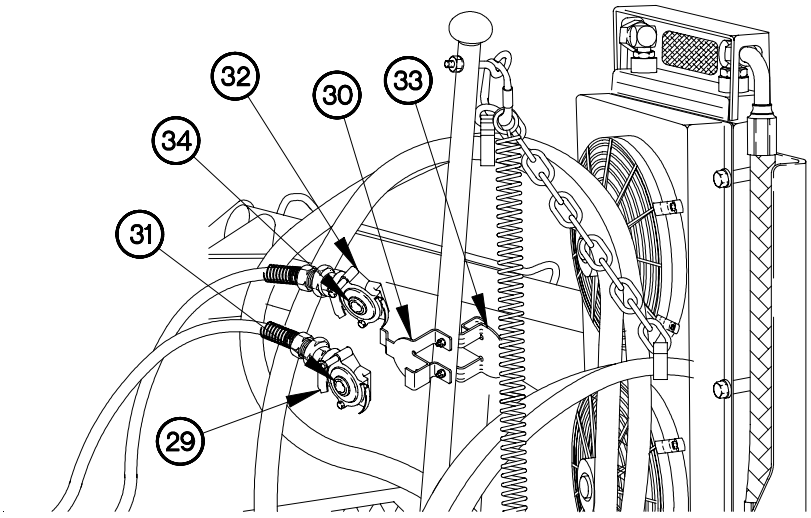
COUPLING M1088A1 TRACTOR TO TRAILER - Continued

24. Disconnect SERVICE gladhand (29) from dummy coupling (30) on M1088A1 Tractor.

25. Check coupler seal (31) on SERVICE gladhand (29) for serviceability.

26. Disconnect EMERGENCY gladhand (32) from dummy coupling (33) on M1088A1 Tractor.

27. Check coupler seal (34) on EMERGENCY gladhand (32) for serviceability.



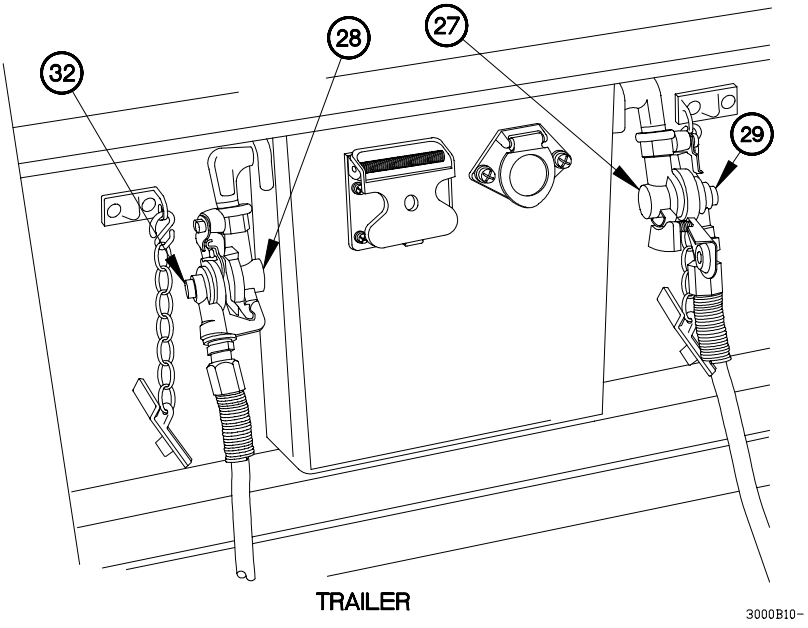
COUPLING M1088A1 TRACTOR TO TRAILER - Continued

WARNING

Ensure that service and emergency gladhand connections do not leak. Failure to comply may result in serious injury or death to personnel or damage to equipment.

28. Connect SERVICE gladhand (29) to SERVICE gladhand (27) on trailer.

29. Connect EMERGENCY gladhand (32) to EMERGENCY gladhand (28) on trailer.



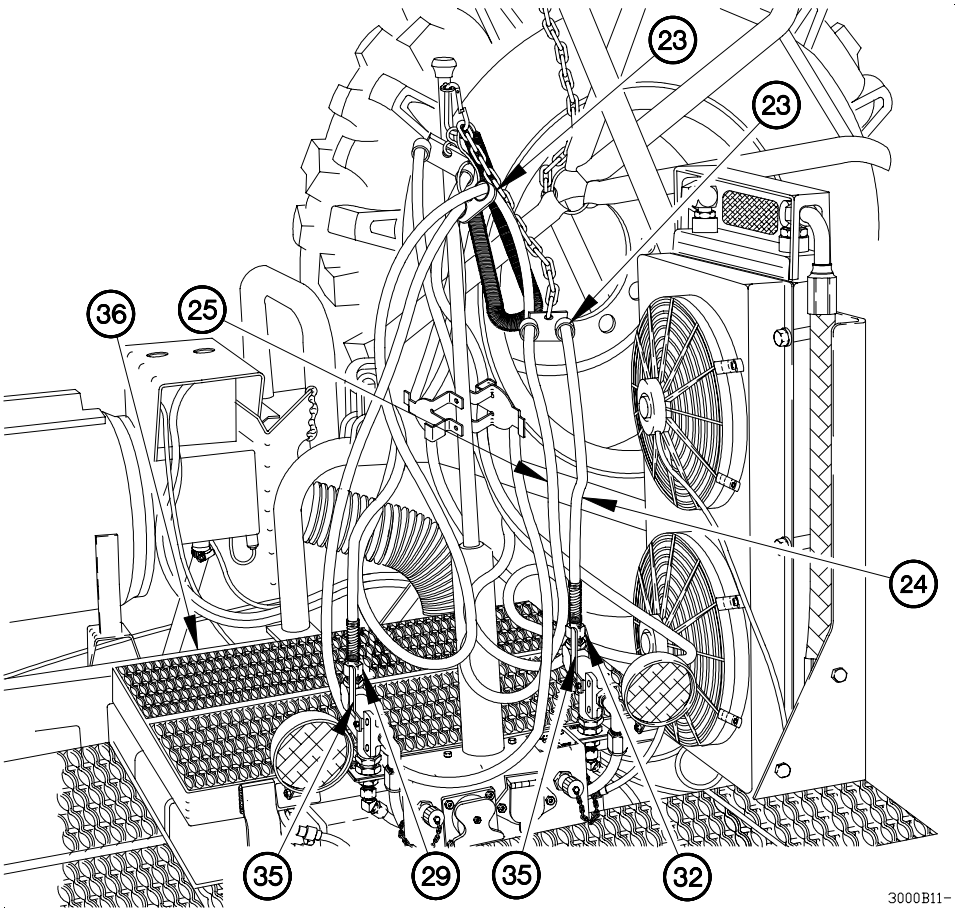
COUPLING M1088A1 TRACTOR TO TRAILER - Continued

30. Position two gladhand selector valves (35) for SERVICE gladhand (29) and EMERGENCY gladhand (32) to TRAILER GLADHAND (up).

NOTE

Perform step 31 if clamps were not removed in steps 19 through 21 and if air brake hoses are rubbing on work platform.

31. Adjust two clamps (23) as required to prevent air brake hoses (24 and 25) from rubbing on platform (36).

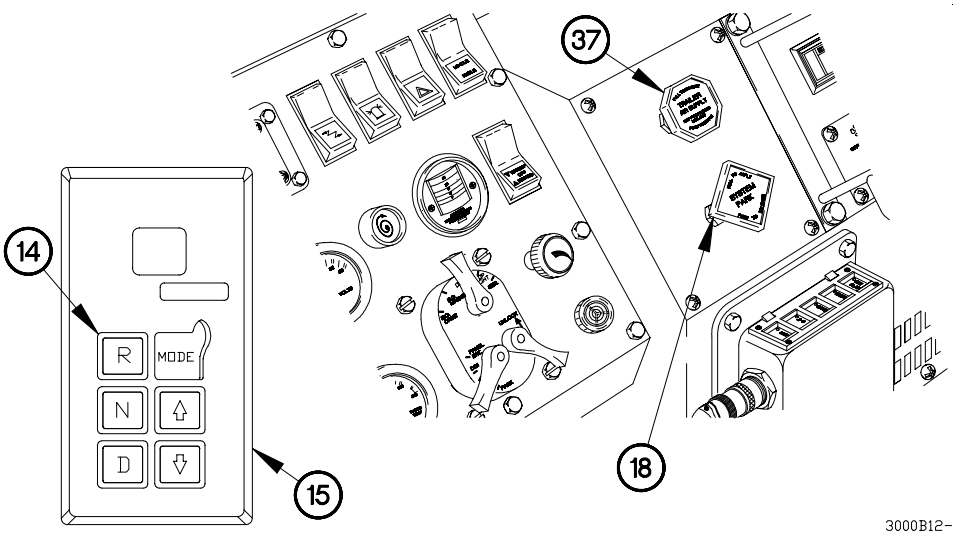


COUPLING M1088A1 TRACTOR TO TRAILER - Continued

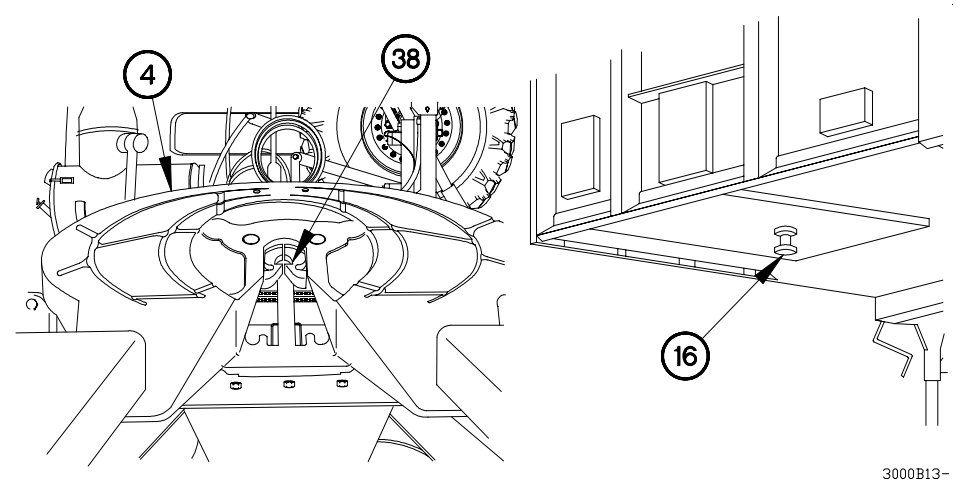
32. Push in TRAILER AIR SUPPLY control (37).

33. Press R (Reverse) button (14) on WTEC III TPSS (15).

34. Push in SYSTEM PARK control (18).



35. Back M1088A1 Tractor slowly until jaws (38) of fifth wheel (4) lock around trailer kingpin (16).

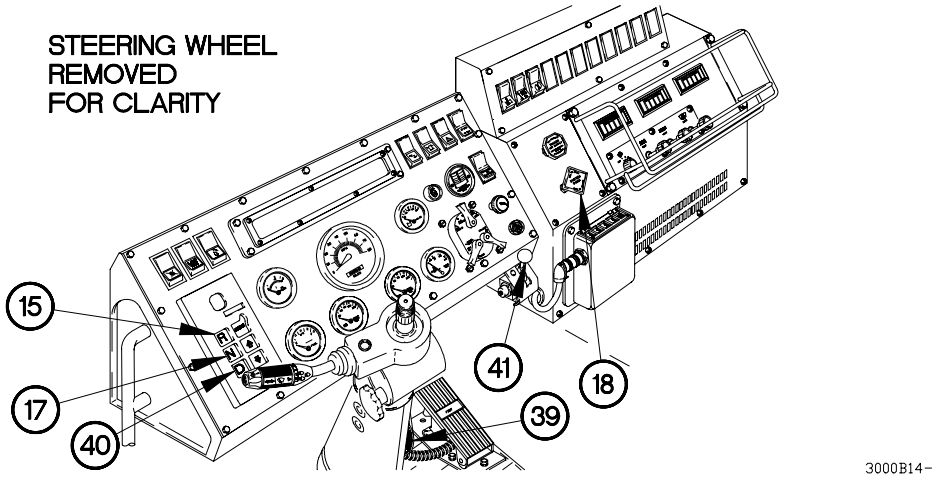


M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

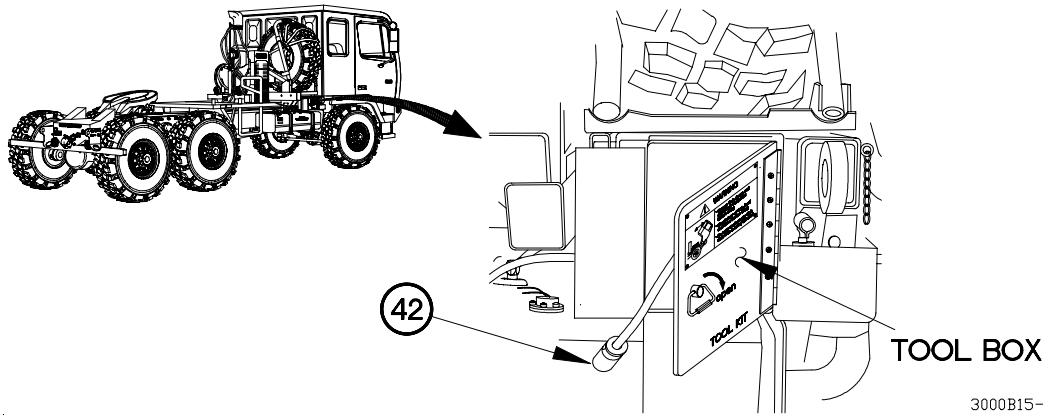
0030 00

COUPLING M1088A1 TRACTOR TO TRAILER - Continued

36. Press brake pedal (39) and stop M1088A1 Tractor.
37. Press D (Drive) button (40) on WTEC III TPSS (15).
38. Push down on trailer handbrake (41) and attempt to move M1088A1 Tractor forward slightly to check that trailer is securely coupled.
39. If coupling is not secure, use D (drive) and R (reverse) gears alternately to rock M1088A1 Tractor back and forth until fifth wheel locks.
40. Press N (Neutral) button (17) on WTEC III TPSS (15).
41. Pull out SYSTEM PARK control (18).



42. Remove intervehicular cable (42) from tool box.



M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

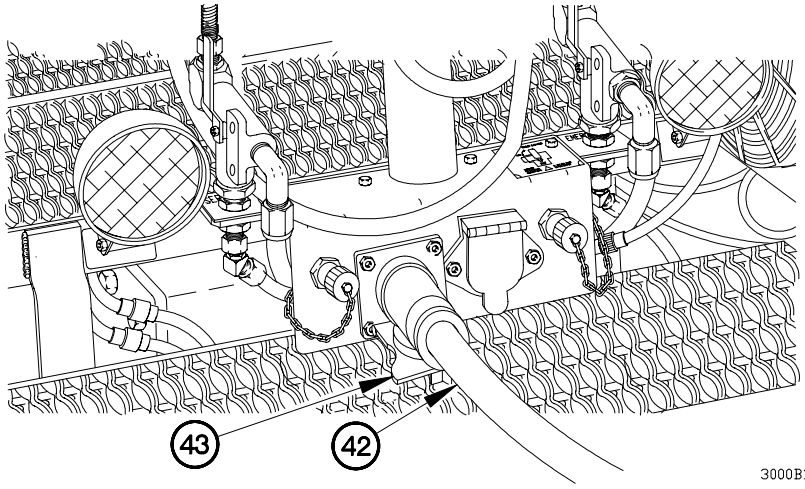
0030 00

COUPLING M1088A1 TRACTOR TO TRAILER - Continued

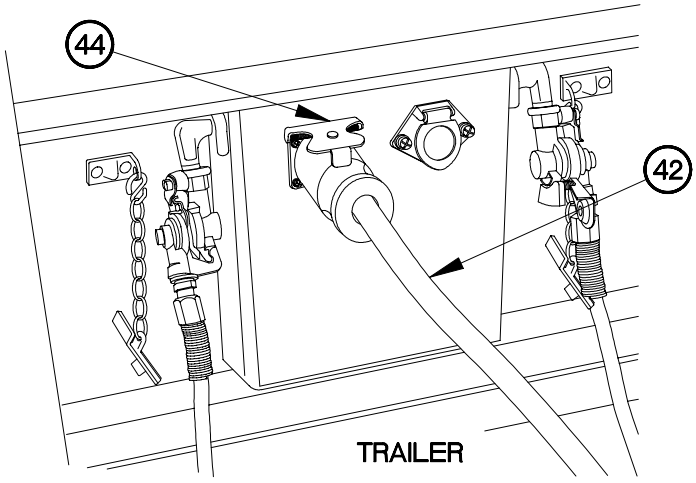
NOTE

There are two receptacles on M1088A1 Tractor: a 24-vdc/12-pin receptacle and a 12-vdc/7-pin receptacle. Receptacle used will depend on model of trailer.

43. Connect intervehicular cable (42) to receptacle (43) on M1088A1 Tractor.



44. Connect intervehicular cable (42) to receptacle (44) on trailer.



COUPLING M1088A1 TRACTOR TO TRAILER - Continued

CAUTION

Notify Unit Maintenance to tighten nut to 7-9 lb-ft (10-12 N·m). Failure to comply may result in damage to equipment.

NOTE

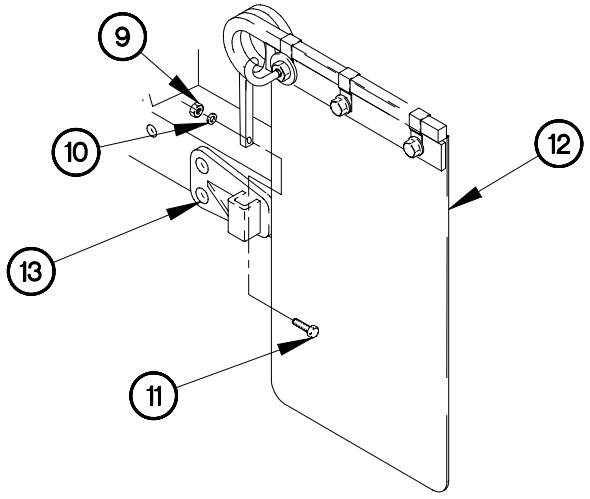
Install tractor mudflaps if there is adequate clearance between the tractor and trailer for full radius turns.

If interference is possible, stow mudflaps in tractor for future use.

If mudflaps are to be installed, perform step 45.

Left and right mudflaps are installed the same way. Right side shown.

45. Install mudflap (12) on mounting bracket (13) with screw (11), washer (10), and self-locking nut (9).



3000B18-

M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

0030 00

COUPLING M1088A1 TRACTOR TO TRAILER - Continued

46. Prepare trailer for transport (refer to Operator's manual for trailer).

47. Push in SYSTEM PARK control (18).

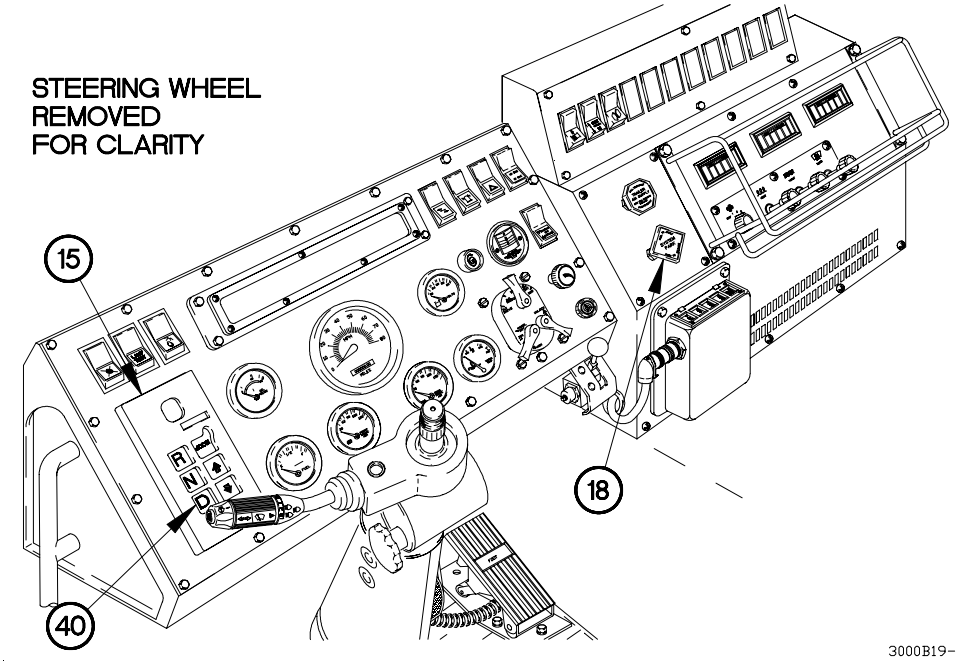
NOTE

If FRONT BRAKE AIR and REAR BRAKE AIR pressure gages do not read 75 psi (517 kPa) or more, trailer spring brakes will not release.

48. Press D (Drive) button (40) on WTEC III TPSS (15).

49. Check trailer brakes for proper operation (refer to Operator's Manual for trailer).

50. Drive M1088A1 tractor forward (WP 0031 00).

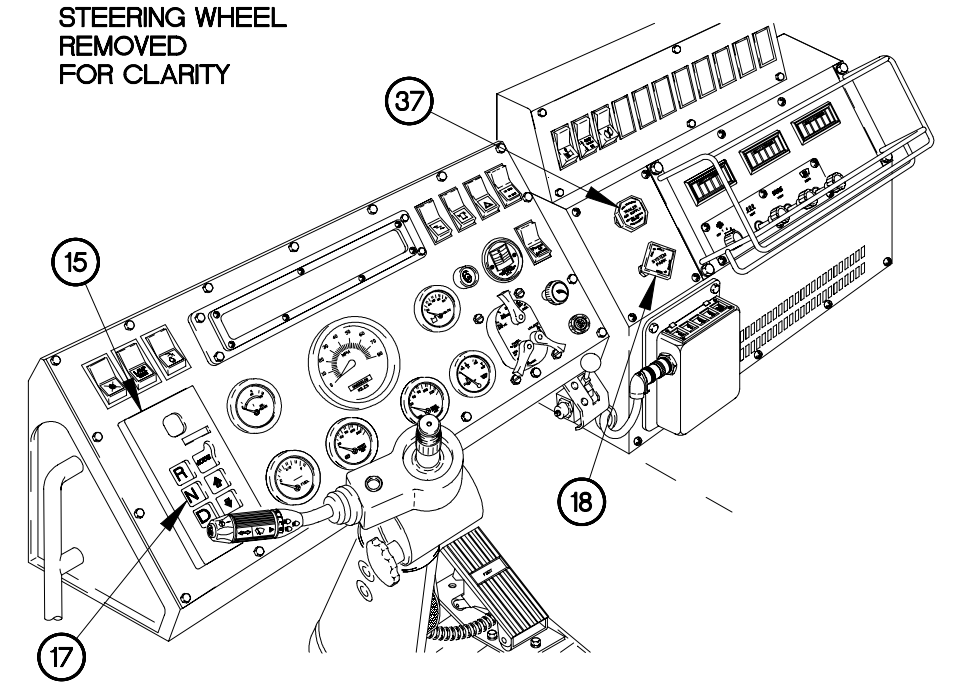


M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

0030 00

UNCOUPLING M1088A1 TRACTOR FROM TRAILER

1. Park M1088A1 tractor (WP 0031 00).
2. Press N (Neutral) button (17) on WTEC III TPSS (15).
3. Pull out SYSTEM PARK control (18).
4. Pull out TRAILER AIR SUPPLY control (37).



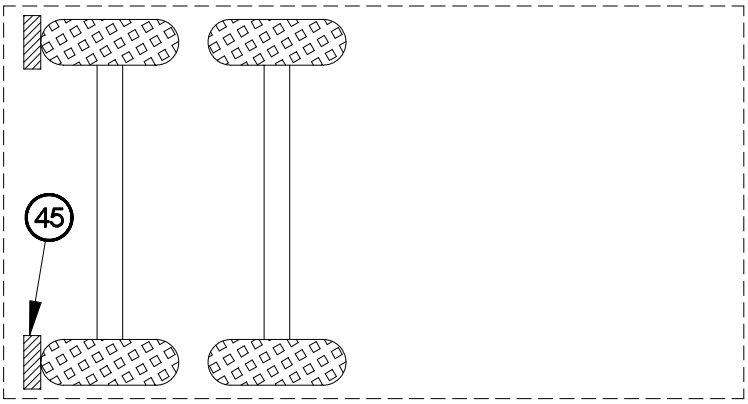
UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

WARNING

Trailer wheels must be chocked before coupling/uncoupling from fifth wheel. Trailer wheels may roll if they are not chocked. Failure to comply may result in serious injury or death to personnel or damage to equipment.

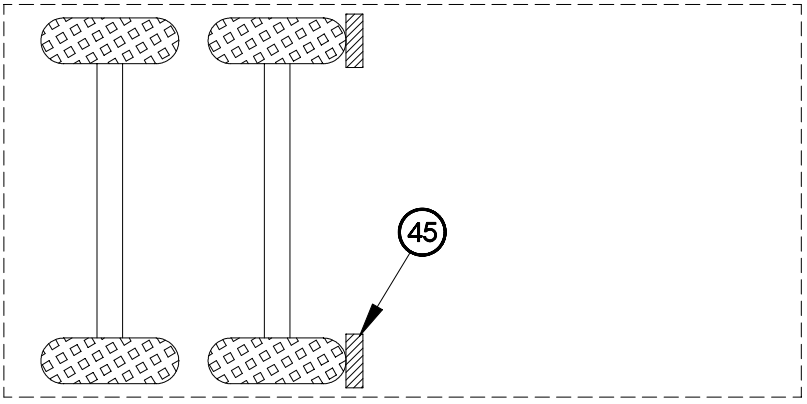
5. Install wheel chocks (45) on trailer wheels as follows:

   a. Place wheel chocks (45) in back of both rear trailer wheels when parked uphill.



3000B21-

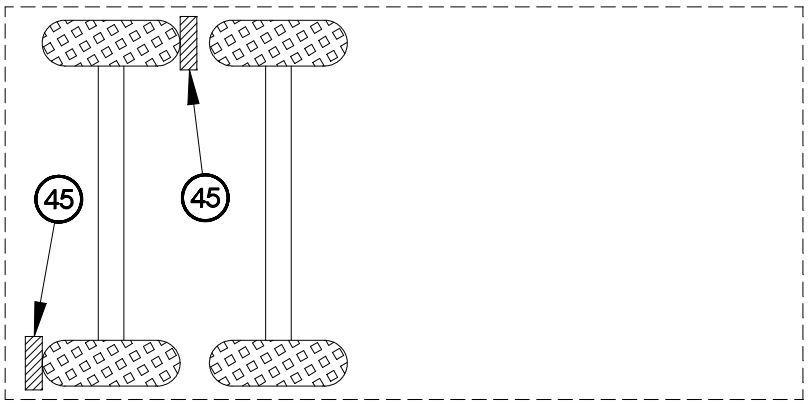
   b. Place wheel chocks (45) in front of both front trailer wheels when parked downhill.



3000B22-

UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

c. Place one wheel chock (45) in front of one trailer wheel and the other wheel chock in back of the opposite trailer wheel when parked on level ground.



3000B23-

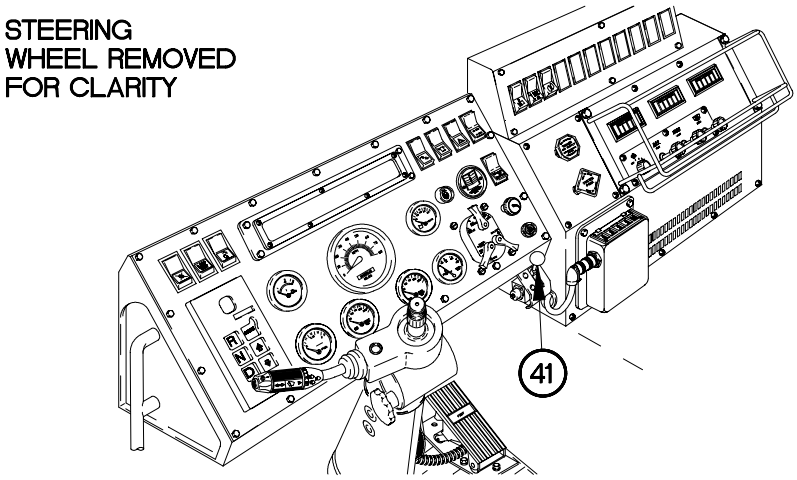
6. Prepare trailer for uncoupling (refer to Operator's Manual for trailer).

7. Lower trailer landing gear (refer to Operator's Manual for trailer).

NOTE

Perform step 8 if lock release handles cannot be moved.

8. Apply trailer brakes using trailer handbrake (41) and move M1088A1 Tractor backward slightly to relieve pressure on fifth wheel coupler jaws.

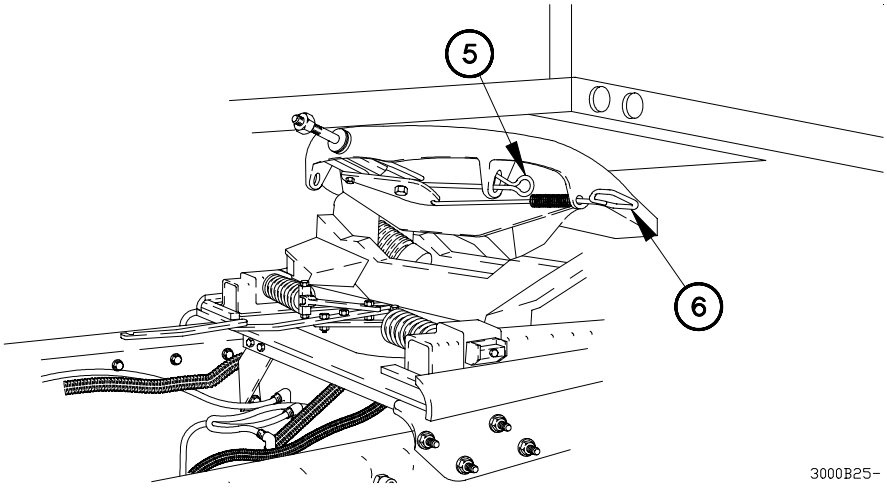


3000B24-

UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

9. Pull secondary lock release handle (5) out and hook in out position.

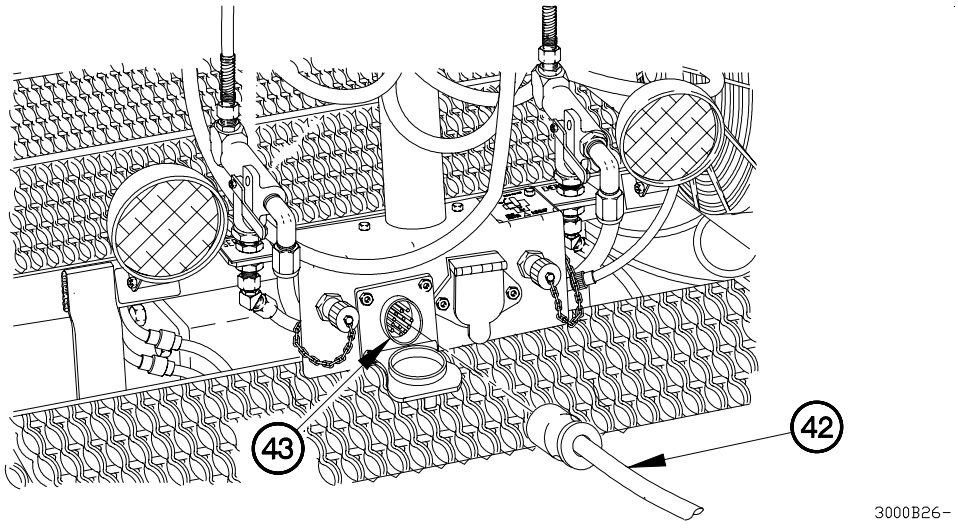
10. Pull primary lock release handle (6) out completely.



CAUTION

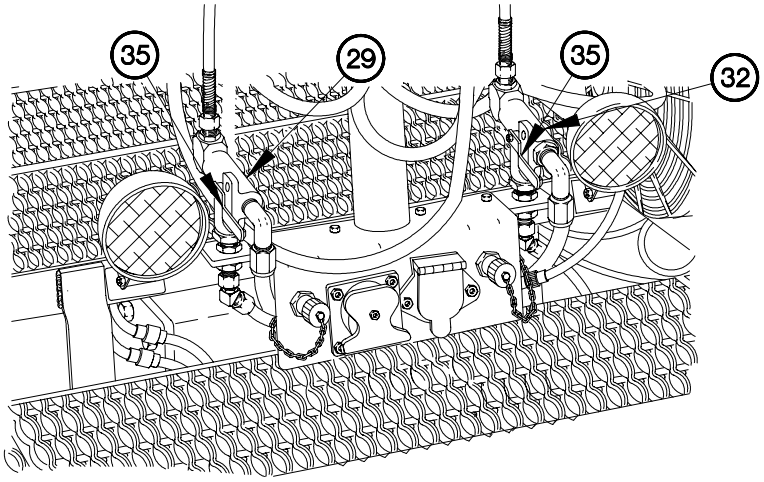
After disconnecting intervehicular cable, close the receptacle cover. Failure to comply may cause damage to equipment.

11. Disconnect intervehicular cable (42) from receptacle (43) on M1088A1 Tractor.



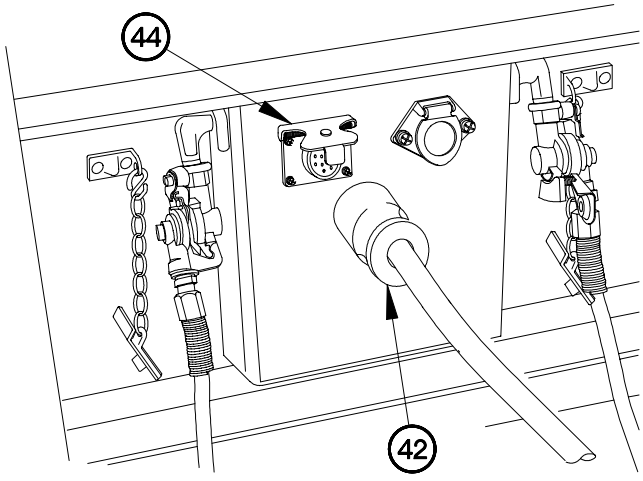
UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

12. Position gladhand selector valves (35) for SERVICE gladhand (29) and EMERGENCY gladhand (32) to REAR GLADHAND (down).



3000B27-

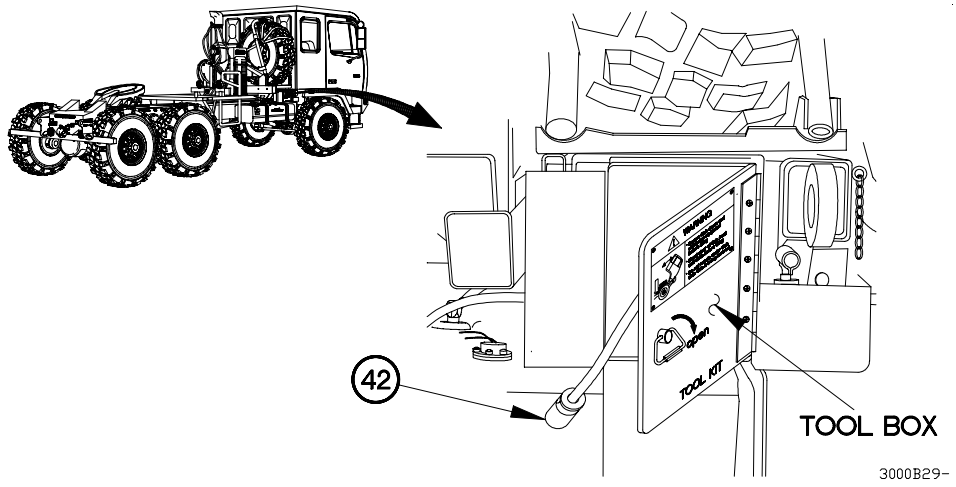
13. Disconnect intervehicular cable (42) from receptacle (44) on trailer.



3000B28-

UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

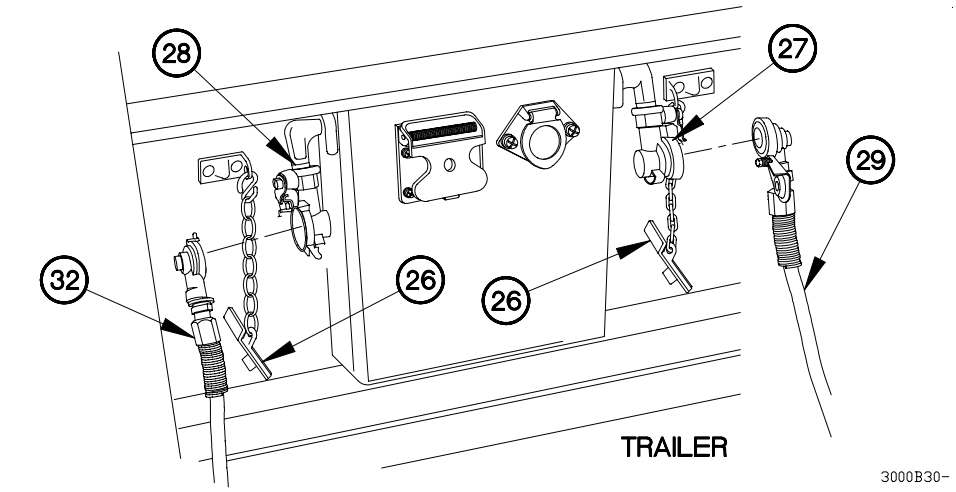
14. Stow intervehicular cable (42) in tool box.



15. Disconnect EMERGENCY gladhand (32) from EMERGENCY gladhand (28) on trailer.

16. Disconnect SERVICE gladhand (29) from SERVICE gladhand (27) on trailer.

17. Install two dummy couplings (26) on EMERGENCY gladhand (28) and SERVICE gladhand (27) on trailer.



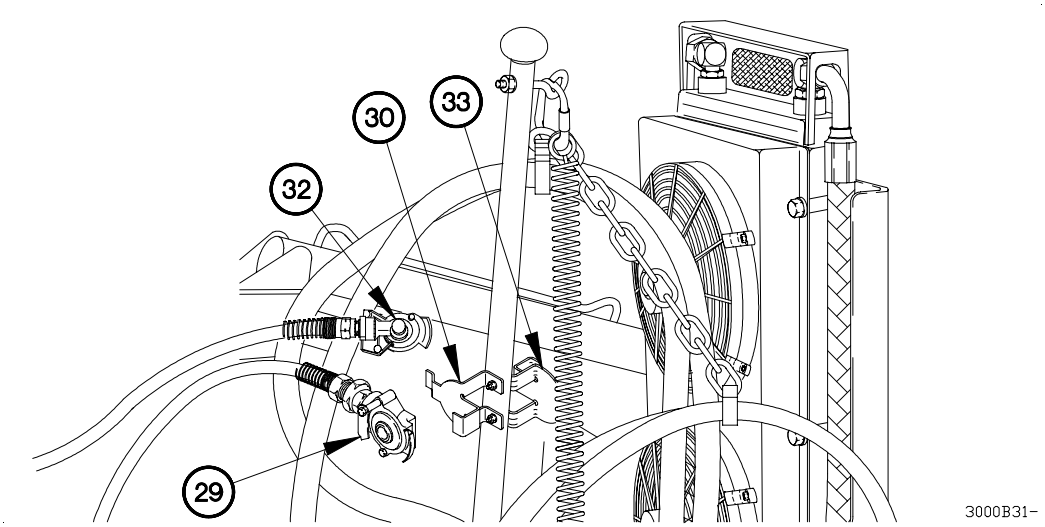
M1088A1 TRACTOR AND TRAILER COUPLING/UNCOUPLING - Continued

0030 00

UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

18. Connect SERVICE gladhand (29) to dummy coupling (30) on M1088A1 Tractor.

19. Connect EMERGENCY gladhand (32) to dummy coupling (33) on M1088A1 Tractor.

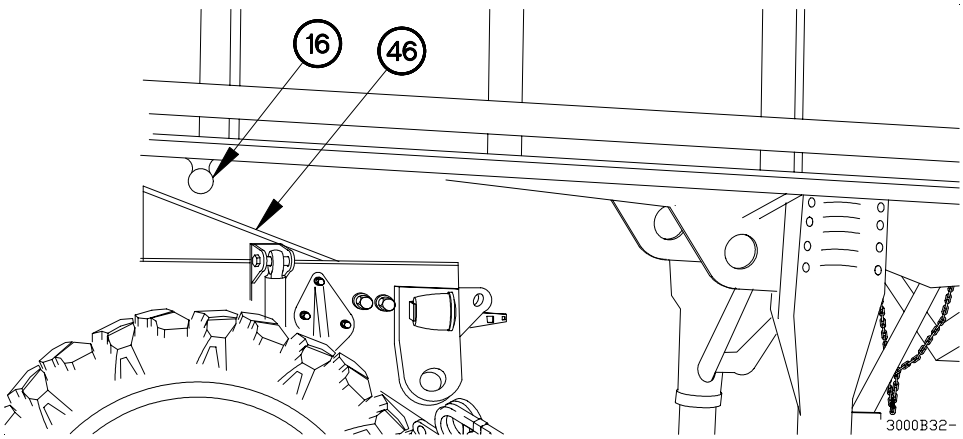


20. Drive M1088A1 Tractor forward approximately 4 ft (1.2 m) and stop.

21. Check clearance between trailer kingpin (16) and rear frame crossmember (46) of M1088A1 Tractor.

22. Adjust trailer height as required for trailer kingpin (16) to clear rear frame crossmember (46).

23. Drive M1088A1 Tractor forward until clear of trailer.



UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

NOTE

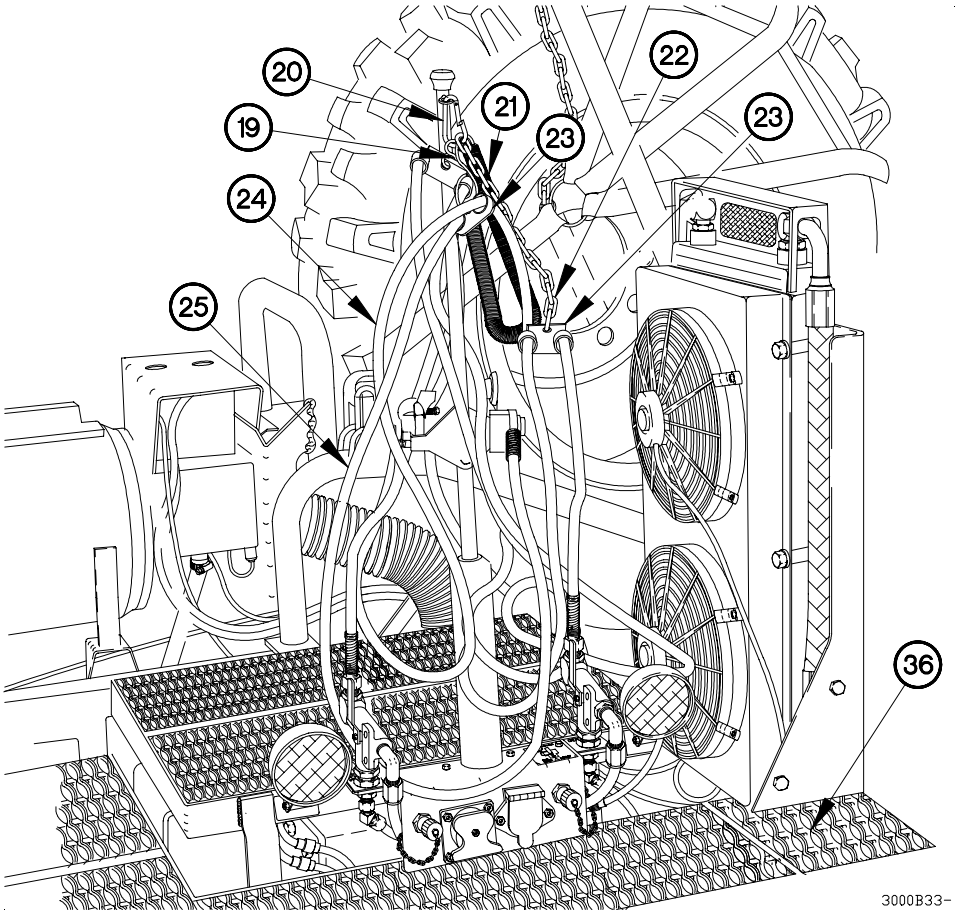
Perform steps 24 through 27 only if clamps were removed for cable extension.

24. Connect chain (22) to air brake hoses (24 and 25) with clamp (23).

25. Connect spring (21) to air brake hoses (24 and 25) with clamp (23).

26. Connect hose clamp hook (19) to snap ring (20).

27. Adjust two clamps (23) as required to prevent air brake hoses (24 and 25) from rubbing on platform (36).



UNCOUPLING M1088A1 TRACTOR FROM TRAILER - Continued

CAUTION

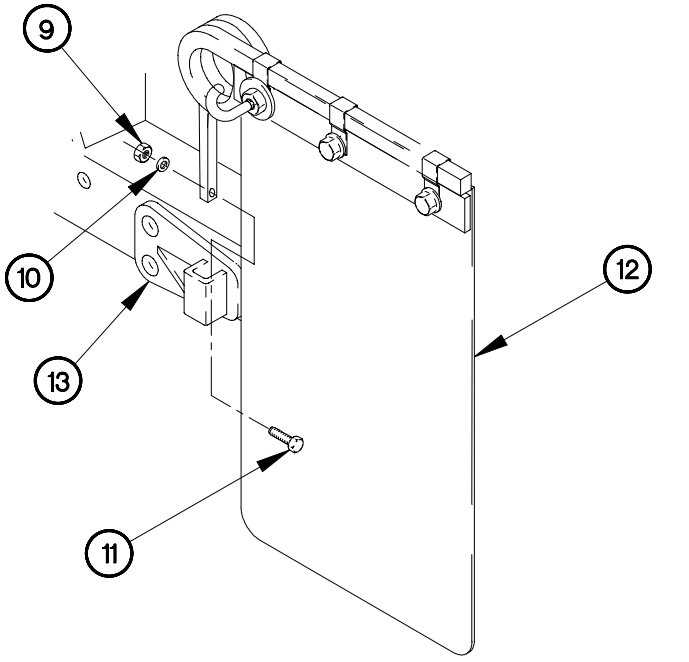
Notify Unit Maintenance to tighten self-locking nut to 7-9 lb-ft (10-12 N·m) as soon as possible. Failure to comply may result in damage to equipment.

NOTE

Perform step 28 if mudflaps were removed and not reinstalled during coupling operations.

Left and right mudflaps are installed the same way. Right side shown.

28. Install mudflap (12) on mounting bracket (13) with screw (11), washer (10), and self-locking nut (9).



END OF OPERATING PROCEDURE

M1088A1 TRACTOR WITH TRAILER OPERATION 0031 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel
Two

Tools/Special Tools
Wheel Chocks

References
STP 55-88M12-5M
FM 90-3
FM 21-305
TB 43-0239
WP 0017 00
WP 0018 00

GENERAL

This work package provides the data and procedures to operate the M1088A1 Tractor safely. Items covered include Moving Tractor With Trailer Forward; Backing Tractor With Trailer; and Braking, Stopping, And Parking Tractor With Trailer.

MOVING TRACTOR WITH TRAILER FORWARD

CAUTION

Do not exceed the 22% (12.4°) grade limitations while operating M1088A1 Tractor.

Failure to comply may result in damage to equipment.

NOTE

Additional information on tractor operations may be obtained from STP 55-88M12-5M.

1. Tire Pressure. Tire pressure for the M1088A1 Tractor is determined by trailer payload, vehicle speed, and the type of terrain to be crossed. Refer to Table 1. M1088A1 Speed and Tire Pressure on Highways, Table 2. M1088A1 Speed and Tire Pressure on Gravel/Dirt, Table 3. M1088A1 Speed and Tire Pressure for Cross Country, or Table 4. M1088A1 Speed and Tire Pressure in Sand/Mud/Snow for correct tire pressure.

2. Towing. When towing trailer, overall length of M1088A1 Tractor must be kept in mind when passing other vehicles. During trailer towing operations, acceleration rate is reduced and stopping distance increased.

3. Turning. When turning corners, trailer wheels will track inside the turning radius of M1088A1 Tractor. To make right or left turn at intersection, drive approximately halfway into intersection and then turn sharply in desired direction. This will prevent trailer from running over curb or from going in lane of oncoming traffic.

M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

MOVING TRACTOR WITH TRAILER FORWARD - Continued

Table 1. M1088A1 Speed and Tire Pressure on Highways.

TRAILER MODEL	PAYLOAD TONS (METRIC TONS)	SPEED (MPH) (KM/H)	TRAILER TIRE PRESSURE (PSI) (KPA)
M127A2C	12.0 (11)	50 (80)	60 (414)
M128A2C	12.0 (11)	50 (80)	60 (414)
M129A2C	12.0 (11)	50 (80)	60 (414)
M172	15.0 (14)	30 (48)	85 (856) (see Note 1)
M172A1	25.0 (23)	30 (48)	100 (690) (see Note 2)
M373A2	8.0 (7)	50 (80)	50 (345)
M373A2C	6.0 (5)	50 (80)	50 (345)
M871	22.5 (20)	55 (88)	75 (517)
M871A1	22.5 (20)	55 (88)	75 (517)
M871A2	22.5 (20)	55 (88)	75 (517)
M967	17.0 (15)	55 (88)	60 (414)
M967A1	17.0 (15)	55 (88)	60 (414)
M969	17.0 (15)	55 (88)	60 (414)
M969A1	17.0 (15)	55 (88)	60 (414)
M970	17.0 (15)	55 (88)	60 (414)
M970A1	17.0 (15)	55 (88)	60 (414)
MILVAN	22.1 (19)	50 (80)	75 (517) (see Note 3)
M270A1	20.0 (19)	45 (72)	75 (517)

M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

MOVING TRACTOR WITH TRAILER FORWARD - Continued

Table 1. M1088A1 Speed and Tire Pressure on Highways - Continued.

TRAILER MODEL	PAYLOAD TONS (METRIC TONS)	SPEED (MPH) (KM/H)	TRAILER TIRE PRESSURE (PSI) (KPA)
M146	8.0 (7)	50 (80)	50 (345)

NOTES: 1. Pressure is for bias tires. For radial tires the pressure is 80 psi.

2. Pressure is for bias tires. For radial tires the pressure is 90 psi.

3. Pressure is for 12-ply tire. For 14-ply tire use 90 psi.

Table 2. M1088A1 Speed and Tire Pressure on Gravel/Dirt.

TRAILER MODEL	PAYLOAD TONS (METRIC TONS)	SPEED (MPH) (KM/H)	TRAILER TIRE PRESSURE (PSI) (KPA)
M127A2C	12.0 (11)	20 (32)	60 (414)
M128A2C	12.0 (11)	20 (32)	60 (414)
M129A2C	12.0 (11)	20 (32)	60 (414)
M172	15.0 (14)	30 (48)	85 (586) (see Note 1)
M172A1	15.0 (14)	30 (48)	100 (690) (see Note 2)
M373A2	6.0 (5)	30 (48)	50 (345)
M373A2C	6.0 (5)	30 (48)	50 (345)
M871	22.5 (20)	20 (32)	75 (517)
M871A1	22.5 (20)	20 (32)	75 (517)
M871A2	22.5 (20)	20 (32)	75 (517)
M967	17.0 (15)	20 (32)	60 (414)

M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

MOVING TRACTOR WITH TRAILER FORWARD - Continued

Table 2. M1088A1 Speed and Tire Pressure on Gravel/Dirt - Continued.

TRAILER MODEL	PAYLOAD TONS (METRIC TONS)	SPEED (MPH) (KM/H)	TRAILER TIRE PRESSURE (PSI) (KPA)
M967A1	17.0 (15)	20 (32)	60 (414)
M969	17.0 (15)	20 (32)	60 (414)
M969A1	17.0 (15)	20 (32)	60 (414)
M970	12.9 (12)	20 (32)	60 (414)
M970A1	12.9 (12)	20 (32)	60 (414)
MILVAN	15.5 (14)	see Note 3	see Note 3
M270A1	12.0 (11)	20 (32)	75 (517)
M146	6.0 (5)	20 (32)	50 (345)

NOTES:
1. Pressure is for bias tires. For radial tires the pressure is 80 psi.
2. Pressure is for bias tires. For radial tires the pressure is 90 psi.
3. Trailer is designed for use on improved roads only. If off-road use is necessary follow guidance in FM 90-3, FM 21-305, and TB 43-0239.

Table 3. M1088A1 Speed and Tire Pressure for Cross Country.

TRAILER MODEL	PAYLOAD TONS (METRIC TONS)	SPEED (MPH) (KM/H)	TRAILER TIRE PRESSURE (PSI) (KPA)
M127A2C	12.0 (11)	20 (32)	40 (276)
M128A2C	12.0 (11)	20 (32)	40 (276)
M129A2C	12.0 (11)	20 (32)	40 (276)

M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

MOVING TRACTOR WITH TRAILER FORWARD - Continued

Table 3. M1088A1 Speed and Tire Pressure for Cross Country - Continued.

TRAILER MODEL	PAYLOAD TONS (METRIC TONS)	SPEED (MPH) (KM/H)	TRAILER TIRE PRESSURE (PSI) (KPA)
M172	15.0 (14)	10 (16)	45 (310)
M172A1	15.0 (14)	10 (16)	60 (414)
M373A2	6.0 (5)	20 (32)	30 (207)
M373A2C	6.0 (5)	20 (32)	30 (207)
M871	22.5 (20)	10 (16)	35 (241)
M871A1	22.5 (20)	10 (16)	35 (241)
M871A2	22.5 (20)	10 (16)	40 (276)
M967	17.0 (15)	10 (16)	40 (276)
M967A1	17.0 (15)	10 (16)	40 (276)
M969	17.0 (15)	10 (16)	40 (276)
M969A1	17.0 (15)	10 (16)	40 (276)
M970	12.9 (12)	10 (16)	40 (276)
M970A1	12.9 (12)	10 (16)	40 (276)
MILVAN	15.5 (14)	see Note 1	see Note 1
M270A1	12.0 (11)	10 (16)	40 (276)
M146	6.0 (5)	30 (48)	35 (241)

NOTES: 1. Trailer is designed for use on improved roads only. If off-road use is necessary follow guidance in FM 90-3, FM 21-305, and TB 43-0239.

M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

MOVING TRACTOR WITH TRAILER FORWARD - Continued

Table 4. M1088A1 Speed and Tire Pressure in Sand/Mud/Snow.

TRAILER MODEL	PAYLOAD TONS (METRIC TONS)	SPEED (MPH) (KM/H)	TRAILER TIRE PRESSURE (PSI) (KPA)
M127A2C	12.0 (11)	10 (16)	40 (276)
M128A2C	12.0 (11)	10 (16)	40 (276)
M129A2C	12.0 (11)	10 (16)	40 (276)
M172	15.0 (14)	10 (16)	35 (241)
M172A1	15.0 (14)	10 (16)	45 (310)
M373A2	6.0 (5)	15 (24)	20 (138)
M373A2C	6.0 (5)	15 (24)	20 (138)
M871	22.5 (20)	10 (16)	35 (241)
M871A1	22.5 (20)	10 (16)	35 (241)
M871A2	22.5 (20)	10 (16)	40 (276)
M967	17.0 (15)	10 (16)	40 (276)
M967A1	17.0 (15)	10 (16)	40 (276)
M969	17.0 (15)	10 (16)	40 (276)
M969A1	17.0 (15)	10 (16)	40 (276)
M970	12.9 (12)	10 (16)	40 (276)
M970A1	12.9 (12)	10 (16)	40 (276)
MILVAN	15.5 (14)	see Note 1	see Note 1

M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

MOVING TRACTOR WITH TRAILER FORWARD - Continued

Table 4. M1088A1 Speed and Tire Pressure in Sand/Mud/Snow.

M270A1	12.0 (11)	10 (16)	40 (276)
M146	6.0 (5)	10 (16)	15 (103)

NOTES: 1. Trailer is designed for use on improved roads only. If off-road use is necessary follow guidance in FM 90-3, FM 21-305, and TB 43-0239.

BACKING TRACTOR WITH TRAILER

1. Adjust side mirrors for best visibility (WP 0017 00).

WARNING

Position of assistant must be known at all times. Do not allow anyone to stand between tractor and trailer, behind trailer, or under trailer neck during coupling of tractor to trailer. Failure to comply may result in serious injury or death to personnel or damage to equipment.

NOTE

Use the aid of an assistant as a ground guide when backing M1088A1 Tractor.

2. Back up slowly and pay close attention to signals of ground guide.

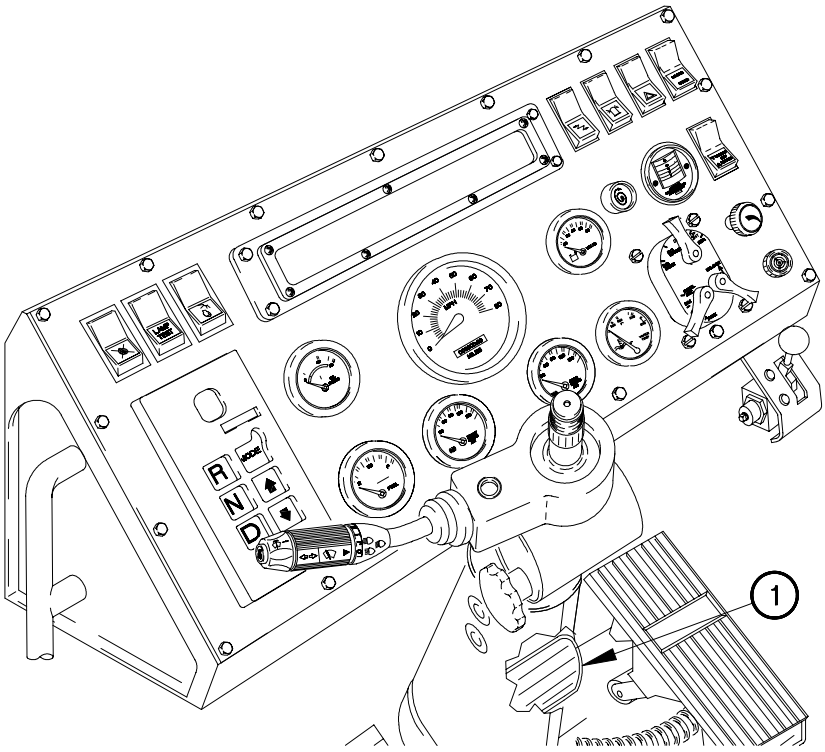
M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

BRAKING, STOPPING, AND PARKING TRACTOR WITH TRAILER

NOTE

During normal operation, brakes of M1088A1 Tractor and attached trailer are both applied when brake pedal is pressed.

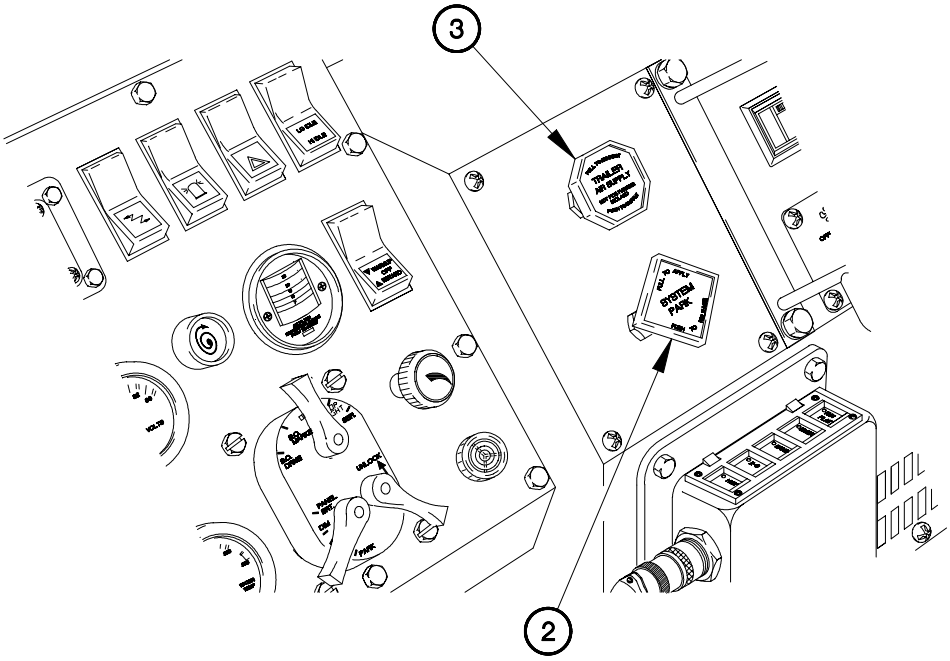
1. Press brake pedal (1) gradually and smoothly, keeping in mind that braking and stopping distance increases when trailer is connected.



M1088A1 TRACTOR WITH TRAILER OPERATION - Continued 0031 00

BRAKING, STOPPING, AND PARKING TRACTOR WITH TRAILER - Continued

2. Pull out SYSTEM PARK control (2).
3. Pull out TRAILER AIR SUPPLY control (3).
4. Shut down engine (WP 0018 00).
5. Chock wheels (WP 0018 00).



3100B02-

END OF OPERATING PROCEDURE

M1089A1 STIFFLEGS OPERATION 0032 00

INITIAL SETUP:

Maintenance level
Operator

Personnel Required
Two

Tools/Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)
Goggles, Industrial (Item 25, Table 2, WP 0112 00)

References
WP 0018 00

GENERAL

This work package provides the data and procedures for safely operating the stiff legs on the M1089A1 Wrecker. Items covered include Preparing M1089A1 To Operate Stifflegs, Lowering Stifflegs, Raising Stifflegs, and Shut Down M1089A1.

PREPARE M1089A1 TO OPERATE STIFFLEGS

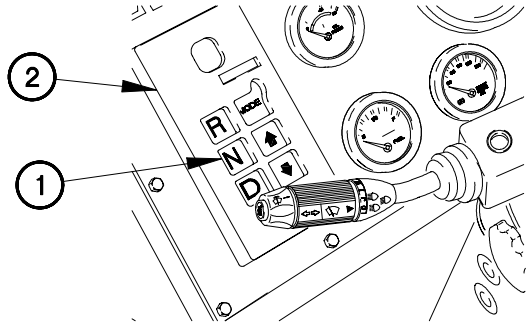
CAUTION

Ensure that hydraulic shutoff valve and return valve are open before operating hydraulic equipment. Failure to comply may result in damage to equipment.

NOTE

Stifflegs are used to stabilize vehicle when 30K winches or Material Handling Crane (MHC) are operated.

1. Chock wheels (WP 0018 00).
2. Start engine (WP 0018 00).
3. Press N (Neutral) button (1) on WTEC III TPSS (2).



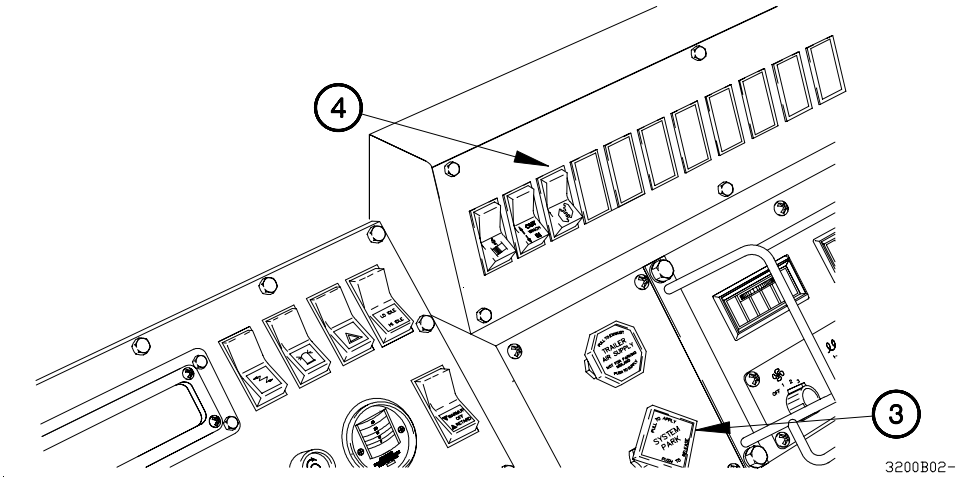
3200B01-

M1089A1 STIFFLEGS OPERATION - Continued 0032 00

PREPARE M1089A1 TO OPERATE STIFFLEGS - Continued

4. Pull out SYSTEM PARK control (3).

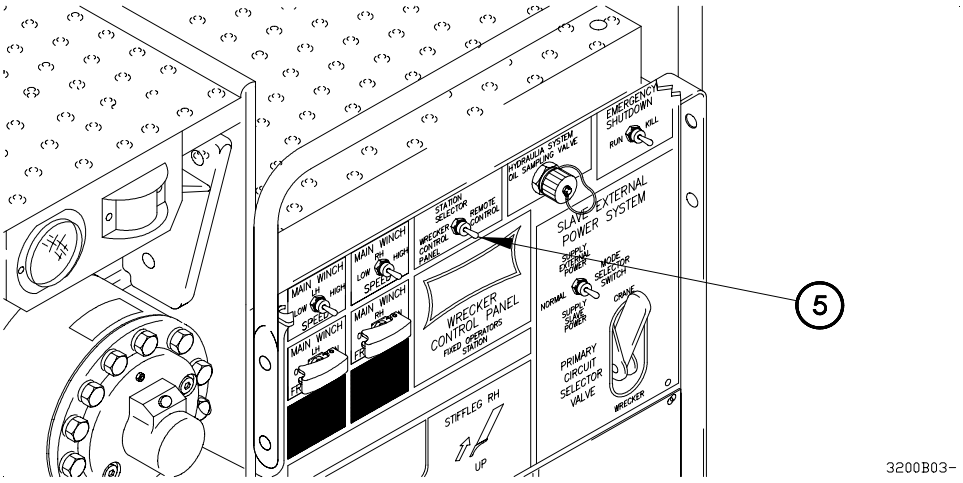
5. Position PTO switch (4) to on.



WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Position STATION SELECTOR switch (5) to WRECKER CONTROL PANEL.



LOWERING STIFFLEGS

CAUTION

Mudflaps must be removed from brackets before stifflegs are lowered. Failure to comply may result in damage to equipment.

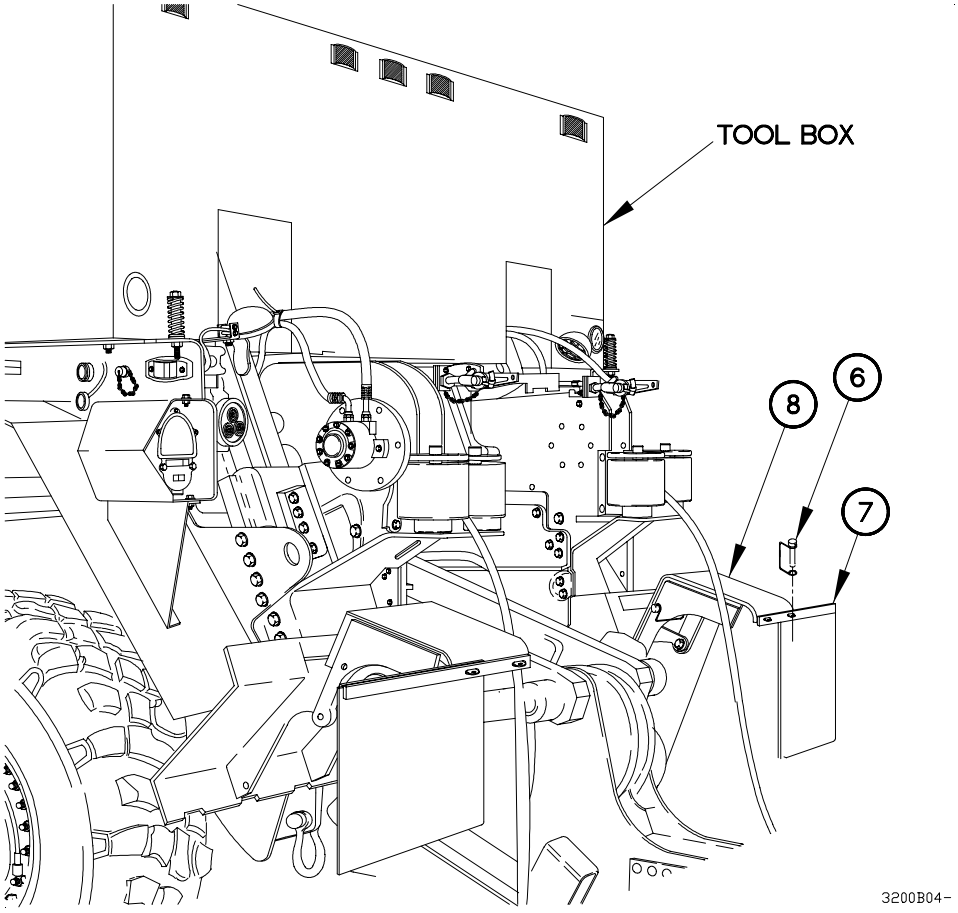
NOTE

Stifflegs are equipped with sandshoes used during operations on paved surfaces and sand. When operating on off-road terrain, sandshoes are folded up and blade portion of stiffleg anchors M1089A1.

Perform steps 1 through 4 to lower sandshoes.

1. Remove two lock pins (6) and mudflap (7) from sandshoe (8).

2. Stow two lock pins (6) and mudflap (7) in tool box.

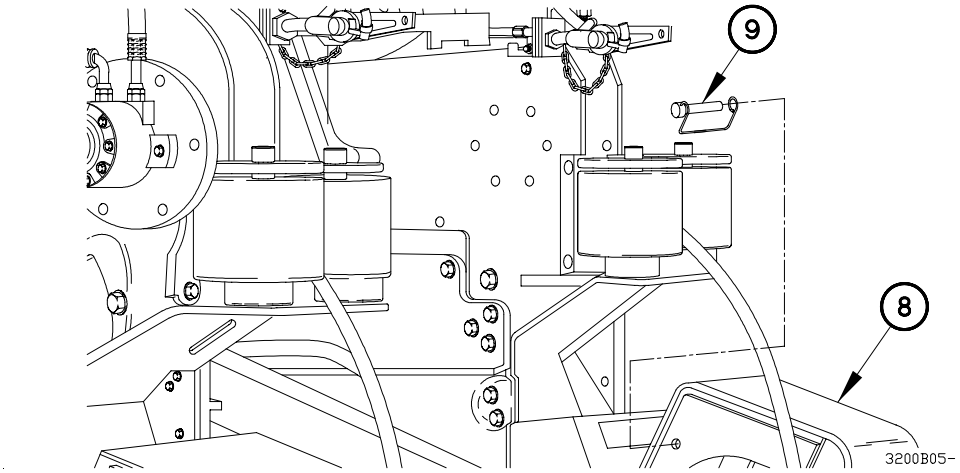


LOWERING STIFFLEGS - Continued

WARNING

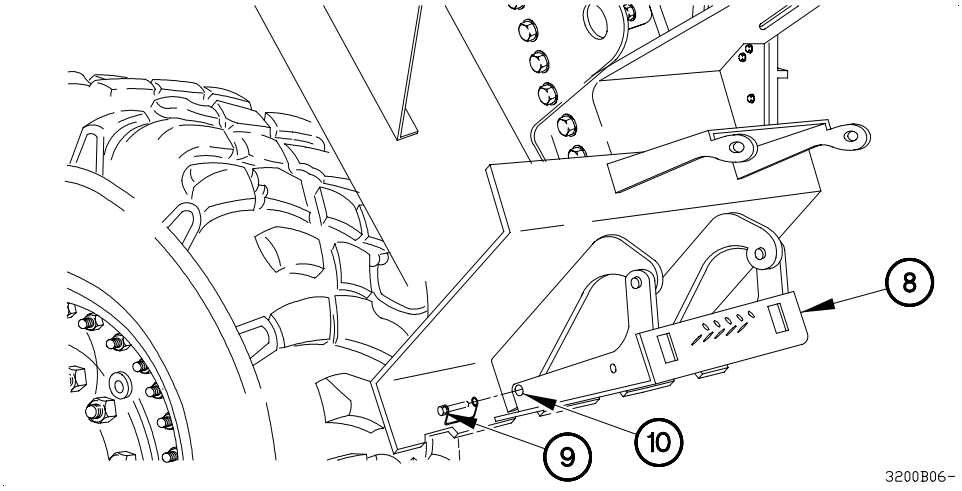
Sandshoe weighs approximately 70 lbs (32 kgs). Use the aid of an assistant to lower/raise sandshoe. Failure to comply may result in injury to personnel or damage to equipment.

3. Remove two lock pins (9) and lower sandshoe (8).



4. Position sandshoe (8) to align holes (10) and install lock pins (9).

5. Perform steps 1 through 4 for other stiffleg.



M1089A1 STIFFLEGS OPERATION - Continued 0032 00

LOWERING STIFFLEGS - Continued

WARNING

Keep hands and feet clear of stifflegs during operation. Failure to comply may result in serious injury to personnel.

Do not raise vehicle tires off ground with stifflegs. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

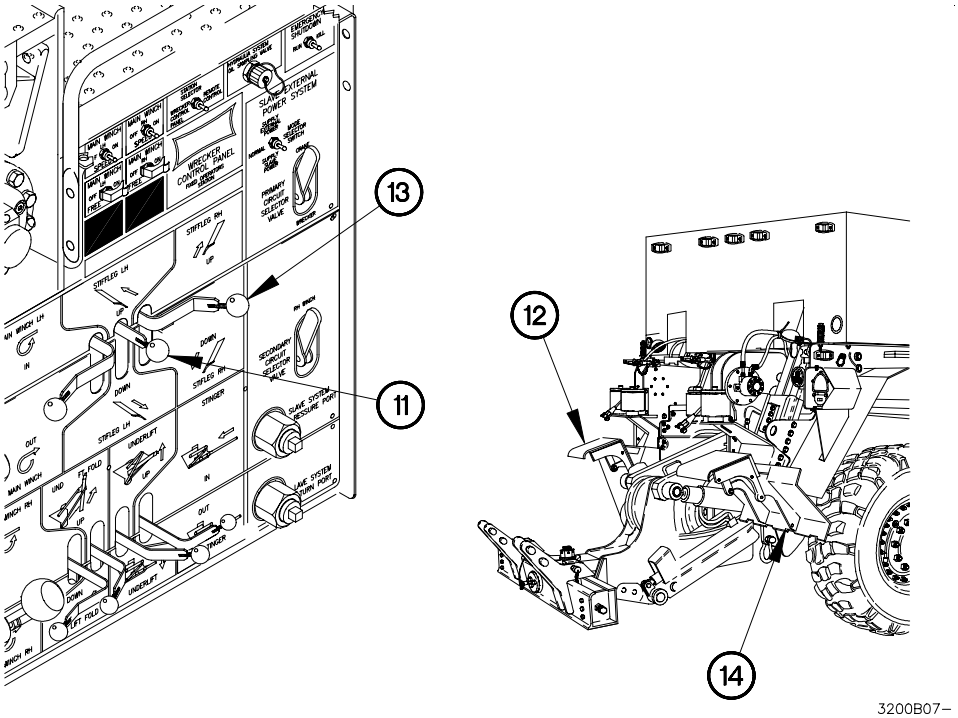
Stifflegs must be positioned so that vehicle is level from side to side. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

NOTE

When using stifflegs with sandshoes up, blade portion should be allowed to penetrate ground until downward travel of stiffleg stops.

6. Position STIFFLEG LH (left hand) lever (11) to DOWN to lower stiffleg (12).

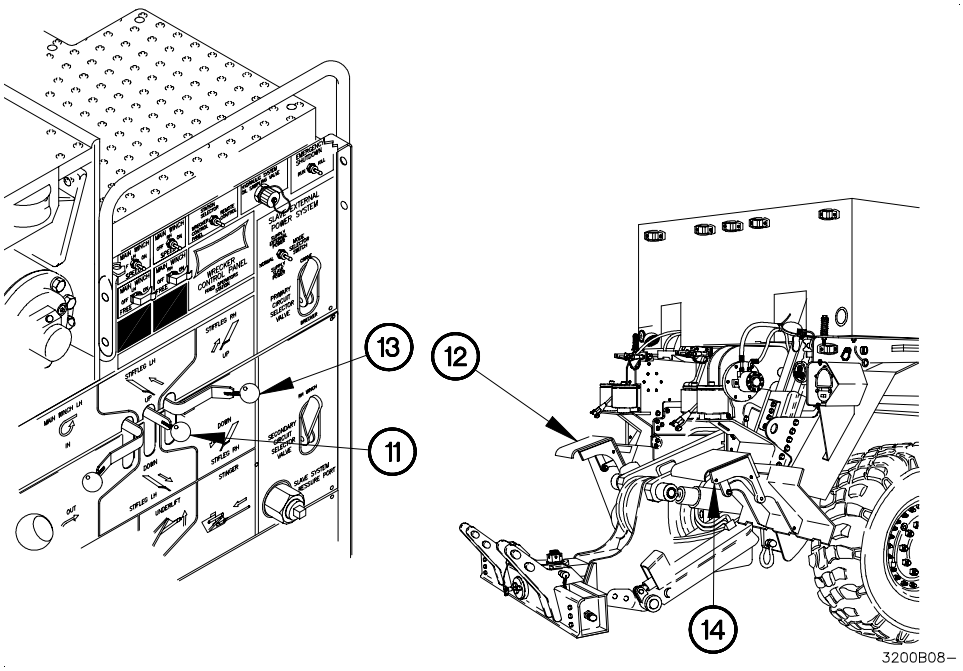
7. Position STIFFLEG RH (right hand) lever (13) to DOWN to lower stiffleg (14).



M1089A1 STIFFLEGS OPERATION - Continued 0032 00

RAISING STIFFLEGS

1. Position STIFFLEG RH (right hand) lever (13) to UP until stiffleg (14) is fully raised.
2. Position STIFFLEG LH (left hand) lever (11) to UP until stiffleg (12) is fully raised.



RAISING STIFFLEGS - Continued

WARNING

Sandshoe weighs approximately 70 lbs (32 kgs). Use the aid of an assistant to lower/raise sandshoe. Failure to comply may result in injury to personnel.

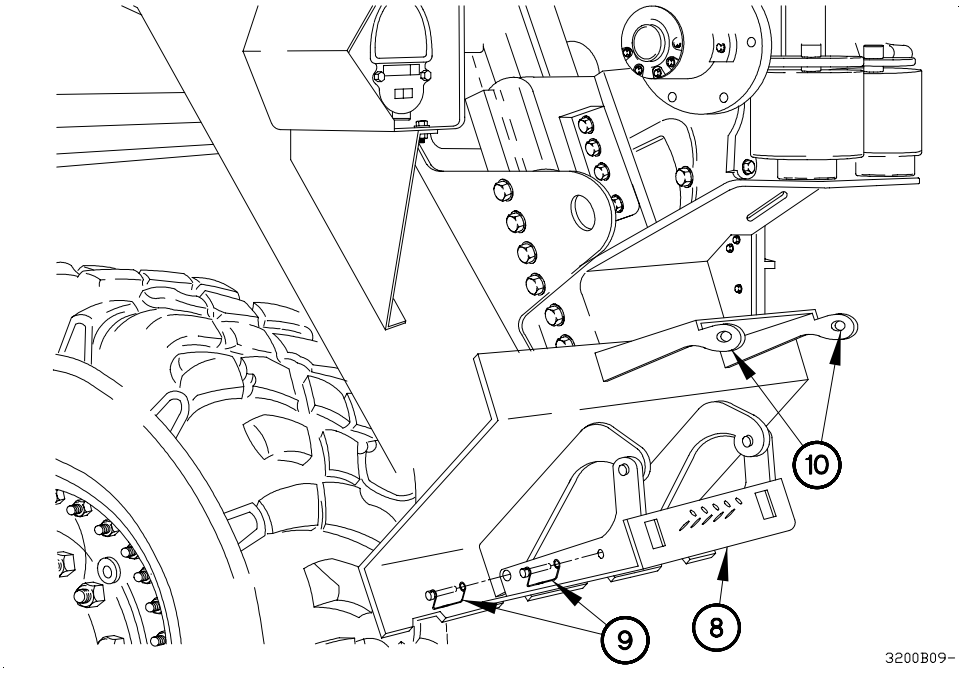
NOTE

Perform steps 3 through 5 if sandshoes were used.

Steps 3 and 4 require the aid of an assistant.

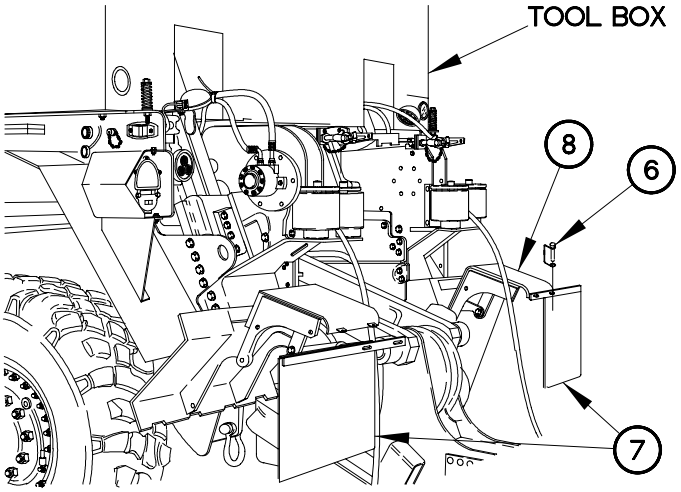
3. Remove two lock pins (9) and raise sandshoe (8).

4. Position sandshoe (8) to align holes (10) and install lock pins (9).



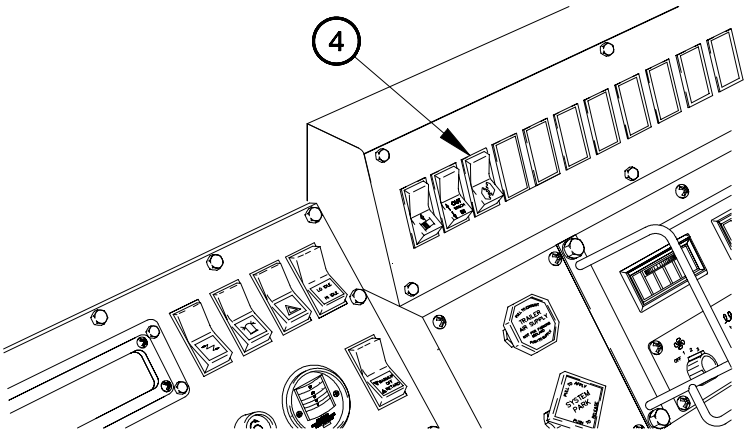
RAISING STIFFLEGS - Continued

5. Remove two mudflaps (7) and four lock pins (6) from tool box.
6. Install mudflap (7) on sandshoe (8) with two lock pins (6).
7. Perform steps 3, 4, and 6 for other stiffleg.



SHUT DOWN M1089A1

1. Position PTO switch (4) to off.
2. Shut down engine (WP 0018 00).



END OF OPERATING PROCEDURE

30K WINCH OPERATION 0033 00

INITIAL SETUP:

Maintenance Level
Operator

Tool/Special Tool
Gloves, Leather (NSN 8415-00634-4658 WP 0113 00)
Goggles, Industrial (Item 24, Table 2, WP 0112 00)
Socket Wrench (Item 52, Table 2 WP 0112 00)

References
FM 20-22
WP 0018 00
WP 0032 00
WP 0035 00
WP 0069 00

GENERAL

This work package provides the data and procedures for safely operating the 30K winches on the M1089A1 wrecker. Items covered include 30K Winch Operation With Load and 30K Winch Operation Without Load.

30K WINCH OPERATION WITH LOAD

WARNING

Ensure there are at least five wraps of cable on hoist drum at all times. Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

Ensure hydraulic shutoff valve and return valve are open before operating hydraulic equipment. Failure to comply may result in damage to equipment.

1. Start engine (WP 0018 00).

30K WINCH OPERATION WITH LOAD - Continued

2. Position vehicle so the pull is as straight as possible and the 30K winch pull capacity is adequate for equipment to be recovered. Refer to FM 20-22 and Table 1.

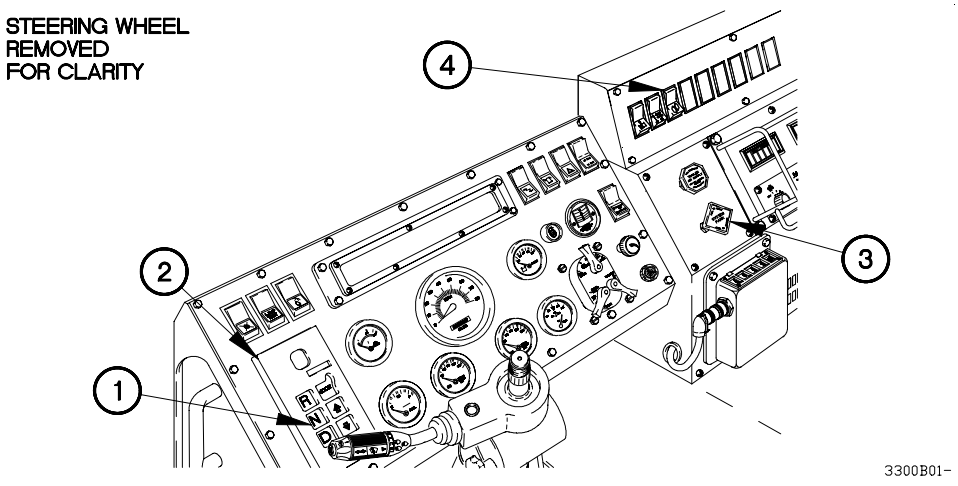
Table 1. 30K Winch Pull Capacity

Cable Layer	Maximum Line Pull (cable reeled in at high speed)	Maximum Line Pull (cable reeled in at low speed)
Bottom Layer (five wraps minimum)	15,000 lbs (66,720 N)	30,000 lbs (133,440 N)
2nd Layer	12,720 lbs (56,579 N)	25,440 lbs (113,157 N)
3rd Layer	11,045 lbs (49,128 N)	22,090 lbs (98,256 N)
4th Layer	9,758 lbs (43,404 N)	19,515 lbs (86,803 N)
5th Layer	8,740 lbs (38,876 N)	17,480 lbs (77,751 N)
Top Layer	7,915 lbs (35,206 N)	15,830 lbs (70,412 N)

3. Press N (Neutral) button (1) on WTEC III TPSS (2).

4. Pull out SYSTEM PARK control (3).

5. Position PTO switch (4) to on.



30K WINCH OPERATION WITH LOAD - Continued

WARNING

Goggles must be worn while operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

NOTE

LH and RH 30K winch controls operate the same way. RH 30K winch controls are shown.

6. Connect WRECKER REMOTE CONTROL (WP 0035 00).

7. Position STATION SELECTOR switch (5) to REMOTE CONTROL.

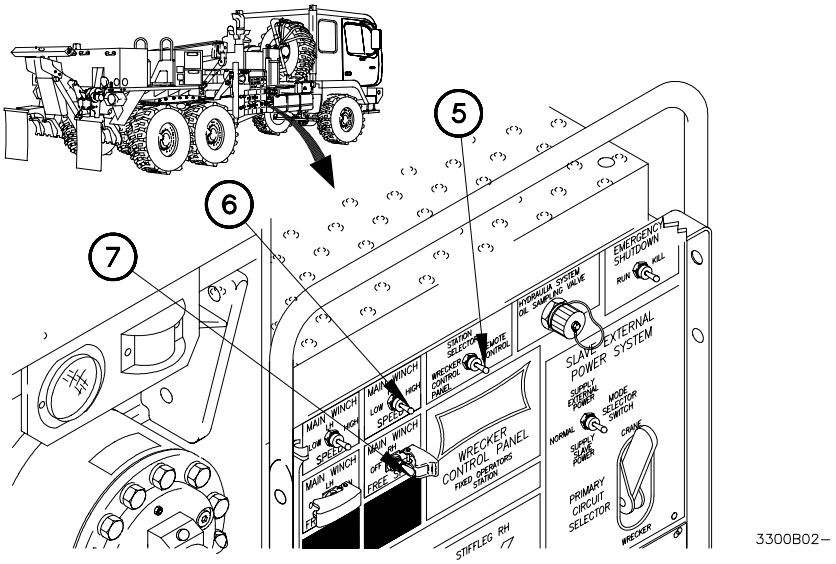
8. Position MAIN WINCH RH SPEED switch (6) to LOW.

CAUTION

MAIN WINCH RH FREE SPOOL switch must be in the OFF position while paying out cable. Failure to comply may result in damage to equipment.

9. Position MAIN WINCH RH FREE SPOOL switch (7) to OFF.

10. Lower stifflegs (WP 0032 00).

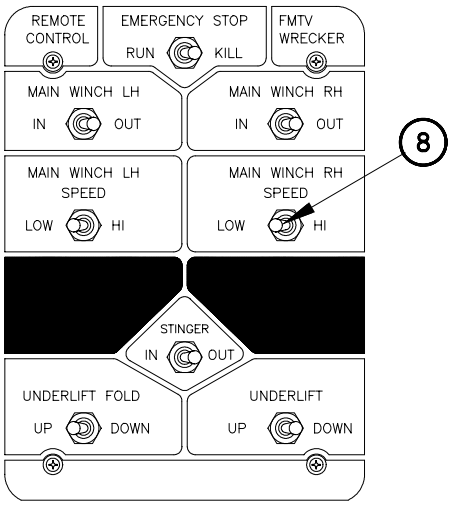


30K WINCH OPERATION WITH LOAD - Continued

CAUTION

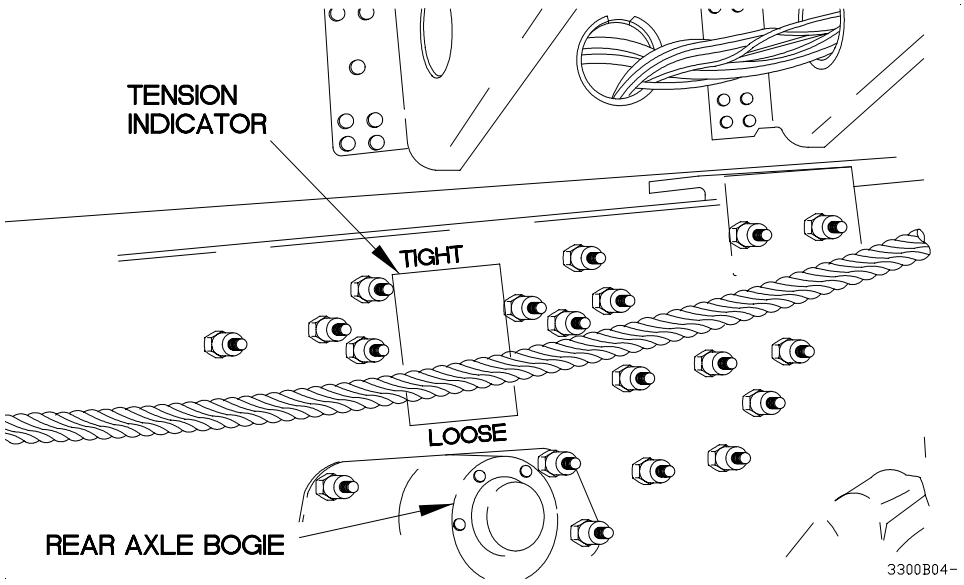
MAIN WINCH RH SPEED switch must be in LOW position during payout of the first five wraps of cable. Failure to comply may result in damage to equipment.

11. Position MAIN WINCH RH SPEED switch (8) to LOW.



3300B03-

12. Remove any dirt and mud from tension indicator.



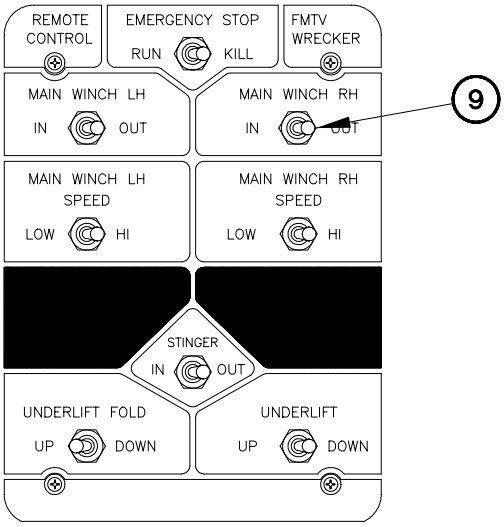
3300B04-

30K WINCH OPERATION WITH LOAD - Continued

CAUTION

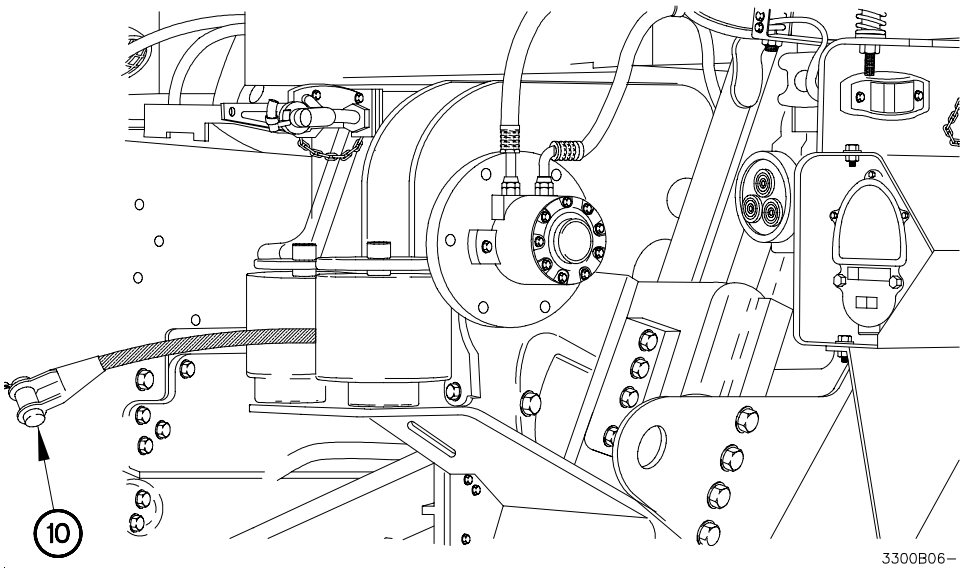
Cable tension must be checked prior to use. Some slack in the cable is desired. Excessive tension can cause damage to power fairlead and cable. Failure to comply may result in damage to equipment.

13. Position MAIN WINCH RH switch (9) to OUT.



3300B05–

14. Pay out cable (10) for approximately 20 seconds.



3300B06–

30K WINCH OPERATION WITH LOAD - Continued

WARNING

Wear heavy leather-palmed work gloves when handling cable. Cables can become frayed or contain broken wires. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury to personnel.

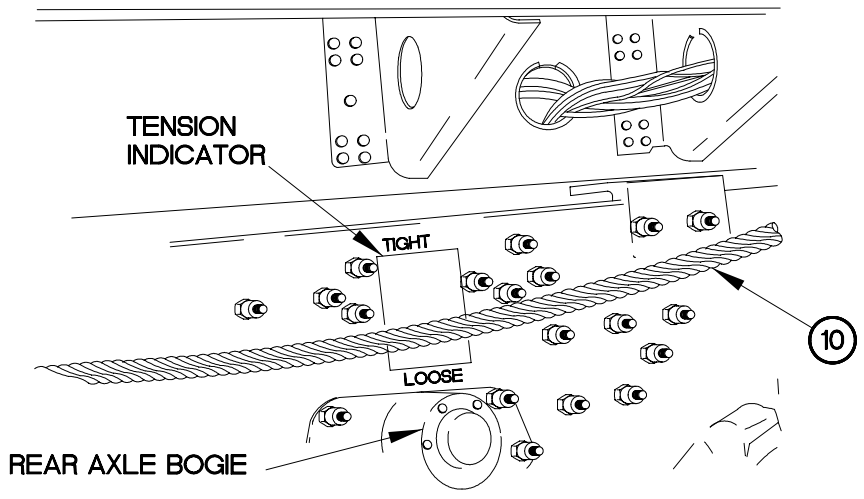
NOTE

If the power fairlead does not pay out the cable at the same rate of speed as the 30K winch, cable will hang loose.

Operator should stand approximately four feet away from the rear axle bogie to view the tension indicator during pay out.

15. During pay out, check that cable (10) passes through tension indicator, directly over rear axle bogie.

    a. If cable (10) is too loose and hangs below loose mark on tension indicator, stop pay out and perform steps 16, 18, and 19.

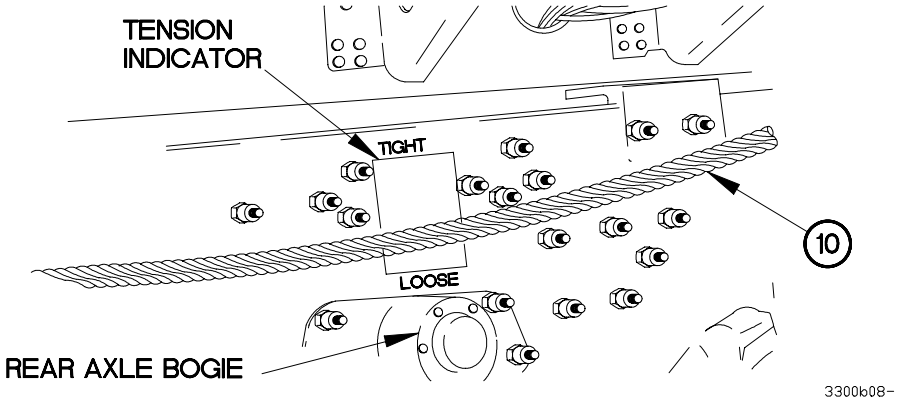


3300B07-

30K WINCH OPERATION WITH LOAD - Continued

b. If cable (10) is too tight and is above tight mark on tension indicator, stop pay out and perform steps 17 through 19.

c. If cable (10) passes between loose and tight marks on tension indicator, proceed to step 21.

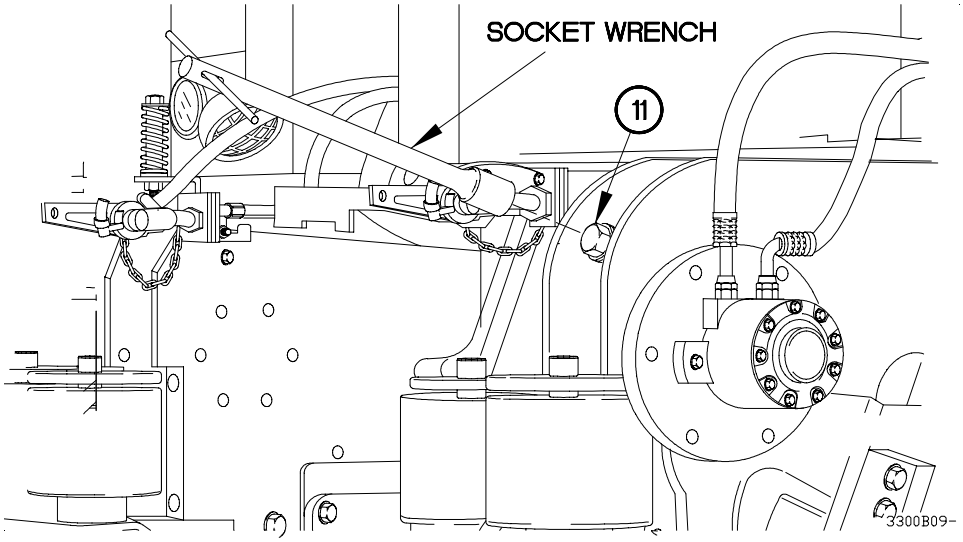


CAUTION

Power fairlead tension bolt must not be overtightened. Overtightening power fairlead tension bolt will put strain on cable, winch motor, and power fairlead. Failure to comply may result in damage to equipment.

16. Turn tension screw (11) to the right one complete turn.

17. Turn tension screw (11) to the left one complete turn.



30K WINCH OPERATION WITH LOAD - Continued

CAUTION

Ensure cable is clear of crossbar and sandshoe when reeling in cable. The cable socket may catch on crossbar or sandshoe. Failure to comply may result in damage to equipment.

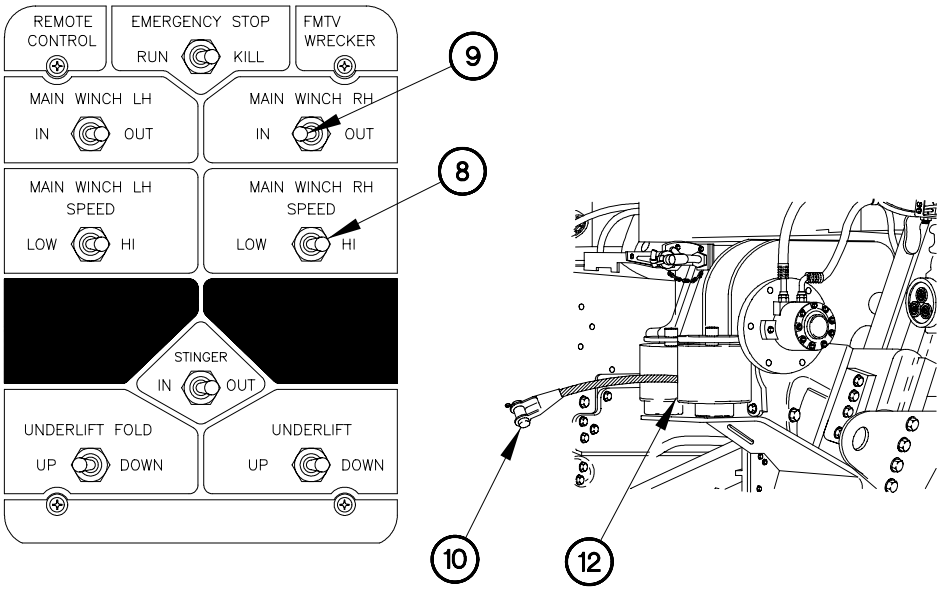
18. Position MAIN WINCH RH switch (9) to IN and reel in cable (10) until approximately 12 inches of cable is hanging from the power fairlead (12).

19. Repeat steps 14 and 15.

NOTE

After the first five wraps of cable have been payed out, positioning MAIN WINCH RH SPEED switch to HI (high) position is allowed.

20. Position MAIN WINCH RH SPEED switch (8) to HI (high).



3300B10–

30K WINCH OPERATION WITH LOAD - Continued

NOTE

If weight of equipment to be recovered exceeds 15 tons (14 metric tons), refer to FM 20-22 for operational requirements and WP 0069 00 for snatch block installation/removal.

21. Position MAIN WINCH RH switch (9) to OUT and pay out cable (10) to vehicle to be recovered.

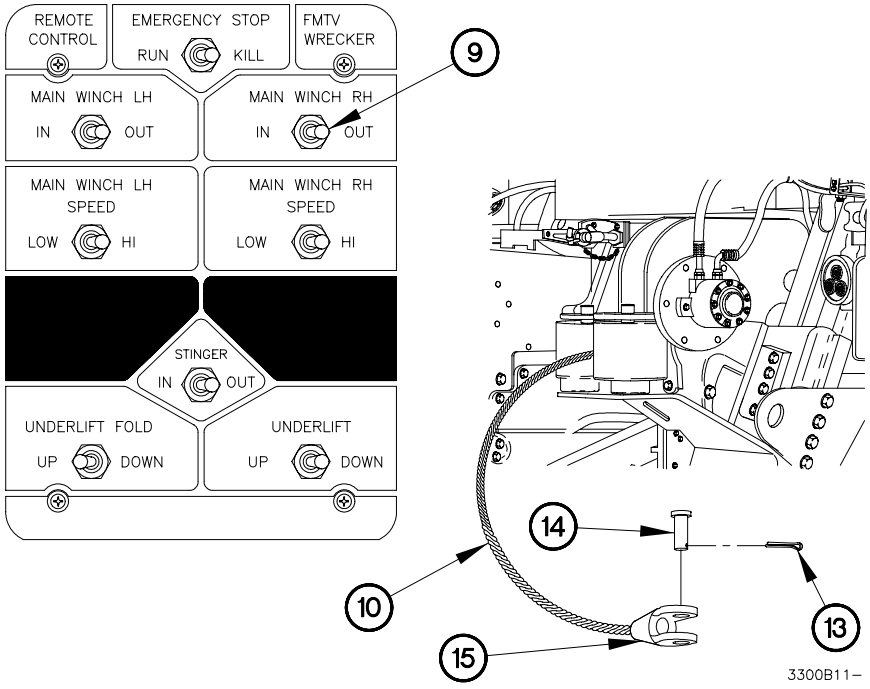
NOTE

Perform steps 22 through 31 when recovering a vehicle.

22. Remove cotter pin (13) and pin (14) from socket (15).

23. Connect socket (15) to vehicle to be recovered.

24. Install pin (14) and cotter pin (13) in socket (15).



30K WINCH OPERATION WITH LOAD - Continued

WARNING

Keep all personnel clear of area when tension is on cable. Failure to comply may result in serious injury or death to personnel.

CAUTION

Do not attempt to pull load greater than 30K winch capacity. Failure to comply may result in damage to equipment.

Ensure MAIN WINCH RH SPEED is in the LOW position when not in use. Failure to comply may result in damage to equipment.

25. Position MAIN WINCH RH SPEED switch (8) to LOW.

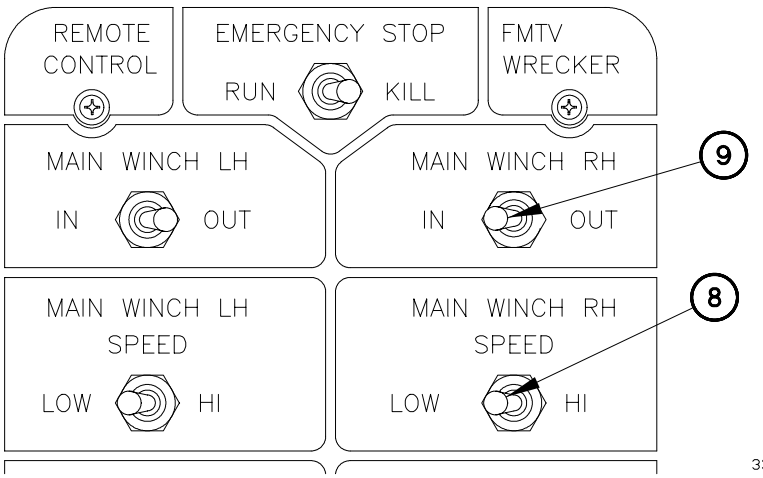
WARNING

Slowly take out slack in cable before recovering equipment. Failure to comply may result in serious injury or death to personnel.

CAUTION

Ensure that recovered cable winds level. If it does not, pay out cable and repeat recovery. Failure to comply may result in damage to equipment.

26. Position MAIN WINCH RH switch (9) to IN.



30K WINCH OPERATION WITH LOAD - Continued

27. Reel in cable (10) until recovered vehicle is within approximately 10 feet (3.1 m) of vehicle.

WARNING

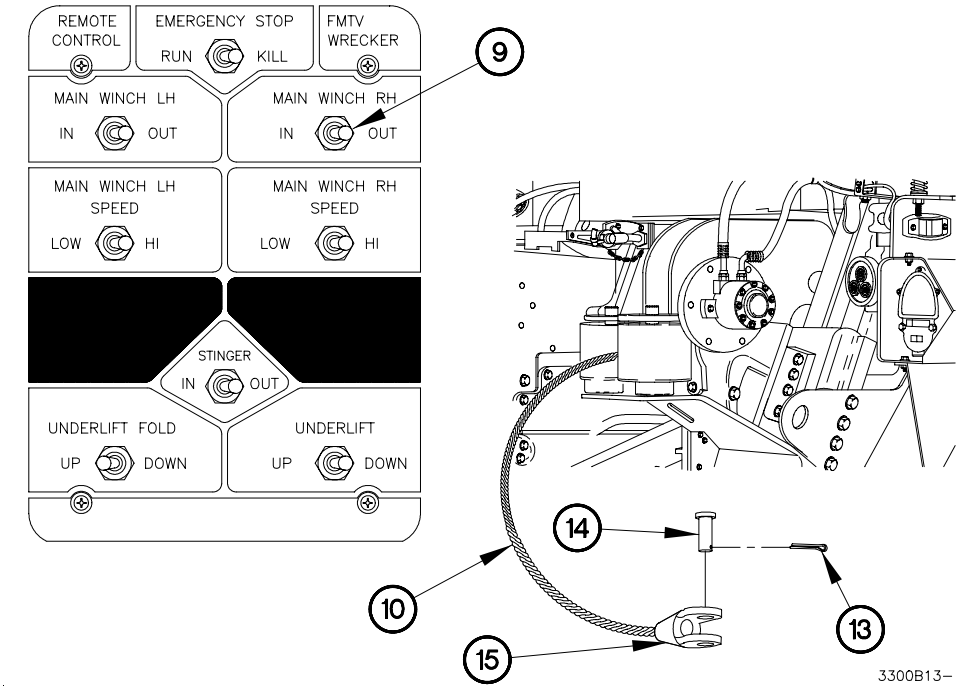
Use extreme caution when disconnecting cable. Cable may spin rapidly to the left approximately 1 1/2 turns when disconnected. Failure to comply may result in serious injury or death to personnel.

28. Position MAIN WINCH RH switch (9) to OUT to pay out cable (10) until there is enough slack to disconnect socket (15) from recovered vehicle.

29. Remove cotter pin (13) and pin (14) from socket (15).

30. Detach socket (15) from recovered vehicle.

31. Install pin (14) and cotter pin (13) in socket (15).



30K WINCH OPERATION WITH LOAD - Continued

WARNING

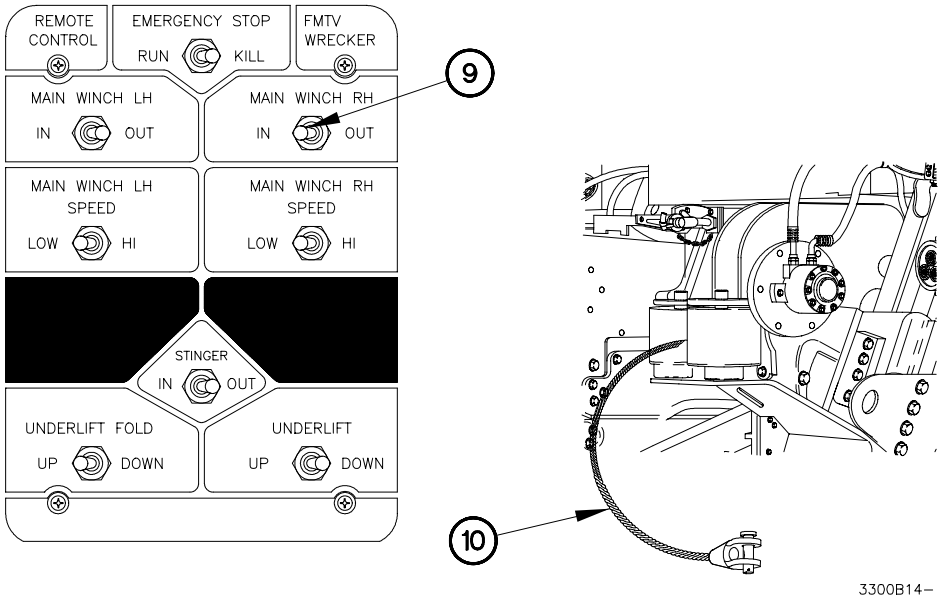
Ensure there are at least five wraps of cable on hoist drum at all times. Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

When reeling in cable, do not allow end of cable to contact rear rollers. Failure to comply may result in damage to equipment.

32. Position MAIN WINCH RH switch (9) to IN.

33. Reel in cable (10) until cable is fully recovered.



30K WINCH OPERATION - Continued 0033 00

30K WINCH OPERATION WITH LOAD - Continued

CAUTION

Ensure there are no gaps between layers of cable. Gaps between cable layers indicate loose winding. Failure to comply may result in damage to equipment.

NOTE

Perform steps 35 through 38 if cable is not winding properly.

34. Position MAIN WINCH RH switch (9) to OUT.

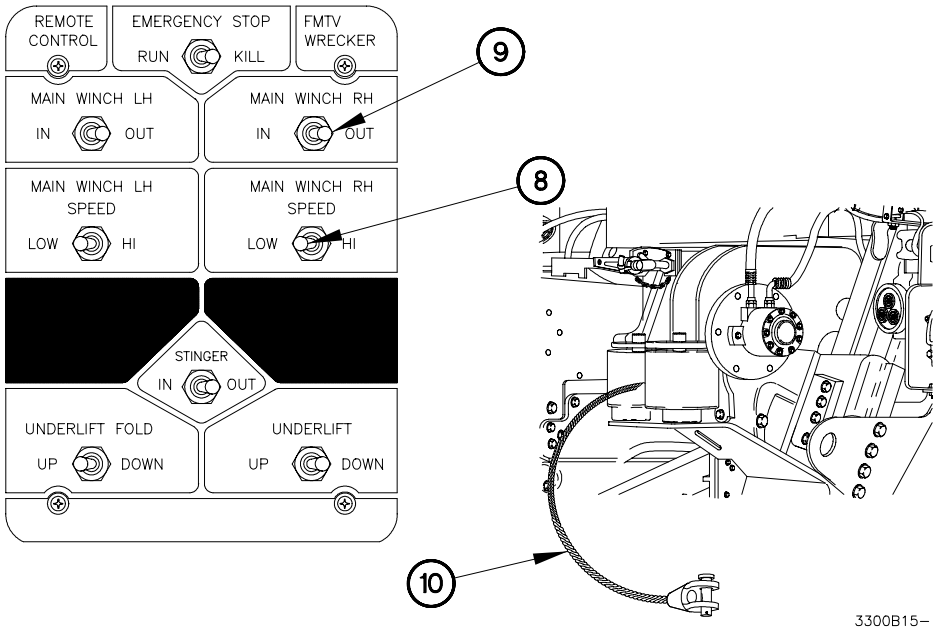
35. Pay out cable (10) until cable on 30K winch drum has clean wind.

CAUTION

Do not dead-end cable into rear rollers. Failure to comply may result in damage to equipment.

36. Position MAIN WINCH RH SPEED switch (8) to LOW.

37. Continue steps 32 through 36 until cable (10) is fully recovered.



30K WINCH OPERATION WITH LOAD - Continued

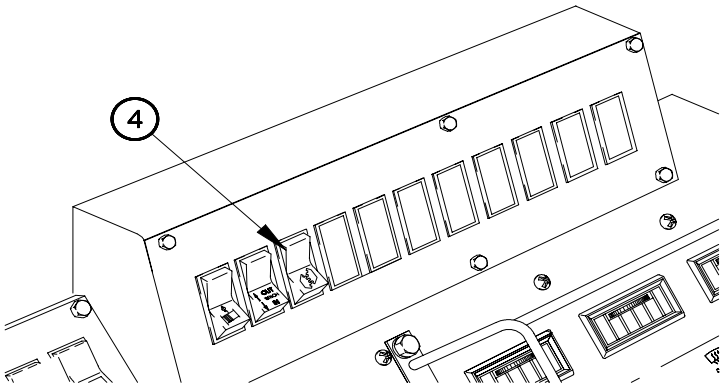
38. Raise stifflegs (WP 0032 00).

39. Position PTO switch (4) to off.

40. Shut down engine (WP 0018 00).

41. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

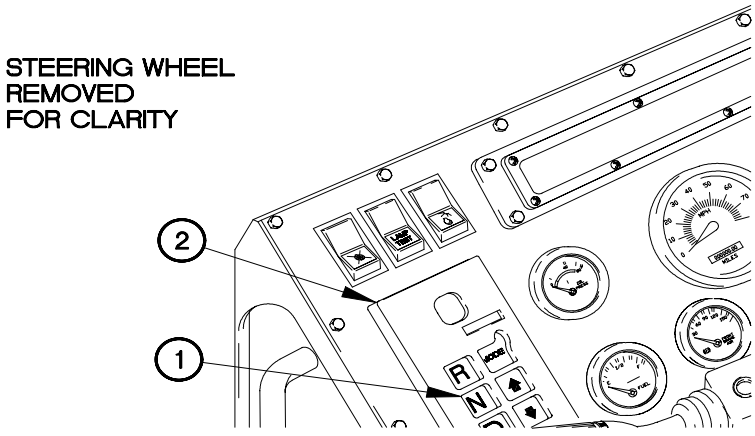
42. Notify Unit Maintenance to clean and lubricate 30K winch cable.



3300B16-

30K WINCH OPERATION WITHOUT LOAD

1. Press N (Neutral) button (1) on WTEC III TPSS (2).

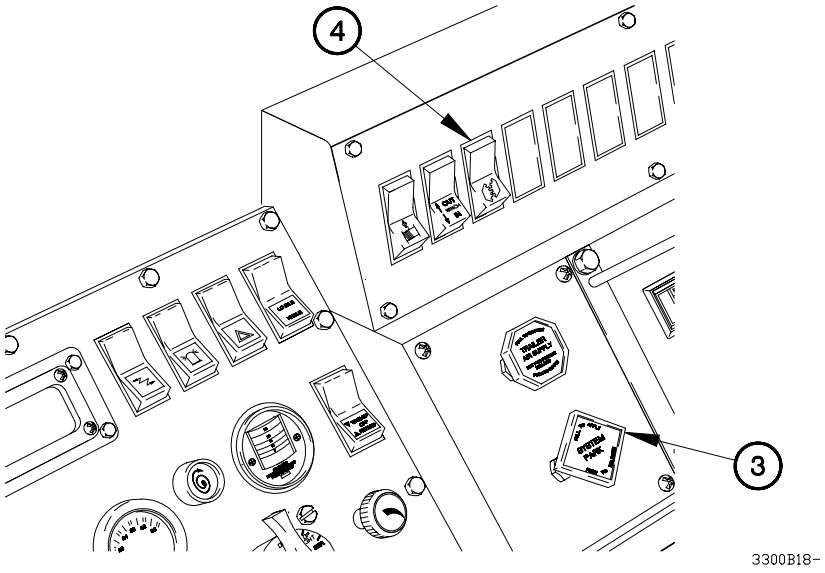


3300B17-

30K WINCH OPERATION WITHOUT LOAD - Continued

2. Pull out SYSTEM PARK control (3).

3. Position PTO switch (4) to on.



WARNING

Goggles must be worn while operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

NOTE

LH and RH 30K winch controls operate the same way. RH 30K winch controls shown.

4. Connect WRECKER REMOTE CONTROL (WP 0035 00).

30K WINCH OPERATION - Continued 0033 00

30K WINCH OPERATION WITHOUT LOAD - Continued

5. Position STATION SELECTOR switch (5) to REMOTE CONTROL.

6. Position MAIN WINCH RH SPEED switch (6) to LOW.

CAUTION

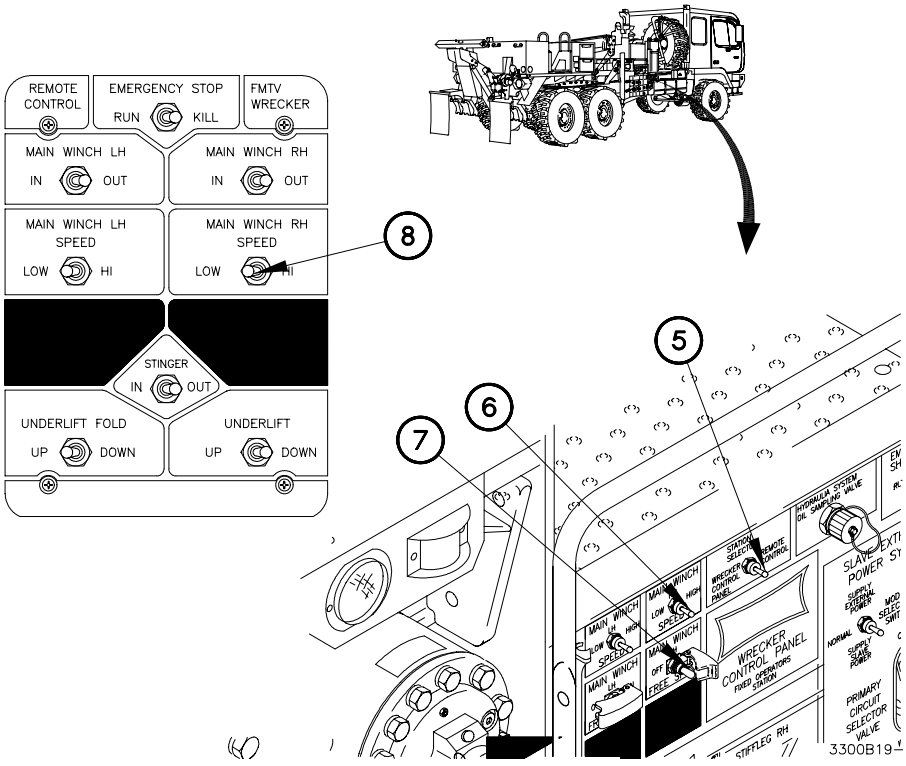
MAIN WINCH RH FREE SPOOL switch must be in the OFF position while paying out cable. Failure to comply may result in damage to equipment.

7. Position MAIN WINCH RH FREE SPOOL switch (7) to OFF.

CAUTION

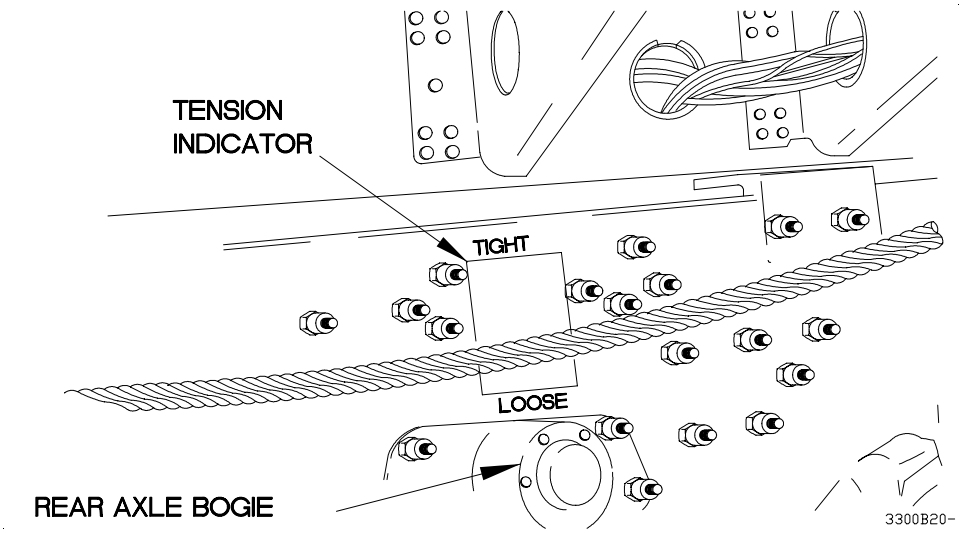
MAIN WINCH RH SPEED switch must be in LOW position during payout of the first five wraps of cable. Failure to comply may result in damage to equipment.

8. Position MAIN WINCH RH SPEED switch (8) to LOW.



30K WINCH OPERATION WITHOUT LOAD - Continued

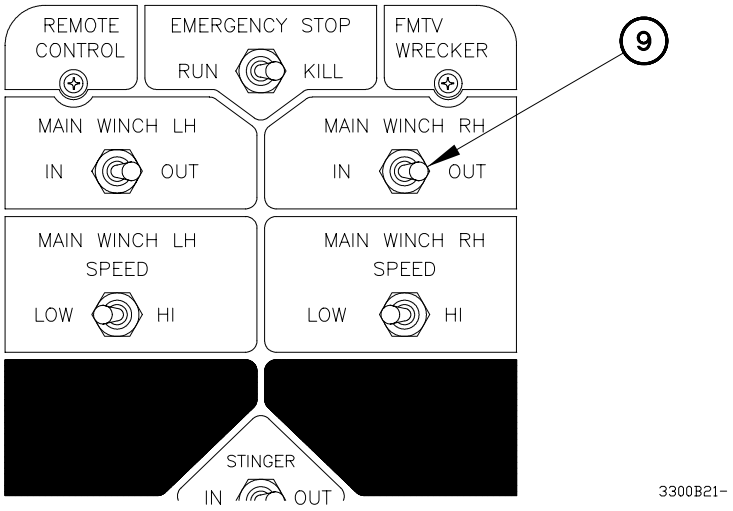
9. Remove any dirt and mud from tension indicator.



CAUTION

Cable tension must be checked prior to use. Some slack in the cable is desired. Excessive tension can cause damage to power fairlead and cable. Failure to comply may result in damage to equipment.

10. Position MAIN WINCH RH switch (9) to OUT.



30K WINCH OPERATION WITHOUT LOAD - Continued

WARNING

Wear heavy leather-palmed work gloves when handling cable. Cables can become frayed or contain broken wires. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury to personnel.

NOTE

If the power fairlead does not pay out the cable at the same rate of speed as the 30K winch, cable will hang loose.

Operator should stand approximately four feet away from the rear axle bogie to view the tension indicator during pay out.

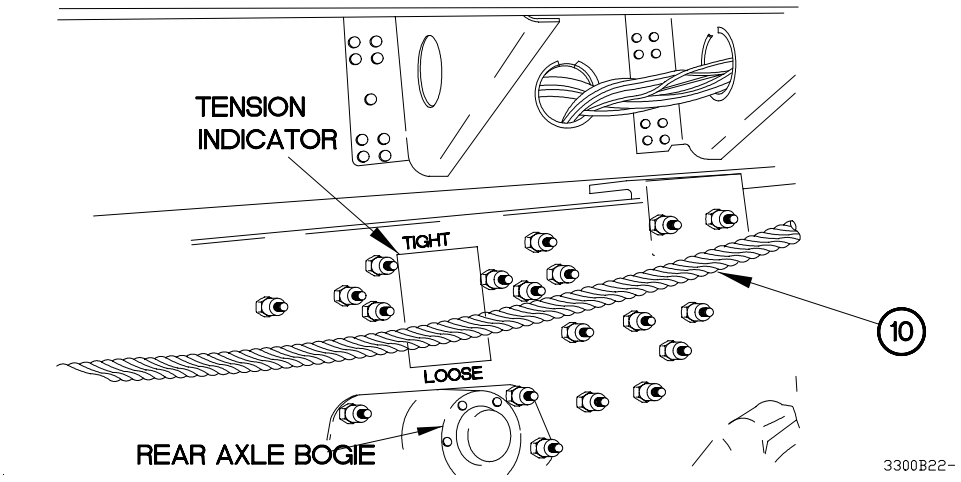
11. Pay out cable (10) for approximately 20 seconds.

12. During pay out, check that cable (10) passes through tension indicator, directly over rear axle bogie.

    a. If cable (10) is too loose and hangs below loose mark on tension indicator, stop pay out and perform steps 13, 15, and 16.

    b. If cable (10) is too tight and is above tight mark on tension indicator, stop pay out and perform steps 14 through 16.

    c. If cable (10) passes between loose and tight marks on tension indicator, proceed to step 17.



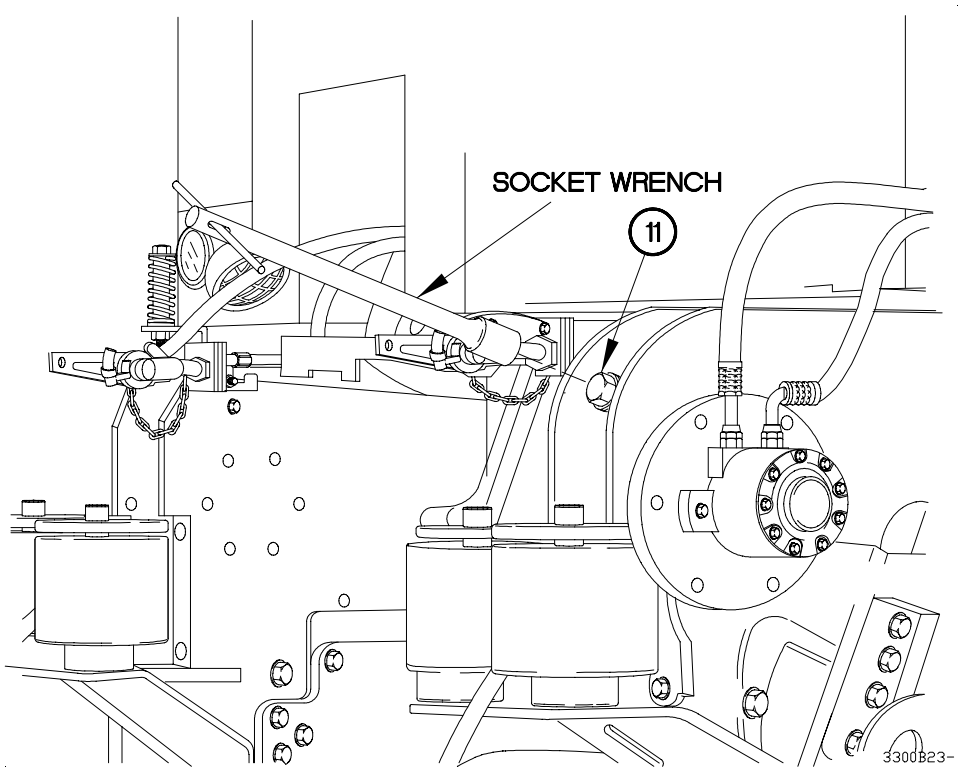
30K WINCH OPERATION WITHOUT LOAD - Continued

CAUTION

Power fairlead tension bolt must not be overtightened. Overtightening power fairlead tension bolt will put strain on cable, winch motor, and power fairlead. Failure to comply may result in damage to equipment.

13. Turn tension screw (11) to the right one complete turn.

14. Turn tension screw (11) to the left one complete turn.



30K WINCH OPERATION WITHOUT LOAD - Continued

CAUTION

Ensure cable is clear of crossbar and sandshoe when reeling in cable. The cable socket may catch on crossbar or sandshoe. Failure to comply may result in damage to equipment.

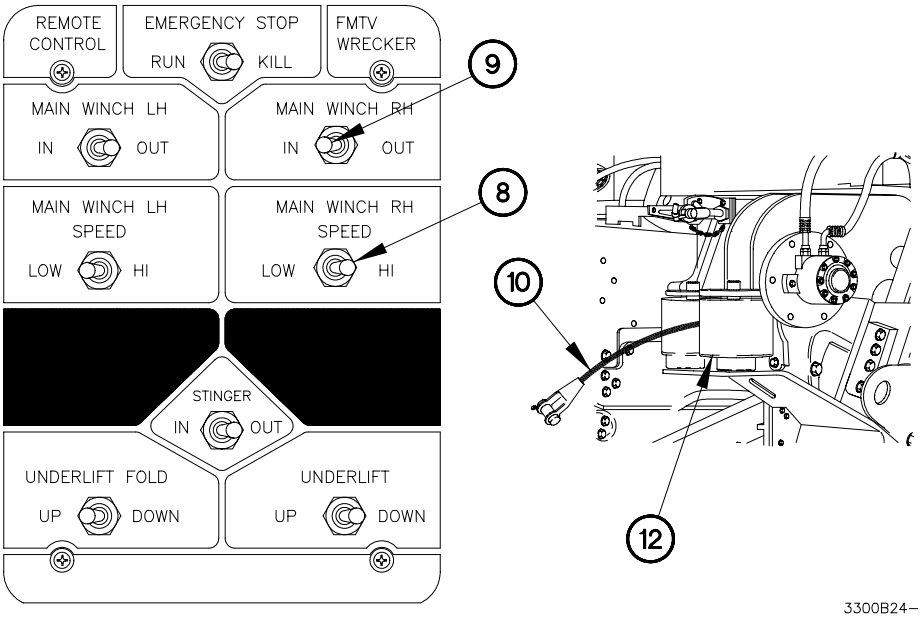
15. Position MAIN WINCH RH switch (9) to IN and reel in cable (10) until approximately 12 inches (61 cm) of cable is hanging from the power fairlead (12).

16. Repeat steps 11 and 12.

NOTE

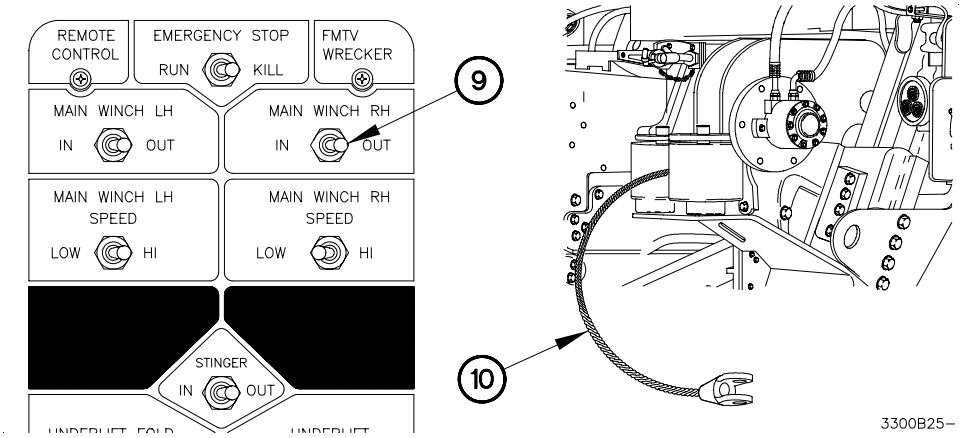
After the first five wraps of cable have been payed out, positioning MAIN WINCH RH SPEED switch to HI is allowed.

17. Position MAIN WINCH RH SPEED switch (8) to HI (high).



30K WINCH OPERATION WITHOUT LOAD - Continued

18. Position MAIN WINCH RH switch (9) to OUT and pay out cable (10) its entire length.



19. Position MAIN WINCH RH switch (9) to IN.

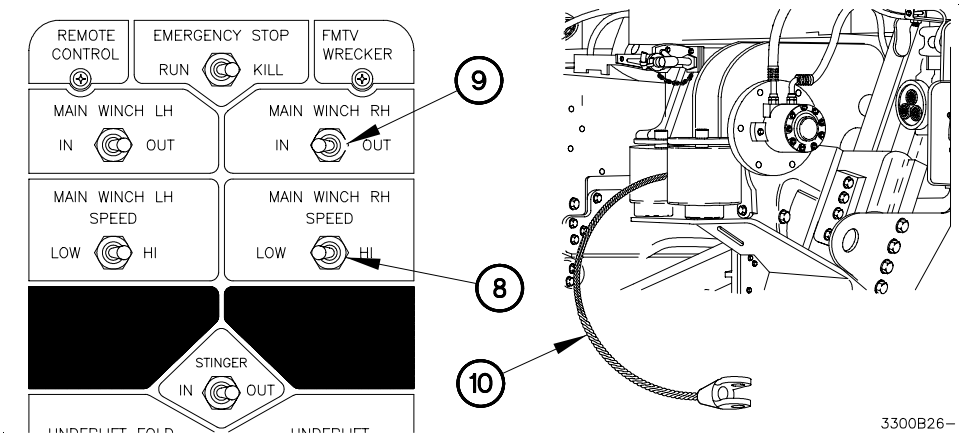
CAUTION

- Ensure there are no gaps between layers of cable. Gaps between cable layers indicate loose winding. Failure to comply may result in damage to equipment.

- Ensure MAIN WINCH RH SPEED is in the LOW position when not in use. Failure to comply will result in draining of batteries.

20. Position MAIN WINCH RH SPEED switch (8) to LOW.

21. Reel in cable (10) until cable is fully recovered.


REMOTE CONTROL
EMERGENCY STOP
RUN
KILL
FMTV WRECKER
MAIN WINCH LH
IN
OUT
MAIN WINCH RH
IN
OUT
MAIN WINCH LH SPEED
LOW
HI
MAIN WINCH RH SPEED
LOW
HI
STINGER
IN
OUT
9
8
10
3300B26-

30K WINCH OPERATION WITHOUT LOAD - Continued

CAUTION

Ensure there are no gaps between layers of cable. Gaps between cable layers indicate loose winding. Failure to comply may result in damage to equipment.

NOTE

Perform steps 22 through 25 if cable is not winding properly.

22. Position MAIN WINCH RH switch (9) to OUT.

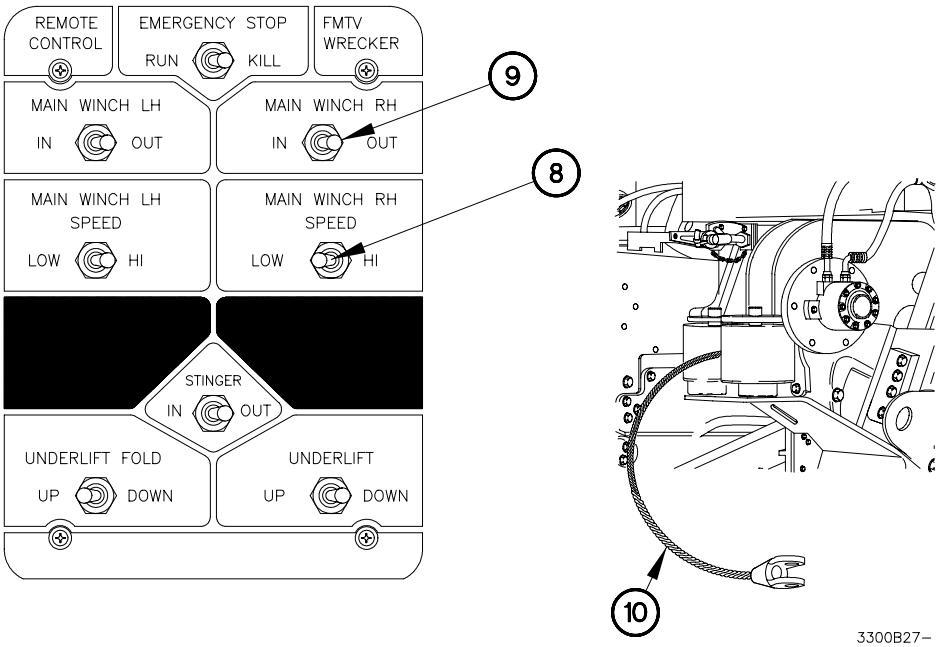
23. Pay out cable (10) until cable on 30K winch drum has clean wind.

CAUTION

Do not dead-end cable into rear rollers. Failure to comply may result in damage to equipment.

24. Position MAIN WINCH RH SPEED switch (8) to LOW.

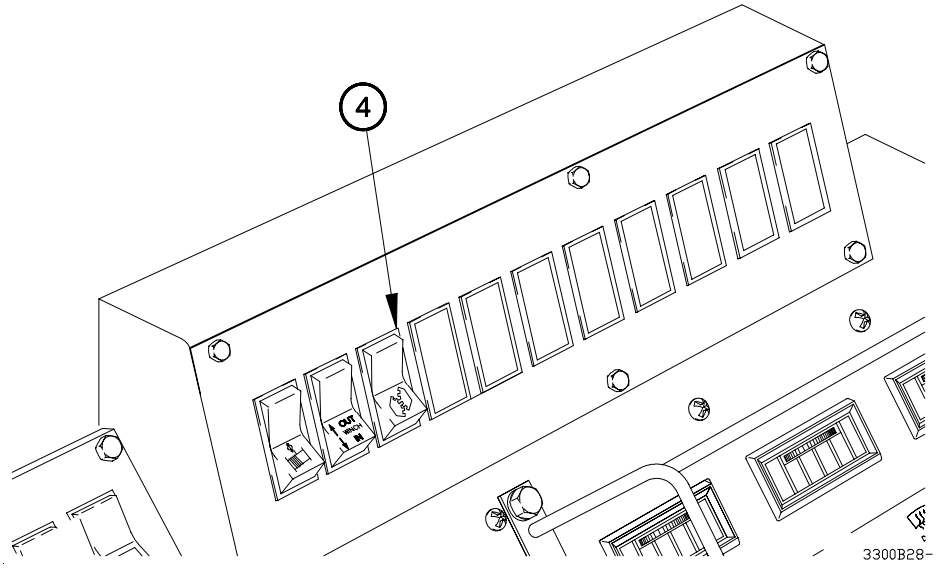
25. Continue steps 20 through 25 until cable (10) is fully recovered.



30K WINCH OPERATION - Continued 0033 00

30K WINCH OPERATION WITHOUT LOAD - Continued

26. Position PTO switch (4) to off.
27. Shut down engine (WP 0018 00).
28. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
29. Notify Unit Maintenance to clean and lubricate 30K winch cable.



END OF OPERATING PROCEDURE

M1089A1 FLAT TOWING 0034 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel Required
Two

References
FM 20-22

GENERAL

This work package provides the data and procedures for M1089A1 flat towing. Items covered include Vehicles M1089A1 Can Tow, Pintle Towing Hook Installation, Towbar Connection, Towbar Disconnection, and Pintle Towing Hook Removal.

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that vehicle being towed and terrain conditions allow safe operation. The following are maximum speeds for safe operation. Exceeding these speeds may result in loss of vehicle control.

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

Exceeding maximum speed may result in serious injury or death to personnel or damage to equipment.

Do not flat tow a fully loaded MTV and trailer combination. The FMTV Wrecker towbar can be damaged if weight capacity is exceeded. Failure to comply may result in serious injury or death to personnel or damage to equipment.

When towing a vehicle with nonfunctional brakes, use extreme caution and reduce/adjust speed accordingly. Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

Extreme care must be used when towing disabled vehicle to prevent further damage to disabled vehicle. Failure to comply may result in damage to equipment.

M1089A1 FLAT TOWING - Continued 0034 00

GENERAL - Continued

CAUTION

Fluid level in hydraulic tank must be visible in sight glass, hydraulic supply, and shutoff valves must be open before starting engine. Failure to comply may result in damage to equipment.

NOTE

Tow a disabled vehicle from the front whenever possible. Rear air brakes (if equipped) on disabled vehicle can be used to assist stopping.

Check Operator's manual for disabled vehicle for towing preparation before towing vehicle.

For detailed instructions on towing procedures refer to FM 20-22.

VEHICLES M1089A1 CAN TOW

The following vehicles can be towed with M1089A1:

- M35 Series
- M939 Series and M809 Series
- M998 Series
- M1008 Series
- M1078, M1078A1, M1083 and M1083A1 Series (M1089/M1089A1 can be towed from the front only)

PINTLE TOWING HOOK INSTALLATION

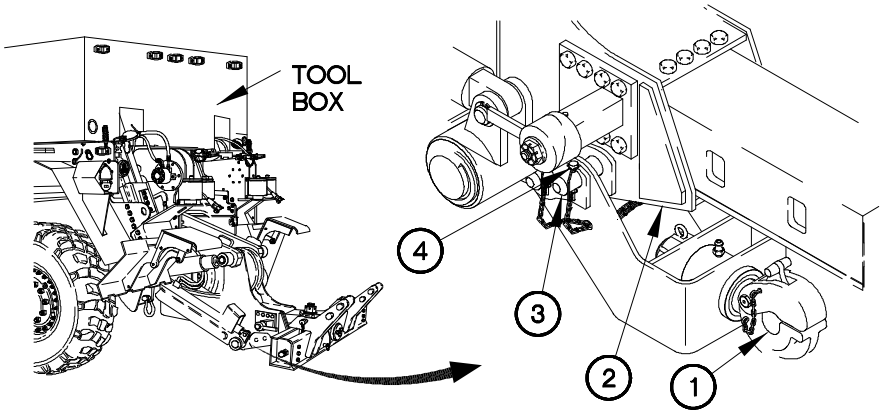
CAUTION

Underlift assembly must be fully raised. Failure to comply may result in damage to equipment.

1. Position underlift assembly for flat tow (WP 003500)

PINTLE TOWING HOOK INSTALLATION - Continued

2. Remove pintle towing hook (1) from tool box.
3. Install pintle towing hook (1) on boom frame (2) with two pins (3).
4. Install two lock pins (4) in each pin (3).

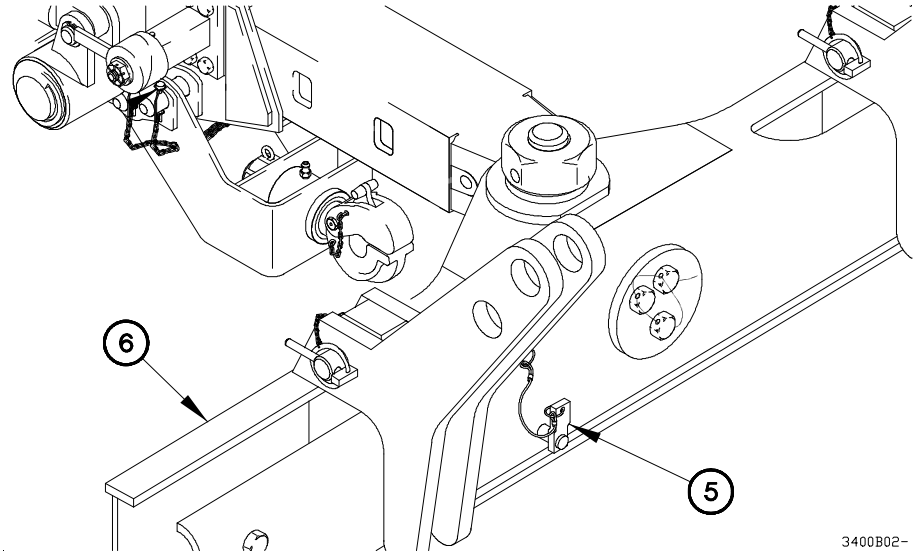


3400B01-

CAUTION

Crossbar lock pin must be securely installed to prevent interference with towbar. Failure to comply may result in damage to equipment.

5. Install crossbar lock pin (5) in crossbar (6).



3400B02-

TOWBAR CONNECTION

WARNING

Towbar weighs approximately 100 lbs (45 kgs) and requires two or more personnel to carry. Failure to comply may result in injury to personnel.

NOTE

Steps 1 and 2 require the aid of an assistant.

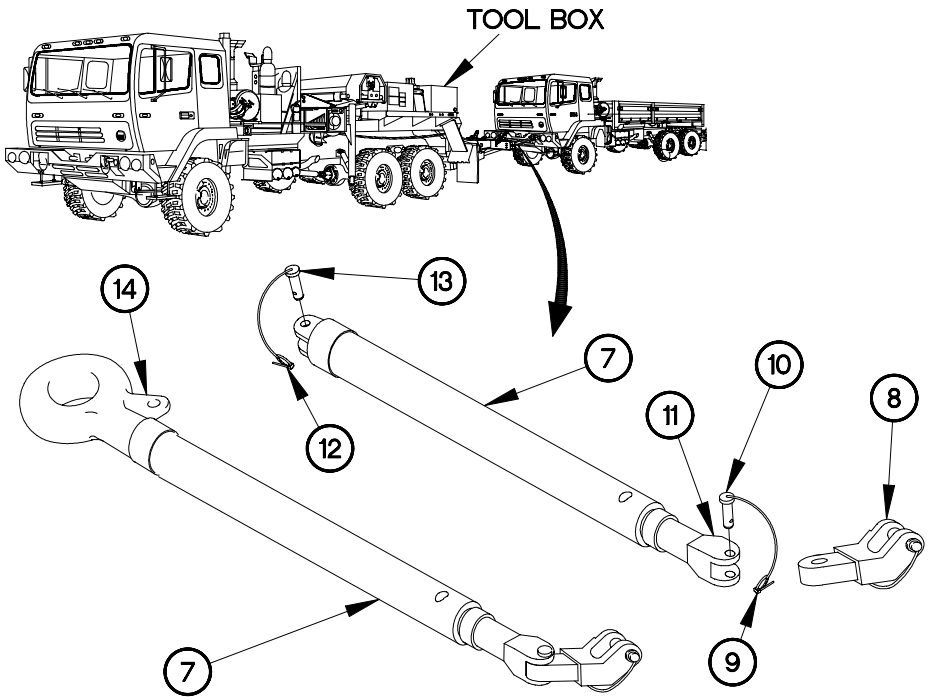
1. Remove towbar (7) and two adapters (8) from tool box.

NOTE

Left and right side towbar adapters are installed the same way. One shown.

2. Remove linchpin (9) and pin (10) from towbar clevis (11).
3. Install towbar adapter (8) in towbar clevis (11) with pin (10) and linchpin (9).
4. Perform step on remaining towbar clevis.
5. Position rear of M1089A1 near front of disabled vehicle with towbar (7) between vehicles.
6. Remove linchpin (12) from pin (13).
7. Remove pin (13) from towbar (7).
8. Separate towbar (7) at pivot point (14).

TOWBAR CONNECTION - Continued

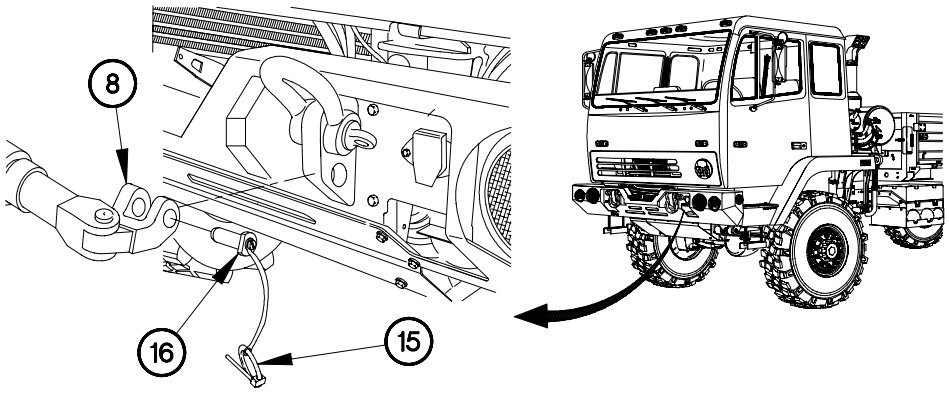


3400b03-

NOTE

Left and right side towbar adapters are installed on tow eyes the same way. Left side shown.

9. Remove linchpin (15) and pin (16) from towbar adapter (8).



3400b05-

TOWBAR CONNECTION - Continued

WARNING

M1089A1 and disabled vehicle must have parking brakes applied before connecting/disconnecting towbar. Failure to comply may cause vehicles to roll into each other and may result in serious injury or death to personnel or damage to equipment.

NOTE

It may be necessary to remove shackles on some vehicles.

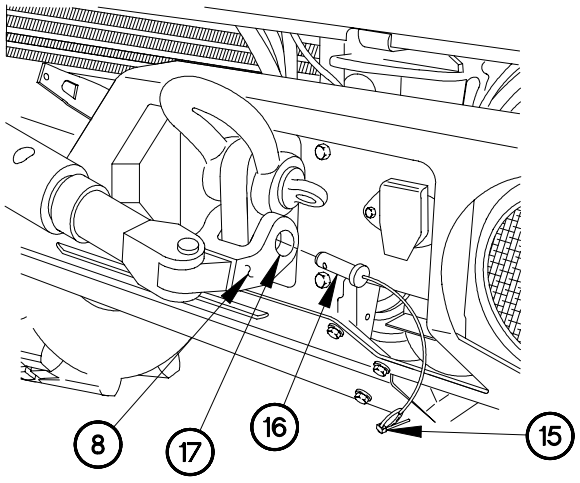
10. Install towbar adapter (8) on bottom tow eye (17) of disabled vehicle.

CAUTION

Ensure pin is installed with linchpin hole down. Failure to comply may result in damage to equipment.

11. Install pin (16) in towbar adapter (8).

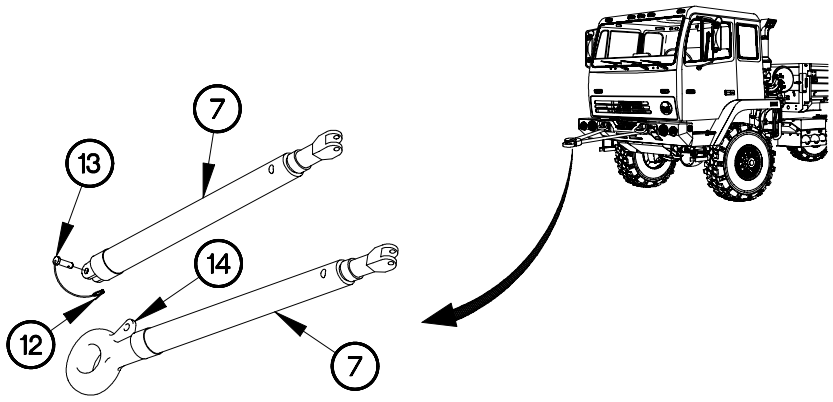
12. Install linchpin (15) in pin (16).



3400b06-

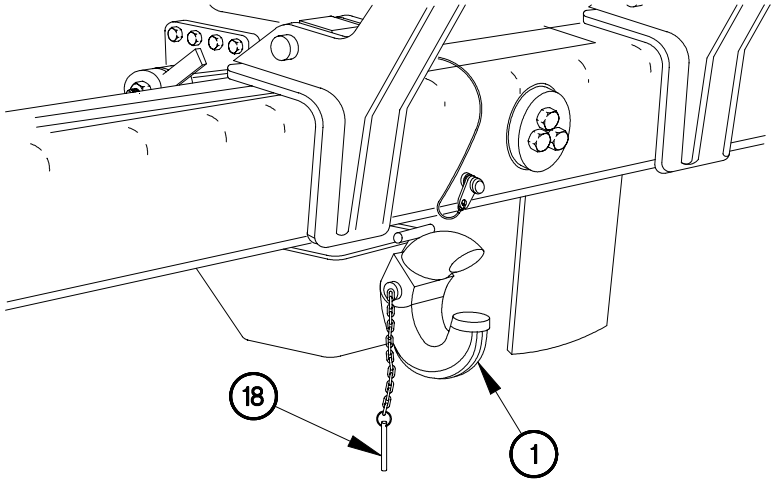
TOWBAR CONNECTION - Continued

13. Align left and right sides of towbar (7) at pivot point (14).
14. Install pin (13) in towbar (7).
15. Install linchpin (12) in pin (13).



3400b08-

16. Remove cotter pin (18) from pintle towing hook (1).
17. Open pintle towing hook (1).



3400b09-

TOWBAR CONNECTION - Continued

WARNING

Ground guide is required to guide vehicle backing up. Failure to comply may result in injury to personnel or damage to equipment.

Do not place hands near pintle towing hook when aligning towbar eye with pintle towing hook or when removing towbar. Failure to comply may result in injury to personnel.

CAUTION

Adjust underlift assembly to level of vehicle to be towed. Failure to comply may result in damage to equipment.

NOTE

Steps 17 and 18 require the aid of an assistant.

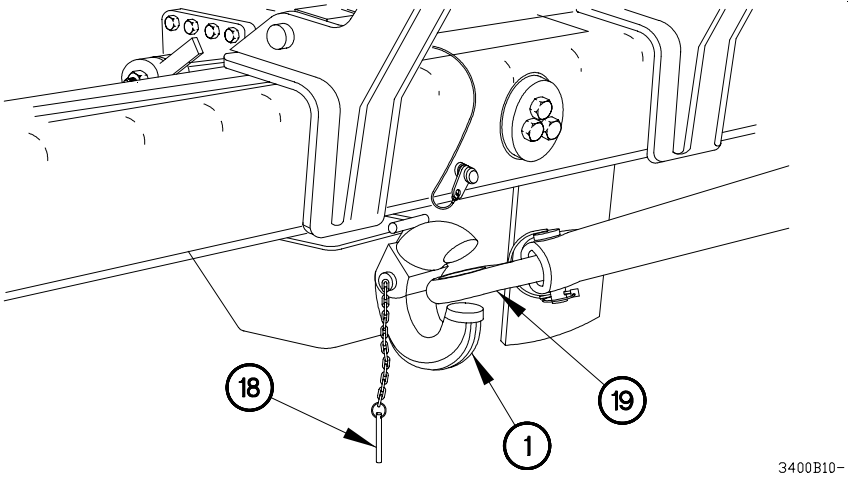
18. Adjust underlift assembly so that it is level with vehicle to be towed (WP 0035 00).

19. Slowly back up M1089A1 until towbar eye (19) is aligned with pintle towing hook (1).

20. Connect towbar eye (19) to pintle towing hook (1).

21. Close pintle towing hook (1).

22. Install cotter pin (18) in pintle towing hook (1).



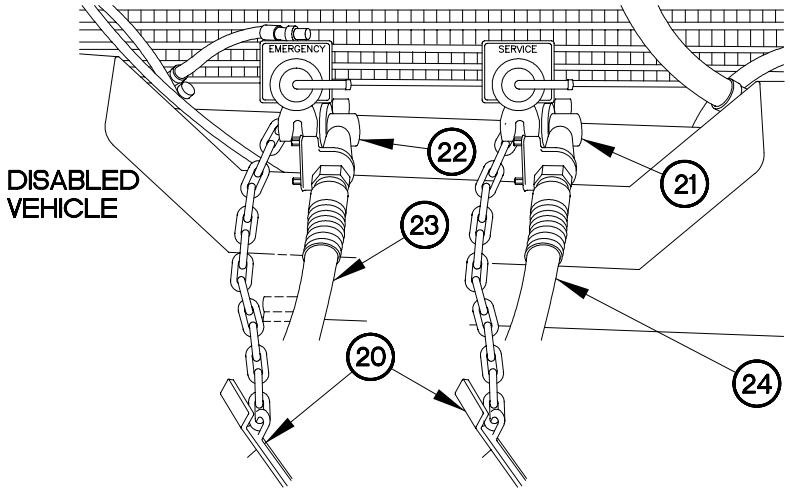
TOWBAR CONNECTION - Continued

23. Release parking brakes of disabled vehicle (refer to disabled vehicle Operator's manual).

24. Remove two dummy couplings (20) from SERVICE gladhand (21) and EMERGENCY gladhand (22) on front of disabled vehicle.

25. Connect intervehicular air hose (23) to EMERGENCY gladhand (22) of disabled vehicle.

26. Connect intervehicular air hose (24) to SERVICE gladhand (21) of disabled vehicle.



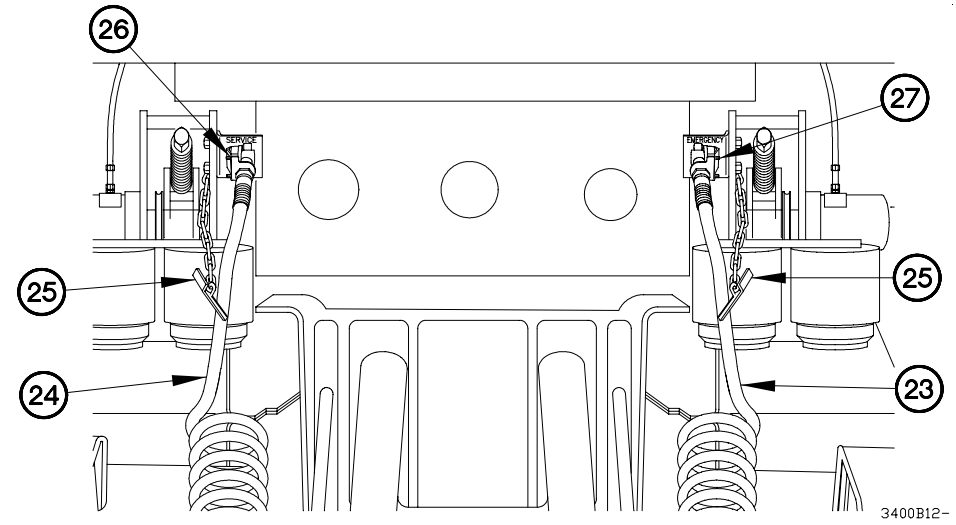
3400B11-

TOWBAR CONNECTION - Continued

27. Remove two dummy couplings (25) from SERVICE gladhand (26) and EMERGENCY gladhand (27) of M1089A1.

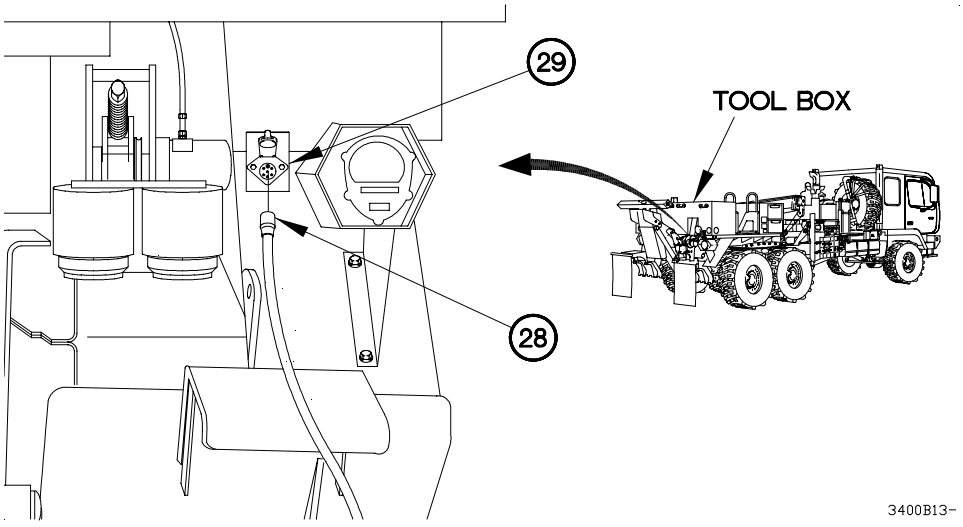
28. Connect intervehicular air hose (23) to EMERGENCY gladhand (27).

29. Connect intervehicular air hose (24) to SERVICE gladhand (26).



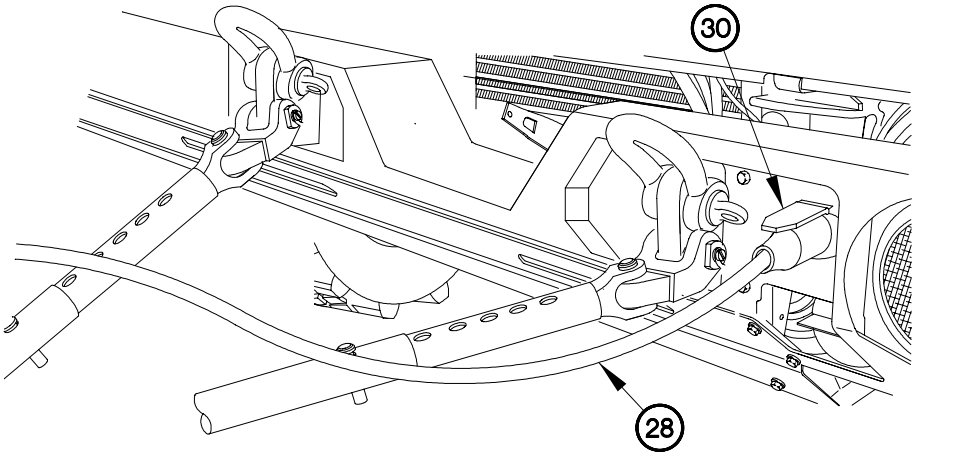
30. Remove intervehicular cable (28) from tool box.

31. Connect intervehicular cable (28) to receptacle (29) on M1089A1.



TOWBAR CONNECTION - Continued

32. Connect other end of intervehicular cable (28) to receptacle (30) on disabled vehicle.

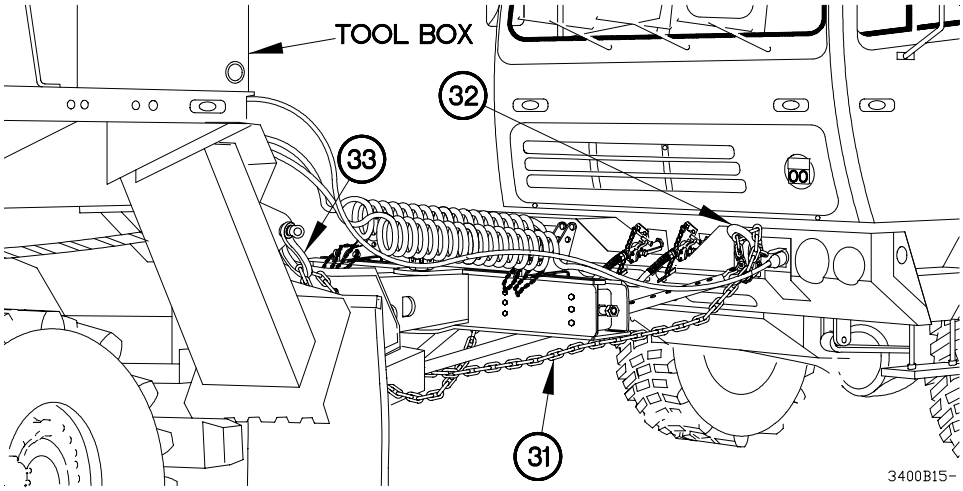


NOTE

Left and right side safety chains are installed the same way. Left side shown.

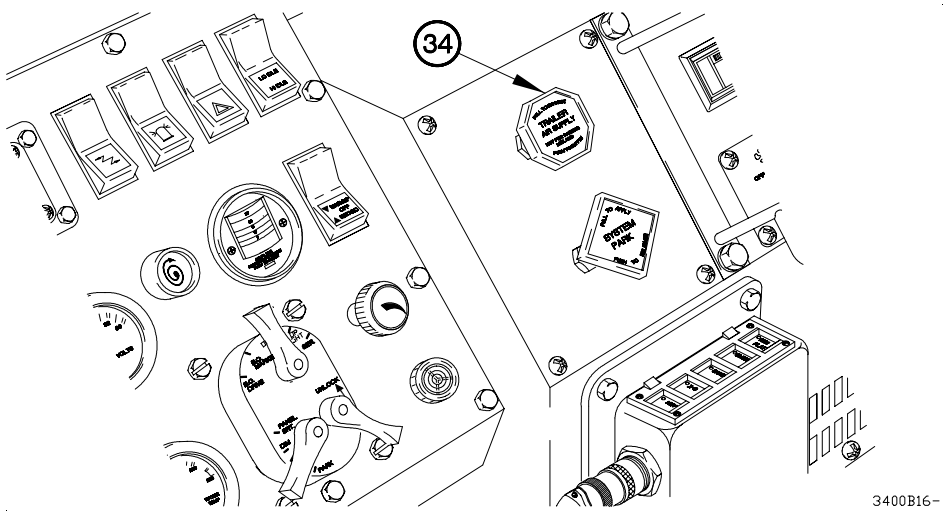
33. Remove two safety chains (31) from tool box.

34. Attach one safety chain (31) to shackle (32) on disabled vehicle and to shackle (33) on M1089A1.



TOWBAR DISCONNECTION

1. Pull out TRAILER AIR SUPPLY control (34) on towing vehicle.

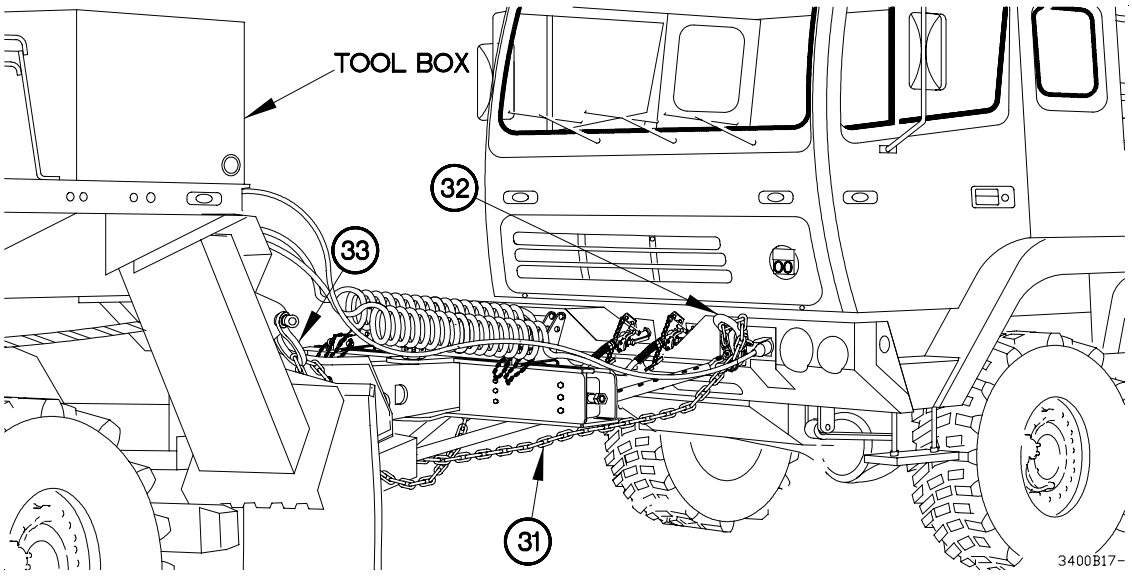


NOTE

Left and right side safety chains are removed the same way. Left side shown.

2. Disconnect safety chain (31) from shackle (33) of M1089A1 and from shackle (32) on disabled vehicle.

3. Stow two safety chains (31) in tool box.

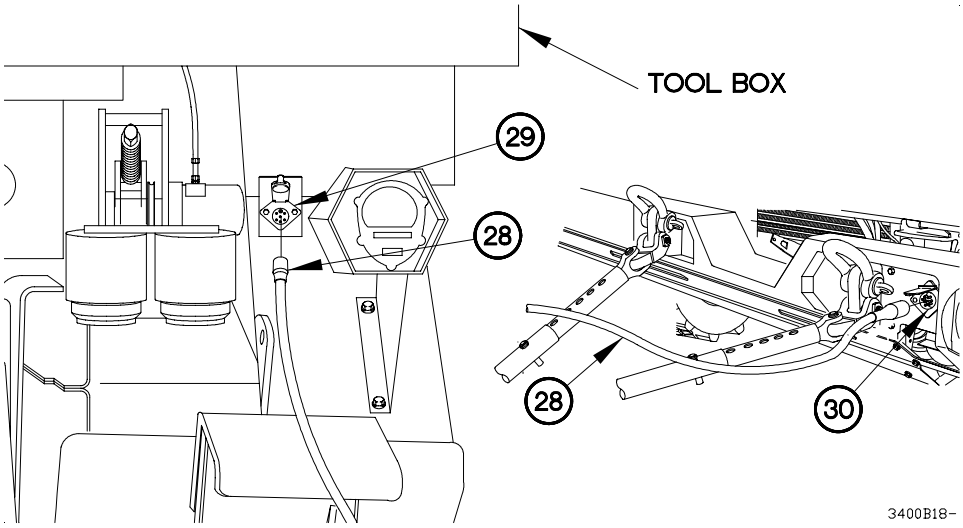


TOWBAR DISCONNECTION - Continued

4. Disconnect intervehicular cable (28) from receptacle (30) on disabled vehicle.

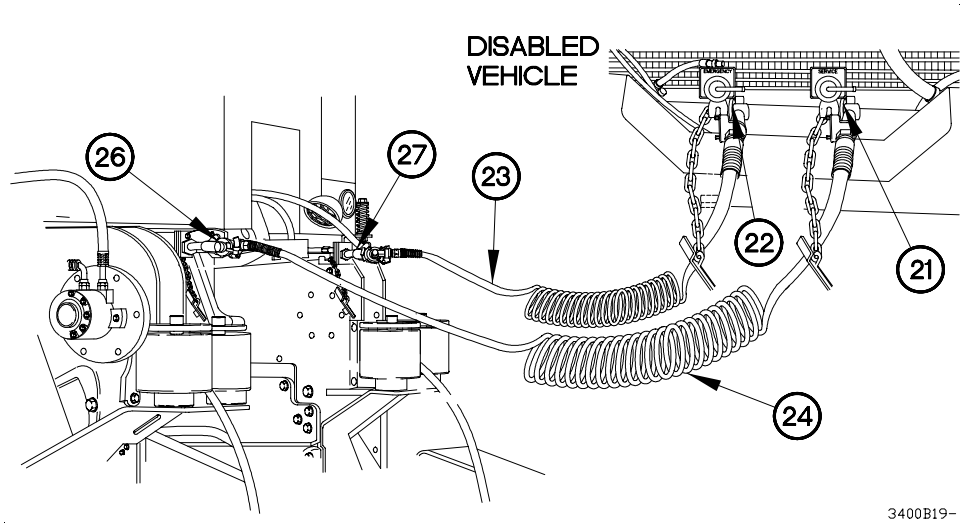
5. Disconnect other end of intervehicular cable (28) from receptacle (29) on M1089A1.

6. Stow intervehicular cable (28) in tool box.



7. Disconnect intervehicular air hose (24) from SERVICE gladhand (26) of M1089A1 and SERVICE gladhand (21) on disabled vehicle.

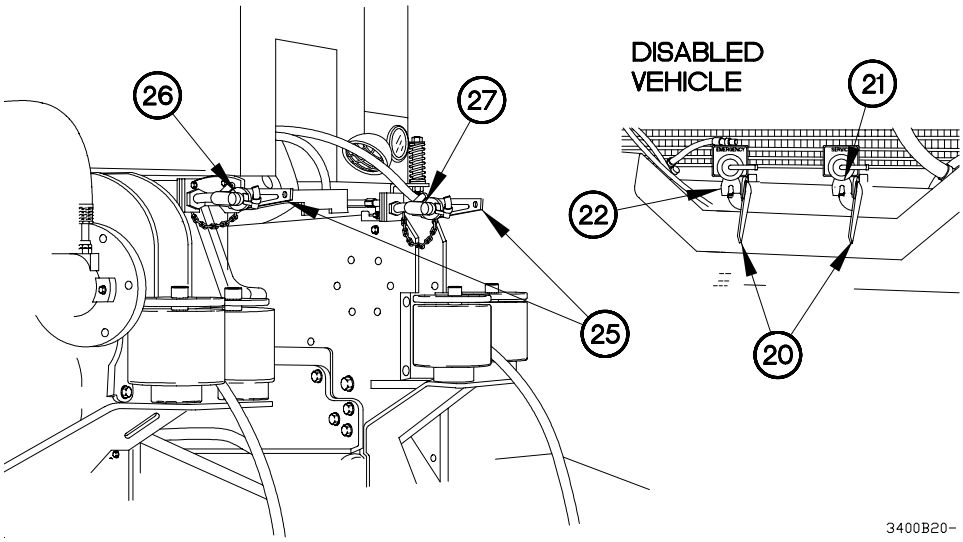
8. Disconnect intervehicular air hose (23) from EMERGENCY gladhand (27) of M1089A1 and EMERGENCY gladhand (22) on disabled vehicle.



TOWBAR DISCONNECTION - Continued

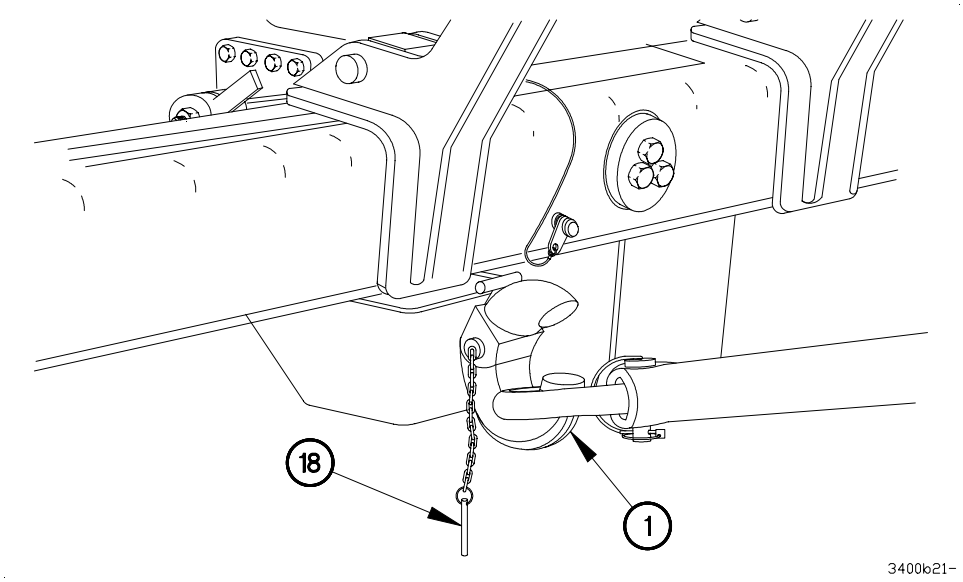
9. Install dummy couplings (20) on gladhands (21 and 22) of disabled vehicle.

10. Install dummy couplings (25) on gladhands (26 and 27) of M1089A1.



11. Remove cotter pin (18) from pintle towing hook (1).

12. Open pintle towing hook (1).



TOWBAR DISCONNECTION - Continued

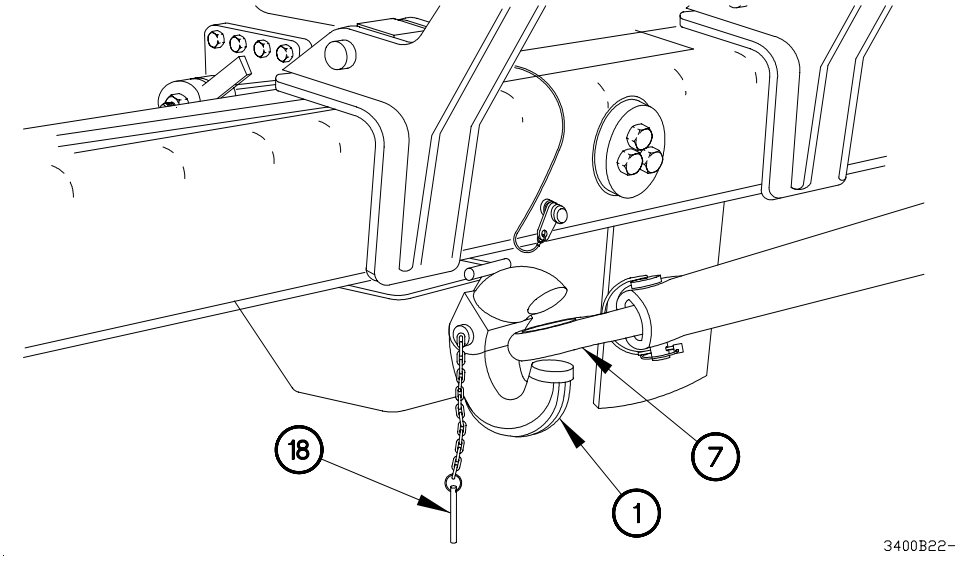
WARNING

Do not place hands near pintle towing hook when removing towbar. Failure to comply may result in injury to personnel.

NOTE

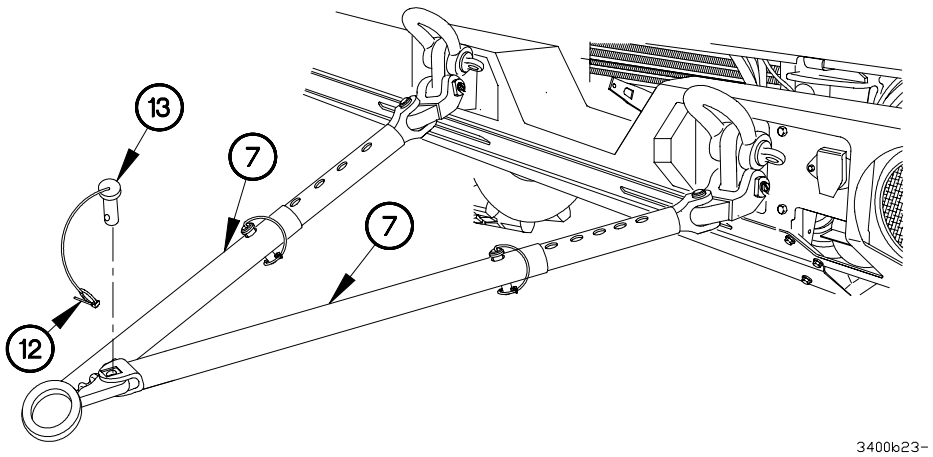
Steps 13 and 14 require the aid of an assistant.

13. Remove towbar (7) from pintle towing hook (1).
14. Drive M1089A1 forward. When M1089A1 is clear, lower towbar (7) to ground.
15. Close pintle towing hook (1).
16. Install cotter pin (18) in pintle towing hook (1).



TOWBAR DISCONNECTION - Continued

17. Remove linchpin (12) and pin (13) from towbar (7).
18. Separate left and right sides of towbar (7).

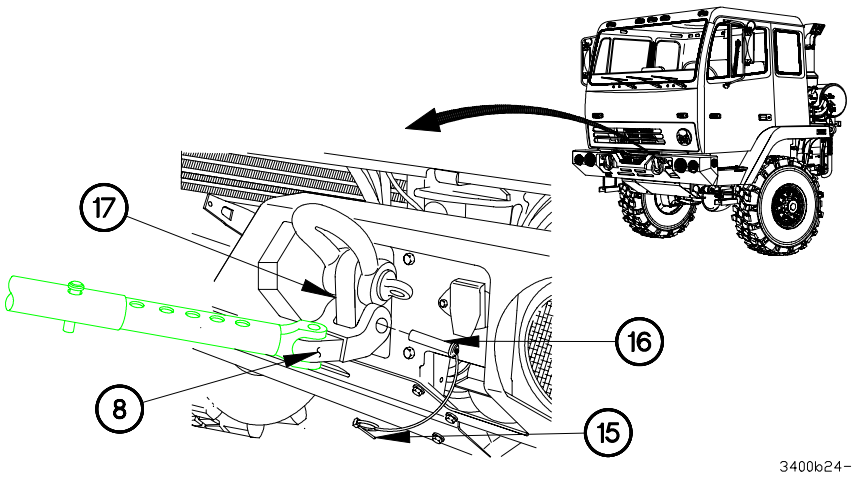


NOTE

Left and right sides of towbar are removed the same way. Left side shown.

Step 19 requires the aid of an assistant.

19. Remove linchpin (15), pin (16), and towbar adapter (8) from bottom towage (17) of disabled vehicle.



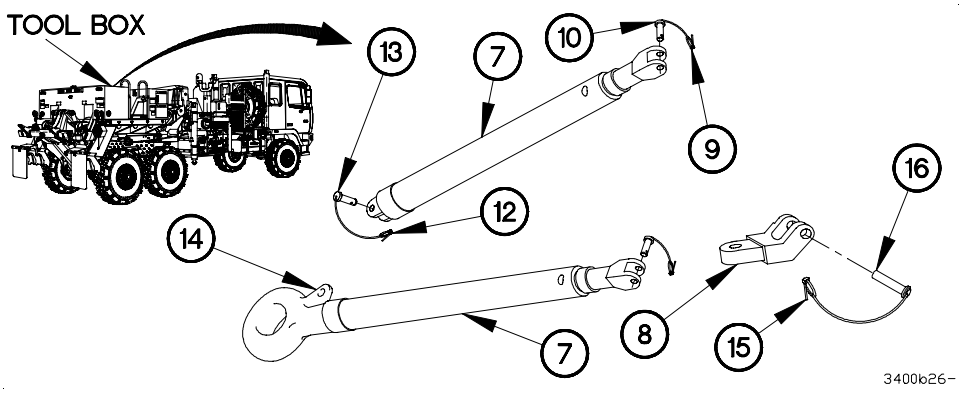
TOWBAR DISCONNECTION - Continued

20. Install pin (16) and linchpin (15) in towbar adapter (8).
21. Install towbar adapter (8) on towbar (7) with pin (10) and linchpin (9).
22. Perform steps (21) and (22) for right side of towbar.
23. Join towbar (7) at pivot point (14).
24. Install pin (13) and linchpin (12) in towbar (7).

NOTE

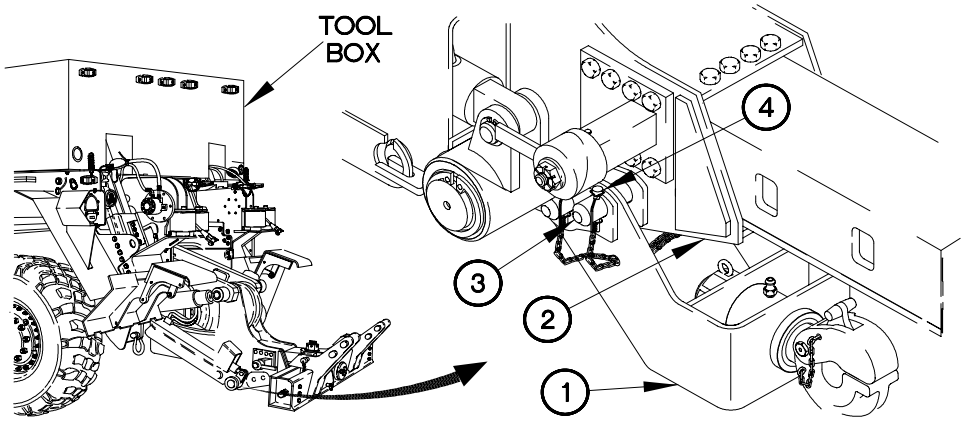
Step 25 requires the aid of an assistant.

25. Stow towbar (7) in tool box.



PINTLE TOWING HOOK REMOVAL

1. Remove two pin locks (4) from each pin (3).
2. Remove two pins (3) and pintle towing hook (1) from boom frame (2).
3. Stow two pins (3), four pin locks (4) and pintle towing hook (1) in tool box.



3400B27-

END OF OPERATING PROCEDURE

M1089A1 UNDERLIFT ASSEMBLY OPERATION 0035 00

INITIAL SETUP:

Maintenance Level
Operator

Reference
WP 0018 00
WP 0099 00

Tools/Special Tools
Control, Remote Switching (Item 7, Table 1, WP 0111 00)
Goggles, Industrial (Item 25, Table 2, WP 0112 00)

GENERAL

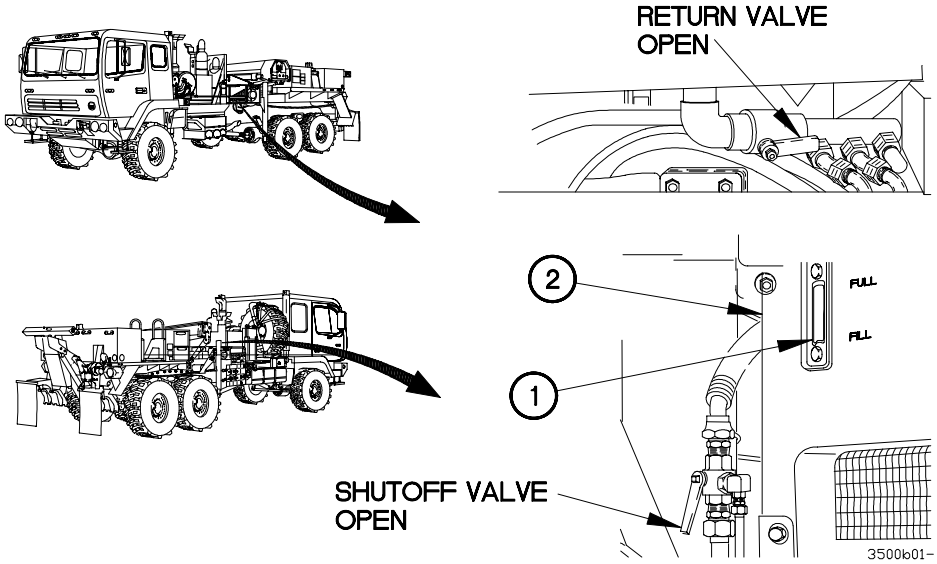
This work package provides the data and procedures for operating the underlift assembly on the M1089A1 wrecker. Items covered include Prepare Underlift Assembly For Operation, Connect WRECKER REMOTE CONTROL, Disconnect WRECKER REMOTE CONTROL, Lower Underlift Assembly and Raise Underlift Assembly.

PREPARE UNDERLIFT ASSEMBLY FOR OPERATION

CAUTION

Ensure hydraulic shutoff valve and return valve are open and hydraulic tank is full. Failure to comply may result in damage to equipment.

1. Check sight gage (1) on hydraulic tank (2).



M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

PREPARE UNDERLIFT ASSEMBLY FOR OPERATION - Continued

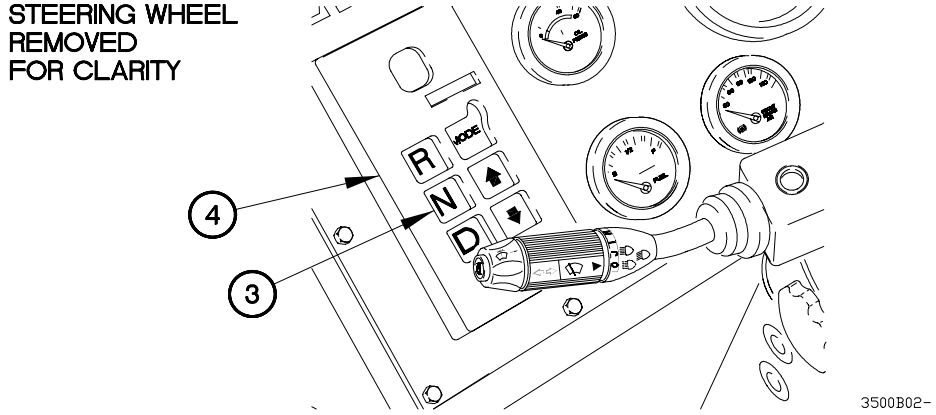
2. Add hydraulic oil to bring to FULL mark as required (WP 0099 00, Table 15, Item 9).

3. Start engine (WP 0018 00).

4. Turn on amber warning light (WP 0018 00).

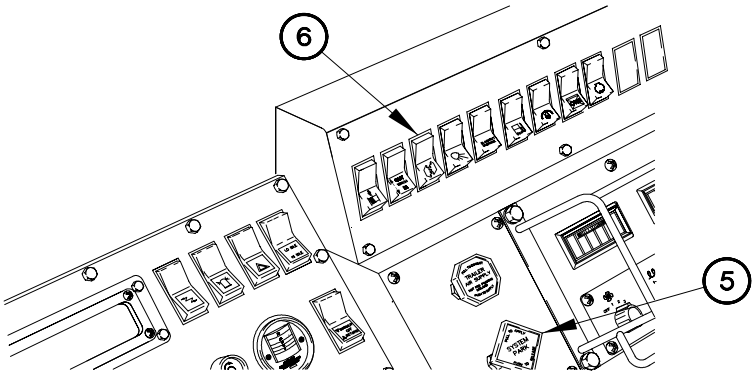
5. Align underlift assembly with front or rear of disabled vehicle.

6. Press N (Neutral) button (3) on WTEC III TPSS (4).



7. Pull out SYSTEM PARK control (5).

8. Position PTO switch (6) to on.



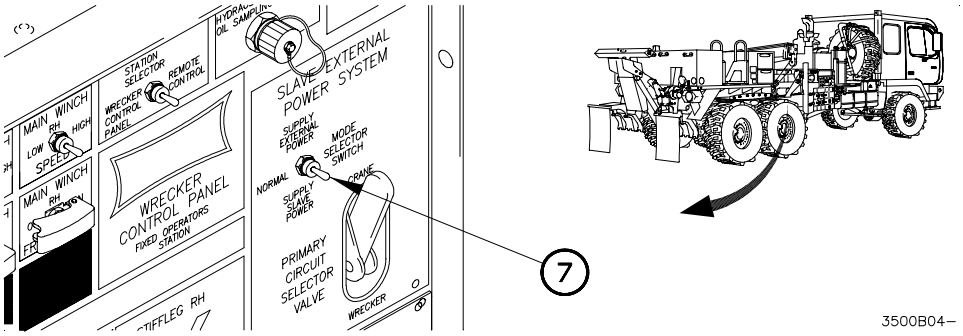
M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

PREPARE UNDERLIFT ASSEMBLY FOR OPERATION - Continued

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

9. Position MODE SELECTOR SWITCH (7) to NORMAL.

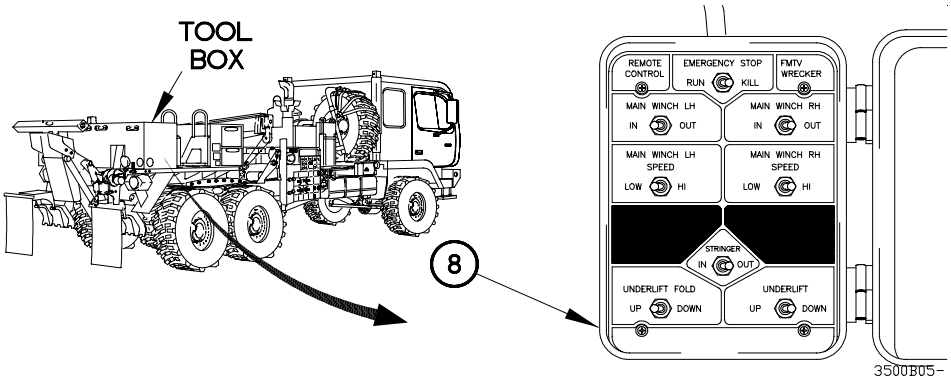


CONNECT WRECKER REMOTE CONTROL

WARNING

Underlift assembly must be operated with WRECKER REMOTE CONTROL if Operator is not able to keep underlift assembly and disabled vehicle in sight at all times during operation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

1. Remove WRECKER REMOTE CONTROL (8) from tool box.



M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

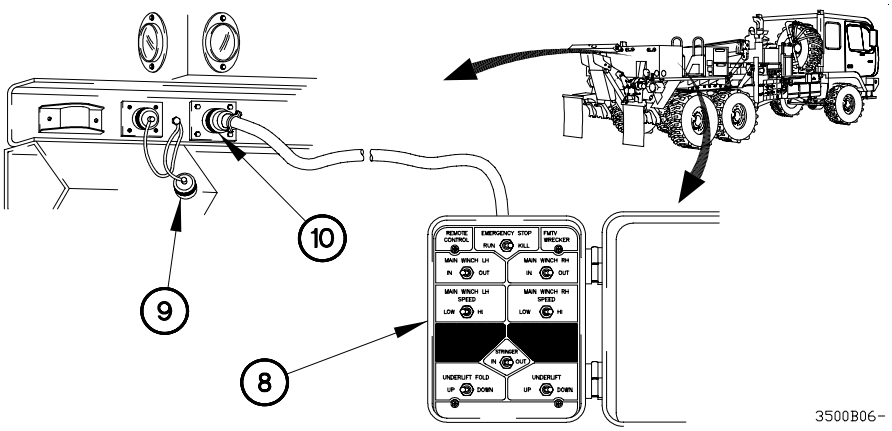
CONNECT WRECKER REMOTE CONTROL - Continued

NOTE

WRECKER REMOTE CONTROL may be connected on either side of the vehicle. Right side connection shown.

2. Remove dust cap (9) from receptacle (10).

3. Connect WRECKER REMOTE CONTROL (8) to receptacle (10).

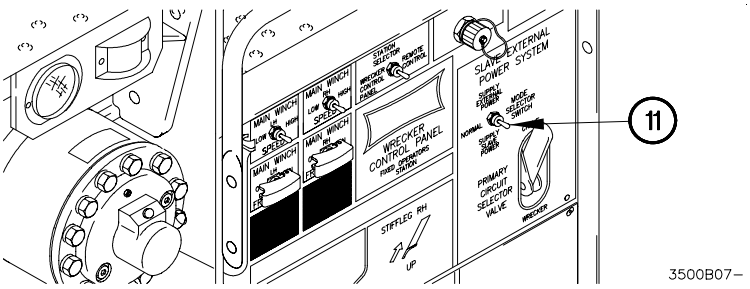


NOTE

WRECKER REMOTE CONTROL switches operate the same as levers on WRECKER CONTROL PANEL. For example; where procedure calls for STINGER lever to be positioned to IN, position STINGER IN/OUT switch on wrecker remote control to IN.

4. Position STATION SELECTOR switch (11) to REMOTE CONTROL.

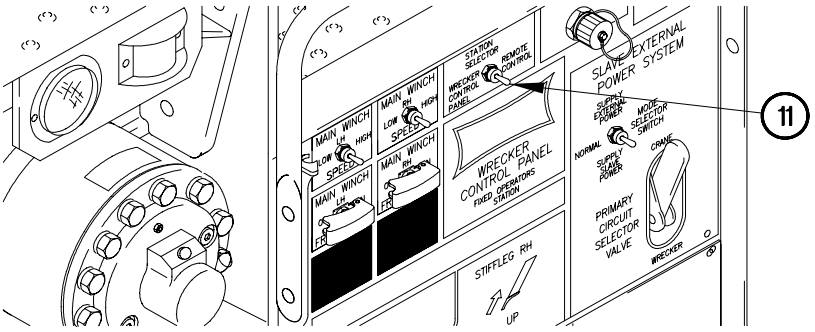
5. Lower underlift assembly (WP 0035 00).



M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

DISCONNECT WRECKER REMOTE CONTROL

1. Position STATION SELECTOR switch (11) to WRECKER CONTROL PANEL.



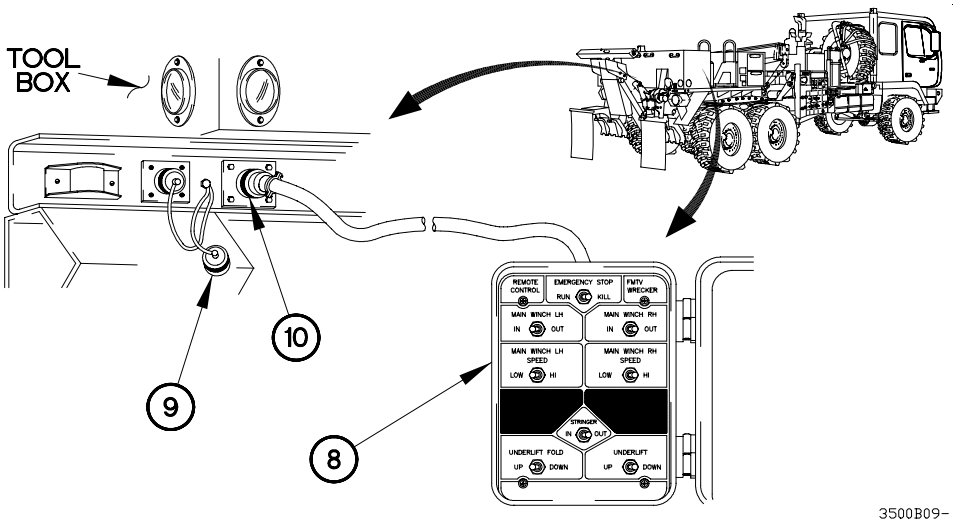
NOTE

WRECKER REMOTE CONTROL may be connected on either side of the vehicle. Right side connection shown.

2. Disconnect WRECKER REMOTE CONTROL (8) from receptacle (10).

3. Install dust cap (9) on receptacle (10).

4. Stow WRECKER REMOTE CONTROL (8) in tool box.

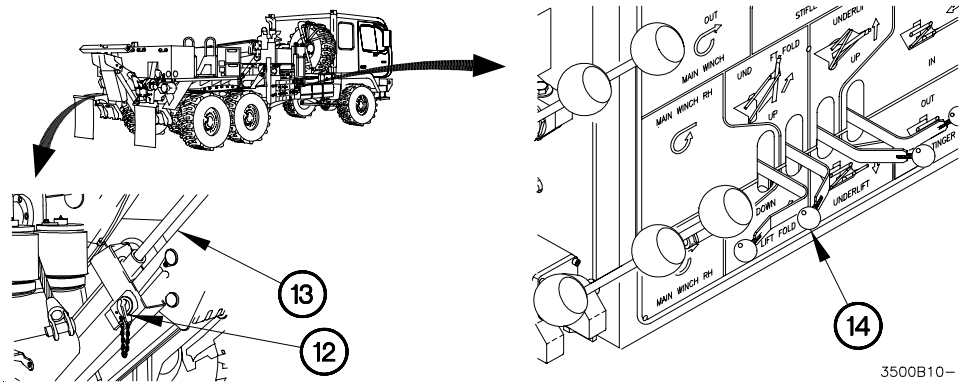


M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

LOWER UNDERLIFT ASSEMBLY

1. Remove underlift assembly lock pin (12) from boom frame (13).

2. Position UNDERLIFT FOLD lever (14) to DOWN until boom frame (13) is fully unfolded.



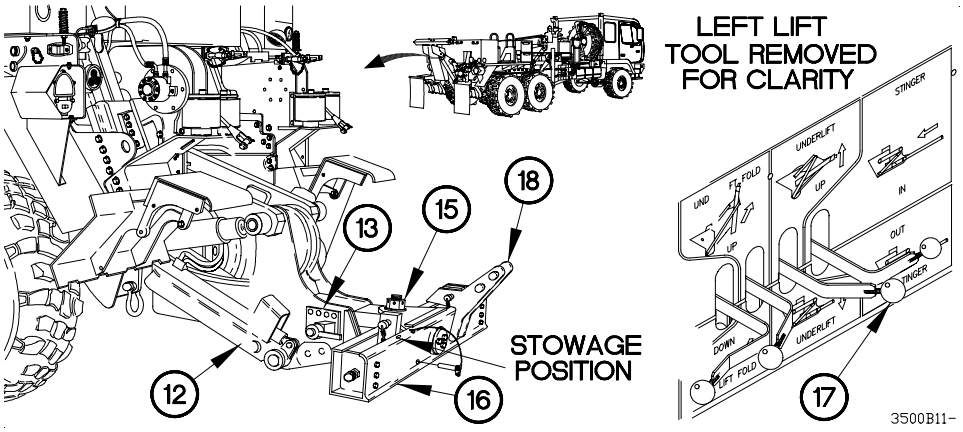
CAUTION

Ensure underlift assembly lock pin is installed when underlift assembly is fully unfolded. Failure to comply may result in damage to equipment.

3. Install underlift assembly lock pin (12) in boom frame (13).

4. Position wrecker so that centerline of disabled vehicle is in line with nut (15) on crossbar (16).

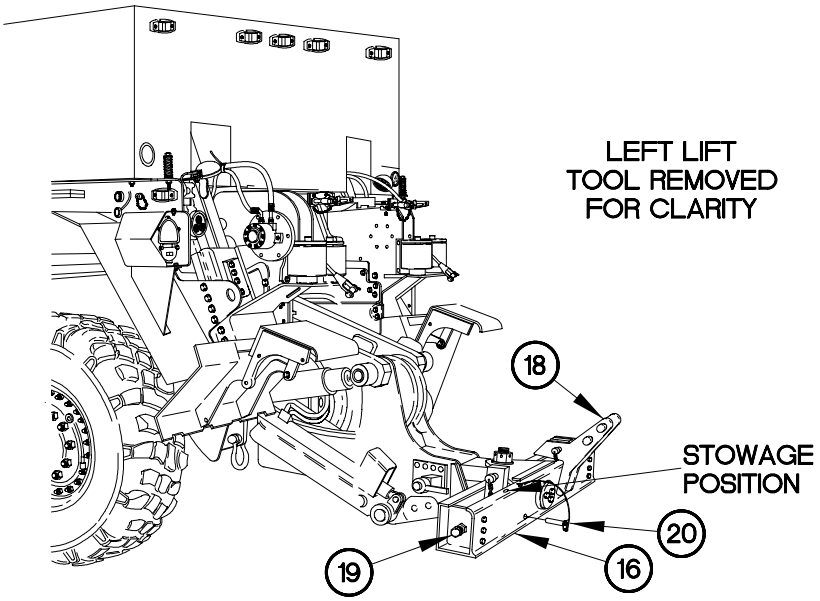
5. Position UNDERLIFT lever (17) to DOWN until lift tool supports (18) are aligned with tow eyes on disabled vehicle.



M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

LOWER UNDERLIFT ASSEMBLY - Continued

6. Turn nut (19) to the left to move lift tool supports (18) closer together.
7. Turn nut (19) to the right to move lift tool supports (18) further apart.
8. Remove crossbar lockpin (20) from crossbar (16).
9. Install crossbar lockpin (20) in stowage location.
10. Connect disabled vehicle to underlift assembly (WP 0036 00 - WP 0040 00).



3500B12-

M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

RAISE UNDERLIFT ASSEMBLY

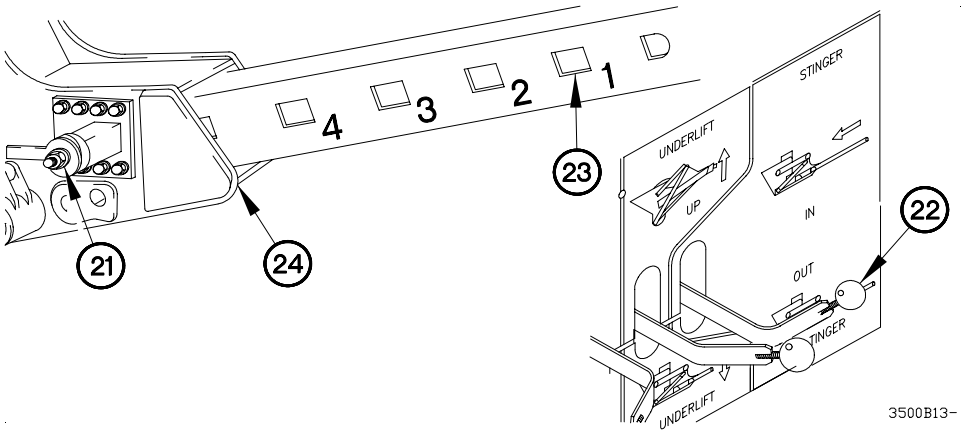
WARNING

Do not tow vehicle with stinger in the stowed position. Failure to comply may result in injury to personnel and/or damage to equipment.

NOTE

Perform steps 1 through 3 only if stinger cam lock is not locked in first rectangular hole on stinger.

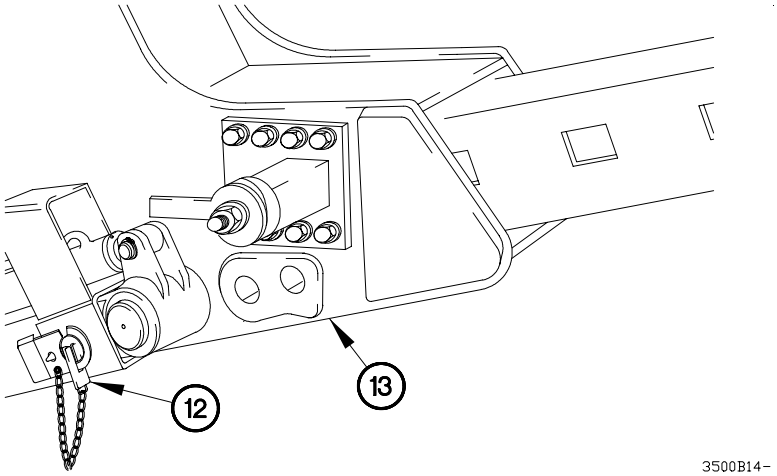
1. Unlock stinger cam lock (21).
2. Position STINGER lever (22) to IN until stinger cam lock (21) is aligned with first hole (23) in stinger (24).
3. Lock stinger cam lock (21).



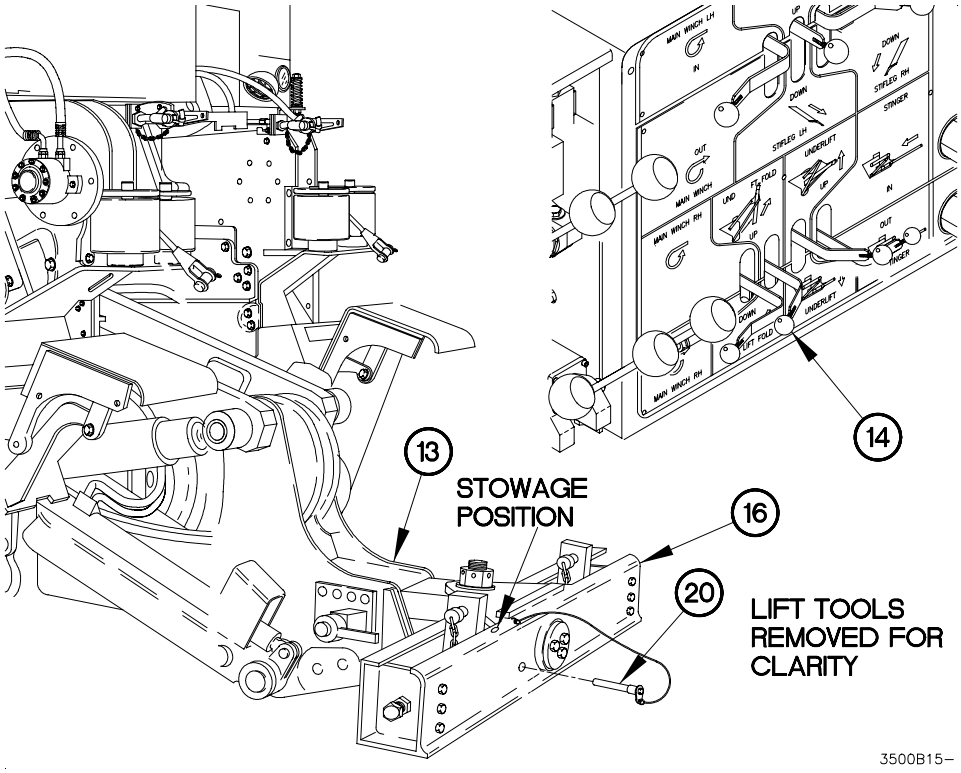
4. Remove underlift assembly lock pin (12) from boom frame (13).

M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

RAISE UNDERLIFT ASSEMBLY - Continued



5. Position UNDERLIFT FOLD lever (14) to UP until boom frame (13) is fully folded.
6. Remove crossbar lockpin (20) from stowage position.
7. Install crossbar lockpin (20) in crossbar (16).



M1089A1 UNDERLIFT ASSEMBLY OPERATION - Continued 0035 00

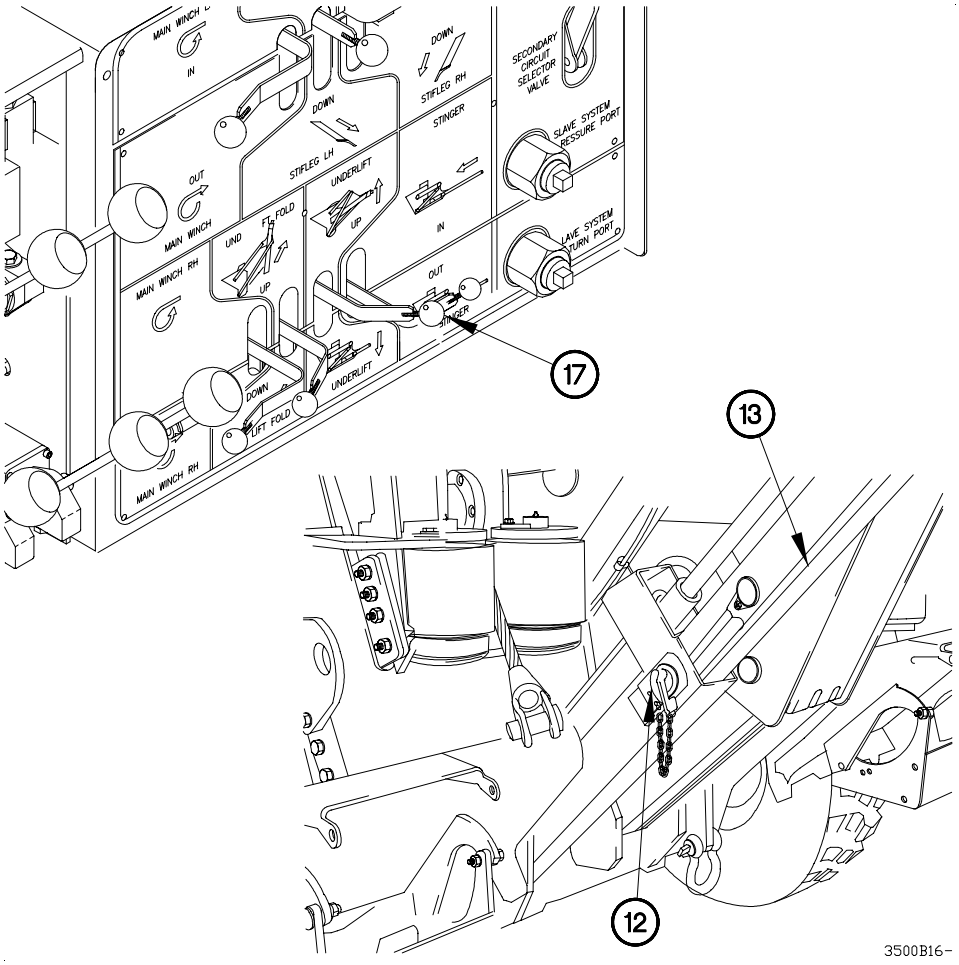
RAISE UNDERLIFT ASSEMBLY - Continued

CAUTION

Ensure underlift assembly lock pin is securely installed when underlift assembly is fully folded. Failure to comply may result in damage to equipment.

8. Install underlift assembly lock pin (12) in boom frame (13).

9. Position UNDERLIFT lever (17) to UP until boom frame (13) is fully raised.



END OF OPERATING PROCEDURE

M998 SERIES TOWING CONNECTION/DISCONNECTION

0036 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Lift Tool, Top Bumper (Item 21, Table 1, WP 0112 00)
Cable Kit (Item 12, Table 2, WP 0112 00)
Chain Assembly, Single Leg (Item 13, Table 2, WP 0112 00)
Taillight Assembly (Item 43, Table 2, WP 0112 00)
Goggles, Industrial (Item 25, Table 2, WP 0112 00)

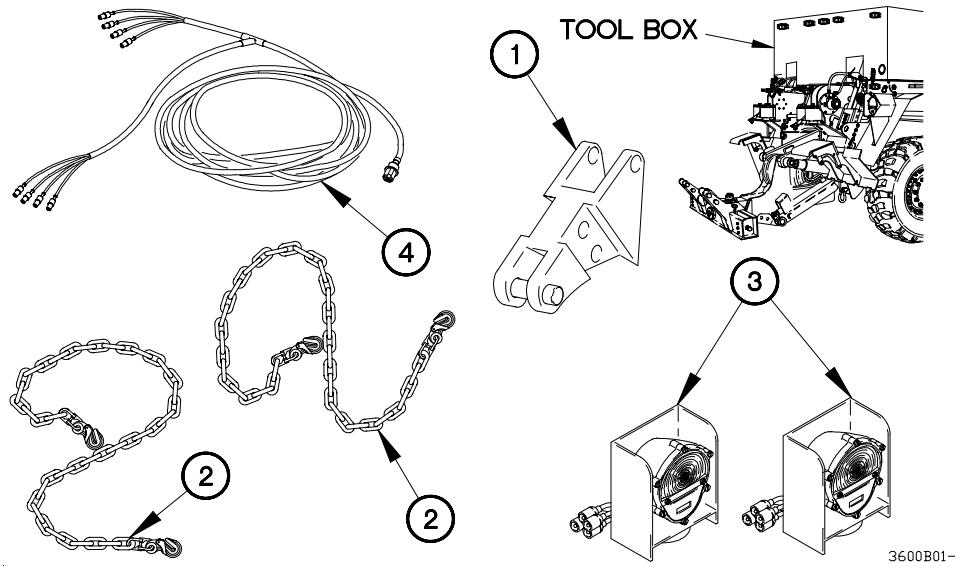
References
TM 9-2320-280-10
WP 0018 00
WP 0035 00
WP 0066 00

GENERAL

This work package provides the data and procedures for M998 series towing connection and disconnection. Items covered include Front Connection, Front Disconnection, Rear Connections and Rear Disconnection.

FRONT CONNECTION

1. Remove two top bumper lift tools (1), chains (2), emergency tow lights (3), and tow lights cable (4) from tool box.



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT CONNECTION - Continued

2. Prepare underlift assembly for operation (WP 0035 00).

3. Connect WRECKER REMOTE CONTROL (WP 0035 00).

4. Remove two linchpins (5) and large pins (6) from lift tools (7).

5. Remove two linchpins (8) and small pins (9) from lift tools (7).

NOTE

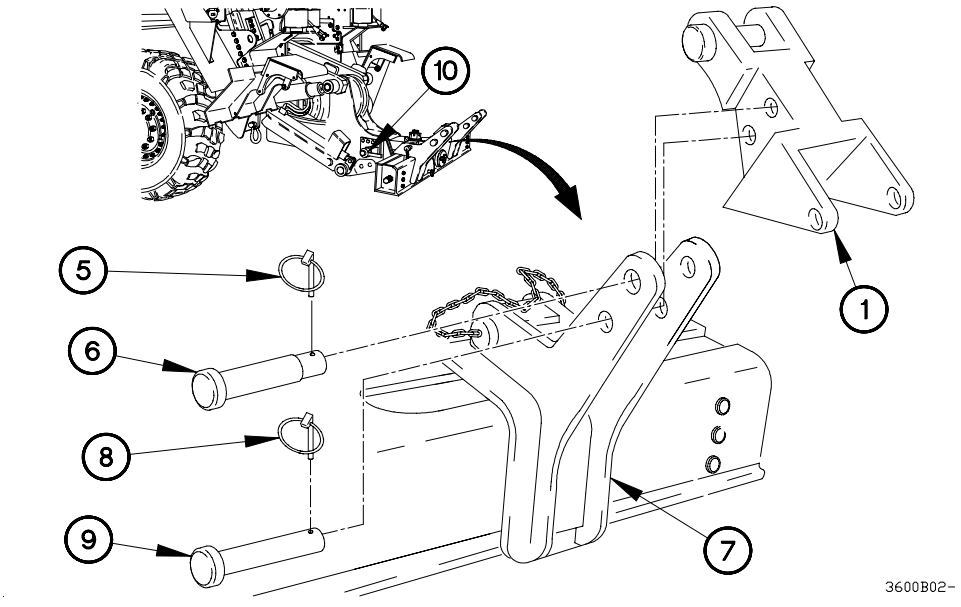
Top bumper lift tools are installed with small pin hole facing toward rear of crossbar.

Left and right side top lift tools are installed the same way. Right side shown.

6. Install two top bumper lift tools (1) on lift tools (7) with large pins (6) and linchpins (5).

7. Install small pins (9) and linchpins (8) in two top bumper lift tools (1).

8. Unlock stinger cam lock (10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT CONNECTION - Continued

9. Remove two shackles from M998 tow eyes (TM 9-2320-280-10).

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

10. Place UNDERLIFT lever (11) in UP position to raise crossbar (12) until two top bumper lift tools (1) are aligned with M998 tow eyes (13).

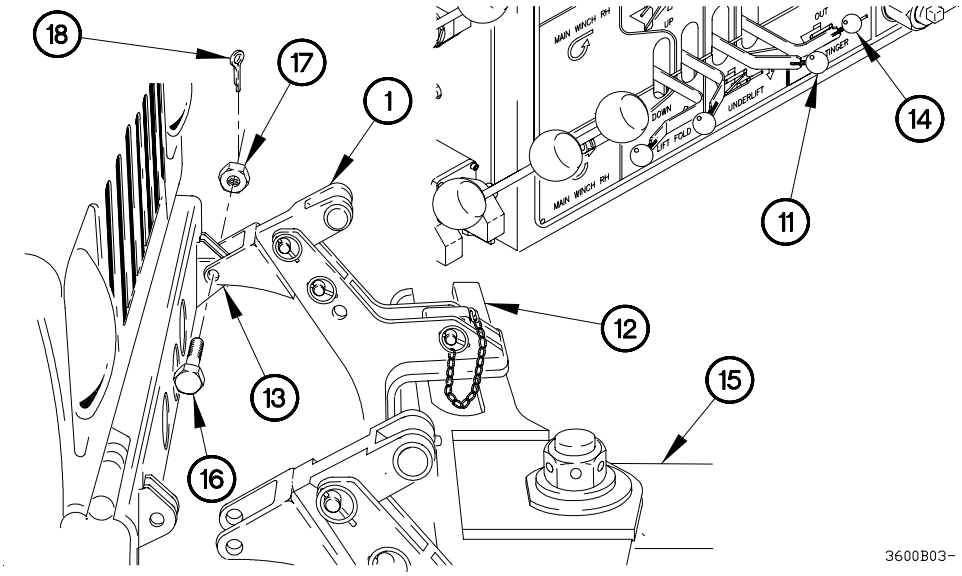
11. Place STINGER lever (14) in OUT position to extend stinger (15) until two top bumper lift tools (1) are aligned with M998 tow eyes (13).

NOTE

Left and right side top bumper lift tools are installed on M998 tow eyes the same way. Left side shown.

Top bumper lift tools are attached to M998 tow eyes with bolts, nuts and cotter pins removed with M998 shackles.

12. Install two top bumper lift tools (1) on two M998 tow eyes (13) with two bolts (16), nuts (17), and cotter pins (18).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

FRONT CONNECTION - Continued

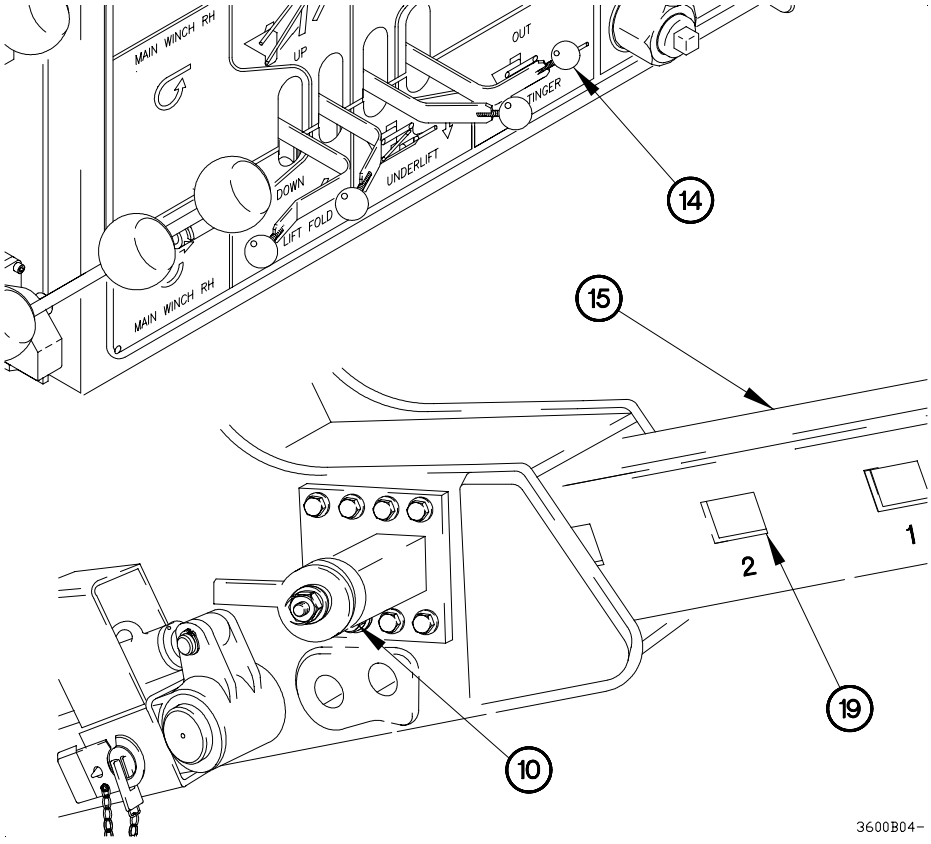
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing an M998. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if winches or other components mounted on front of M998 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

13. Place STINGER lever (14) to IN position to retract stinger (15) until desired stinger cam lock hole (19) is aligned.

14. Lock stinger cam lock (10).



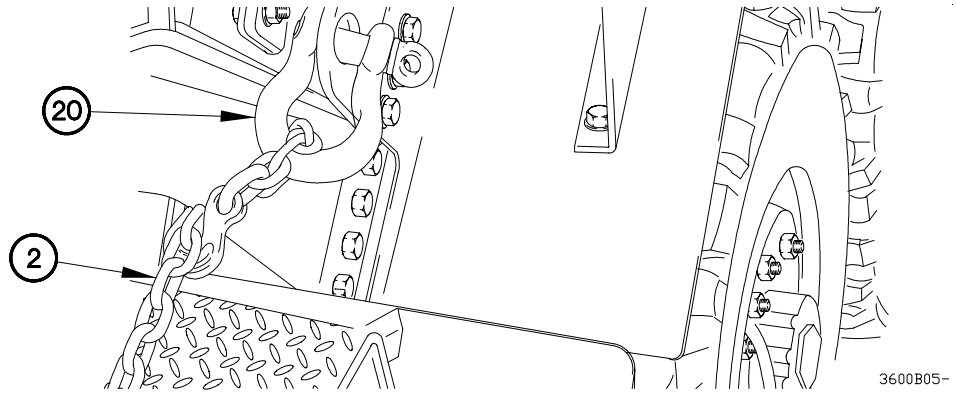
M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT CONNECTION - Continued

NOTE

Left and right side chains are connected the same way. Right side shown.

15. Connect one end of two chains (2) to M1089A1 rear shackles (20).

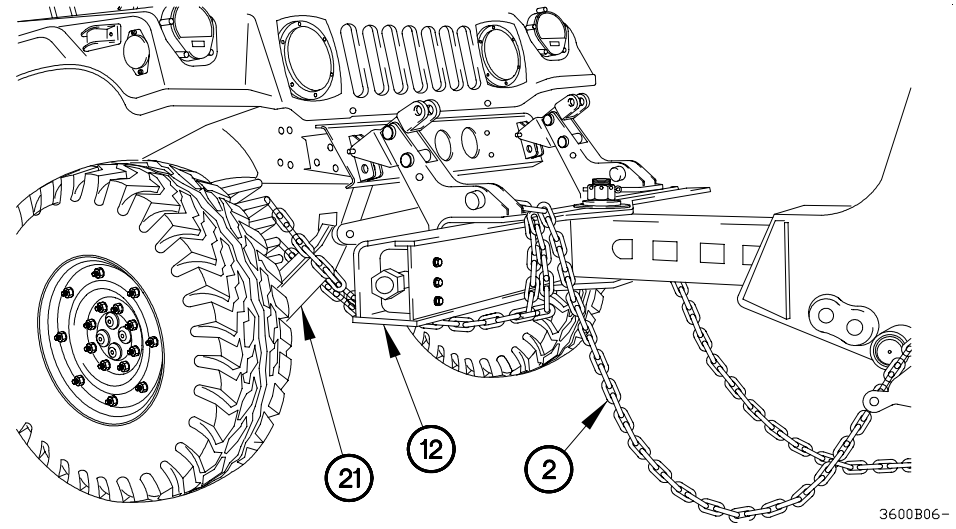


NOTE

Wrap chains around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

16. Wrap two chains (2) around crossbar (12).

17. Connect other end of two chains (2) to front arm of M998 A-frame (21).

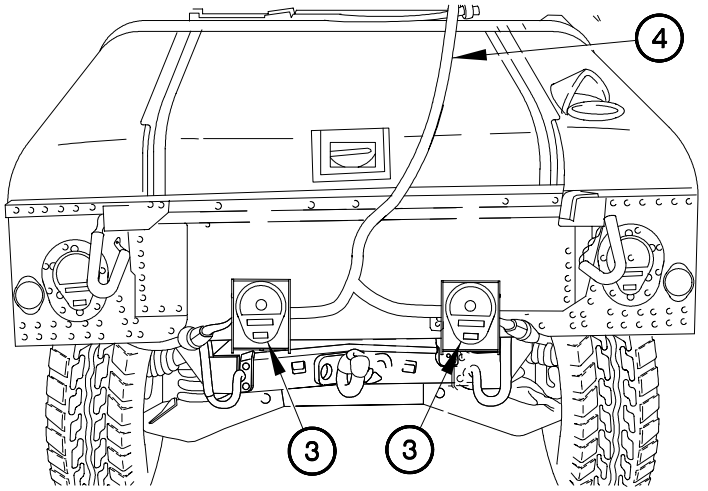


M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT CONNECTION - Continued

18. Position two emergency tow lights (3) on rear of M998.

19. Connect tow lights cable (4) to two emergency tow lights (3).



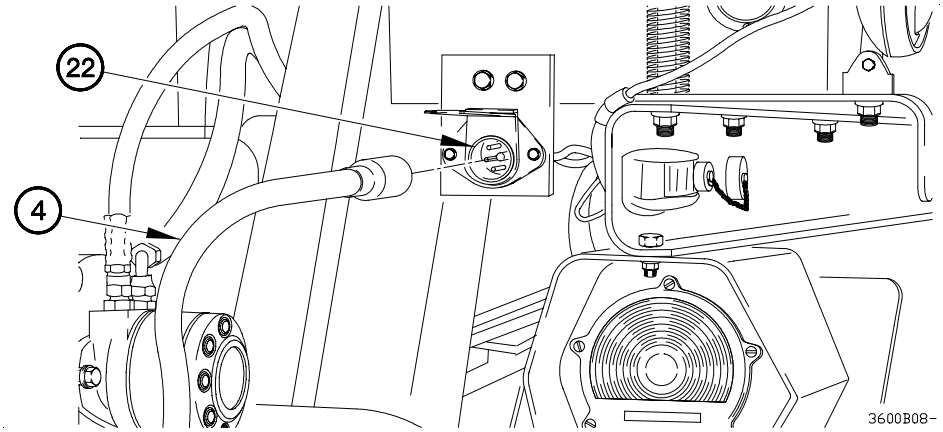
20. Route end of tow light cable (4) along top of M998.

21. Connect tow lights cable (4) to M1089A1 rear electrical connector (22).

CAUTION

All loose equipment must be secure on M998. Failure to comply may result in damage to equipment.

22. Prepare M998 for towing (TM 9-2320-280-10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

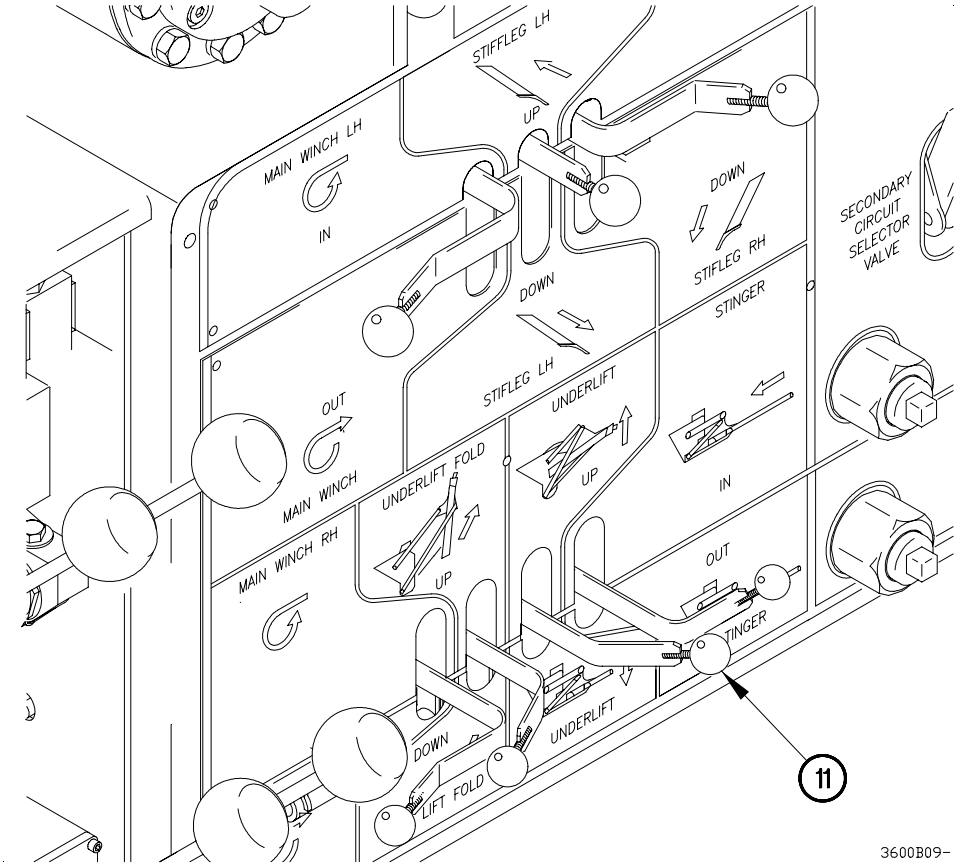
FRONT CONNECTION - Continued

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

23. Place UNDERLIFT lever (11) in UP position to raise M998 until wheels are approximately 16 in. (41 cm) off ground.

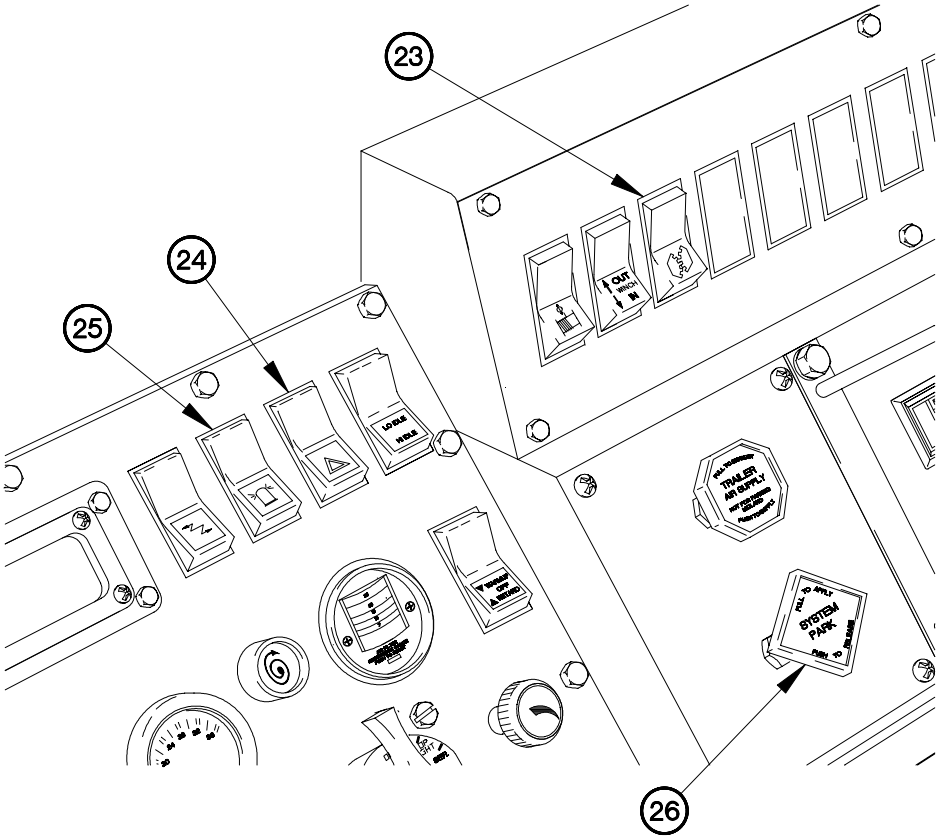
24. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT CONNECTION - Continued

25. Position PTO switch (23) to off.
26. Install and raise two amber warning lights (WP 0066 00).
27. Turn on service drive lights (WP 0018 00).
28. Position hazard lights switch (24) to on.
29. Position warning lights switch (25) to on.
30. Push in SYSTEM PARK control (26).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT CONNECTION - Continued

31. Set transmission in gear (WP 0018 00).

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that vehicle being towed and terrain allow safe operation. The following are maximum speeds for safe operation. Exceeding these speeds may result in loss of vehicle control.

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

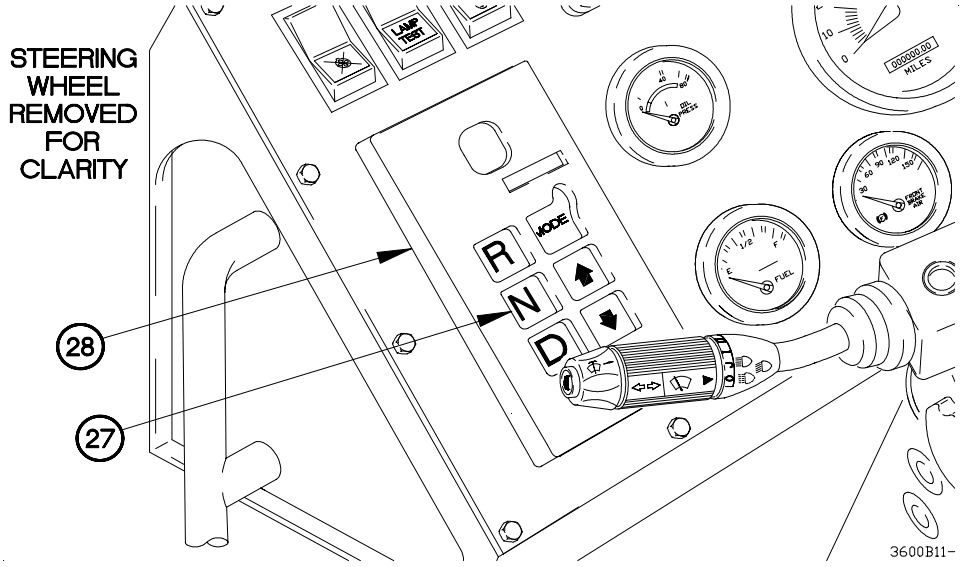
Failure to comply may result in serious injury or death to personnel or damage to equipment.

32. Transport M998.

FRONT DISCONNECTION

1. Start engine (WP 0018 00).

2. Press N (Neutral) button (27) on WTEC III TPSS (28).

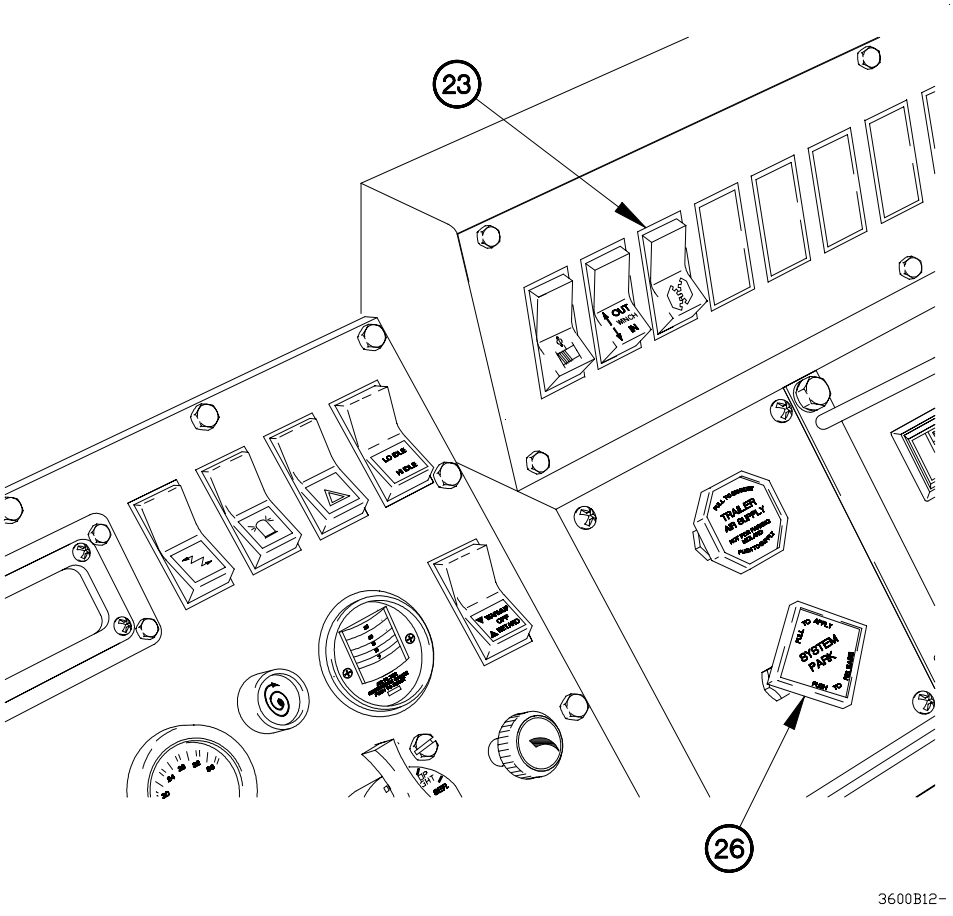


M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT DISCONNECTION - Continued

3. Pull out SYSTEM PARK control (26).

4. Position PTO switch (23) to on.



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT DISCONNECTION - Continued

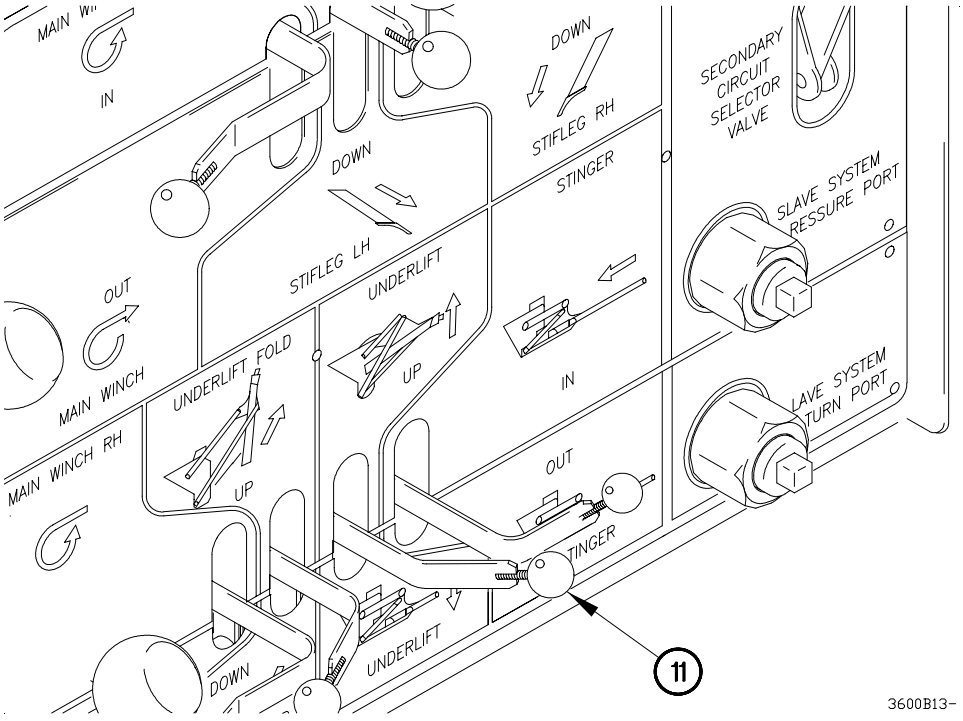
5. Connect WRECKER REMOTE CONTROL (WP 0035 00).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Place UNDERLIFT lever (11) in DOWN position to lower M998 until wheels are in firm contact with ground.



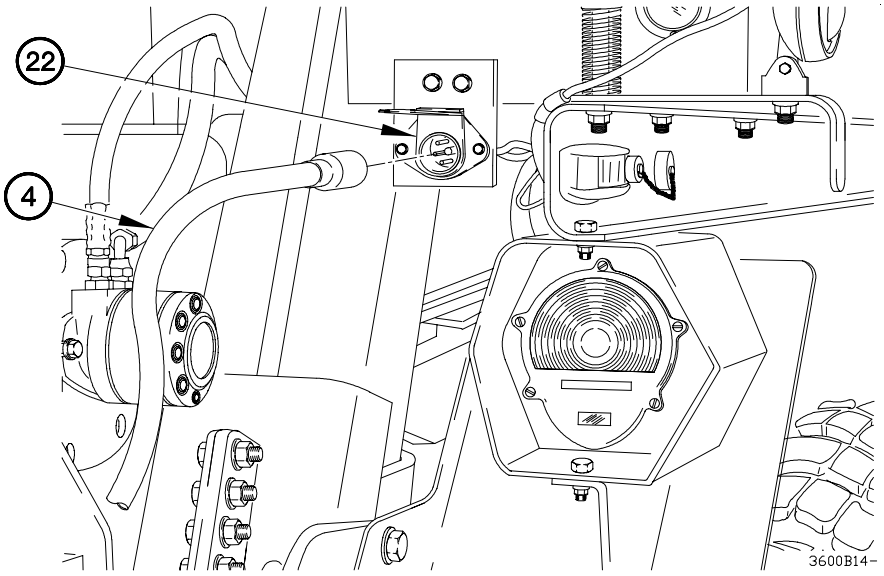
M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

FRONT DISCONNECTION - Continued

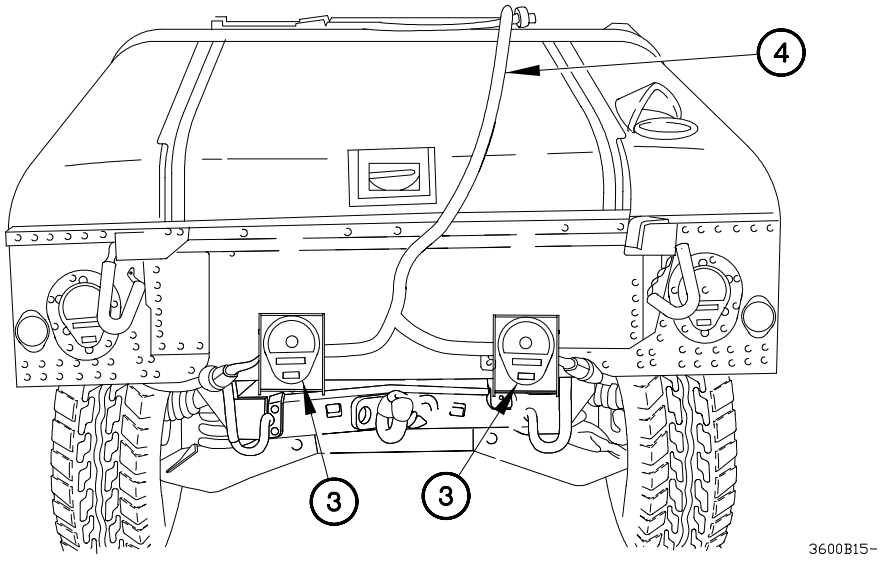
7. Set parking brake on M998 (TM 9-2320-280-10).

8. Disconnect tow lights cable (4) from M1089A1 rear electrical connector (22).



9. Disconnect tow lights cable (4) from two emergency tow lights (3).

10. Remove two emergency tow lights (3) from rear of M998.



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

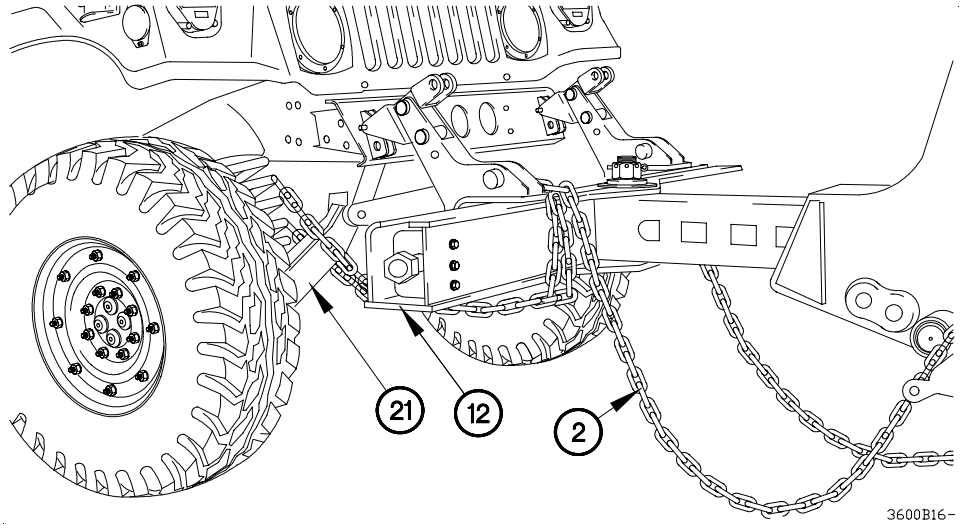
FRONT DISCONNECTION - Continued

NOTE

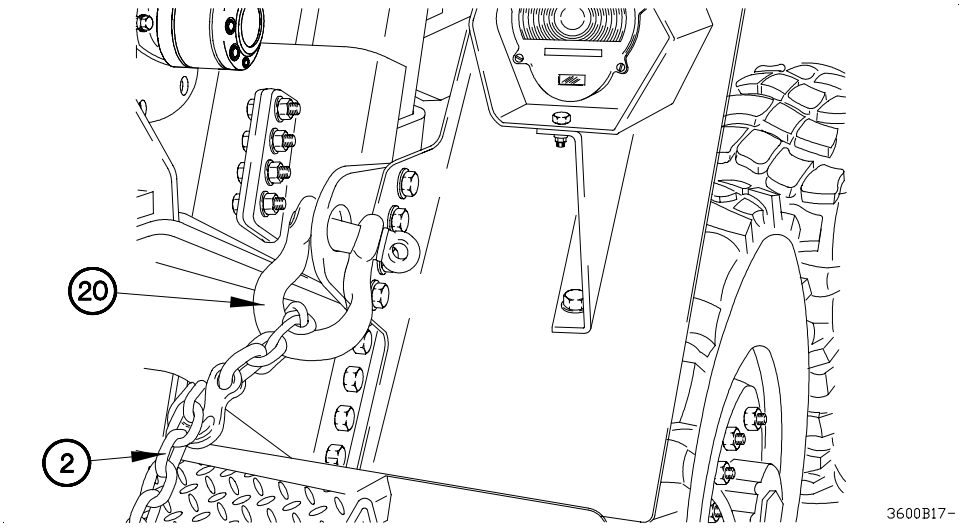
Left and right side chains are removed the same way. Right side shown.

11. Remove two chains (2) from front arm of M998 A-frames (21).

12. Remove two chains (2) from crossbar (12).



13. Remove other end of two chains (2) from M1089A1 rear shackles (20).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

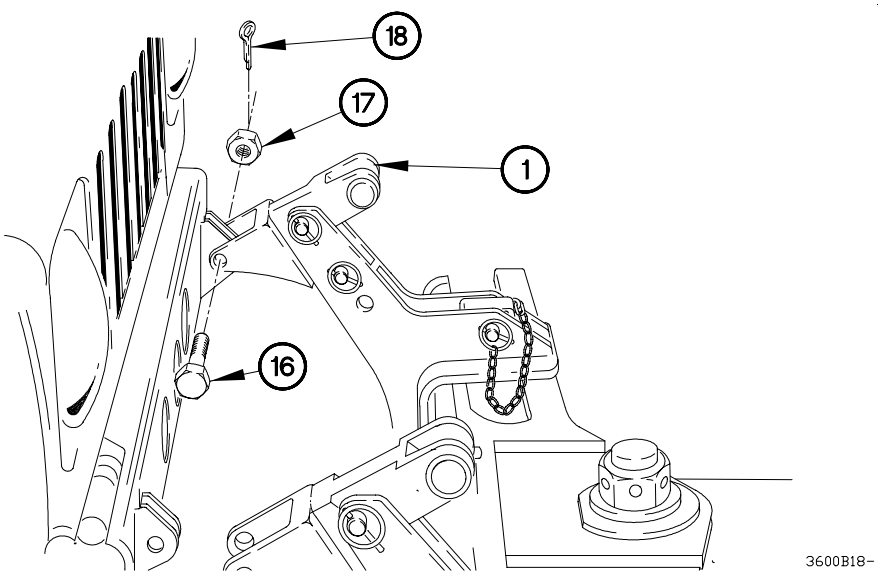
0036 00

FRONT DISCONNECTION - Continued

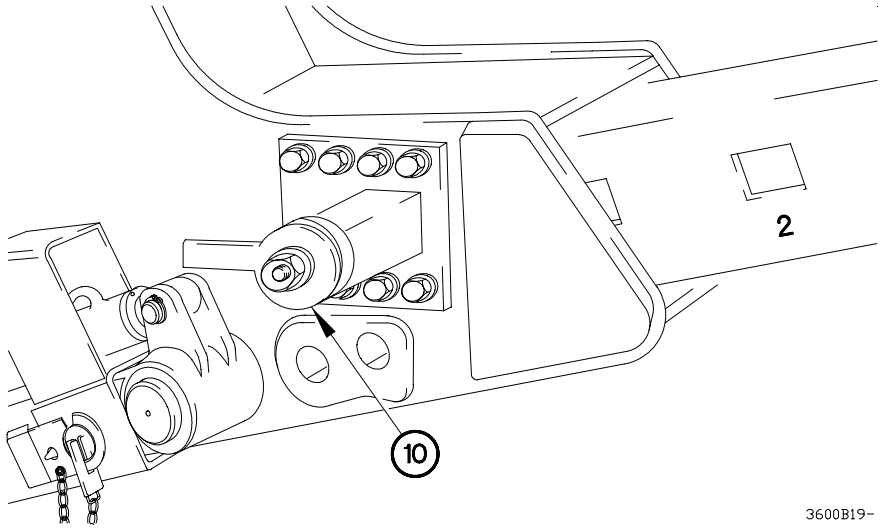
NOTE

Left and right side top bumper lift tools are removed from towed vehicle the same way. Left side shown.

16. Remove two cotter pins (18), nuts (17), and bolts (16) from two top bumper lift tools (1).



15. Unlock stinger cam lock (10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT DISCONNECTION - Continued

16. Place STINGER lever (14) to IN position to retract stinger (15) until stinger cam lock (10) is aligned with first hole (19) in stinger.

WARNING

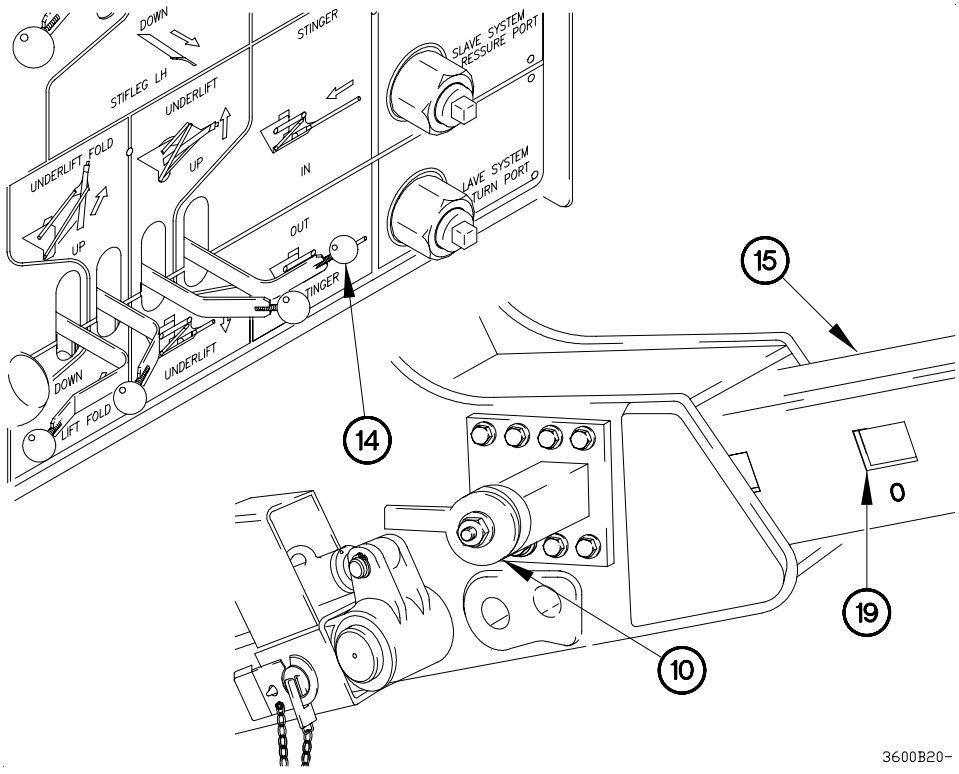
Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded in its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

17. Lock stinger cam lock (10).

NOTE

Shackles are attached to M998 tow eyes using bolts, nuts, and cotter pins that were removed with M998 shackles.

18. Install shackles on M998 tow eyes (TM 9-2320-280-10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT DISCONNECTION - Continued

NOTE

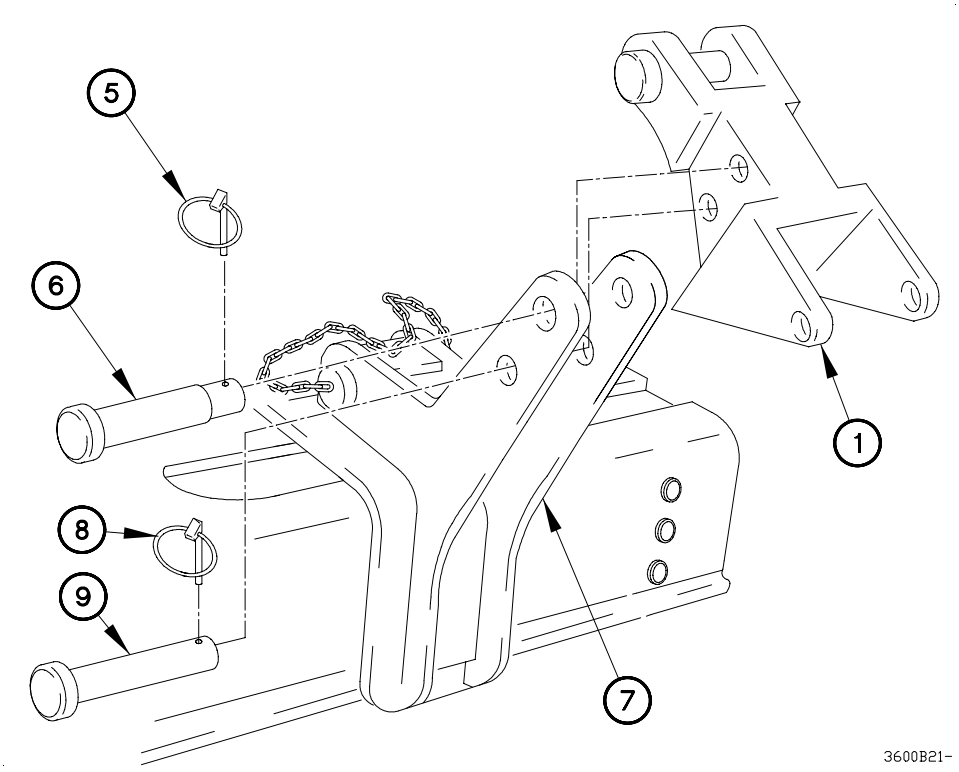
Left and right side top bumper lift tools are removed from lift tools the same way. Right side shown.

19. Remove two linchpins (8) and small pins (9) from two lift tools (7).

20. Remove two linchpins (5), large pins (6) and top bumper lift tools (1) from two lift tools (7).

21. Install two large pins (6) and linchpins (5) in lift tools (7).

22. Install two small pins (9) and linchpins (8) in lift tools (7).

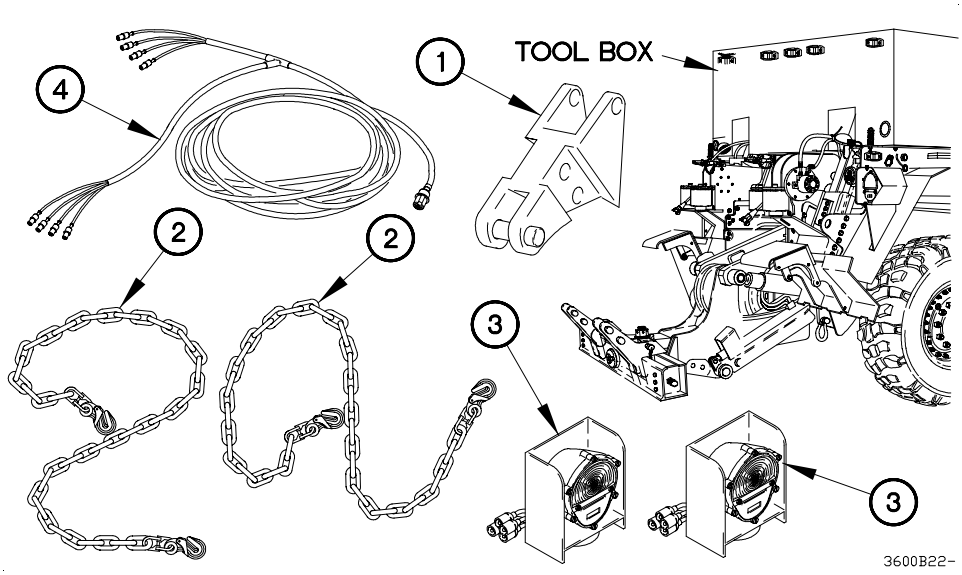


M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

FRONT DISCONNECTION - Continued

23. Stow two chains (2), top bumper lift tools (1), emergency tow lights (3), and tow lights cable (4) in tool box.



24. Raise underlift assembly (WP 0035 00).

25. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

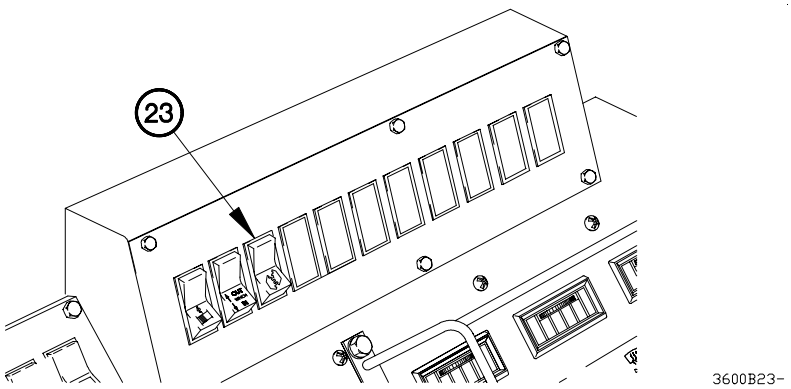
M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

FRONT DISCONNECTION - Continued

26. Position PTO switch (23) to off.

27. Shut down engine (WP 0018 00).

28. Lower and remove two amber warning lights (WP 0066 00).

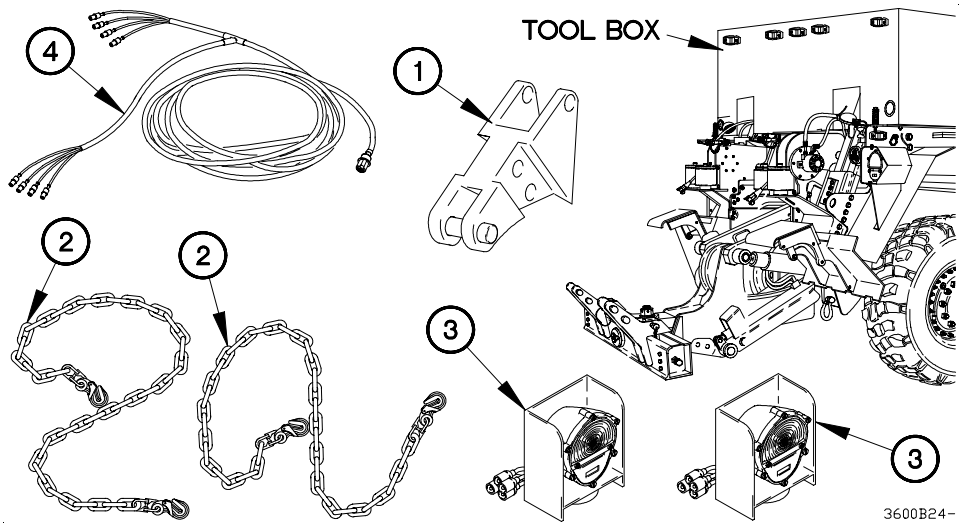


REAR CONNECTION

1. Remove two top bumper lift tools (1), chains (2), emergency tow lights (3), and tow lights cable (4) from tool box.

2. Prepare underlift assembly for operation (WP 0035 00).

3. Connect WRECKER REMOTE CONTROL (WP 0035 00).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

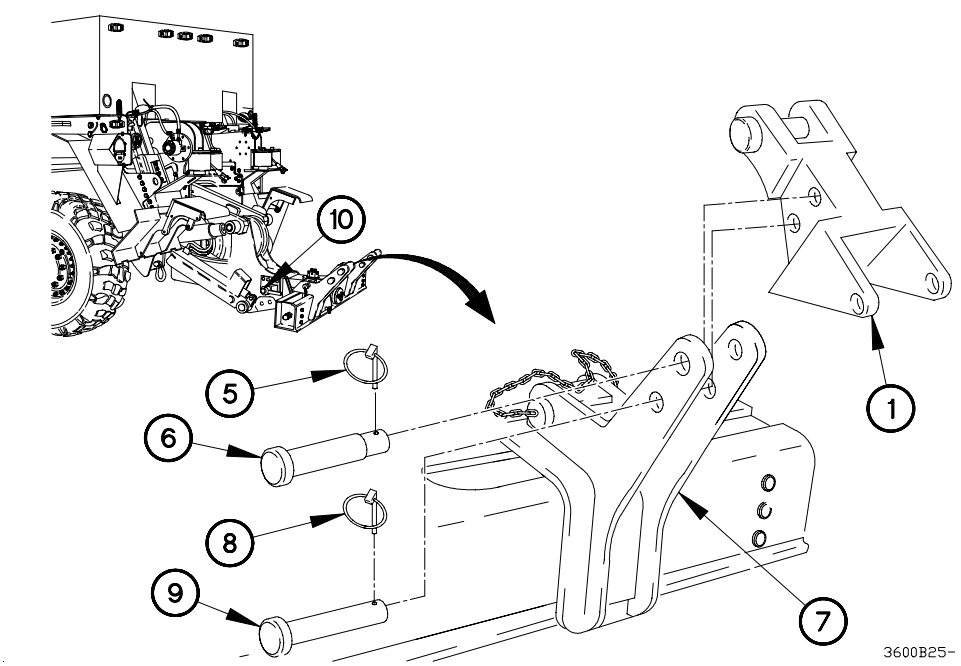
REAR CONNECTION - Continued

NOTE

Top bumper lift tools are installed with small pin hole facing toward rear of crossbar.

Left and right side top bumper lift tools are installed the same way. Right side shown.

4. Remove two linchpins (5) and large pins (6) from lift tools (7).
5. Remove two linchpins (8) and small pins (9) from lift tools (7).
6. Install top bumper lift tools (1) on lift tools (7) with large pins (6) and linchpins (5).
7. Install two small pins (9) and linchpins (8) in two top bumper lift tools (1).
8. Remove two shackles from M998 tow eyes (TM 9-2320-280-10).
9. Unlock stinger cam lock (10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

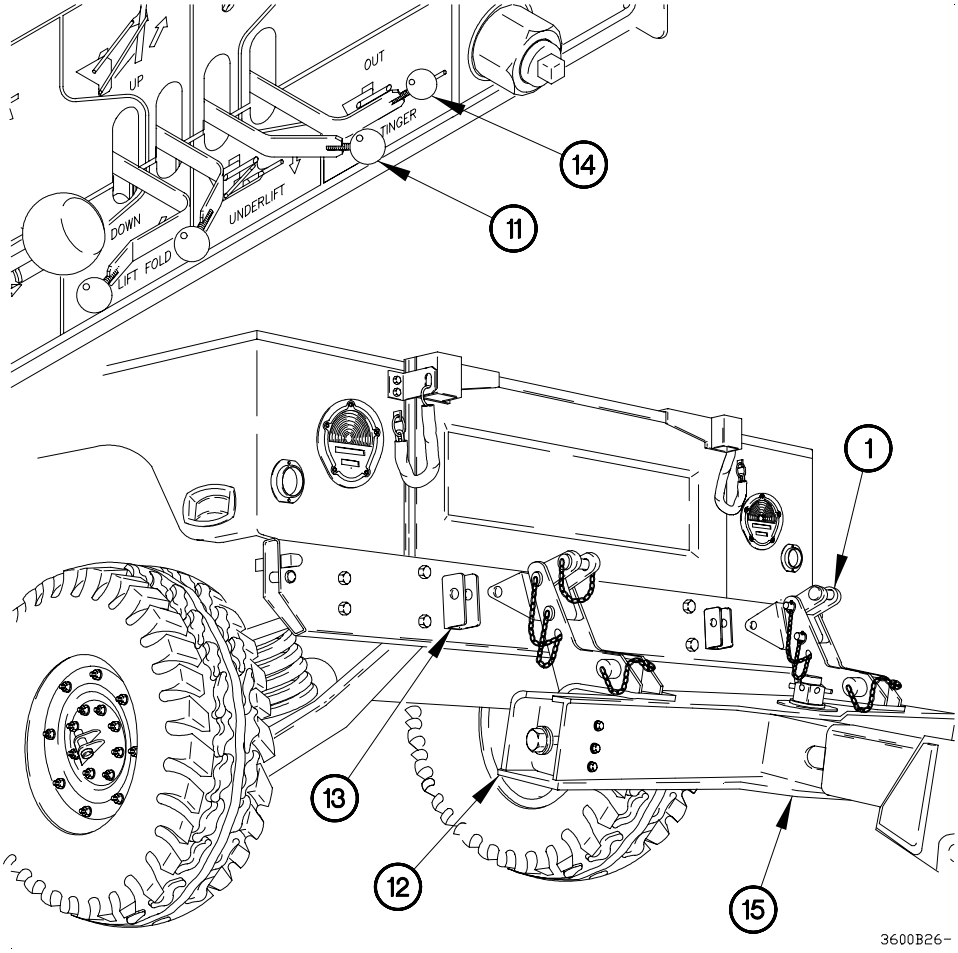
REAR CONNECTION - Continued

WARNING

Goggles must be worn when operating the WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

10. Place STINGER lever (14) in OUT position to extend stinger (15) until two top bumper lift tools (1) are aligned with M998 tow eyes (13).

11. Place UNDERLIFT lever (11) in UP position to raise crossbar (12) until two top bumper lift tools (1) are aligned with M998 tow eyes (13).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

REAR CONNECTION - Continued

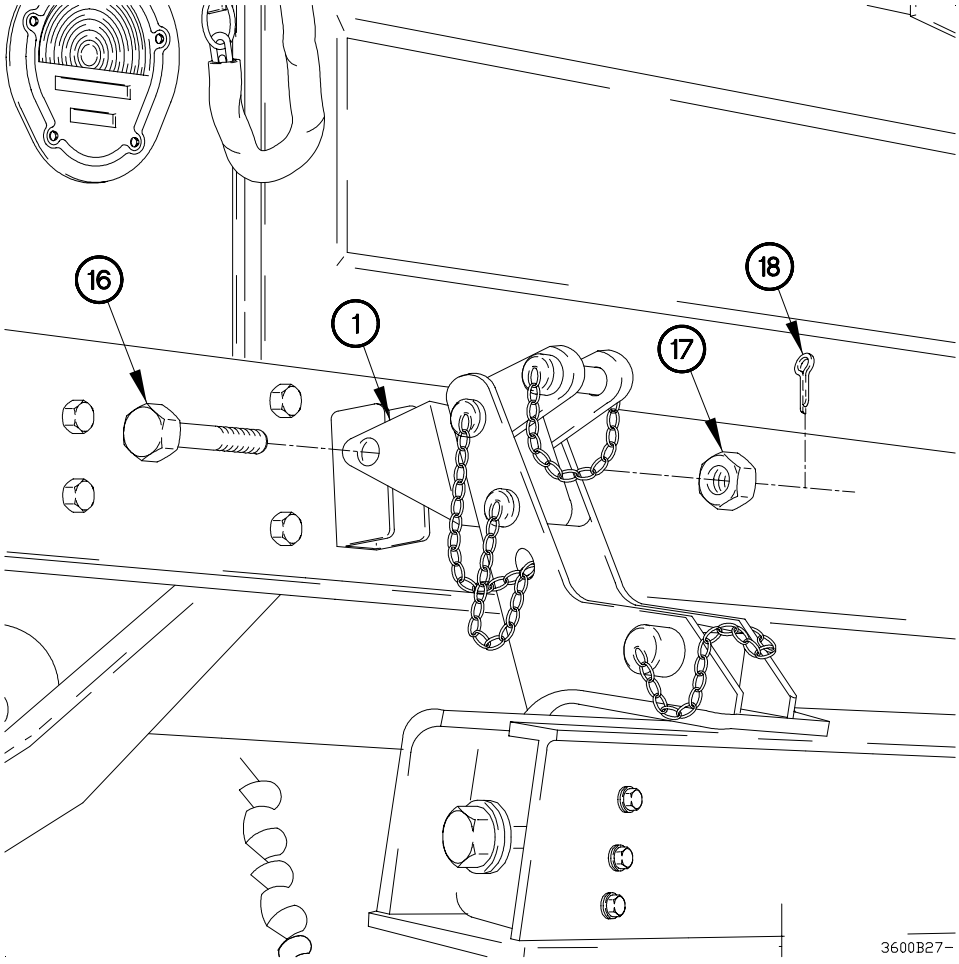
NOTE

Left and right side top bumper lift tools are installed on M998 tow eyes the same way. Right side shown.

Top bumper lift tools are attached to M998 tow eyes with bolts, nuts and cotter pins removed from M998 shackles.

12. Install two bolts (16), nuts (17), and cotter pins (18) in top bumper lift tools (1).

13. Prepare M998 for towing (TM 9-2320-280-10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

REAR CONNECTION - Continued

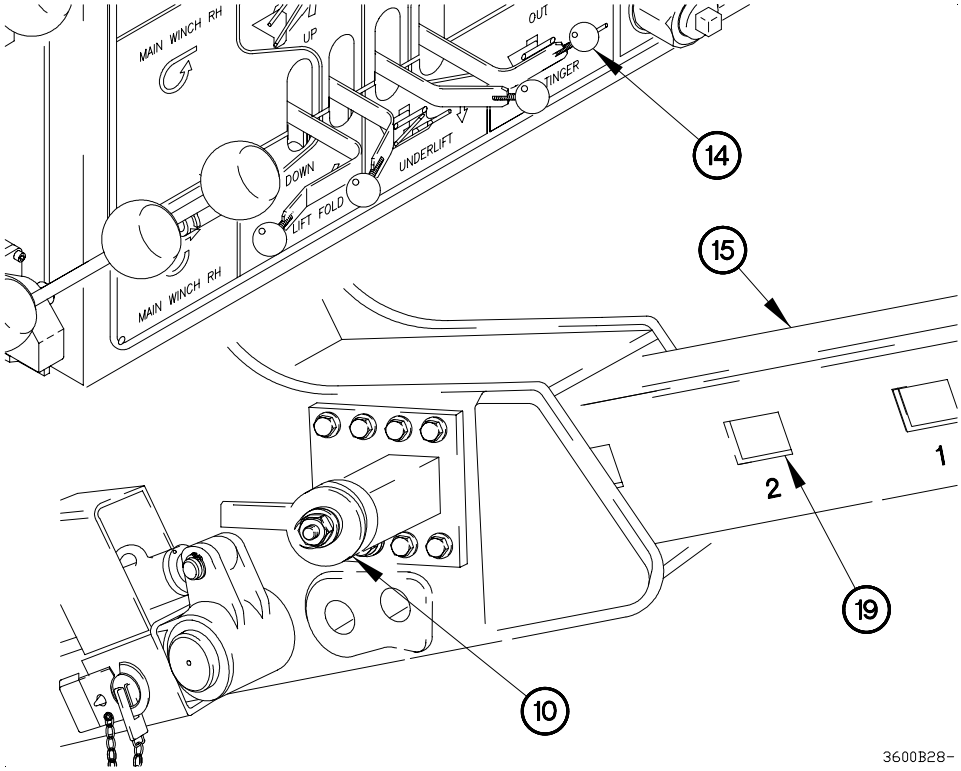
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing M998. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if components mounted on rear of M998 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

14. Place STINGER lever (14) to IN position to retract stinger (15) until desired stinger cam lock hole (19) is aligned.

15. Lock stinger cam lock (10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

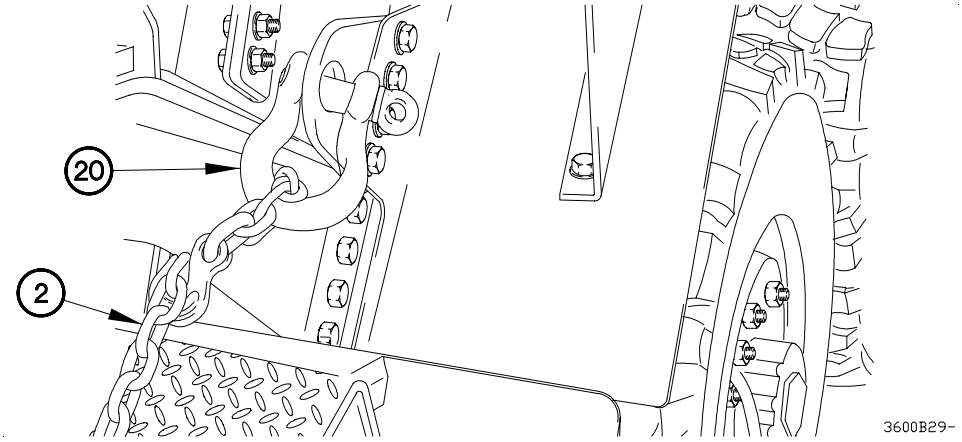
0036 00

REAR CONNECTION - Continued

NOTE

Left and right side chains are installed the same way. Right side shown.

16. Connect one end of two chains (2) to M1089A1 rear shackles (20).

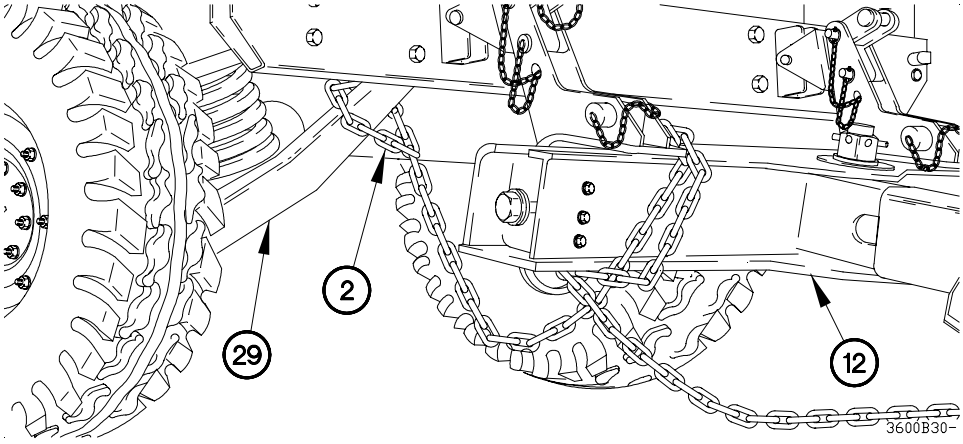


NOTE

Wrap chains around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

17. Wrap two chains (2) around crossbar (12).

18. Connect other end of two chains (2) around rear crossmember (29) under M998.



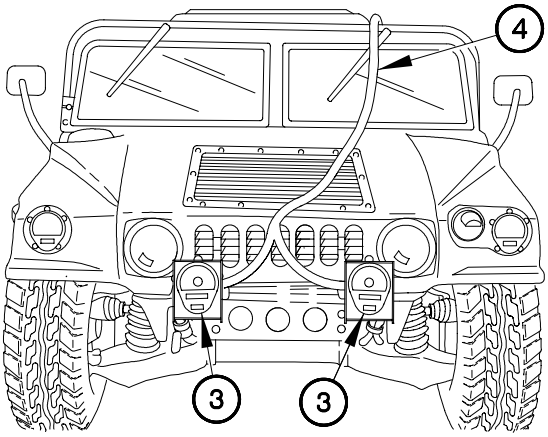
M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

REAR CONNECTION - Continued

19. Position two emergency tow lights (3) on front of M998.

20. Connect tow lights cable (4) to two emergency tow lights (3).



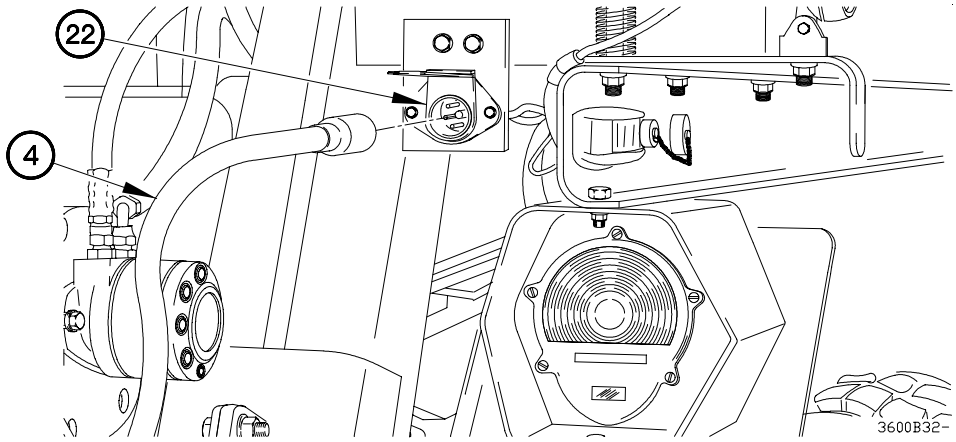
21. Route tow lights cable (4) along top of M998.

22. Connect tow lights cable (4) to M1089A1 rear electrical connector (22).

CAUTION

Ensure all loose equipment is secure on M998. Failure to comply may result in damage to equipment.

23. Prepare M998 for towing (TM 9-2320-280-10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

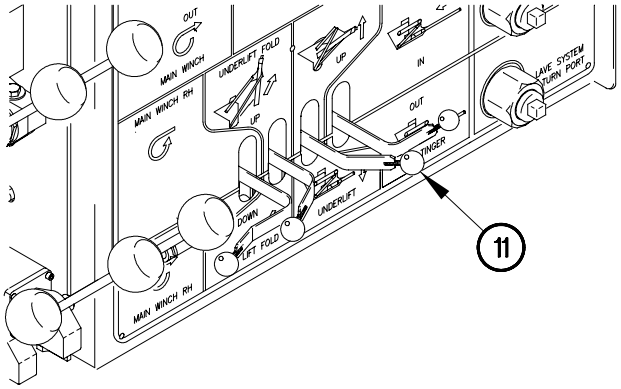
REAR CONNECTION - Continued

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

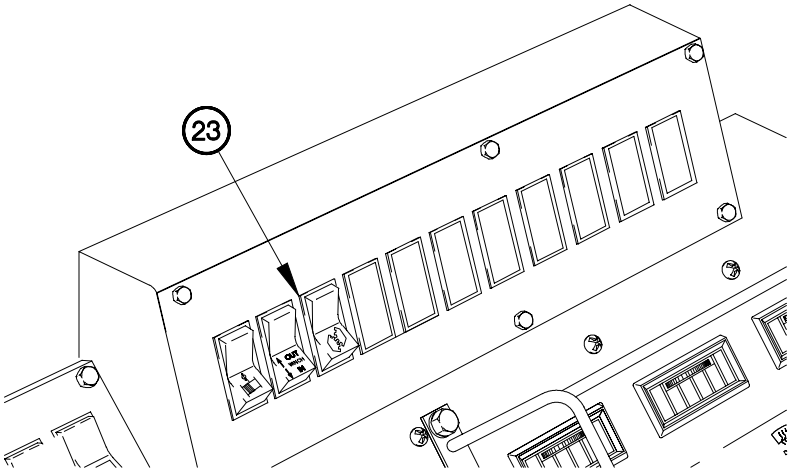
24. Place UNDERLIFT lever (11) in UP position to raise M998 until wheels are approximately 16 in. (41 cm) off ground.

25. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).



3600B33-

26. Position PTO switch (23) to off.



3600B34-

M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

REAR CONNECTION - Continued

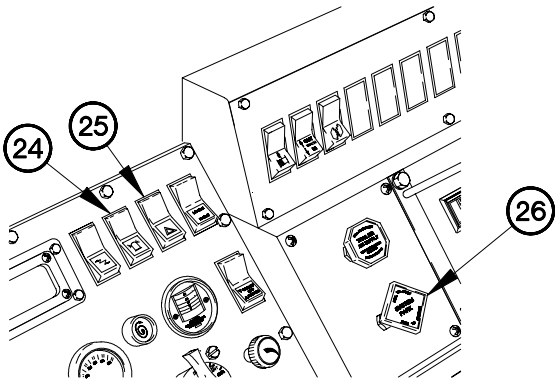
27. Install and raise two amber warning lights (WP 0066 00).

28. Turn on service drive lights (WP 0018 00).

29. Position warning lights switch (24) to on.

30. Position hazard lights switch (25) to on.

31. Push in SYSTEM PARK control (26).



3600B35-

32. Set transmission in gear (WP 0018 00).

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing vehicle except on paved roads when Operator determines that vehicle being towed and terrain allow safe operation. The following are maximum speeds for safe operation. Exceeding these speeds may result in loss of vehicle control.

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

Failure to comply may result in serious injury or death to personnel or damage to equipment.

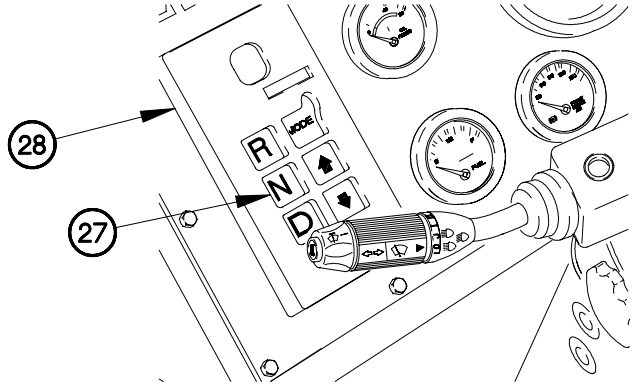
33. Transport M998.

M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

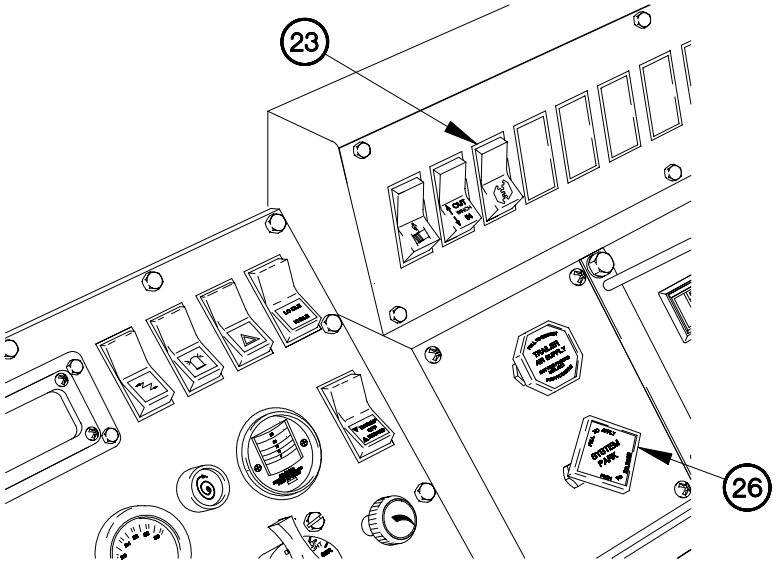
REAR DISCONNECTION

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (27) on WTEC III TPSS (28).



3600B36-

3. Pull out SYSTEM PARK control (26).
4. Position PTO switch (23) to on.
5. Connect WRECKER REMOTE CONTROL (WP 0035 00).



3600B37-

M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

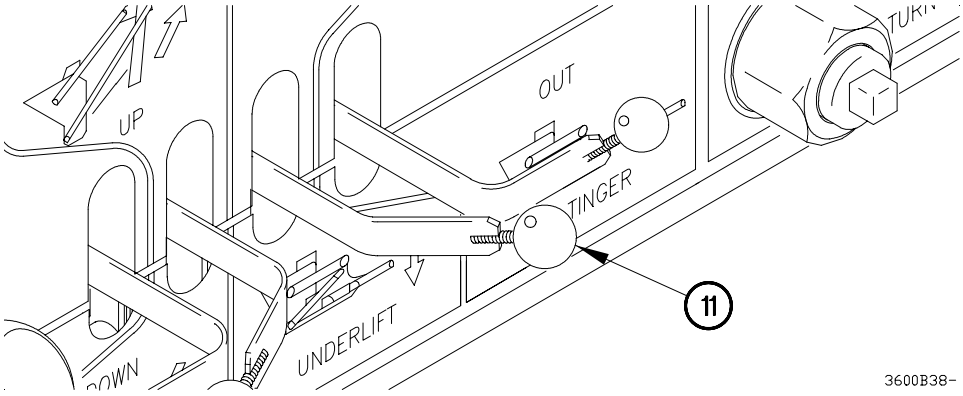
REAR DISCONNECTION - Continued

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

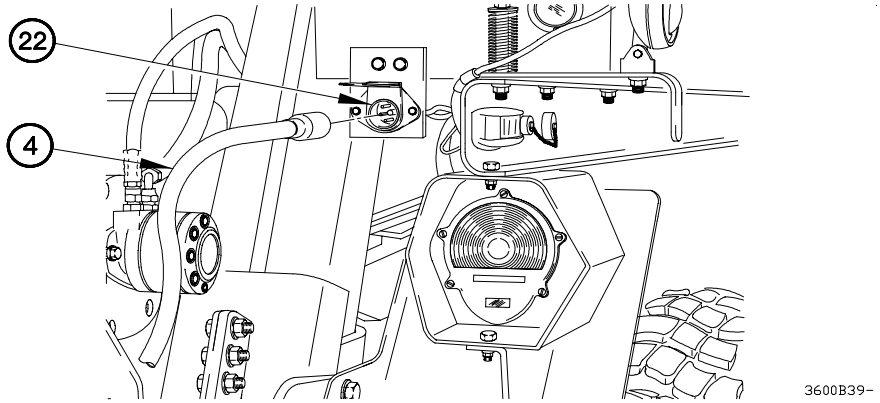
Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

6. Place UNDERLIFT lever (11) in DOWN position to lower M998 until vehicle wheels are in firm contact with ground.



7. Set parking brake on M998 (TM 9-2320-280-10).

8. Disconnect tow lights cable (4) from M1089A1 rear electrical connector (22).



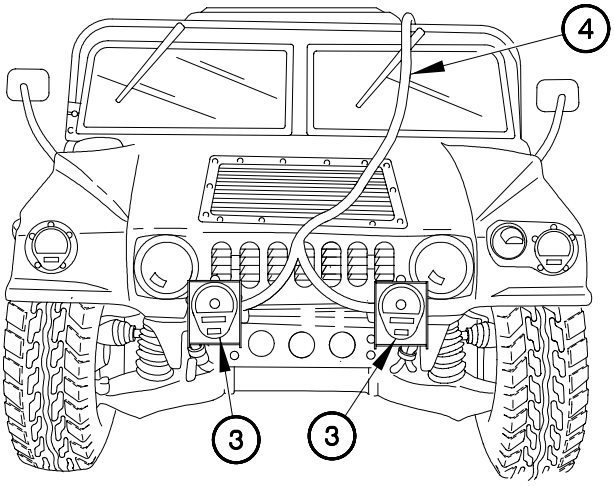
M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

REAR DISCONNECTION - Continued

9. Disconnect tow lights cable (4) from two emergency tow lights (3).

10. Remove two emergency tow lights (3) from front of M998.

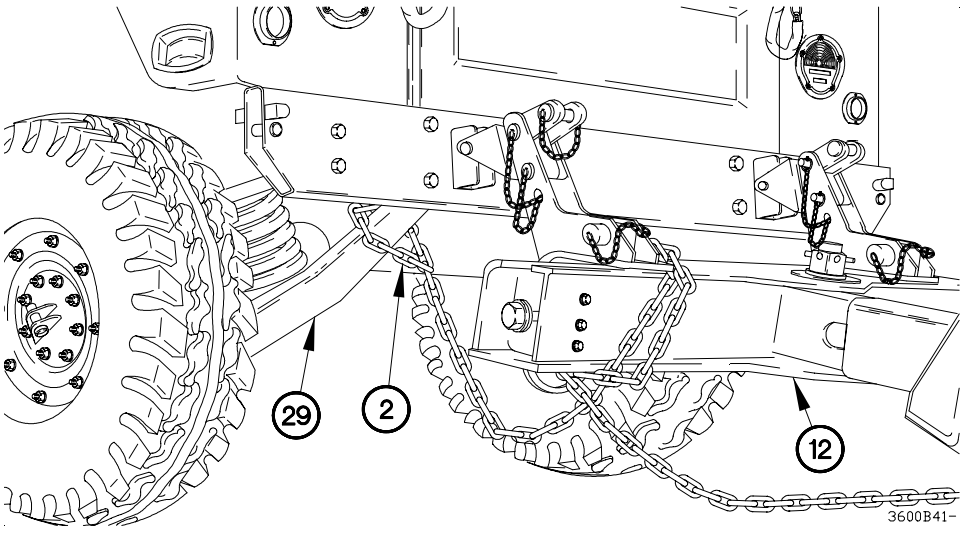


NOTE

Left and right side chains are removed the same way. Right side shown.

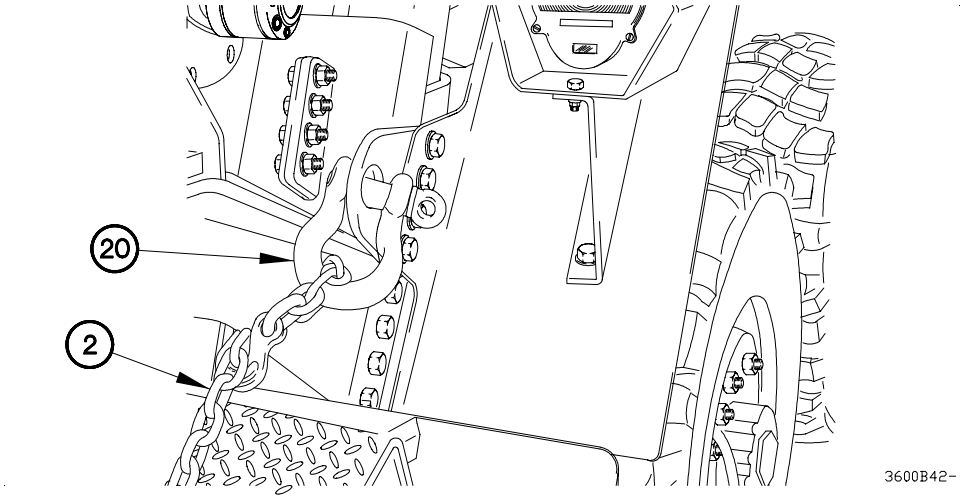
11. Remove two chains (2) from M998 rear crossmember (29).

12. Remove two chains (2) from crossbar (12).



REAR DISCONNECTION - Continued

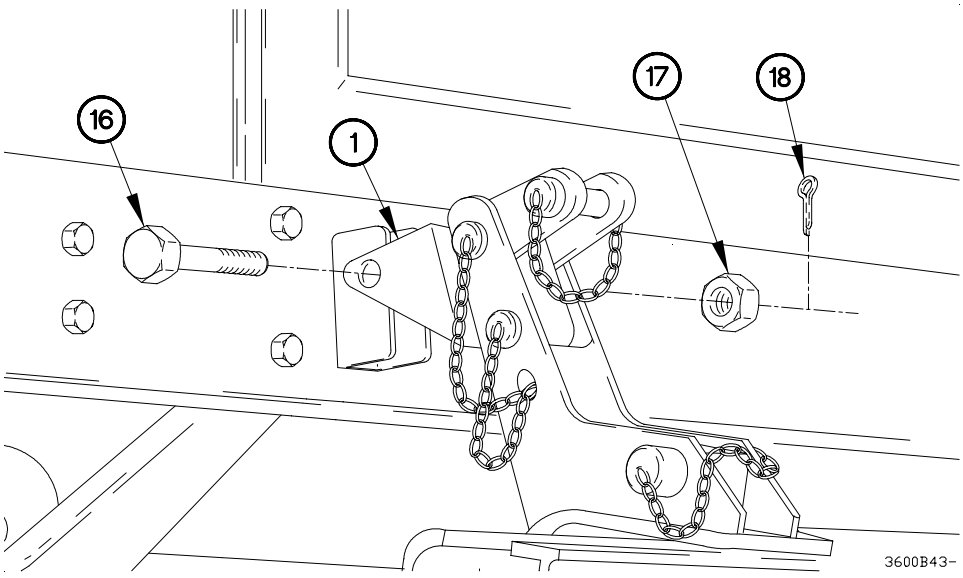
13. Remove other end of two chains (2) from M1089A1 rear shackles (20).



NOTE

Left and right side top bumper tools are removed the same way. Right side shown.

14. Remove two cotter pins (18), nuts (17), and bolts (16) from two top bumper tools (1).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

REAR DISCONNECTION - Continued

15. Unlock stinger cam lock (10).

16. Place STINGER lever (14) to IN position to retract stinger (15) until stinger cam lock (10) is aligned with first hole (19) in stinger.

WARNING

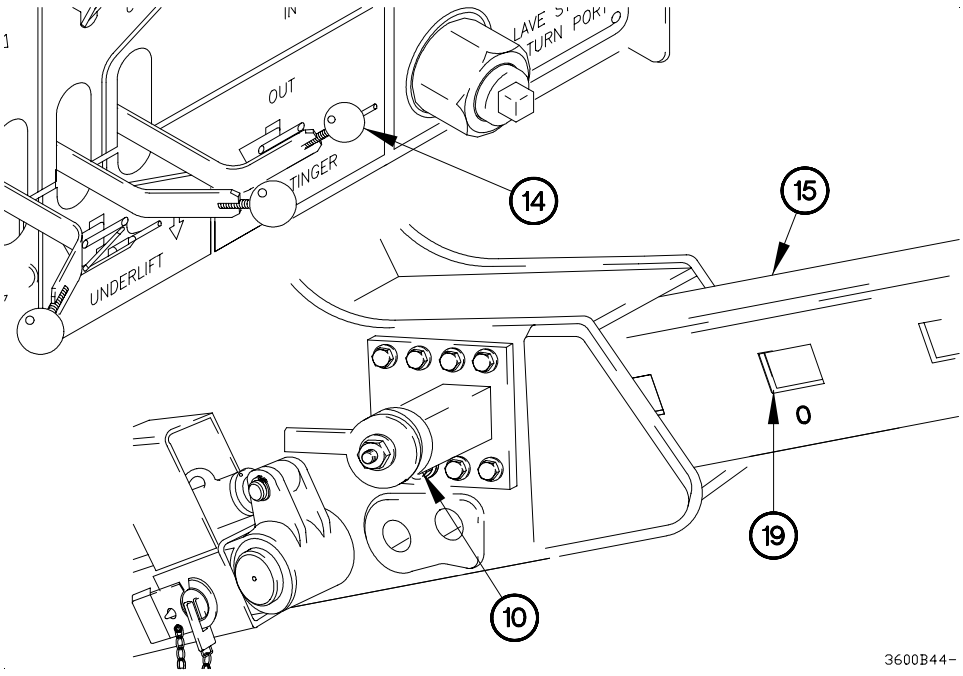
Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded in its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

17. Lock stinger cam lock (10).

NOTE

Shackles are attached to M998 tow eyes using bolts, nuts, and cotter pins that were removed from M998 shackles.

18. Install shackles on M998 tow eyes (TM 9-2320-280-10).



M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0036 00

REAR DISCONNECTION - Continued

NOTE

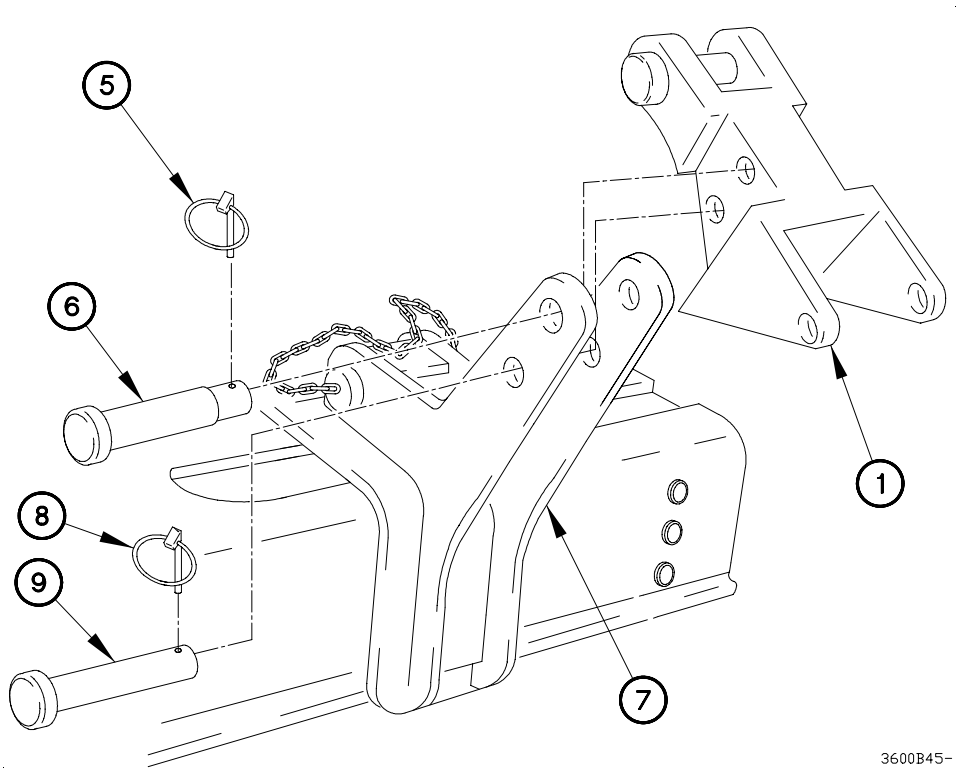
Left and right side top bumper lift tools are removed from lift tools the same way. Right side shown.

19. Remove two linchpins (8) and small pins (9) from two lift tools (7).

20. Remove two linchpins (5), large pins (6) and top bumper lift tools (1) from two lift tools (7).

21. Install two large pins (6) and linchpins (5) in two lift tools (7).

22. Install two small pins (9) and linchpins (8) in two lift tools (7).

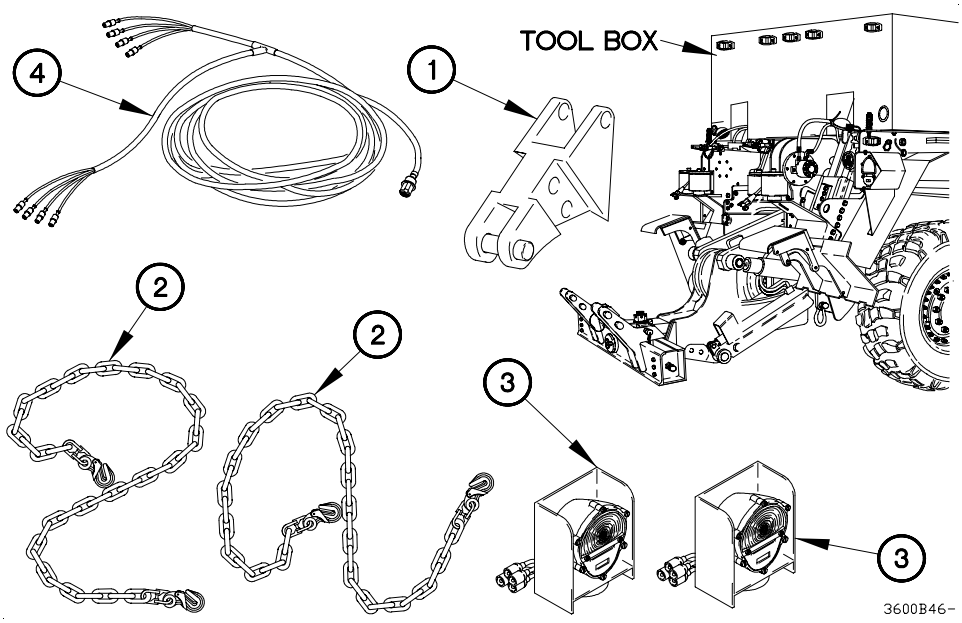


M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0036 00

REAR DISCONNECTION - Continued

23. Stow two chains (2), top bumper lift tools (1), emergency tow lights (3), and tow lights cable (4) in tool box.



24. Raise underlift assembly (WP 0035 00).

25. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

M998 SERIES TOWING CONNECTION/DISCONNECTION - Continued

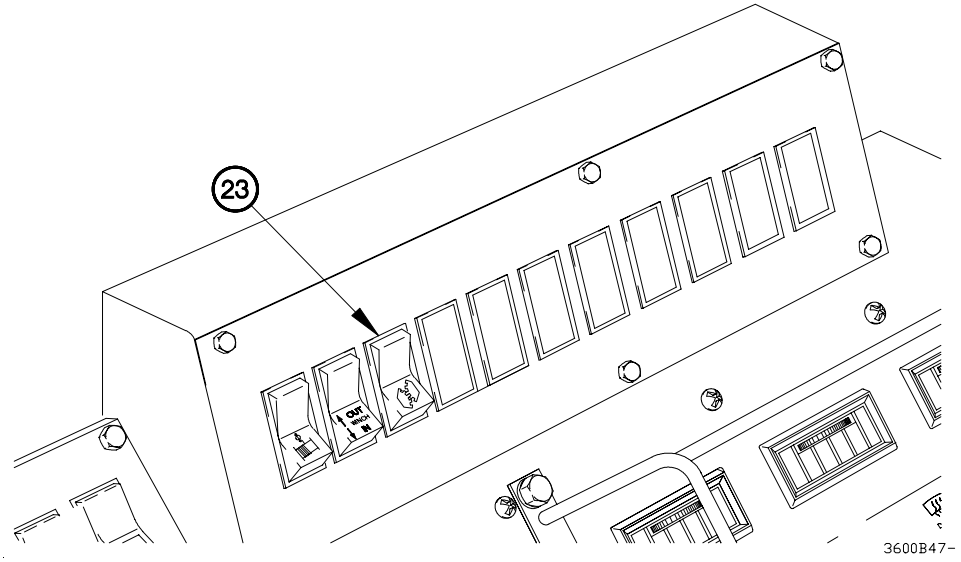
0036 00

REAR DISCONNECTION - Continued

26. Position PTO switch (23) to off.

27. Shut down engine (WP 0018 00).

28. Lower and remove two amber warning lights (WP 0066 00).



END OF OPERATING PROCEDURE

M1008 SERIES TOWING CONNECTION/DISCONNECTION

0037 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Cable Kit (Item 5, Table 2, WP 0112 00)
Chain Assembly, Single Leg (Item 13, Table 2, WP 0112 00)
Goggles, Industrial (Item 25, Table 2, WP 0112 00)
Taillight Assembly (Item 43, Table 2, WP 0112 00)

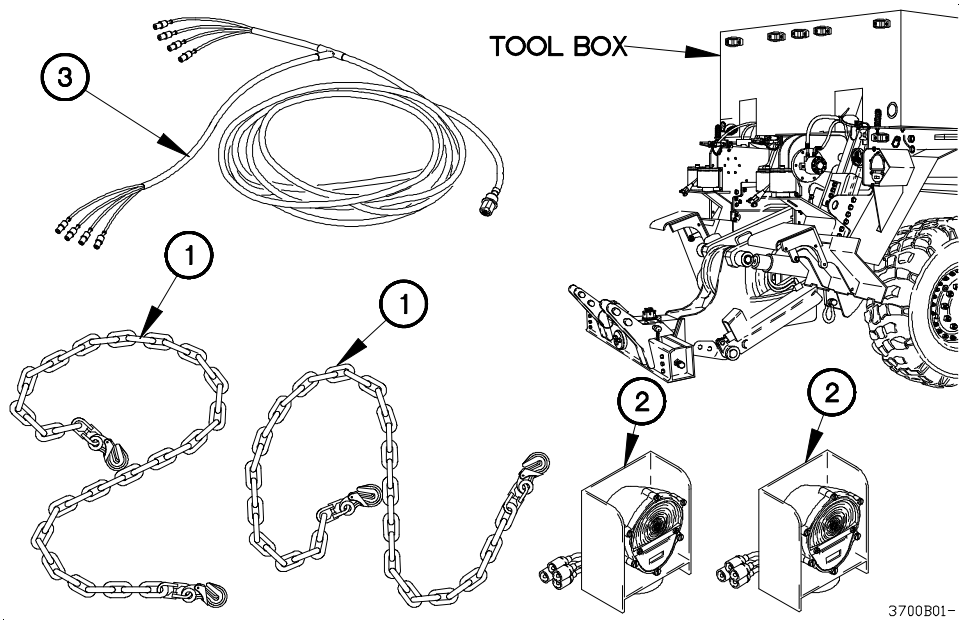
References
TM 9-2320-289-10
WP 0018 00
WP 0035 00
WP 0066 00

GENERAL

This work package provides the data and procedures for M1008 series towing connection and disconnection. Items covered include Front Connection, Front Disconnection, Rear Connection, and Rear Disconnection.

FRONT CONNECTION

1. Remove two chains (1), emergency tow lights (2), and tow lights cable (3) from tool box.



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

FRONT CONNECTION - Continued

2. Prepare underlift assembly for operation (WP 0035 00).

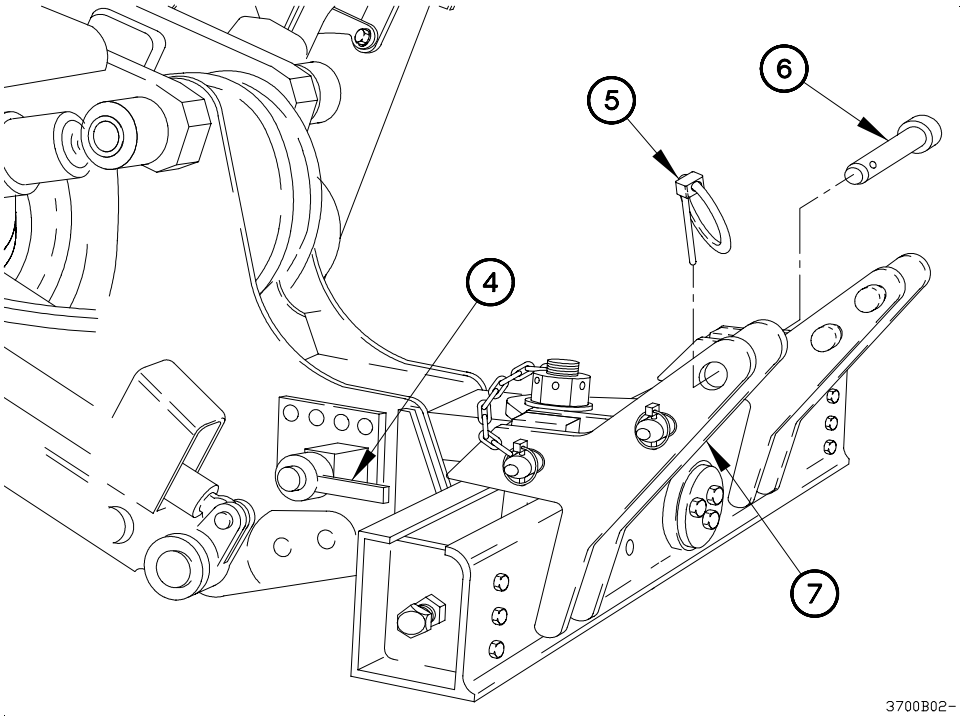
NOTE

Perform step 3 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

3. Connect WRECKER REMOTE CONTROL (WP 0035 00).

4. Unlock stinger cam lock (4).

5. Remove two top linchpins (5) and pins (6) from two lift tools (7).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

FRONT CONNECTION - Continued

6. Remove two shackles from M1008 tow eyes (TM 9-2320-289-10).

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

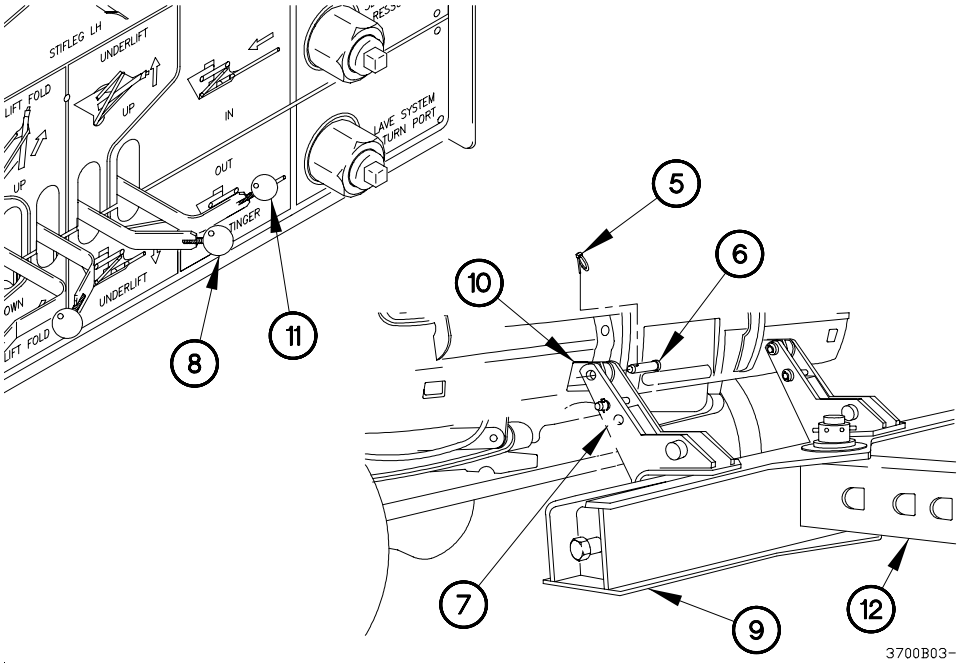
7. Place UNDERLIFT lever (8) in UP position to raise crossbar (9) until lift tools (7) are aligned with M1008 tow eyes (10).

8. Place STINGER lever (11) in OUT position to extend stinger (12) until lift tools (7) are aligned with M1008 tow eyes (10).

NOTE

Left and right side lift tools are installed on M1008 tow eyes the same way. Right side shown.

9. Install two lift tools (7) on M1008 tow eyes (10) with two pins (6) and linchpins (5).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

FRONT CONNECTION - Continued

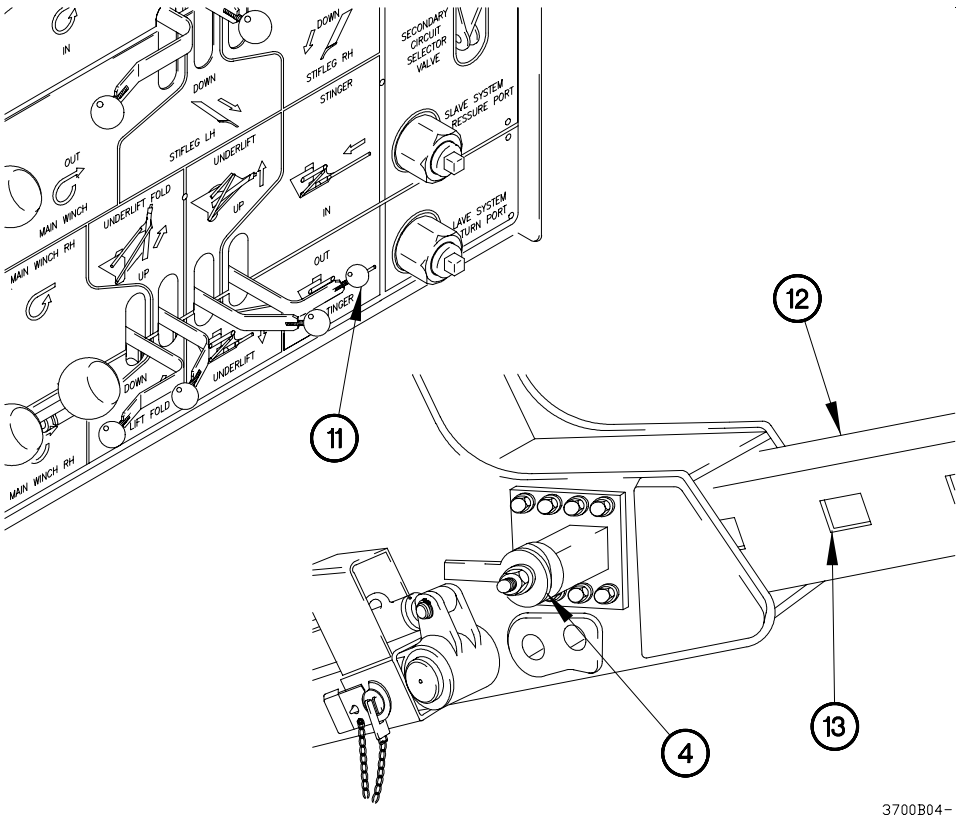
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing an M1008. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if winches or other components mounted on front of M1008 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

10. Place STINGER lever (11) to IN position to retract stinger (12) until desired stinger cam lock hole (13) is aligned.

11. Lock stinger cam lock (4).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

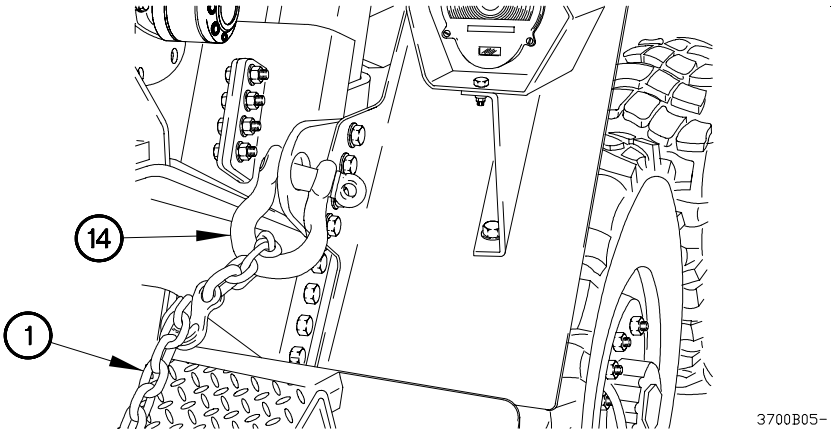
0037 00

FRONT CONNECTION - Continued

NOTE

Left and right side chains are installed the same way. Right side shown.

12. Connect one end of two chains (1) to M1089A1 rear shackles (14).

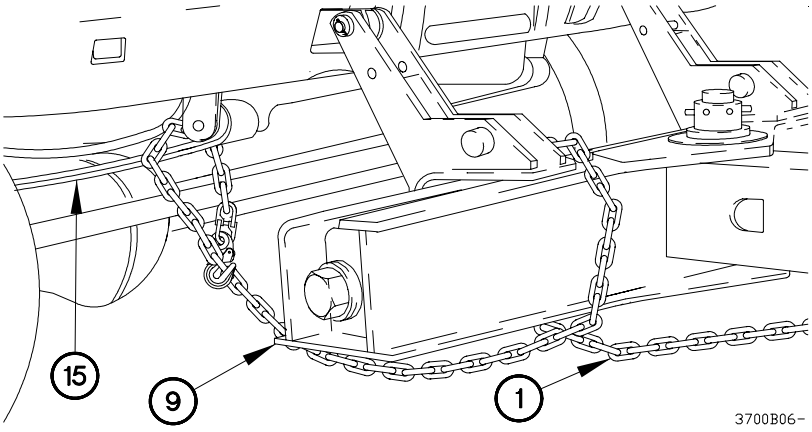


NOTE

Chains must be wrapped around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

13. Wrap two chains (1) around crossbar (9).

14. Connect other end of two chains (1) around M1008 front leaf spring supports (15).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

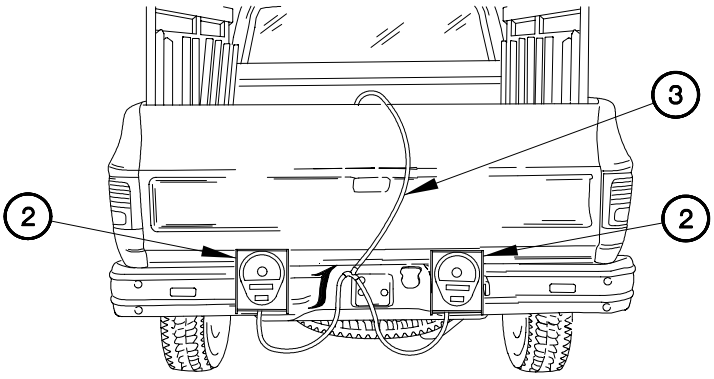
0037 00

FRONT CONNECTION - Continued

15. Position two emergency tow lights (2) on rear of M1008.

16. Connect tow lights cable (3) to two emergency tow lights (2).

17. Route tow lights cable (3) along top of M1008.



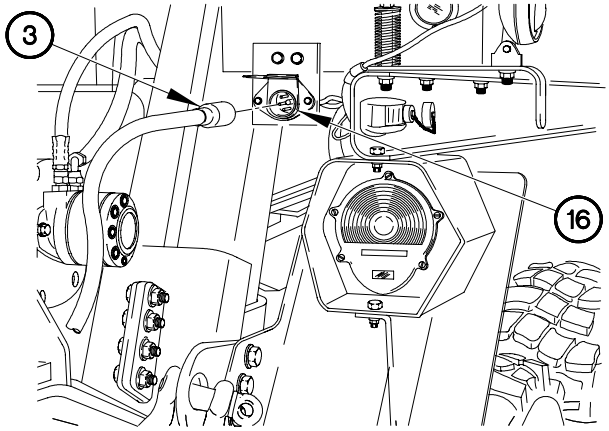
3700B07-

18. Connect tow lights cable (3) to M1089A1 rear electrical connector (16).

CAUTION

All loose equipment must be secure on M1008. Failure to comply might result in damage to equipment.

19. Prepare M1008 for towing (TM 9-2320-289-10).



3700B08-

M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

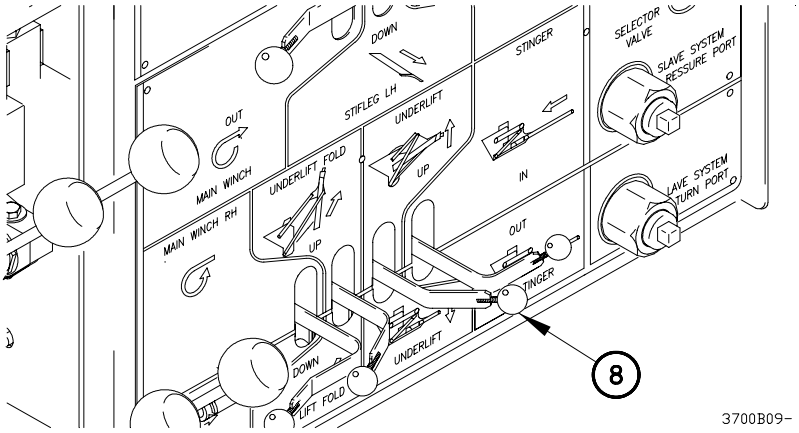
0037 00

FRONT CONNECTION - Continued

WARNING

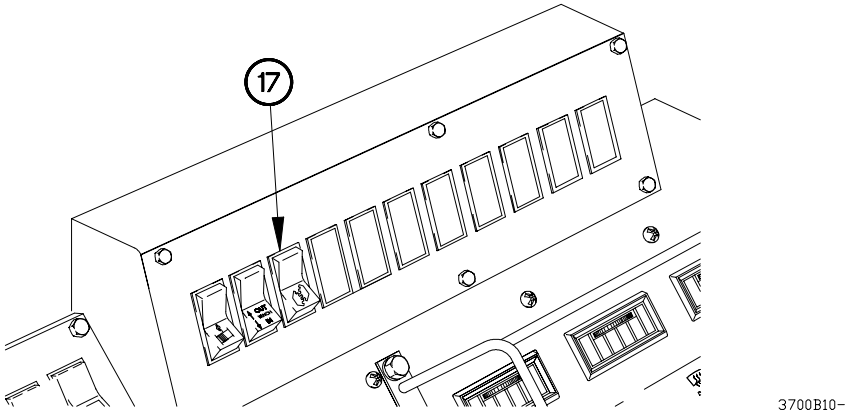
Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

20. Place UNDERLIFT lever (8) in UP position to raise M1008 until wheels are approximately 16 in. (41 cm) off ground.



21. Disconnect WRECKER REMOTE CONTROL (WP 0055 00).

23. Position PTO switch (17) to off.



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

FRONT CONNECTION - Continued

23. Install and raise two amber warning lights (WP 0066 00).
24. Turn on service drive lights (WP 0018 00).
25. Position hazard lights switch (18) to on.
26. Position warning lights switch (19) to on.
27. Push in SYSTEM PARK control (20).
28. Set transmission in gear (WP 0018 00).

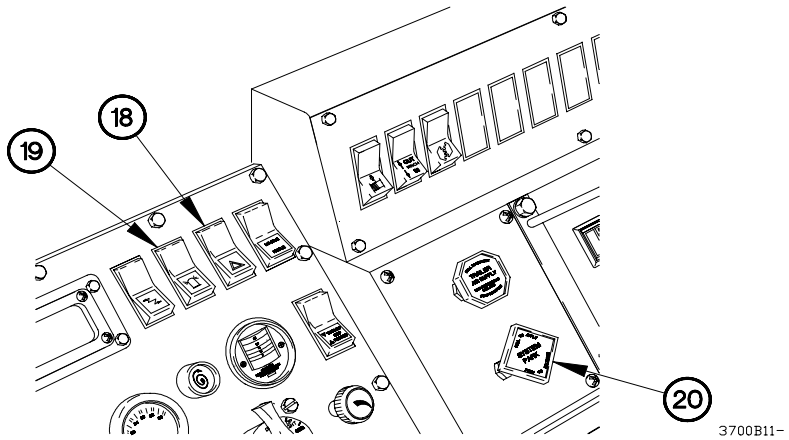
WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	5 mph (24 km/h)

Failure to comply may result in serious injury or death to personnel or damage to equipment.

29. Transport M1008.



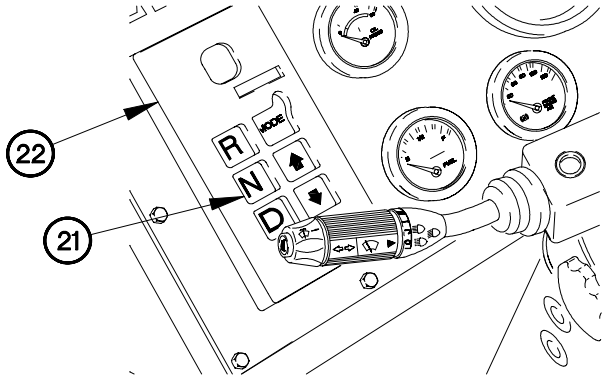
M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

FRONT DISCONNECTION

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (21) on WTEC III TPSS (22).

STEERING WHEEL REMOVED FOR CLARITY



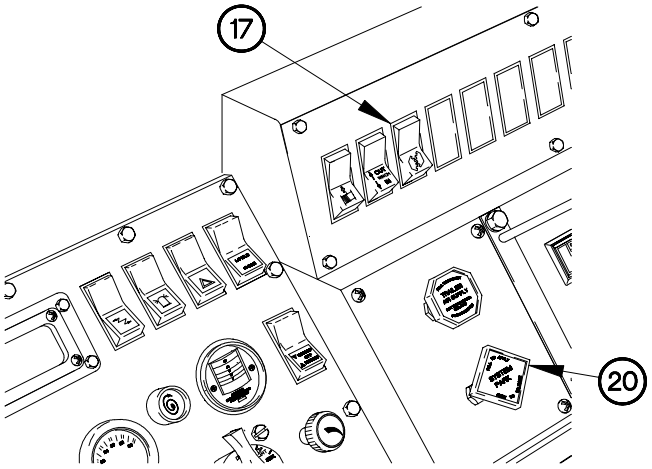
3700B12-

3. Pull out SYSTEM PARK control (20).
4. Position PTO switch (17) to on.

NOTE

Perform step 5 if an assistant is not present to assist with vehicle disconnection. Operation from WRECKER CONTROL PANEL shown.

5. Connect WRECKER REMOTE CONTROL (WP 0035 00).



3700B13-

M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0037 00

FRONT DISCONNECTION - Continued

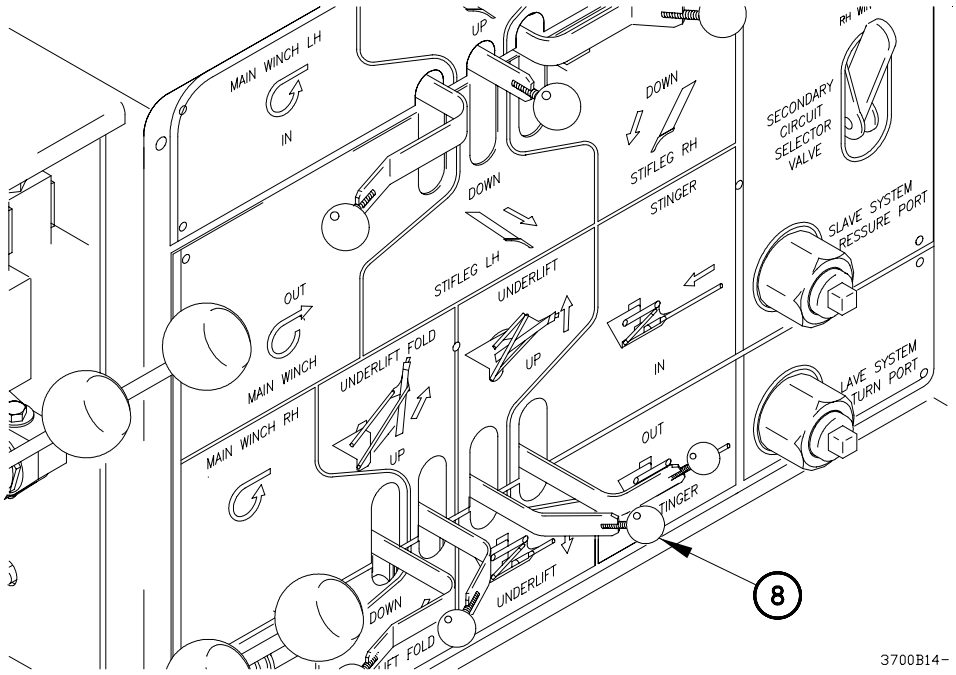
WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Place UNDERLIFT lever (8) in DOWN position to lower M1008 until wheels are in firm contact with ground.

7. Set parking brake on M1008 (TM 9-2320-289-10).

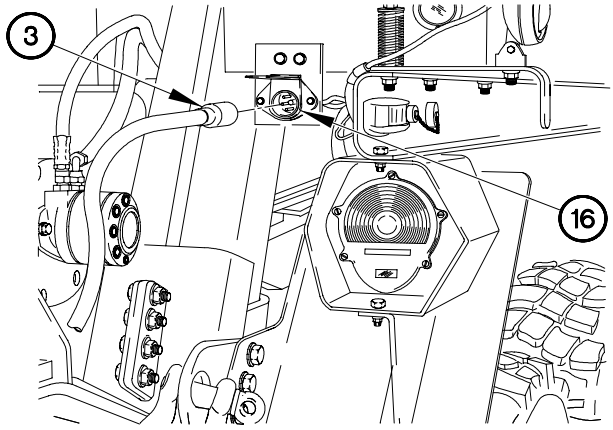


M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

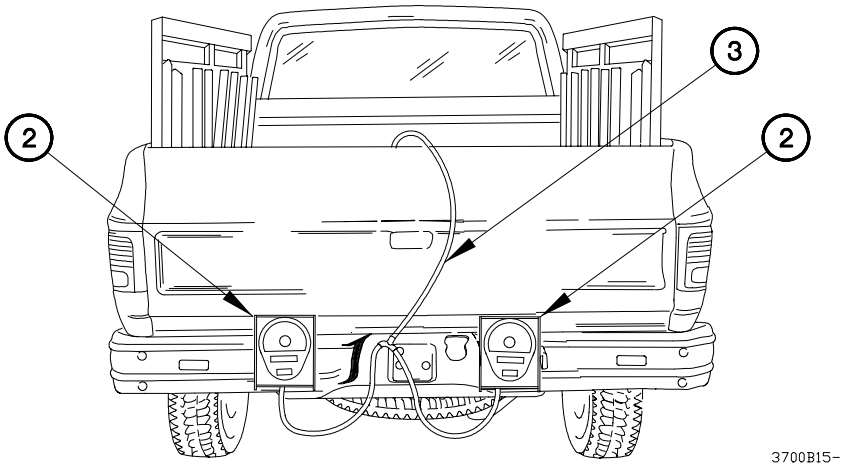
FRONT DISCONNECTION - Continued

8. Disconnect tow lights cable (3) from M1089A1 rear electrical connector (16).



9. Disconnect tow lights cable (3) from two emergency tow lights (2).

10. Remove two emergency tow lights (2) from rear of M1008.



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

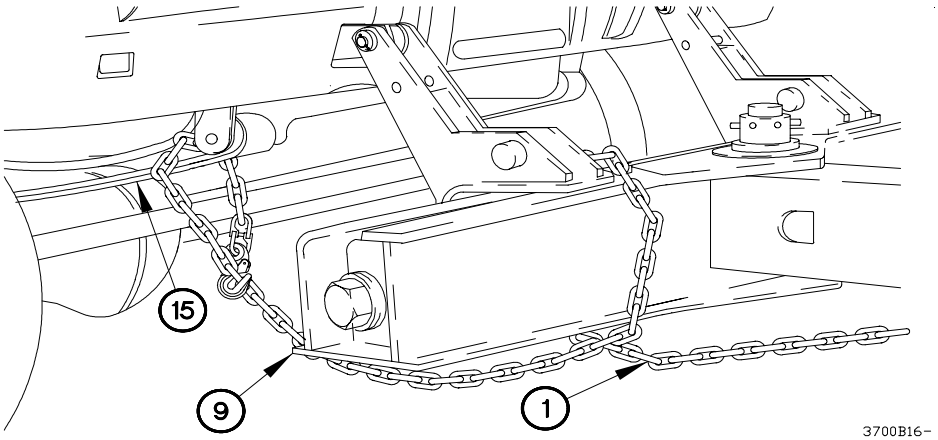
FRONT DISCONNECTION - Continued

NOTE

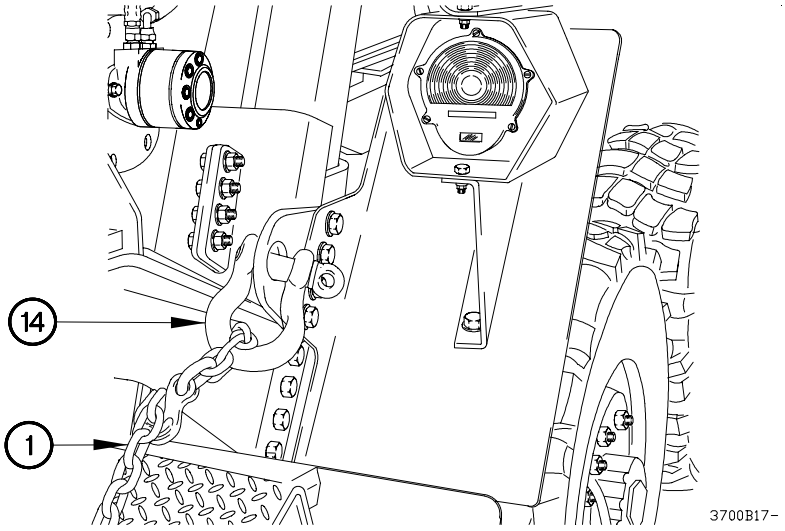
Left and right side chains are removed the same way. Right side shown.

11. Remove two chains (1) from M1008 front leaf spring supports (15).

12. Remove two chains (1) from crossbar (9).



13. Remove other end of two chains (1) from M1089A1 rear shackles (14).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

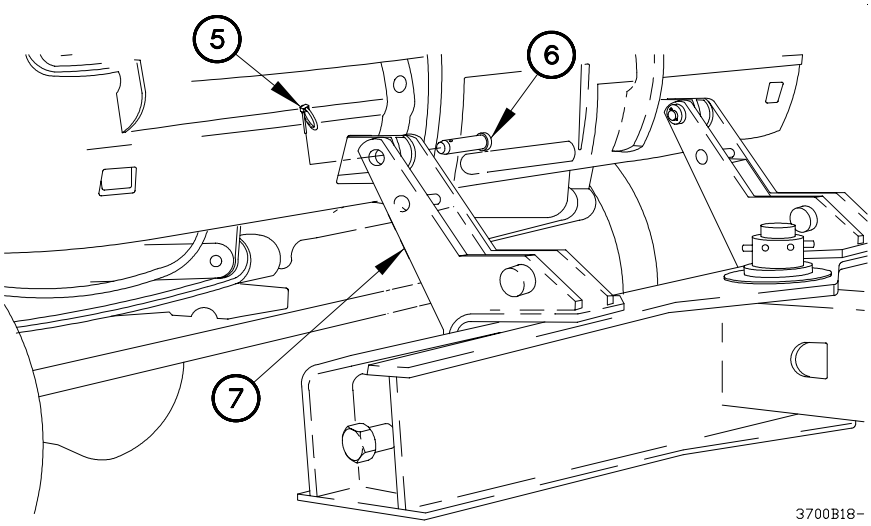
0037 00

FRONT DISCONNECTION - Continued

NOTE

Left and right side lift tools are removed from towed vehicle the same way. Right side shown.

14. Remove two linchpins (5) and pins (6) from two lift tools (7).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

FRONT DISCONNECTION - Continued

15. Unlock stinger cam lock (4).

16. Place STINGER lever (11) to IN position to retract stinger (12) until stinger cam lock (4) is aligned with first hole (13) in stinger.

WARNING

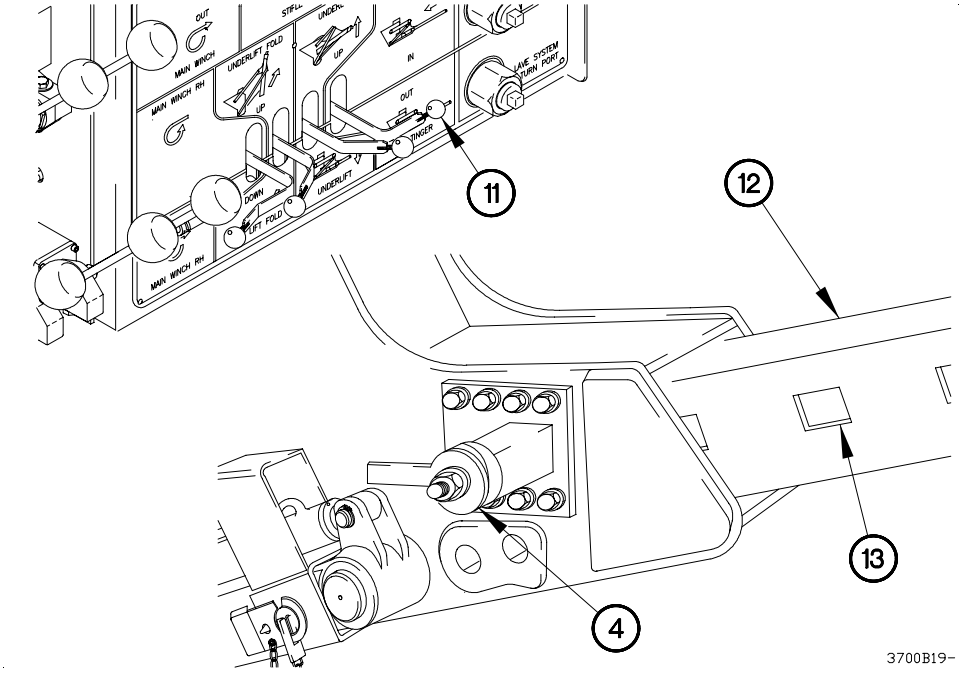
Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

17. Lock stinger cam lock (4).

NOTE

Shackles are attached to M1008 tow eyes using bolts, nuts, and cotter pins that were removed with M1008 shackles.

18. Install two shackles on M1008 tow eyes (TM 9-2320-289-10).

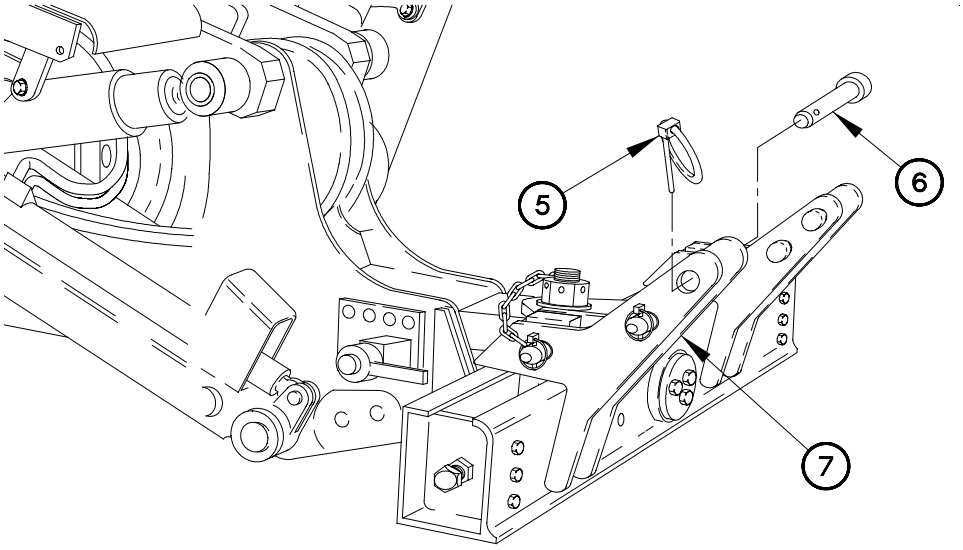


M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

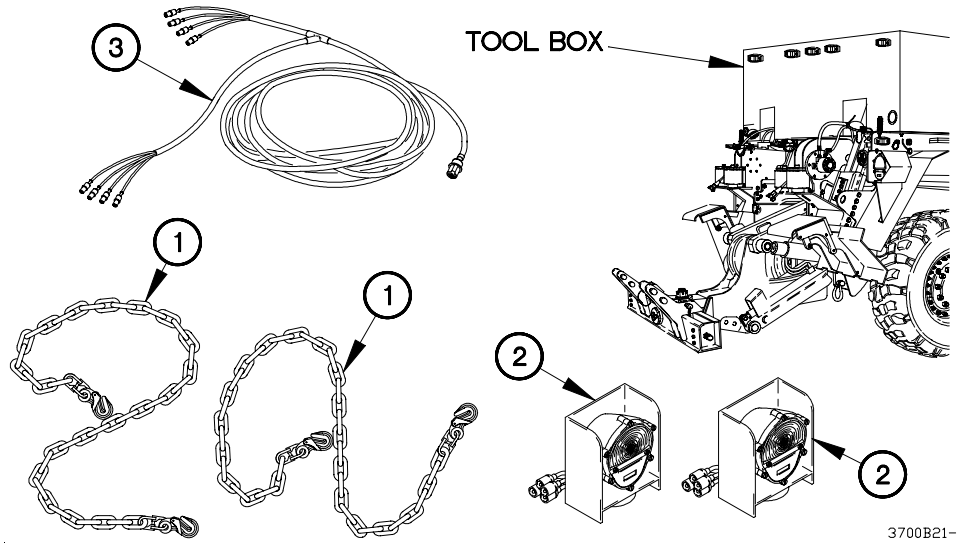
FRONT DISCONNECTION - Continued

19. Install two pins (6) and linchpins (5) in two lift tools (7).



3700B20-

20. Stow two chains (1), emergency tow lights (2), and tow lights cable (3) in tool box.



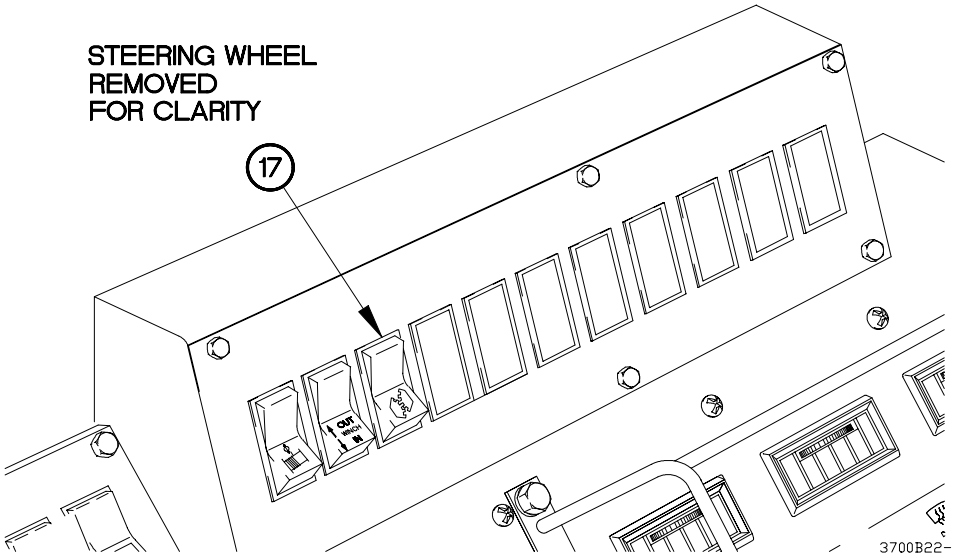
3700B21-

M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

FRONT DISCONNECTION - Continued

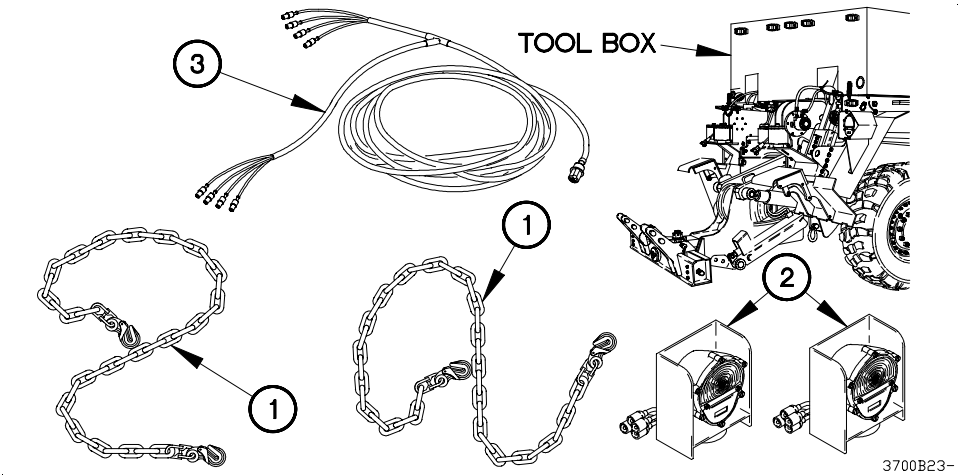
21. Raise underlift assembly (WP 0035 00).
22. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
23. Position PTO switch (17) to off.
24. Shut down engine (WP 0018 00).
25. Lower and remove two amber warning lights (WP 0066 00).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0037 00

REAR CONNECTION

1. Remove two chains (1), emergency tow lights (2), and tow lights cable (3) from tool box



2. Prepare underlift assembly for operation (WP 0035 00).

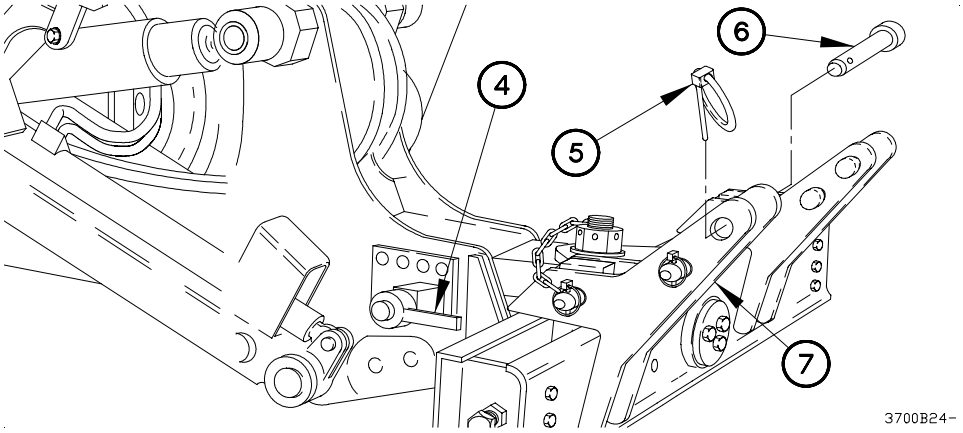
NOTE

Perform step 3 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

3. Connect WRECKER REMOTE CONTROL (WP 0035 00).

4. Unlock stinger cam lock (4).

5. Remove top linchpins (5) and pins (6) from two lift tools (7).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR CONNECTION - Continued

6. Remove shackles from M1008 tow eyes (TM 9-2320-289-10).

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

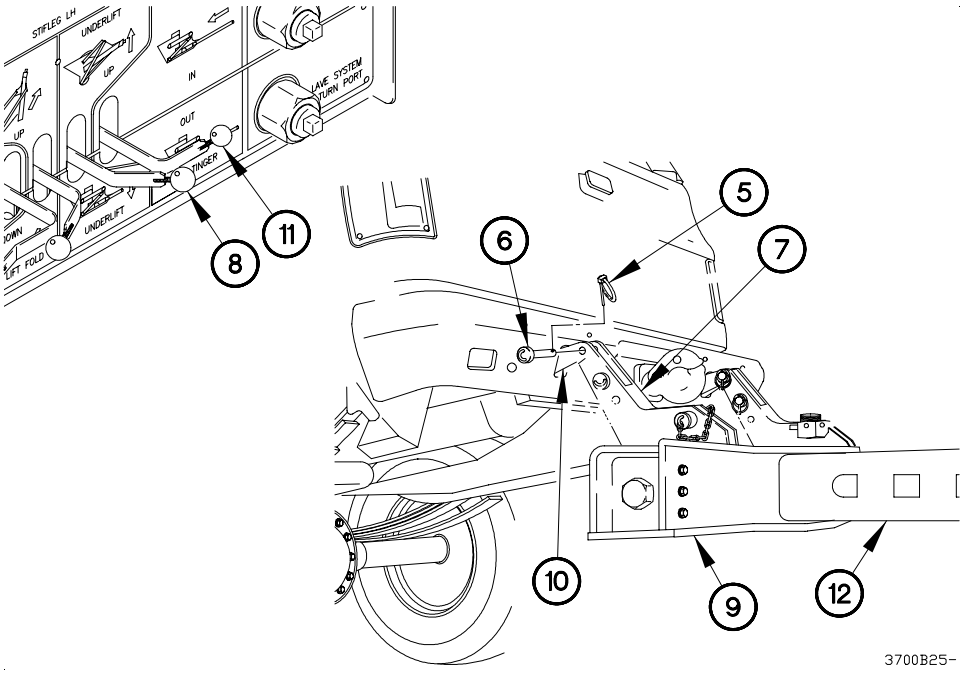
7. Place UNDERLIFT lever (8) in UP position to raise crossbar (9) until lift tools (7) align with M1008 tow eyes (10).

8. Place STINGER lever (11) in OUT position to extend stinger (12) until lift tools (7) align with M1008 tow eyes (10).

NOTE

Left and right side tools are installed on M1008 tow eyes the same way. Right side shown.

9. Install two lift tools (7) on M1008 tow eyes (10) with two pins (6) and linchpins (5).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR CONNECTION - Continued

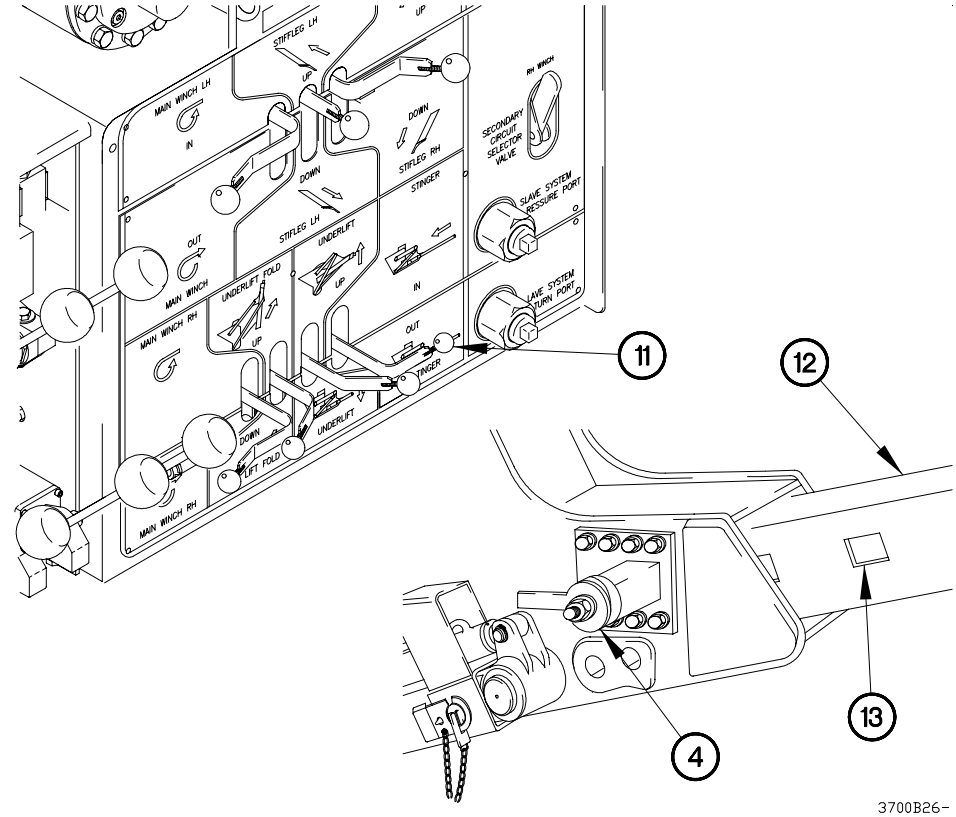
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing M1008. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if components mounted on rear of M1008 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

10. Place STINGER lever (11) to IN position to retract stinger (12) until desired stinger cam lock hole (13) is aligned.

11. Lock stinger cam lock (4).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

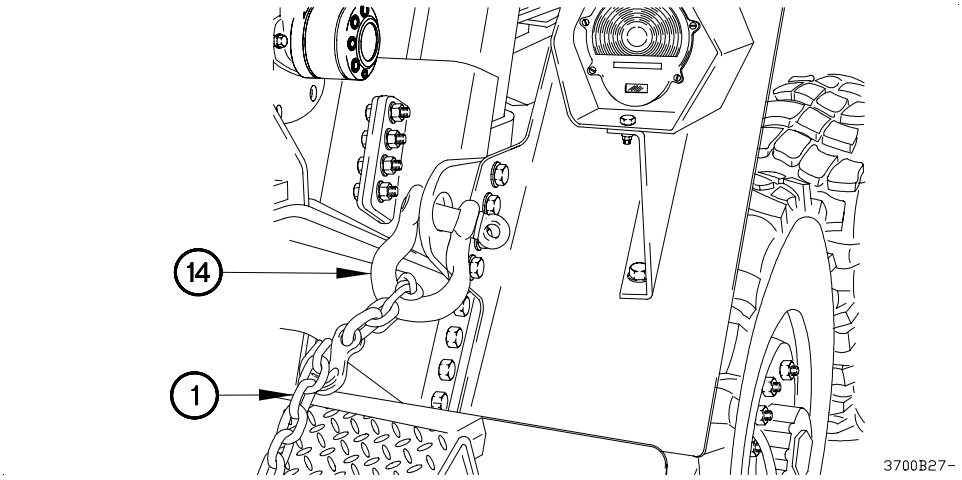
0037 00

REAR CONNECTION - Continued

NOTE

Left and right side chains are installed the same way. Right side shown.

12. Connect one end of two chains (1) to M1089A1 rear shackles (14).

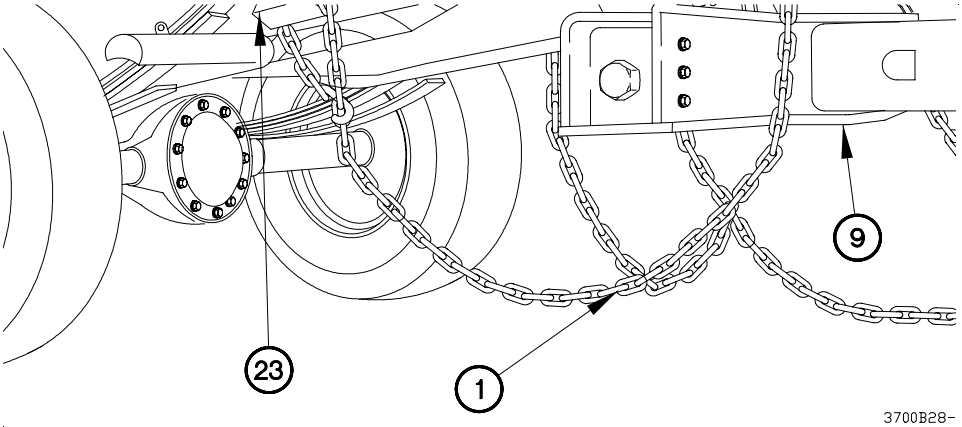


NOTE

Chains must be wrapped around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

13. Wrap two chains (1) around crossbar (9).

14. Connect other end of two chains (1) around M1008 rear leaf spring supports (23).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

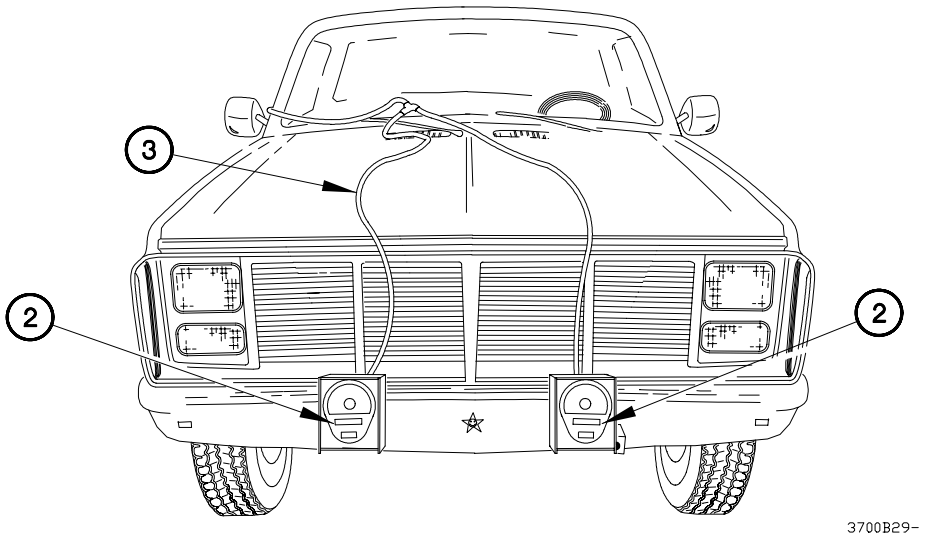
0037 00

REAR CONNECTION - Continued

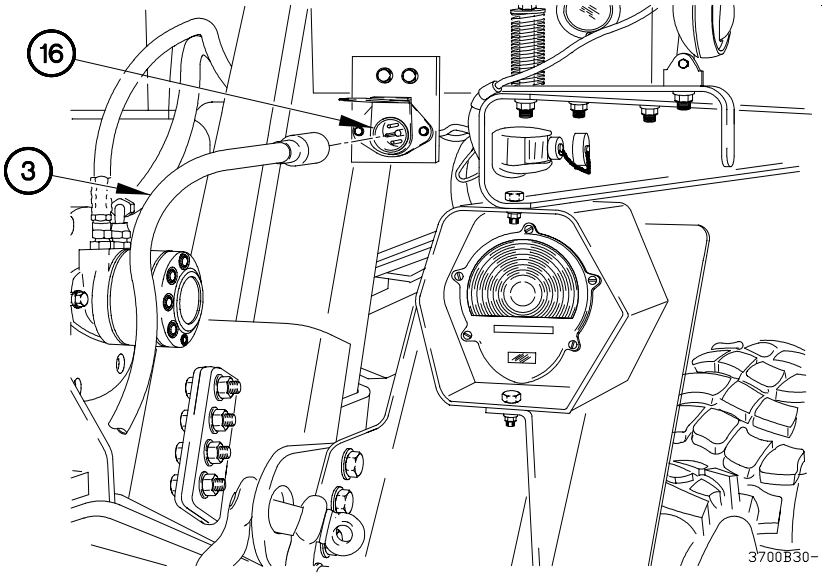
15. Position two emergency tow lights (2) on front of M1008.

16. Connect tow lights cable (3) to two emergency tow lights (2).

17. Route tow lights cable (3) along top of M1008



18. Connect tow lights cable (3) to M1089A1 rear electrical connector (16).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR CONNECTION - Continued

CAUTION

Ensure all loose equipment is secure on M1008. Failure to comply may result in damage to equipment.

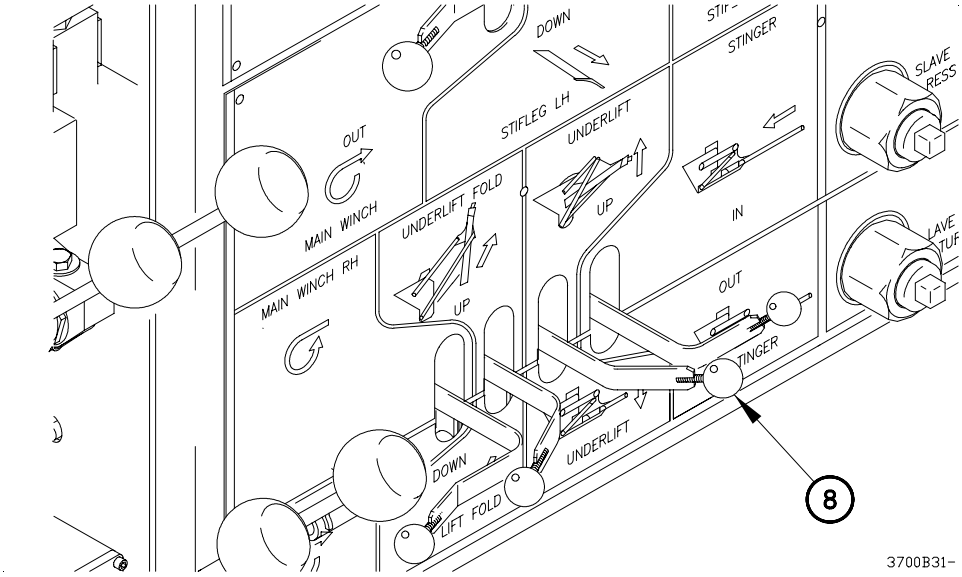
19. Prepare M1008 for towing (TM 9-2320-289-10).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

20. Place UNDERLIFT lever (8) in UP position to raise M1008 until wheels are approximately 16 in. (41 cm) off ground.

21. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

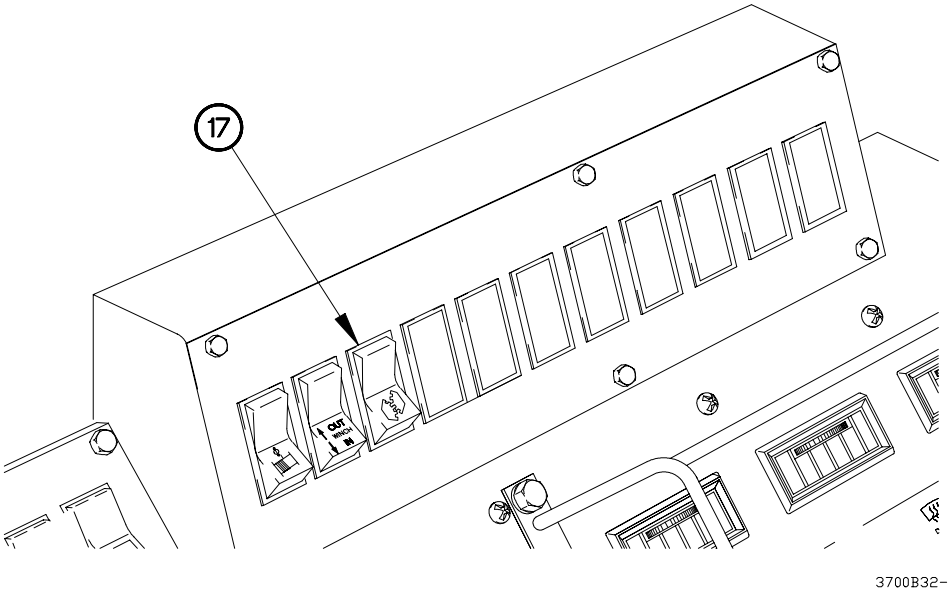


M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR CONNECTION - Continued

22. Position PTO switch (17) to off.



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR CONNECTION - Continued

23. Install and raise two amber warning lights (WP 0067 00).
24. Turn on service drive lights (WP 0018 00).
25. Position hazard lights switch (18) to on.
26. Position warning lights switch (19) to on.
27. Push in SYSTEM PARK control (20).
28. Set transmission in gear (WP 0018 00).

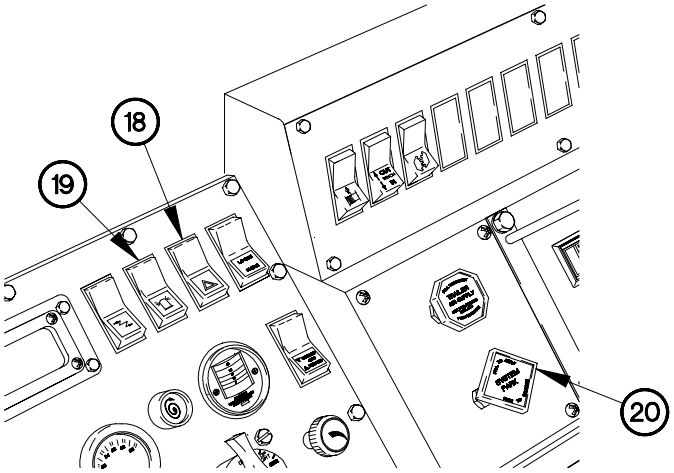
WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

Failure to comply may result in serious injury or death to personnel or damage to equipment.

29. Transport M1008.

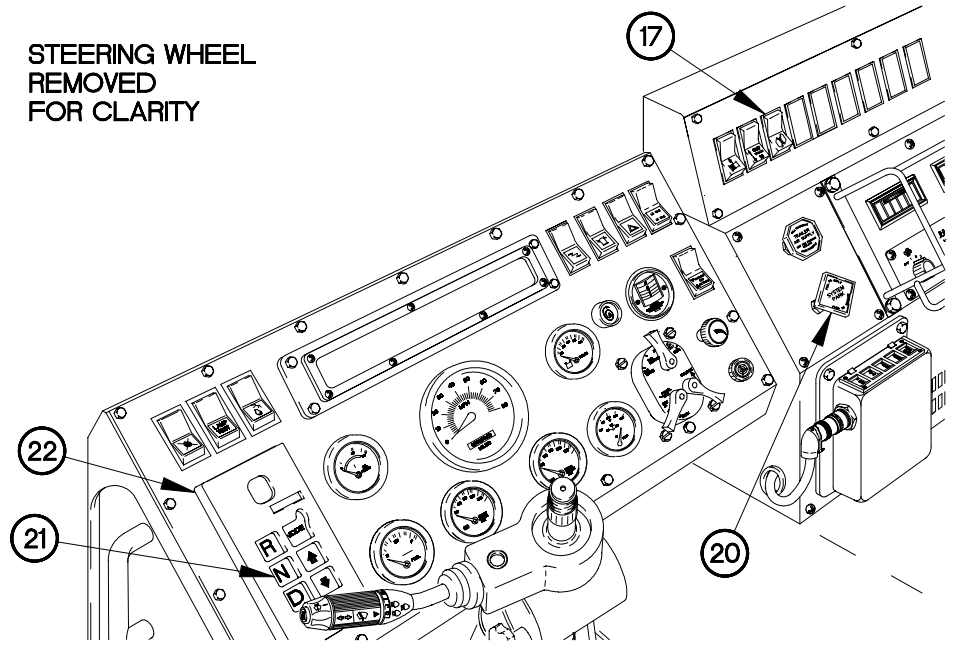


3700B33-

M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

REAR DISCONNECTION

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (21) on WTEC III TPSS (22).
3. Pull out SYSTEM PARK control (20).
4. Position PTO switch (17) to on.



3700B34-

M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR DISCONNECTION - Continued

NOTE

Perform step 5 if an assistant is not present to assist with vehicle disconnection. Operation from WRECKER CONTROL PANEL shown.

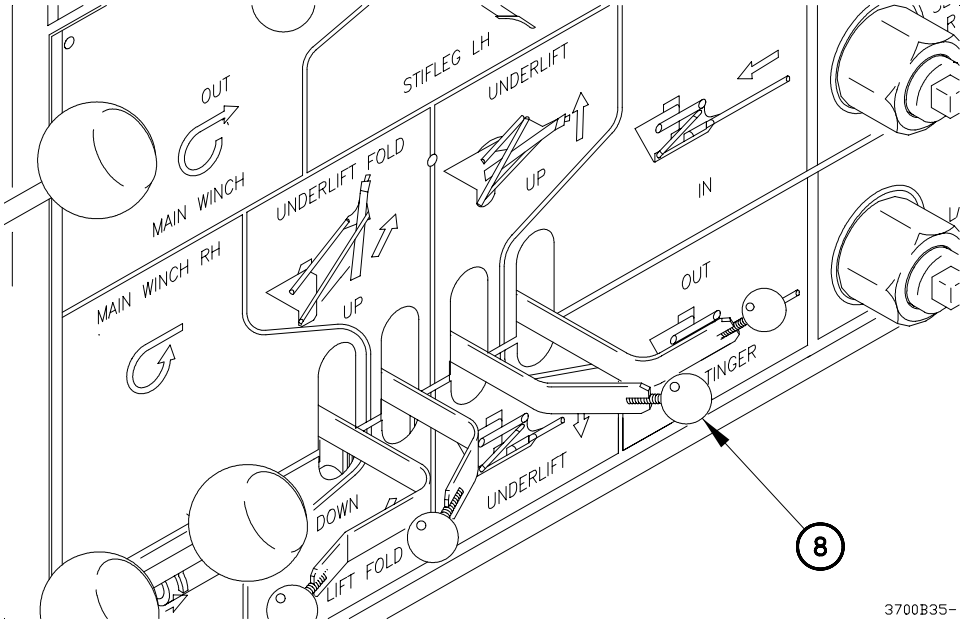
5. Connect WRECKER REMOTE CONTROL (WP 0035 00).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Place UNDERLIFT lever (8) in DOWN position to lower M1008 until wheels are in firm contact with ground.



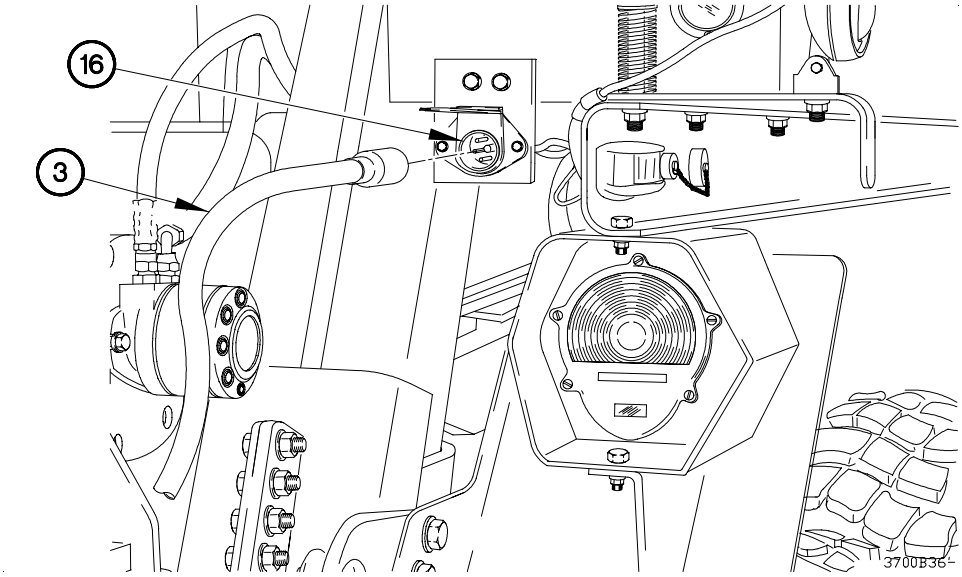
M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR DISCONNECTION - Continued

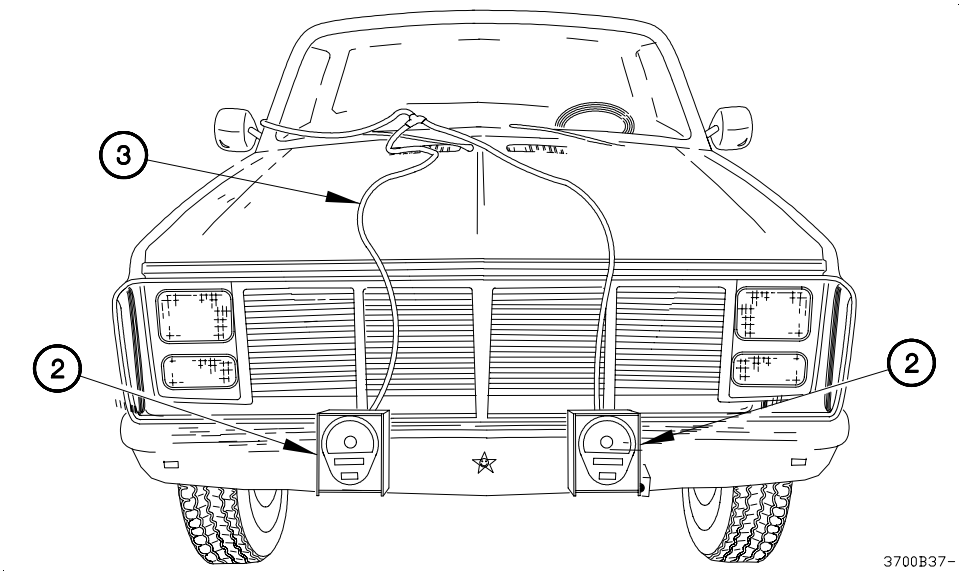
7. Set parking brake on M1008 (TM 9-2320-289-10).

8. Disconnect tow lights cable (3) from M1089A1 rear electrical connector (16).



9. Disconnect tow lights cable (3) from two emergency tow lights (2).

10. Remove two emergency tow lights (2) from front of M1008.



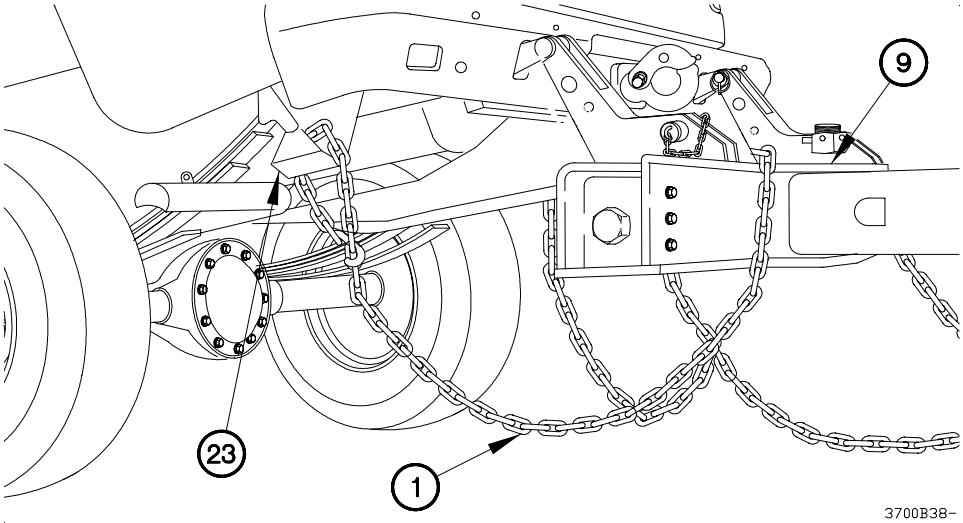
REAR DISCONNECTION - Continued

NOTE

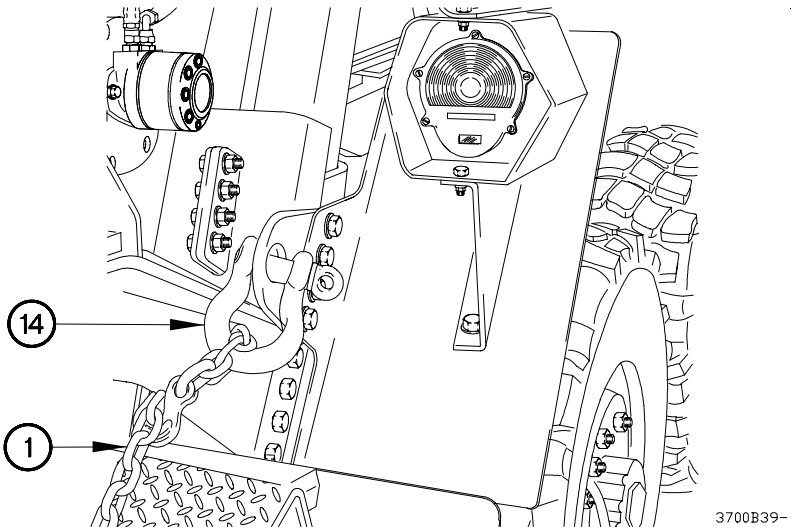
Left and right side chains are removed the same way. Right side shown.

11. Remove two chains (1) from M1008 rear leaf spring supports (23).

12. Remove two chains (1) from crossbar (9).



13. Remove other end of two chains (1) from M1089A1 rear shackles (14).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

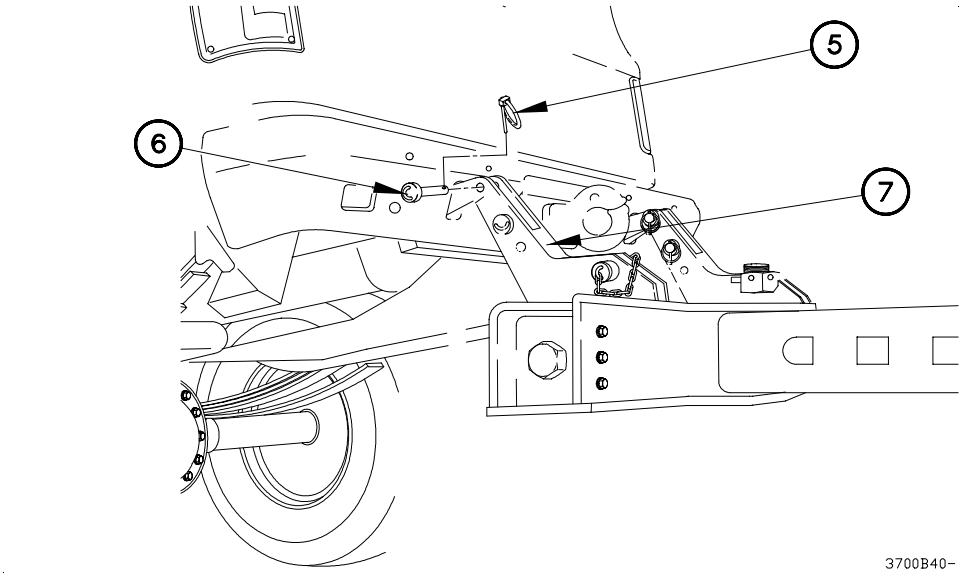
0037 00

REAR DISCONNECTION - Continued

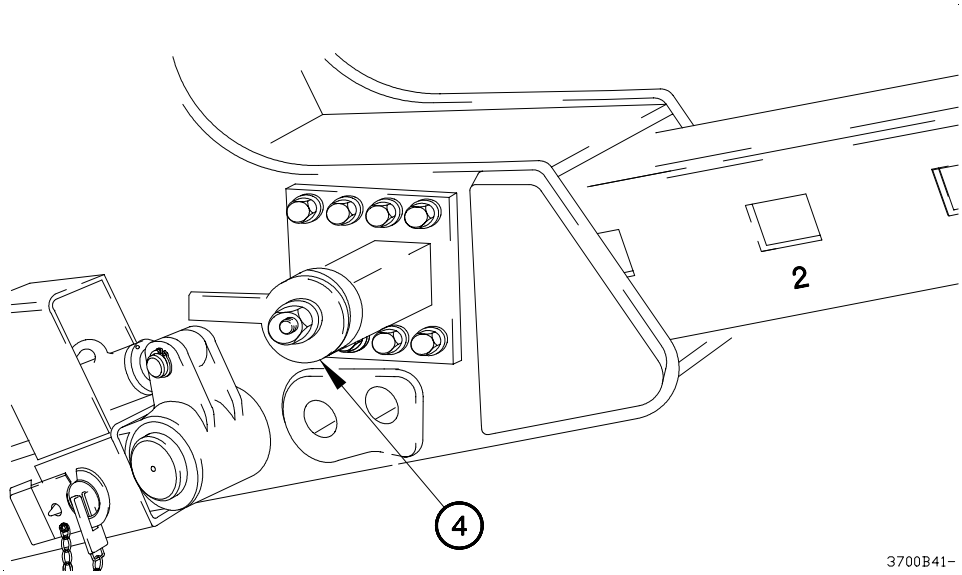
NOTE

Left and right side lift tools are removed the same way. Right side shown.

14. Remove two linchpins (5) and pins (6) from two lift tools (7).



15. Unlock stinger cam lock (4).



M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR DISCONNECTION - Continued

16. Place STINGER lever (11) to IN position to retract stinger (12) until stinger cam lock (4) is aligned with first hole (13) in stinger.

WARNING

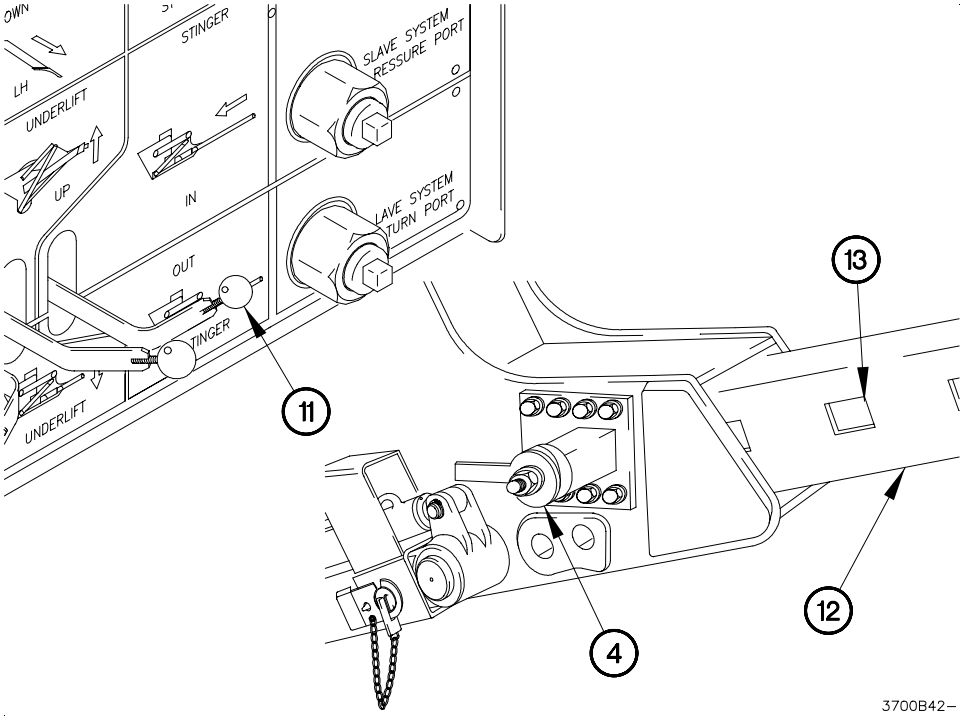
Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

17. Lock stinger cam lock (4).

NOTE

Shackles are attached to M1008 tow eyes using bolts, nuts, and cotter pins that were removed with M1008 shackles.

18. Install shackles on M1008 tow eyes (TM 9-2320-289-10).

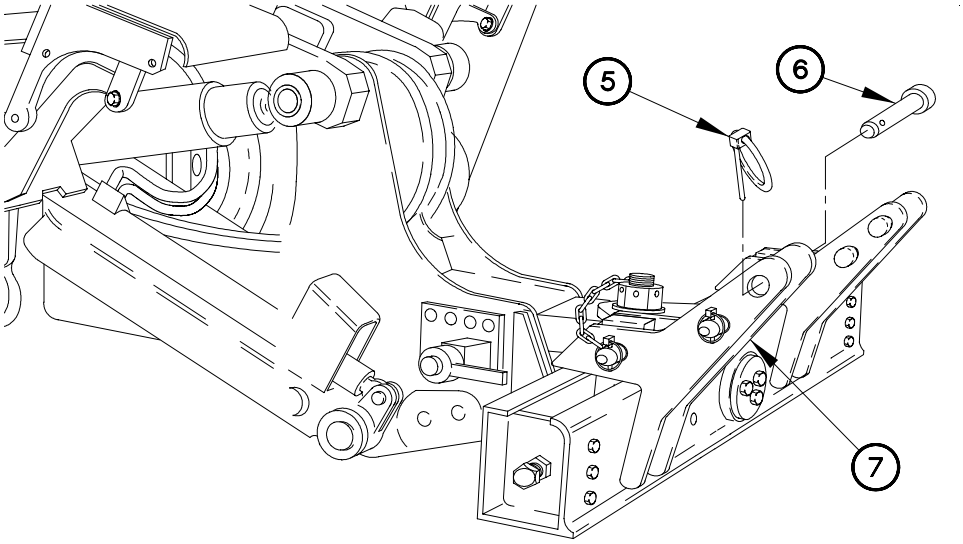


M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

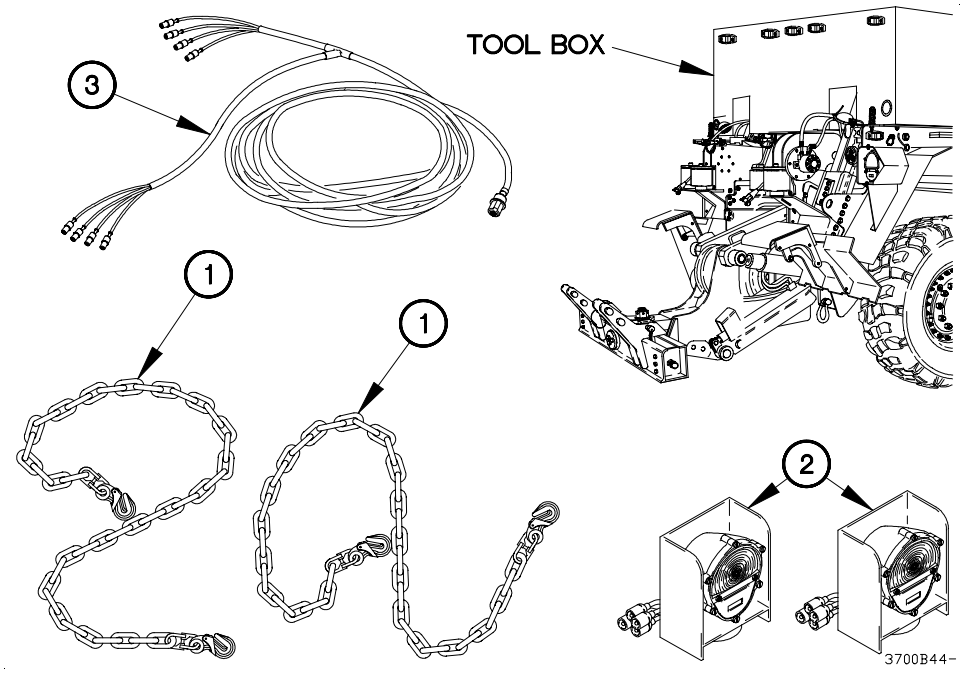
0037 00

REAR DISCONNECTION - Continued

19. Install two pins (6) and linchpins (5) in two lift tools (7).



20. Stow two chains (1), emergency tow lights (2), and tow lights cable (3) in tool box.

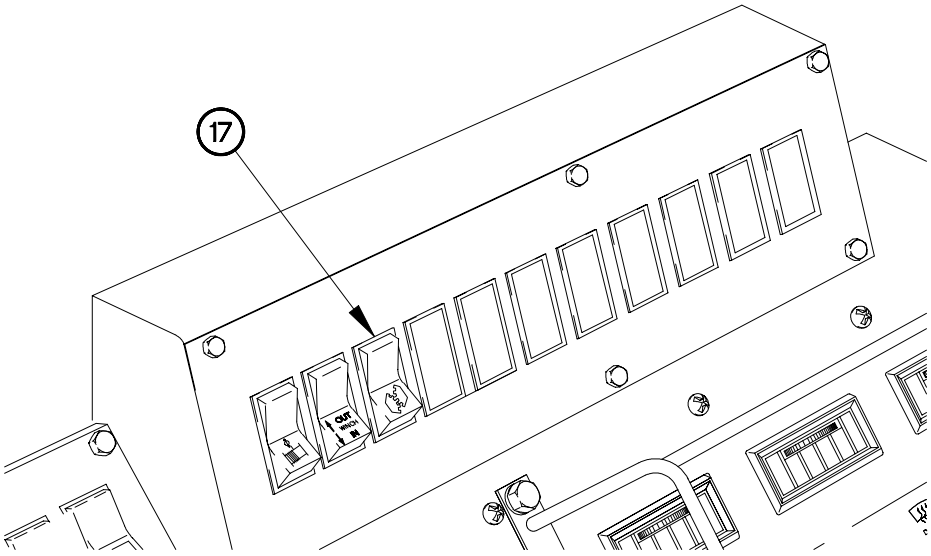


M1008 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0037 00

REAR DISCONNECTION - Continued

21. Raise underlift assembly (WP 0035 00).
22. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
23. Position PTO switch (17) to off.
24. Shut down engine (WP 0018 00).
25. Lower and remove two amber warning lights (WP 0066 00).



3700B45-

END OF OPERATING PROCEDURE

M35 SERIES TOWING CONNECTION/DISCONNECTION 0038 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Cable Kit (Item 12, Table 2, WP 0112 00)
Lift Tool, Top Bumper (Item 21, Table 1, WP 0112 00)
Goggles, Industrial (Item 25, Table 2, WP 0112 00)
Taillight Assembly (Item 43, Table 2, WP 0112 00)

References
TM 9-2320-361-10
WP 0018 00
WP 0035 00
WP 0066 00

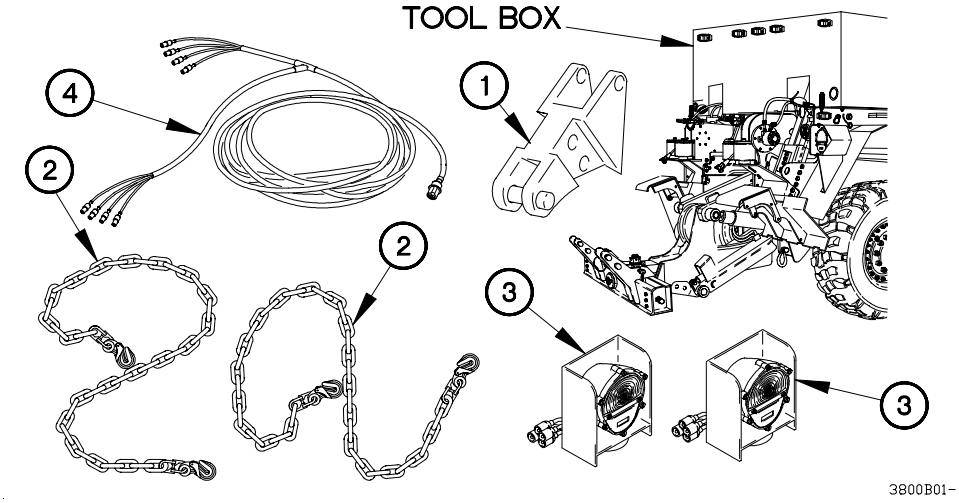
GENERAL

This work package provides the data for M35 series towing connection and disconnection. Items covered include Front Connection, Front Disconnection, Rear Connection, and Rear Disconnection.

FRONT CONNECTION

1. Remove two top bumper lift tools (1), chains (2), emergency tow lights (3), and tow lights cable (4) from tool box.

2. Prepare underlift assembly for operation (WP 0035 00).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

FRONT CONNECTION - Continued

NOTE

Perform step 3 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

3. Connect WRECKER REMOTE CONTROL (WP 0035 00).

4. Remove two linchpins (5) and large pins (6) from two lift tools (7).

5. Remove two linchpins (8) and small pins (9) from two lift tools (7).

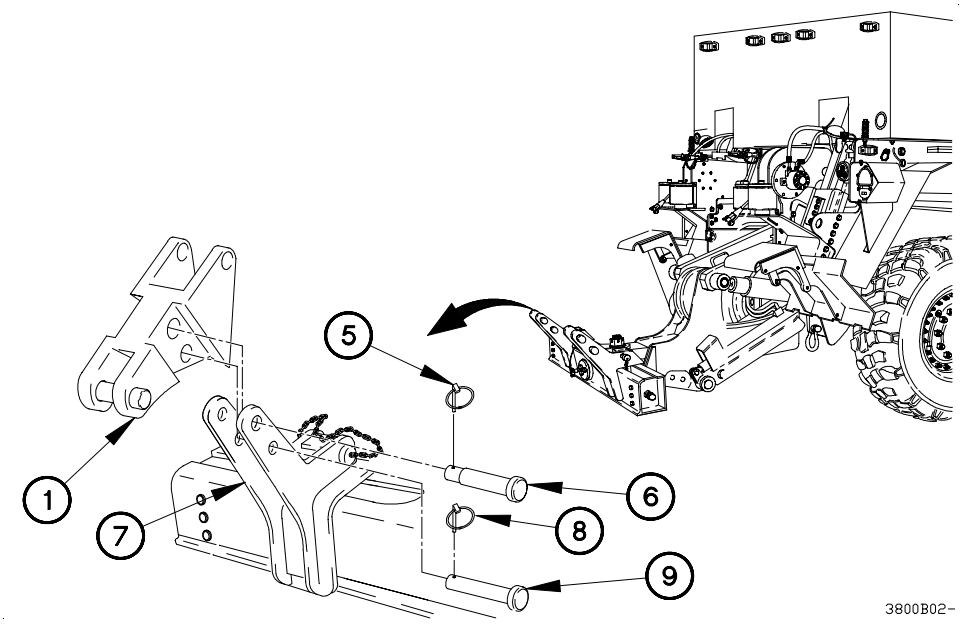
NOTE

Top bumper lift tools are installed with small pin holes facing toward rear of crossbar.

Left and right side top bumper lift tools are installed on lift tools the same way. Left side shown.

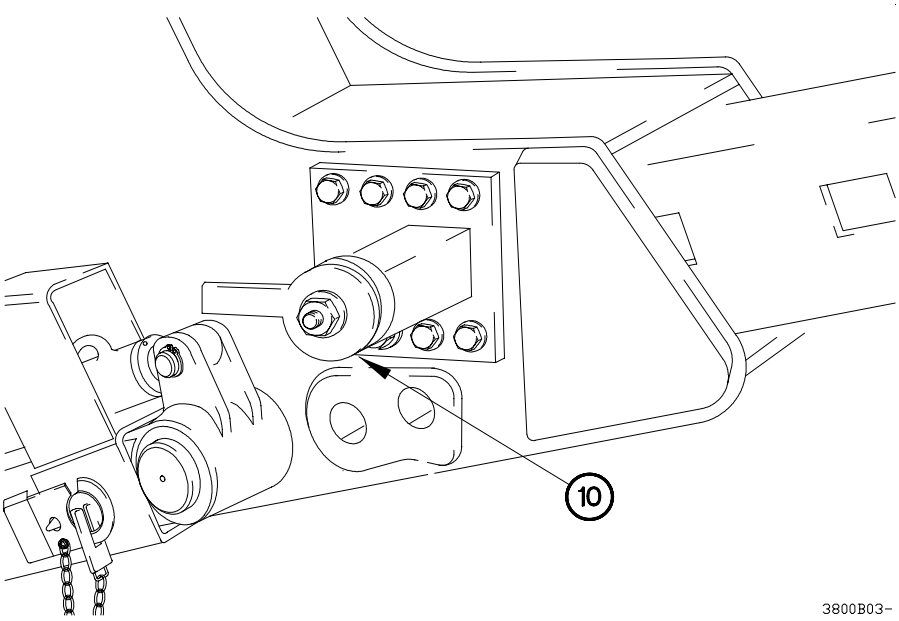
6. Install two top bumper lift tools (1) on two lift tools (7) with large pins (6) and linchpins (5).

7. Install small pins (9) and linchpins (8) in two top bumper lift tools (1).



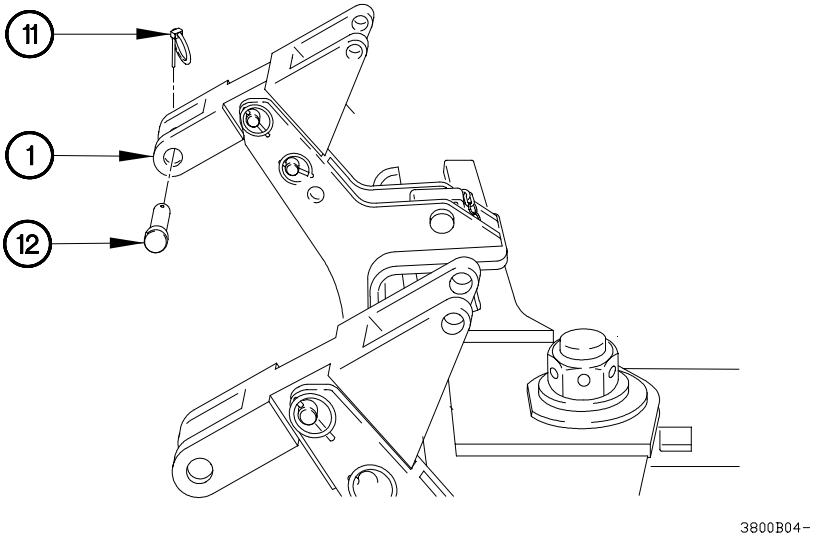
FRONT CONNECTION - Continued

8. Unlock stinger cam lock (10).



9. Remove shackles from M35 tow eyes (TM 9-2320-361-10).

10. Remove two linchpins (11) and pins (12) from two top bumper lift tools (1).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

FRONT CONNECTION - Continued

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

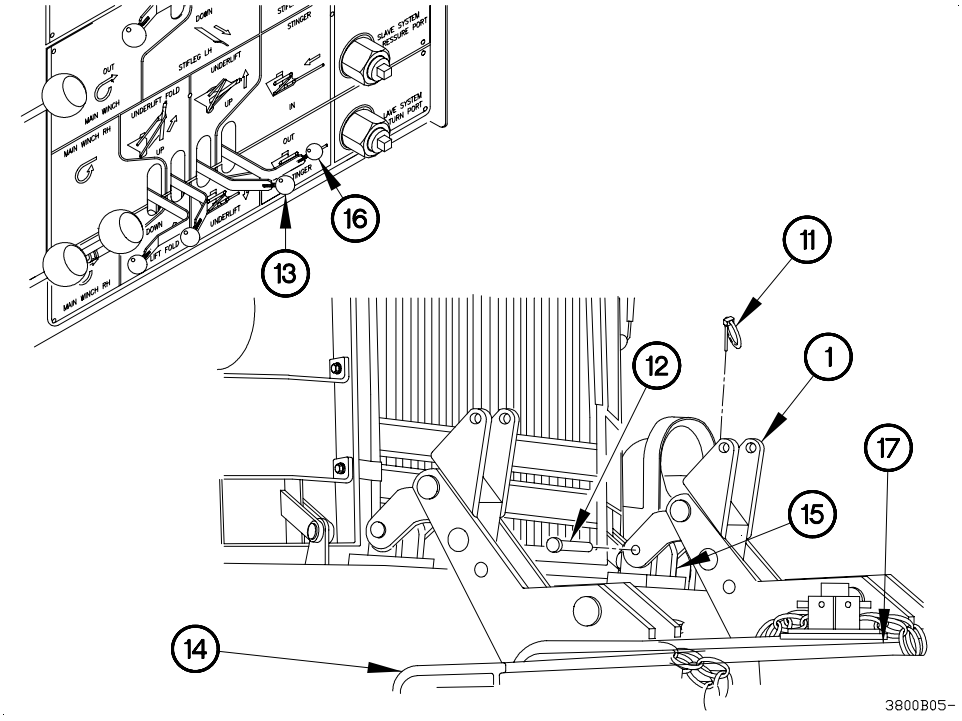
11. Place UNDERLIFT lever (13) to UP position to raise crossbar (14) until top bumper lift tools (1) are aligned with M35 tow eyes (15).

12. Place STINGER lever (16) to OUT position to extend stinger (17) until top bumper lift tools (1) are aligned with M35 tow eyes (15).

NOTE

Left and right side top bumper lift tools are installed on M35 tow eyes the same way. Left side shown.

13. Install two top bumper lift tools (1) on M35 tow eyes (15) with two pins (12) and linchpins (11).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

FRONT CONNECTION - Continued

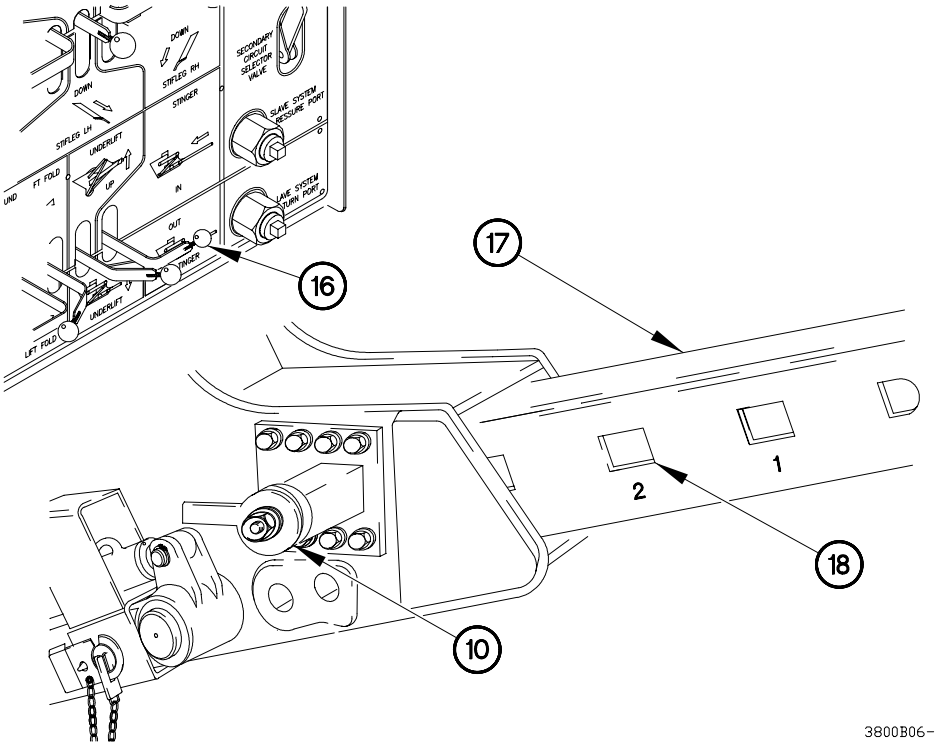
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing an M35. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if winches or other components mounted on front of M35 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

14. Place STINGER lever (16) to IN position to retract stinger (17) until desired stinger cam lock hole (18) is aligned.

15. Lock stinger cam lock (10).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

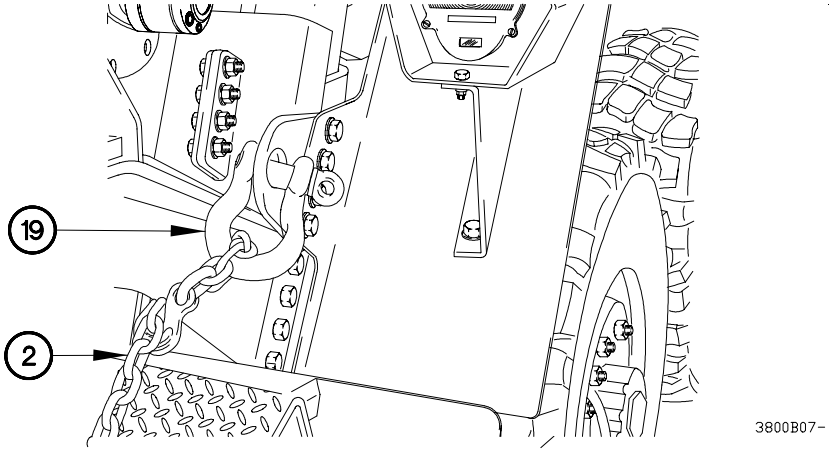
0038 00

FRONT CONNECTION - Continued

NOTE

Left and right side chains are installed the same way. Right side shown.

16. Connect one end of two chains (2) to M1089A1 rear shackles (19).

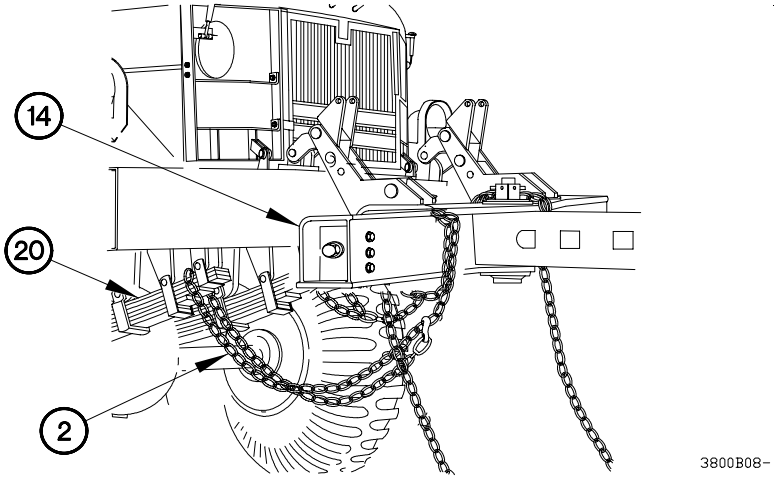


NOTE

Chains must be wrapped around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

17. Wrap two chains (2) around crossbar (14).

18. Connect other end of two chains (2) around M35 front leaf springs (20).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

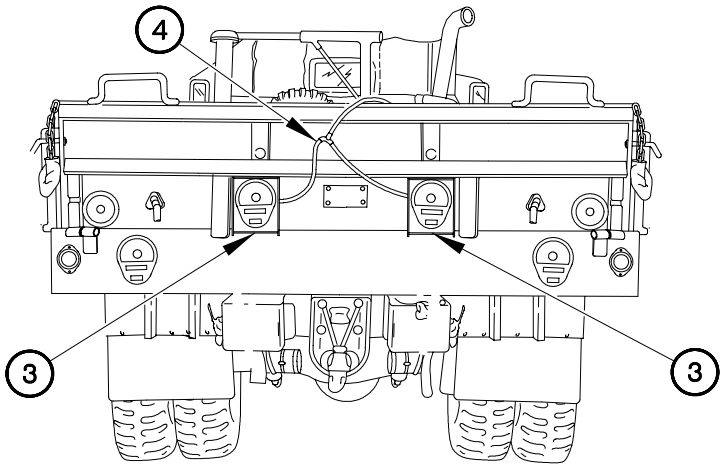
0038 00

FRONT CONNECTION - Continued

19. Position two emergency tow lights (3) on rear of M35.

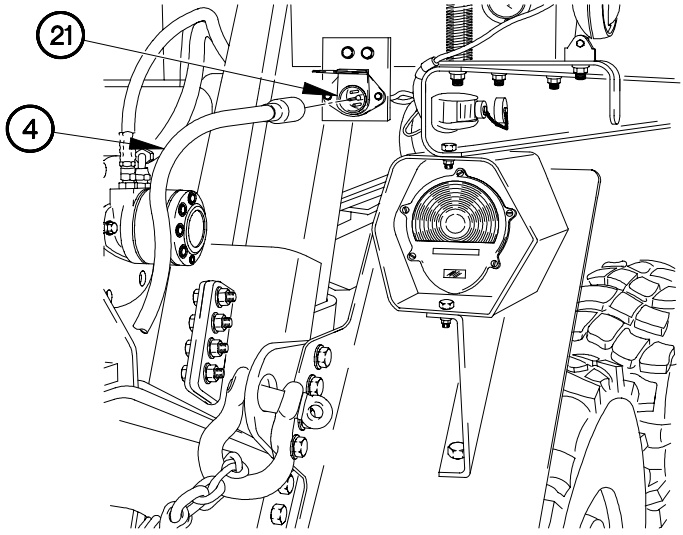
20. Connect tow lights cable (4) to two emergency tow lights (3).

21. Route tow lights cable (4) along top of M35.



3800B09-

22. Connect tow lights cable (4) to M1089A1 rear electrical connector (21).



3800b10-

M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0038 00

FRONT CONNECTION - Continued

CAUTION

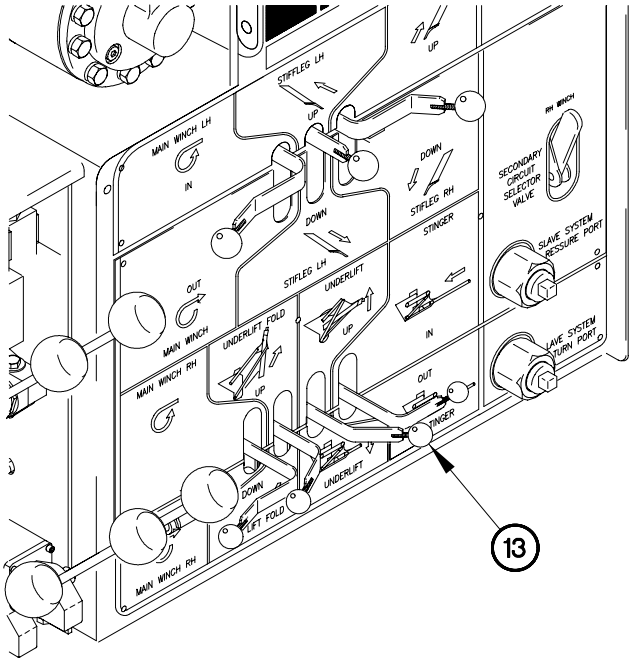
All loose equipment must be secure on M35. Failure to comply may result in damage to equipment.

23. Prepare M35 for towing (TM 9-2320-361-10).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

24. Place UNDERLIFT lever (13) to UP position to raise M35 until wheels are approximately 16 in. (41 cm) off ground.



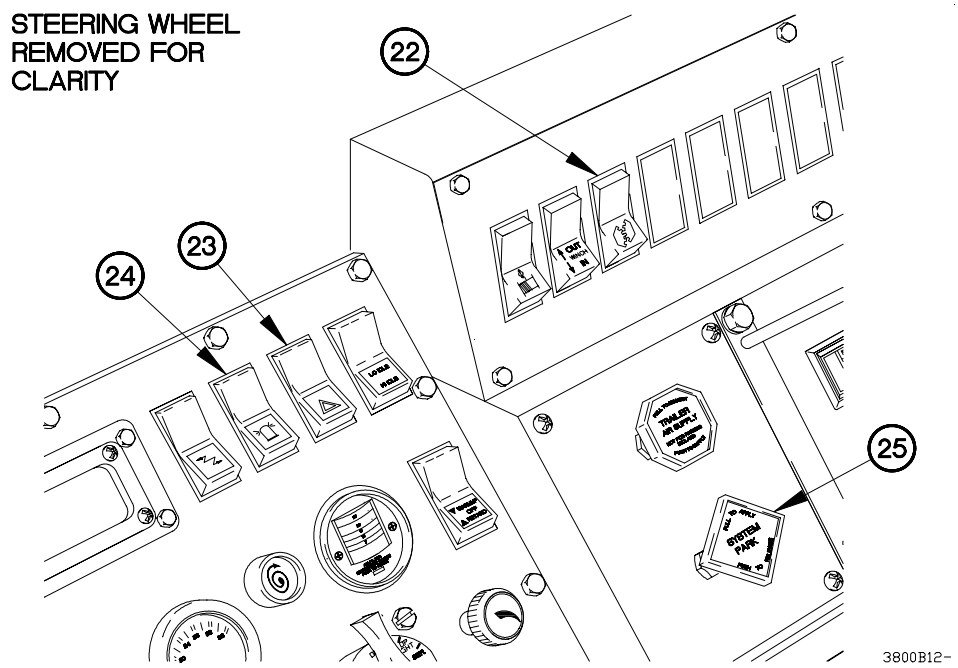
3800B11-

M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

FRONT CONNECTION - Continued

25. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
26. Position PTO switch (22) to off.
27. Install and raise two amber warning lights (WP 0066 00).
28. Turn on service drive lights (WP 0018 00).
29. Position hazard lights switch (23) to on.
30. Position warning lights switch (24) to on.
31. Push in SYSTEM PARK control (25).
32. Set transmission in gear (WP 0018 00).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0038 00

FRONT CONNECTION - Continued

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

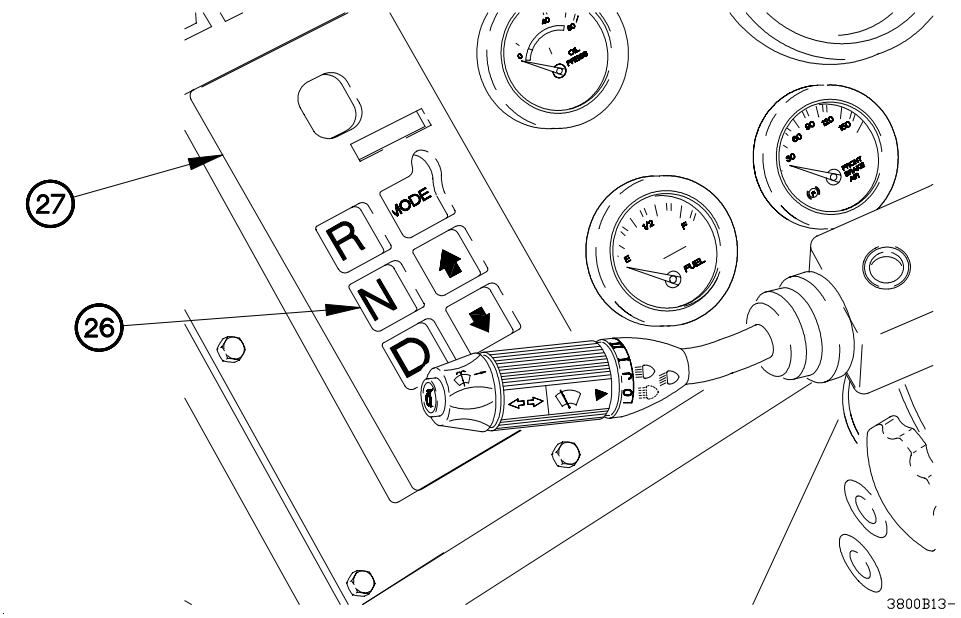
Failure to comply may result in serious injury or death to personnel or damage to equipment.

33. Transport M35.

FRONT DISCONNECTION

1. Start engine (WP 0018 00).

2. Press N (Neutral) button (26) on WTEC III TPSS (27).

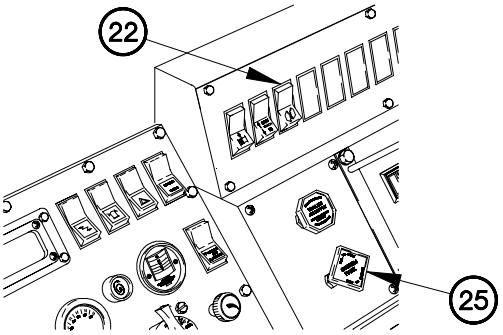


M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0038 00

FRONT DISCONNECTION - Continued

3. Pull out SYSTEM PARK control (25).

4. Position PTO switch (22) to on.



3800B14-

NOTE

Perform step 5 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

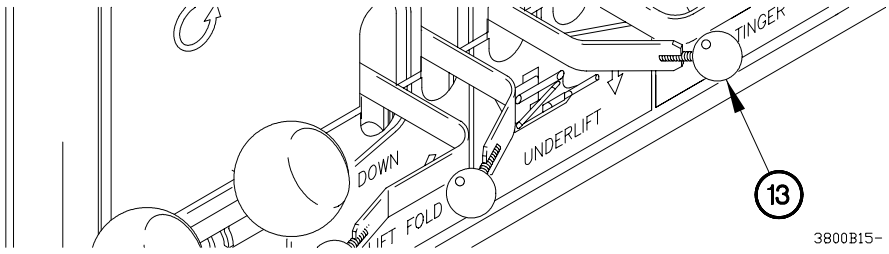
5. Connect WRECKER REMOTE CONTROL (WP 0035 00).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Position UNDERLIFT lever (13) to DOWN to lower M35 until wheels are in firm contact with ground.



3800B15-

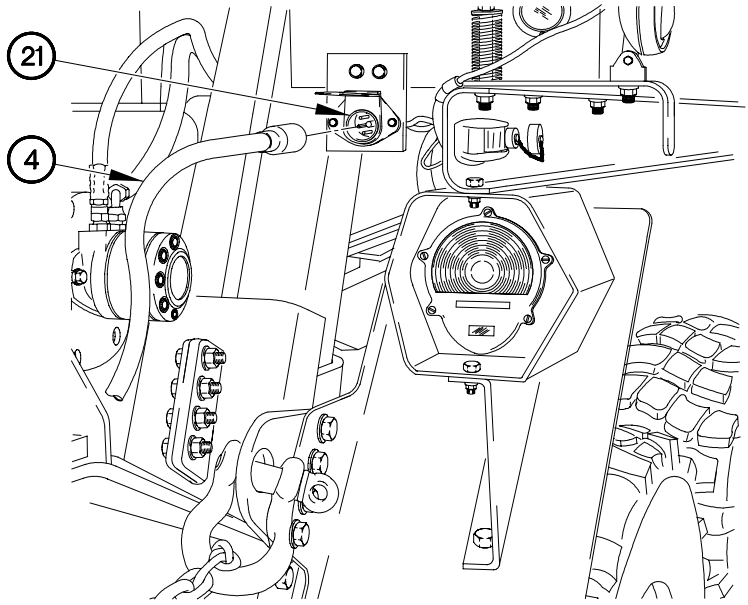
M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

FRONT DISCONNECTION - Continued

7. Set parking brake on M35 (TM 9-2320-361-10).

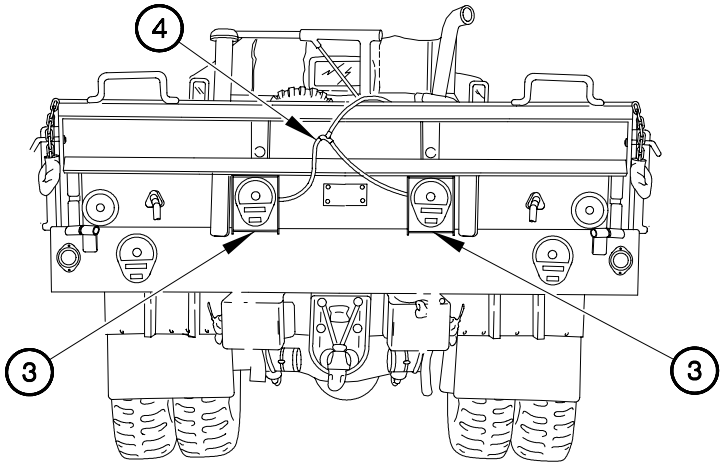
8. Disconnect tow lights cable (4) from M1089A1 rear electrical connector (21).



3800B16-

9. Disconnect tow lights cable (4) from two emergency tow lights (3).

10. Remove two emergency tow lights (3) from rear of M35.



3800B17-

M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

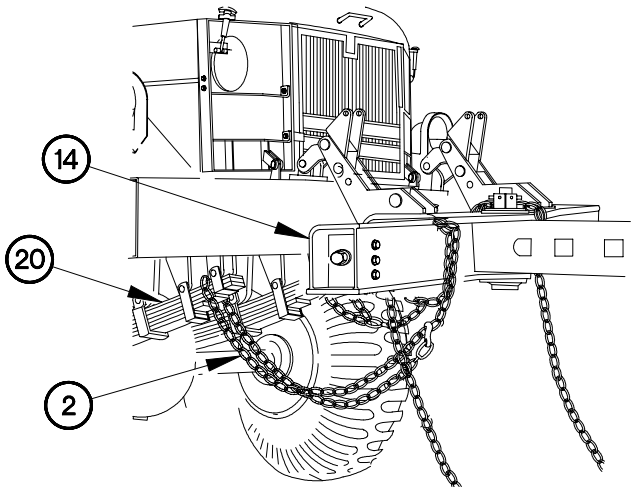
FRONT DISCONNECTION - Continued

NOTE

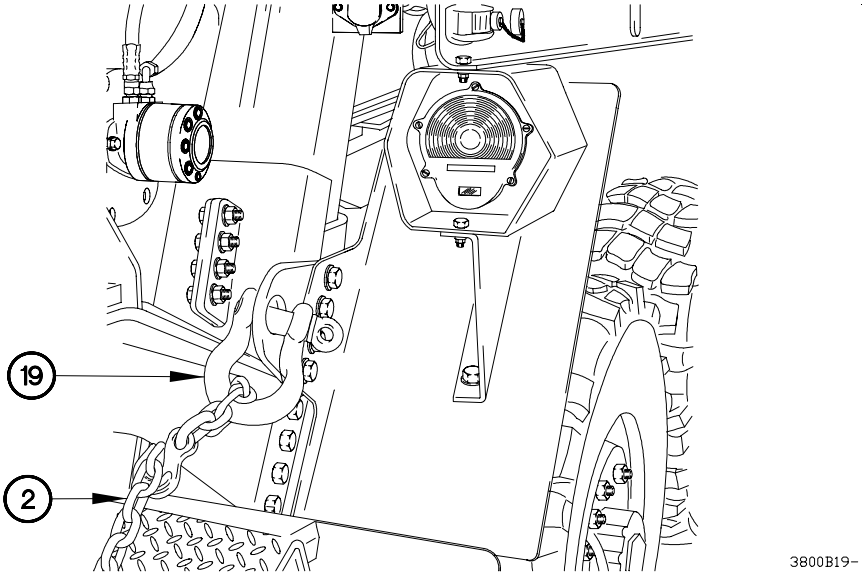
Left and right side chains are removed the same way. Right side shown.

11. Remove two chains (2) from M35 front leaf springs (20).

12. Remove two chains (2) from crossbar (14).



13. Remove other end of two chains (2) from M1089A1 rear shackles (19).

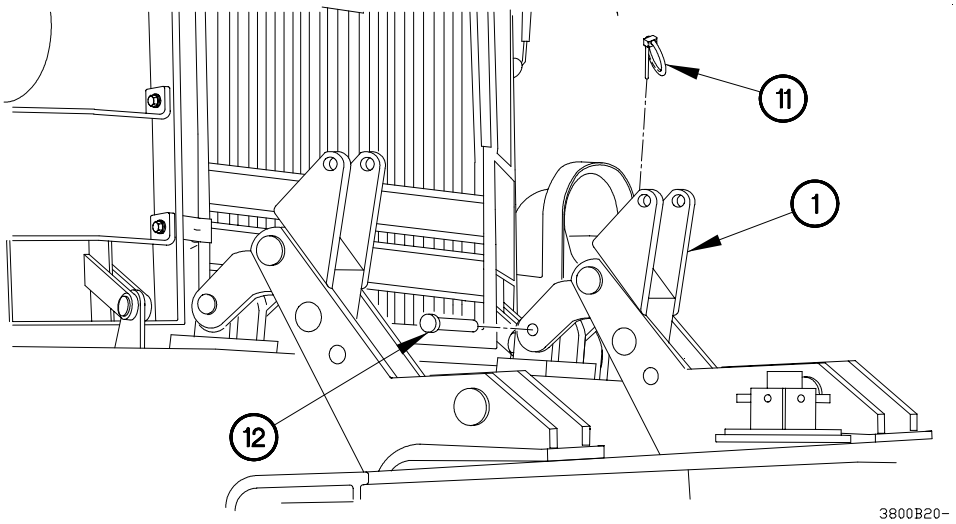


FRONT DISCONNECTION - Continued

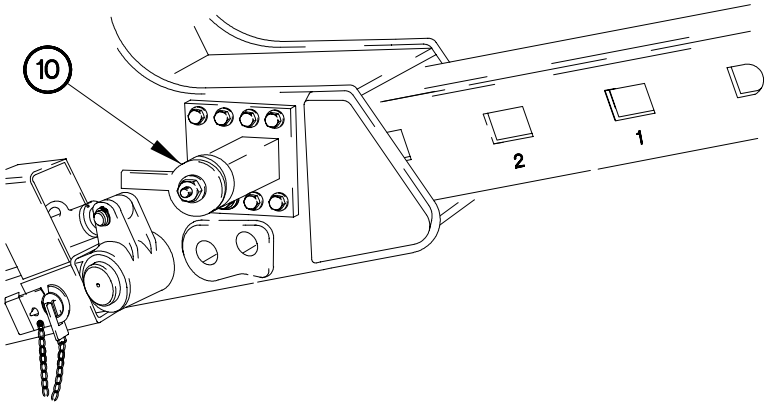
NOTE

Left and right side top bumper lift tools are removed from towed vehicle the same way. Left side shown.

14. Remove two linchpins (11) and pins (12) from two top bumper lift tools (1).



15. Unlock stinger cam lock (10).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

FRONT DISCONNECTION - Continued

WARNING

Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

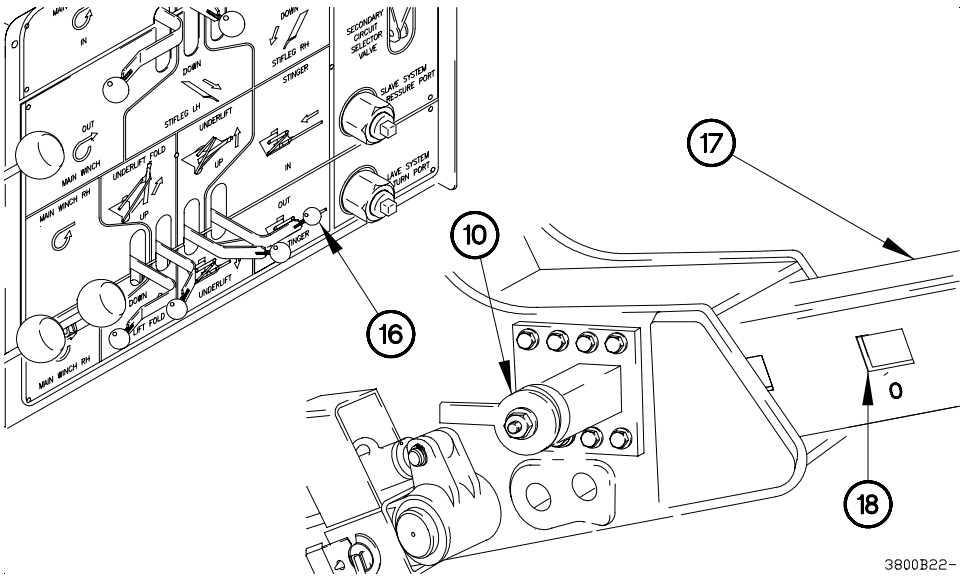
16. Place STINGER lever (16) to IN position to retract stinger (17) until stinger cam lock (10) is aligned with first hole (18) in stinger.

17. Lock stinger cam lock (10).

NOTE

Shackles are attached to M35 tow eyes using bolts, nuts, and cotter pins that were removed with M35 shackles.

18. Install shackles on M35 tow eyes (TM 9-2320-361-10).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0038 00

FRONT DISCONNECTION - Continued

NOTE

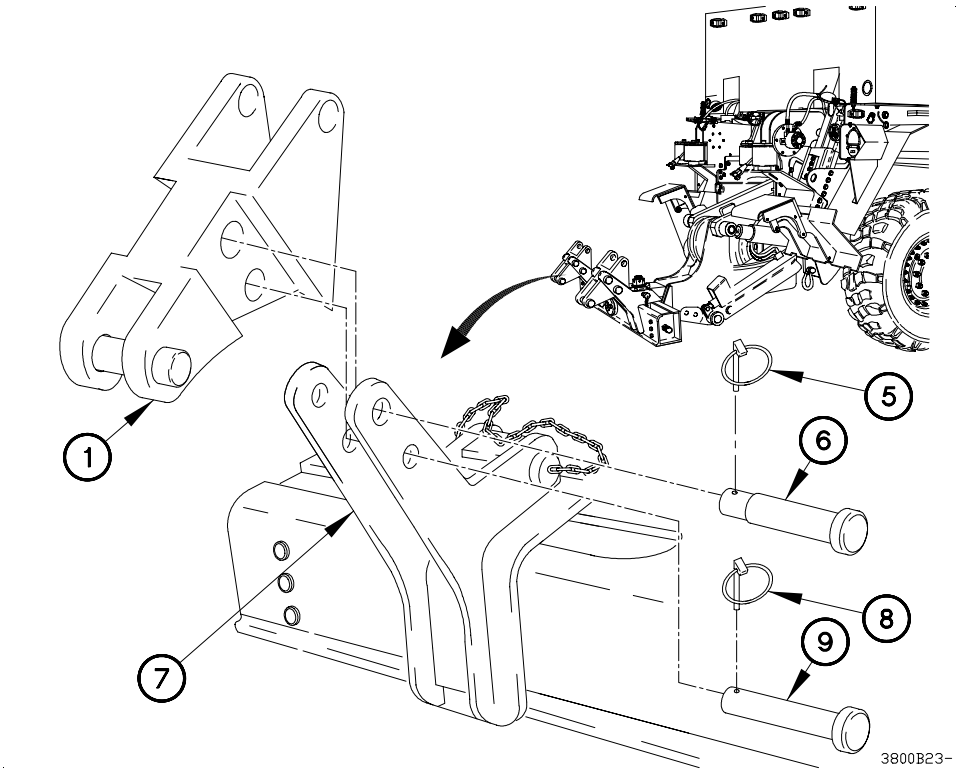
Left and right side top bumper lift tools are removed from lift tools the same way. Left side shown.

19. Remove two linchpins (8) and small pins (9) from two lift tools (7).

20. Remove two linchpins (5), large pins (6), and top bumper lift tools (1) from two lift tools (7).

21. Install two large pins (6) and linchpins (5) in two lift tools (7).

22. Install two small pins (9) and linchpins (8) in two lift tools (7).

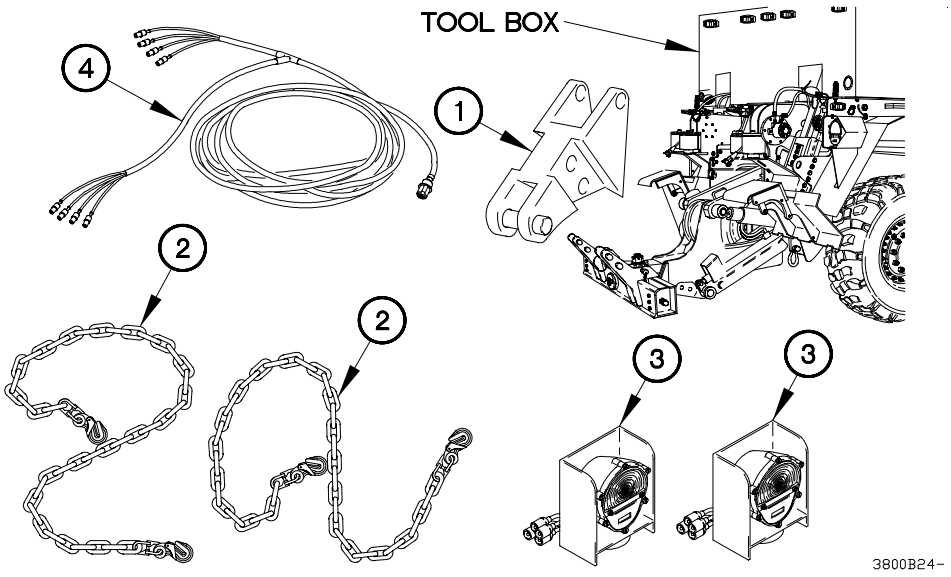


M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

FRONT DISCONNECTION - Continued

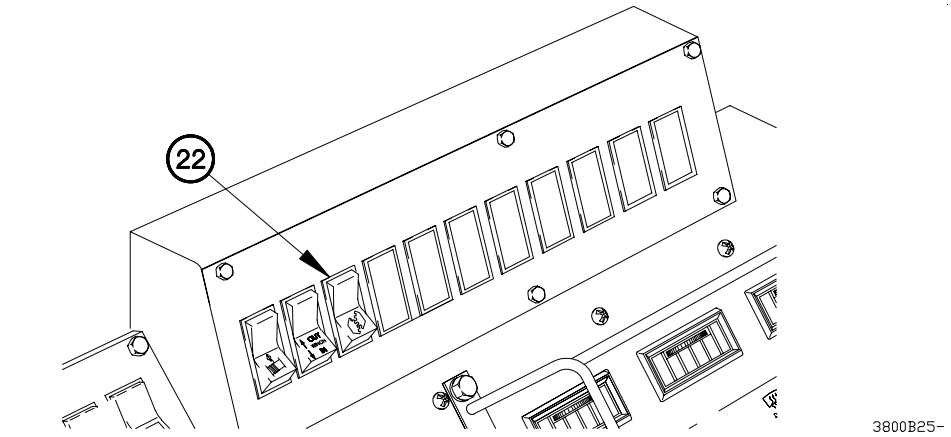
23. Stow two chains (2), top bumper lift tools (1), emergency tow lights (3), and tow lights cable (4) in tool box.



24. Raise underlift assembly (WP 0035 00).

25. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

28. Position PTO switch (22) to off.



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0038 00

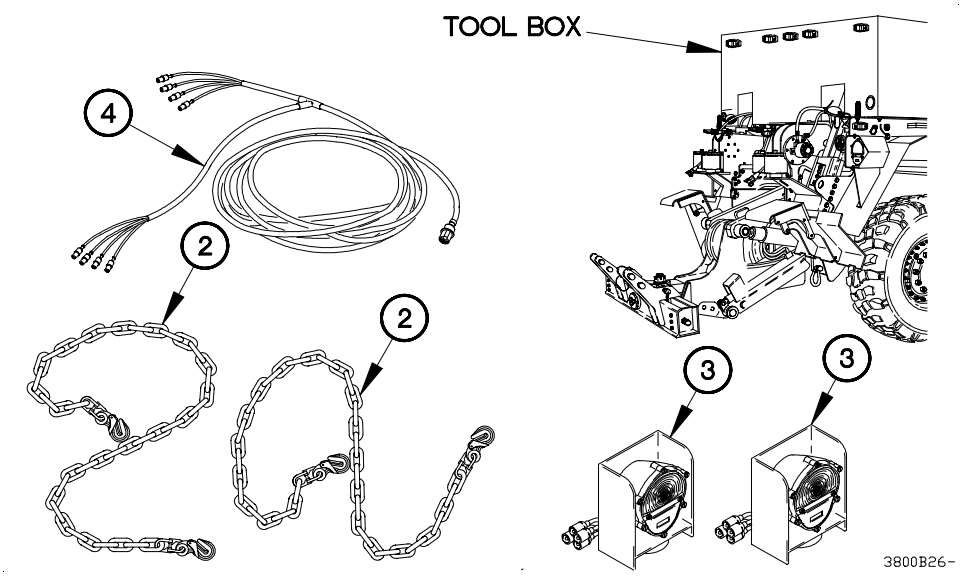
FRONT DISCONNECTION - Continued

29. Shut down engine (WP 0018 00).

30. Lower and remove two amber warning lights (WP 0066 00).

REAR CONNECTION

1. Remove two chains (2), emergency tow lights (3), and tow lights cable (4) from tool box.



2. Prepare underlift assembly for operation (WP 0035 00).

NOTE

Perform step 3 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

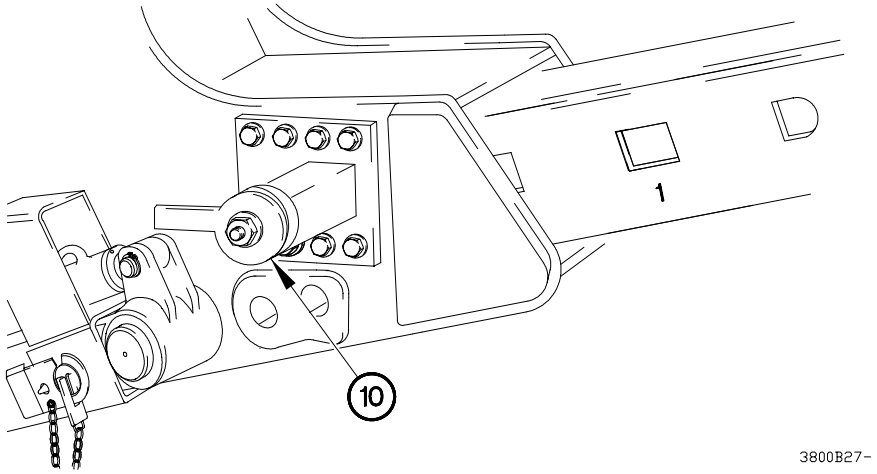
3. Connect WRECKER REMOTE CONTROL (WP 0035 00).

M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

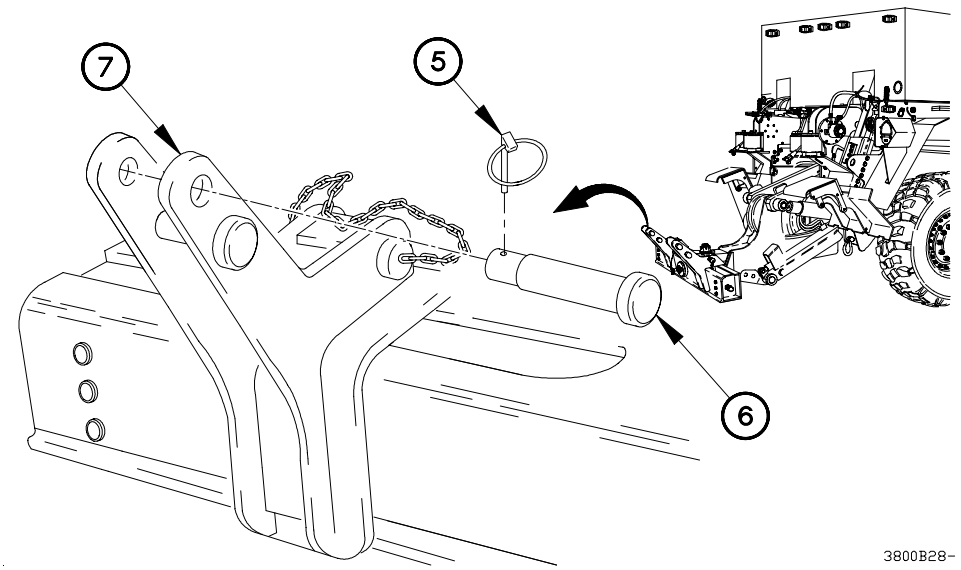
REAR CONNECTION - Continued

4. Unlock stinger cam lock (10).



5. Remove shackles from M35 tow eyes (TM 9-2320-361-10).

6. Remove two linchpins (5) and pins (6) from two lift tools (7).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

REAR CONNECTION - Continued

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

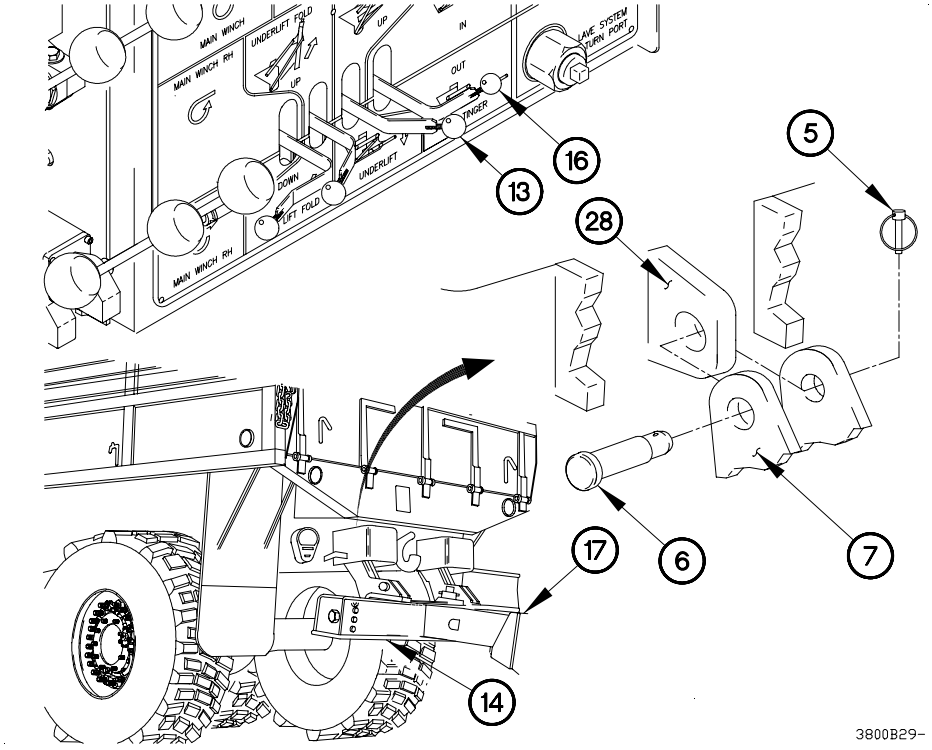
7. Place STINGER lever (16) to OUT position to extend stinger (17) until lift tools (7) are aligned with M35 tow eyes (28).

8. Place UNDERLIFT lever (13) to UP position to raise crossbar (14) until lift tools (7) are aligned with M35 tow eyes (28).

NOTE

Left and right side lift tools are installed on M35 tow eyes the same way. Right side shown.

9. Install two lift tools (7) on M35 tow eyes (28) with pins (6) and linchpins (5).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

REAR CONNECTION - Continued

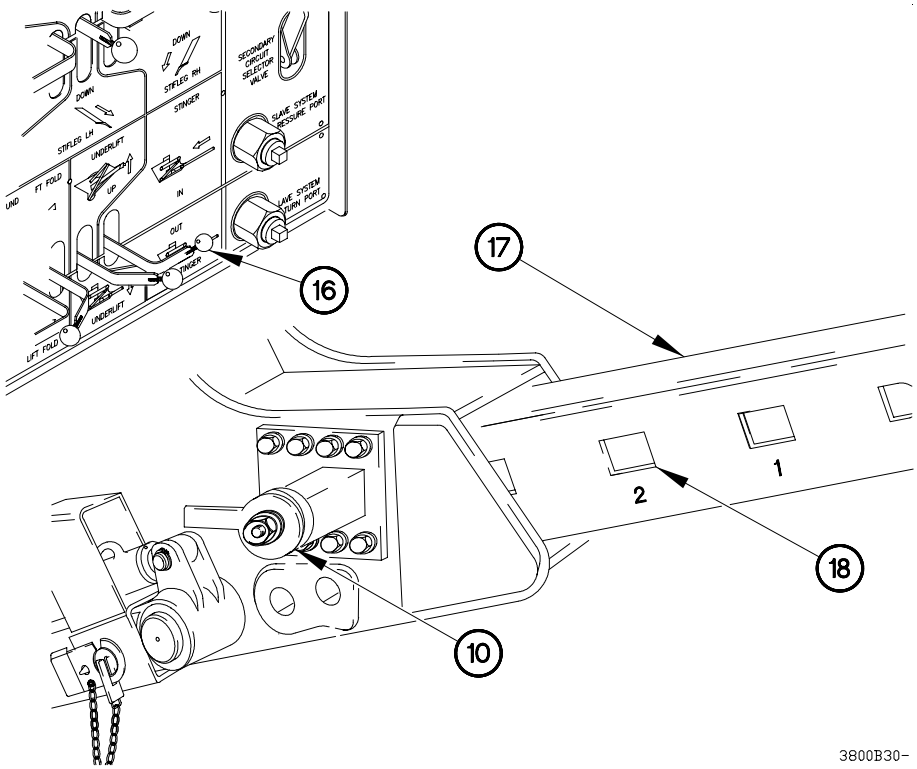
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing M35. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if components are mounted on rear of M35 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

10. Place STINGER lever (16) to IN position to retract stinger (17) until desired stinger cam lock hole (18) is aligned.

11. Lock stinger cam lock (10).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

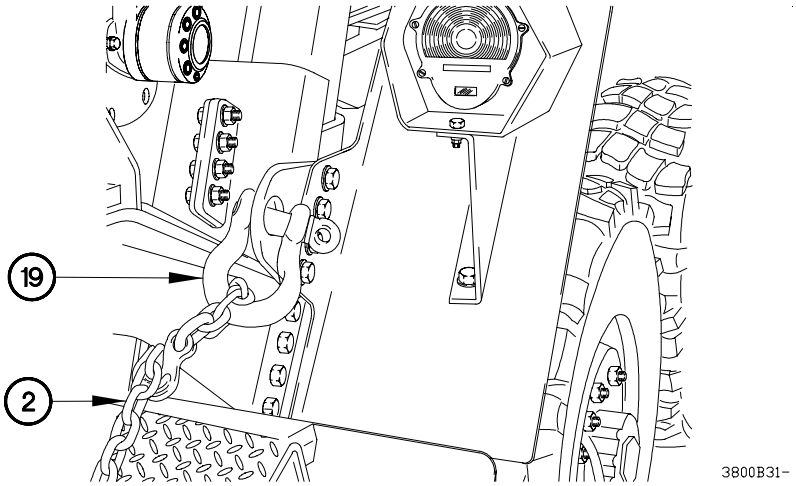
0038 00

REAR CONNECTION - Continued

NOTE

Left and right side chains are installed the same way. Right side shown.

12. Connect one end of two chains (2) to M1089A1 rear shackles (19).

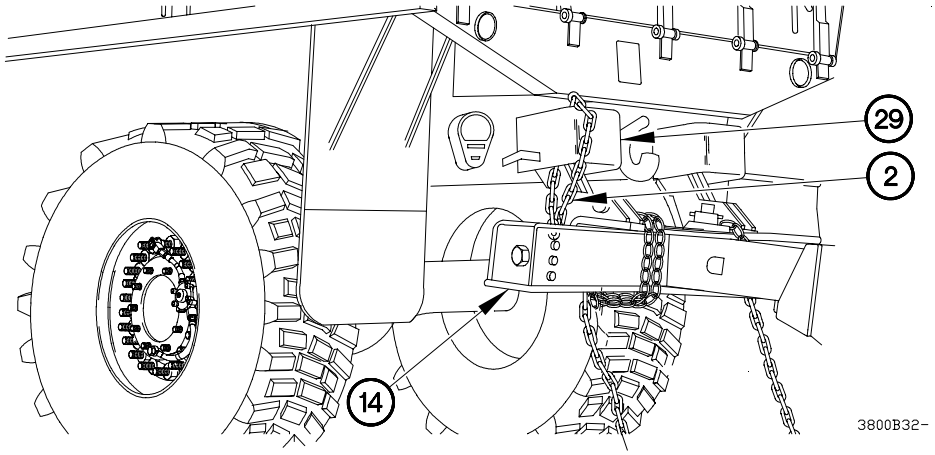


NOTE

Chains must be wrapped around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

13. Wrap two chains (2) around crossbar (14).

14. Connect other end of two chains (2) around M35 rear crossmember (29).

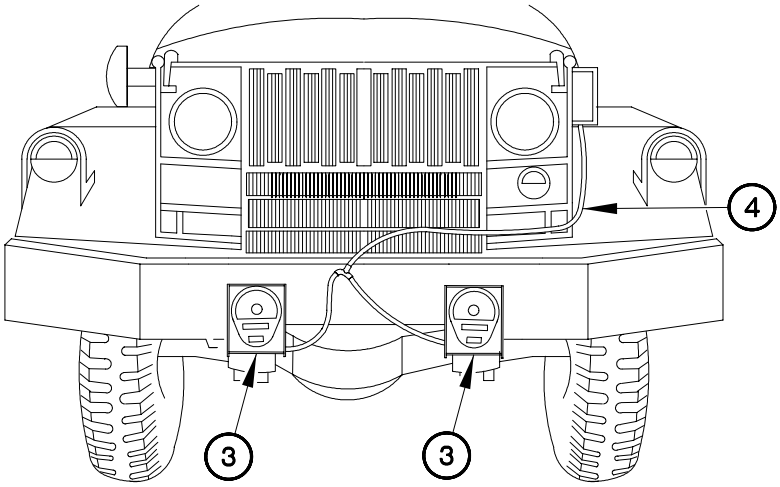


M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

REAR CONNECTION - Continued

15. Position two emergency tow lights (3) on front of M35.

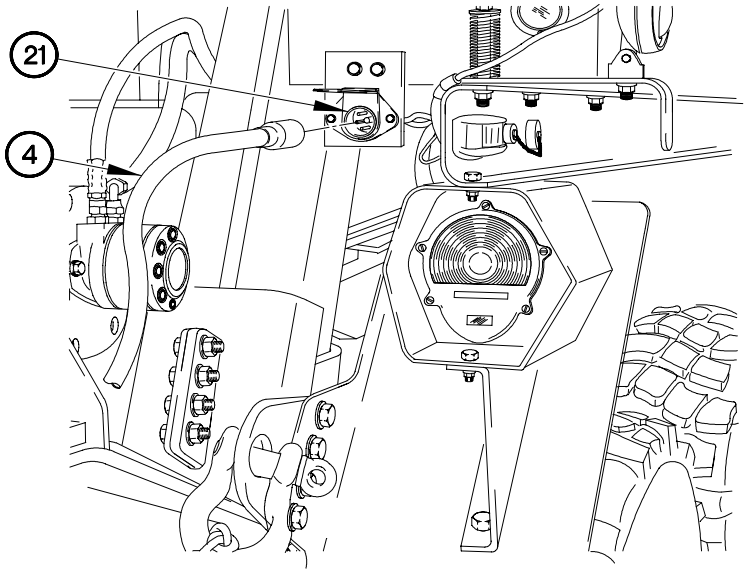
16. Connect tow lights cable (4) to two emergency tow lights (3).



3800B33-

17. Route tow lights cable (4) along top of M35.

18. Connect tow lights cable (4) to M1089A1 rear electrical connector (21).



3800B34-

M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0038 00

REAR CONNECTION - Continued

CAUTION

All loose equipment must be secure on M35. Failure to comply may result in damage to equipment.

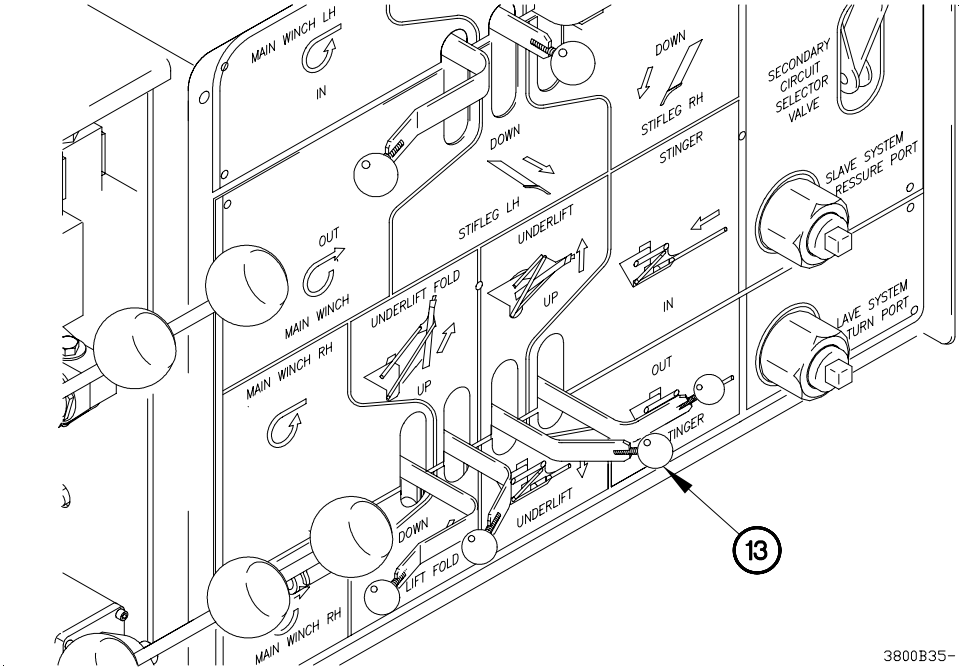
19. Prepare M35 for towing (TM 9-2320-361-10).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

20. Place UNDERLIFT lever (13) to UP position to raise M35 until wheels are approximately 16 in. (41 cm) off ground.

21. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

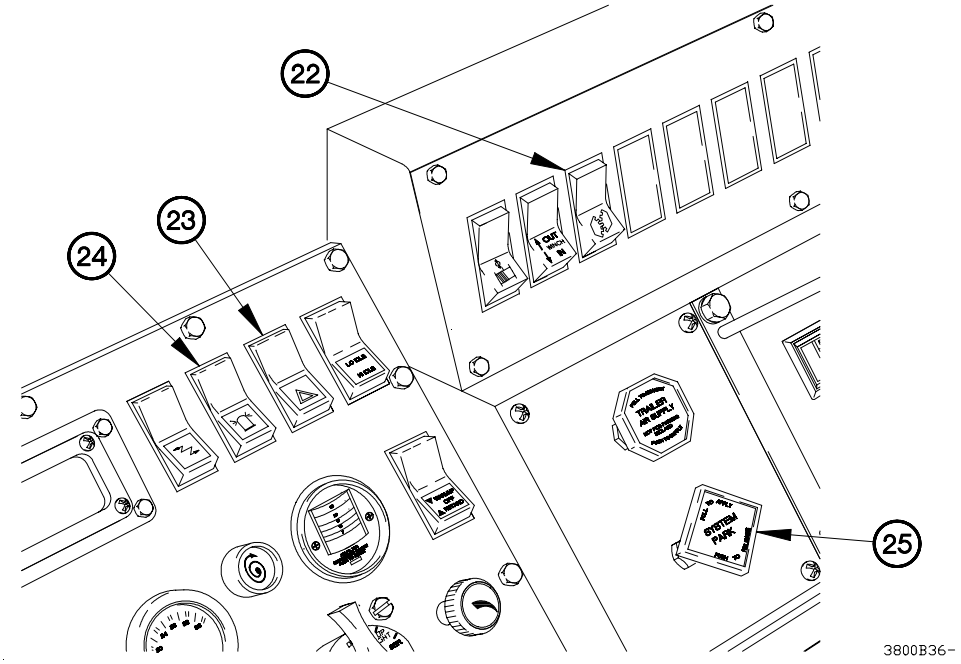


M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

REAR CONNECTION - Continued

22. Position PTO switch (22) to off.
23. Install and raise two amber warning lights (0066 00).
24. Turn on service drive lights (WP 0018 00).
25. Position hazard lights switch (23) to on.
26. Position warning lights switch (24) to on.
27. Push in SYSTEM PARK control (25).
28. Set transmission in gear (WP 0018 00).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

REAR CONNECTION - Continued

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

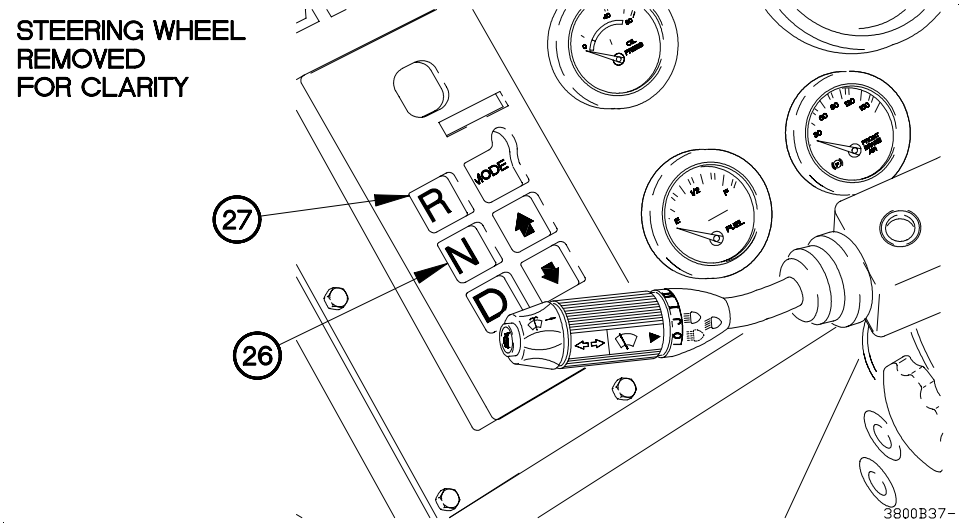
Failure to comply may result in serious injury or death to personnel or damage to equipment.

30. Transport M35.

REAR DISCONNECTION

1. Start engine (WP 0018 00).

2. Press N (Neutral) button (26) on WTEC III TPSS (27).



M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

REAR DISCONNECTION - Continued

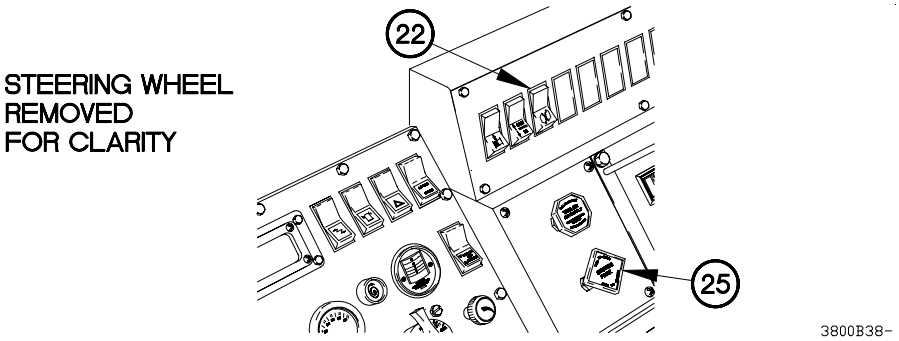
3. Pull out SYSTEM PARK control (25).

4. Position PTO switch (22) to ON.

NOTE

Perform step 5 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

5. Connect WRECKER REMOTE CONTROL (WP 0035 00).

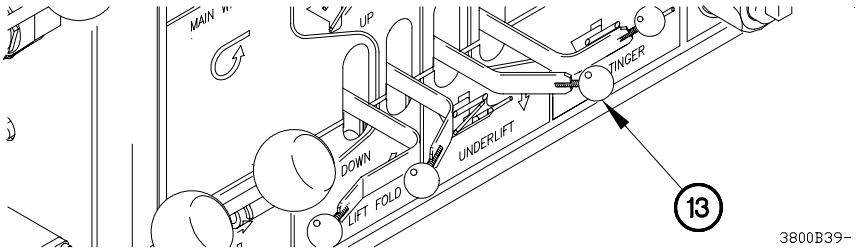


WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Position UNDERLIFT lever (13) to DOWN to lower M35 until wheels are in firm contact with ground.



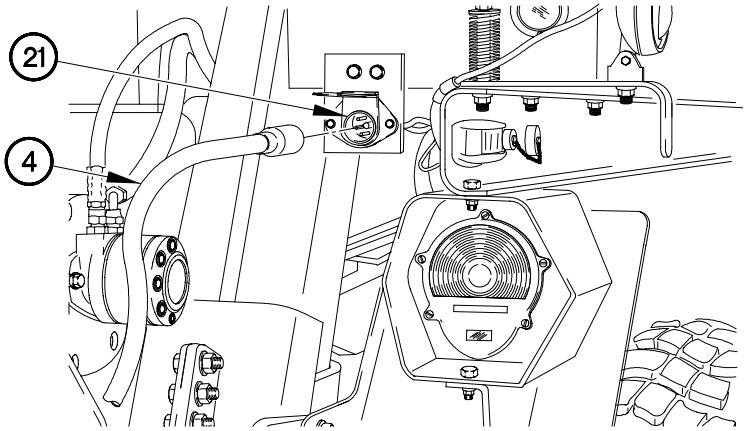
M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

REAR DISCONNECTION - Continued

7. Set parking brake on M35 (TM 9-2320-361-10).

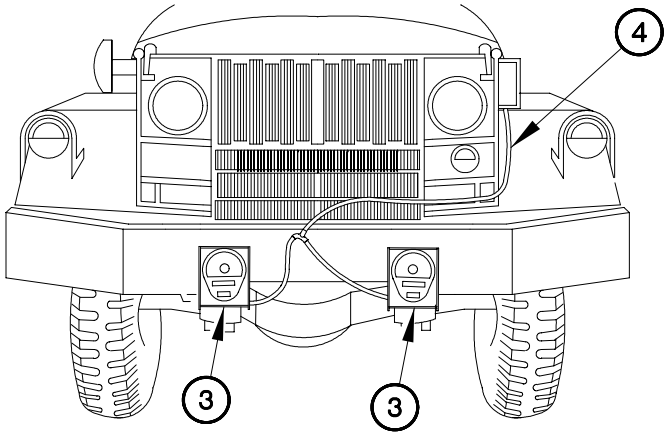
8. Disconnect tow lights cable (4) from M1089A1 rear electrical connector (21).



3800B40-

9. Disconnect tow lights cable (4) from two emergency tow lights (3).

10. Remove two emergency tow lights (3) from front of M35.



3800b41-

M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

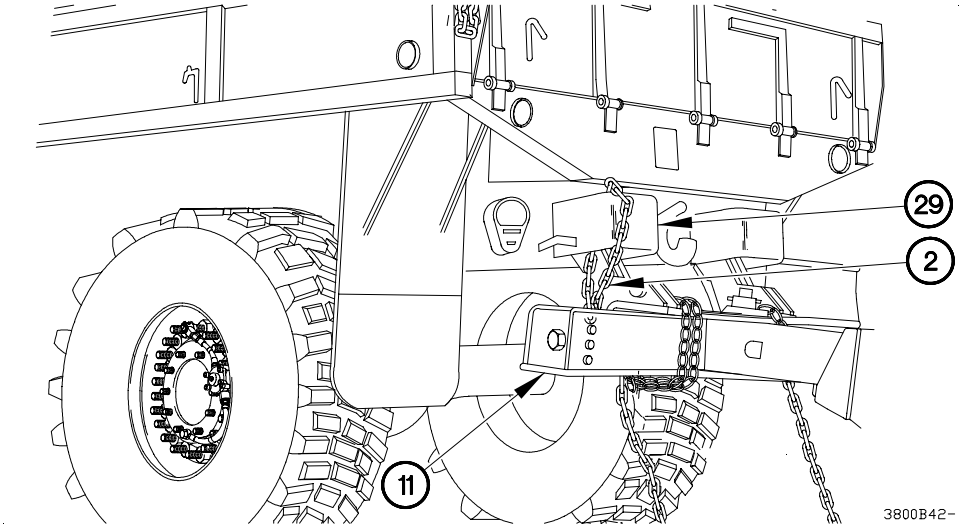
REAR DISCONNECTION - Continued

NOTE

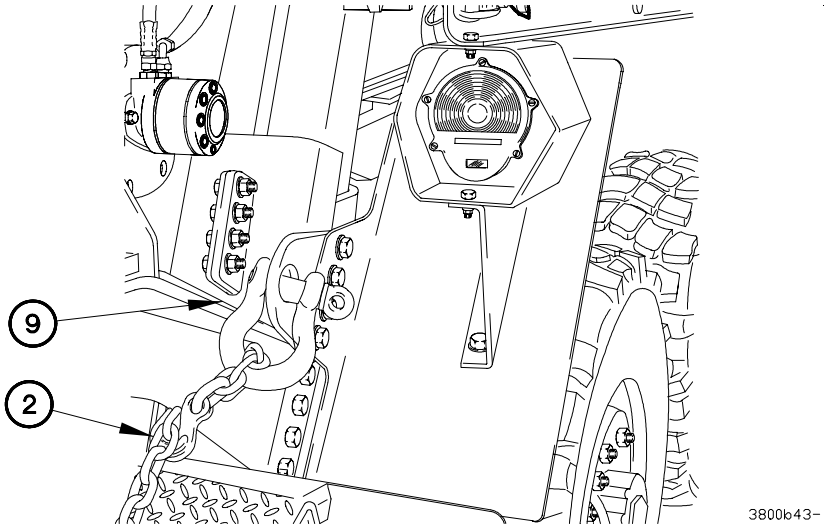
Left and right side chains are removed the same way. Left side shown.

11. Remove two chains (2) from M35 rear crossmember (29).

12. Remove two chains (2) from crossbar (14).



13. Remove other end of two chains (2) from M1089A1 rear shackles (19).

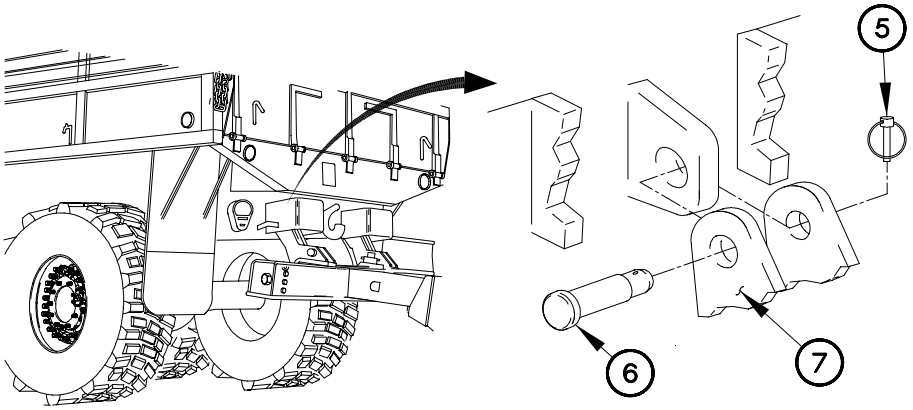


REAR DISCONNECTION - Continued

NOTE

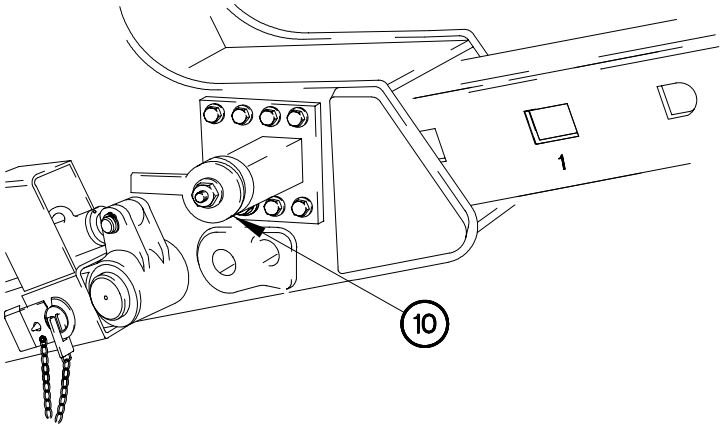
Left and right side lift tools are removed the same way. Right side shown.

14. Remove two linchpins (5) and pins (6) from two lift tools (7).



3800B44-

15. Unlock stinger cam lock (10).



3800B45-

M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0038 00

REAR DISCONNECTION - Continued

16. Place STINGER lever (16) to IN position to retract stinger (17) until stinger cam lock (10) is aligned with first hole (18) in stinger.

WARNING

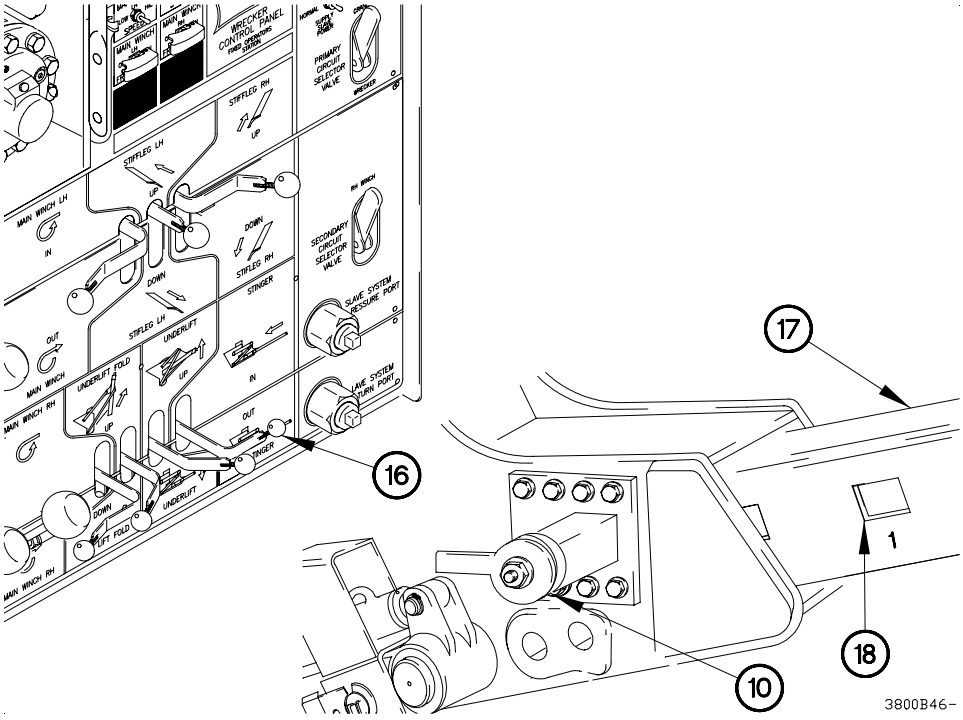
Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

17. Lock stinger cam lock (10).

NOTE

Shackles are attached to M35 tow eyes using bolts, nuts, and cotter pins that were removed with M35 shackles.

18. Install shackles on M35 tow eyes (TM 9-2320-361-10).

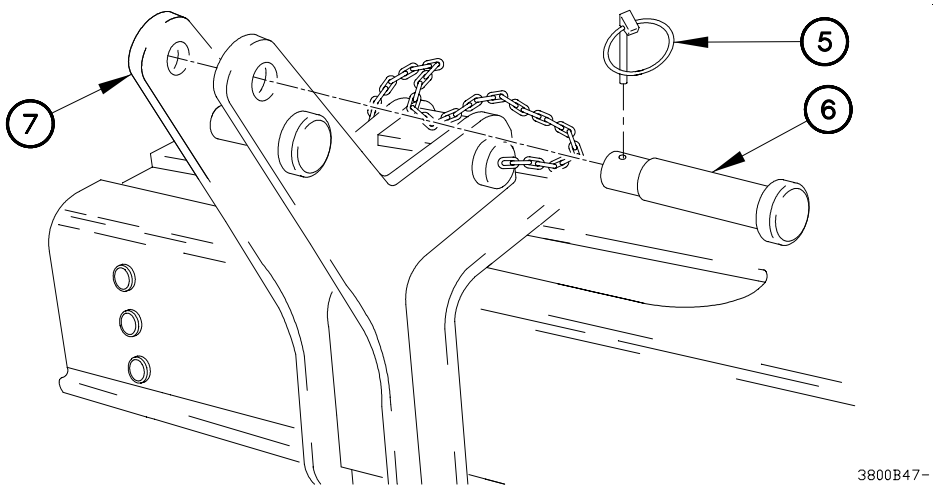


M35 SERIES TOWING CONNECTION/DISCONNECTION - Continued

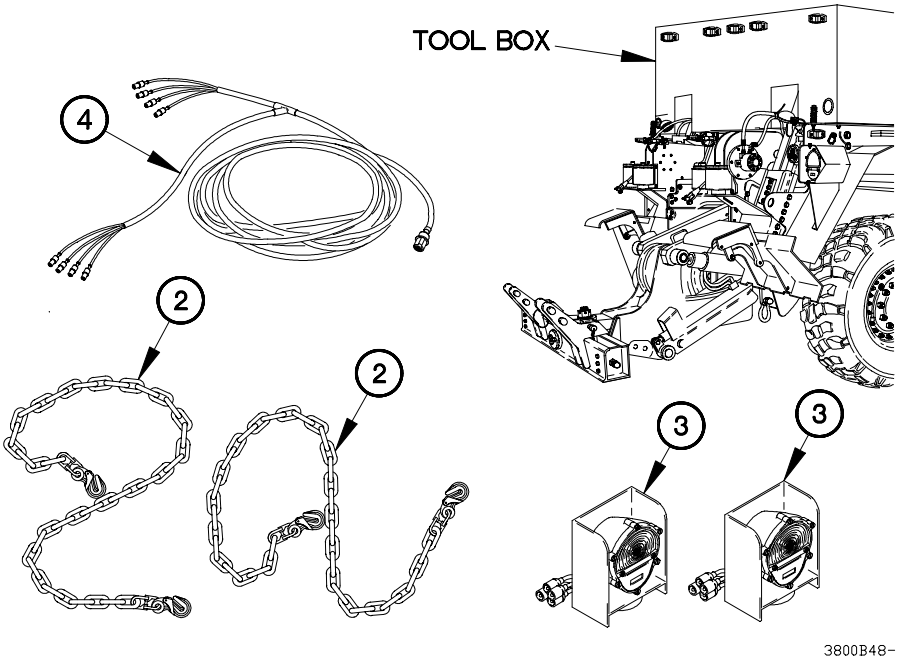
0038 00

REAR DISCONNECTION - Continued

19. Install two pins (6) and linchpins (5) in two lift tools (7).

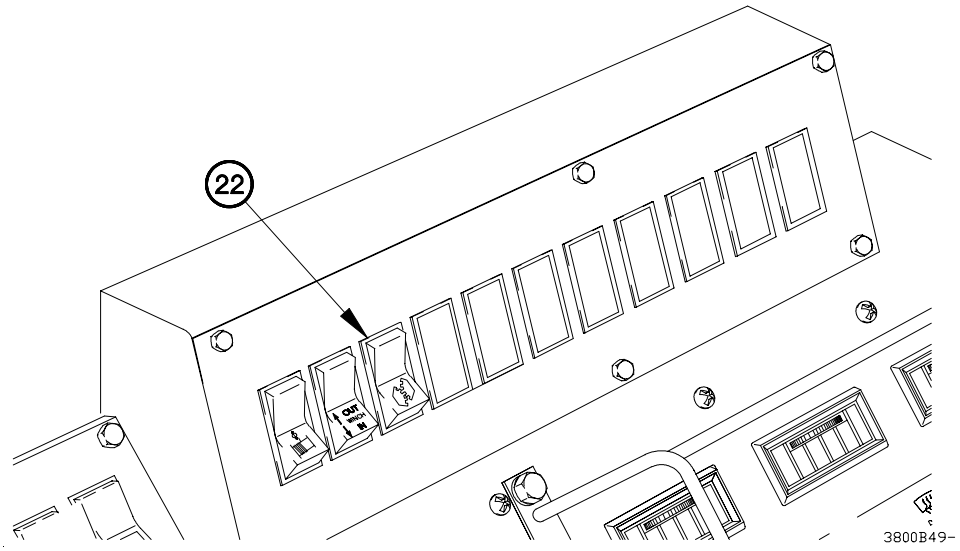


20. Stow two chains (2), emergency tow lights (3), and tow lights cable (4) in tool box.



REAR DISCONNECTION - Continued

21. Raise underlift assembly (WP 0035 00).
22. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
23. Position PTO switch (22) to off.
24. Shut down engine (WP 0018 00).
25. Lower and remove two amber warning lights (WP 0066 00).



END OF OPERATIONAL PROCEDURE

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION 0039 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Binder, Load (Item 2, Table 1 WP 0112 00)
Bracket, Lower, LH (Item 3, Table 1, WP 0112 00)
Bracket, Lower, RH (Item 4, Table 1, WP 0112 00)
Cable Kit (Item 12, Table 2, WP 0112 00)
Chain Assembly, Single Leg (Item 13, Table 2, WP 0112 00)
Goggles, Industrial (Item 25, Table 2, WP 0112 00)

Tools/Special Tools - Continued
Hose Assembly, Nonmetallic (Item 29, Table 2, WP 0112 00)
Hose Assembly, Nonmetallic (Item 30, Table 2, WP 0112 00)
Lift Tool, Extension (Item 18, Table 1, WP 0112 00)

References
TM 9-2320-272-10
TM 9-2320-260-10
WP 0018 00
WP 0035 00
WP 0066 00

GENERAL

This work package provides the data and procedures for M939/M939A1 and M89 series towing connection and disconnection. Items covered include Front Connection, Front Disconnection, Rear Connection, and Rear Disconnection.

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

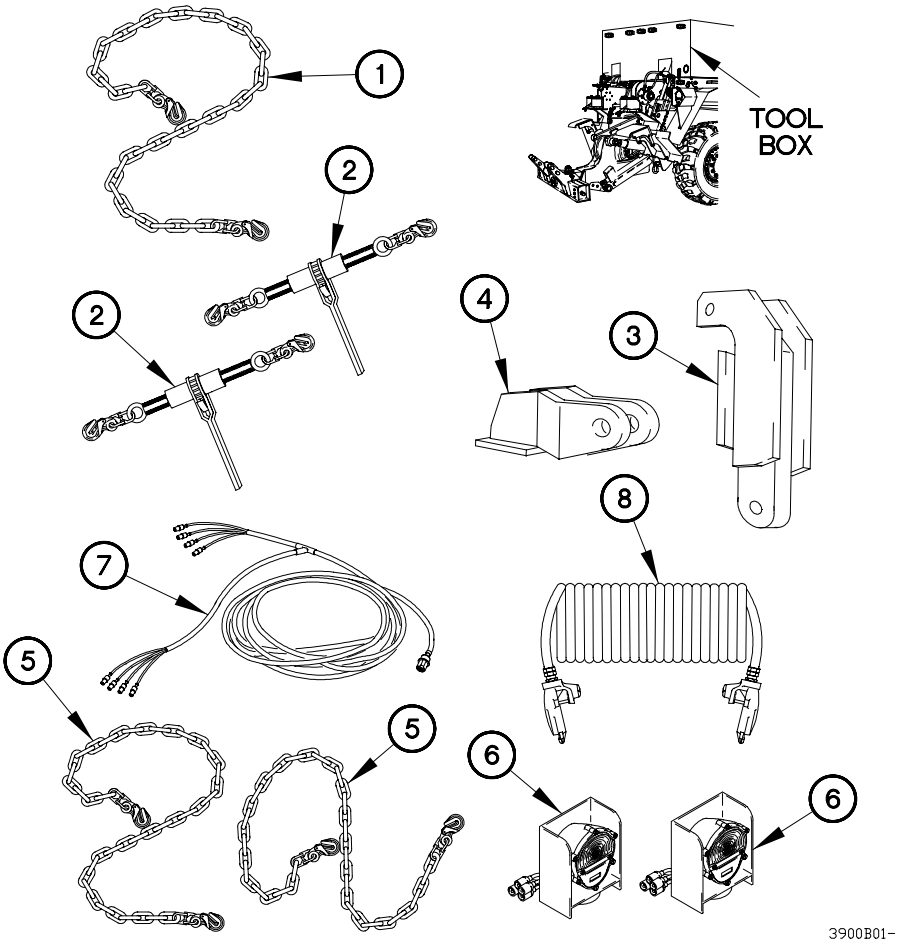
0039 00

FRONT CONNECTION

1. Remove chain (1), two load binders (2), lifting extensions (3), lower brackets (4), chains (5), emergency tow lights (6), tow lights cable (7), and two intervehicular air hoses (8) from tool box.

2. Prepare underlift assembly for operation (WP 0035 00).

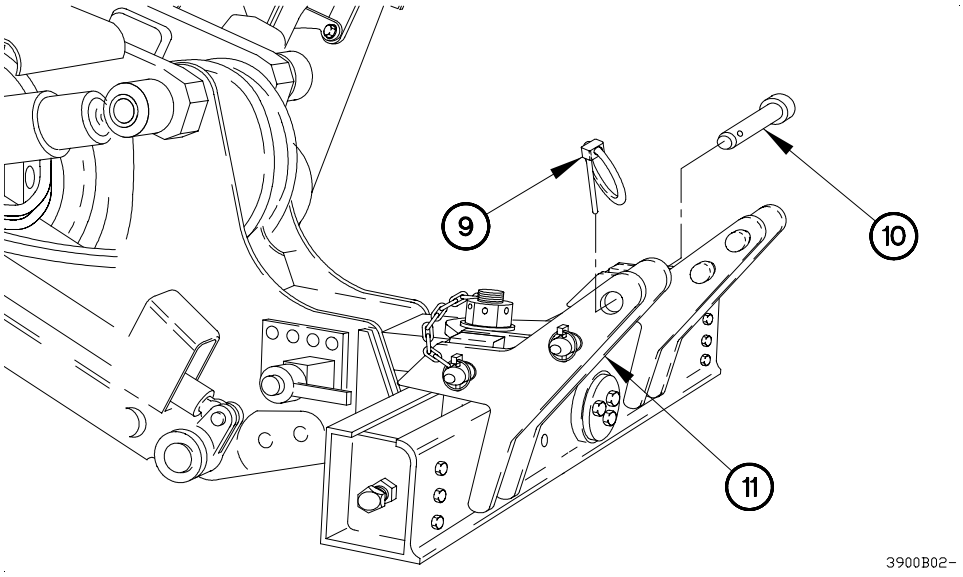
3. Connect WRECKER REMOTE CONTROL (WP 0035 00).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

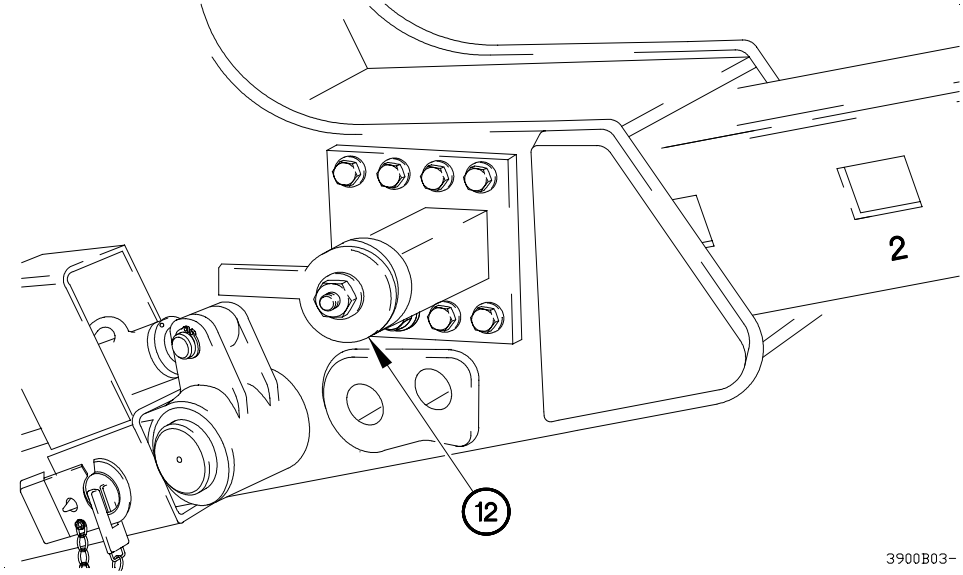
FRONT CONNECTION - Continued

4. Remove two linchpins (9) and large pins (10) from two lift tools (11) and stow in tool box.



5. Unlock stinger cam lock (12).

6. Remove shackles from M939/M939A1/M809 tow eyes (TM 9-2320-272-10/TM 9-2320-260-10).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

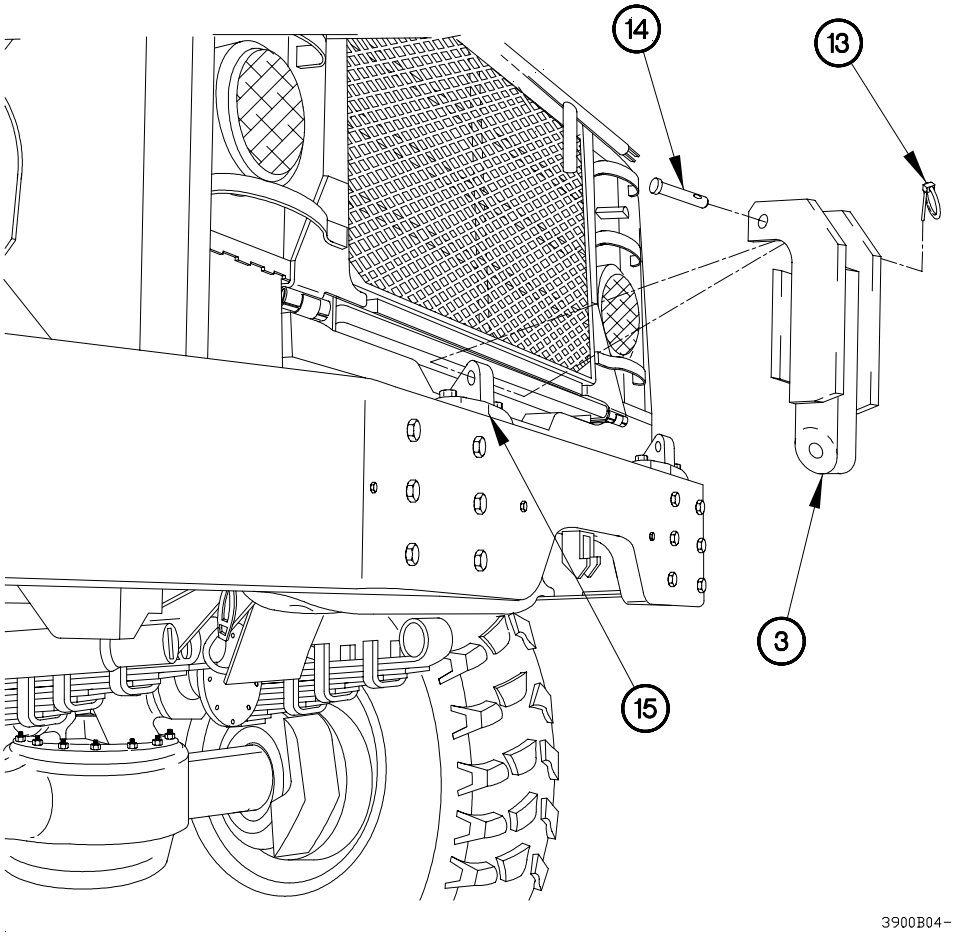
FRONT CONNECTION - Continued

7. Remove two linchpins (13) and pins (14) from two lifting extensions (3).

NOTE

Left and right side lifting extensions are installed on M939/M939A1/M809 tow eyes the same way. Right side shown.

8. Install two lifting extensions (3) on M939/M939A1/M809 tow eyes (15) with pins (14) and linchpins (13).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

FRONT CONNECTION - Continued

WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

9. Place UNDERLIFT lever (16) in UP position to raise crossbar (17) until lift tools (11) are aligned with lifting extensions (3) on M939/M939A1/M809.

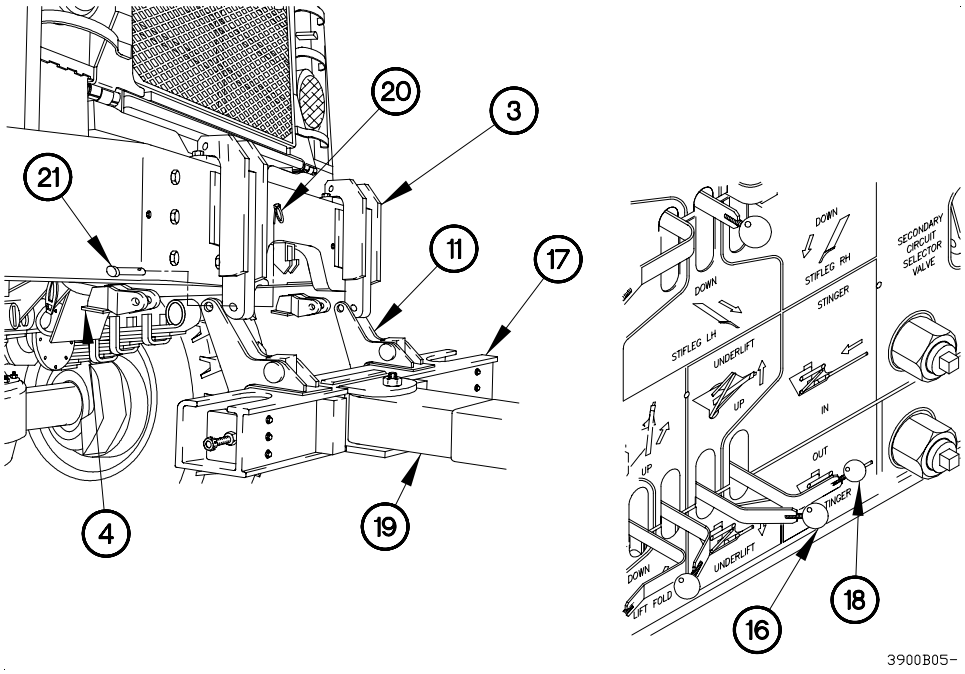
10. Place STINGER lever (18) in OUT position to extend stinger (19) until lift tools (11) are aligned with lifting extensions (3) on M939/M939A1/M809.

11. Remove two linchpins (20) and pins (21) from lifting extensions (3).

NOTE

Left and right side lower brackets are installed on lifting extensions and lift tools the same way. Right side shown.

12. Install two lower brackets (4) on lifting extensions (3) and lift tools (11) with pins (21) and linchpins (20).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

FRONT CONNECTION - Continued

13. Wrap one end of chain (1) around M939/M939A1/M809 front axle (22) then hook chain back to itself.

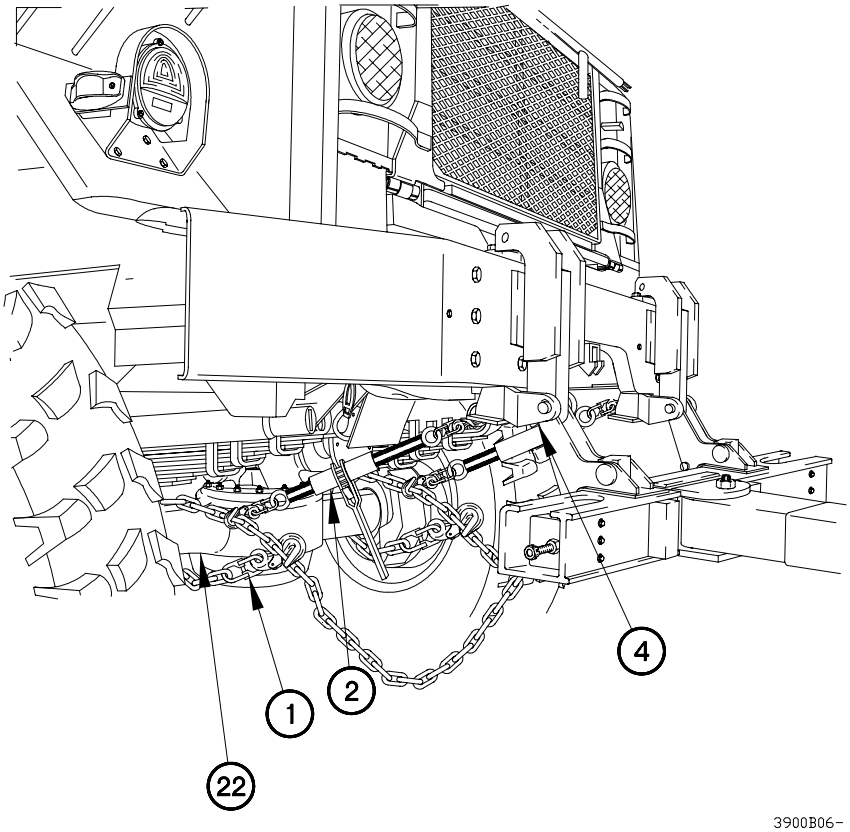
14. Wrap other end of chain (1) around opposite side of M939/M939A1/M809 front axle (22) then hook chain back to itself.

NOTE

Left and right side load binders are installed the same way. Right side shown.

15. Attach hooks of two load binders (2) to chain (1) that is wrapped around M939/M939A1/ M809 front axle (22).

16. Attach other end of load binders (2) to two lower brackets (4).



3900B06-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT CONNECTION - Continued

17. Wrap remaining slack in chain (1) around M939/M939A1/M809 front axle (22) to prevent chain from dragging on ground.

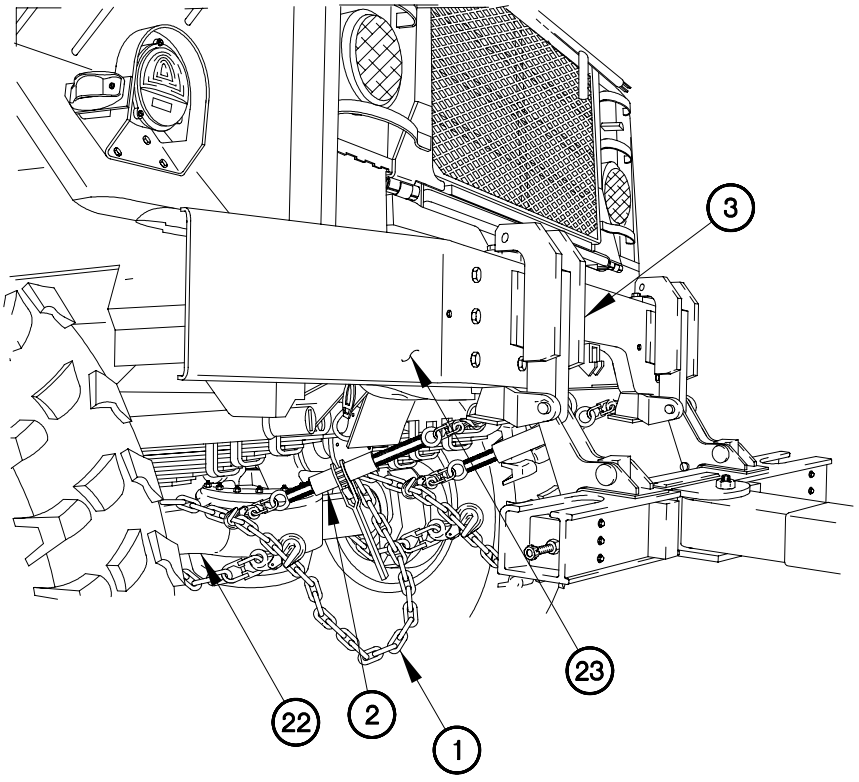
CAUTION

Position lower brackets between front bumper attaching parts. Lifting extensions must be pulled tight against front bumper and all slack in chain removed. Failure to comply may result in damage to equipment.

NOTE

Operating crank handles of load binders will remove slack from chain.

18. Remove slack in chain (1), using both load binders (2), until lifting extensions (3) are against M939/M939A1/M809 front bumper (23).



3900B07-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

FRONT CONNECTION - Continued

19. Manually cage spring brakes on M939/M939A1/M809 (TM 9-2320-272-10/TM 9-2320-260-10).

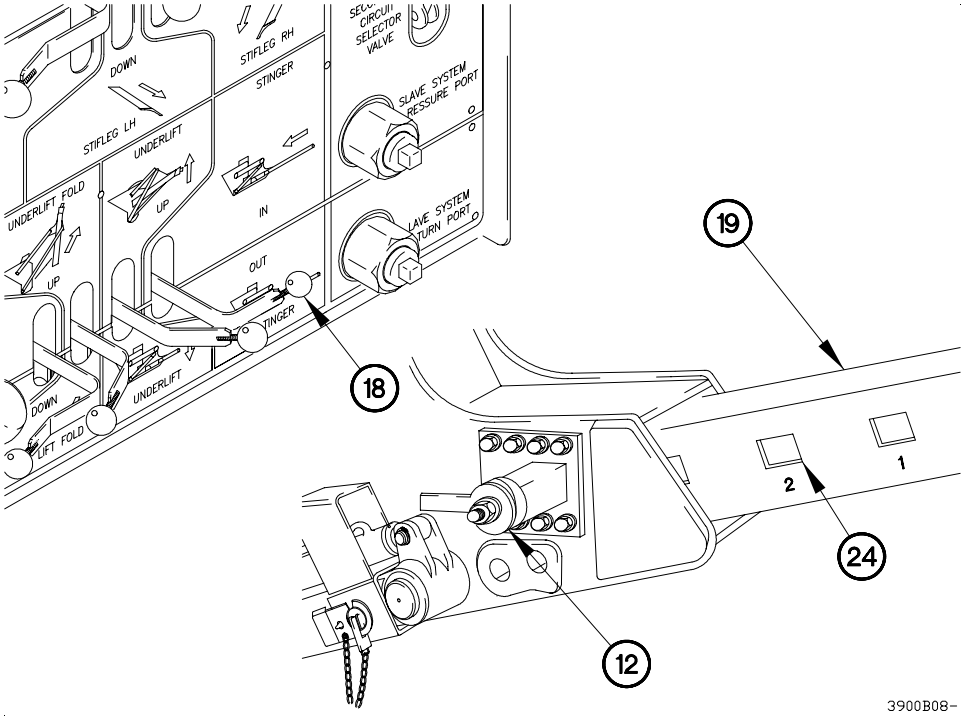
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing an M939/M939A1/M809. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if winches or other components mounted on front of M939/M939A1/M809 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

20. Place STINGER lever (18) to IN position to retract stinger (19) until desired stinger cam lock hole (24) is aligned.

21. Lock stinger cam lock (12).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

FRONT CONNECTION - Continued

CAUTION

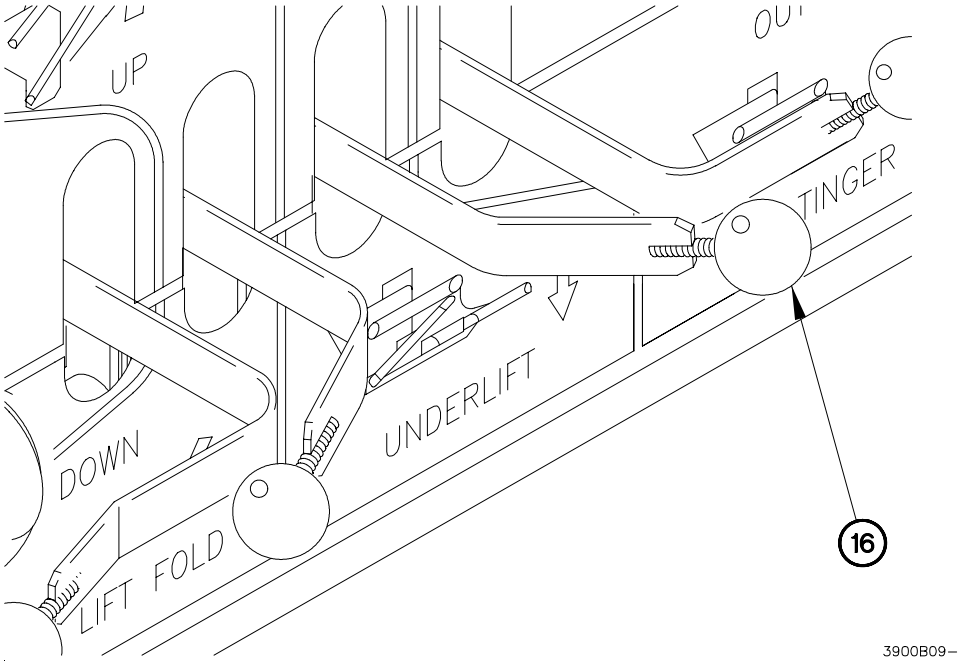
All loose equipment must be secure on M939/M939A1/M809. Failure to comply may result in damage to equipment.

22. Prepare M939/M939A1/M809 for towing (TM 9-2320-272-10/TM 9-2320-260-10).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

23. Place UNDERLIFT lever (16) in UP position to raise M939/M939A1/M809 until wheels are approximately 16 in. (41 cm) off ground.

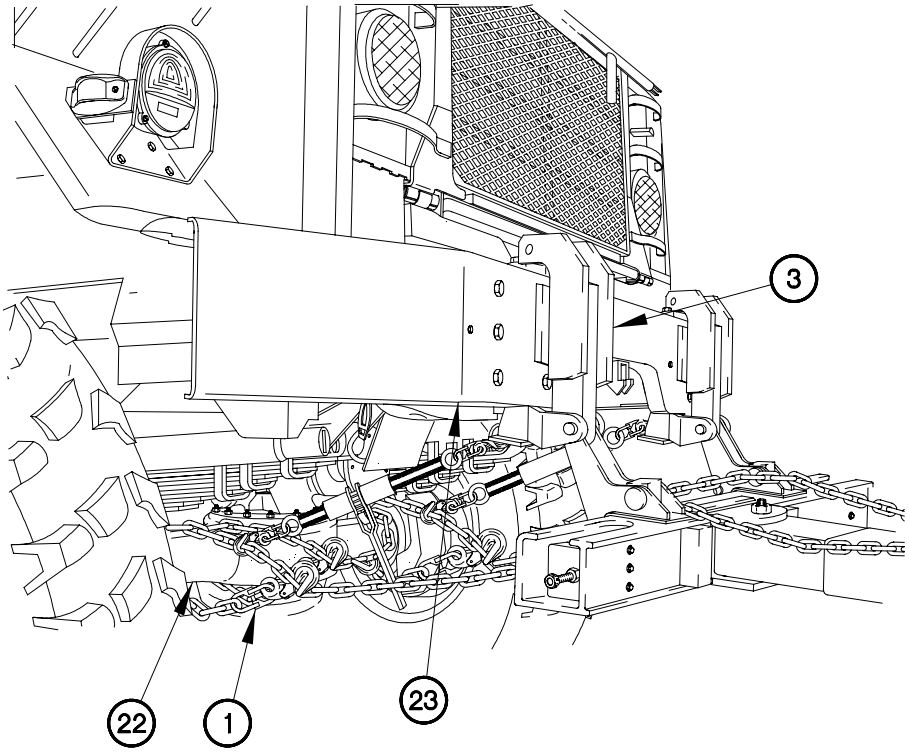


M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

FRONT CONNECTION - Continued

24. Check that chain (1) around M939/M939A1/M809 front axle (22) is tight.

25. Check that lifting extensions (3) are tight against M939/M939A1/M809 front bumper (23).



3900B10-

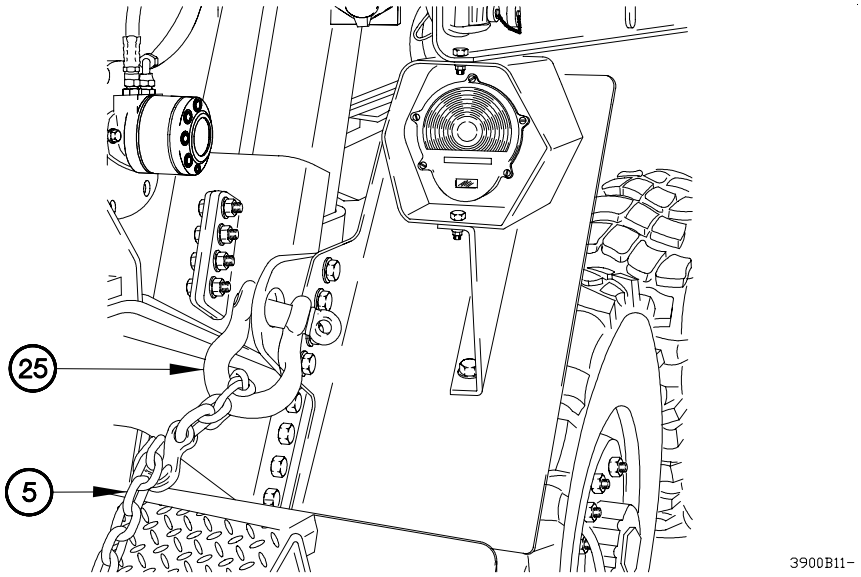
M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT CONNECTION - Continued

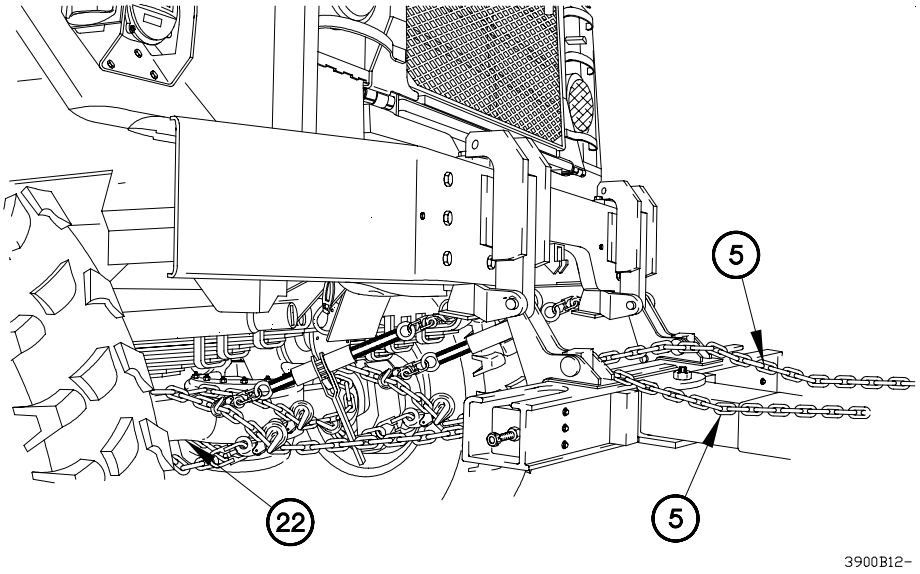
NOTE

Left and right side chains are installed the same way. Right side shown.

26. Connect one end of two chains (5) to M1089A1 rear shackles (25).



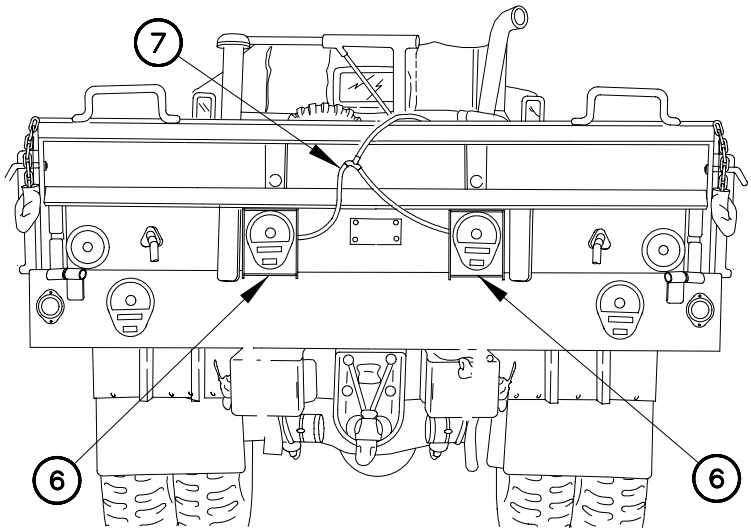
27. Connect other end of two chains (5) to M939/M939A1/M809 front axle (22).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

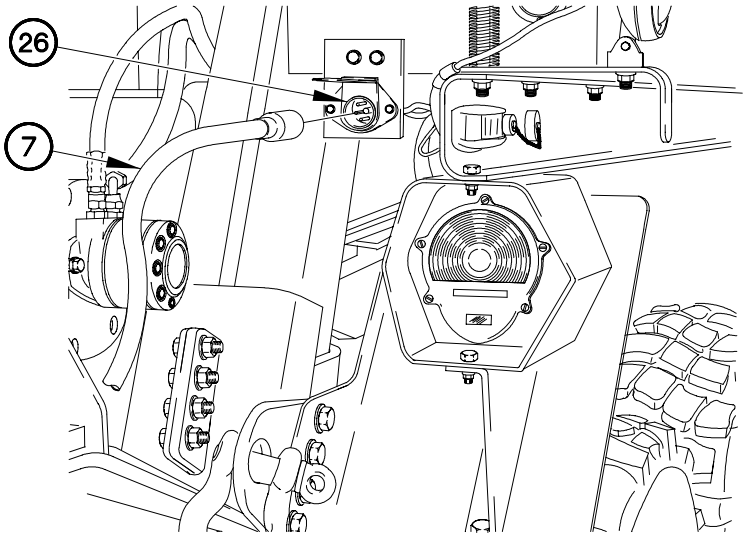
FRONT CONNECTION - Continued

28. Position two emergency tow lights (6) on rear of M939/M939A1/M809.
29. Connect tow lights cable (7) to two emergency tow lights (6).
30. Route tow lights cable (7) along top of M939/M939A1/M809.



3900B13-

31. Connect tow lights cable (7) to M1089A1 rear electrical connector (26).



3900B14-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

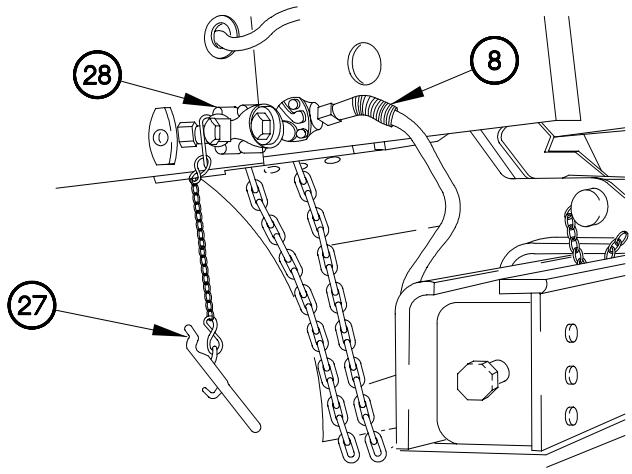
FRONT CONNECTION - Continued

32. Remove two dummy connectors (27) from M939/M939A1/M809 gladhands (28).

NOTE

Service and emergency intervehicular air hoses are connected the same way. Service intervehicular air hose shown.

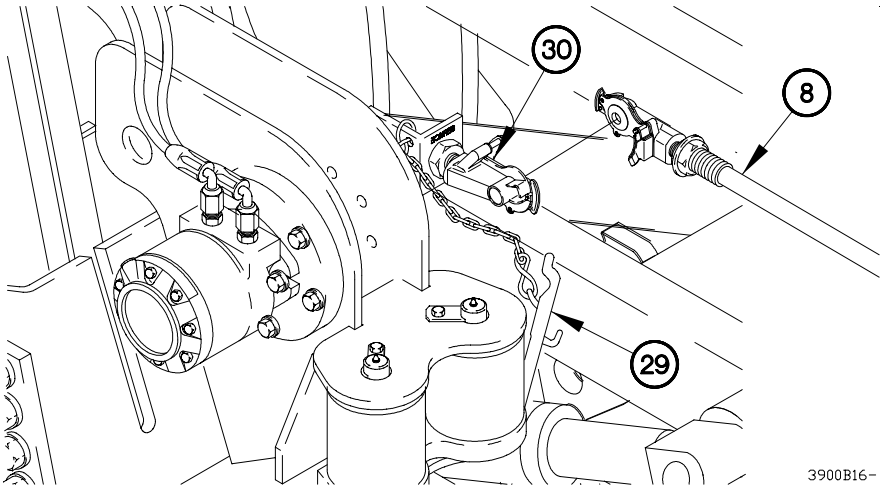
33. Connect two intervehicular air hoses (8) to M939/M939A1/M809 gladhands (28).



3900B15-

34. Remove two dummy connectors (29) from M1089A1 gladhands (30).

35. Connect two intervehicular air hoses (8) to M1089A1 gladhands (30).



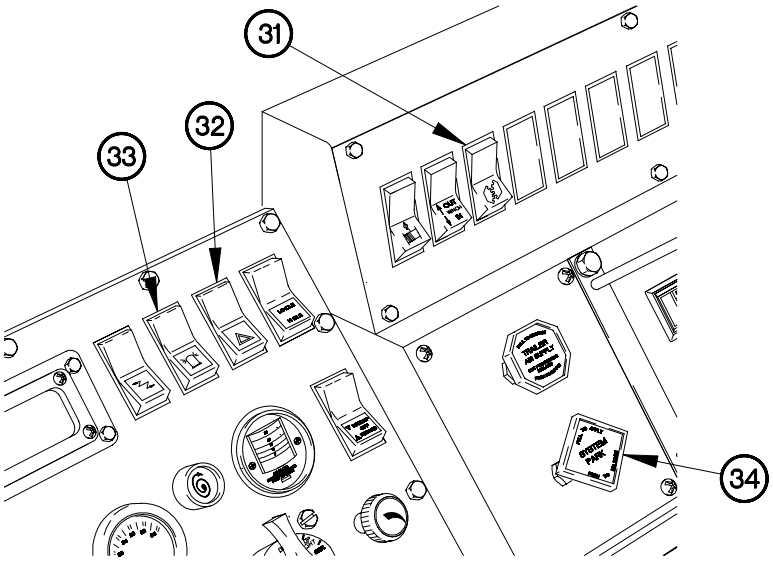
3900B16-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

FRONT CONNECTION - Continued

36. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
37. Position PTO switch (31) to off.
38. Install and raise two amber warning lights (WP 0066 00).
39. Turn on service drive lights (WP 0018 00).
40. Position hazard lights switch (32) to on.
41. Position warning lights switch (33) to on.
42. Push in SYSTEM PARK control (34).
43. Set transmission in gear (WP 0018 00).



3900B17-

FRONT CONNECTION - Continued

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	**35 mph (56 km/h)**
on road (hilly)	**30 mph (48 km/h)**
off road	**15 mph (24 km/h)**

Failure to comply may result in serious injury or death to personnel or damage to equipment.

CAUTION

Chains must be tight at all times during lift and tow operations. Lifting extensions must be tight against front bumper. The following are maximum distances before inspection is due:

TERRAIN CONDITION	MAXIMUM DISTANCE
on road (level)	105 miles (169 km)
on road (hilly)	90 miles (145 km)
off road	45 miles (72 km)

Failure to comply may result in damage to equipment.

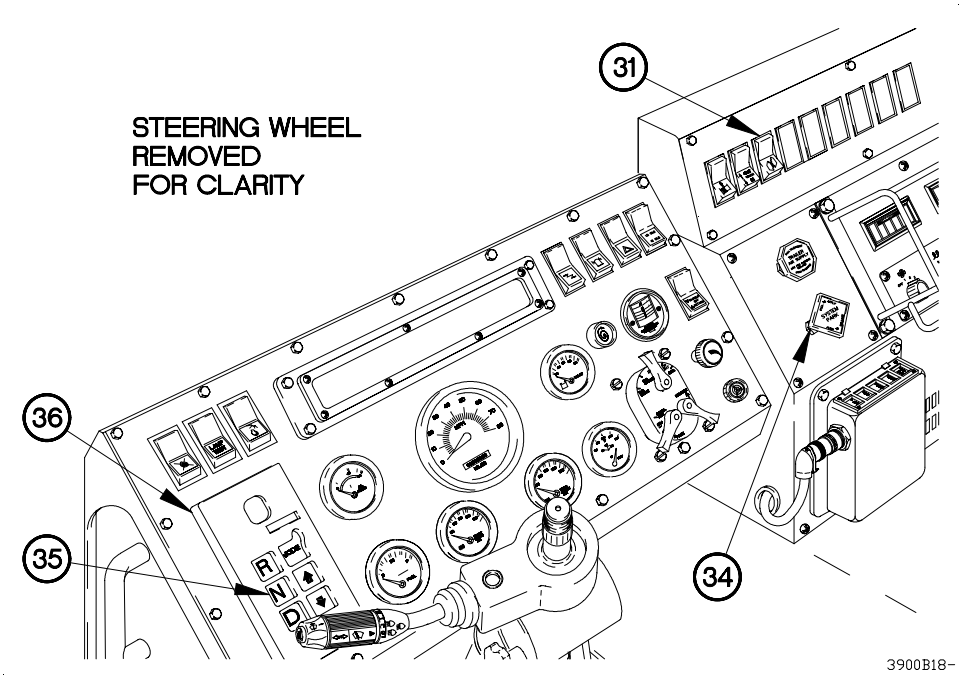
44. Transport M939/M939A1/M809.

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

FRONT DISCONNECTION

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (35) on WTEC III TPSS (36).
3. Pull out SYSTEM PARK control (34).
4. Position PTO switch (31) to on.
5. Connect WRECKER REMOTE CONTROL (WP 0035 00).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

FRONT DISCONNECTION - Continued

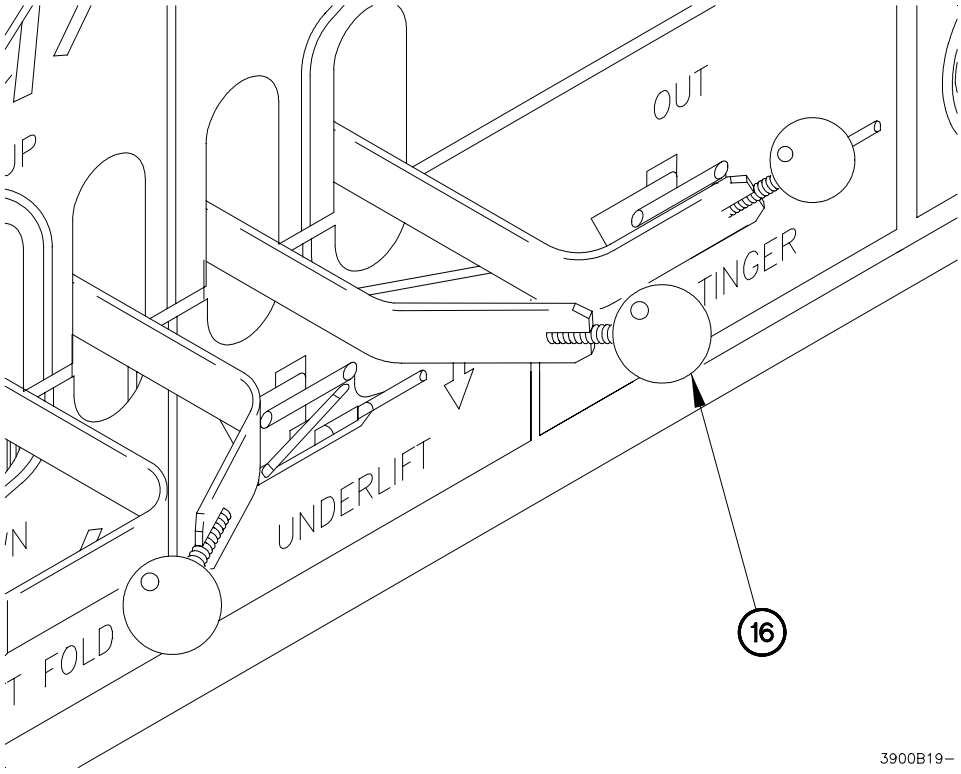
WARNING

Keep personnel clear of underlift assembly and disabled vehicle when lowering. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Place UNDERLIFT lever (16) in DOWN position to lower M939/M939A1/M809 until wheels are in firm contact with ground.

7. Set parking brake on M939/M939A1/M809 (TM 9-2320-272-10/TM 9-2320-260-10).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

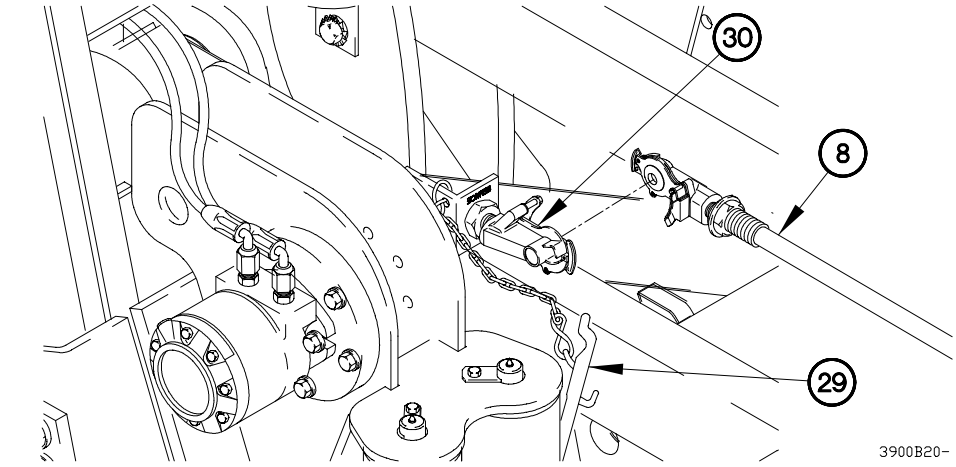
FRONT DISCONNECTION - Continued

NOTE

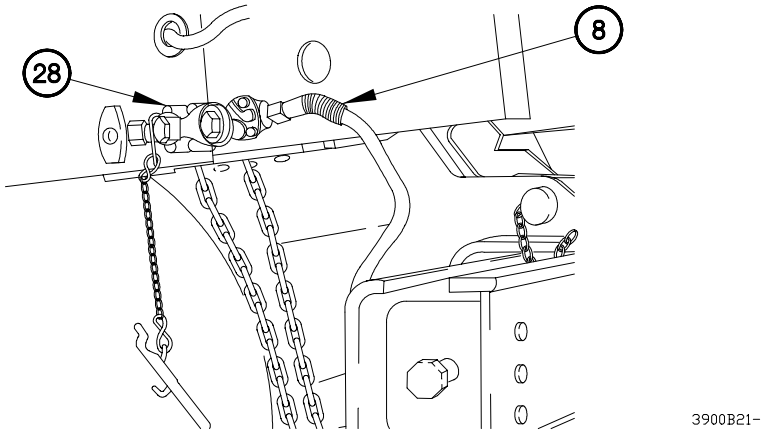
Service and emergency intervehicular air hoses are disconnected the same way. Service intervehicular air hose shown.

8. Disconnect two intervehicular air hoses (8) from M1089A1 gladhands (30).

9. Install two dummy connectors (29) on M1089A1 gladhands (30).



10. Disconnect two intervehicular air hoses (8) from M939/M939A1/M809 gladhands (28).

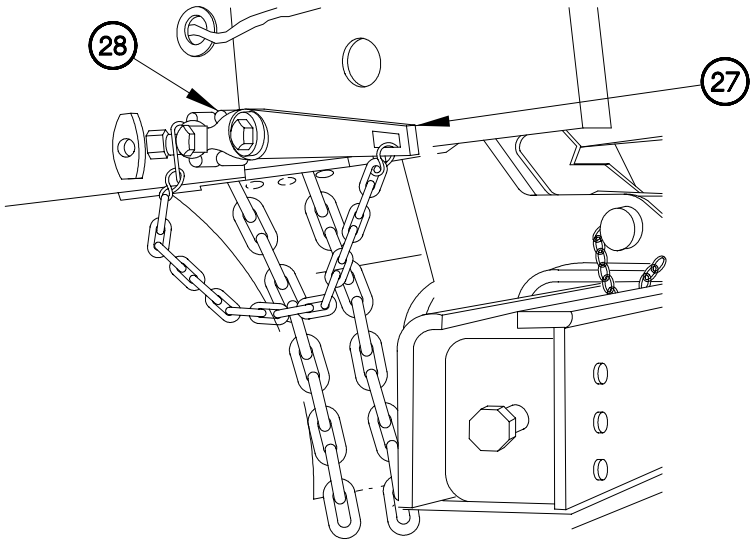


M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT DISCONNECTION - Continued

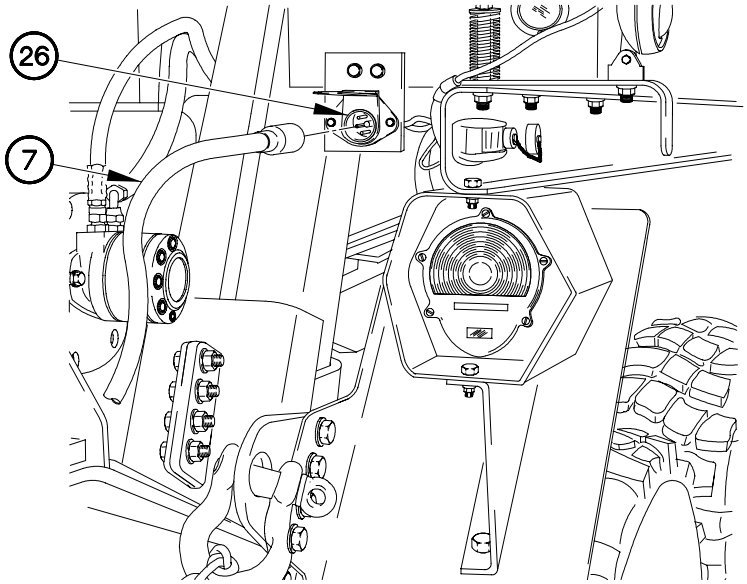
11. Install two dummy connectors (27) on M939/M939A1/M809 gladhands (28).

12. Manually uncage spring brakes on M939/M939A1/M809 (TM 9-2320-272-10/TM 9-2320-260-10).



3900B22-

13. Disconnect tow lights cable (7) from M1089A1 rear electrical connector (26).



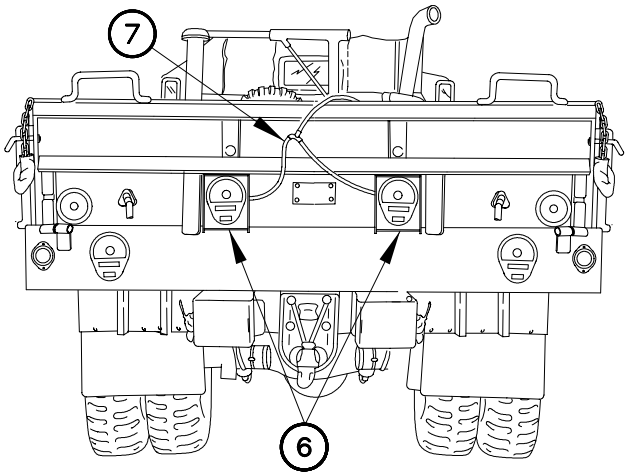
3900B23-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT DISCONNECTION - Continued

14. Disconnect tow lights cable (7) from two emergency tow lights (6).

15. Remove two emergency tow lights (6) from rear of M939/M939A1/M809.

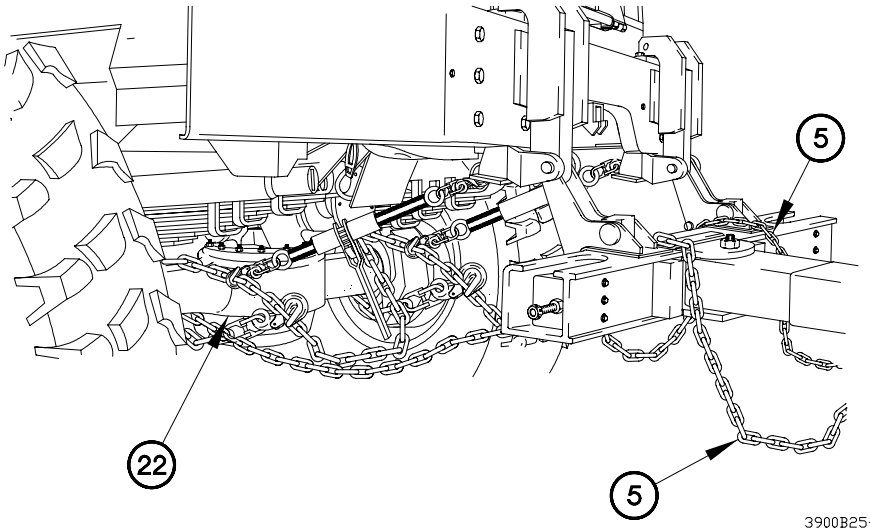


3900B24-

NOTE

Left and right side chains are removed the same way. Right side shown.

16. Remove two chains (5) from M939/M939A1/M809 front axle (22).

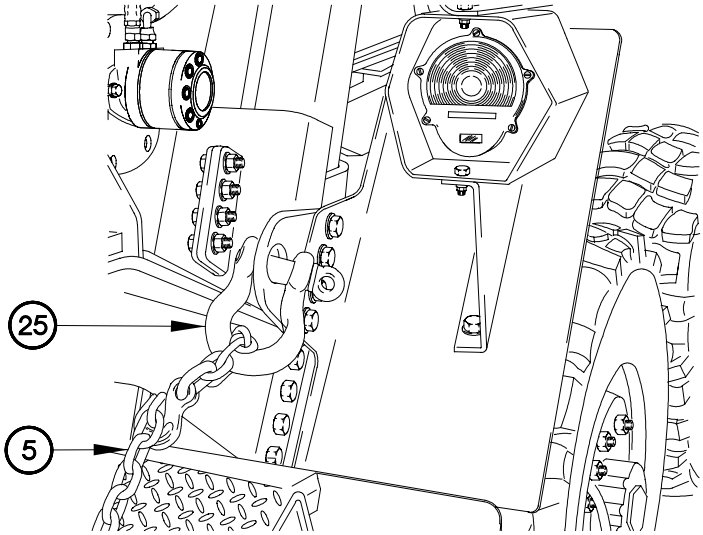


3900B25-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT DISCONNECTION - Continued

17. Remove other end of two chains (5) from M1089A1 rear shackles (25).

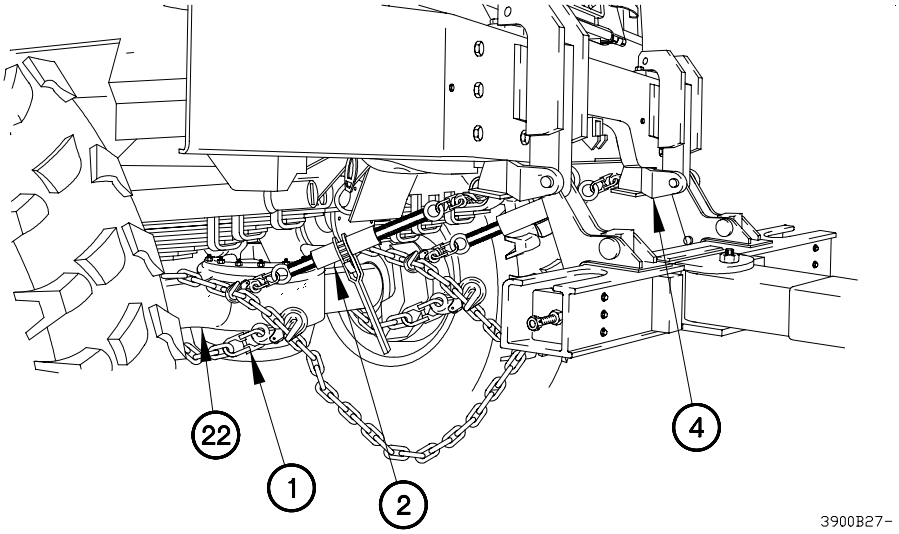


NOTE

Operating crank handles of load binders will remove tension from chain.

18. Remove two load binders (2) from two lower brackets (4) and chain (1).

19. Remove chain (1) from M939/M939A1/M809 front axle (22).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

FRONT DISCONNECTION - Continued

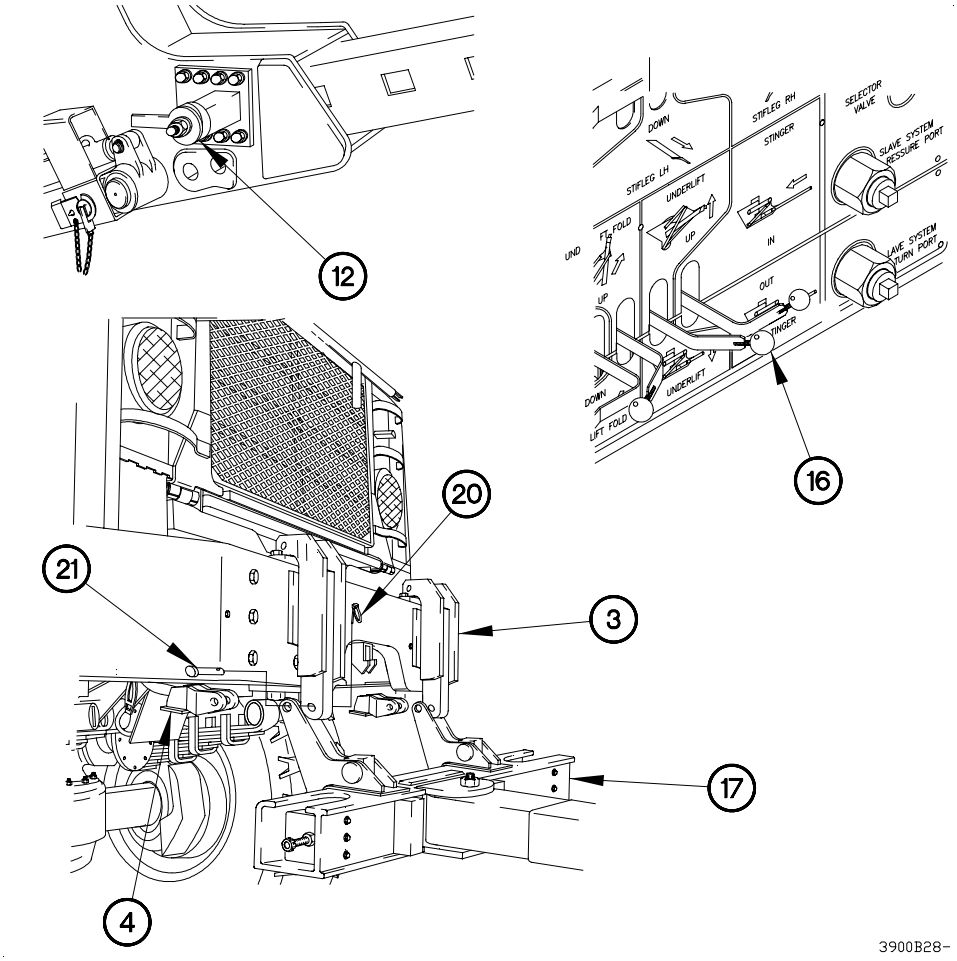
NOTE

Left and right side lower brackets are removed from lifting extensions the same way. Right side shown.

20. Remove two linchpins (20), pins (21) and two lower brackets (4) from two lifting extensions (3).

21. Unlock stinger cam lock (12).

22. Place UNDERLIFT lever (16) in the DOWN position until crossbar (17) is fully lowered.



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

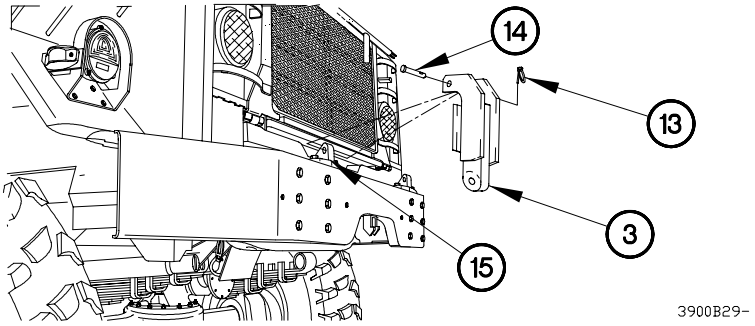
0039 00

FRONT DISCONNECTION - Continued

NOTE

Left and right side lifting extensions are removed the same way. Right side shown.

23. Remove two linchpins (13), pins (14), and lifting extensions (3) from M939/M939A1/M809 tow eyes (15).

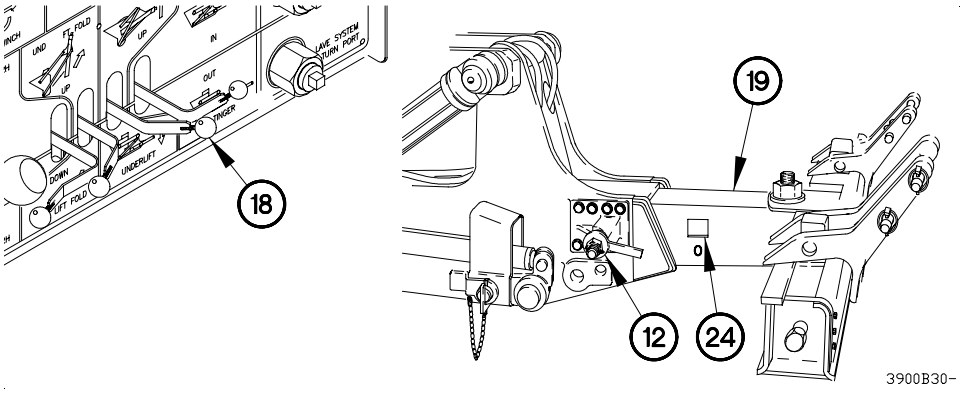


24. Place STINGER lever (18) to IN position to retract stinger (19) until stinger cam lock (12) is aligned with first hole (24) in stinger.

WARNING

Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

25. Lock stinger cam lock (12).



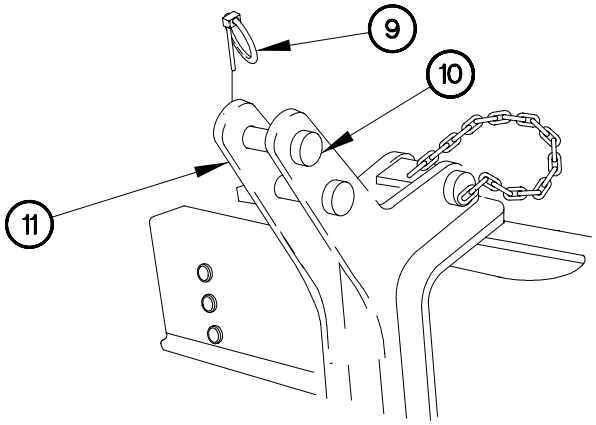
M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT DISCONNECTION - Continued

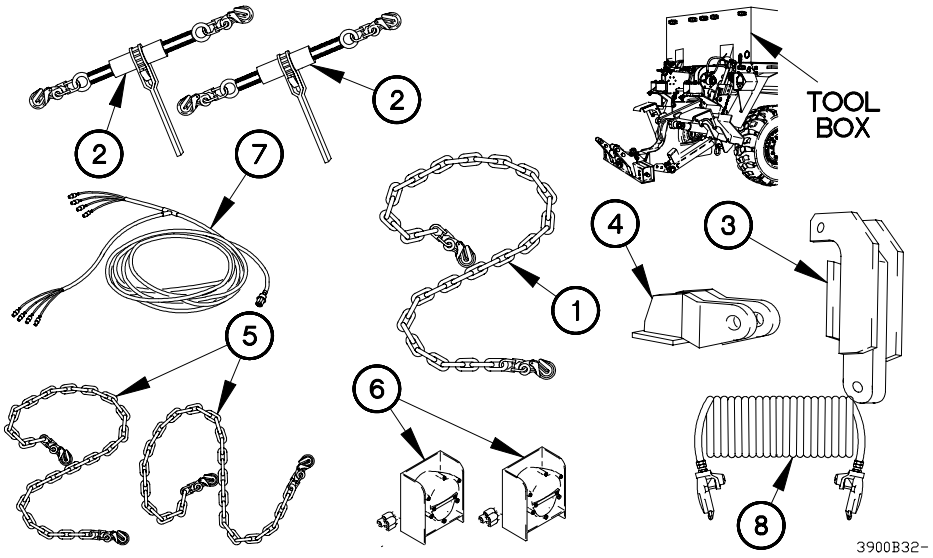
26. Install shackles on M939/M939A1/M809 tow eyes (TM 9-2320-272-10/TM 9-2320-260-10).

27. Remove two large pins (10) and linchpins (9) from tool box.

28. Install two large pins (10) and linchpins (9) in two lift tools (11).



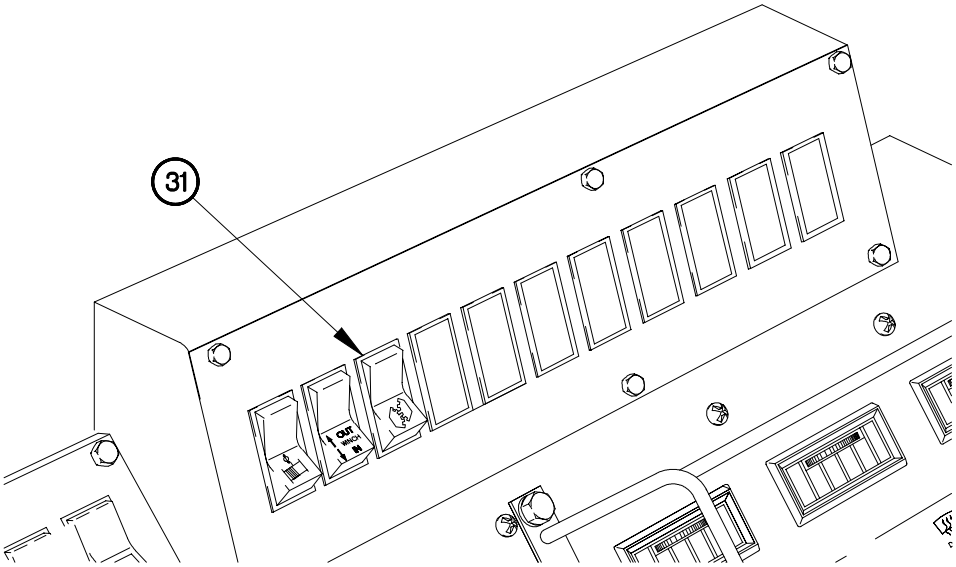
29. Stow two lifting extensions (3), lower brackets (4), chain (1), two load binders (2), chains (5), emergency tow lights (6), tow lights cable (7), and two intervehicular air hoses (8) in tool box.



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT DISCONNECTION - Continued

30. Raise underlift assembly (WP 0035 00).
31. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
32. Position PTO switch (31) to off.
33. Shut down engine (WP 0018 00).
34. Lower and remove two amber warning lights (WP 0066 00).



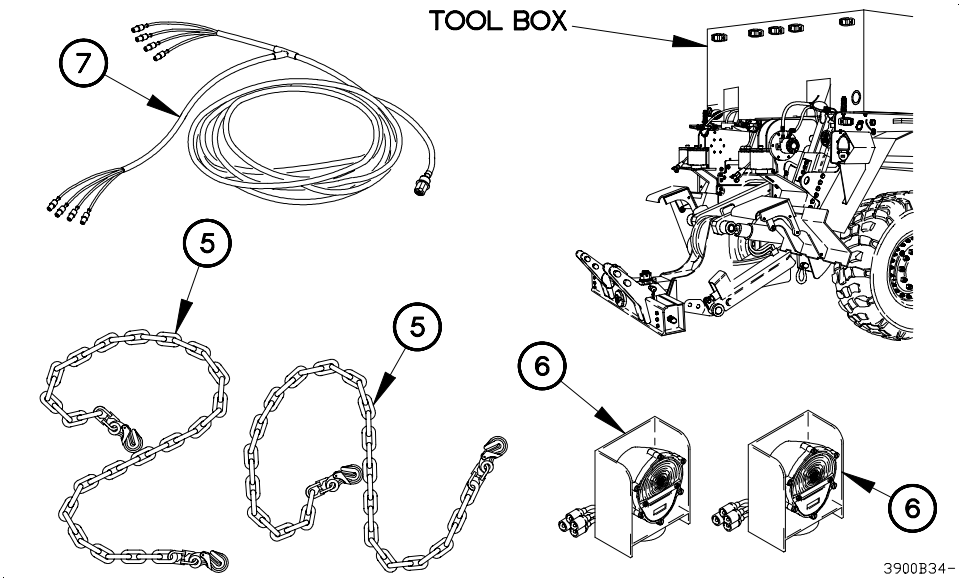
3900B33-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

REAR CONNECTION

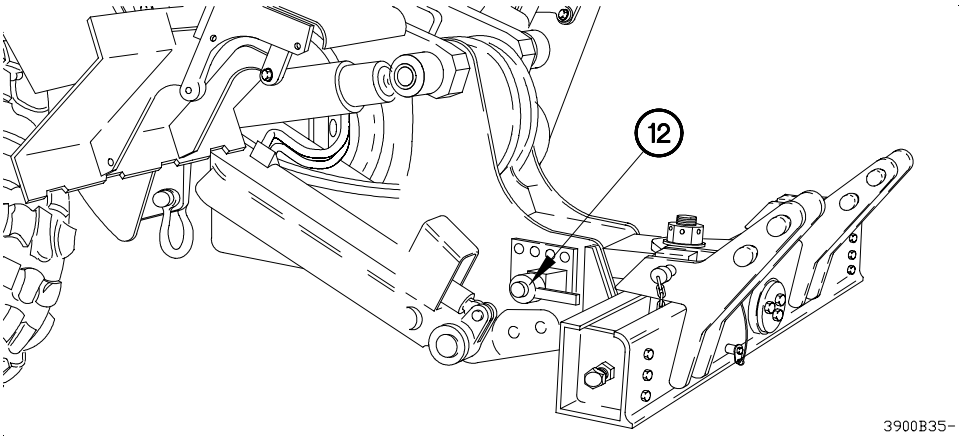
1. Remove two chains (5), emergency tow lights (6), and tow lights cable (7) from tool box.



2. Prepare underlift assembly for operation (WP 0035 00).

3. Connect WRECKER REMOTE CONTROL (WP 0035 00).

4. Unlock stinger cam lock (12).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

REAR CONNECTION - Continued

NOTE

Left and right side lift tools are installed on tow eyes the same way. Left side shown.

5. Remove two top linchpins (9) and pins (10) from two lift tools (11).

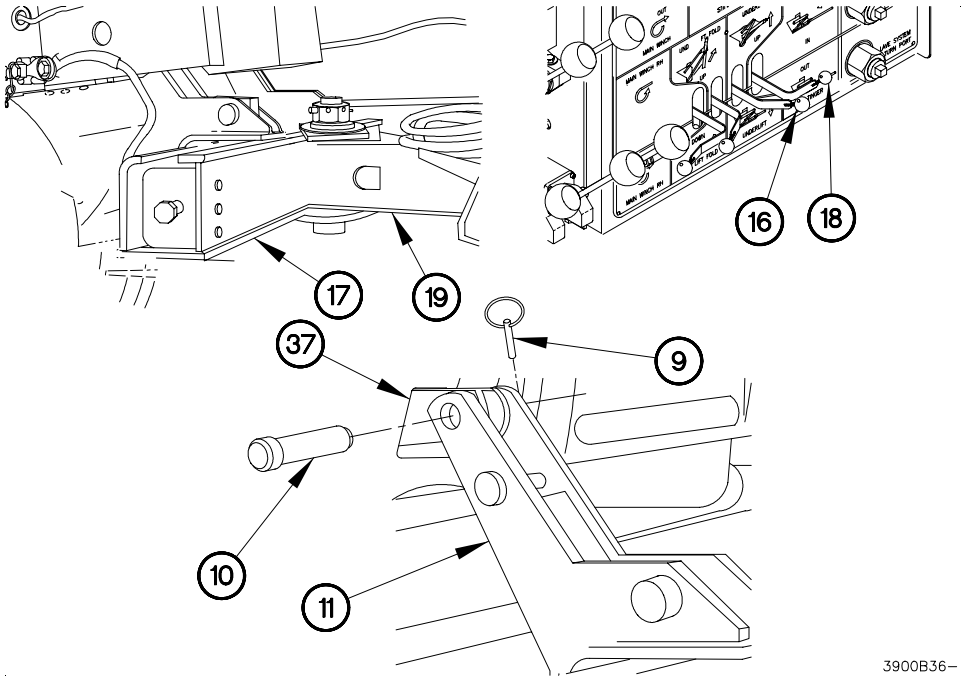
WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Place UNDERLIFT lever (16) in the UP position to raise crossbar (17) until lift tools (11) are aligned with M939/M939A1/M809 tow eyes (37).

7. Place STINGER lever (18) in the OUT position to extend stinger (19) until lift tools (11) are aligned with M939/M939A1/M809 tow eyes (37).

8. Install two lift tools (11) on M939/M939A1/M809 tow eyes (37) with two pins (10) and linchpins (9).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

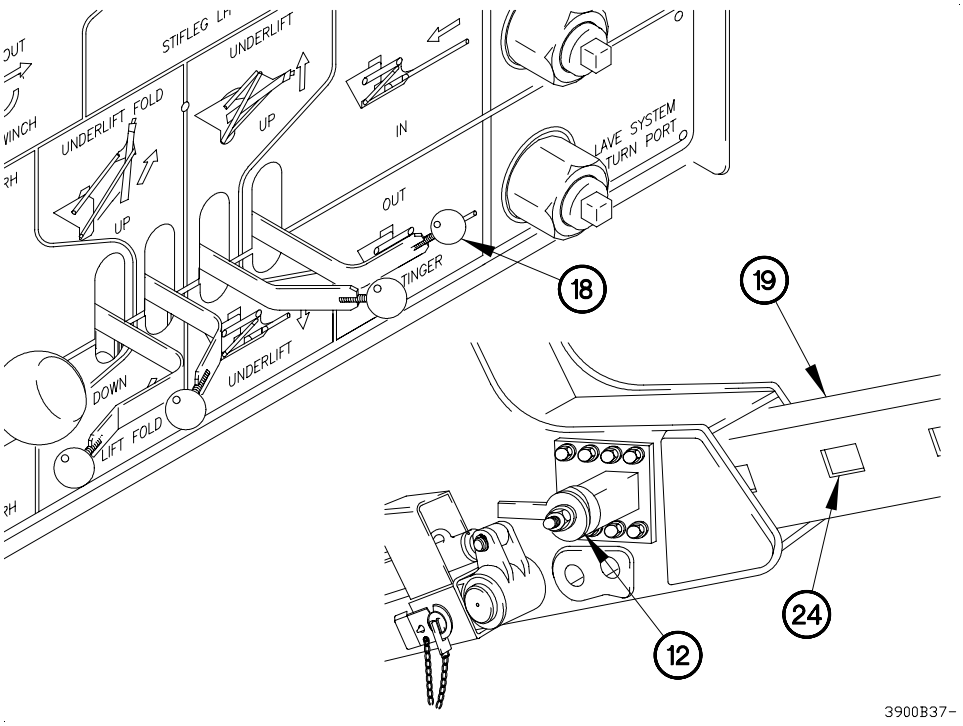
REAR CONNECTION - Continued

CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing M939/M939A1/M809. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if components mounted on rear of M939/M939A1/M809 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to turn freely. Failure to comply may result in damage to equipment.

9. Place STINGER lever (18) to IN position to retract stinger (19) until desired stinger cam lock hole (24) is aligned.

10. Lock stinger cam lock (12).



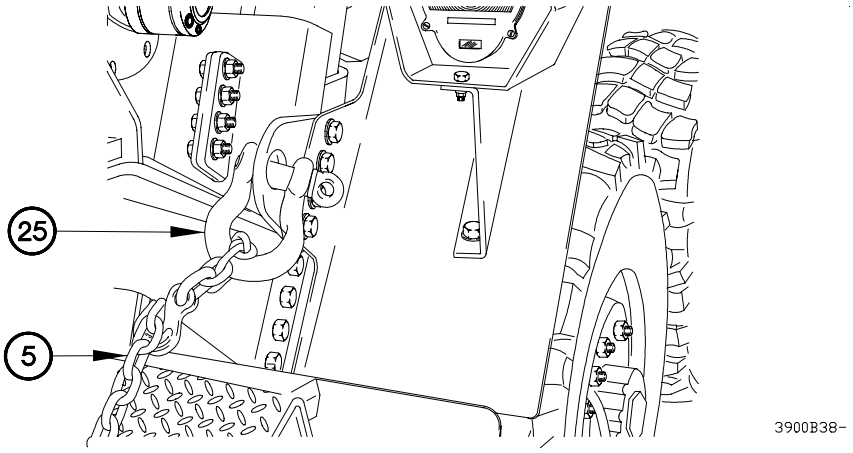
M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

REAR CONNECTION - Continued

NOTE

Left and right side chains are installed the same way. Right side shown.

11. Connect one end of two chains (5) to M1089A1 rear shackles (25).

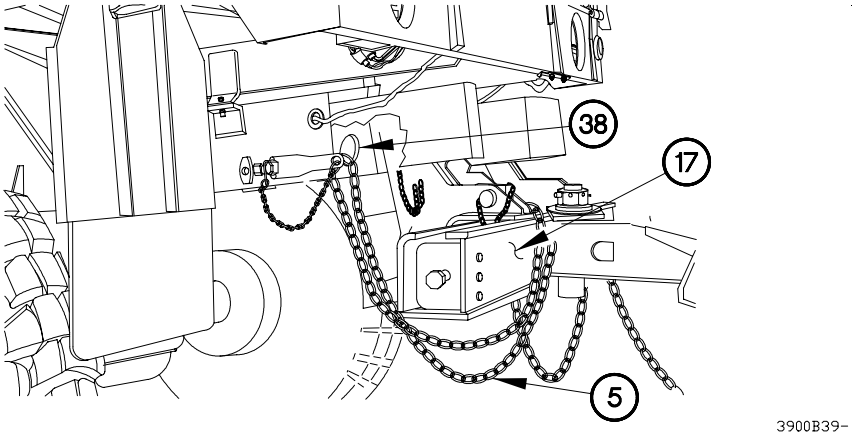


NOTE

Chains must be wrapped around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

12. Wrap two chains (5) around crossbar (17).

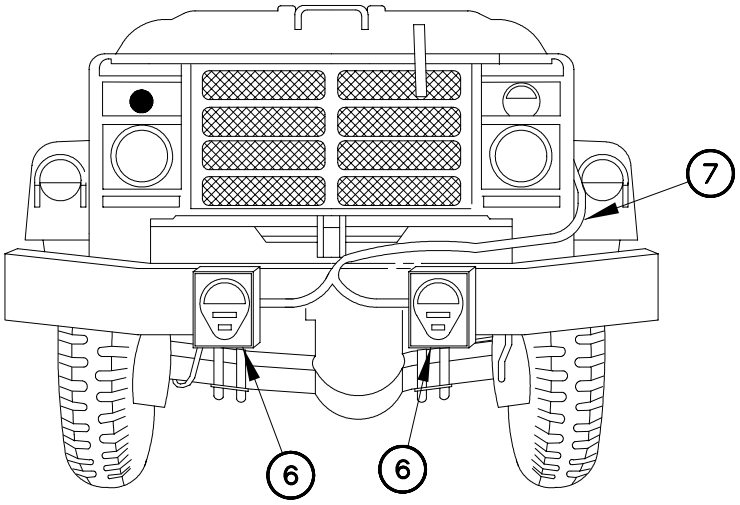
13. Connect other end of two chains (5) through holes in M939/M939A1/M809 rear crossmember (38).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

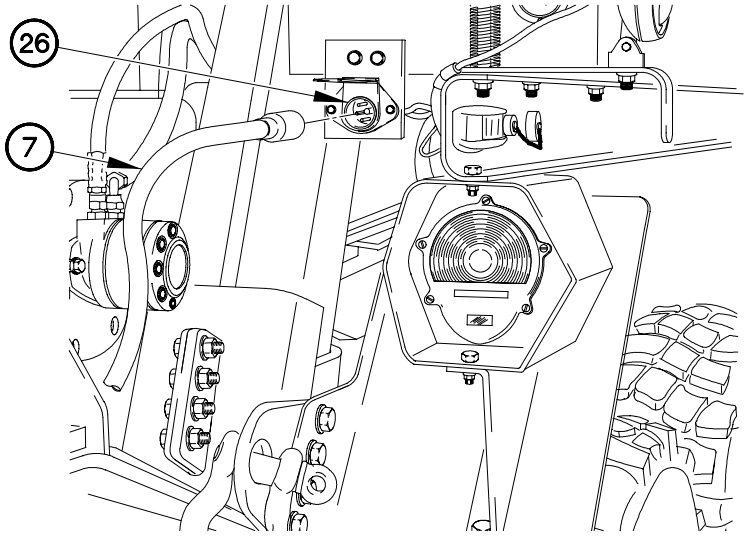
REAR CONNECTION - Continued

14. Position two emergency tow lights (6) on front of M939/M939A1/M809.
15. Connect tow lights cable (7) to two emergency tow lights (6).
16. Route tow lights cable (7) along top of M939/M939A1/M809.



3900B40-

17. Connect tow lights cable (7) to M1089A1 rear electrical connector (26).



3900B41-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

REAR CONNECTION - Continued

CAUTION

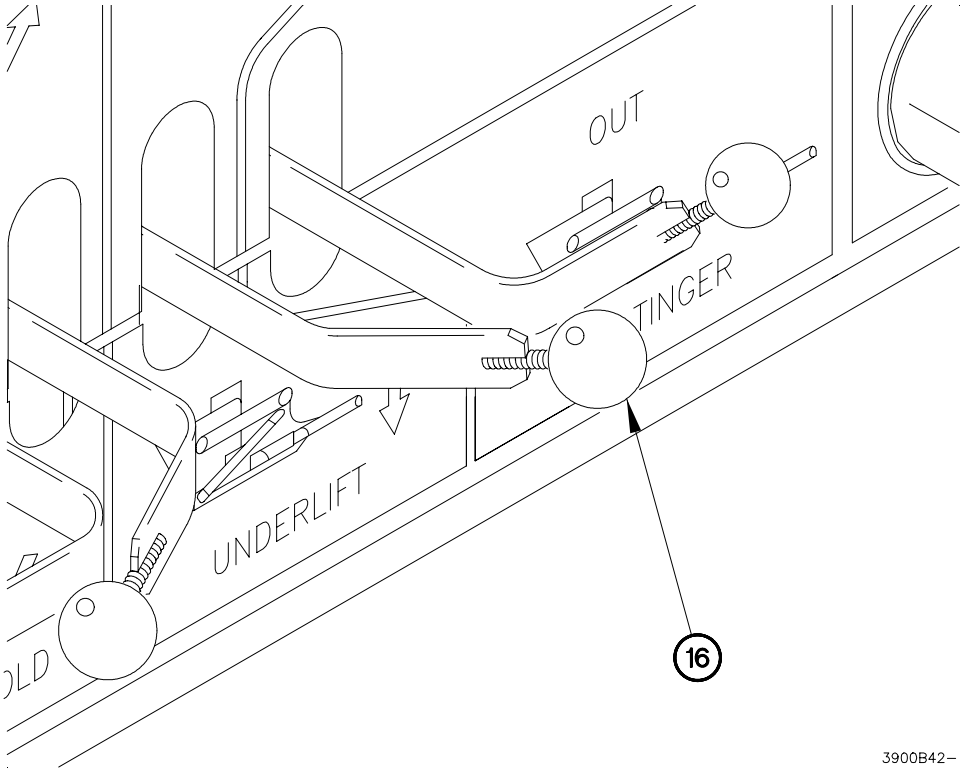
All loose equipment must be secure on M939/M939A1/M809. Failure to comply may result in damage to equipment.

18. Prepare M939/M939A1/M809 for towing (TM 9-2320-272-10/TM 9-2320-260-10).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

19. Place UNDERLIFT lever (16) in UP position to raise M939/M939A1/M809 until wheels are approximately 16 in. (41 cm) off ground.

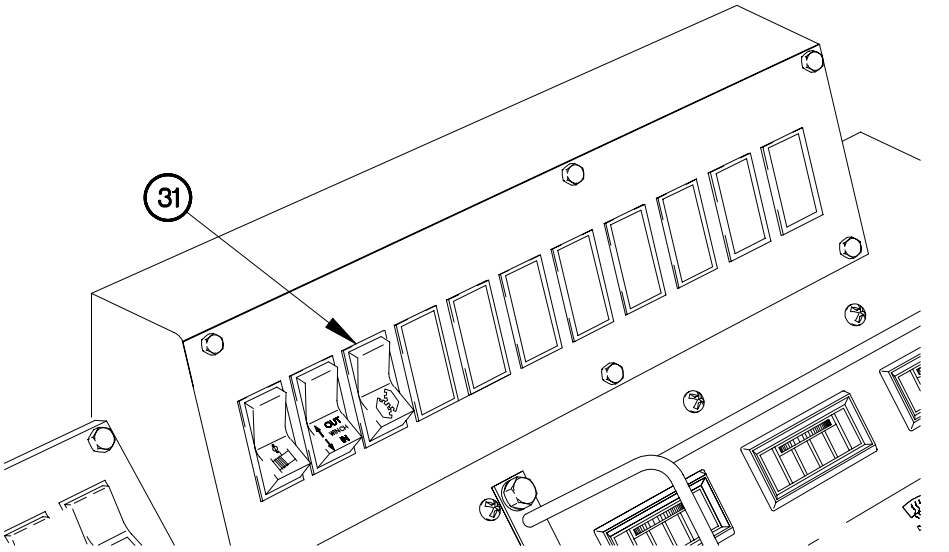


M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

REAR CONNECTION - Continued

20. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

21. Position PTO switch (31) to off.

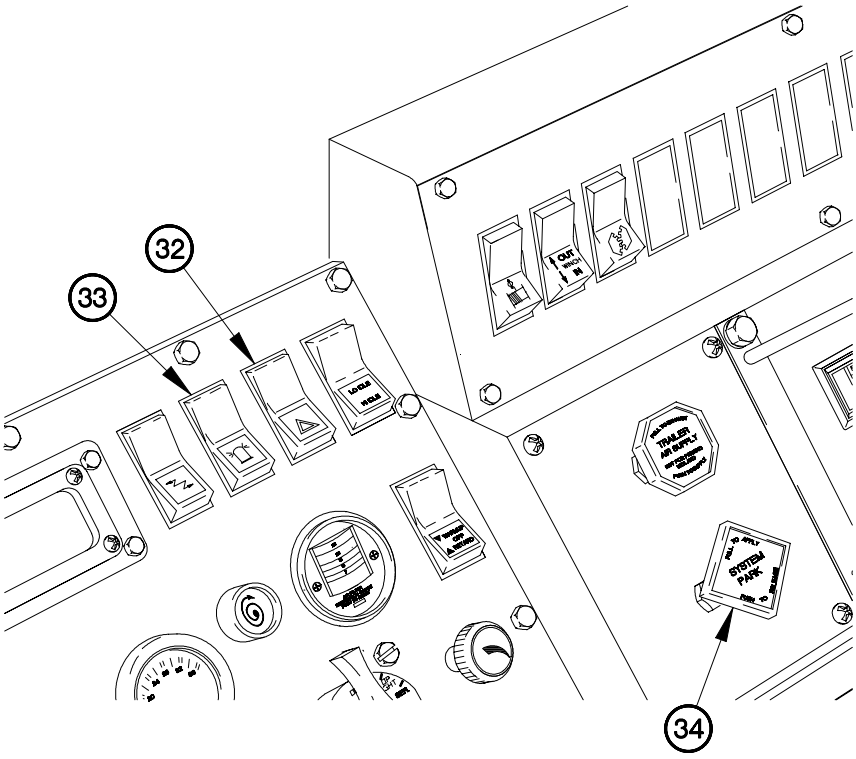


3900B43-

M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

REAR CONNECTION - Continued

22. Install and raise two amber warning lights (WP 0066 00).
23. Turn on service drive lights (WP 0018 00).
24. Position hazard lights switch (32) to on.
25. Position warning lights switch (33) to on.
26. Push in SYSTEM PARK control (34).
27. Set transmission in gear (WP 0018 00).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0039 00

REAR CONNECTION - Continued

WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

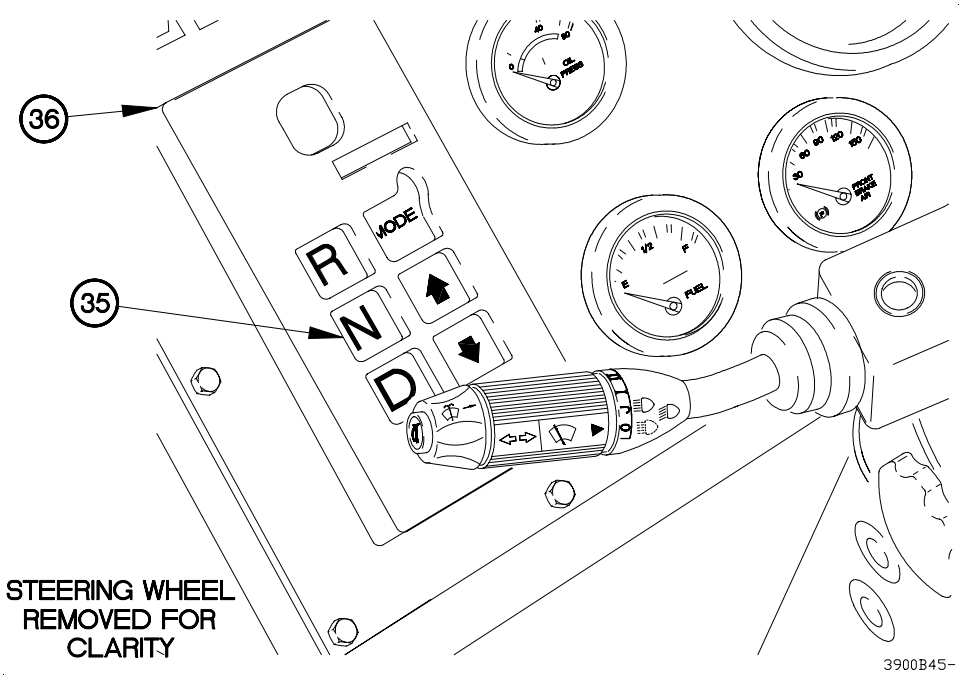
Failure to comply may result in serious injury or death to personnel or damage to equipment.

28. Transport M939/M939A1/M809.

REAR DISCONNECTION

1. Start engine (WP 0018 00).

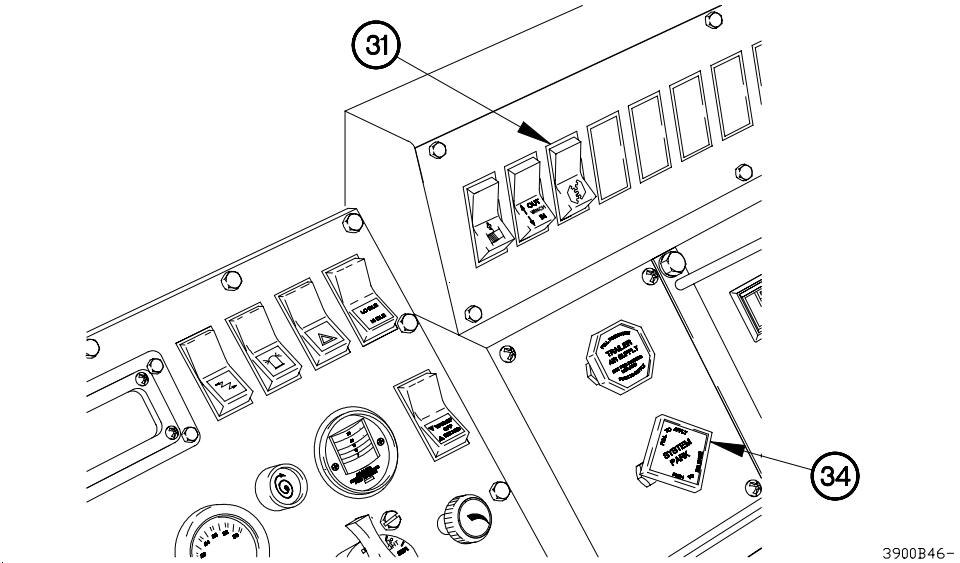
2. Press N (Neutral) button (35) on WTEC III TPSS (36).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

REAR DISCONNECTION - Continued

3. Pull out SYSTEM PARK control (34).
4. Position PTO switch (31) to on.
5. Connect WRECKER REMOTE CONTROL (WP 0035 00).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

REAR DISCONNECTION - Continued

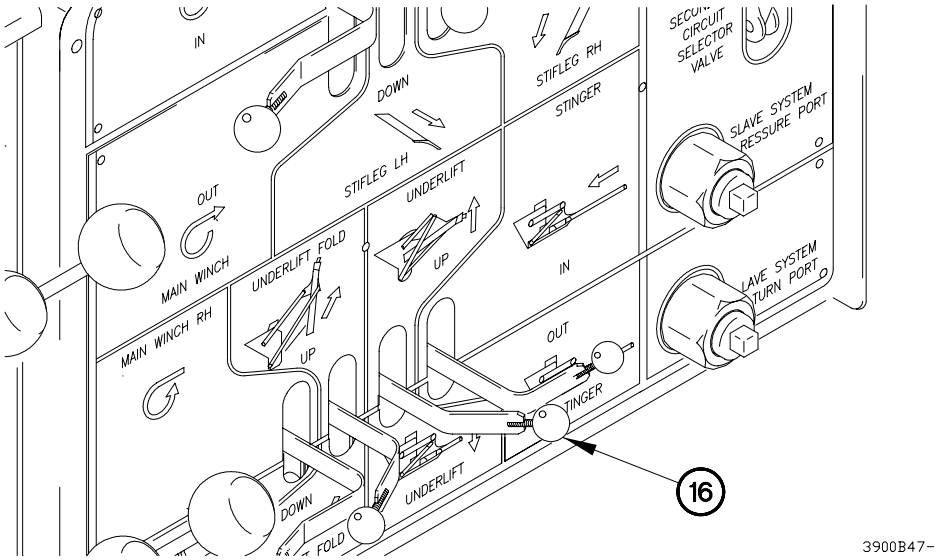
WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Place UNDERLIFT lever (16) in DOWN position to lower M939/M939A1/M809 until wheels are in firm contact with ground.

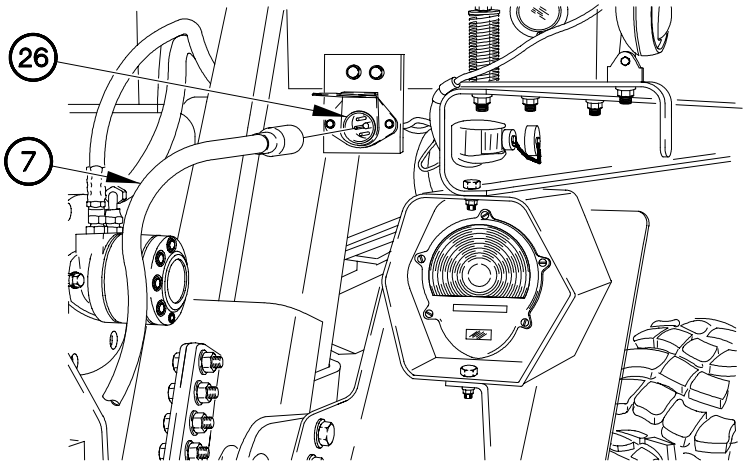
7. Set parking brake on M939/M939A1/M809 (TM 9-2320-272-10/TM 9-2320-260-10).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

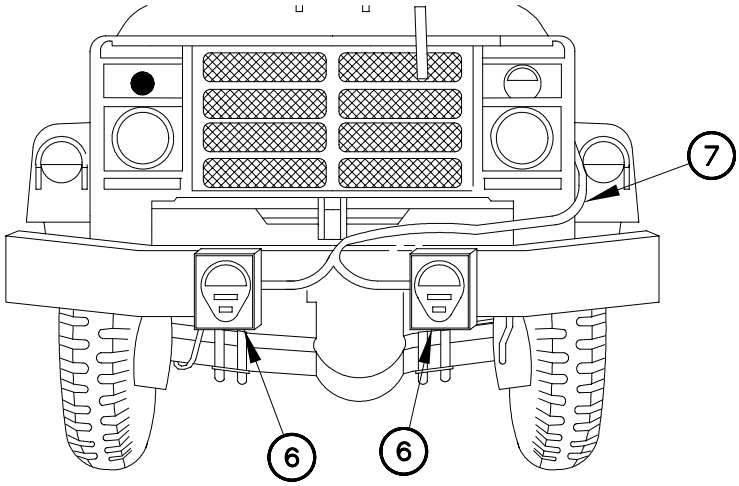
REAR DISCONNECTION - Continued

8. Disconnect tow lights cable (7) from M1089A1 rear electrical connector (26).



9. Disconnect tow lights cable (7) from two emergency tow lights (6).

10. Remove two emergency tow lights (6) from front of M939/M939A1/M809.



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

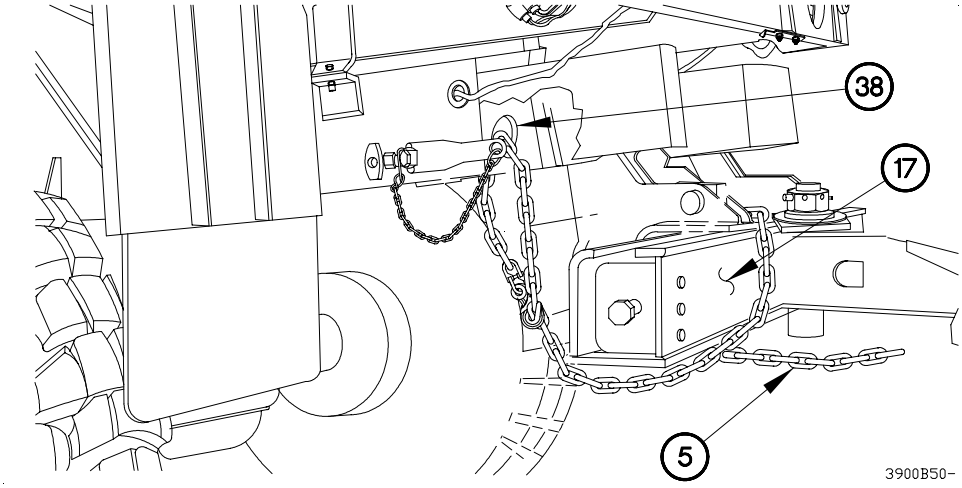
REAR DISCONNECTION - Continued

NOTE

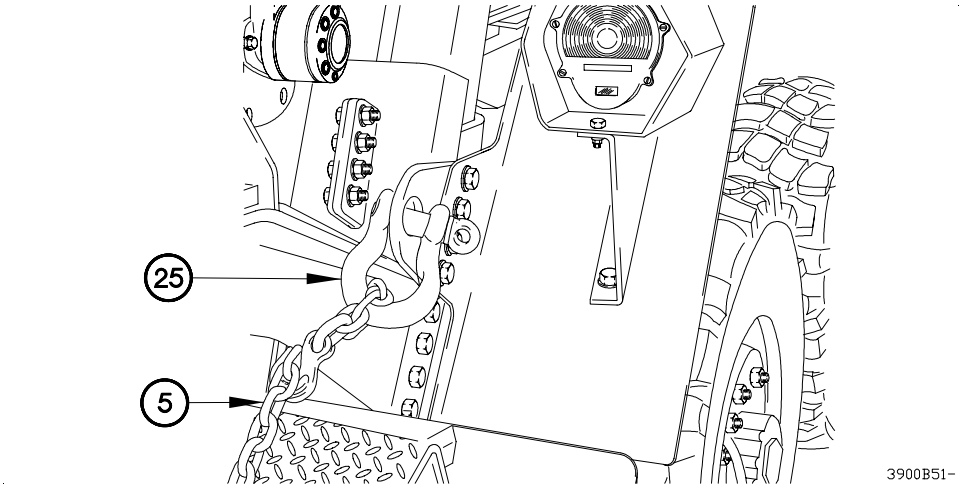
Left and right side chains are removed the same way. Right side shown.

11. Remove two chains (5) from holes in M939/M939A1/M809 rear crossmember (38).

13. Remove two chains (5) from crossbar (17).

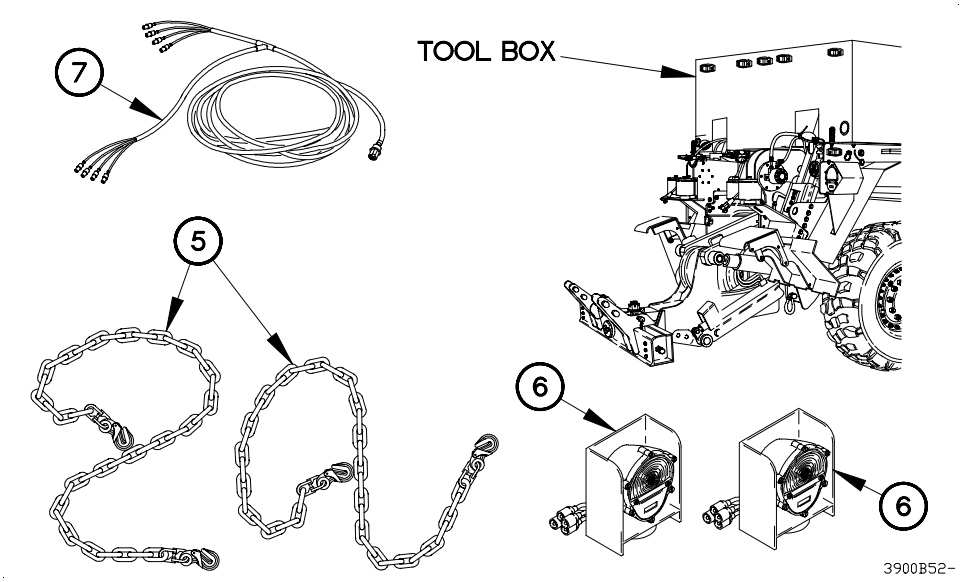


13. Remove other end of two chains (5) from M1089A1 rear shackles (25).



REAR DISCONNECTION - Continued

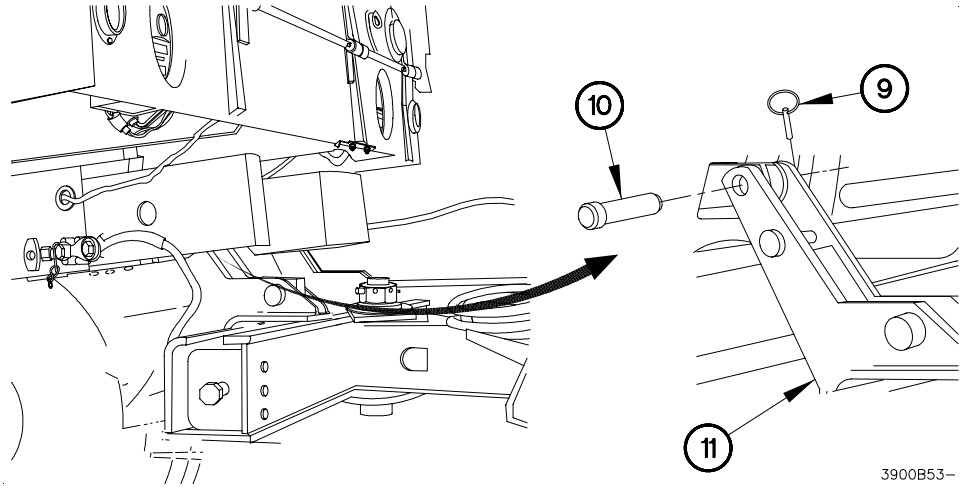
14. Stow two chains (5), emergency tow lights (6), and tow lights cable (7) in tool box.



NOTE

Left and right side lift tools are removed the same way. Right side shown.

15. Remove two linchpins (9) and pins (10) from two lift tools (11).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0039 00

REAR DISCONNECTION - Continued

16. Unlock stinger cam lock (12).

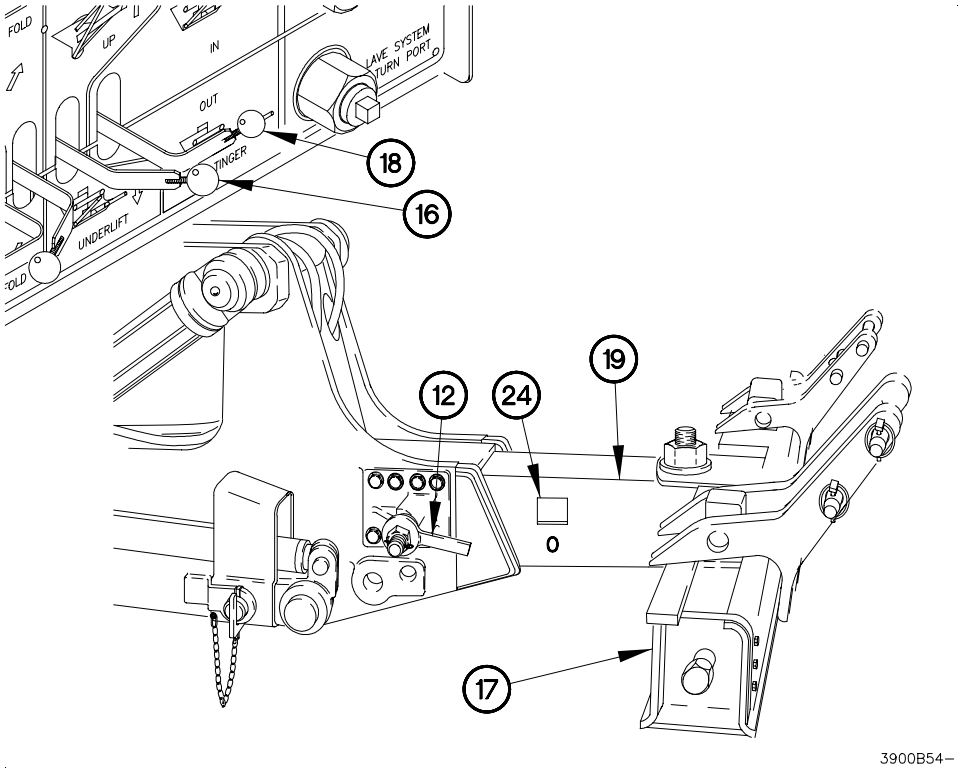
17. Place STINGER lever (18) to IN position to retract stinger (19) until stinger cam lock (12) is aligned with first hole (24) in stinger.

18. Place UNDERLIFT lever (16) in the DOWN position until crossbar (17) is fully lowered.

WARNING

Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

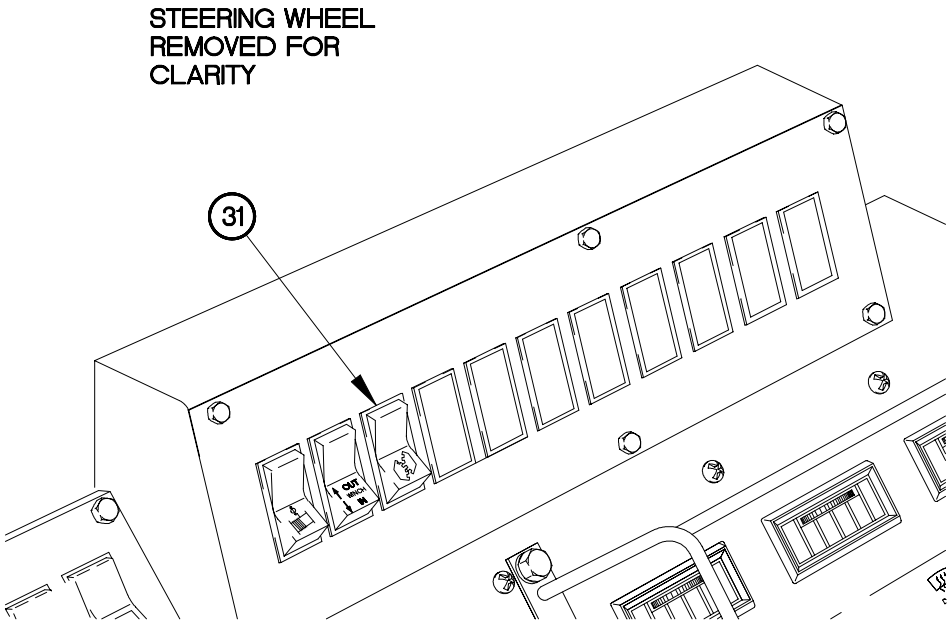
19. Lock stinger cam lock (12).



M939/M939A1 AND M809 SERIES TOWING CONNECTION/DISCONNECTION - Continued

REAR DISCONNECTION - Continued

20. Raise underlift assembly (WP 0035 00).
21. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
22. Position PTO switch (31) to off.
23. Shut down engine (WP 0018 00).
24. Lower and remove two amber warning lights (WP 0066 00).



3900B55-

END OF OPERATING PROCEDURE

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION 0040 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Cable Assembly (Item 10, Table 2, WP 0112 00)
Cable Kit (Item 12, Table 2, WP 0112 00)
Chain Assembly, Single Leg (Item 13, Table 2, WP 0112 00)
Goggles, Industrial (Item 25, Table 2, WP 0112 00)

Tools/Special Tools - Continued
Hose Assembly, Nonmetallic (Item 29 Table 2, WP 0112 00)
Hose Assembly, Nonmetallic (Item 30, Table 2, WP 0112 00)
Taillight Assembly (Item 43, Table 2, WP 0112 00)
Restraining strap (Item42, Table 2, WP 0112 00)

References
WP 0018 00
WP 0035 00
WP 0060 00
WP 0066 00

GENERAL

This work package provides the data and procedures for M1078/M1078A1 and M1083/M1083A1 series towing connection and disconnection. Items covered include Front Connection, Front Disconnection, Rear Connection, and Rear Disconnection.

FRONT CONNECTION

CAUTION

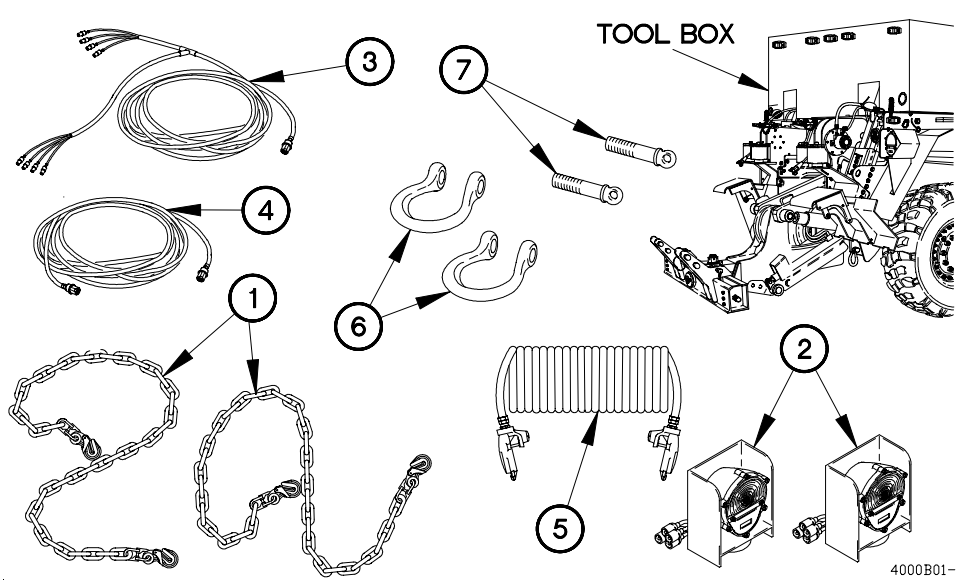
- Intermediate axle driveshaft must be removed on M1083 series vehicles prior to performing a front connection lift and tow. Failure to comply may result in damage to equipment.
- Rear axle driveshaft must be removed on M1078 series vehicles prior to performing a front connection lift and tow. Failure to comply may result in damage to equipment.

1. Notify Unit Maintenance to remove rear axle driveshaft on M1078/M1078A1 series or intermediate axle drive shaft on M1083/M1083A1 series vehicles.

2. Remove two chains (1), emergency tow lights (2), tow lights cable (3), tow interconnect cable (4), two intervehicular air hoses (5), shackles (6), and clevis pins (7) from tool box.

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

FRONT CONNECTION - Continued



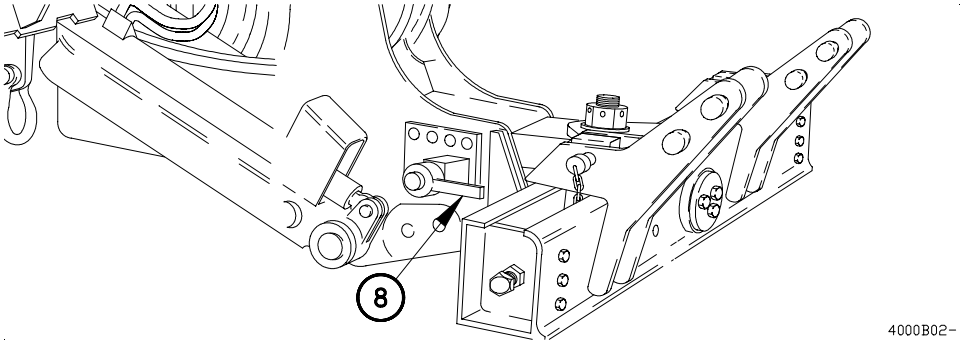
3. Prepare underlift assembly for operation (WP 0035 00).

NOTE

Perform step 4 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

4. Connect WRECKER REMOTE CONTROL (WP 0035 00).

5. Unlock stinger cam lock (8).

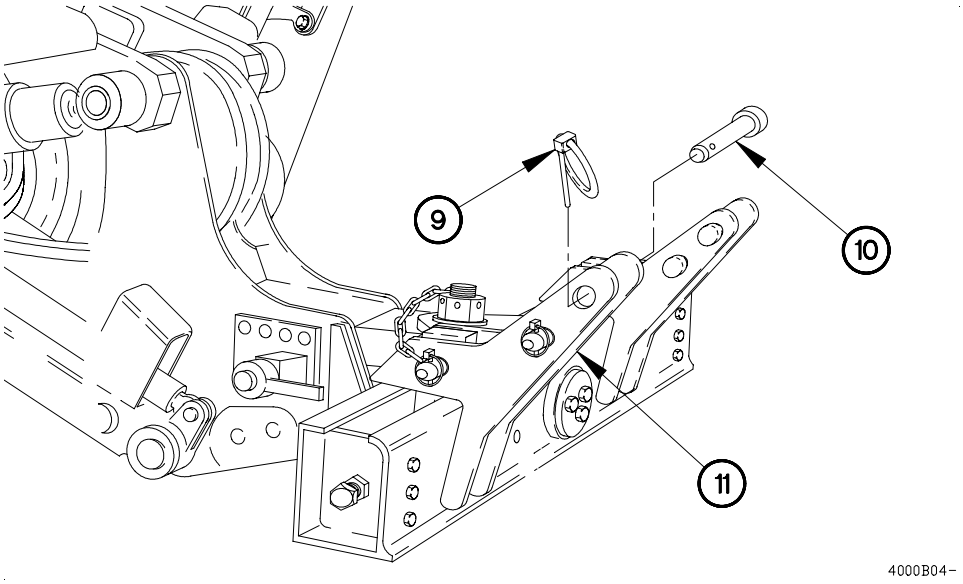


M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

FRONT CONNECTION - Continued

6. Remove two linchpins (9) and pins (10) from two lift tools (11).



WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

7. Place UNDERLIFT lever (12) in UP position to raise crossbar (13) until lift tools (11) are aligned with M1078/M1078A1 and/or M1083/M1083A1 tow eyes (14).

8. Place STINGER lever (15) in OUT position to extend stinger (16) until lift tools (11) are aligned with M1078/M1078A1 and/or M1083/M1083A1 tow eyes (14).

NOTE

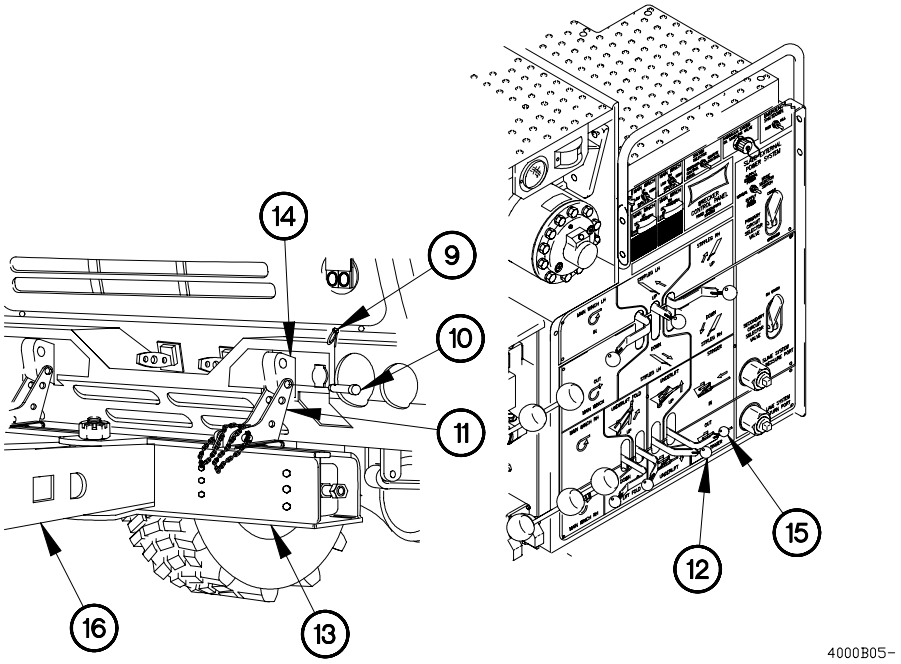
Left and right side lift tools are installed on M1078/M1078A1/ M1083/M1083A1 tow eyes the same way. Left side shown.

9. Install two lift tools (11) on bottom M1078/M1078A1 and/or M1083/M1083A1 tow eyes (14) with pins (10) and linchpins (9).

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

FRONT CONNECTION - Continued



CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing an M1078/M1078A1 or M1083/M1083A1. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if winches or other components mounted on front of M1078/M1078A1 or M1083/M1083A1 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

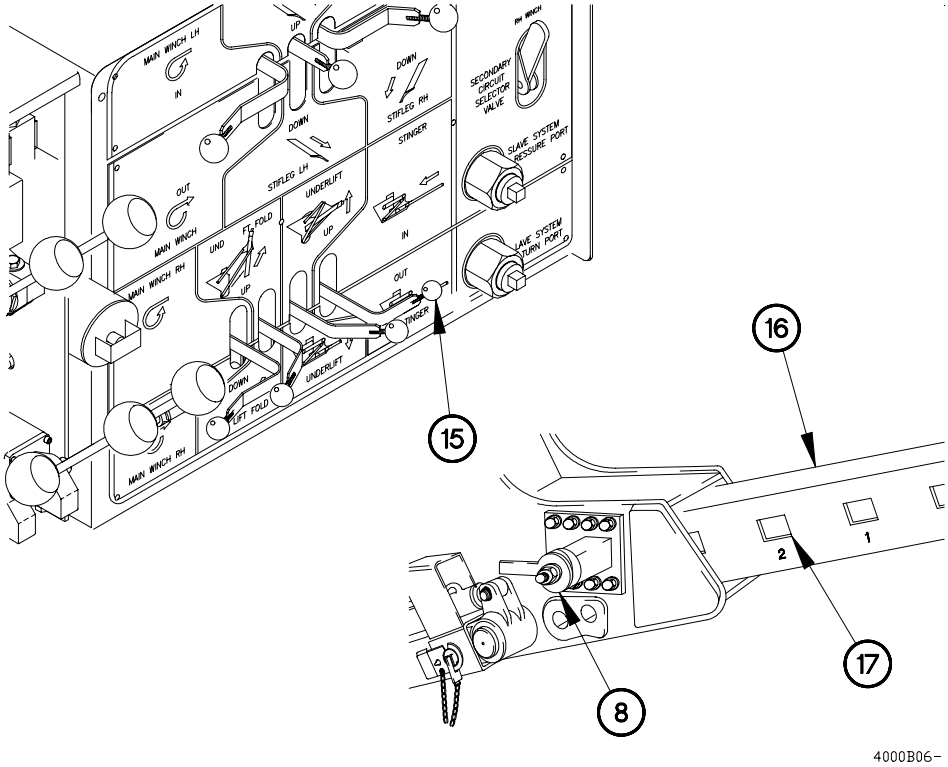
It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may result in damage to equipment.

10. Place STINGER lever (15) to IN position to retract stinger (16) until stinger cam lock holes (17) are aligned.

11. Lock stinger cam lock (8).

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

FRONT CONNECTION - Continued

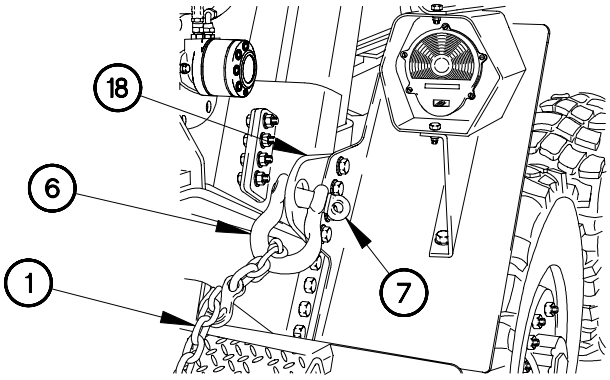


4000B06-

NOTE

Left and right side chains are installed the same way. Right side shown.

12. Install two shackles (6) on M1089A1 rear towing eyes (18) with clevis pins (7).
13. Connect one end of two chains (1) to M1089A1 rear shackles (6).



4000B07-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

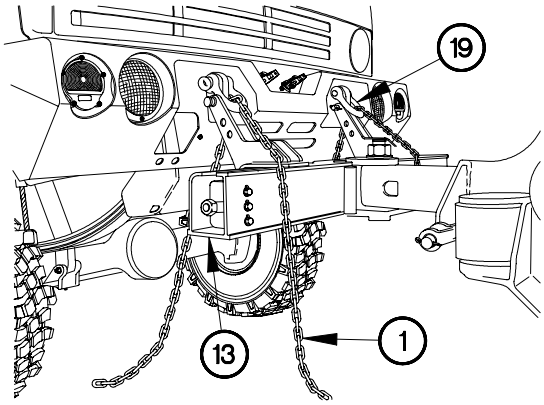
FRONT CONNECTION - Continued

NOTE

Chain must be placed over crossbar and through towed vehicle shackles so that chains are equally spaced above ground.

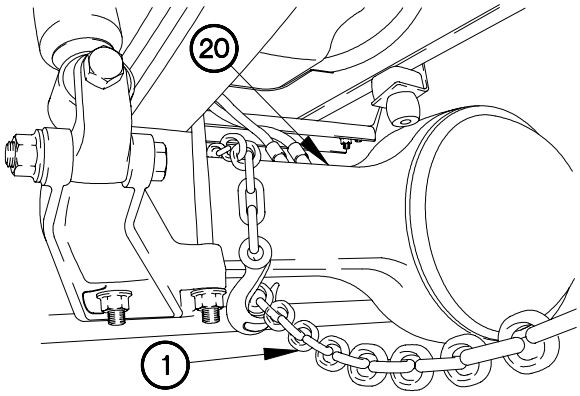
14. Route two chains (1) over crossbar (13).

15. Position two chains (1) through front shackles (19) of disabled vehicle.



4000B60

16. Connect other end of two chains (1) to disabled vehicle front axle (20) as shown.



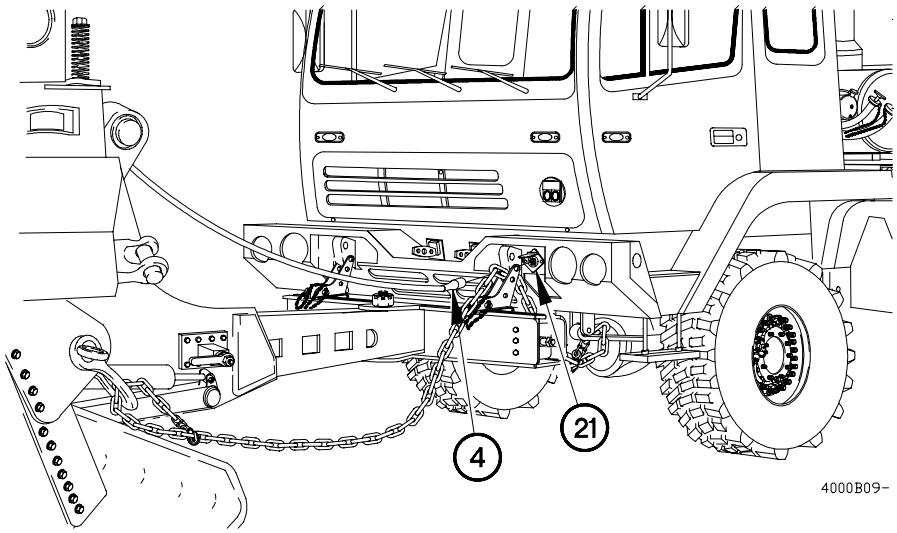
4000B61

NOTE

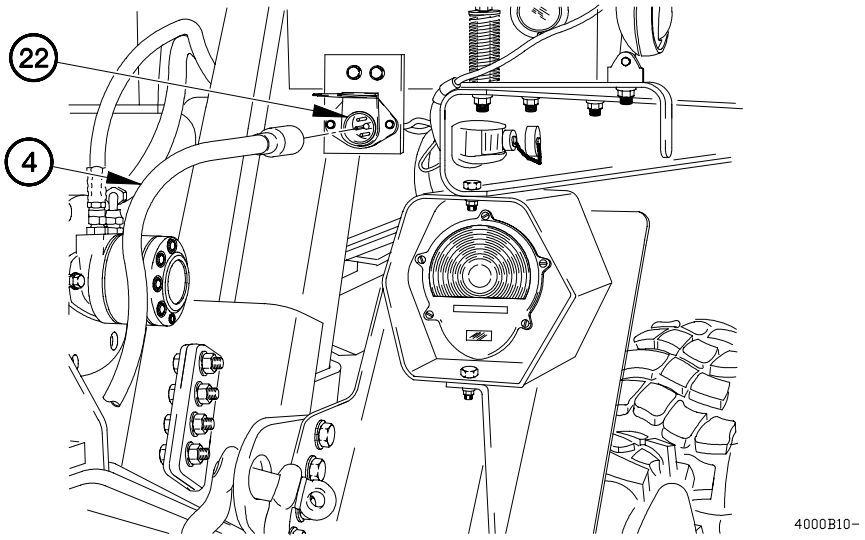
Perform steps 17 and 18 if M1078/M1078A1 and/or M1083/M1083A1 electrical system and composite taillights are undamaged.

17. Connect tow interconnect cable (4) to M1078/M1078A1 and/or M1083/M1083A1 front electrical connector (21).

FRONT CONNECTION – Continued



18. Connect tow interconnect cable (4) to M1089A1 rear electrical connector (22).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

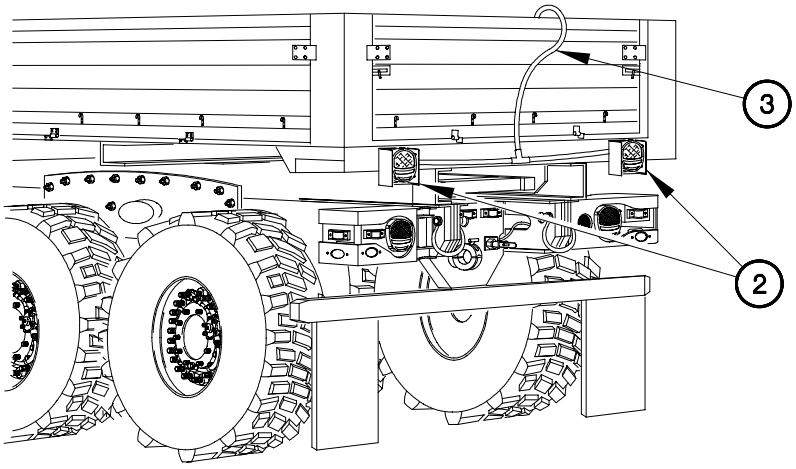
FRONT CONNECTION - Continued

NOTE

Perform steps 19 through 22 if M1078/M1078A1 and/or M1083/M1083A1 electrical system or composite taillights are damaged.

19. Position two emergency tow lights (2) on rear of M1078/M1078A1 and/or M1083/M1083A1.

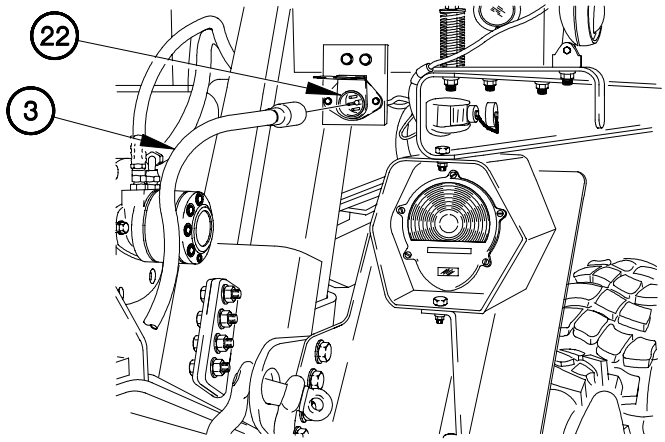
20. Connect tow lights cable (3) to two emergency tow lights (2).



4000B11-

21. Route tow lights cable (3) along top of M1078/M1078A1 and/or M1083/M1083A1.

22. Connect tow lights cable (3) to M1089A1 rear electrical connector (22).



4000B12-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

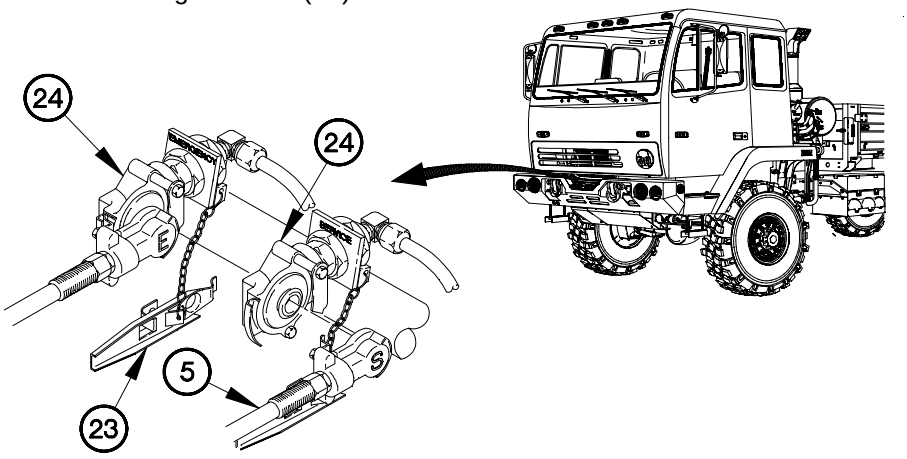
FRONT CONNECTION - Continued

23. Remove two dummy connectors (23) from M1078/M1078A1 and/or M1083/M1083A1 gladhands (24).

NOTE

Service and emergency intervehicular air hoses are connected the same way. Service intervehicular air hose shown.

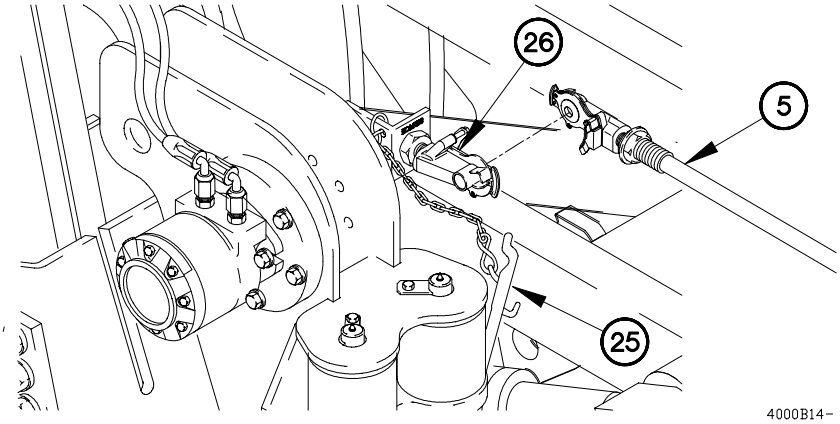
24. Connect two intervehicular air hoses (5) to M1078/M1078A1 and/or M1083/M1083A1 gladhands (24).



4000B13-

25. Remove two dummy connectors (25) from M1089A1 gladhands (26).

26. Connect two intervehicular air hoses (5) to M1089A1 gladhands (26).



4000B14-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

FRONT CONNECTION - Continued

CAUTION

All loose equipment must be secure on M1078/M1078A1 and M1083/M1083A1. Failure to comply may result in damage to equipment.

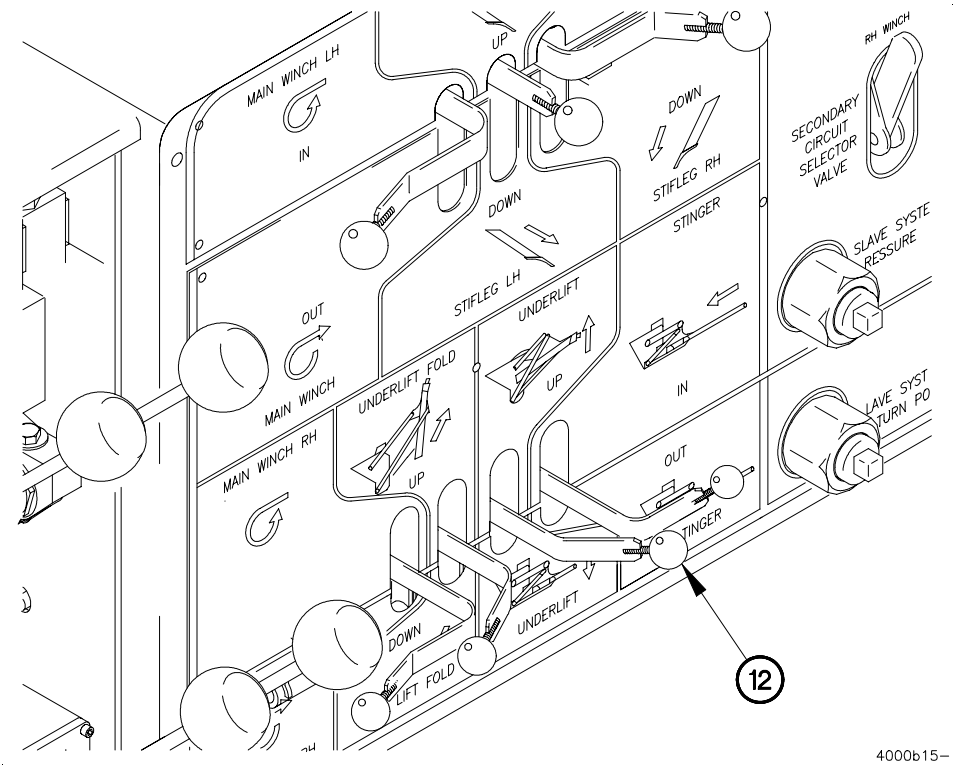
27. Prepare M1078/M1078A1 and/or M1083/M1083A1 for towing (WP 0060 00).

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

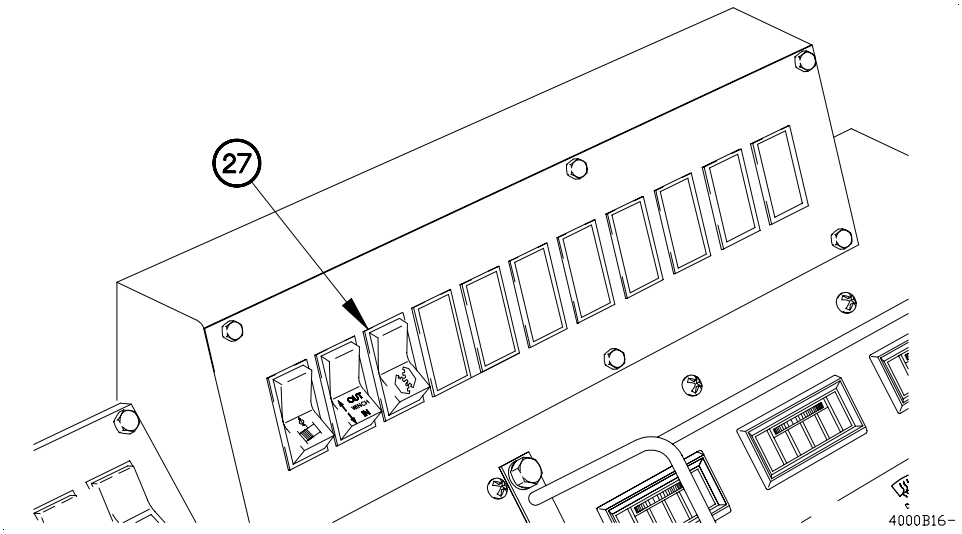
28. Place UNDERLIFT lever (12) in UP position to raise M1078/M1078A1 and/or M1083/M1083A1 until wheels are approximately 16 in. (41 cm) off ground.

29. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).

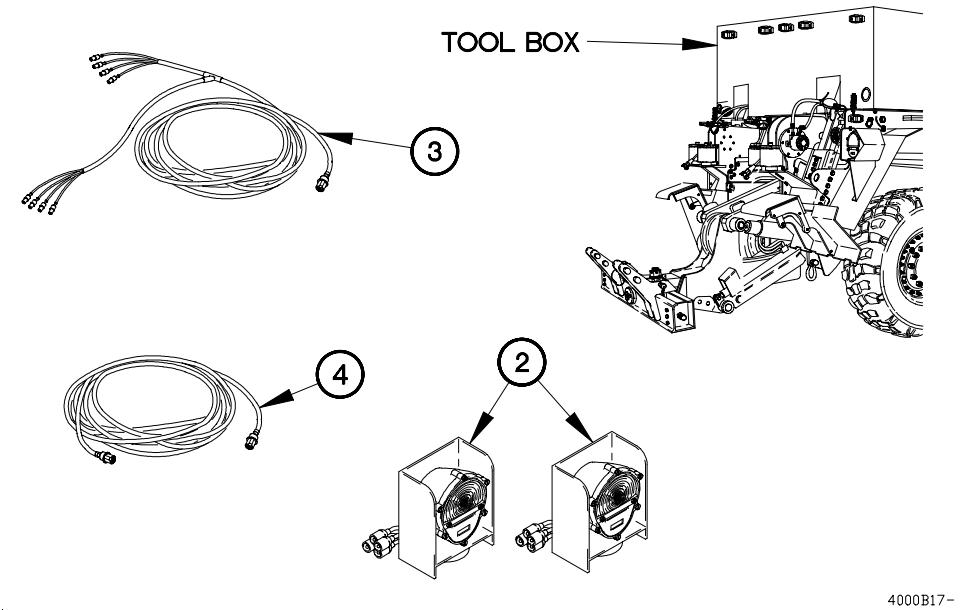


FRONT CONNECTION - Continued

30. Position PTO switch (27) to off.



31. Stow unused tow interconnect cable (4) or tow lights cable (3) and two emergency tow lights (2) in tool box.



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

FRONT CONNECTION - Continued

32. Install and raise two amber warning lights (WP 0066 00).

33. Turn on service drive lights (WP 0018 00).

34. Position hazard lights switch (28) to on.

35. Position warning lights switch (29) to on.

36. Push in SYSTEM PARK control (30).

37. Set transmission in gear (WP 0018 00).

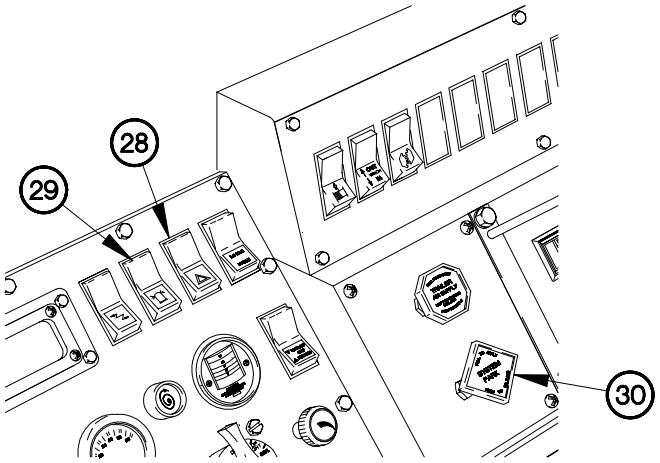
WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

Failure to comply may result in serious injury or death to personnel or damage to equipment.

38. Transport M1078/M1078A1 and/or M1083/M1083A1.



4000B18-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

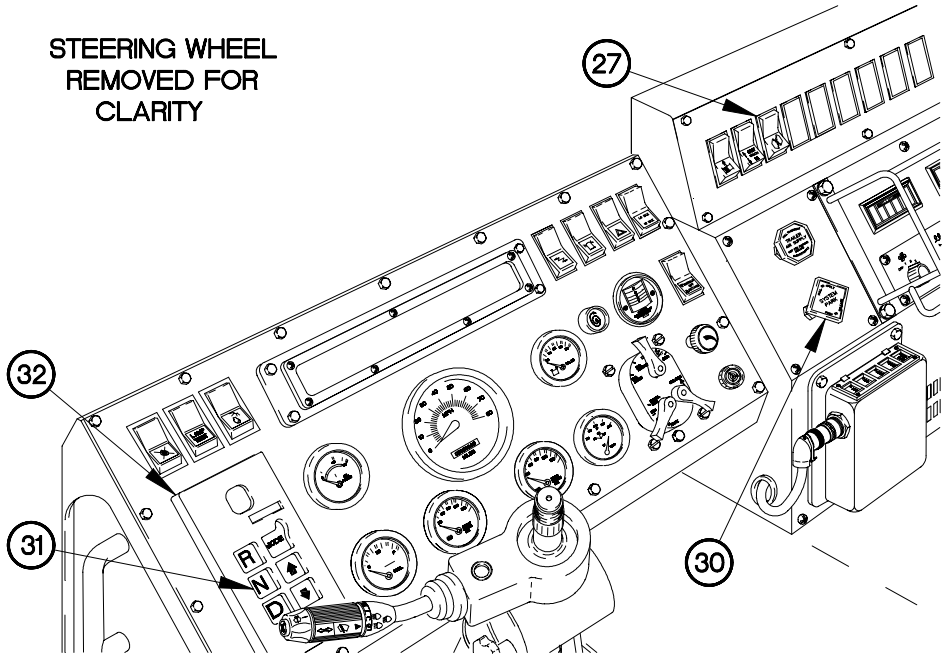
FRONT DISCONNECTION

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (31) on WTEC III TPSS (32).
3. Pull out SYSTEM PARK control (30).
4. Position PTO switch (27) to on.

NOTE

Perform step 5 if an assistant is not present to assist with vehicle disconnection. Operation from WRECKER CONTROL PANEL shown.

5. Connect WRECKER REMOTE CONTROL (WP 0035 00).



4000B19-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

FRONT DISCONNECTION - Continued

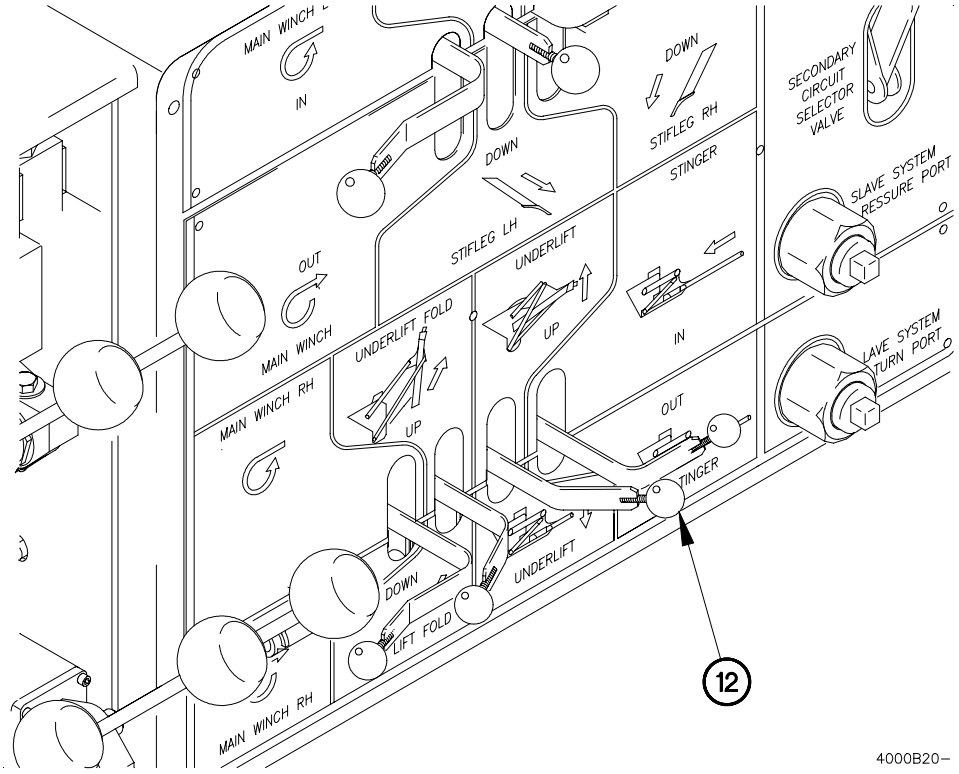
WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Place UNDERLIFT lever (12) in DOWN position to lower M1078/M1078A1 and/or M1083/M1083A1 until wheels are in firm contact with ground.

7. Set parking brake on M1078/M1078A1 and/or M1083/M1083A1 (WP 0018 00).

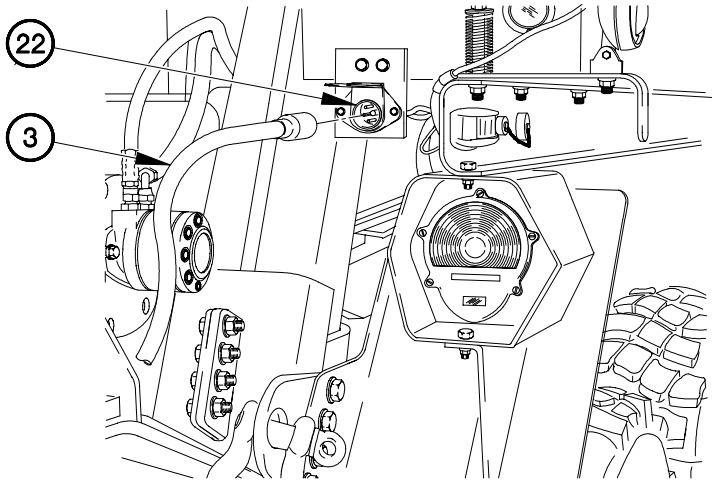


FRONT DISCONNECTION - Continued

NOTE

Perform steps 8 through 10 if tow lights cable and emergency tow lights were used due to damaged M1078/M1078A1 and/or M1083/M1083A1 electrical system or composite taillights.

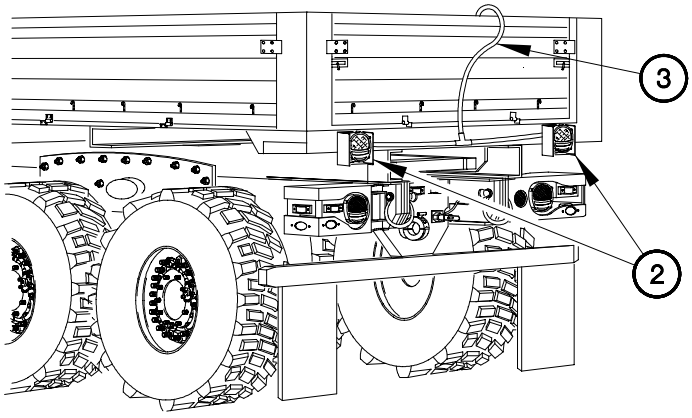
8. Disconnect tow lights cable (3) from M1089A1 rear electrical connector (22).



4000B21-

9. Disconnect tow lights cable (3) from two emergency tow lights (2).

10. Remove two emergency tow lights (2) from rear of M1078/M1078A1 and/or M1083/M1083A1.



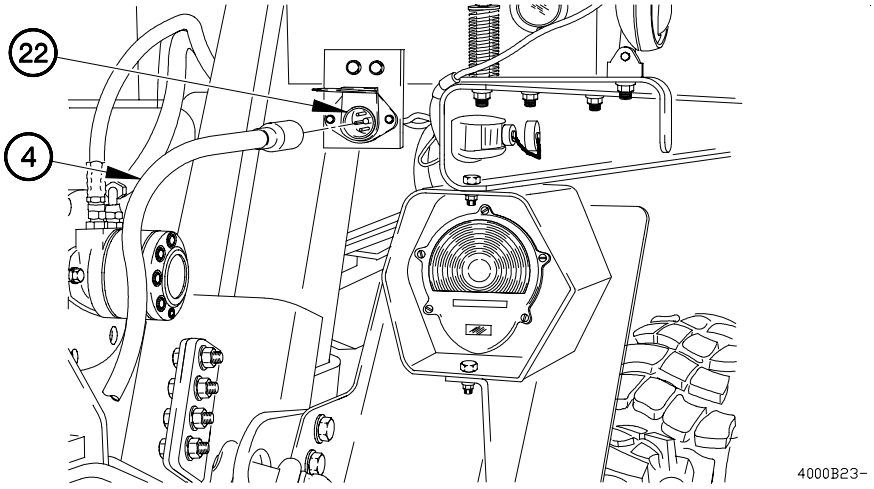
4000B22-

FRONT DISCONNECTION - Continued

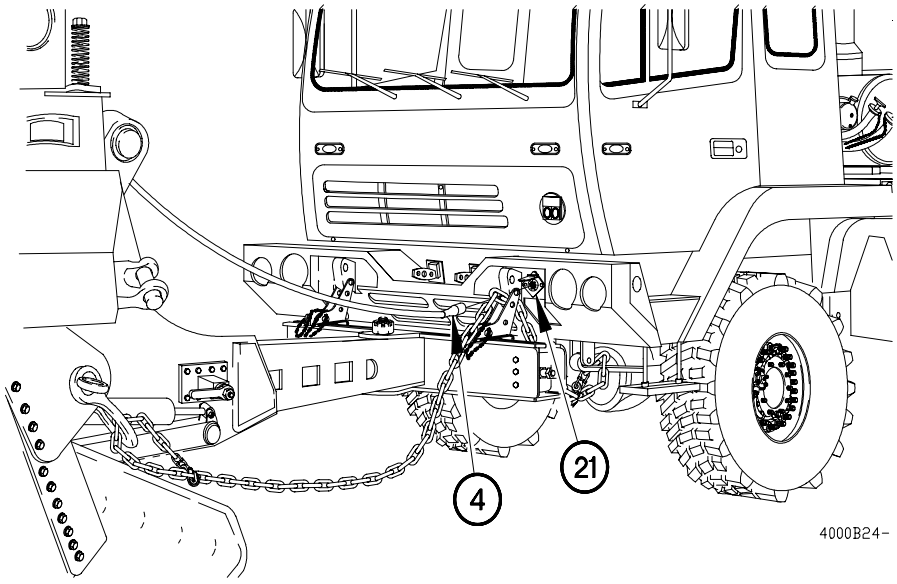
NOTE

Perform steps 11 and 12 if tow interconnect cable was used to power M1078/M1078A1 and/or M1083/M1083A1 composite taillights.

11. Disconnect tow interconnect cable (4) from M1089A1 rear electrical connector (22).



12. Disconnect tow interconnect cable (4) from M1078/M1078A1 and/or M1083/M1083A1 front electrical connector (21).



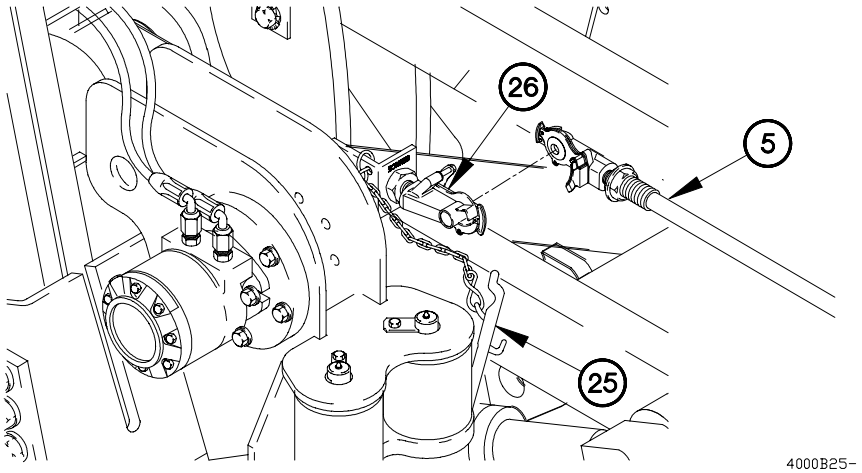
FRONT DISCONNECTION - Continued

NOTE

Service and emergency intervehicular air hoses are disconnected the same way. Service intervehicular air hose shown.

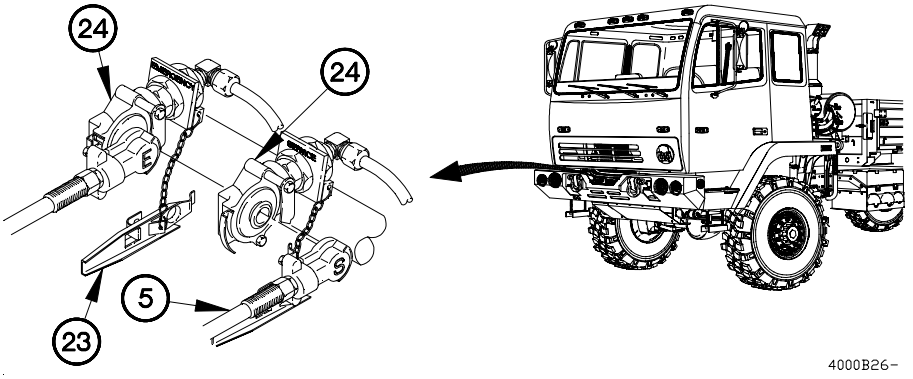
13. Disconnect two intervehicular air hoses (5) from M1089A1 gladhands (26).

14. Install two dummy connectors (25) on M1089A1 gladhands (26).



15. Disconnect two intervehicular air hoses (5) from M1078/M1078A1 and/or M1083/M1083A1 gladhands (24).

16. Install two dummy connectors (23) on M1078/M1078A1 and/or M1083/M1083A1 gladhands (24).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

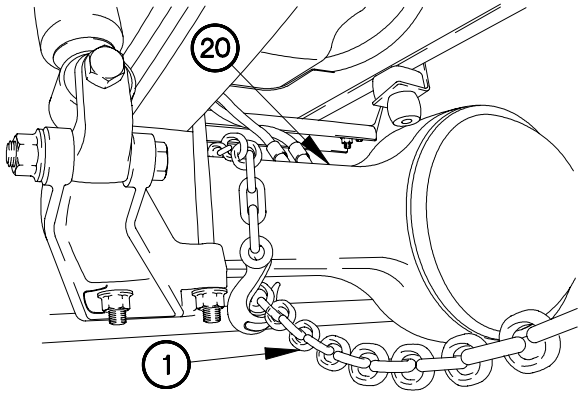
0040 00

FRONT DISCONNECTION - Continued

NOTE

Left and right side chains are removed the same way. Right side shown.

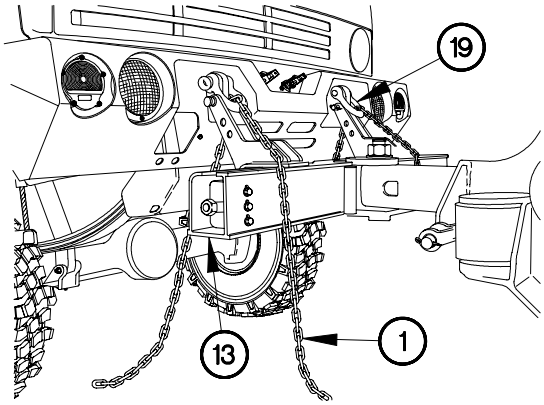
17. Remove two chains (1) from disabled vehicles front axle (20).



4000B61

18. Remove two chains (1) from front shackles (19) of disabled vehicle.

19. Remove two chains (1) from crossbar (13).



4000B60

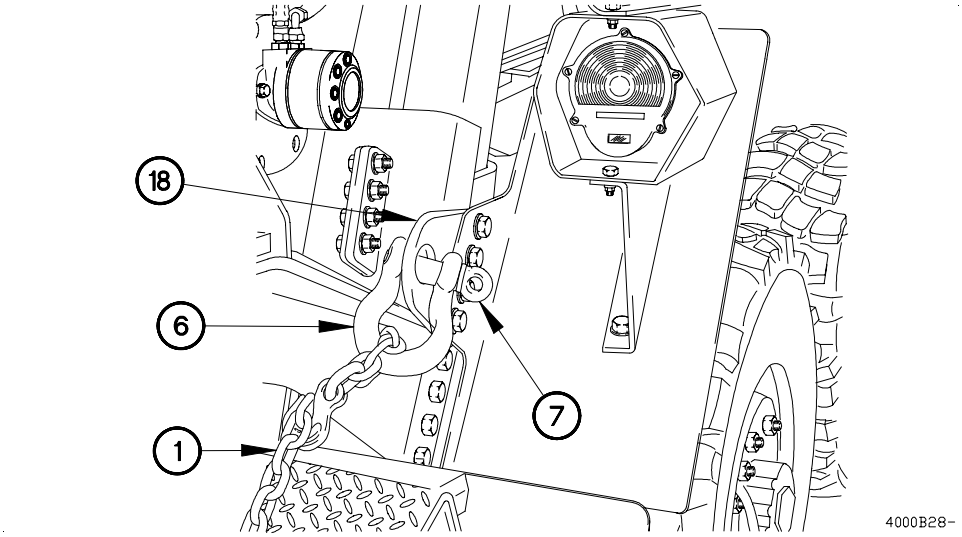
M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

FRONT DISCONNECTION - Continued

20. Remove other end of two chains (1) from wrecker rear shackles (6).

21. Remove two clevis pins (7) and shackles (6) from M1089A1 rear towing eyes (18).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

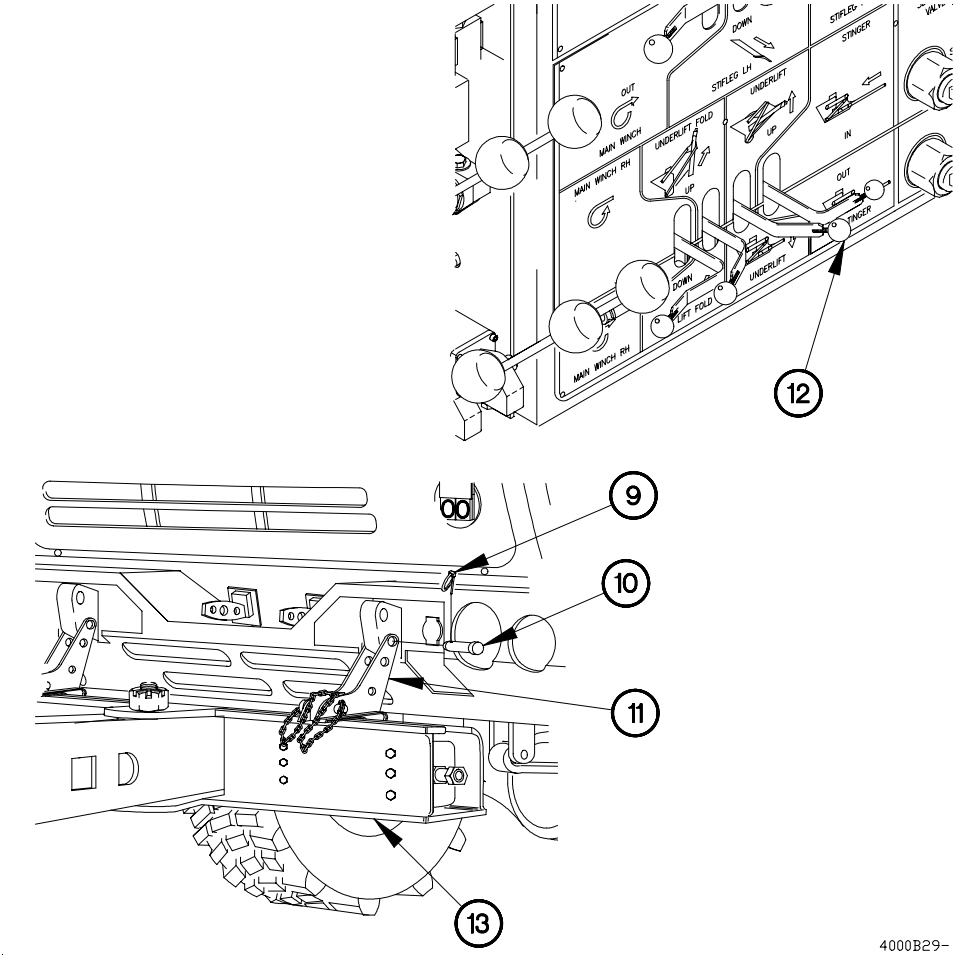
FRONT DISCONNECTION - Continued

NOTE

Left and right side lift tools are removed from towed vehicle the same way. Left side shown.

22. Remove two linchpins (9) and pins (10) from two lift tools (11).

23. Place UNDERLIFT lever (12) in the DOWN position until crossbar (13) is fully lowered.



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

FRONT DISCONNECTION - Continued

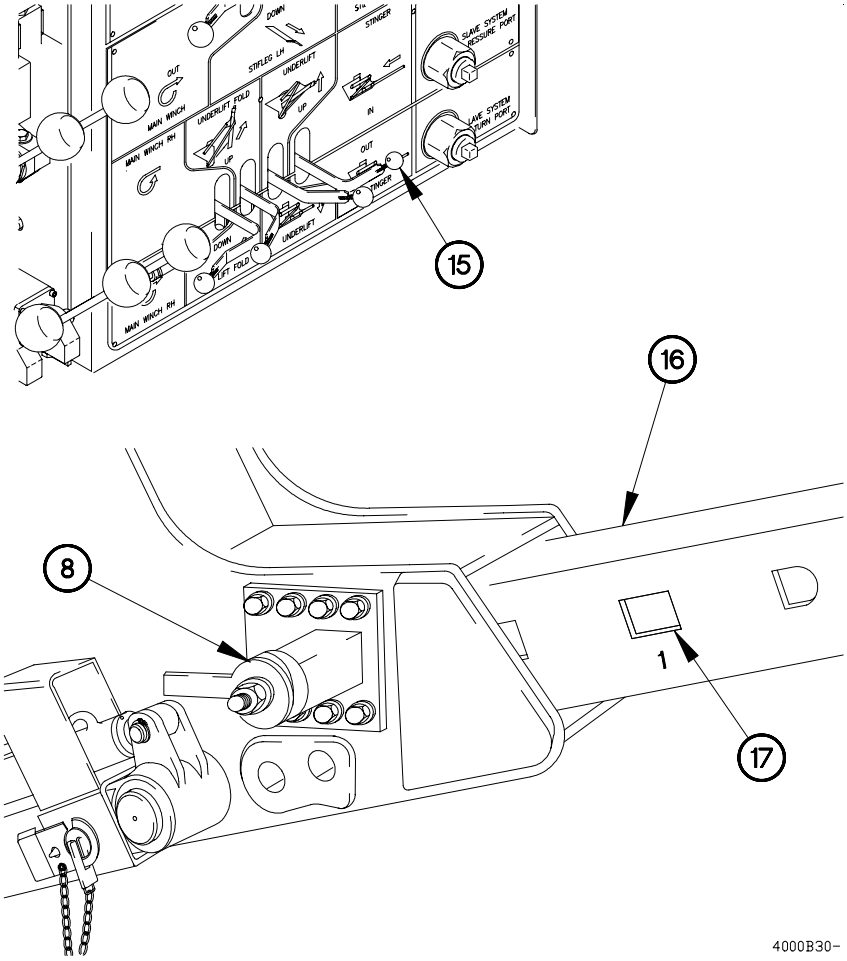
WARNING

Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

24. Unlock stinger cam lock (8).

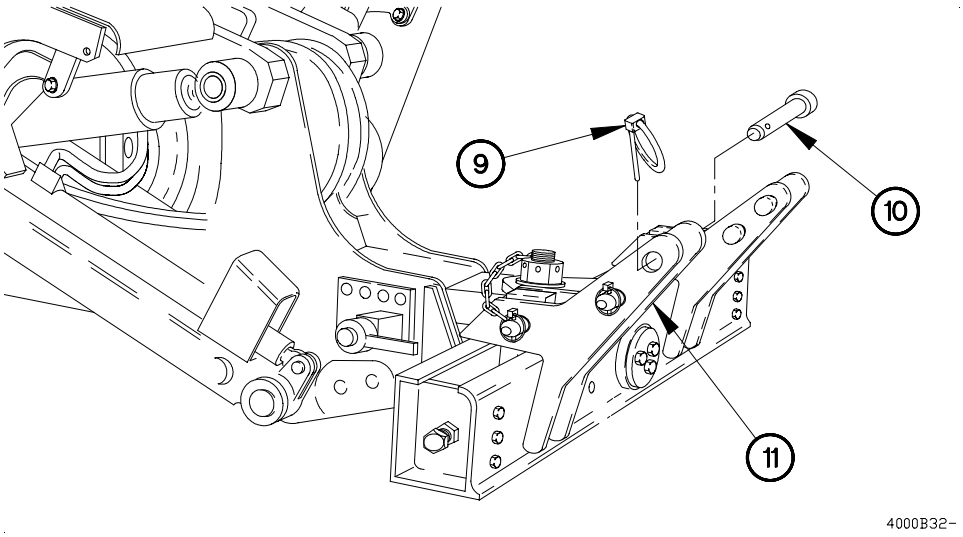
25. Place STINGER lever (15) to IN position to retract stinger (16) until stinger cam lock (8) is aligned with first hole (17) in stinger.

26. Lock stinger cam lock (8).

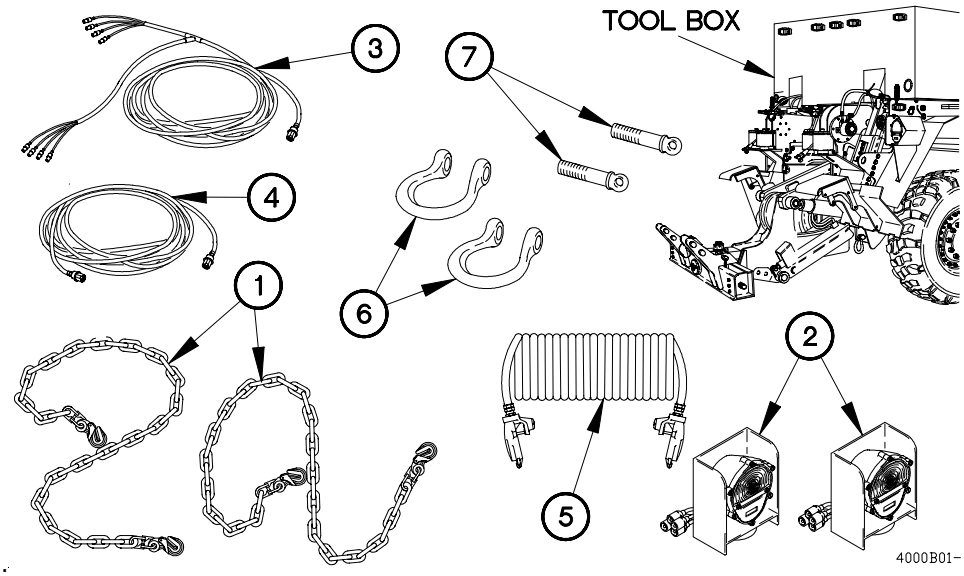


FRONT DISCONNECTION - Continued

27. Install two pins (10) and linchpins (9) in lift tools (11).



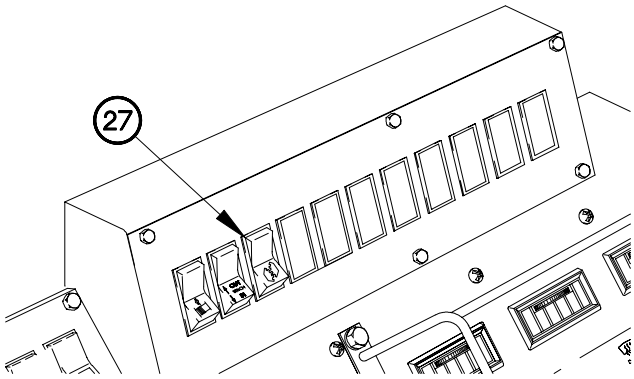
28. Stow two Chains (1), two intervehicular air hoses (5), two shackles (6), clevis pins (7), tow interconnect cable (4) or emergency tow lights (2) and tow lights cable (3) in tool box



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

FRONT DISCONNECTION - Continued

29. Raise underlift assembly (WP 0035 00).
30. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
31. Position PTO switch (27) to off.
32. Shut down engine (WP 0018 00).
33. Lower and remove two amber warning lights (WP 0066 00).



4000B33-

REAR CONNECTION

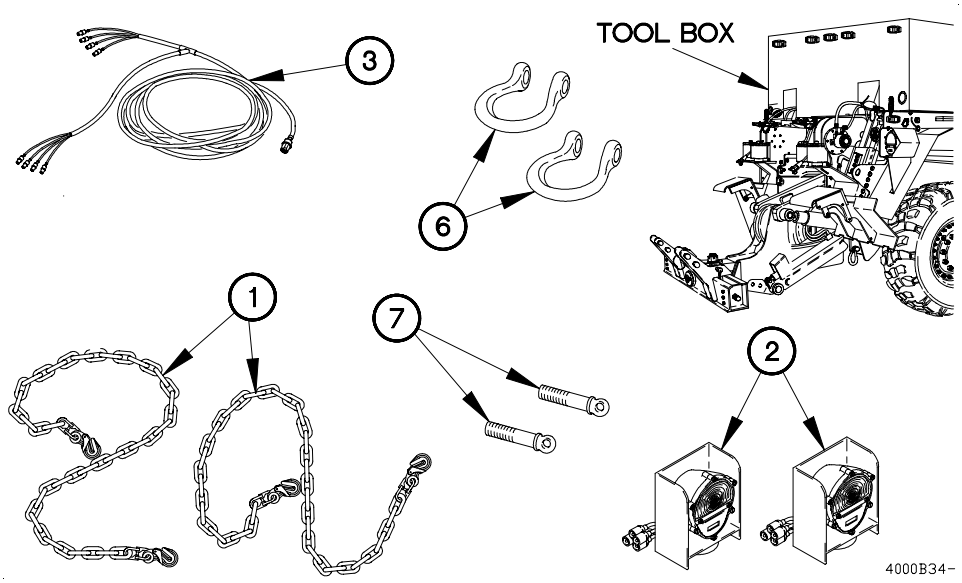
CAUTION

Front axle drive shaft must be removed on both M1078/M1078A1 and M1083/M1083A1 series vehicles prior to performing a rear connection lift and tow. Failure to comply may result in damage to equipment.

1. Notify Unit Maintenance to remove front axle driveshaft from disabled vehicle.
2. Remove two chains (1), emergency tow lights (2), and tow lights cable (3), two shackles (6), clevis pins (7), from tool box.

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

REAR CONNECTION - Continued



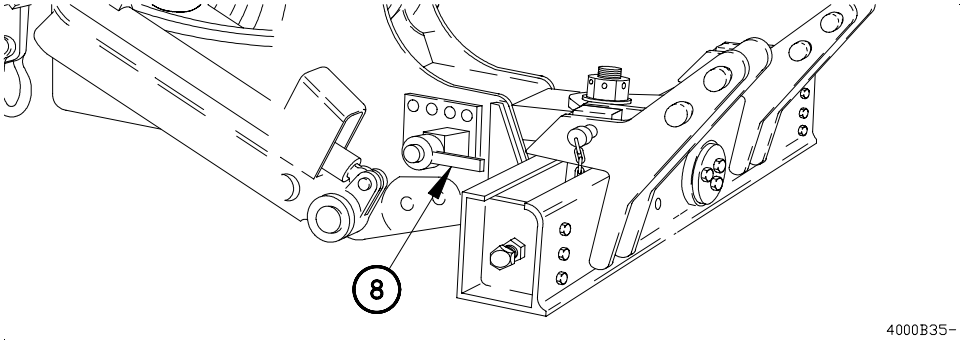
3. Prepare underlift assembly for operation (WP 0035 00).

NOTE

Perform step 4 if an assistant is not present to assist with vehicle connection. Operation from WRECKER CONTROL PANEL shown.

4. Connect WRECKER REMOTE CONTROL (WP 0035 00)

5. Unlock stinger cam lock (8).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

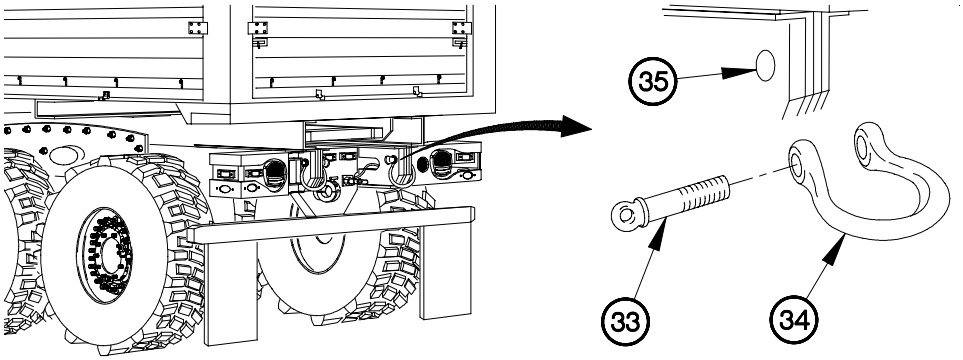
REAR CONNECTION - Continued

NOTE

Left and right side shackles are removed the same way. Left side shown.

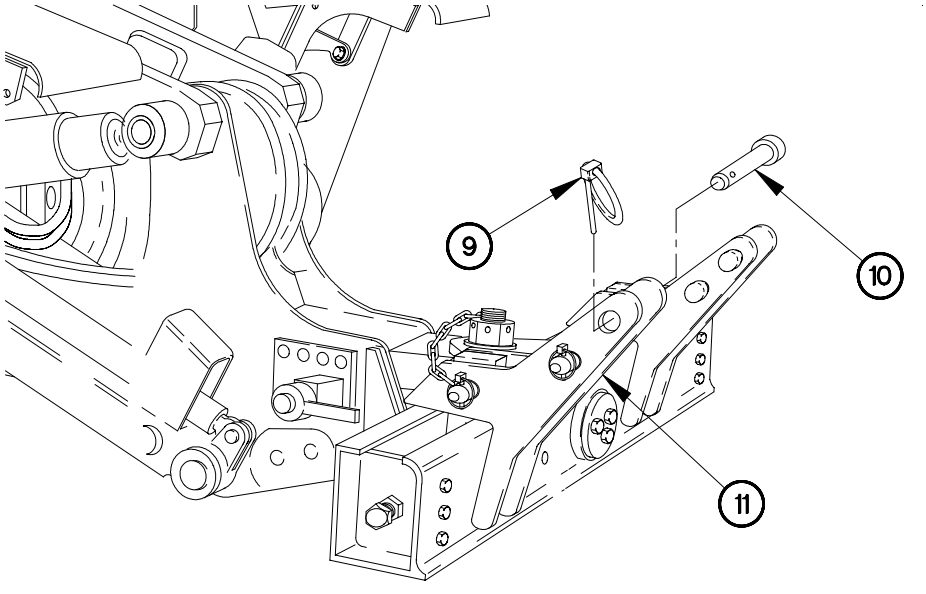
6. Remove two clevis pins (33) and shackles (34) from M1078/M1078A1 and/or M1083/M1083A1 tow eyes (35).

7. Stow two shackles (33) and clevis pins (34) in M1078/M1078A1 and/or M1083/M1083A1 cab stowage box.



4000B36-

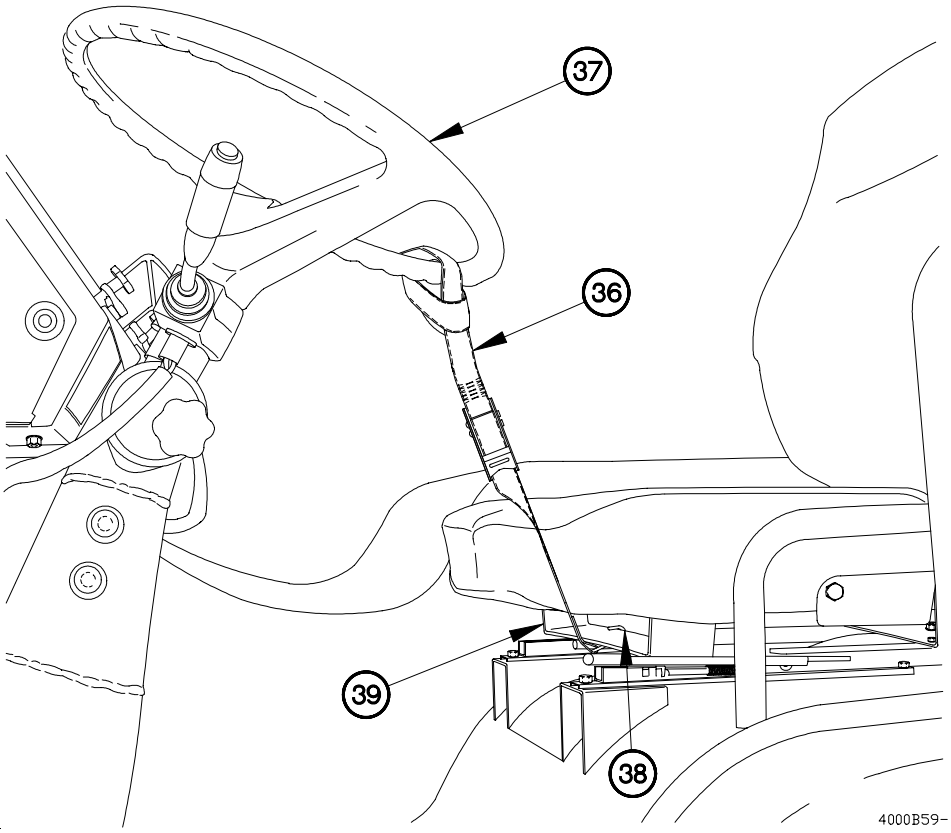
8. Remove two linchpins (9) and pins (10) from lift tools (11).



4000B37-

REAR CONNECTION – Continued

9. Place loop of restraining strap (36) through steering wheel (37).
10. Attach restraining strap hook (38) on seat support bracket (39).
11. Tighten restraining strap (36).



WARNING

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

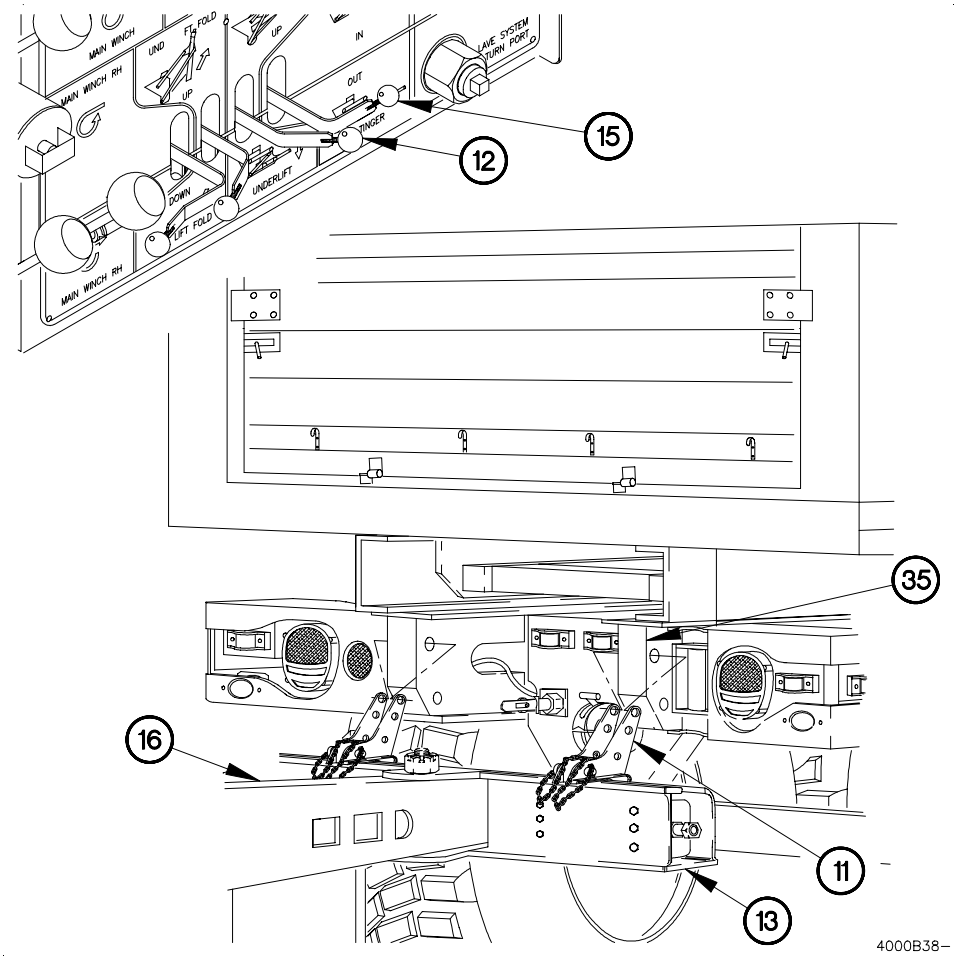
M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

REAR CONNECTION – Continued

12. Place UNDERLIFT lever (12) in the UP position to raise crossbar (13) until lift tools (11) are aligned with M1078/M1078A1 and/or M1083/M1083A1 tow eyes (35).

13. Place STINGER lever (15) in OUT position to extend stinger (16) until lift tools (11) are aligned with M1078/M1078A1 and/or083/M1083A1 tow eyes (35).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

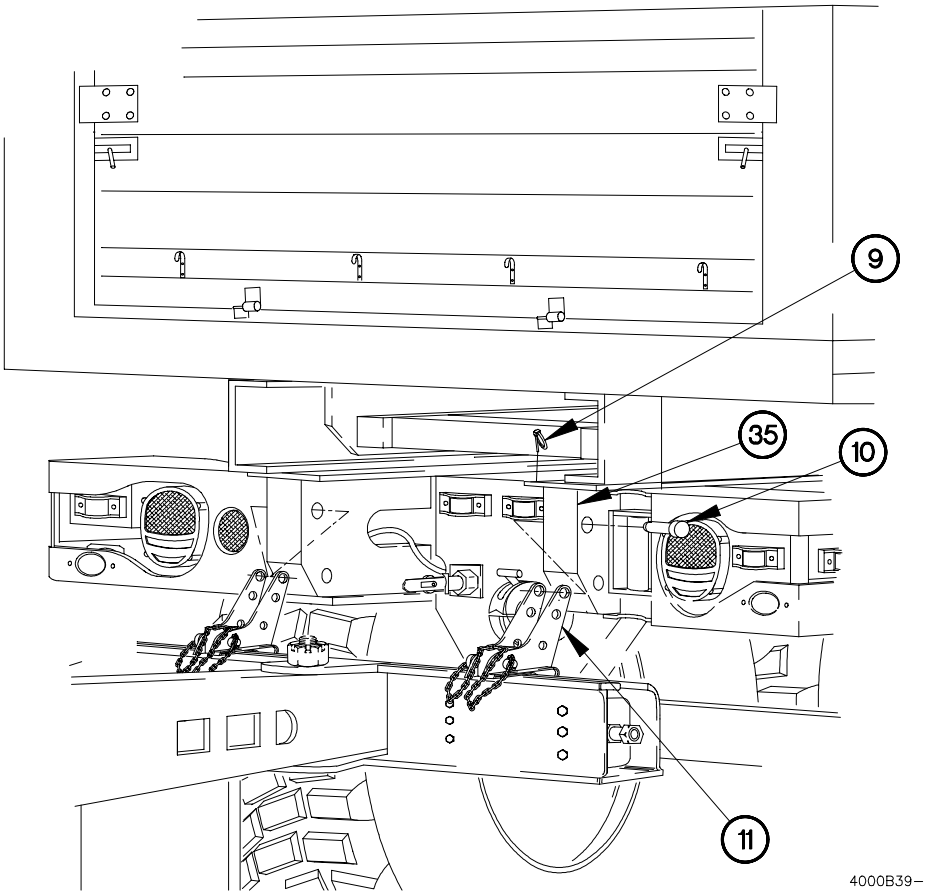
0040 00

REAR CONNECTION - Continued

NOTE

Left and right side lift tools are installed on M1078/M1078A1 and M1083/M1083A1 tow eyes the same way. Left side shown.

14. Install two lift tools (11) on M1078/M1078A1 and/or M1083/M1083A1 tow eyes (35) with pins (10) and linchpins (9).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

REAR CONNECTION - Continued

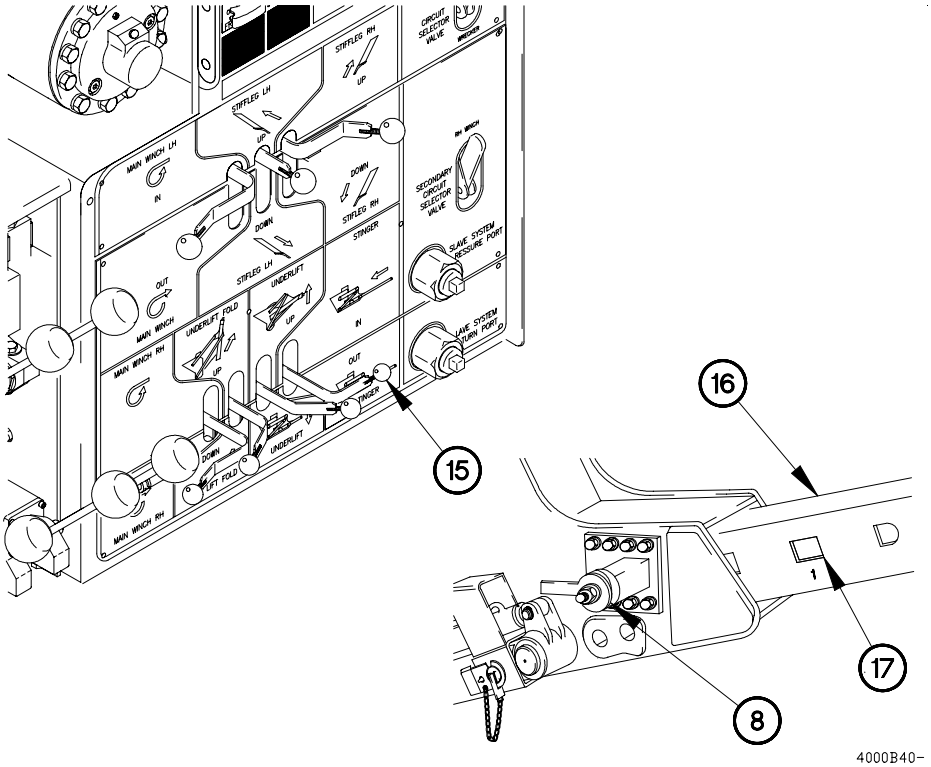
CAUTION

Stinger cam lock is normally locked in second rectangular hole on stinger when towing M1078/M1078A1 and M1083/M1083A1. It may be necessary to lock stinger cam lock in third rectangular hole on stinger if components mounted on rear of M1078/M1078A1 and M1083/M1083A1 interfere with movement of crossbar. Lock stinger cam lock in hole which will allow crossbar to rotate freely. Failure to comply may result in damage to equipment.

It may be necessary to start with holes 4 or 5 on stinger when recovering a vehicle on uneven ground. Once level ground is reached, lock stinger in second hole. Failure to comply may cause damage to equipment.

15. Place STINGER lever (15) to IN position to retract stinger (16) until stinger cam lock holes (17) are aligned.

16. Lock stinger cam lock (8).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

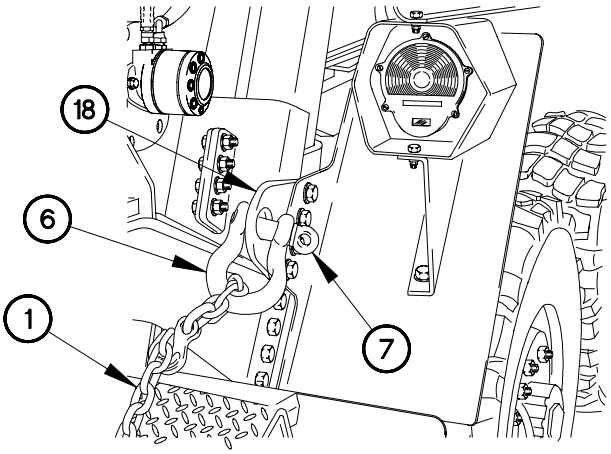
0040 00

REAR CONNECTION - Continued

NOTE

Left and right side chains are installed the same way. Right side shown.

17. Install two shackles (6) on M1089A1 rear towing eyes (18) with clevis pins (7).
18. Connect one end of two chains (1) to M1089A1 rear shackles (6).

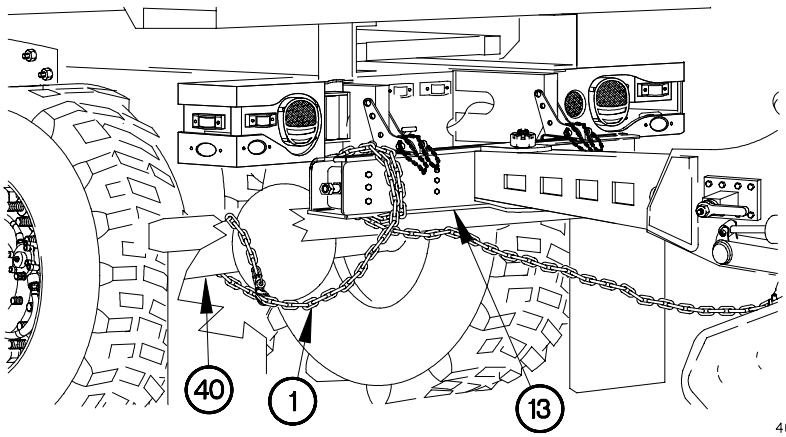


4000B41-

NOTE

Chains must be wrapped around crossbar so that chains are approximately 6-10 in. (15-25 cm) above ground.

19. Wrap two chains (1) around crossbar (13).
20. Connect other end of chains (1) around M1078/M1078A1 and/or M1083/M1083A1 rear axle (40).



4000B42-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

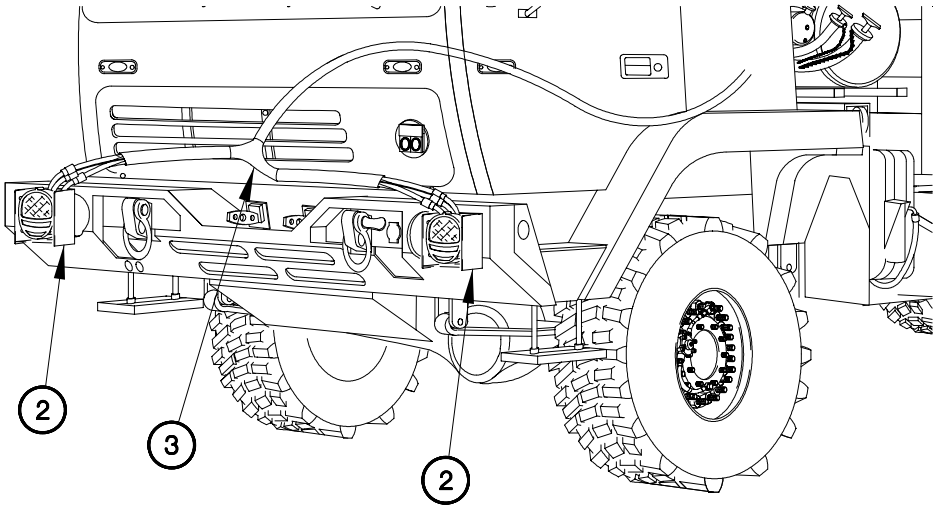
0040 00

REAR CONNECTION - Continued

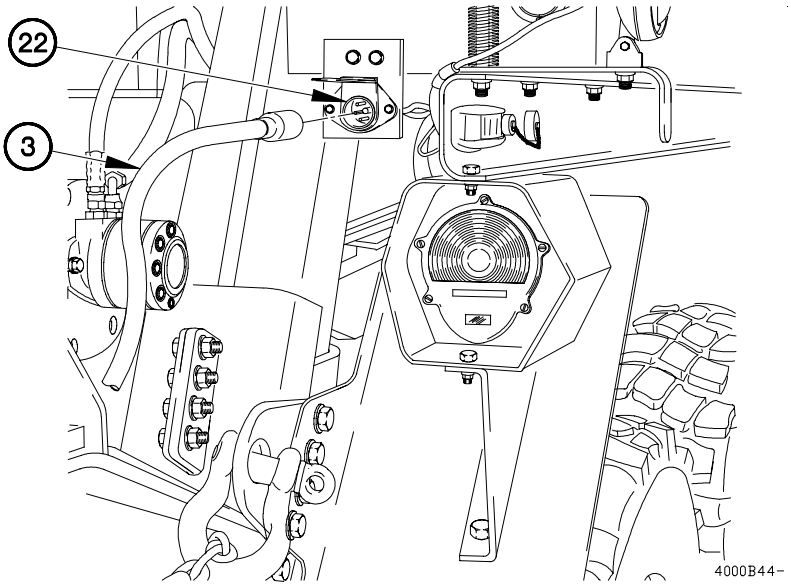
21. Position two emergency tow lights (2) on front of M1078/M1078A1 and/or M1083/M1083A1.

22. Connect tow lights cable (3) to two emergency tow lights (2).

23. Route tow lights cable (3) along top of M1078/M1078A1 and/or M1083/M1083A1.



24. Connect tow lights cable (3) to M1089A1 rear electrical connector (22).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

REAR CONNECTION - Continued

WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

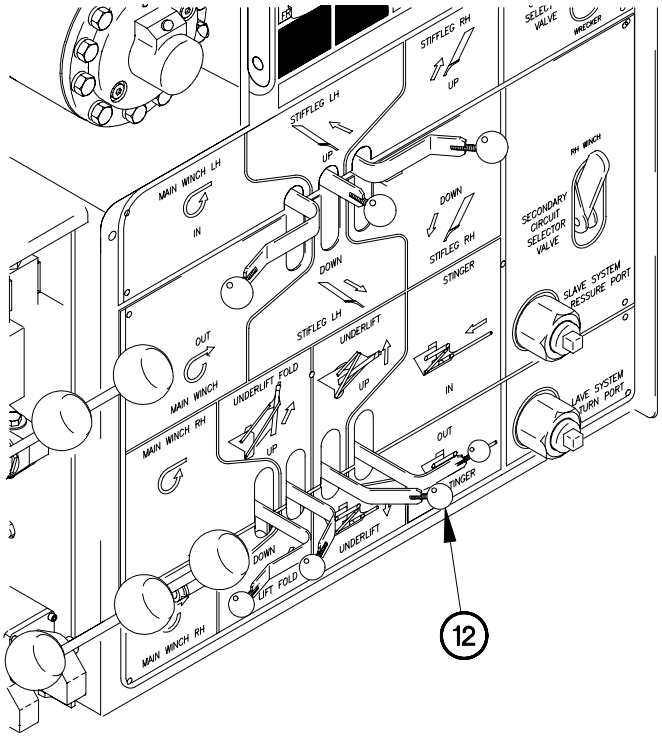
CAUTION

All loose equipment must be secure on M1078/M1078A1 and M1083/M1083A1. Failure to comply may result in damage to equipment.

25. Prepare M1078/M1078A1 and/or M1083/M1083A1 for towing (WP 0060 00).

26. Place UNDERLIFT lever (12) in UP position to raise M1078/M1078A1 and/or M1083/M1083A1 until wheels are approximately 16 in. (41 cm) off ground.

27. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).



4000B45-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

REAR CONNECTION - Continued

28. Position PTO switch (27) to off.
29. Install and raise two amber warning lights (WP 0066 00).
30. Turn on service drive lights (WP 0018 00).
31. Position hazard lights switch (28) to on.
32. Position warning lights switch (29) to on.
33. Push in SYSTEM PARK control (30).
34. Set transmission in gear (WP 0018 00).

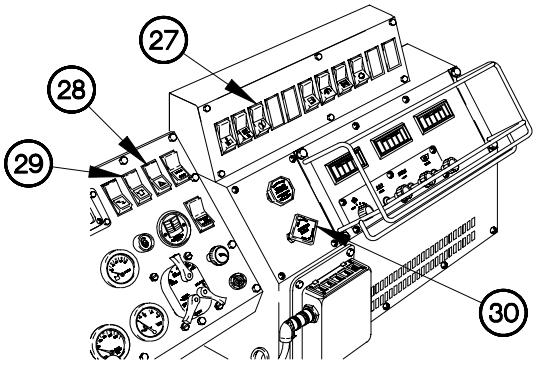
WARNING

M1089A1 should not be operated at speeds over 15 mph (24 km/h) when towing, except on paved roads when Operator determines that terrain conditions allow safe operation. The following are maximum speeds for safe operation:

TERRAIN CONDITION	MAXIMUM SPEED
on road (level)	35 mph (56 km/h)
on road (hilly)	30 mph (48 km/h)
off road	15 mph (24 km/h)

Failure to comply may result in serious injury or death to personnel or damage to equipment.

35. Transport M1078/M1078A1 and/or M1083/M1083A1.



4000B46-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

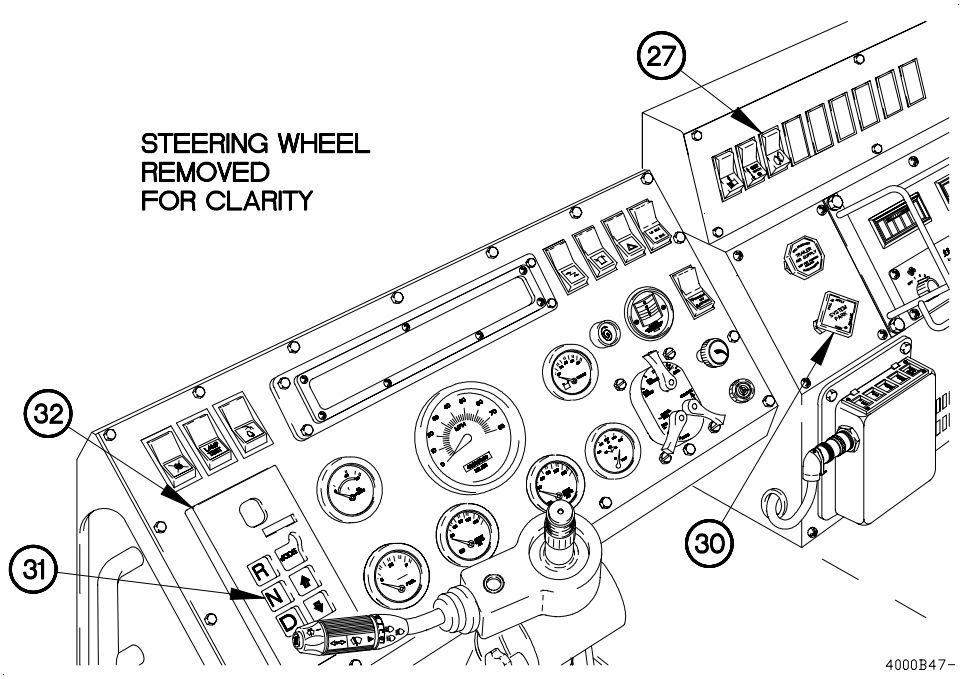
REAR DISCONNECTION

1. Start engine (WP 0018 00).
2. Press N (Neutral) button (31) on WTEC III TPSS (32).
3. Pull out SYSTEM PARK control (30).
4. Position PTO switch (27) to on.

NOTE

Perform step 5 if an assistant is not present to assist with vehicle disconnection. Operation from WRECKER CONTROL PANEL shown.

5. Connect WRECKER REMOTE CONTROL (WP 0035 00).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

REAR DISCONNECTION - Continued

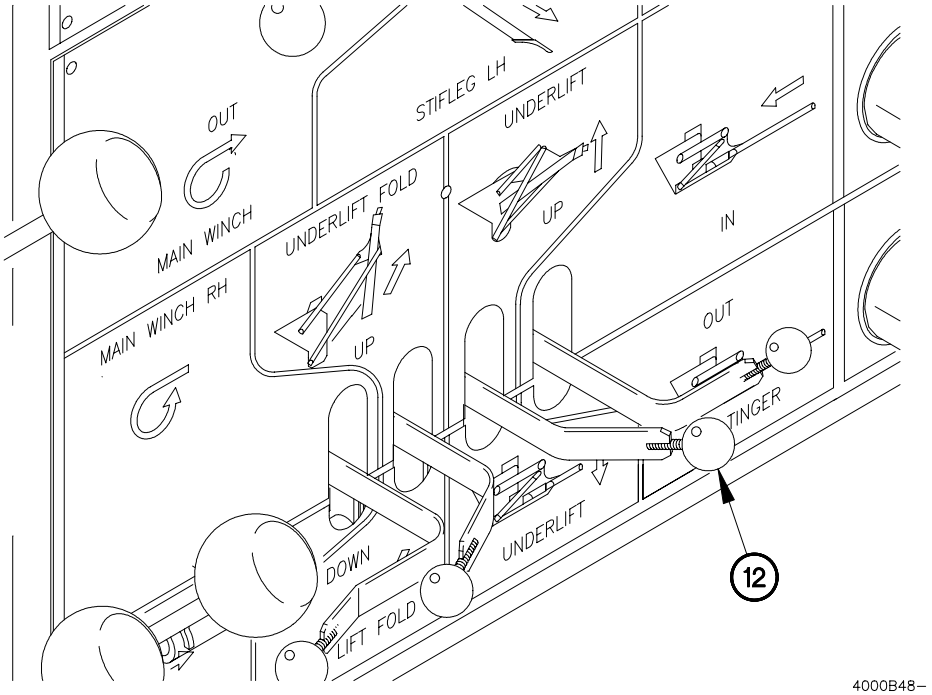
WARNING

Keep personnel clear of underlift assembly and disabled vehicle when raising. Disabled vehicle could fall suddenly. Failure to comply may result in serious injury or death to personnel.

Goggles must be worn when operating WRECKER CONTROL PANEL. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

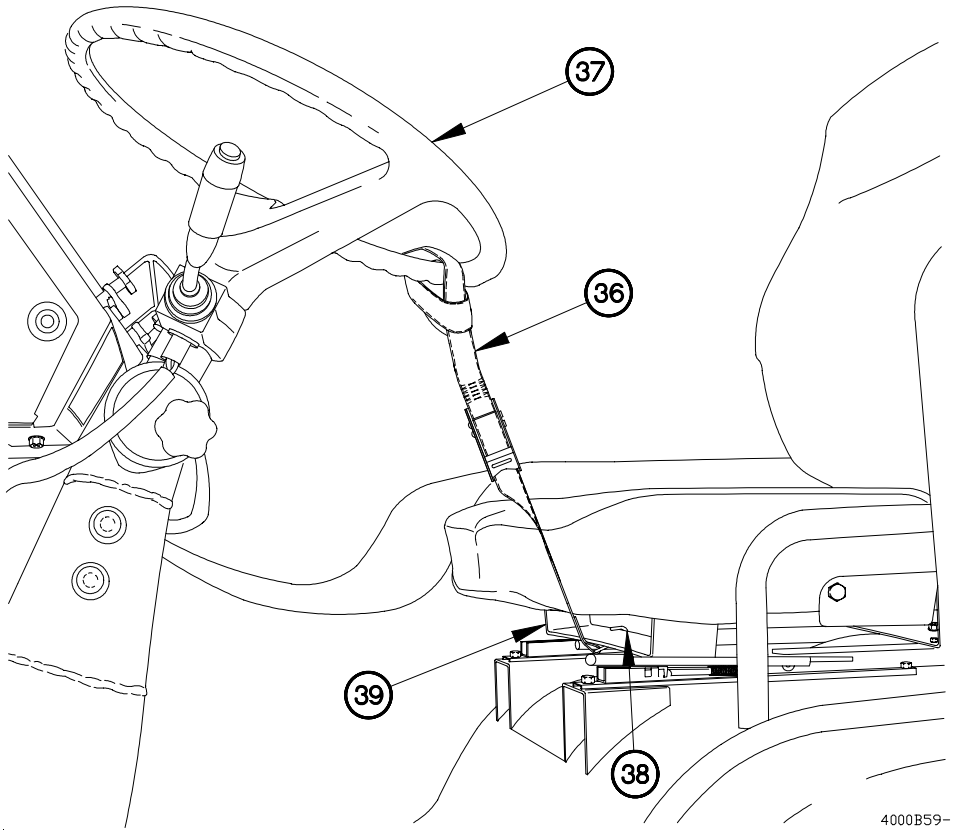
6. Place UNDERLIFT lever (12) in DOWN position to lower M1078/M1078A1 and/or M1083/M1083A1 until wheels are in firm contact with ground.

7. Set parking brake on M1078/M1078A1 and/or M1083/M1083A1 (WP 0018 00).



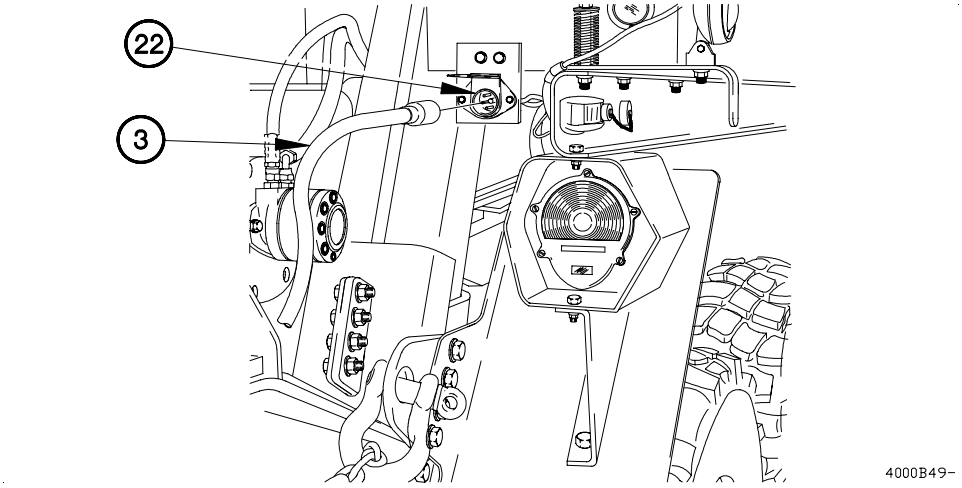
REAR DISCONNECTION - Continued

8. Loosen restraining strap (36).
9. Detach restraining strap hook (38) from seat support bracket (39).
10. Remove loop of restraining strap (36) from steering wheel (37).



11. Disconnect tow lights cable (3) from M1089A1 rear electrical connector (22).

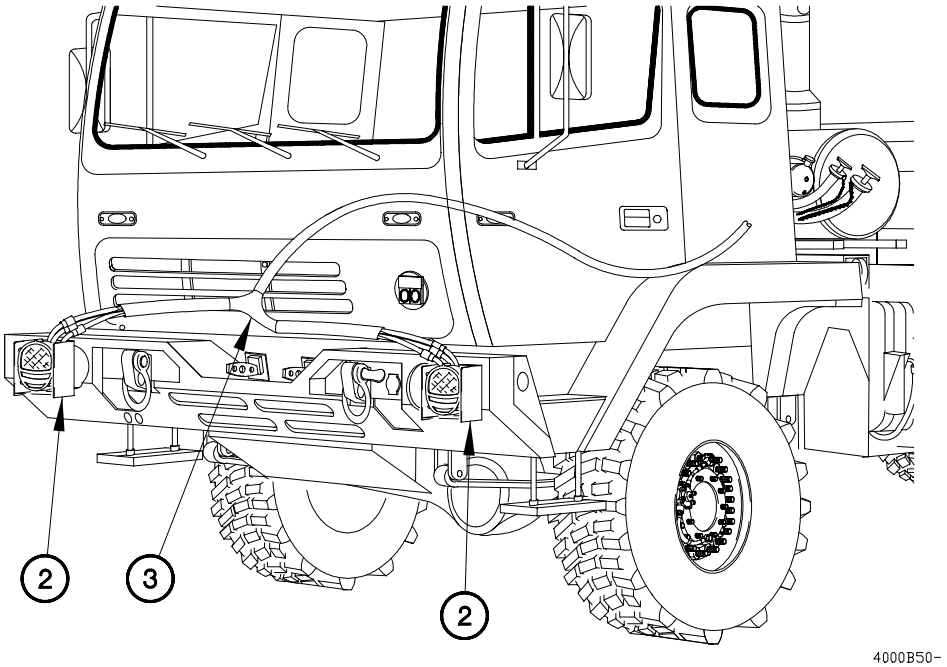
REAR DISCONNECTION - Continued



4000B49-

12. Disconnect tow lights cable (3) from two emergency tow lights (2).

13. Remove two emergency tow lights (2) from front of M1078/M1078A1 and/or M1083/M1083A1.



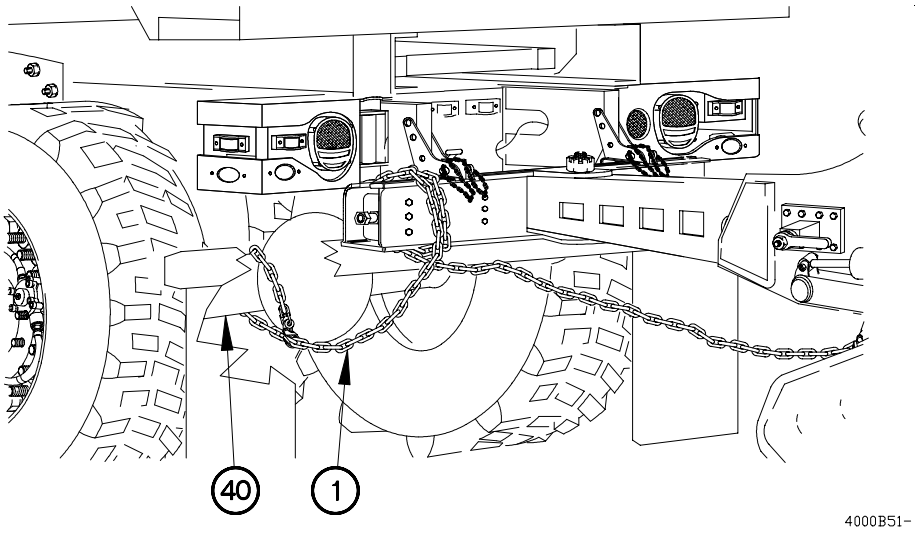
4000B50-

REAR DISCONNECTION - Continued

NOTE

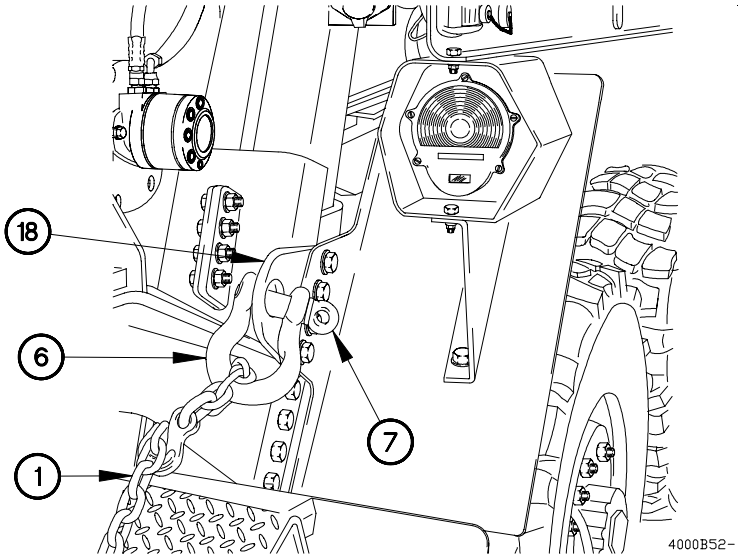
Left and right side chains are removed the same way. Right side shown.

14. Remove two chains (1) from M1078/M1078A1 and/or M1083/M1083A1 rear axle (40).



15. Remove other end of two chains (1) from M1089A1 rear shackles (6).

16. Remove two clevis pins (7) and shackles (6) from M1089A1 rear towing eyes(18).

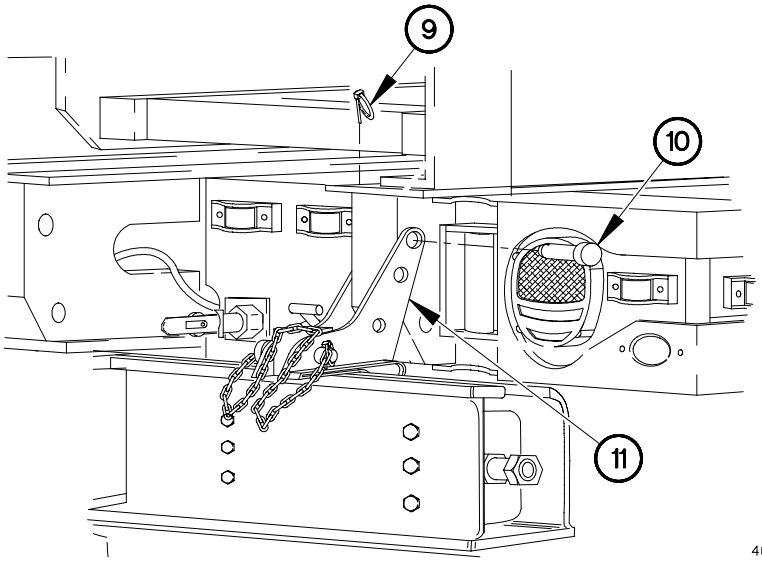


REAR DISCONNECTION - Continued

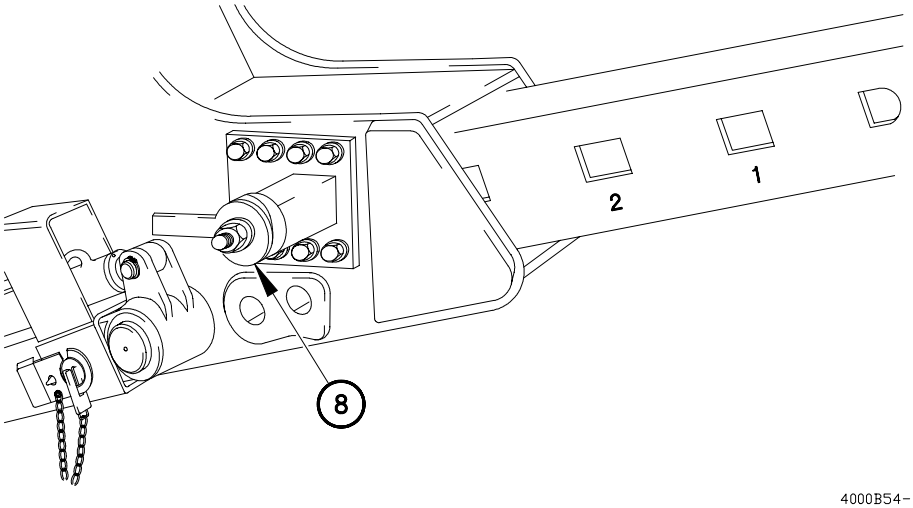
NOTE

Left and right side lift tools are removed the same way. Right side shown.

17. Remove two linchpins (9) and pins (10) from two lift tools (11).



18. Unlock stinger cam lock (8).



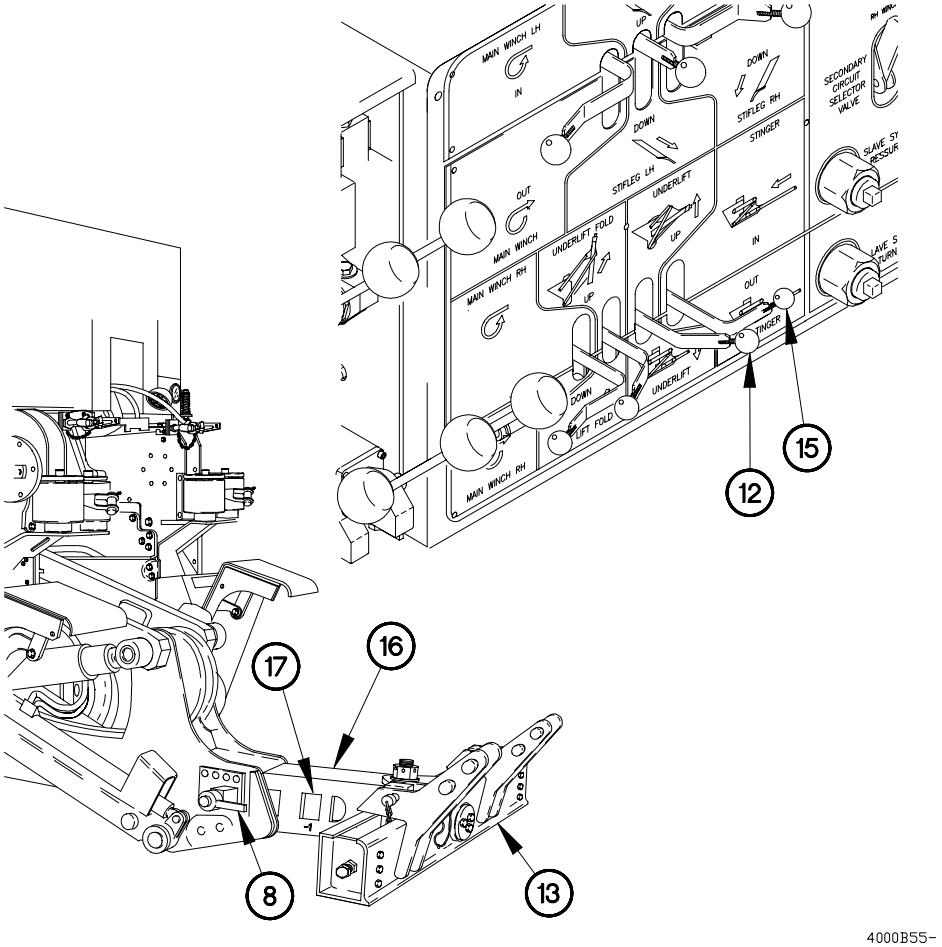
WARNING

Stinger cam lock must be locked in first rectangular hole on stinger before underlift assembly is folded into its stowed position. Crossbar could shift suddenly. Failure to comply may result in injury to personnel.

19. Place STINGER lever (15) to IN position to retract stinger (16) until stinger camlock (8) is aligned with first hole (17) in stinger.

20. Place UNDERLIFT lever (12) in DOWN position until crossbar (13) is fully down.

21. Lock stinger cam lock (8).



M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued 0040 00

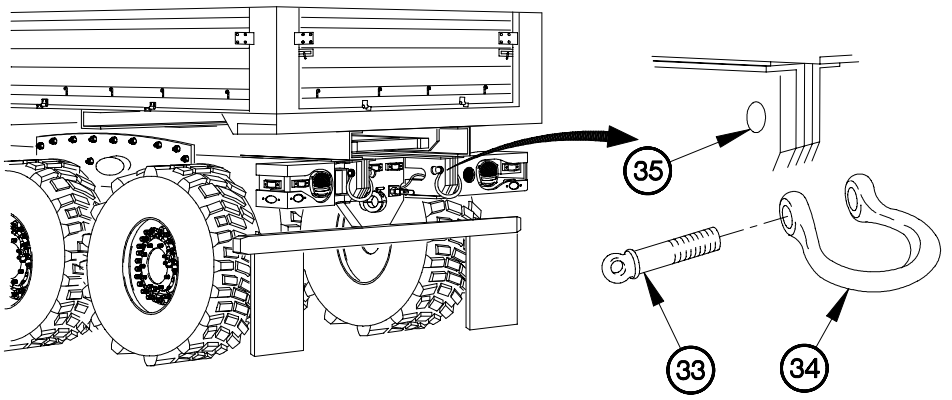
REAR DISCONNECTION - Continued

22. Remove two shackles (34) and clevis pins (33) from M1078/M1078A1 and/or M1083/M1083A1 cab stowage box.

NOTE

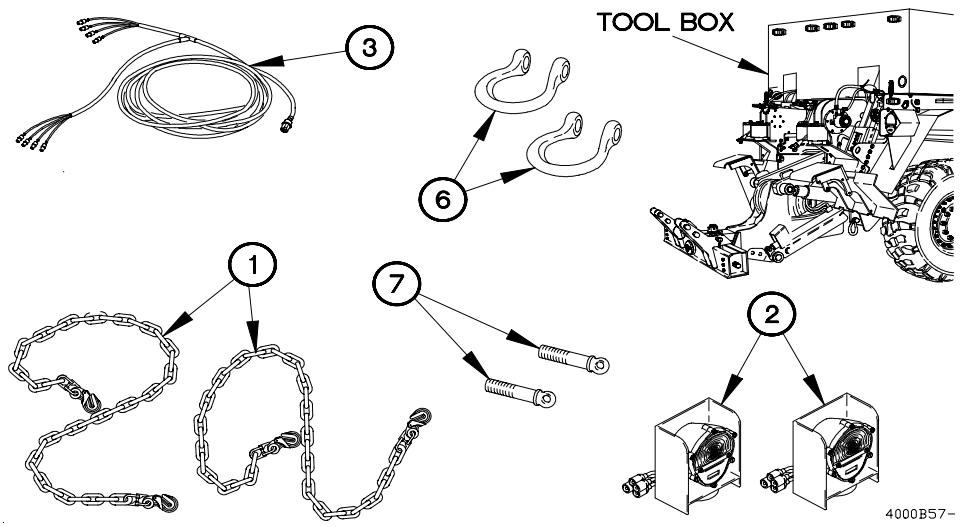
Left and right side shackles are installed the same way. Right side shown.

23. Install two shackles (34) on M1087/M1078A1 and/or M1083/M1083A1 tow eyes (35) with two clevis pins (33).



4000B56-

24. Stow two clevis pins (7), shackles (6), tow light cable (3), two emergency tow lights (2),l and chains (1) in tool box.



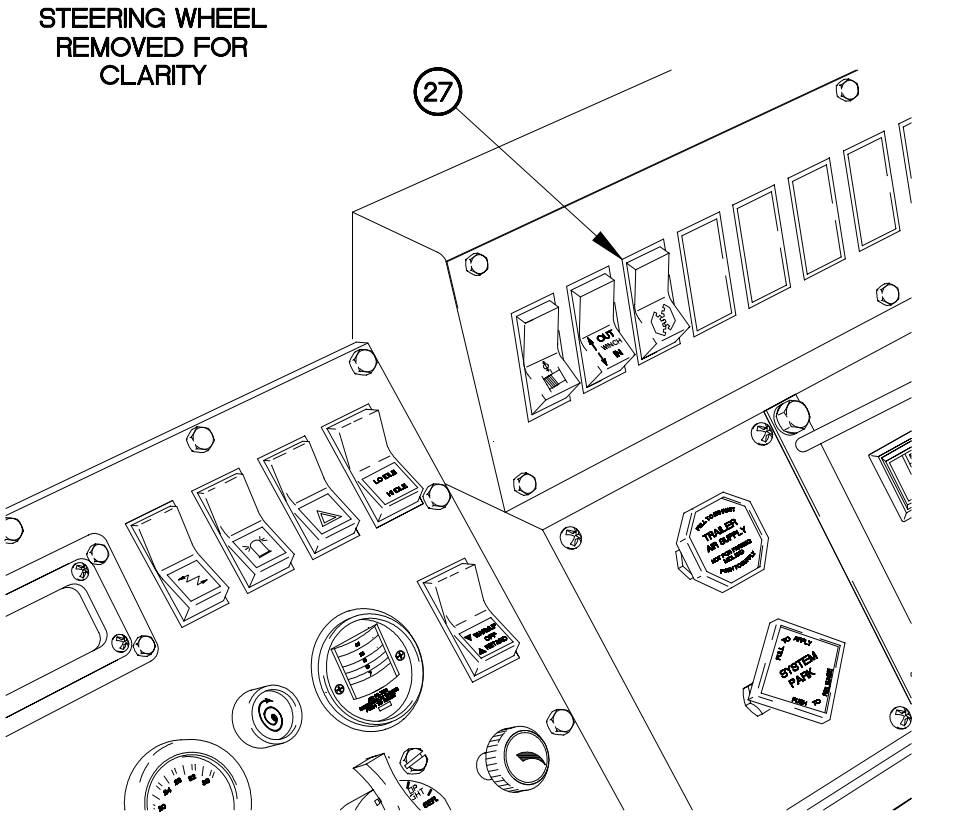
4000B57-

M1078/M1078A1 AND M1083/M1083A1 SERIES TOWING CONNECTION/DISCONNECTION - Continued

0040 00

REAR DISCONNECTION - Continued

25. Raise underlift assembly (WP 0035 00).
26. Disconnect WRECKER REMOTE CONTROL (WP 0035 00).
27. Position PTO switch (27) to off.
28. Shut down engine (WP 0018 00).
29. Lower and remove two amber warning lights (WP 0066 00).



4000B58-

END OF OPERATING PROCEDURE

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION 0041 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel Required
Two

Tools/Special Tools
Control, Remote Switching
(Item 9, Table 1, WP 0112 00)

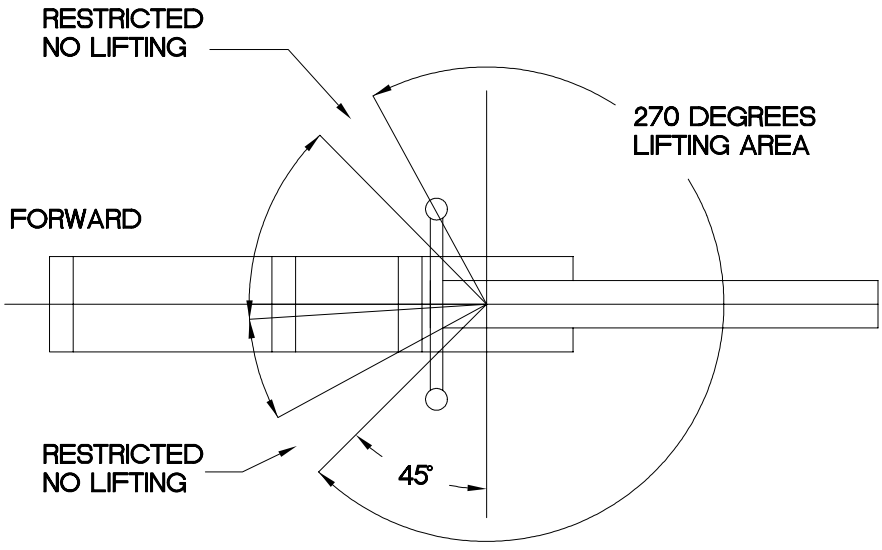
References
WP 0018 00
WP 0062 00

GENERAL

This work package provides the data and procedures for safely operating the MHC on the M1089A1 Wrecker. Items covered include Determine MHC Settings From Range Diagram, Prepare MHC For Use, Set Up Outriggers, Raise Boom To Operating Position, Connect REMOTE CONTROL UNIT, Rotate And Telescope Boom, Raise And Lower Load, Stow MHC, Disconnect REMOTE CONTROL UNIT, Stow Outriggers, and Shut Down MHC.

DETERMINE REQUIRED MHC SETTINGS FROM RANGE DIAGRAM

1. Use Area Definition Chart to determine position of MHC.



AREA DEFINITION CHART

4100B01-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

DETERMINE REQUIRED MHC SETTINGS FROM RANGE DIAGRAM - Continued

2. Use Table 1 to determine load capacities.

Table 1. LOAD CAPACITIES IN POUNDS (KILOGRAMS)

	ON OUTRIGGERS					ON RUBBER
	SIDE & REAR - 270 Degrees					BOOM CENTER OVER REAR
RADIUS	BOOM LENGTH IN FEET (METERS)					
	7.33 ft (2.23 m)	14.25 ft (4.34 m)	15.00 ft (4.57 m)	16.50 ft (5.03 m)	18.42 ft (5.81 m)	
4.00 (1.22)	11,000 lbs (4,988 kgs)					
7.00 (2.13)	11,000 lbs (4,988 kgs)					
8.00 (2.44)		11,000 lbs (4,988 kgs)	11,000 lbs (4,988 kgs)			
9.00 (2.74)		11,000 lbs (4,988 kgs)	11,000 lbs (4,988 kgs)	10,000 lbs (4,535 kgs)		
11.00 (3.35)		11,000 lbs (4,988 kgs)	11,000 lbs (4,988 kgs)	10,000 lbs (4,535 kgs)	9,000 lbs (4,082 kgs)	
12.50 (3.81)		10,000 lbs (4,535 kgs)	10,000 lbs (4,535 kgs)	10,000 lbs (4,535 kgs)	9,000 lbs (4,082 kgs)	

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

DETERMINE REQUIRED MHC SETTINGS FROM RANGE DIAGRAM - Continued

Table 1. LOAD CAPACITIES IN POUNDS (KILOGRAMS) - Continued

	ON OUTRIGGERS					ON RUBBER
	SIDE & REAR - 270 Degrees					BOOM CENTER
RADIUS	BOOM LENGTH IN FEET (METERS)					OVER REAR
	7.33 ft (2.23 m)	14.25 ft (4.34 m)	15.00 ft (4.57 m)	16.50 ft (5.03 m)	18.42 ft (5.81 m)	
14.00 (4.27)		10,000 lbs (4,535 kgs)	10,000 lbs (4,535 kgs)	9,000 lbs (4,082 kgs)	8,000 lbs (3,628 kgs)	
14.50 (4.42)			9,500 lbs (4,309 kgs)	8,500 lbs (3,855 kgs)	8,000 lbs (3,628 kgs)	
16.00 (4.88)				8,000 lbs (3,628 kgs)	7,500 lbs (3,401 kgs)	
17.50 (5.33)					7,000 lbs (3,175 kgs)	
18.00 (5.49)					6,500 lbs (2,948 kgs)	5,000 lbs (2,268 kgs)

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

DETERMINE REQUIRED MHC SETTINGS FROM RANGE DIAGRAM - Continued

3. Determine load distance from MHC and locate dimension along bottom horizontal line (1). (Example: Load is 11 ft (3m) from MHC.)

4. Follow line vertically up graph until it intersects with boom length arc (2). Mark intersection point (3).

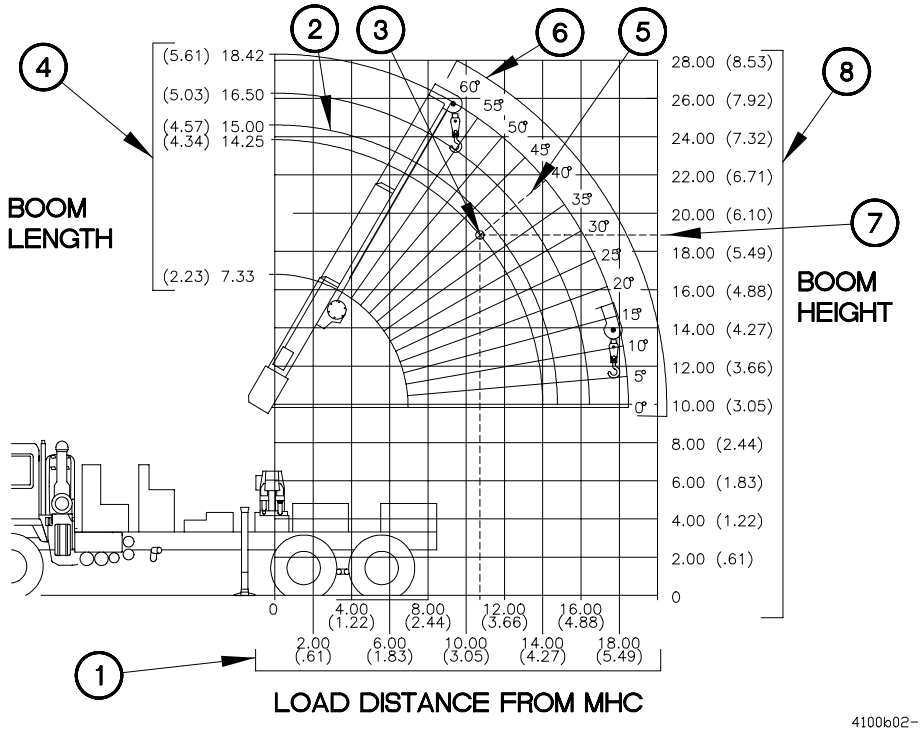
5. Follow line along arc and make note of boom length (4). (Example: If load distance is 11 ft (3 m) from MHC, boom length is 14.25 ft (4 m).)

6. Return to intersection point (3). Follow diagonal line (5) to determine boom angle setting (6). (Example: Boom angle setting is 40 degrees from intersection point.)

7. Return to intersection point (3). Follow horizontal line (7) to determine boom height (8). (Example: Boom height is 19 ft (5 m) from intersection point.)

8. Locate load distance from MHC in Table 2.

9. Follow across table to verify height of boom and to determine maximum load. (Example: Boom height is 19 ft (5 m) and maximum MHC load is 11,000 lbs (4,994 kgs).)



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

DETERMINE REQUIRED MHC SETTINGS FROM RANGE DIAGRAM - Continued

Table 2. MHC Range Diagram Summary.

DISTANCE LOAD IS FROM MHC	BOOM ANGLE	HEIGHT OF BOOM	MAXIMUM LOAD
18 ft (5.5 m)	5 degrees	11.5 ft (3.5 m)	6,500 lbs (2,951 kgs)[1]
17.5 ft (5.3 m)	15 degrees	15 ft (4.6 m)	7,000 lbs (3,178 kgs)
16 ft (4.9 m)	27 degrees	19 ft (5.8 m)	7,500 lbs (3,405 kgs)
	10 degrees	13 ft (4.0 m)	8,000 lbs (3,632 kgs)
14.5 ft (4.4 m)	38 degrees	21.5 ft (6.6 m)	8,000 lbs (3,632 kgs)
	27 degrees	18 ft (5.5 m)	8,500 lbs (3,859 kgs)
	15 degrees	14 ft (4.3 m)	9,500 lbs (4,313 kgs)
14 ft (4.3 m)	39 degrees	22 ft (6.7 m)	8,000 lbs (3,632 kgs)
	30 degrees	18.5 ft (5.6 m)	9,000 lbs (4,086 kgs)
	17 degrees	15 ft (4.6 m)	10,000 lbs (4,540 kgs)
	5 degrees	11 ft (3.4 m)	10,000 lbs (4,540 kgs)
12.5 ft (3.8 m)	47 degrees	23.5 ft (7.2 m)	9,000 lbs (4,086 kgs)
	42 degrees	21 ft (6.4 m)	10,000 lbs (4,540 kgs)
	34 degrees	18.5 ft (5.6 m)	10,000 lbs (4,540 kgs)
	28 degrees	16.5 ft (5.0 m)	10,000 lbs (4,540 kgs)
11 ft (3.4 m)	53 degrees	25 ft (7.6 m)	9,000 lbs (4,086 kgs)
	47 degrees	22.5 ft (6.9 m)	10,000 lbs (4,540 kgs)
	43 degrees	20 ft (6.1 m)	11,000 lbs (4,994 kgs)
	40 degrees	19 ft (5.8 m)	11,000 lbs (4,994 kgs)
9 ft (2.7 m)	57 degrees	24 ft (7.3 m)	10,000 lbs (4,540 kgs)
	53 degrees	22 ft (6.7 m)	11,000 lbs (4,994 kgs)
	50 degrees	21 ft (6.4 m)	11,000 lbs (4,994 kgs)
8 ft (2.4 m)	57 degrees	22.5 ft (6.9 m)	11,000 lbs (4,994 kgs)
	55 degrees	21.5 ft (6.6 m)	11,000 lbs (4,994 kgs)

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

DETERMINE REQUIRED MHC SETTINGS FROM RANGE DIAGRAM - Continued

Table 2. MHC Range Diagram Summary.

DISTANCE LOAD IS FROM MHC	BOOM ANGLE	HEIGHT OF BOOM	MAXIMUM LOAD
7 ft (2.1 m)	20 degrees	13 ft (5.0 m)	11,000 lbs (4,994 kgs)
4 ft (1.2 m)	55 degrees	16 ft (4.9 m)	11,000 lbs (4,994 kgs)

[1] Maximum load is only 5,000 lbs (2,270 kgs) when boom is centered over rear of vehicle.

PREPARE M1089A1 MHC FOR USE

WARNING

Do not operate Material Handling Crane (MHC) unless outriggers are set up and MHC is level from side to side. Failure to comply may result in serious injury or death to personnel.

Set up stifflegs (refer to WP 0032 00) if load is swung around rear of vehicle. Vehicle could turn over if not supported. Failure to comply may result in serious injury or death to personnel.

Operator must keep load in sight at all times while operating Material Handling Crane (MHC). Load may unexpectedly shift. Failure to comply may result in serious injury or death to personnel.

Do not operate Material Handling Crane (MHC) and 15K Self-Recovery Winch (SRW) at the same time. Lock may unexpectedly shift. Failure to comply may result in serious injury or death to personnel.

CAUTION

Hydraulic oil level must be at FULL line and hydraulic shutoff and return valves must be opened before Material Handling Crane (MHC) is operated. Failure to comply may result in damage to equipment.

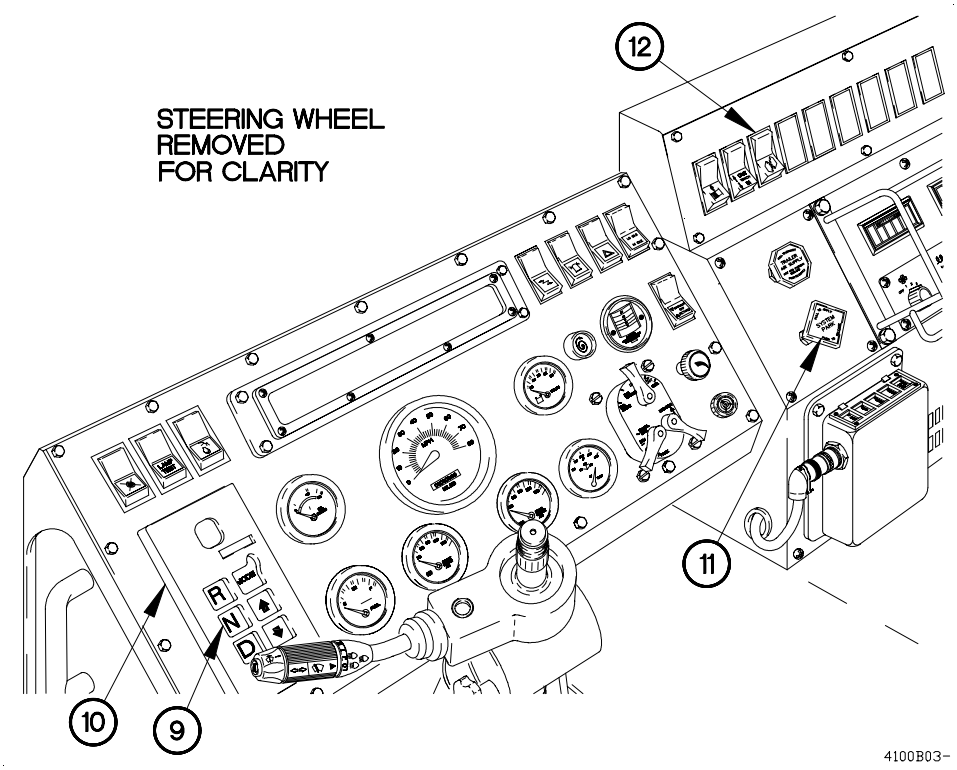
NOTE

MHC will not operate if hydraulic or electrical systems fail. Refer to Table 2 to verify that MHC settings are correct for load being lifted. Refer to WP 0062 00 if hydraulic or electrical systems fail. MHC can operate on side slope up to 5 degrees.

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

PREPARE MHC FOR USE - Continued

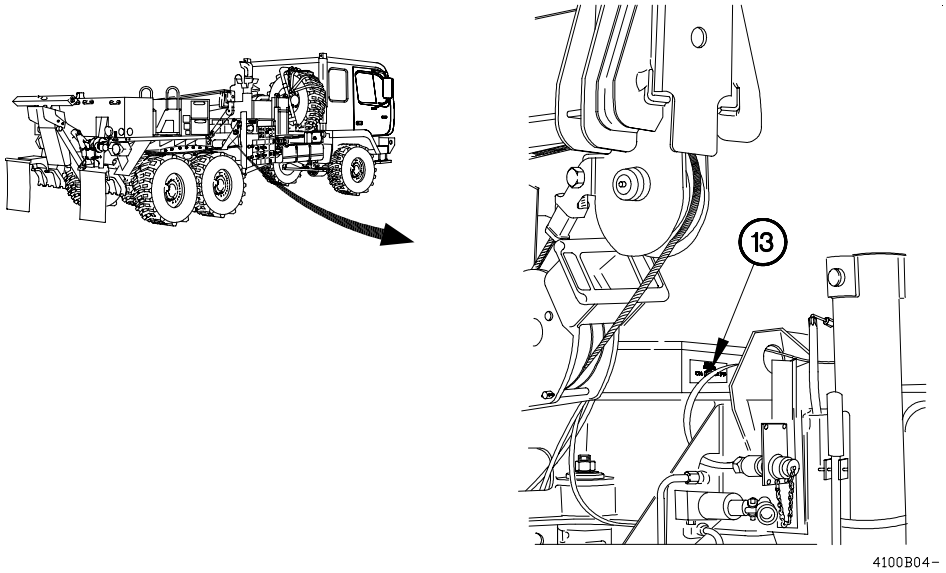
1. Start engine (WP 0018 00).
2. Position vehicle on level ground so all loading and unloading can be performed from one position.
3. Chock wheels (WP 0018 00).
4. Press N (Neutral) button (9) on WTEC III TPSS (10).
5. Pull out SYSTEM PARK control (11).
6. Position PTO switch (12) to on.



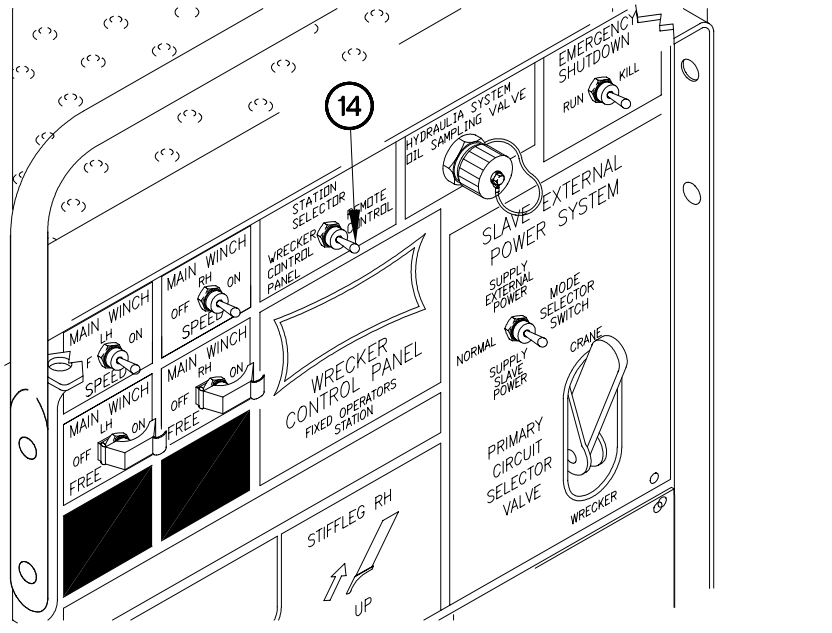
M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

PREPARE MHC FOR USE - Continued

7. Position MAIN POWER ON/OFF switch (13) to on.



8. Position STATION SELECTOR switch (14) to WRECKER CONTROL PANEL.



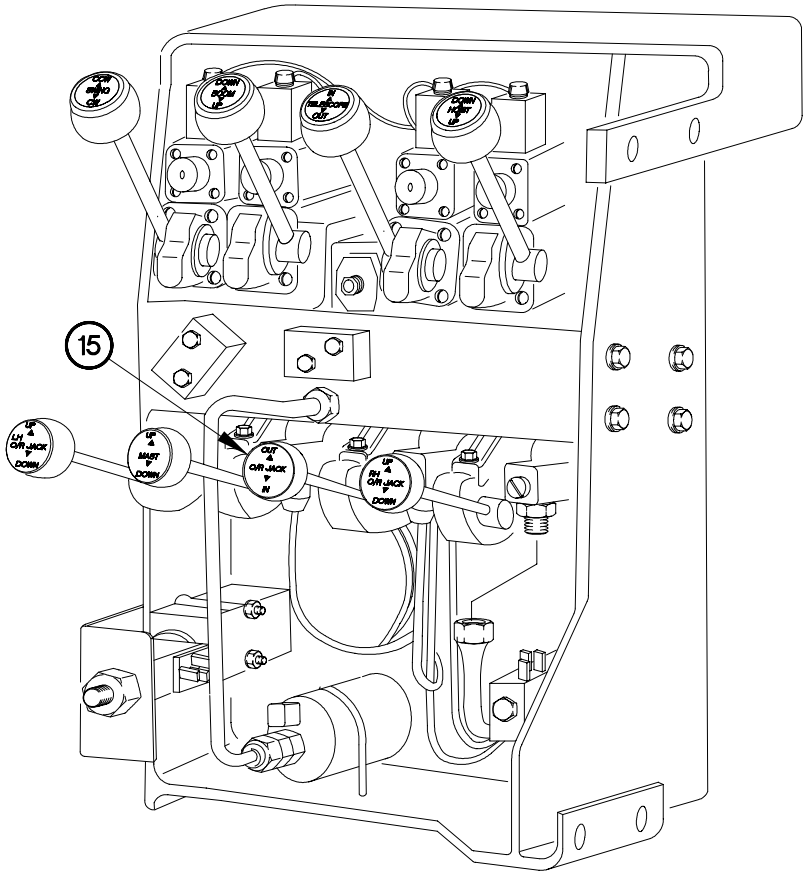
M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

SET UP OUTRIGGERS

WARNING

Area must be clear on both sides of vehicle before extending outriggers. Failure to comply may result in serious injury to personnel.

1. Move O/R JACK lever (15) to OUT position until outriggers are fully extended.



4100B06-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

SET UP OUTRIGGERS - Continued

NOTE

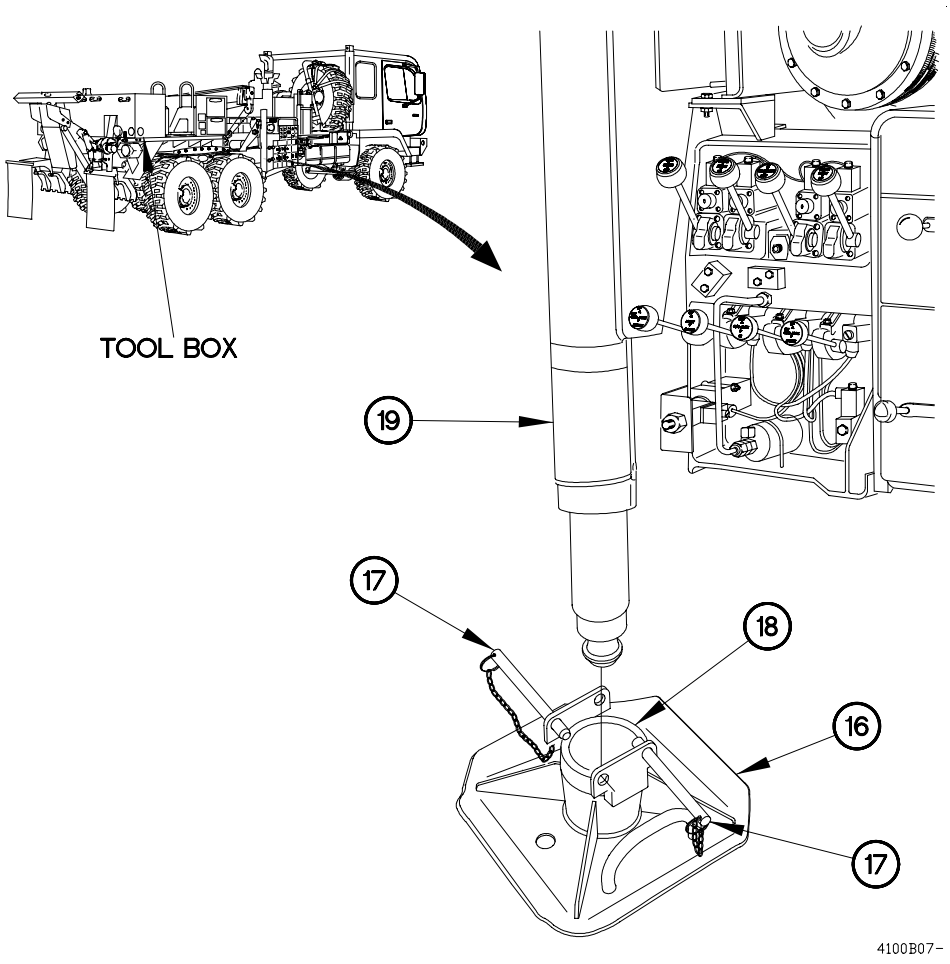
Both outrigger pads are removed the same way. Right outrigger pad shown.

2. Remove two outrigger pads (16) from tool box.

3. Remove two pins (17) from outrigger pad (16).

4. Clean all dirt and debris from socket (18) in outrigger pad (16) and from end of outrigger (19).

5. Install outrigger pad (16) on end of outrigger (19) with two pins (17).



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

SET UP OUTRIGGERS - Continued

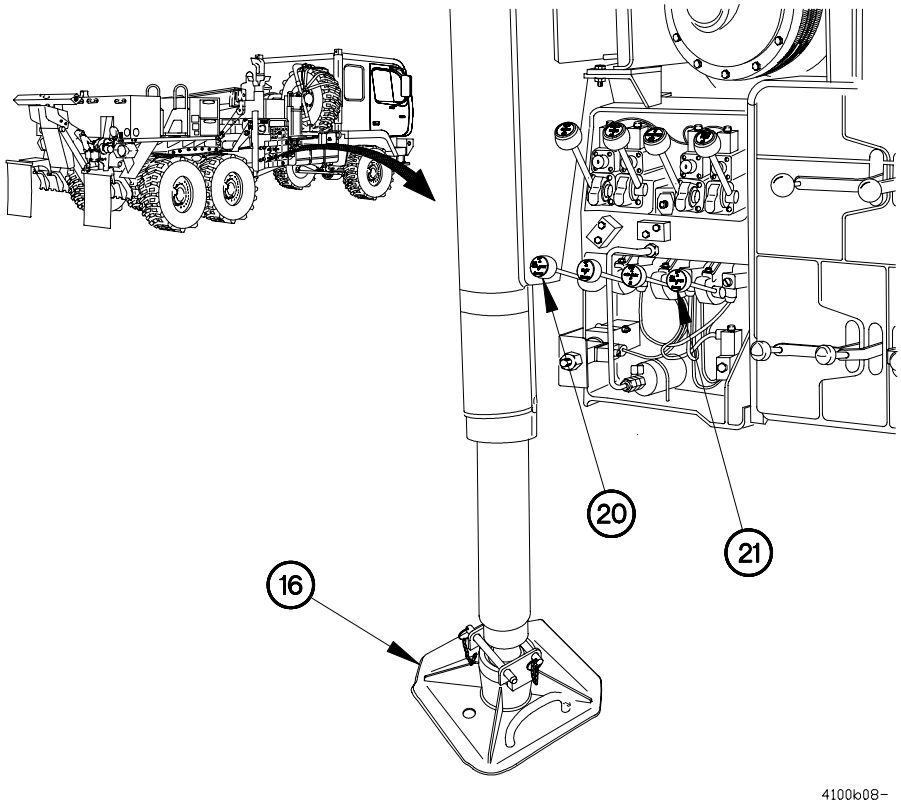
WARNING

Keep hands and feet clear of the outriggers during operation. Failure to comply may result in injury to personnel.

Goggles must be worn while operating Material Handling Crane (MHC) controls. Blowing dust and debris may become airborne while engine is running. Failure to comply may result in injury to personnel.

6. Move LH O/R JACK lever (20) to DOWN position until outrigger pad (16) is on ground.

7. Move RH O/R JACK lever (21) to DOWN position until outrigger pad (16) is on ground.



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

SET UP OUTRIGGERS - Continued

WARNING

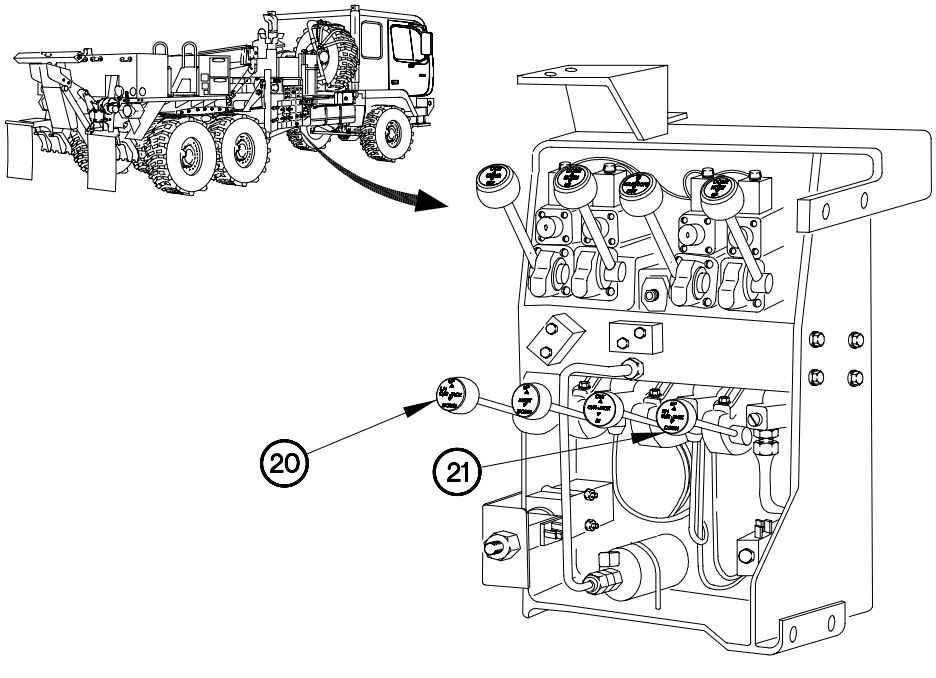
Do not raise vehicle tires off ground with outriggers. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

Outriggers must be positioned so that Material Handling Crane (MHC) is level from side to side. Use of MHC when vehicle is not level can cause vehicle to roll over. Failure to comply may result in serious injury or death to personnel.

NOTE

Outriggers should be lowered just enough so that all tires have firm contact with that ground but do not bulge from weight. Left outrigger or right outrigger may need to be lowered slightly more than the other to level MHC from side to side.

8. Move LH O/R JACK lever (20) and RH O/R JACK lever (21) to DOWN position until most of vehicle weight is off rear tires.



4100B09-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE BOOM TO OPERATING POSITION

WARNING

Do not disconnect cable from stowage ring until boom is raised to a 30-degree angle. Hook assembly could fall. Failure to comply may result in injury to personnel.

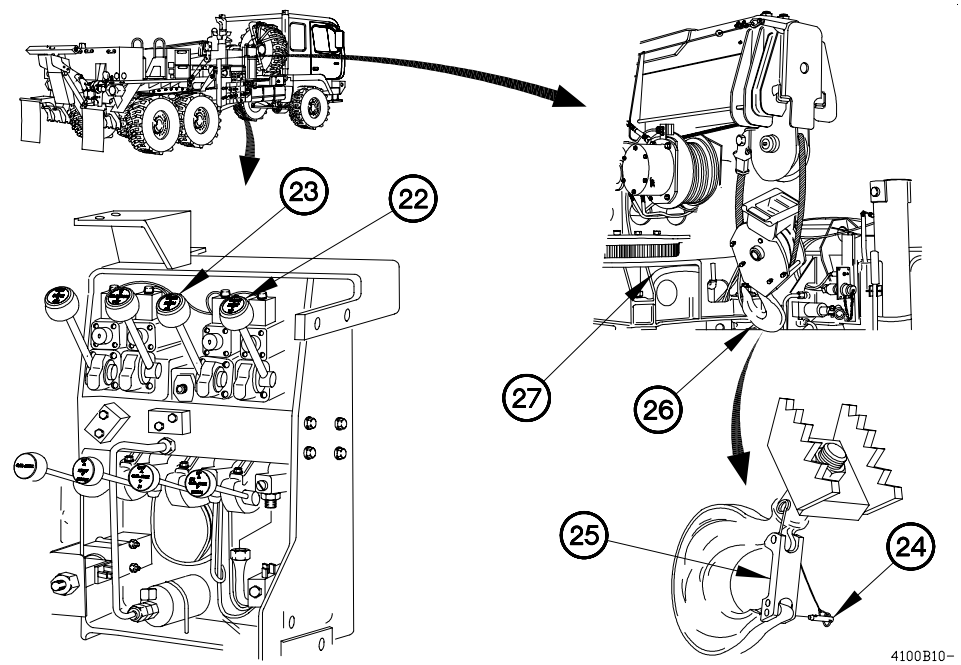
CAUTION

Do not allow excessive slack to build up when paying out cable. Cable may get tangled on drum. Failure to comply may result in damage to equipment.

NOTE

Operate HOIST lever and BOOM lever at the same time.

1. Move HOIST lever (22) to DOWN position and BOOM lever (23) to UP position until boom is at a 30-degree angle.
2. Remove safety pin (24) from hook assembly latch (25).
3. Disconnect hook assembly (26) from stowage ring (27).



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE BOOM TO OPERATING POSITION - Continued

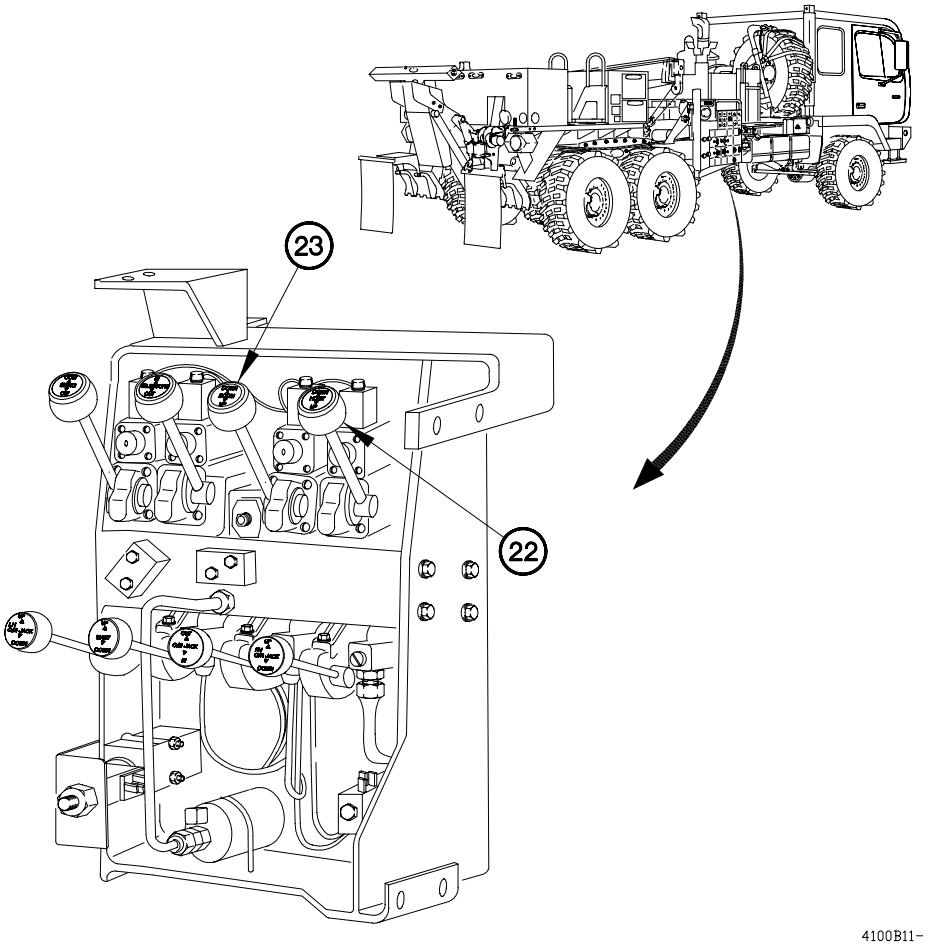
WARNING

Keep boom clear of all electrical lines and other obstacles while operating Material Handling Crane (MHC). Failure to comply may result in serious injury or death to personnel.

NOTE

Operate HOIST lever and BOOM lever at the same time.

4. Position HOIST lever (22) to DOWN position and BOOM lever (23) to UP position until boom angle is approximately 45 degrees.



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE BOOM TO OPERATING POSITION - Continued

CAUTION

Never telescope boom or lift load unless mast is fully raised. Failure to comply may result in damage to equipment.

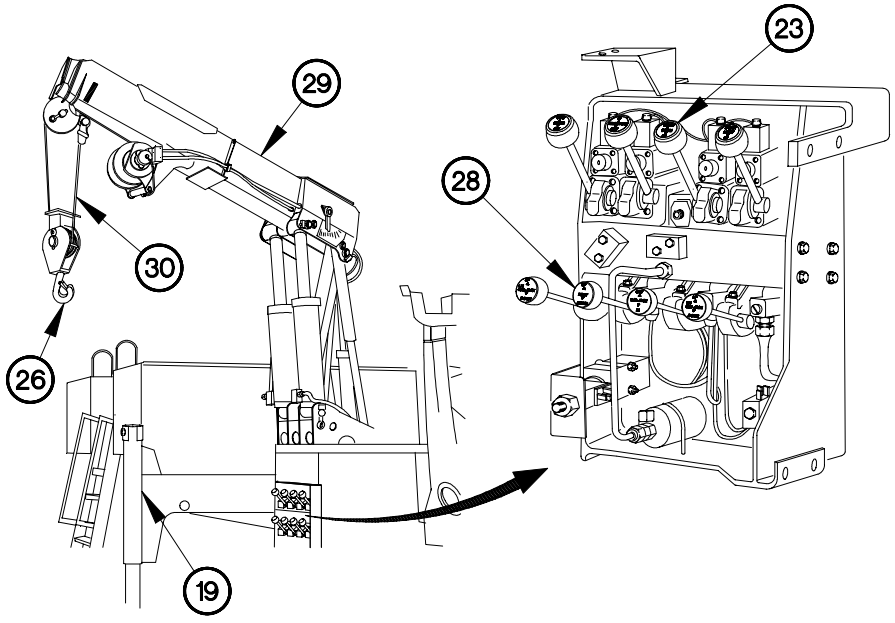
Keep hook assembly from contacting outrigger while raising mast. Failure to comply may result in damage to equipment.

NOTE

Operate BOOM lever and MAST lever at the same time to maintain boom at approximately a 45-degree angle.

5. Move BOOM lever (23) to UP position and MAST lever (28) to UP position until mast (29) is fully raised.

6. Reel in cable (30) so hook assembly (26) clears outriggers (19) as mast (29) is being raised.



4100b12-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE BOOM TO OPERATING POSITION - Continued

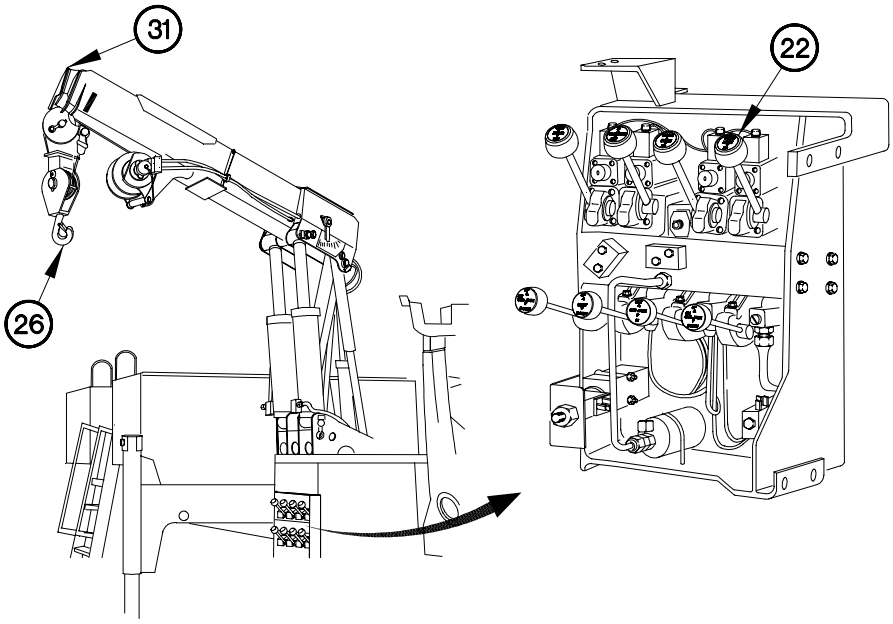
7. To pre-operational check MHC Overload Shutdown System (OSS) perform the following:

   a. Position HOIST lever (22) in UP position until hook assembly (26) is against boom nose (31).

NOTE

Hydraulic system is in by-pass mode when hydraulic system no longer operates.

   b. Hold HOIST lever (22) in UP position until hydraulic system is in by-pass mode.



4100B13-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE BOOM TO OPERATING POSITION - Continued

CAUTION

There should be no movement of the Material Handling Crane (MHC) during this check. If there is movement in the MHC, notify Unit Maintenance. Failure to comply may result in damage to equipment

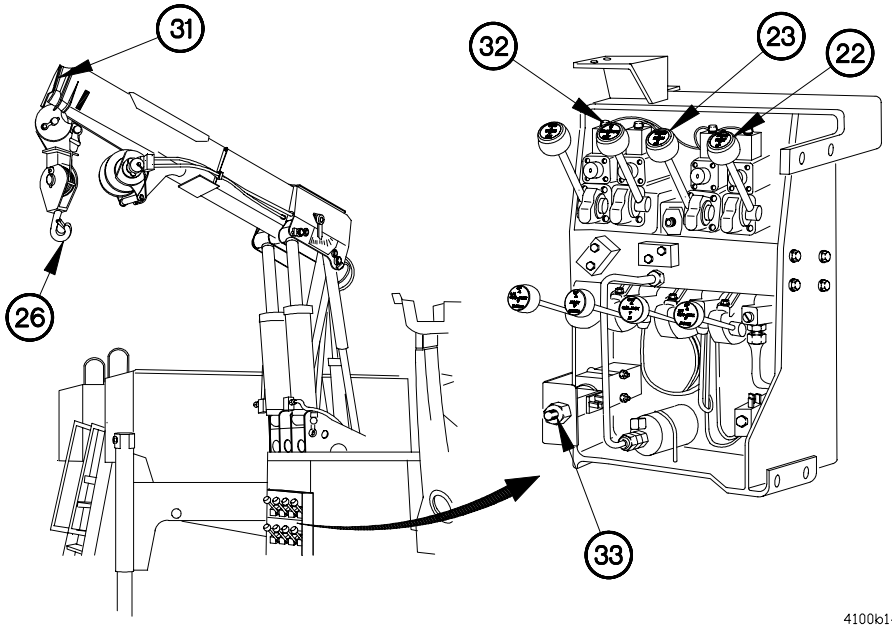
c. Continue holding HOIST lever (22) in UP position while placing TELESCOPE lever (32) in OUT position and BOOM lever (23) first in the UP position and then in the DOWN position.

CAUTION

Approximately six seconds should elapse before Overload Shutdown System resets and boom responds to down movement. If no movement occurs, notify Unit Maintenance. Failure to comply may result in damage to equipment.

d. While holding BOOM lever (23) in the DOWN position, pay out hook assembly (26) so no contact is made with boom nose (31).

e. Press MANUAL OVERRIDE switch (33) to reset.



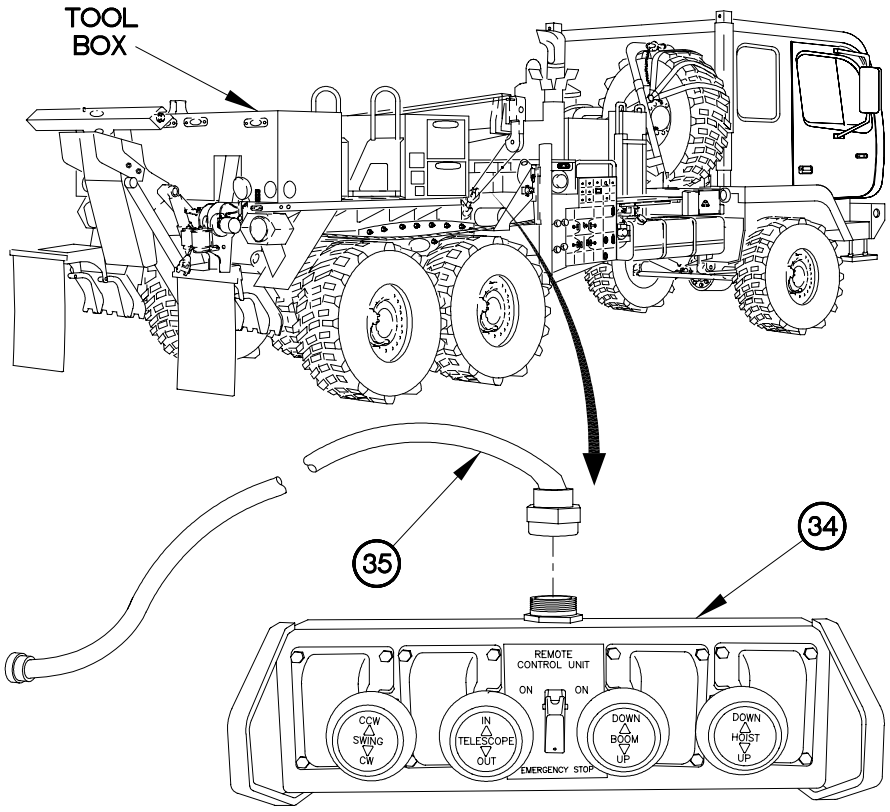
M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

CONNECT REMOTE CONTROL UNIT

WARNING

Material Handling Crane (MHC) must be operated with REMOTE CONTROL UNIT if Operator is not able to keep load in sight at all times during operation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

1. Remove REMOTE CONTROL UNIT (34) and cable (35) from tool box.



4100B15-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

CONNECT REMOTE CONTROL UNIT - Continued

2. Position MAIN POWER ON/OFF switch (13) to OFF.

3. Position power switch (36) on REMOTE CONTROL UNIT (34) to EMERGENCY STOP.

4. Connect remote control cable (35) to REMOTE CONTROL UNIT (34).

WARNING

Main panel Material Handling Crane (MHC) controls must not be used when MHC REMOTE CONTROL UNIT is connected. MHC may move inadvertently. Failure to comply may result in injury to personnel.

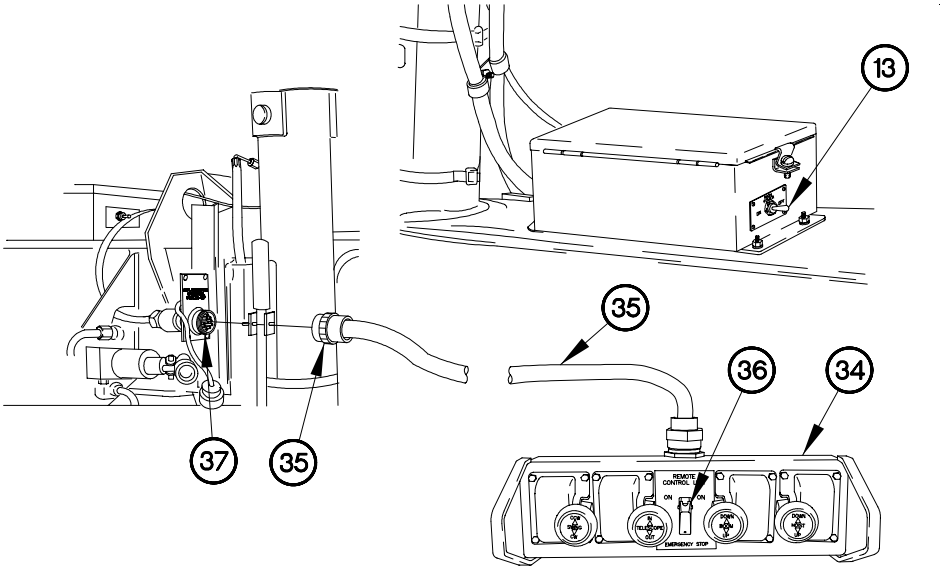
NOTE

RH and LH REMOTE CONTROL UNIT hook-up is the same. RH REMOTE CONTROL UNIT hook-up shown.

5. Connect other end of remote control cable (35) to REMOTE CONTROL HOOK-UP receptacle (37).

6. Position MAIN POWER ON/OFF switch (13) to ON.

7. Position switch (36) on REMOTE CONTROL UNIT (34) to ON.



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

ROTATE AND TELESCOPE BOOM

WARNING

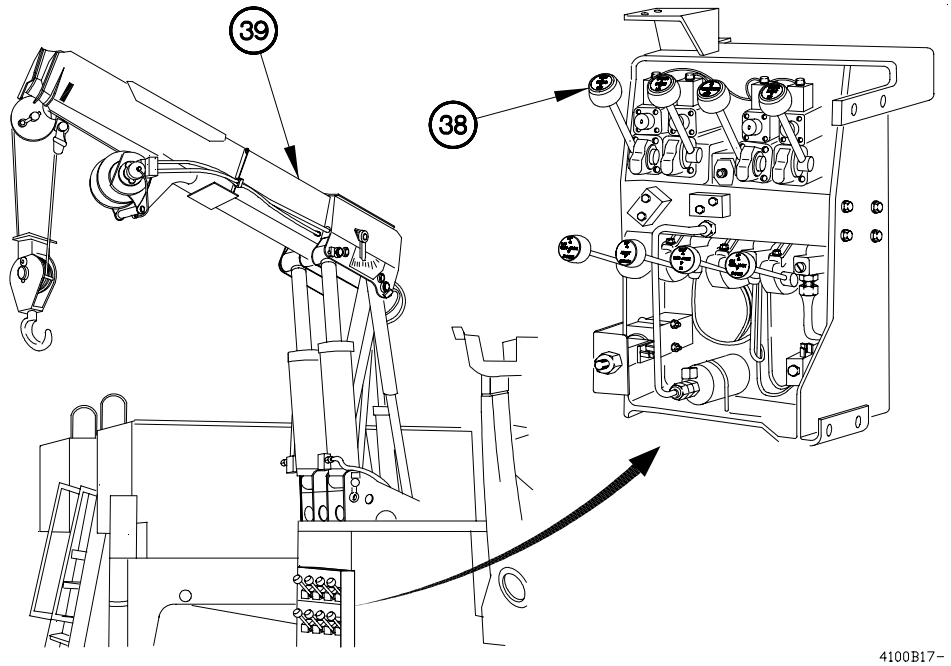
Keep boom clear of all electrical lines and other obstacles while operating Material Handling Crane (MHC). Failure to comply may result in serious injury or death to personnel.

Area must be clear of personnel before operating swing or telescoping boom. Boom must be rotated and telescoped slow enough so Operator has control of load. If Operator cannot see load during operation, operate Material Handling Crane (MHC) with REMOTE CONTROL UNIT. Failure to comply may result in serious injury or death to personnel.

NOTE

Operate MHC control levers using even pressure. Moving lever slightly will cause slow movement MHC. Moving lever to full travel will cause faster movement of MHC.

1. Move SWING lever (38) to CW position to move boom (39) to the right.
2. Move SWING lever (38) to CCW position to move boom (39) to the left.



4100B17-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

ROTATE AND TELESCOPE BOOM - Continued

WARNING

Attach guide lines to load. An assistant is required to attach guide lines. Failure to comply may result in serious injury or death to personnel.

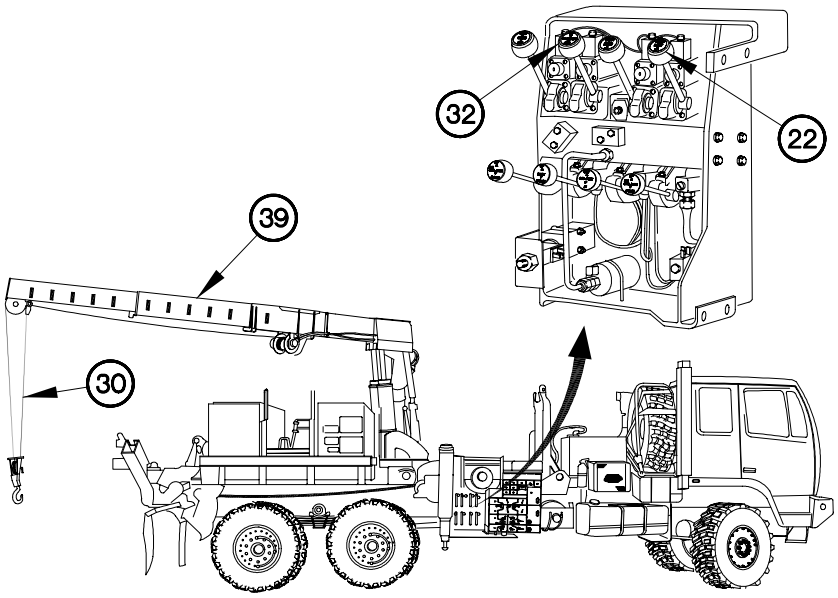
CAUTION

Keep hook assembly at least 2 ft (0.6 m) from end of boom. If hook assembly hits end of boom, Material Handling Crane (MHC) will lose power for several seconds. Failure to comply may result in damage to equipment.

NOTE

Operate HOIST lever and TELESCOPE lever at the same time.

3. Move HOIST lever (22) to DOWN position to pay out cable (30) and TELESCOPE lever (32) to OUT position to extend boom (39).



4100B18-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE AND LOWER LOAD

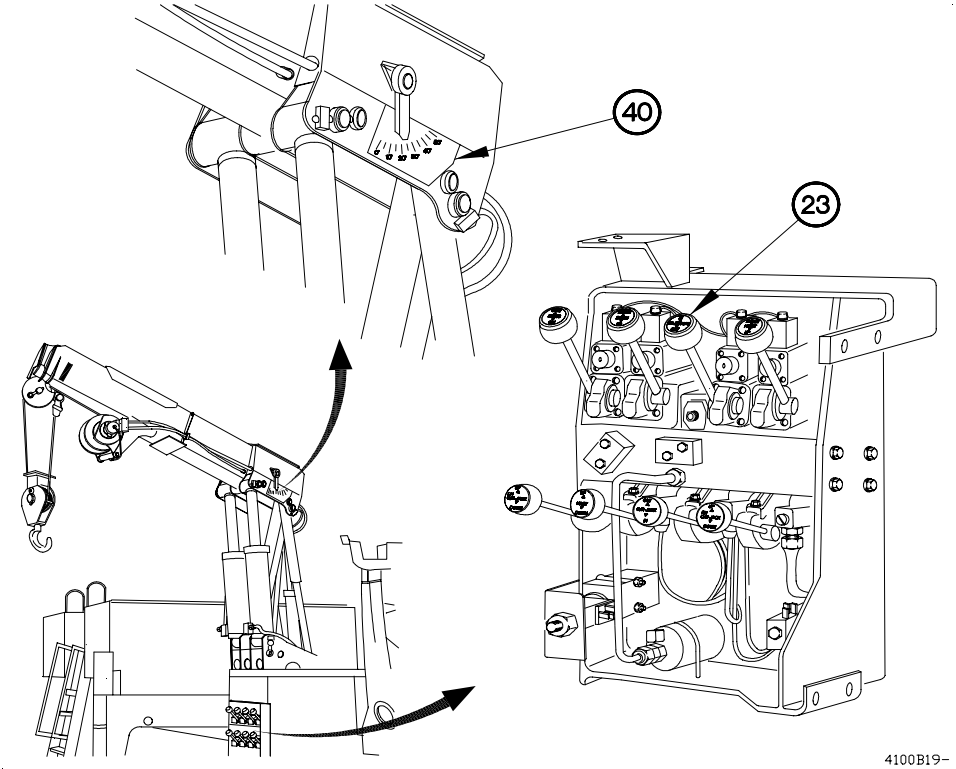
WARNING

Area must be clear of personnel before operating swing or telescoping boom. Boom must be rotated and telescoped slowly enough so Operator has control of load. If Operator cannot see load during operation, operate Material Handling Crane (MHC) with REMOTE CONTROL UNIT. Failure to comply may result in serious injury or death to personnel or damage to equipment.

Attach guide lines to load to keep control of load at all times. An assistant is required to attach guide lines. Failure to comply may result in serious injury or death to personnel or damage to equipment.

1. Refer to Table 3, Material Handling Crane (MHC) Range Diagram, to determine correct boom angle setting.

2. Move BOOM lever (23) to UP position until boom angle indicator (40) shows correct boom angle as determined in step 1.



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE AND LOWER LOAD - Continued

Table 3. Material Handling Crane (MHC) Range Diagram Summary.

DISTANCE LOAD IS FROM MATERIAL HANDLING CRANE (MHC)	BOOM ANGLE	HEIGHT OF BOOM	MAXIMUM LOAD
18 ft (5.5 m)	5 degrees	11.5 ft (3.5 m)	6,500 lbs (2,951 kgs)[1]
17.5 ft (5.3 m)	15 degrees	15 ft (4.6 m)	7,000 lbs (3,178 kgs)
16 ft (4.9 m)	27 degrees	19 ft (5.8 m)	7,500 lbs (3,405 kgs)
	10 degrees	13 ft (4.0 m)	8,000 lbs (3,632 kgs)
14.5 ft (4.4 m)	38 degrees	21.5 ft (6.6 m)	8,000 lbs (3,632 kgs)
	27 degrees	18 ft (5.5 m)	8,500 lbs (3,859 kgs)
	15 degrees	14 ft (4.3 m)	9,500 lbs (4,313 kgs)
14 ft (4.3 m)	39 degrees	22 ft (6.7 m)	8,000 lbs (3,632 kgs)
	30 degrees	18.5 ft (5.6 m)	9,000 lbs (4,086 kgs)
	17 degrees	15 ft (4.6 m)	10,000 lbs (4,540 kgs)
	5 degrees	11 ft (3.4 m)	10,000 lbs (4,540 kgs)
12.5 ft (3.8 m)	47 degrees	23.5 ft (7.2 m)	9,000 lbs (4,086 kgs)
	42 degrees	21 ft (6.4 m)	10,000 lbs (4,540 kgs)
	34 degrees	18.5 ft (5.6 m)	10,000 lbs (4,540 kgs)
	28 degrees	16.5 ft (5.0 m)	10,000 lbs (4,540 kgs)
11 ft (3.4 m)	53 degrees	25 ft (7.6 m)	9,000 lbs (4,086 kgs)
	47 degrees	22.5 ft (6.9 m)	10,000 lbs (4,540 kgs)
	43 degrees	20 ft (6.1 m)	11,000 lbs (4,994 kgs)
	40 degrees	19 ft (5.8 m)	11,000 lbs (4,994 kgs)
9 ft (2.7 m)	57 degrees	24 ft (7.3 m)	10,000 lbs (4,540 kgs)
	53 degrees	22 ft (6.7 m)	11,000 lbs (4,994 kgs)
	50 degrees	21 ft (6.4 m)	11,000 lbs (4,994 kgs)
8 ft (2.4 m)	57 degrees	22.5 ft (6.9 m)	11,000 lbs (4,994 kgs)
	55 degrees	21.5 ft (6.6 m)	11,000 lbs (4,994 kgs)
7 ft (2.1 m)	20 degrees	13 ft (5.0 m)	11,000 lbs (4,994 kgs)
4 ft (1.2 m)	55 degrees	16 ft (4.9 m)	11,000 lbs (4,994 kgs)

[1] Maximum load is only 5,000 lbs (2,270 kgs) when boom is centered over rear of vehicle.

M1089A1 MATERIAL HANDLING CRANE (MHC) 0041 00
OPERATION - Continued

RAISE AND LOWER LOAD - Continued

CAUTION

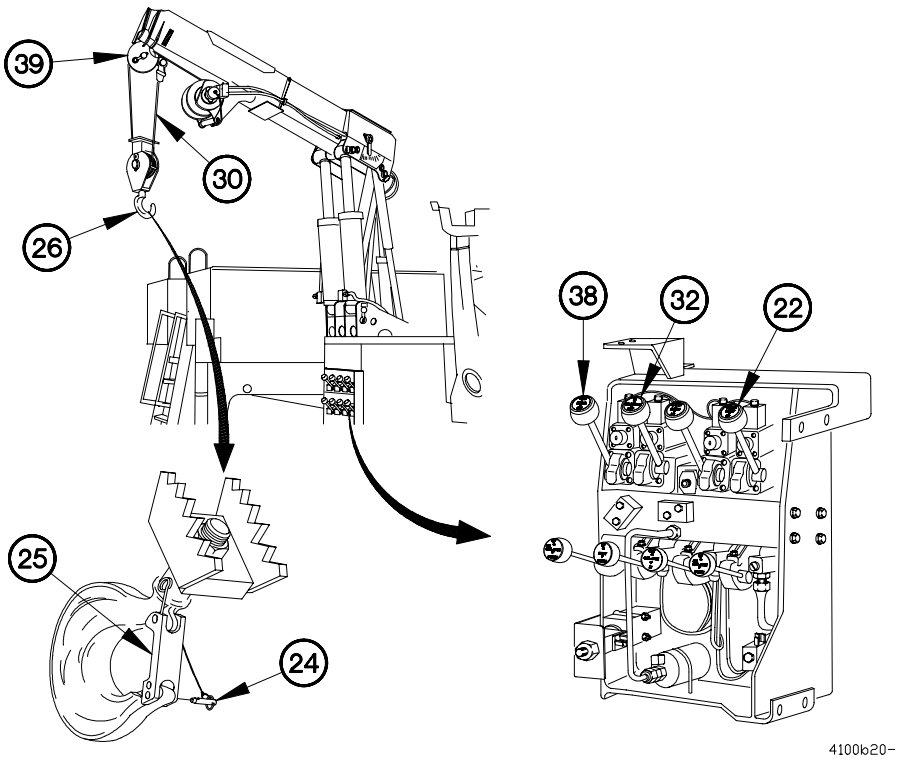
Do not allow excessive slack to build up when paying out cable. Failure to comply may result in damage to equipment.

Use only a straight pull when lifting a load. Failure to comply may result in damage to equipment.

3. Operate SWING lever (38) and TELESCOPE lever (32) to center end of boom (39) directly over load.

4. Operate HOIST lever (22) to pay out or reel in cable (30) and to connect hook assembly (26) to load.

5. Install safety pin (24) in hook assembly latch (25).



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

RAISE AND LOWER LOAD - Continued

WARNING

Ensure that there are at least five wraps of cable on hoist drum at all times. Failure to comply may result in serious injury or death to personnel or damage to equipment.

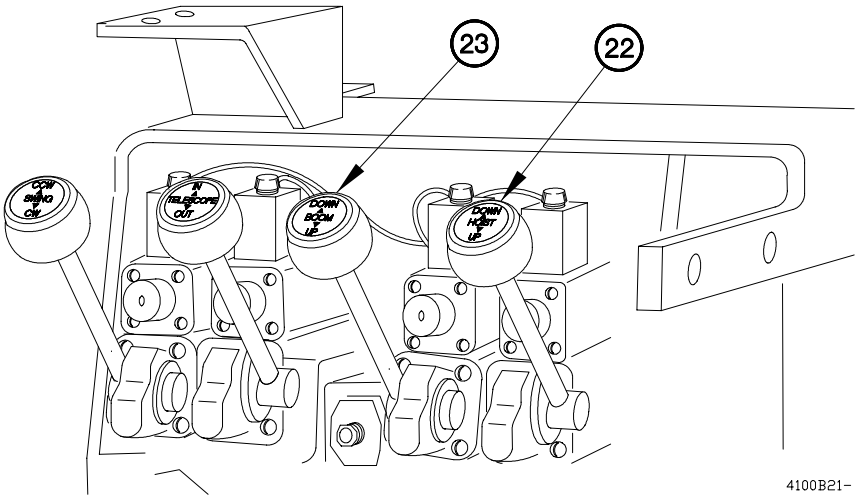
CAUTION

Do not jerk HOIST lever. Load may bounce and cause load to separate from hook assembly. Failure to comply may result in damage to equipment.

Do not lift load heavier than maximum rating for MHC (5,000 lb. (2,268 kg)). Failure to comply may result in damage to equipment.

Ensure boom and load are clear of vehicle sides when loading and unloading cargo. Hitting side of vehicle with boom or load may damage MHC, load, or vehicle.

6. Move HOIST lever (22) to UP position to lift load.
7. Move BOOM lever (23) to UP position to lift load higher as required.
8. Move HOIST lever (22) to DOWN position to lower load.
9. Move BOOM lever (23) to DOWN position to lower load further as required.



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

STOW M1089A1 MHC

CAUTION

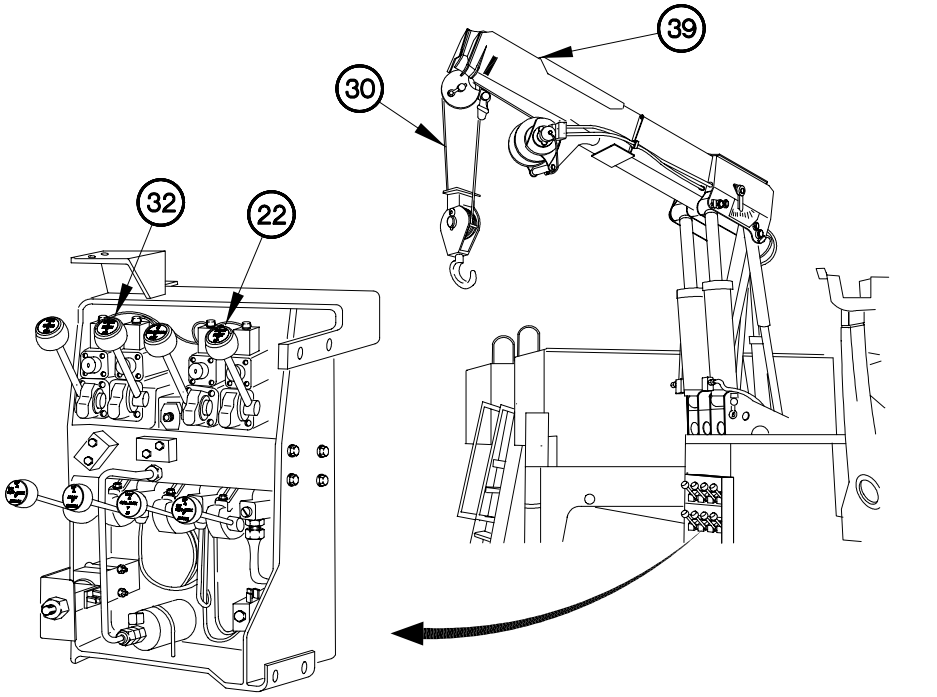
Boom must be positioned with outriggers and fully retracted before lowering. Observe boom during lowering to ensure no contact is made with tool box. Failure to comply may result in damage to equipment.

NOTE

HOIST lever and TELESCOPE lever are operated at the same time.

1. Reel in cable (30) until approximately 2 ft (0.6 m) of cable hangs from boom (39).

2. Move HOIST lever (22) to UP position to reel in cable (30) and TELESCOPE lever (32) to IN position to retract boom (39).



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

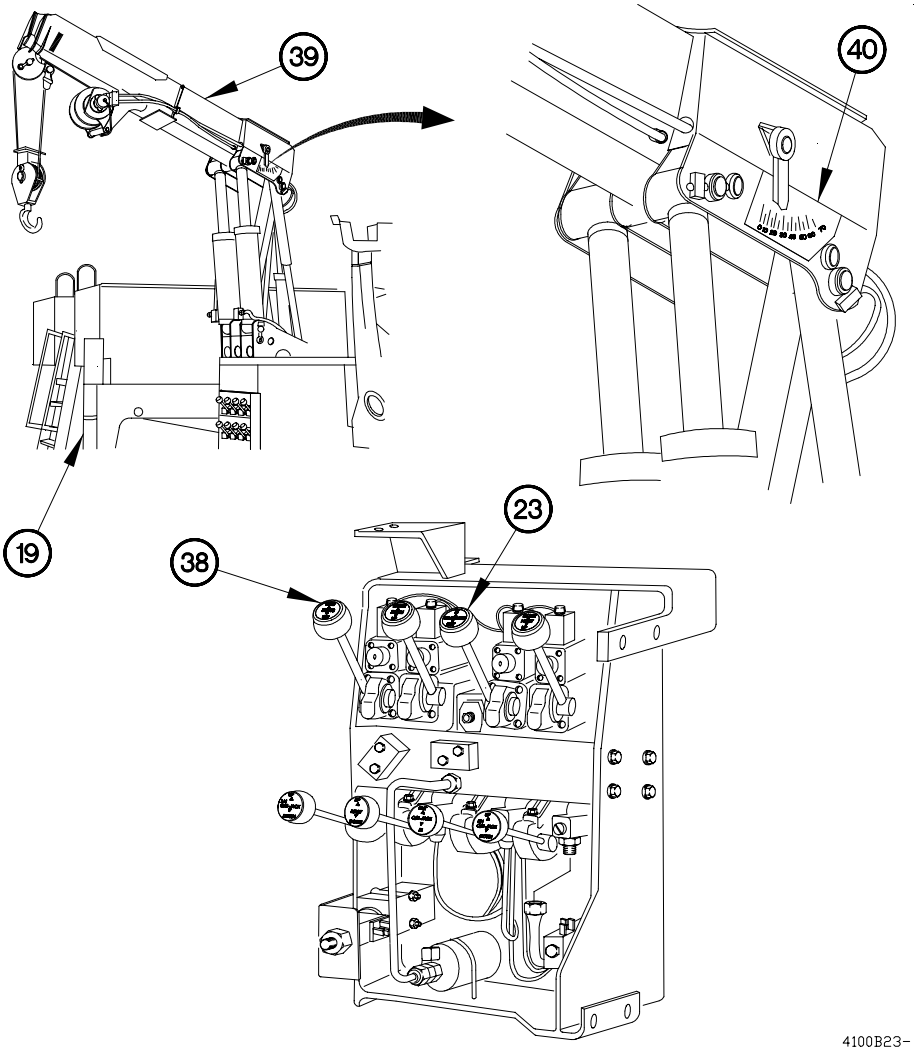
STOW M1089A1 MHC - Continued

NOTE

Position boom so that cable and hook assembly are on passenger's side of vehicle.

3. Operate SWING lever (38) to position boom (39) in line with outrigger (19).

4. Operate BOOM lever (23) so that boom angle indicator (40) reads approximately 45 degrees.



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

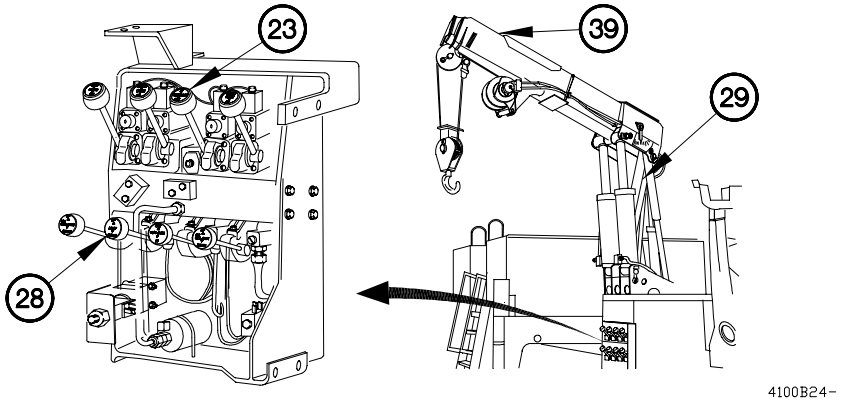
STOW M1089A1 MHC - Continued

NOTE

Operate BOOM lever and MAST lever at the same time so that 45-degree reading is maintained on boom angle indicator.

5. Move BOOM lever (23) and MAST lever (28) to DOWN position until mast (29) is fully lowered.

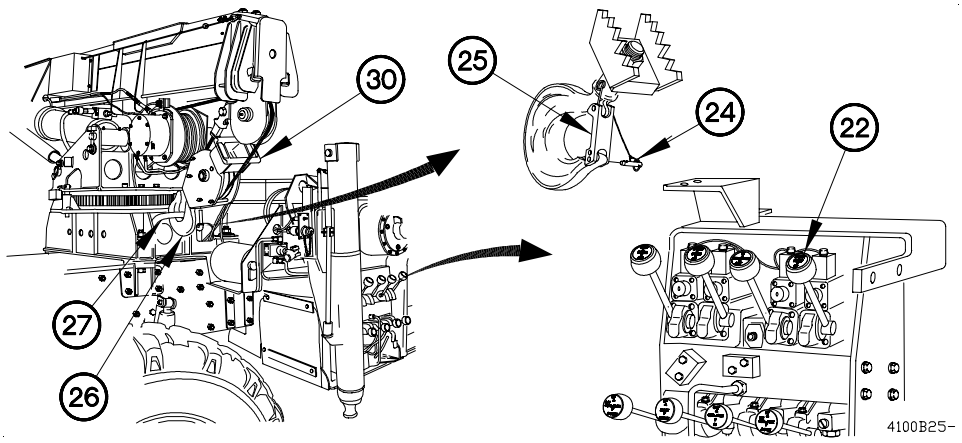
6. Move BOOM lever (23) to DOWN position until boom (39) is fully lowered.



7. Connect hook assembly (26) to stowage ring (27).

8. Install safety pin (24) in hook assembly latch (25).

9. Move HOIST lever (22) to UP position to remove all slack from cable (30).



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

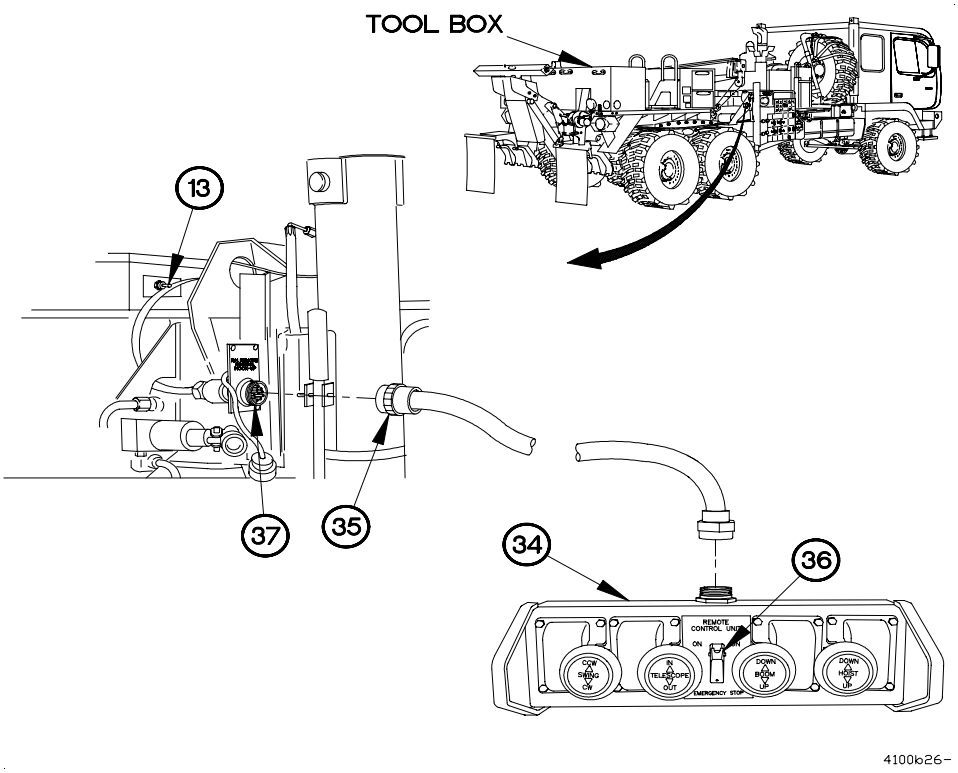
DISCONNECT REMOTE CONTROL UNIT

1. Position power switch (36) on REMOTE CONTROL UNIT (34) to EMERGENCY STOP.
2. Position MAIN POWER ON/OFF switch (13) to OFF.
3. Disconnect remote control cable (35) from RH REMOTE CONTROL HOOK UP receptacle (37).
4. Disconnect remote control cable (35) from REMOTE CONTROL UNIT (34).
5. Stow remote control cable (35) and MAIN REMOTE CONTROL UNIT (34) in tool box.

NOTE

Perform step 6 if MHC operation is still required.

6. Position MAIN POWER ON/OFF switch (13) to ON.



M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

STOW OUTRIGGERS AND SHUT DOWN MHC

NOTE

Both outrigger pads are removed from outriggers the same way. Right outrigger pad shown.

1. Remove two pins (17) from outrigger pad (16).

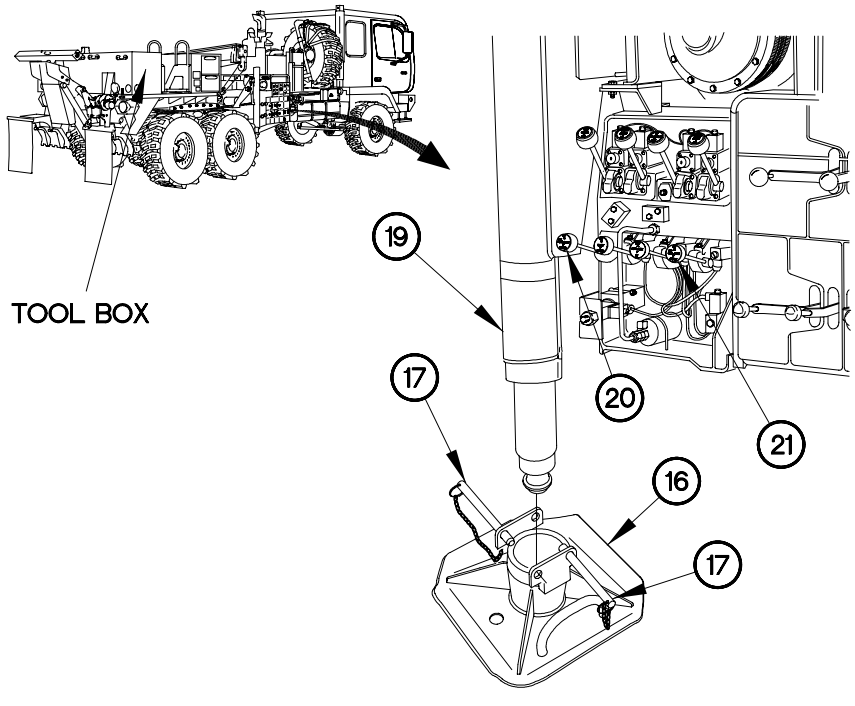
NOTE

Operate LH O/R JACK and RH O/R JACK lever at the same time.

2. Move LH O/R JACK lever (20) and RH O/R JACK lever (21) to UP position until outriggers (19) are fully retracted.

3. Install two pins (17) in outrigger pad (16).

4. Stow two outrigger pads (16) in tool box.



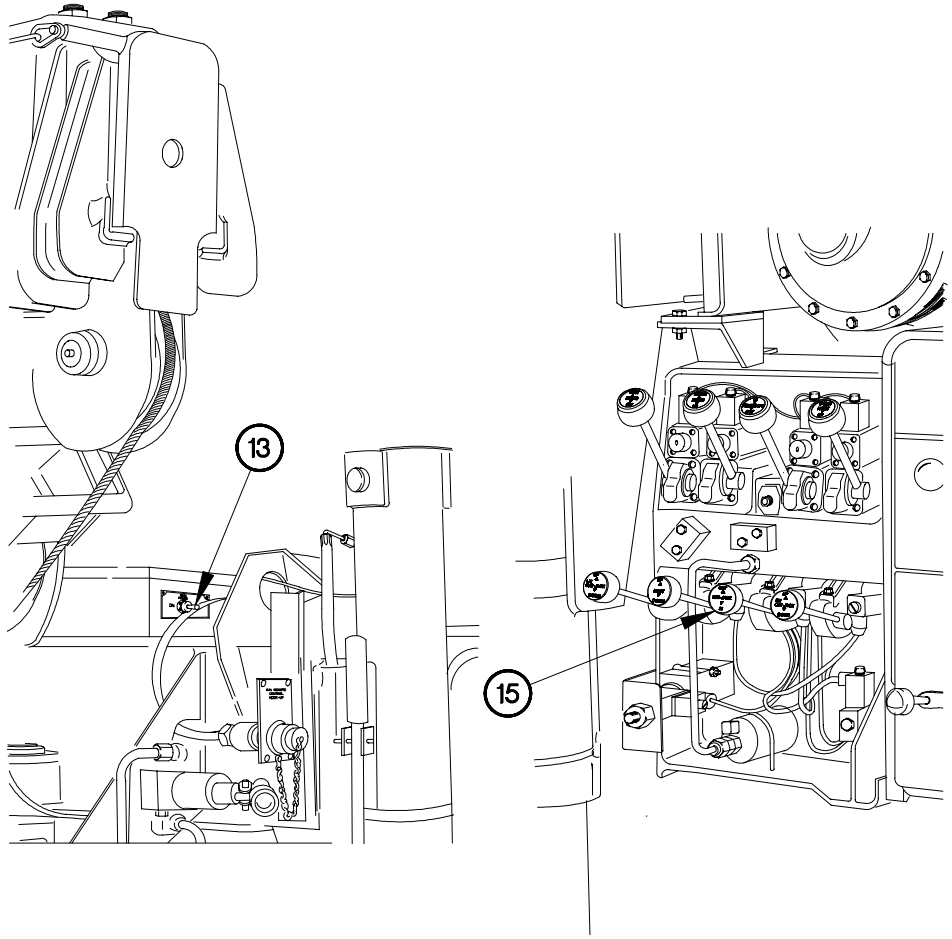
4100B27-

M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

STOW OUTRIGGERS AND SHUT DOWN MHC - Continued

5. Move O/R JACK lever (15) to IN position until outriggers are fully retracted.

6. Position MAIN POWER ON/OFF switch (13) to OFF.

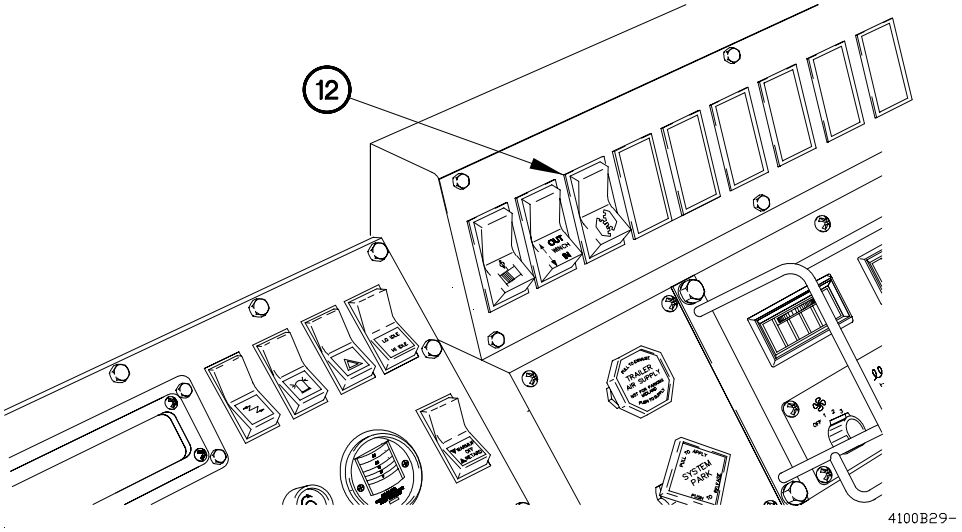


M1089A1 MATERIAL HANDLING CRANE (MHC) OPERATION - Continued 0041 00

STOW OUTRIGGERS AND SHUT DOWN M1089A1 MHC - Continued

7. Position PTO switch (12) to off.

8. Shut down engine (WP 0018 00).



END OF OPERATING PROCEDURE

BACK-UP HYDRAULIC PUMP OPERATION 0042 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Handle (Item 32, Table 2, WP 0112 00)

GENERAL

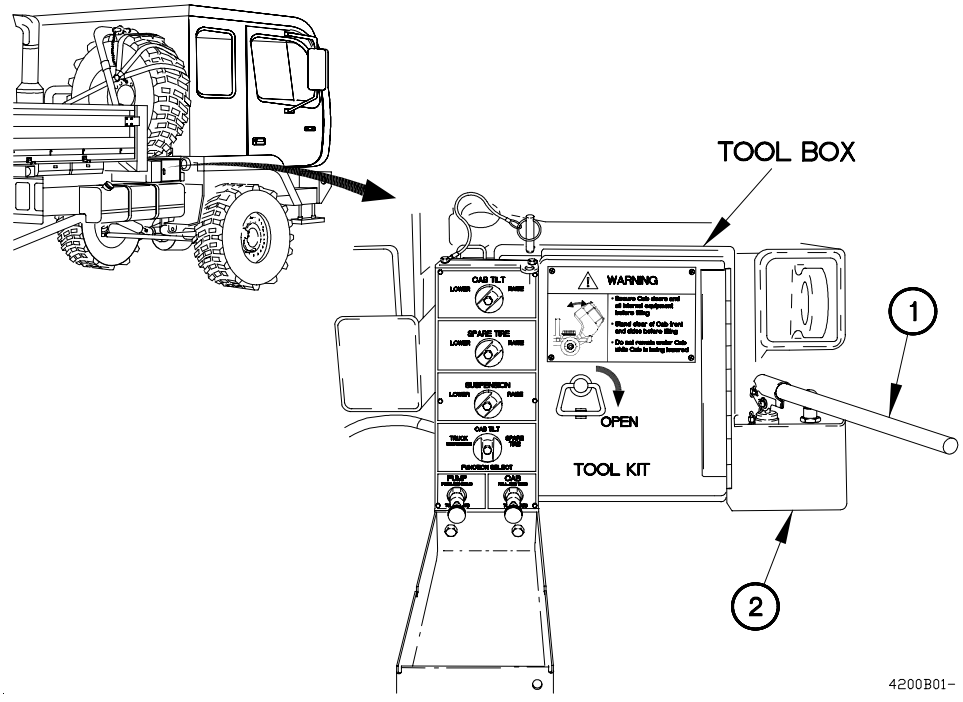
This work package provides the data and procedures Back-Up Hydraulic Pump Operation for the M1083A1 series vehicles.

BACK-UP HYDRAULIC PUMP OPERATION

NOTE

If outside temperature is above -25° F (-32° C), perform steps 1 through 3.

1. Remove handle (1) from tool box.
2. Insert handle (1) in back-up hydraulic pump (2).
3. Pump handle (1) until cab or spare tire is in desired position.



BACK-UP HYDRAULIC PUMP OPERATION - Continued 0042 00

BACK-UP HYDRAULIC PUMP OPERATION - Continued

NOTE

If cab or spare tire does not move, perform steps 4 through 7.

If performing steps 4 through 7 does not accomplish the required action, notify Unit Maintenance.

4. Position CAB TILT (3) or SPARE TIRE (4) knob to opposite selection.

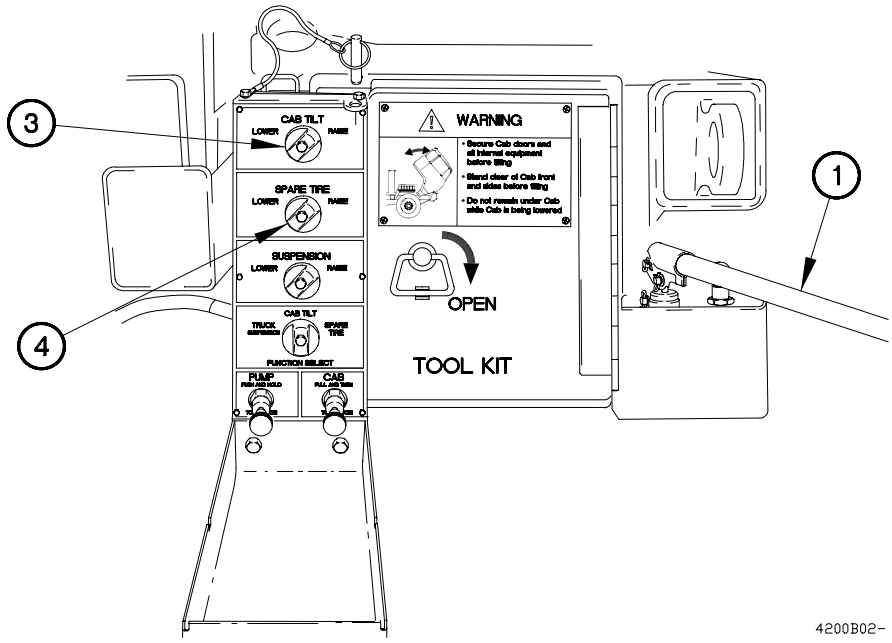
NOTE

If outside temperature is -25° F (-32° C) or below perform steps 5 through 8.

It may be necessary to perform step 5 several times before cab or spare tire begins to move.

A downward cycle should take approximately 3 seconds.

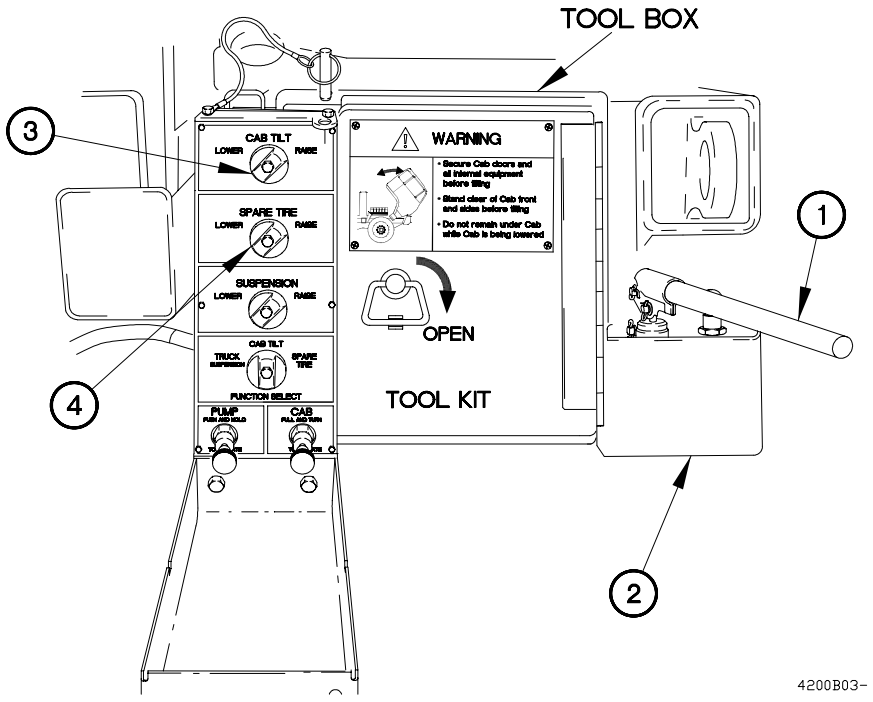
5. Pump handle (1) slowly downward until cab or spare tire moves a few inches.



BACK-UP HYDRAULIC PUMP OPERATION - Continued 0042 00

BACK-UP HYDRAULIC PUMP OPERATION - Continued

6. Position CAB TILT (3) or SPARE TIRE (4) knob to opposite selection.
7. Pump handle (1) until cab or spare tire is in desired position.
8. Place pump handle (1) in down position.
9. Remove handle (1) from back-up hydraulic pump (2).
10. Stow handle (1) in tool box.



END OF OPERATING PROCEDURE

DATA AND INSTRUCTION PLATES 0043 00

INITIAL SETUP:

Maintenance Level
Operator

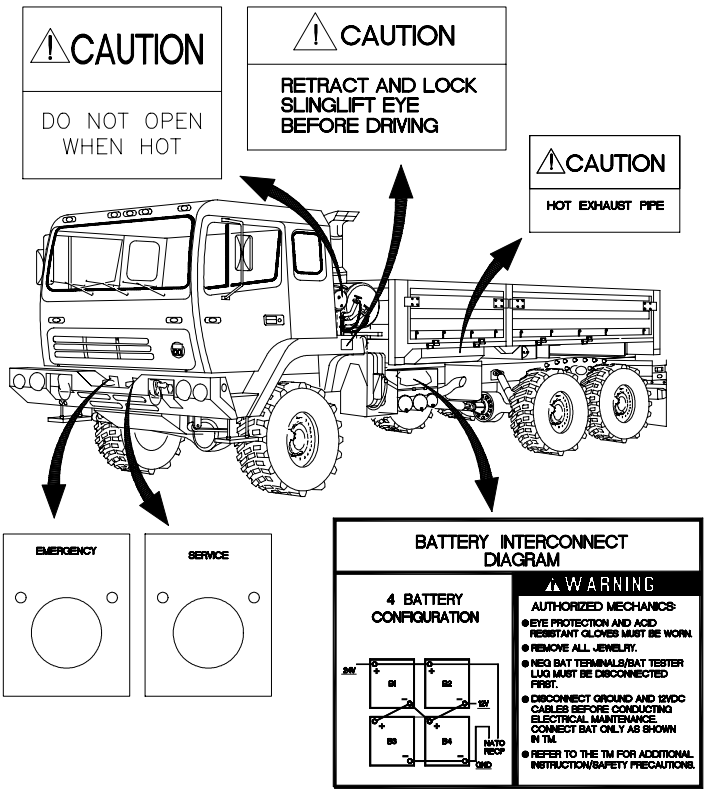
GENERAL

This work package provides the location and content of the data and instruction plates found on the M1083A1 series vehicles. Items covered include All Vehicles, Left Side; All Vehicles Right Side; All Vehicles, Interior; Vehicles With 15K Self-Recovery Winch (SRW); Vehicles With Light Material Handling Crane (LMHC); M1090A1; M1088A1; M1089A1; and M1084Al/M1086A1.

WARNING

Data and instruction plates given below must be followed at all times to safely operate vehicle. Failure to comply may result in serious injury to personnel or damage to equipment.

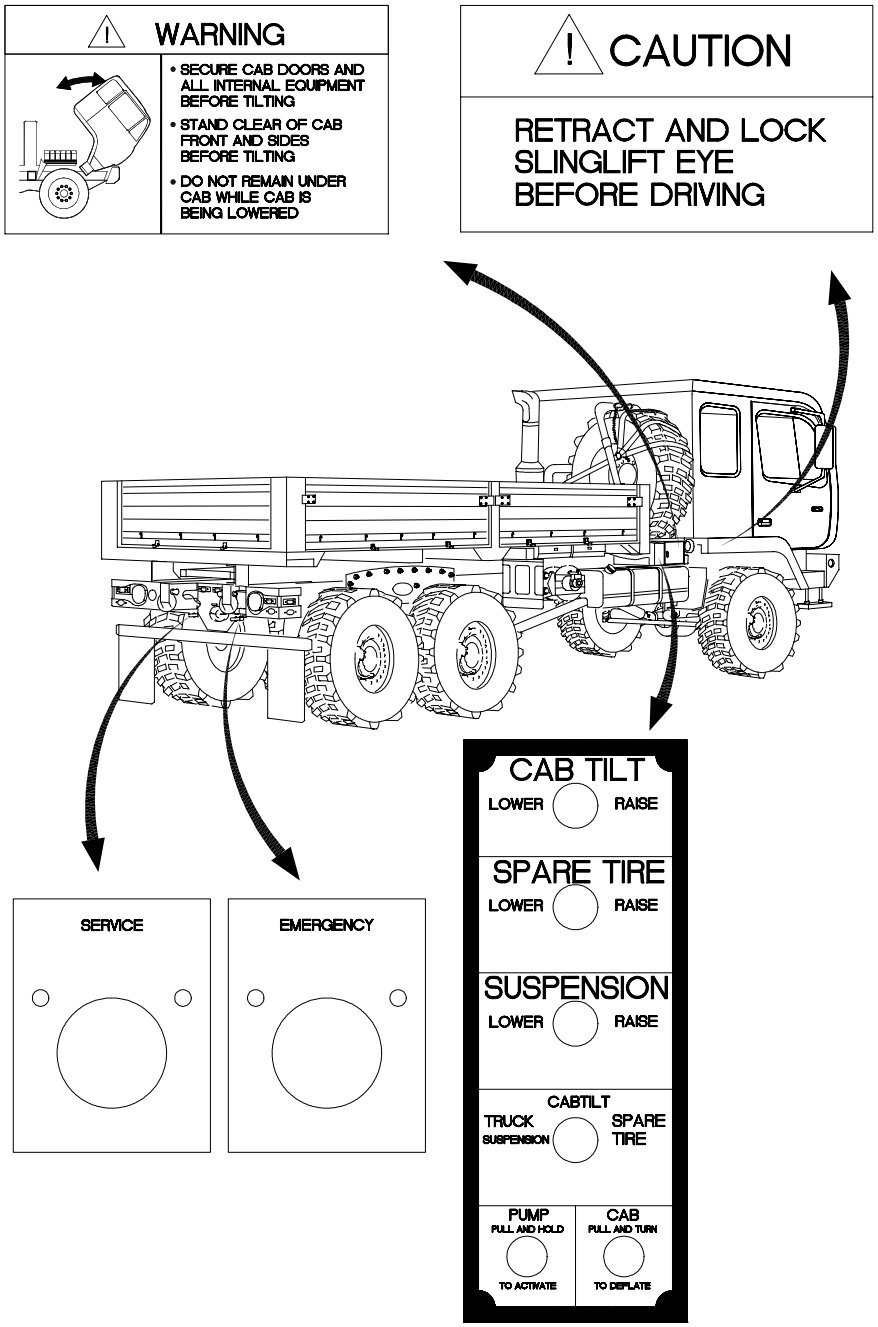
ALL VEHICLES, LEFT SIDE



4300B01-

DATA AND INSTRUCTION PLATES - Continued 0043 00

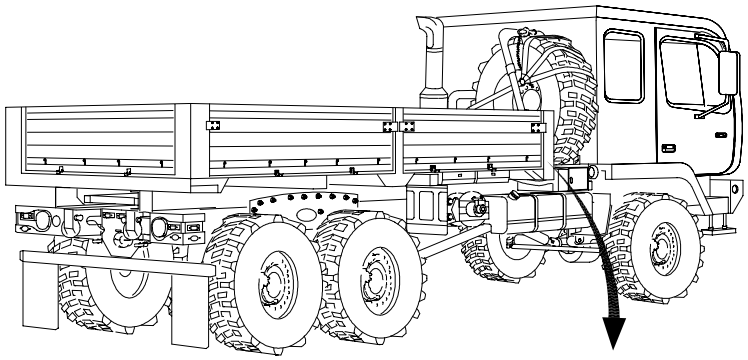
ALL VEHICLES, RIGHT SIDE



4300B02-

DATA AND INSTRUCTION PLATES - Continued 0043 00

ALL VEHICLES, RIGHT SIDE - Continued



CAB

RAISE
1. ENSURE DOORS ARE SECURE AND PERSONNEL AND EQUIPMENT ARE AWAY FROM CAB FRONT.
2. SELECT "CAB TILT" FUNCTION.
3. SELECT CAB TILT "RAISE".
4. PRESS AND HOLD "PUMP" SWITCH UNTILL CAB MOVES PAST THE OVER-CENTER POSITION.

LOWER
1. ENSURE ALL TOOLS AND EQUIPMENT ARE REMOVED FROM ENGINE COMPARTMENT AND OFF RAILS.
2. SELECT "CAB TILT" FUNCTION.
3. SELECT CAB TILT "LOWER".
4. PRESS AND HOLD "PUMP" SWITCH UNTILL CAB MOVES PAST OVER-CENTER AND LET CAB FREE-FALL TO LATCH.
5. ENSURE CAB LOCK IS FULLY RETRACTED.

SPARE TIRE

LOWER
1. REMOVE SPARE TIRE RETAINING STRAP
2. SELECT "SPARE TIRE" FUNCTION.
3. SELECT SPARE TIRE "LOWER".
4. PUSH AND HOLD "PUMP" SWITCH UNTILL SPARE TIRE IS OVER-CENTER THEN ALLOW TIRE TO FREE-FALL TO GROUND

RAISE
1. INSTALL SPARE TIRE IN CARRIER.
2. SELECT "SPARE TIRE" FUNCTION.
3. SELECT SPARE TIRE "RAISE".
4. PUSH AND HOLD "PUMP" SWITCH UNTILL SPARE TIRE IS FULLY SEATED IN THE CARRIER.
5. INSTALL SPARE TIRE RETAINING STRAP.

SUSPENSION

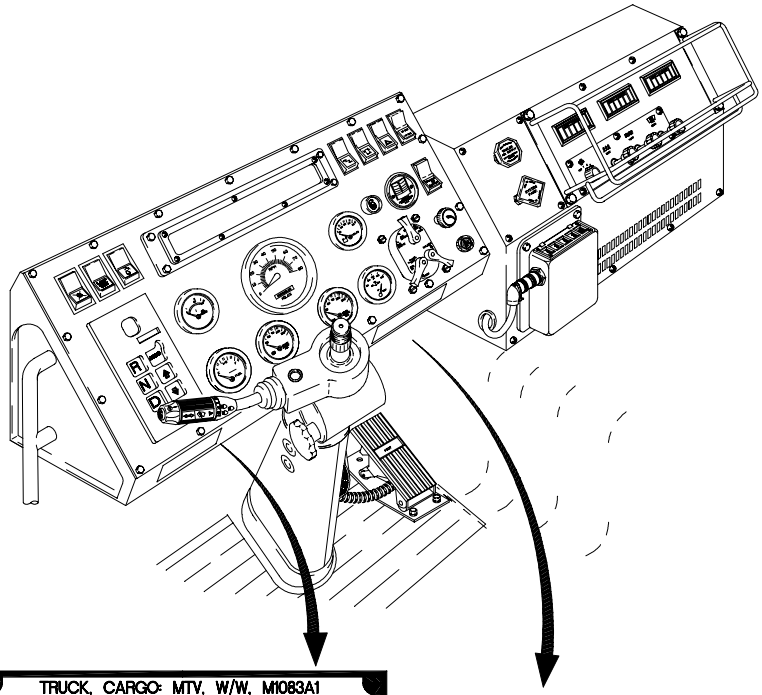
LOWER
1. SET PARK BRAKE START ENGINE AND LET IDLE.
2. OPEN THE VALVES TO DEFLATE FRONT TIRES.
3. RAISE CAB.
4. REMOVE SAFETY PINS FROM CYLINDERS AND REMOVE CHAINS FROM STOWAGE POSITION.
5. SELECT "TRUCK SUSPENSION" FUNCTION.
6. SELECT SUSPENSION "RAISE".
7. PUSH AND HOLD "PUMP" SWITCH UNTILL CHAINS ALIGN WITH PINS ON AXLE.
8. SECURE CHAINS TO AXLE WITH LYNCH PINS.
9. SELECT SUSPENSION "LOWER".
10. PUSH AND HOLD "PUMP" SWITCH UNTILL CYLINDER IS RETRACTED. INSTALL LOCK PINS
11. LOWER CAB. DEFLATE AND SECURE AIR SPRINGS

RAISE
1. SET PARK BRAKE START ENGINE AND LET IDLE.
2. CLOSE TIRE VALVES. SELECT CTIS "RUN FLAT AND HIGHWAY" AT THE SAME TIME.
3. INFLATE CAB AIR SPRINGS BY REMOVING PINS THEN PUSH IN AND TURN "CAB" KONB. STOW PINS.
4. SELECT "TRUCK SUSPENSION" FUNCTION.
5. SELECT SUSPENSION "LOWER".
6. PUSH AND HOLD "PUMP" SWITCH UNTILL CYLINDER LOCKING PINS CAN BE REMOVED. RAISE CAB IF NEEDED.
7. SELECT SUSPENSION "RAISE".
8. PUSH AND HOLD "PUMP" SWITCH UNTILL CHAINS CAN BE REMOVED FROM AXLE PINS.
9. RELEASE HOLD-DOWN CHAINS ON EACH SIDE OF FRONT SUSPENSION BY REMOVING LYNCH PINS CHAINS WITH LINCH PINS.
10. SELECT SUSPENSION "LOWER".
11. PUSH AND HOLD "PUMP" SWITCH UNTIL CYLINDER IS RETRACTED.
12. SECURE CYLINDER WITH LOCKING PINS.
13. STOW CHAINS WITH LINCH PINS. LOWER CAB IF RAISED.

4300B03-

DATA AND INSTRUCTION PLATES - Continued 0043 00

ALL VEHICLES, INTERIOR



TRUCK, CARGO: MTV, W/W, M1083A1

NATIONAL STOCK NO.	2320-01-447-3884
CONTRACT NO.	DAAE07-98-C-M005
MANUFACTURED BY	STEWART + STEVENSON SERVICES, INC. TACTICAL VEHICLE SYSTEMS DIVISION
CAGE NO. 0FW39	SEALY, TEXAS 77474
VSN/USA	[redacted]
MFG. SERIAL NO.	[redacted]
MFG. DATE	[redacted] U.S. PROPERTY
DELIVERY DATE	[redacted]
INSPECTED	[redacted]

WARRANTY

This vehicle is covered by a material and workmanship warranty for a period of 18 months or 12,000 miles which ever occurs first from the date of acceptance for the components identified below:

Entire Vehicle As Delivered National Stock Number: [redacted]

Warranty claim procedures must be followed by the user to secure warranty services for those components or major assemblies covered by the warranty agreement. Contact the local Warranty Control Office (WARCO) and provide an accurate description of the problem along with the vehicle NSN, serial number and mileage. The Government may implement repairs and invoice Tactical Vehicle Systems or TVS will arrange for replacement or repair.

NOTE: The Government will not submit any claims in which the combined parts and labor costs does not exceed $150.00 for any single Depot/GS part failureFor warranty action, complete a DA Form 2407 or DA Form 5504 and submit as instructed in the Warranty Program Technical Bulletin for this vehicle.

	Date(yymm)	Miles
Warranty Begins:	[redacted]	[redacted]
Warranty Ends :	[redacted]	[redacted]

CAGE CODE 0FW39

Tactical Vehicle Systems
Stewart and Stevenson Services, Inc.
P.O. Box 330
5000 I-10 West
Sealy, Texas 77474

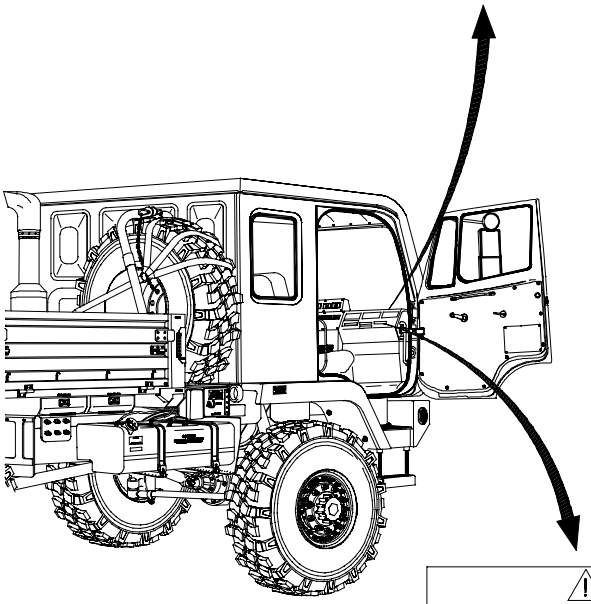
4300B04-

DATA AND INSTRUCTION PLATES - Continued 0043 00

ALL VEHICLES, INTERIOR - Continued

⚠ WARNING

- NEVER LEAVE CAB WHILE ENGINE IS RUNNING UNLESS TRANSMISSION IS IN NEUTRAL AND PARKING BRAKES ARE SET
- USE WHEEL CHOCKS ON UNEVEN SURFACES



⚠ CAUTION

- DISENGAGE FAN CLUTCH WHEN FORDING MORE THAN 20 INCHES DEEP
- OBSERVE ENGINE TEMPERATURE GAUGE TO PREVENT ENGINE OVERHEATING
- AFTER FORDING REENGAGE FAN CLUTCH

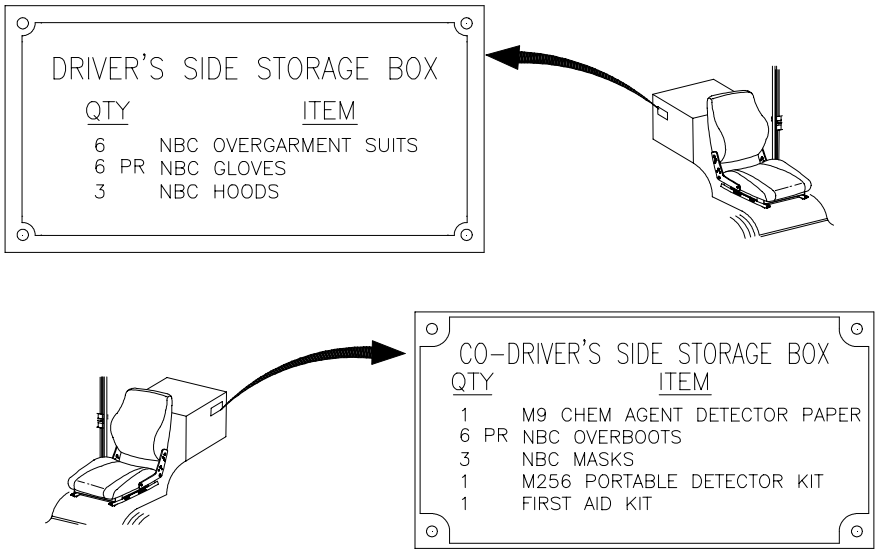
4300b05-

DATA AND INSTRUCTION PLATES - Continued 0043 00

ALL VEHICLES, INTERIOR - Continued

NOTE

On Vehicle S/N 18,549 or lower.



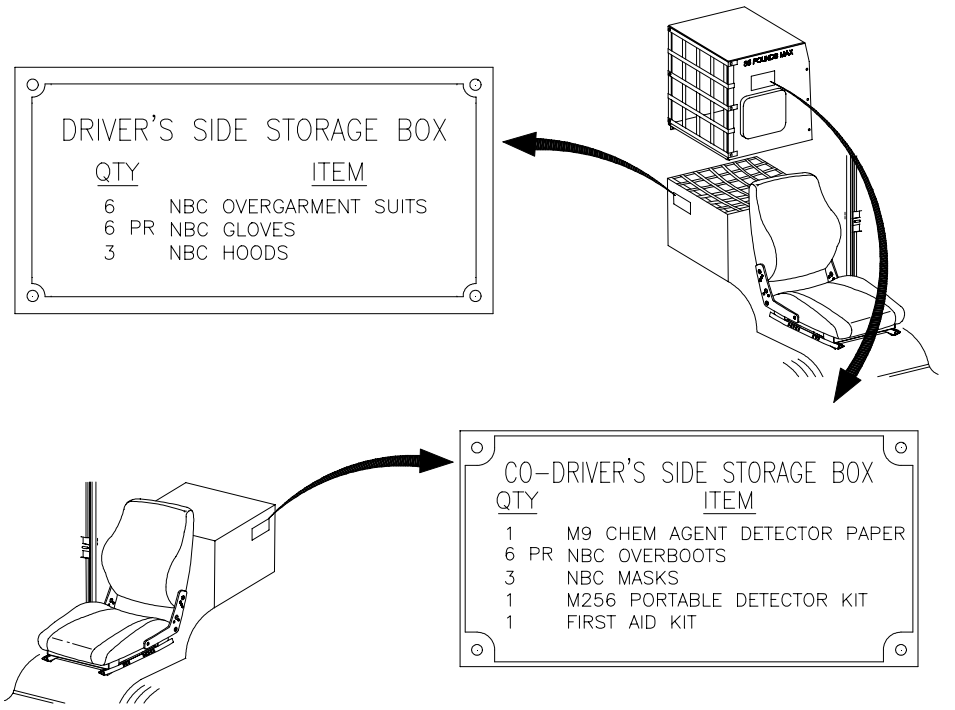
4300B06-

DATA AND INSTRUCTION PLATES - Continued 0043 00

ALL VEHICLES, INTERIOR - Continued

NOTE

On Vehicle S/N 18,550 or higher with and/or without digitization rack.



(NOT PRESENT IF VEHICLE EQUIPPED WITH DIGITIZATION RACK)

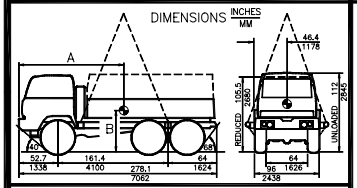
4300B25-

DATA AND INSTRUCTION PLATES - Continued 0043 00

ALL VEHICLES, INTERIOR - Continued

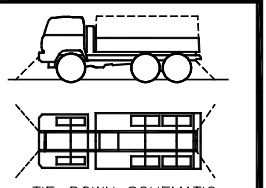
WEIGHT AND DIMENSIONAL DATA
TRUCK, CARGO: MTV, M1083A1

DIMENSIONS INCHES / MM



SHIPPING CUBAGE 1730 CU FT / 49.0 CU M

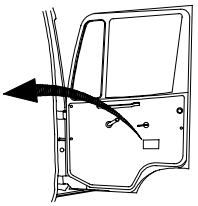
NOTE: TO REDUCE CAB HEIGHT REFER TO AIR TRANSPORT PROCEDURES IN TM 9-2320-392-10.



TIE-DOWN SCHEMATIC
NOTE : ONLY USE TIE-DOWN POINTS SHOWN ABOVE

WEIGHTS		FRONT AXLE	INTERMEDIATE AXLE	REAR AXLE	TOTAL WEIGHT		C G A	DISTANCE B	MAXIMUM PAYLOAD 5 TONS/4536 KG
CURB	LB	11085	4806	4806	20898	IN	128	44	TIRE DATA MAXIMUM COLD PRESSURE 95 PSI MAXIMUM SPEED 55 MPH/88 KMH
	KG	5028	2225	2225	9478	MM	3239	1112	
GROSS	LB	12978	8858	8958	30898	IN	148	57	TURNING RADIUS 40 FT / 12 M WALL TO WALL
	KG	5887	4084	4084	14015	MM	3718	1450	

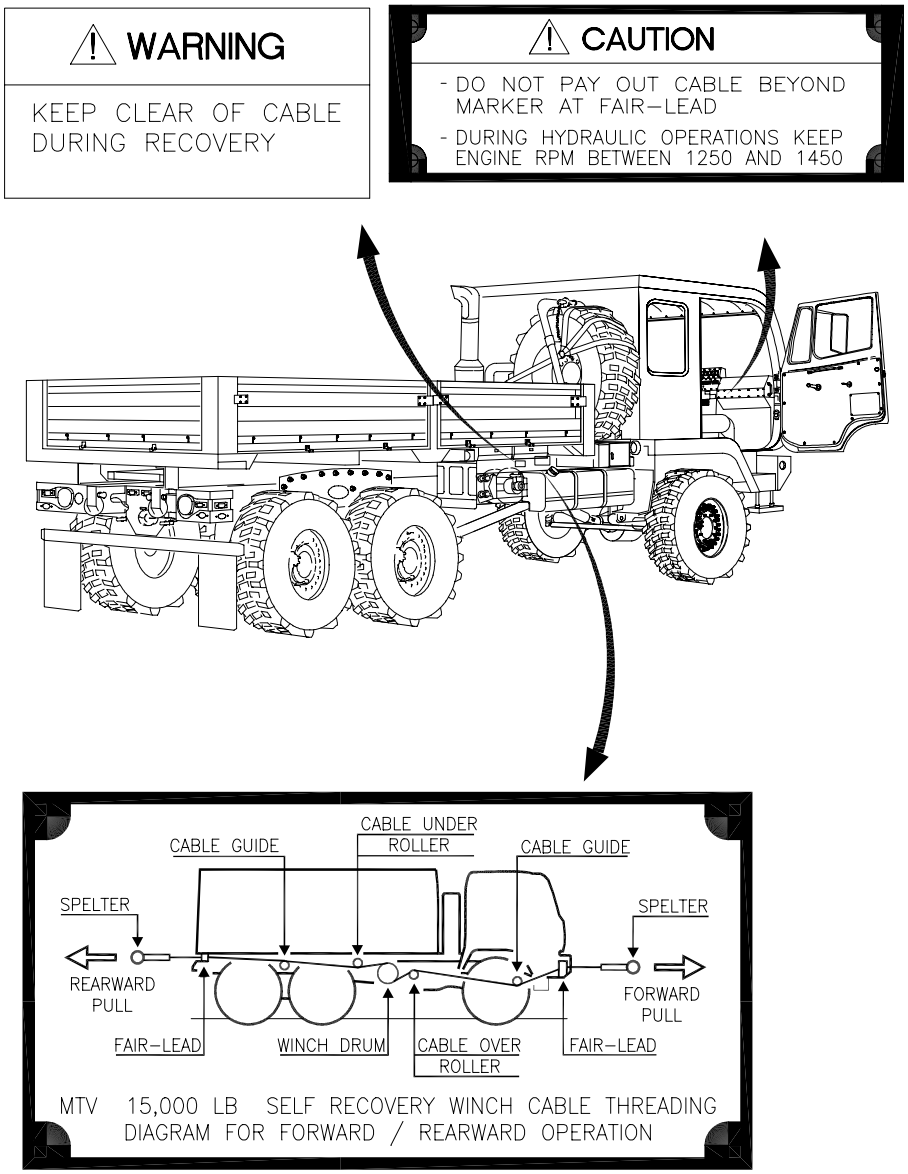
(TYPICAL)



(RIGHT DOOR)

4300B26-

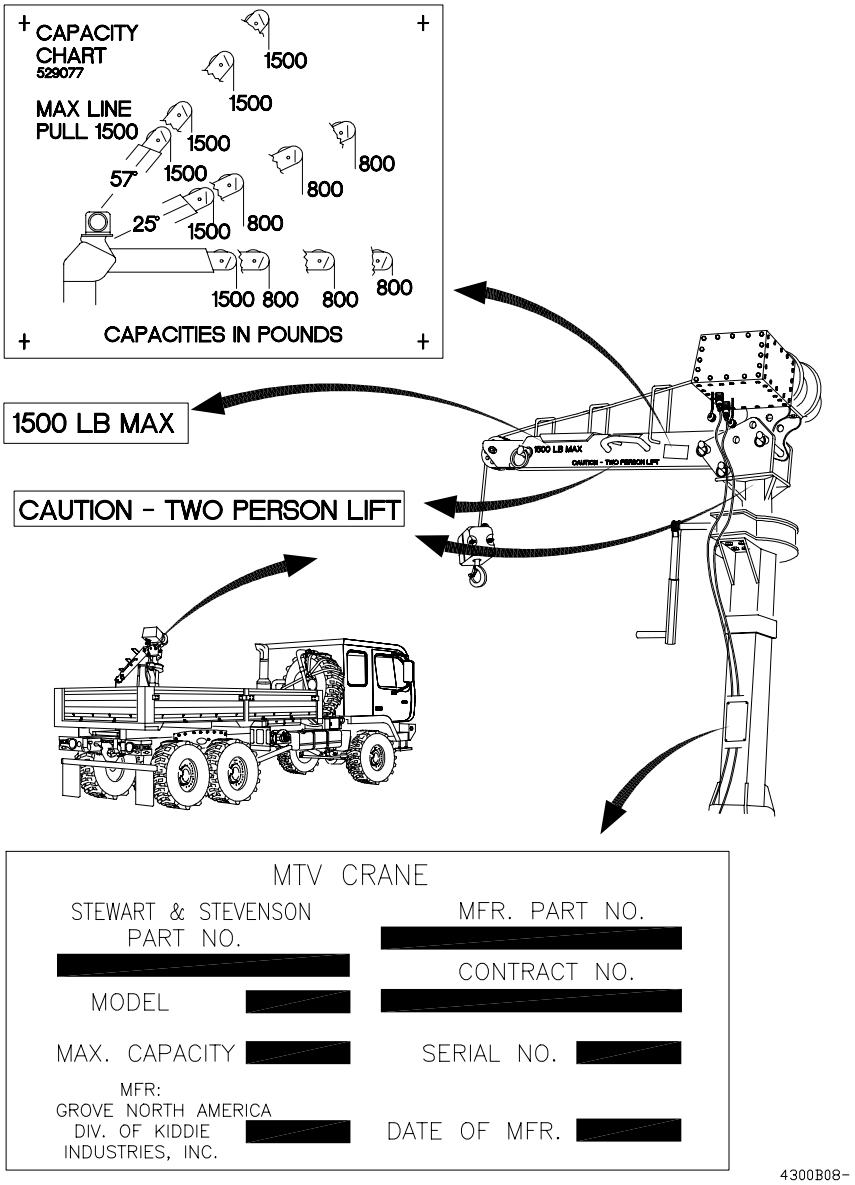
VEHICLES WITH 15K SRW



4300B07-

DATA AND INSTRUCTION PLATES - Continued 0043 00

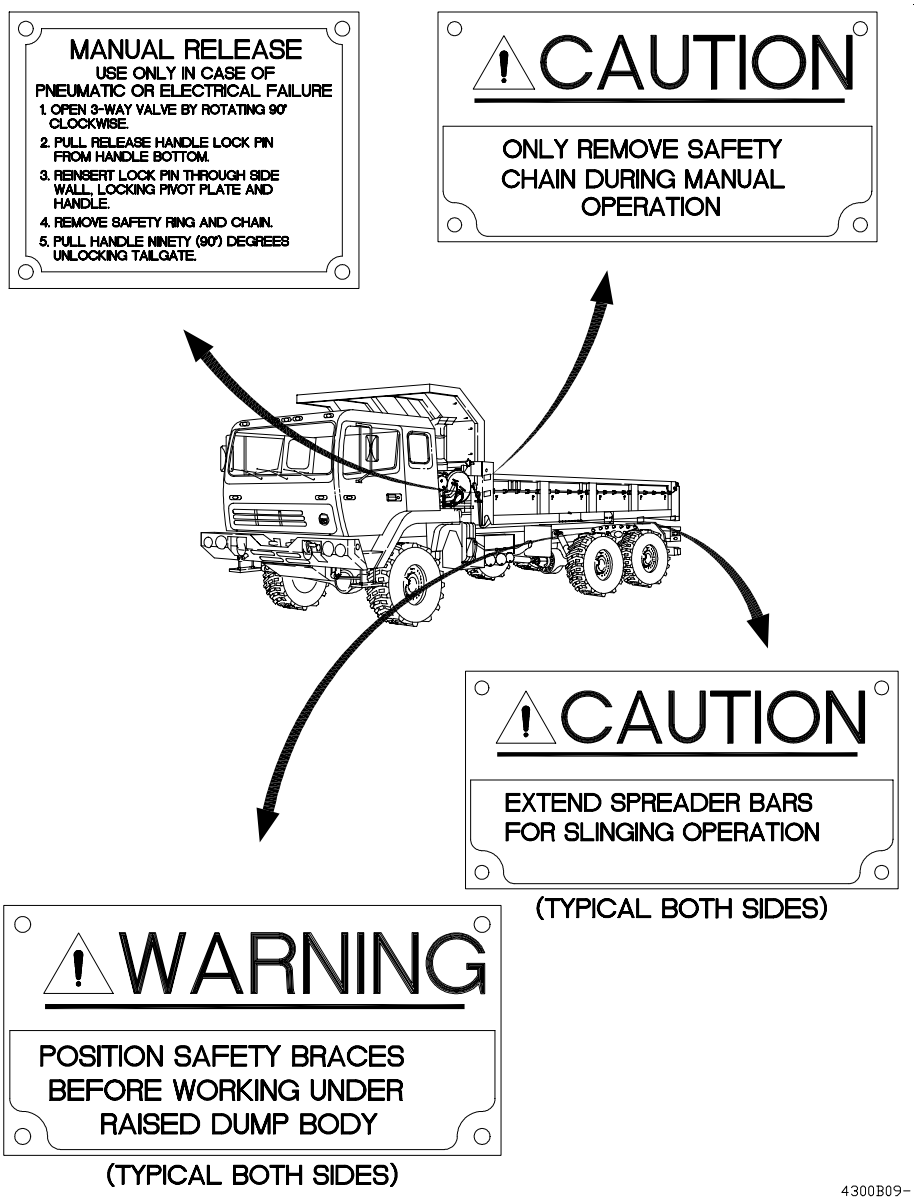
VEHICLES WITH LMHC



4300B08-

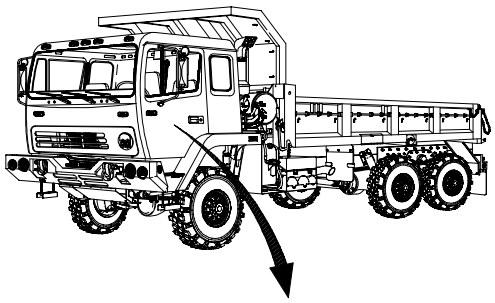
DATA AND INSTRUCTION PLATES - Continued 0043 00

M1090A1



DATA AND INSTRUCTION PLATES - Continued 0043 00

M1090A1- Continued



MATERIAL CAPACITY CHART
MTV DUMP M1090A1

MATERIAL	WEIGHT OF MATERIAL (LBS)		CAPACITY		MAXIMUM FUNCTIONAL LOAD (CU-YD) THAT DOES NOT OVERLOAD TRUCK
			LEVEL FULL 5.19 CU-YD OR 140.17 CU-FT	HEAPING FULL 7.78 CU-YD OR 210.12 CU-FT	
	PER CU-FT	PER CU-YD (KG/CUM)	LOADED WEIGHT LBS (KG)	LOADED WEIGHT LBS (KG)	
ASHES	43	1,161 (689)	6,026 (2,734)	9,033 (4,098)	
CINDERS	46	1,242 (737)	6,446 (2,924)	9,663 (4,384)	
CLAY, DRY LOOSE	77	2,079 (1,234)	[illegible]	[illegible]	4.5
CLAY, WET	110	2,970 (1,762)	[illegible]	[illegible]	3.0
CLAY AND GRAVEL	110	2,970 (1,762)	[illegible]	[illegible]	3.0
COAL, ANTHRACITE (HARD)	54	1,458 (865)	7,567 (3,433)	[illegible]	6.5
COAL, BITUMINOUS (SOFT)	81	2,187 (1,298)	[illegible]	[illegible]	4.5
COKE	28	756 (449)	3,924 (1,780)	5,882 (2,668)	
CONCRETE	138	3,726 (2,211)	[illegible]	[illegible]	2.5
CONCRETE MIX, WET	124	3,348 (1,986)	[illegible]	[illegible]	3.0
EARTH, DRY LOOSE	75	2,025 (1,202)	[illegible]	[illegible]	4.5
EARTH, MOIST PACKED	95	2,565 (1,522)	[illegible]	[illegible]	3.5
EARTH AND GRAVEL DRY LOOSE	100	2,700 (1,602)	[illegible]	[illegible]	3.5
GARBAGE, DRY	37	999 (593)	5,185 (2,352)	7,772 (3,526)	
GARBAGE, WET	47	1,269 (753)	6,586 (2,988)	9,673 (4,479)	

MATERIAL	WEIGHT OF MATERIAL (LBS)		CAPACITY		MAXIMUM FUNCTIONAL LOAD (CU-YD) THAT DOES NOT OVERLOAD TRUCK
			LEVEL FULL 5.19 CU-YD OR 140.17 CU-FT	HEAPING FULL 7.78 CU-YD OR 210.12 CU-FT	
	PER CU-FT	PER CU-YD (KG/CUM)	LOADED WEIGHT LBS (KG)	LOADED WEIGHT LBS (KG)	
GRAVEL	110	2,970 (1,762)	[illegible]	[illegible]	3.0
GRAVEL AND SAND, DRY LOOSE	95	2,565 (1,522)	[illegible]	[illegible]	3.5
GRAVEL AND SAND, WET	120	3,240 (1,922)	[illegible]	[illegible]	3.0
LIMESTONE, CRUSHED	100	2,700 (1,602)	[illegible]	[illegible]	3.5
MUD, WET	120	3,240 (1,922)	[illegible]	[illegible]	3.0
ROCK AND STONE, CRUSHED	95	2,565 (1,522)	[illegible]	[illegible]	3.5
SALT, FINE	50	1,350 (801)	**7,007 (3,179)**	[illegible]	7.0
SAND, DRY LOOSE	98	2,646 (1,570)	[illegible]	[illegible]	3.5
SAND, DRY PACKED	110	2,970 (1,762)	[illegible]	[illegible]	3.0
SAND, MOIST LOOSE	120	3,240 (1,922)	[illegible]	[illegible]	3.0
SLAG, CRUSHED	75	2,025 (1,202)	[illegible]	[illegible]	4.5
SNOW, MOIST PACKED	50	1,350 (801)	**7,007 (3,179)**	[illegible]	7.0
STONE, CRUSHED	100	2,700 (1,602)	[illegible]	[illegible]	3.5
STONE, LOOSE	95	2,565 (1,522)	[illegible]	[illegible]	3.5

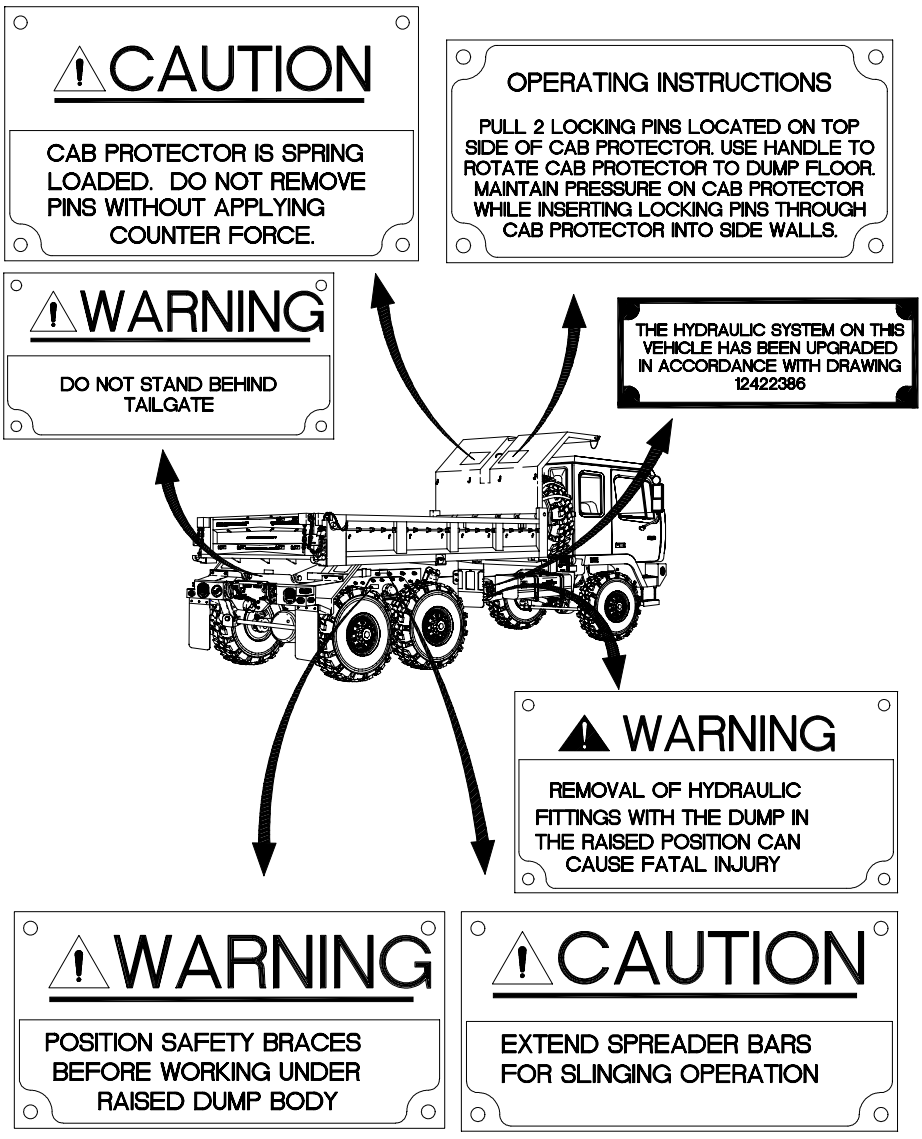
SHADED AREA = LOADED WEIGHT EXCEEDS RATED PAY LOAD

MAXIMUM FUNCTIONAL LOAD = MAXIMUM LOAD ROUNDED TO THE NEAREST HALF CUBIC YARD FOR EASE IN MEASUREMENT.

4300b10-

DATA AND INSTRUCTION PLATES - Continued 0043 00

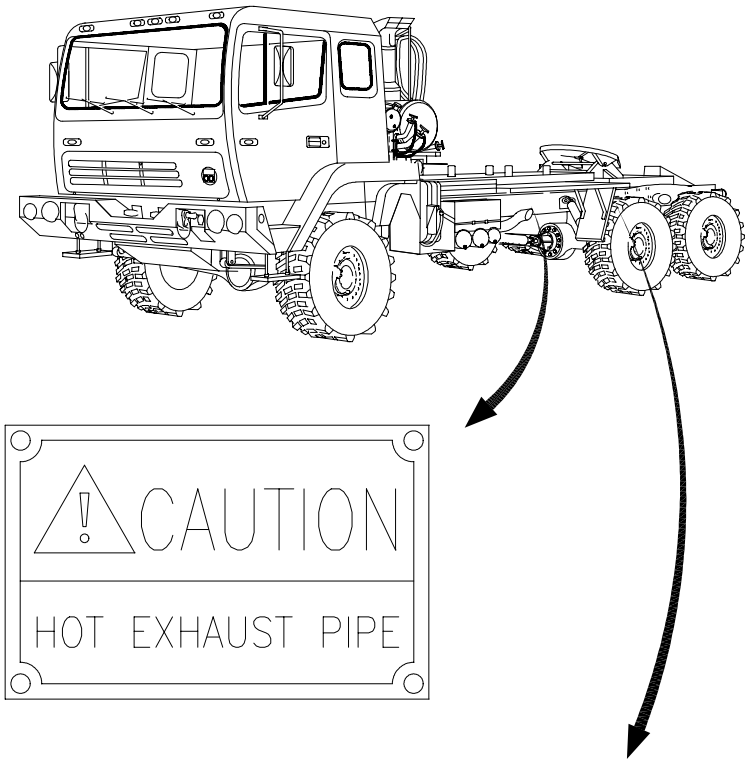
M1090A1 - Continued



4300b11-

DATA AND INSTRUCTION PLATES - Continued 0043 00

M1088A1



CAUTION

HOT EXHAUST PIPE

SLIDING 5TH WHEEL OPERATION

(STARTING WITH THE 5TH WHEEL IN THE FORWARD POSITION)

- SET THE TRACTOR AND TRAILER BRAKES
- PULL SLIDE LATCH RELEASE LEVER WITH RELEASE TOOL TO THE LOCKED OPEN POSITION
- RELEASE TRACTOR BRAKES (TRAILER STILL ENGAGED)
- VERY SLOWLY DRIVE TRACTOR FORWARD UNTIL 5TH WHEEL REACHES THE REAR STOP BLOCKS (TRAILER RESISTANCE WILL BE FELT)
- SET TRACTOR BRAKES
- CLOSE SLIDE LATCH RELEASE BY PUSHING LEVER DOWN WITH THE POINT OF THE RELEASE TOOL (SLIDE CARRIAGE WILL LOCK INTO PLACE AUTOMATICALLY)
- TO MOVE SLIDE CARRIAGE FORWARD, REPEAT THE ABOVE STEPS EXCEPT REVERSE THE DIRECTION OF THE TRACTOR

WARNING

DURING 5TH WHEEL SLIDE OPERATION

NEVER –

- STAND AGAINST OR BETWEEN TRACTOR TIRES
- STAND BETWEEN TRACTOR AND TRAILER
- ALLOW ANYONE BEHIND TRAILER DURING MOVEMENT
- ALLOW ANYONE TO STAND ON OPPOSITE SIDE OF OPERATOR DURING 5TH WHEEL RELEASE

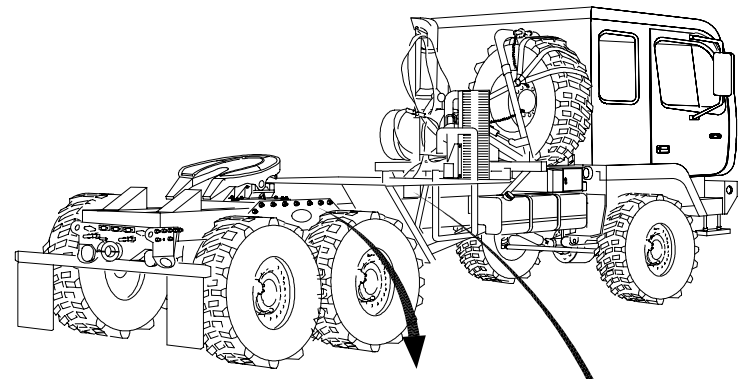
ALWAYS –

- CHOCK TRAILER TIRES BEFORE COUPLING
- CONNECT TRAILER BRAKES AIR SUPPLY AND SET TRAILER BRAKES BEFORE SLIDING 5TH WHEEL
- USE RELEASE TOOL WHEN RELEASING AND ENGAGING SLIDE LATCH LEVER

4300B12-

DATA AND INSTRUCTION PLATES - Continued 0043 00

M1088A1 - Continued

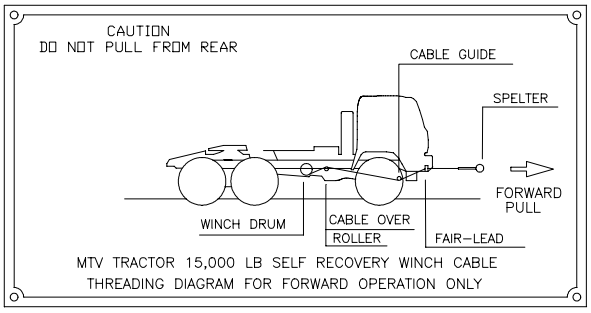


WARNING

DO NOT STAND ACROSS FROM OPERATOR DURING 5TH WHEEL SLIDE CARRIAGE RELEASE

CAUTION

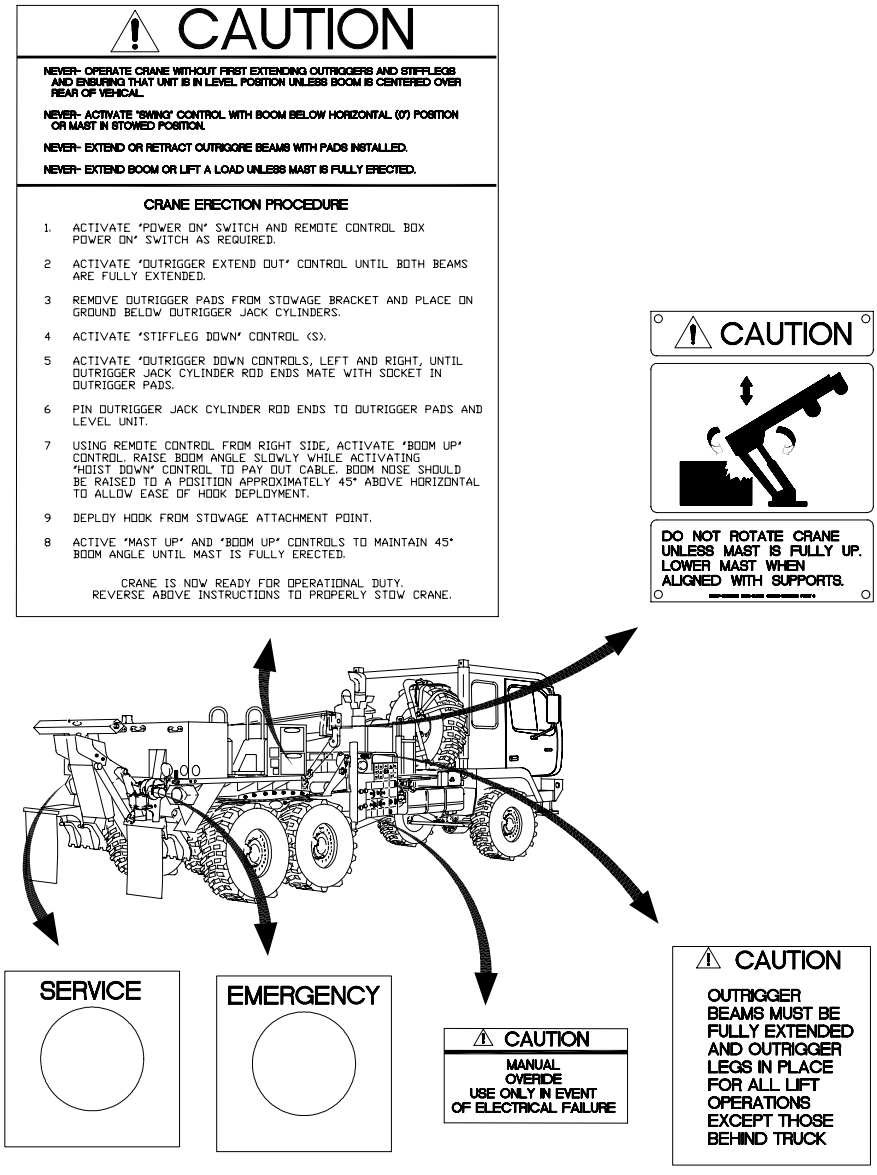
KEEP CLEAR OF CABLE DURING RECOVERY



4300B13-

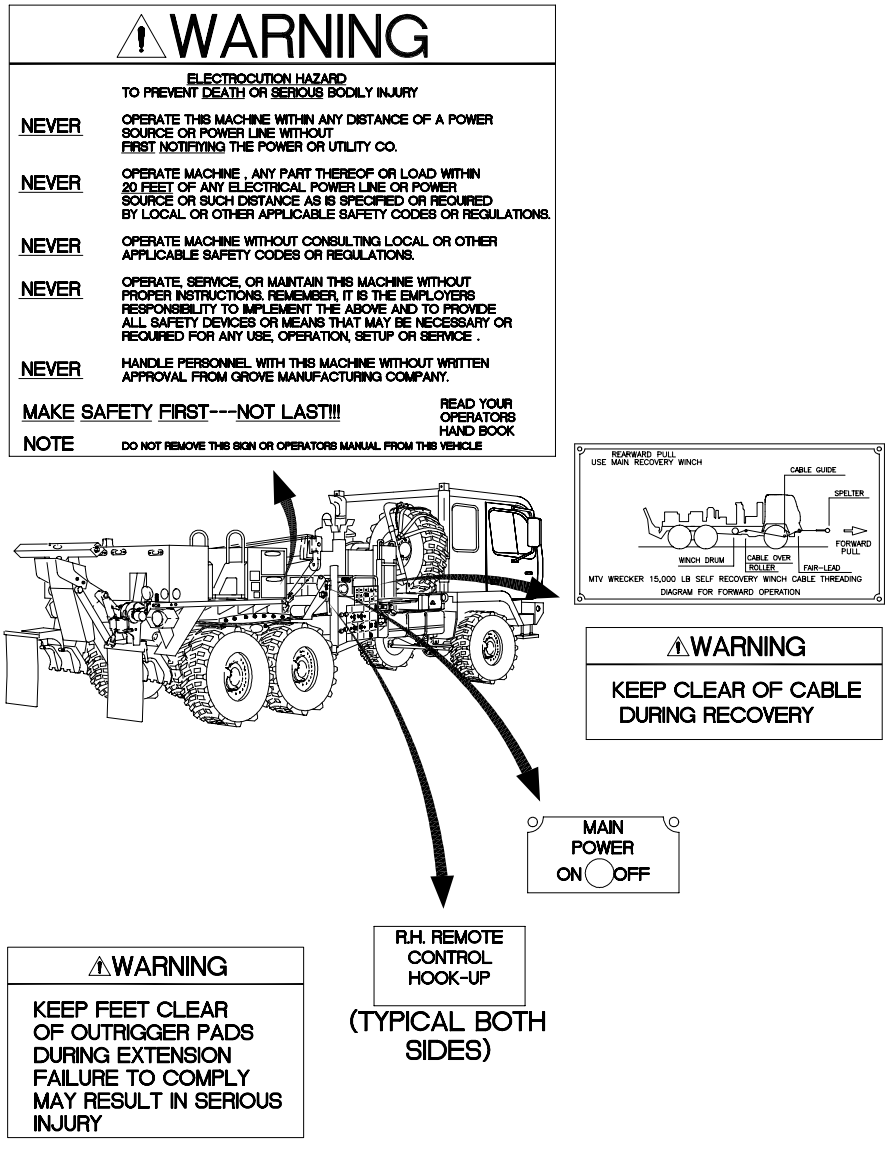
DATA AND INSTRUCTION PLATES - Continued 0043 00

M1089A1



DATA AND INSTRUCTION PLATES - Continued 0043 00

M1089A1 - Continued



DATA AND INSTRUCTION PLATES - Continued 0043 00

M1089A1 - Continued

⚠CAUTION

ELECTRONIC EQUIPMENT ON THIS MACHINE IS INTENDED AS AN AID TO THE OPERATOR

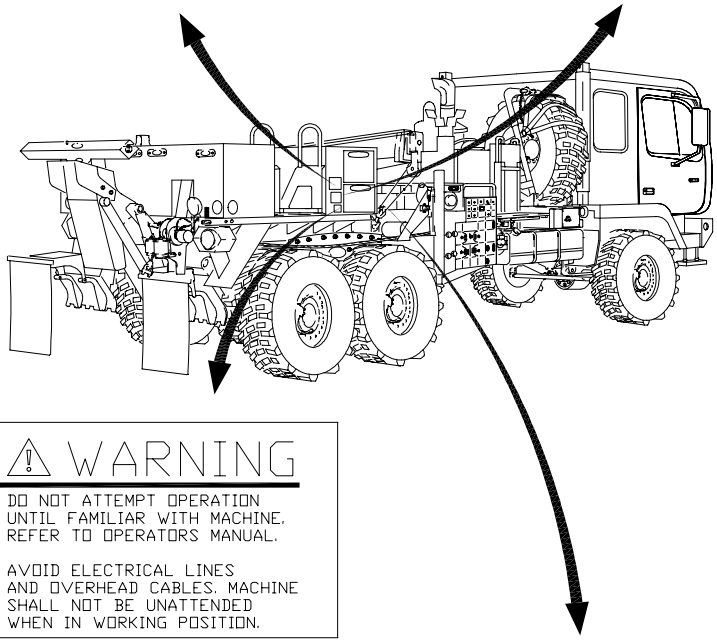
UNDER NO CONDITIONS SHOULD IT BE RELIED UPON TO REPLACE USE OF CAPACITY CHARTS AND OPERATING INSTRUCTIONS. SOLE RELIANCE UPON ELECTRONIC AIDS IN PLACE OF GOOD OPERATING PRACTICES CAN CAUSE AN ACCIDENT.

DO NOT REMOVE THIS SIGN OR OPERATORS MANUAL FROM VEHICLE

⚠WARNING

THIS MACHINE IS NOT EQUIPPED WITH ANY WARNING OR INSULATING DEVICES. EXTREME CAUTION MUST BE EXERCISED BY ALL PERSONNEL WORKING WITH AND AROUND THIS MACHINE WHEN IN THE PROXIMITY OF ENERGIZED POWER SOURCE OR POWER LINES.

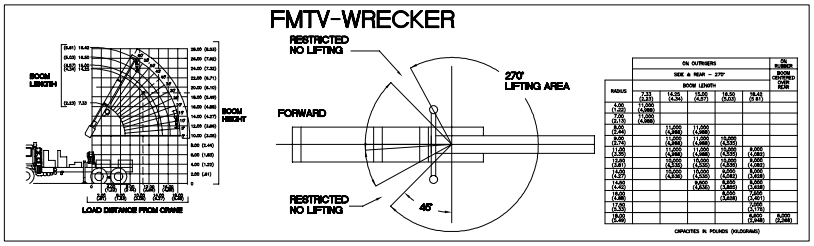
ELECTRICITY CAN CAUSE SEVERE BODILY INJURY OR DEATH IF CONTACT OCCURS. ALL PERSONNEL MUST BE ADEQUATELY WARNED OF SAFETY PROCEDURES.



⚠WARNING

DO NOT ATTEMPT OPERATION UNTIL FAMILIAR WITH MACHINE. REFER TO OPERATORS MANUAL.

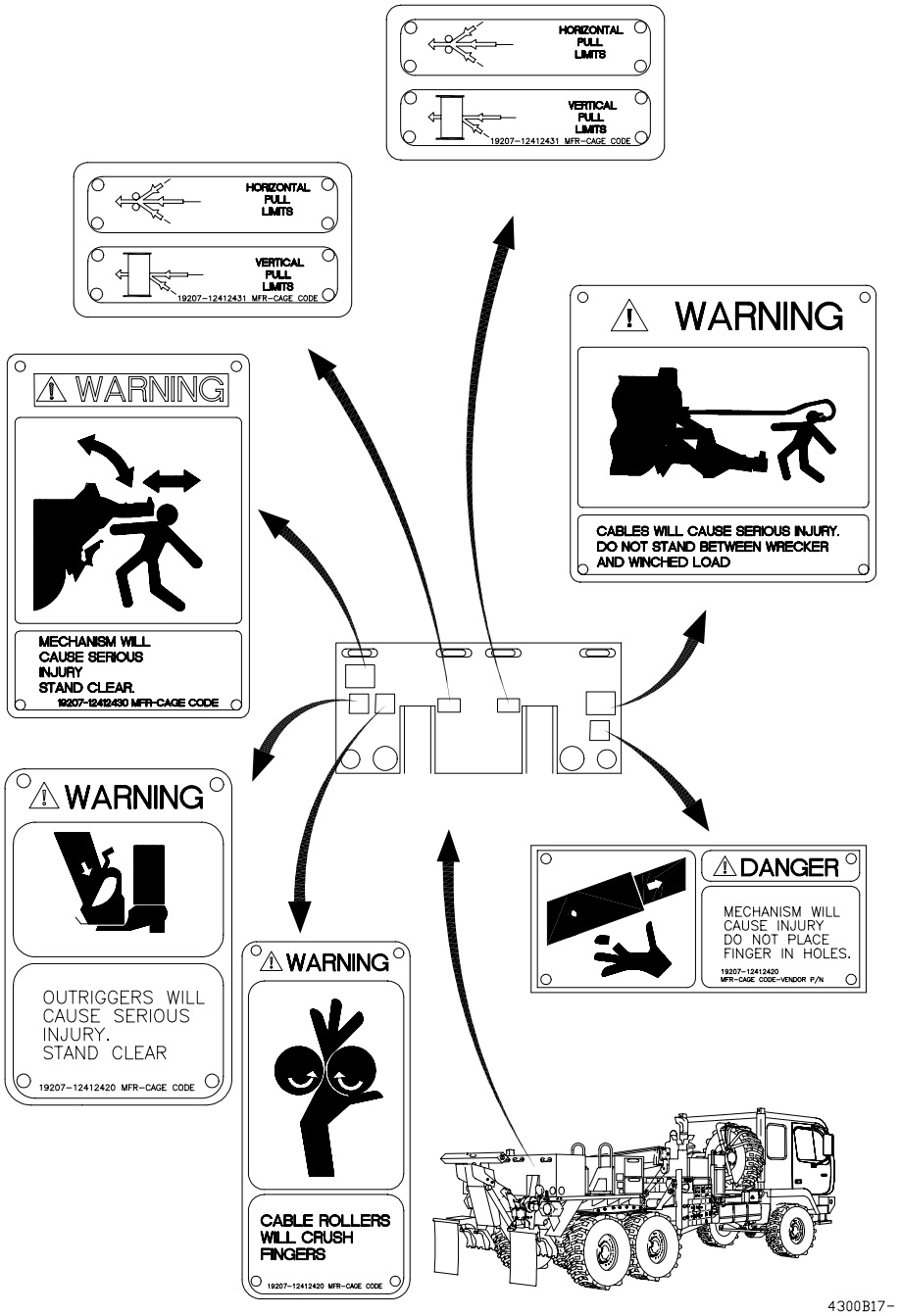
AVOID ELECTRICAL LINES AND OVERHEAD CABLES. MACHINE SHALL NOT BE UNATTENDED WHEN IN WORKING POSITION.



4300B16-

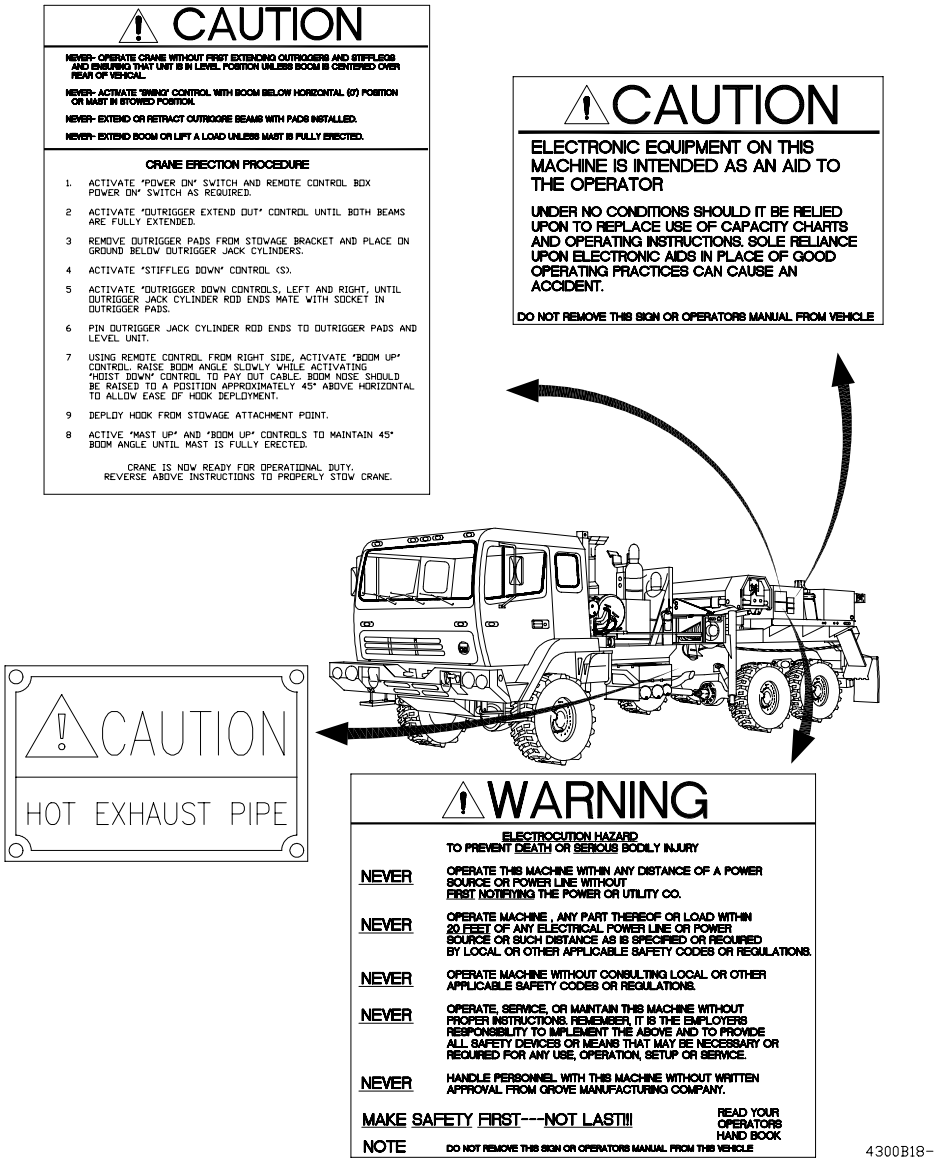
DATA AND INSTRUCTION PLATES - Continued 0043 00

M1089A1 - Continued



DATA AND INSTRUCTION PLATES - Continued 0043 00

M1089A1 - Continued.



⚠ CAUTION

NEVER- OPERATE CRANE WITHOUT FIRST EXTENDING OUTRIGGERS AND STIFFLEGS AND ENSURING THAT UNIT IS IN LEVEL POSITION UNLESS BOOM IS CENTERED OVER REAR OF VEHICAL.

NEVER- ACTIVATE "SWING" CONTROL WITH BOOM BELOW HORIZONTAL (0°) POSITION OR MAST IN STOWED POSITION.

NEVER- EXTEND OR RETRACT OUTRIGGRE BEAMS WITH PADS INSTALLED.

NEVER- EXTEND BOOM OR LIFT A LOAD UNLESS MAST IS FULLY ERECTED.

CRANE ERECTION PROCEDURE

1. ACTIVATE "POWER ON" SWITCH AND REMOTE CONTROL BOX POWER ON" SWITCH AS REQUIRED.
2. ACTIVATE "OUTRIGGER EXTEND OUT" CONTROL UNTIL BOTH BEAMS ARE FULLY EXTENDED.
3. REMOVE OUTRIGGER PADS FROM STOWAGE BRACKET AND PLACE ON GROUND BELOW OUTRIGGER JACK CYLINDERS.
4. ACTIVATE "STIFFLEG DOWN" CONTROL (S).
5. ACTIVATE "OUTRIGGER DOWN CONTROLS, LEFT AND RIGHT, UNTIL OUTRIGGER JACK CYLINDER ROD ENDS MATE WITH SOCKET IN OUTRIGGER PADS.
6. PIN OUTRIGGER JACK CYLINDER ROD ENDS TO OUTRIGGER PADS AND LEVEL UNIT.
7. USING REMOTE CONTROL FROM RIGHT SIDE, ACTIVATE "BOOM UP" CONTROL. RAISE BOOM ANGLE SLOWLY WHILE ACTIVATING "HOIST DOWN" CONTROL TO PAY OUT CABLE. BOOM NOSE SHOULD BE RAISED TO A POSITION APPROXIMATELY 45° ABOVE HORIZONTAL TO ALLOW EASE OF HOOK DEPLOYMENT.
9. DEPLOY HOOK FROM STOWAGE ATTACHMENT POINT.
8. ACTIVE "MAST UP" AND "BOOM UP" CONTROLS TO MAINTAIN 45° BOOM ANGLE UNTIL MAST IS FULLY ERECTED.

CRANE IS NOW READY FOR OPERATIONAL DUTY.
REVERSE ABOVE INSTRUCTIONS TO PROPERLY STOW CRANE.

⚠ CAUTION

ELECTRONIC EQUIPMENT ON THIS MACHINE IS INTENDED AS AN AID TO THE OPERATOR

UNDER NO CONDITIONS SHOULD IT BE RELIED UPON TO REPLACE USE OF CAPACITY CHARTS AND OPERATING INSTRUCTIONS. SOLE RELIANCE UPON ELECTRONIC AIDS IN PLACE OF GOOD OPERATING PRACTICES CAN CAUSE AN ACCIDENT.

DO NOT REMOVE THIS SIGN OR OPERATORS MANUAL FROM VEHICLE

⚠ CAUTION

HOT EXHAUST PIPE

⚠ WARNING

ELECTROCUTION HAZARD
TO PREVENT DEATH OR SERIOUS BODILY INJURY

NEVER — OPERATE THIS MACHINE WITHIN ANY DISTANCE OF A POWER SOURCE OR POWER LINE WITHOUT FIRST NOTIFYING THE POWER OR UTILITY CO.

NEVER — OPERATE MACHINE , ANY PART THEREOF OR LOAD WITHIN 20 FEET OF ANY ELECTRICAL POWER LINE OR POWER SOURCE OR SUCH DISTANCE AS IS SPECIFIED OR REQUIRED BY LOCAL OR OTHER APPLICABLE SAFETY CODES OR REGULATIONS.

NEVER — OPERATE MACHINE WITHOUT CONSULTING LOCAL OR OTHER APPLICABLE SAFETY CODES OR REGULATIONS.

NEVER — OPERATE, SERVICE, OR MAINTAIN THIS MACHINE WITHOUT PROPER INSTRUCTIONS. REMEMBER, IT IS THE EMPLOYERS RESPONSIBILITY TO IMPLEMENT THE ABOVE AND TO PROVIDE ALL SAFETY DEVICES OR MEANS THAT MAY BE NECESSARY OR REQUIRED FOR ANY USE, OPERATION, SETUP OR SERVICE.

NEVER — HANDLE PERSONNEL WITH THIS MACHINE WITHOUT WRITTEN APPROVAL FROM GROVE MANUFACTURING COMPANY.

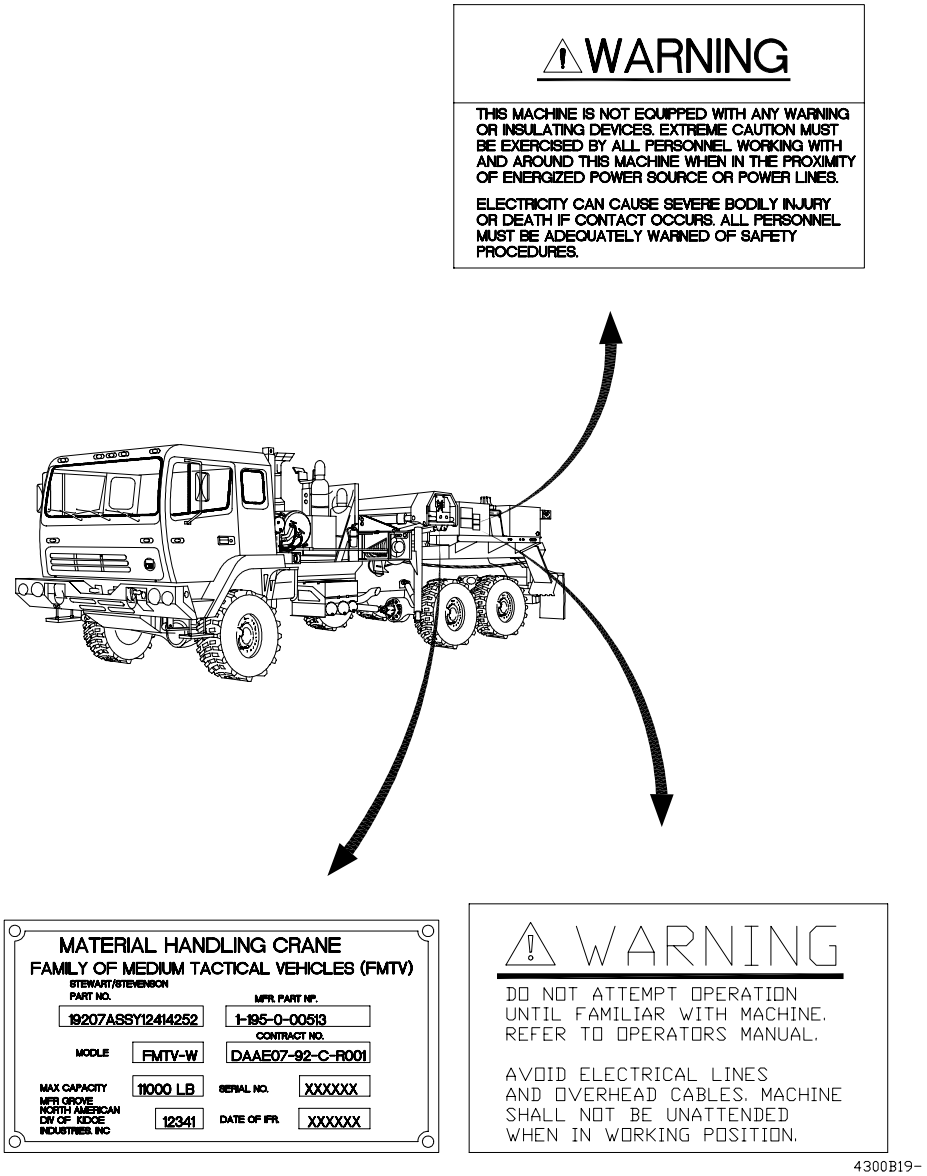
MAKE SAFETY FIRST---NOT LAST!!! READ YOUR OPERATORS HAND BOOK

NOTE DO NOT REMOVE THIS SIGN OR OPERATORS MANUAL FROM THIS VEHICLE

4300B18-

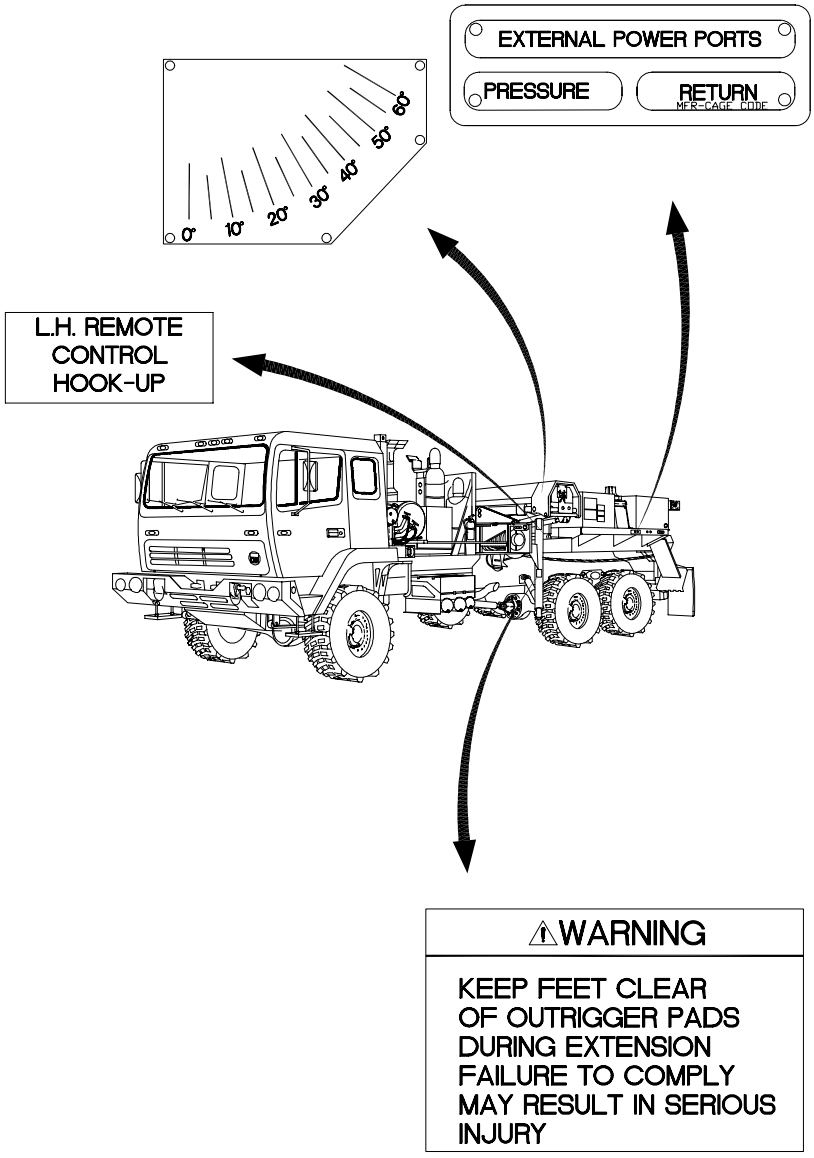
DATA AND INSTRUCTION PLATES - Continued 0043 00

M1089A1 - Continued



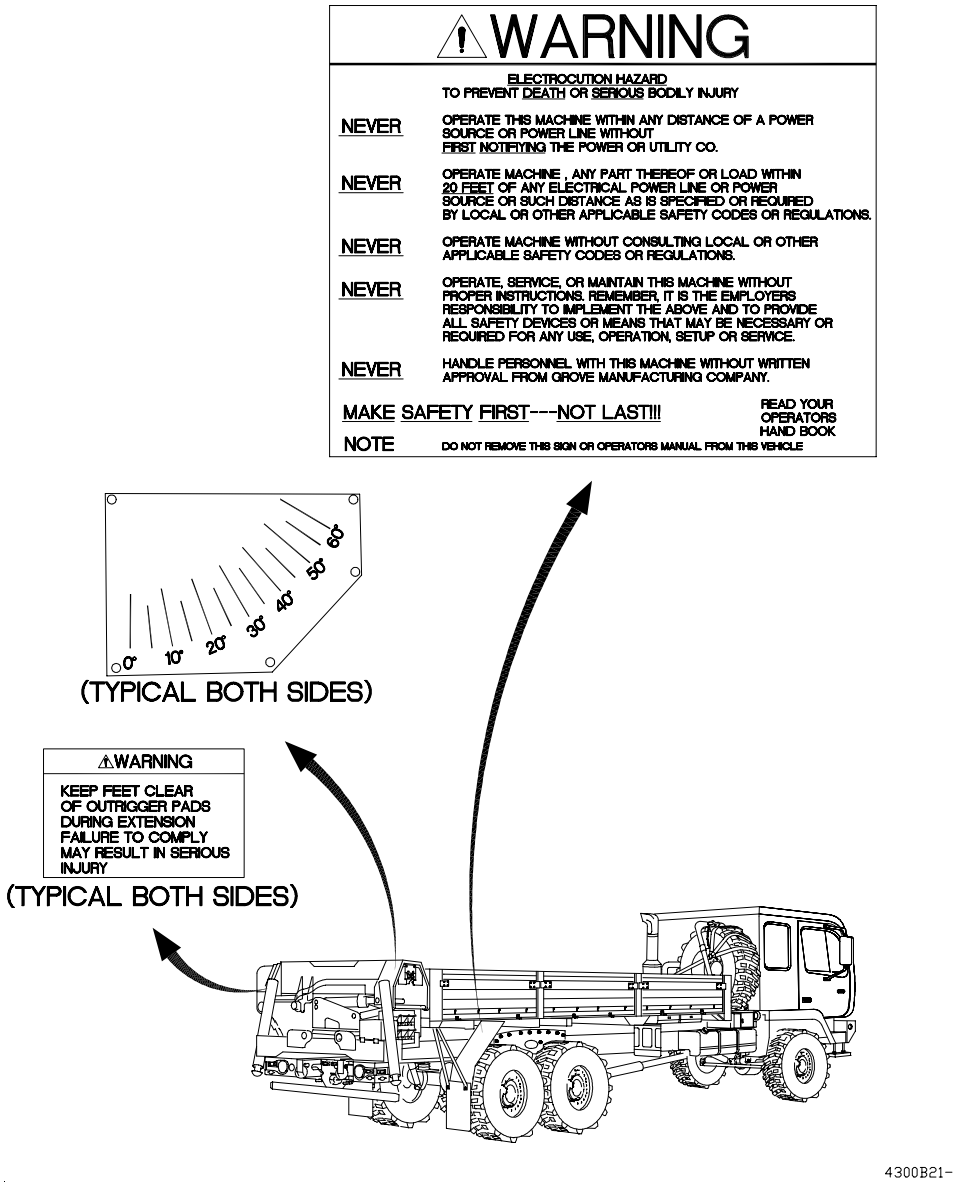
DATA AND INSTRUCTION PLATES - Continued 0043 00

M1089A1 - Continued



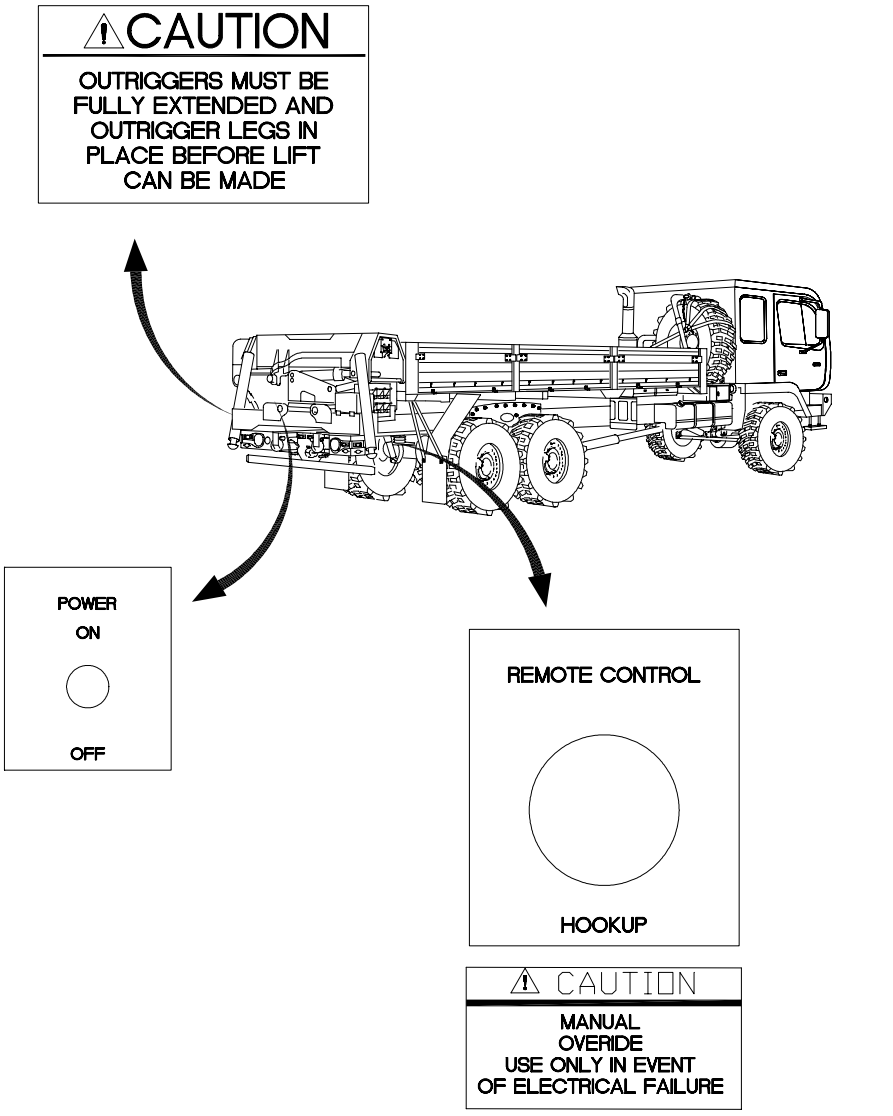
DATA AND INSTRUCTION PLATES - Continued 0043 00

M1084A1/M1086A1



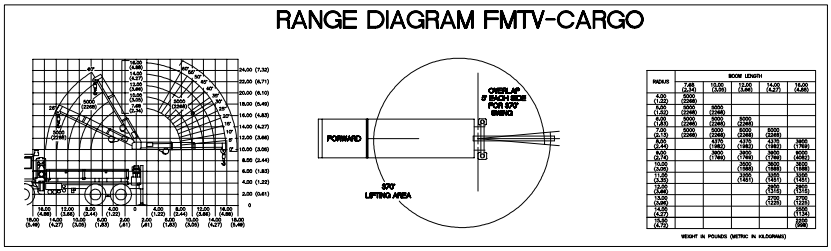
DATA AND INSTRUCTION PLATES - Continued 0043 00

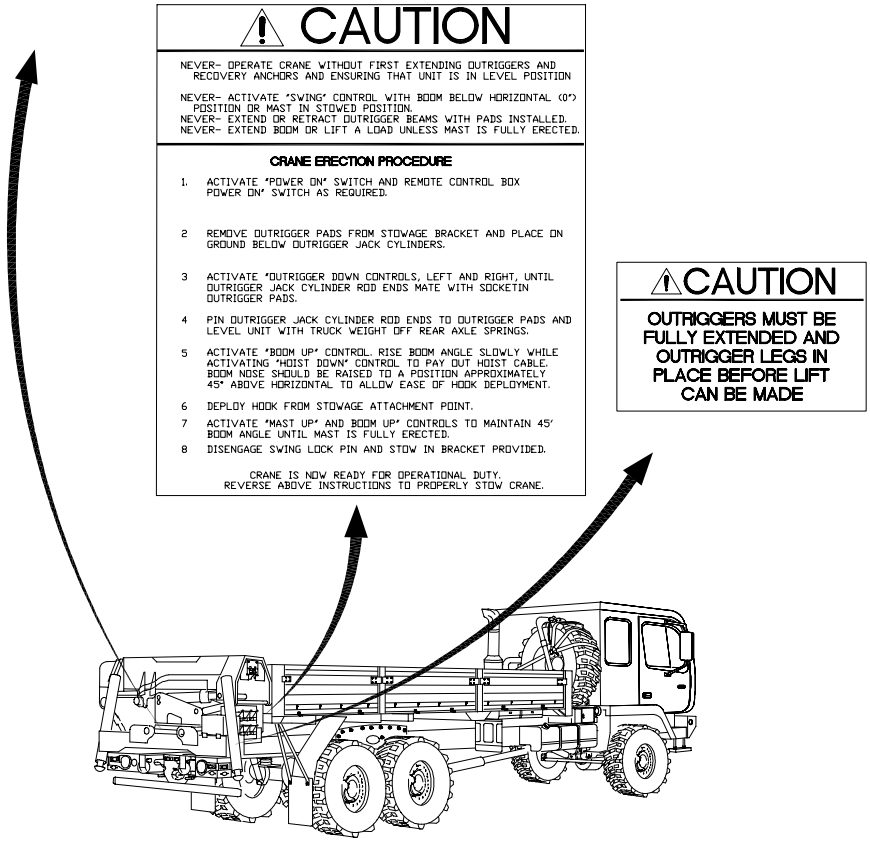
M1084A1/M1086A1 - Continued



DATA AND INSTRUCTION PLATES - Continued 0043 00

M1084A1/M1086A1 - Continued

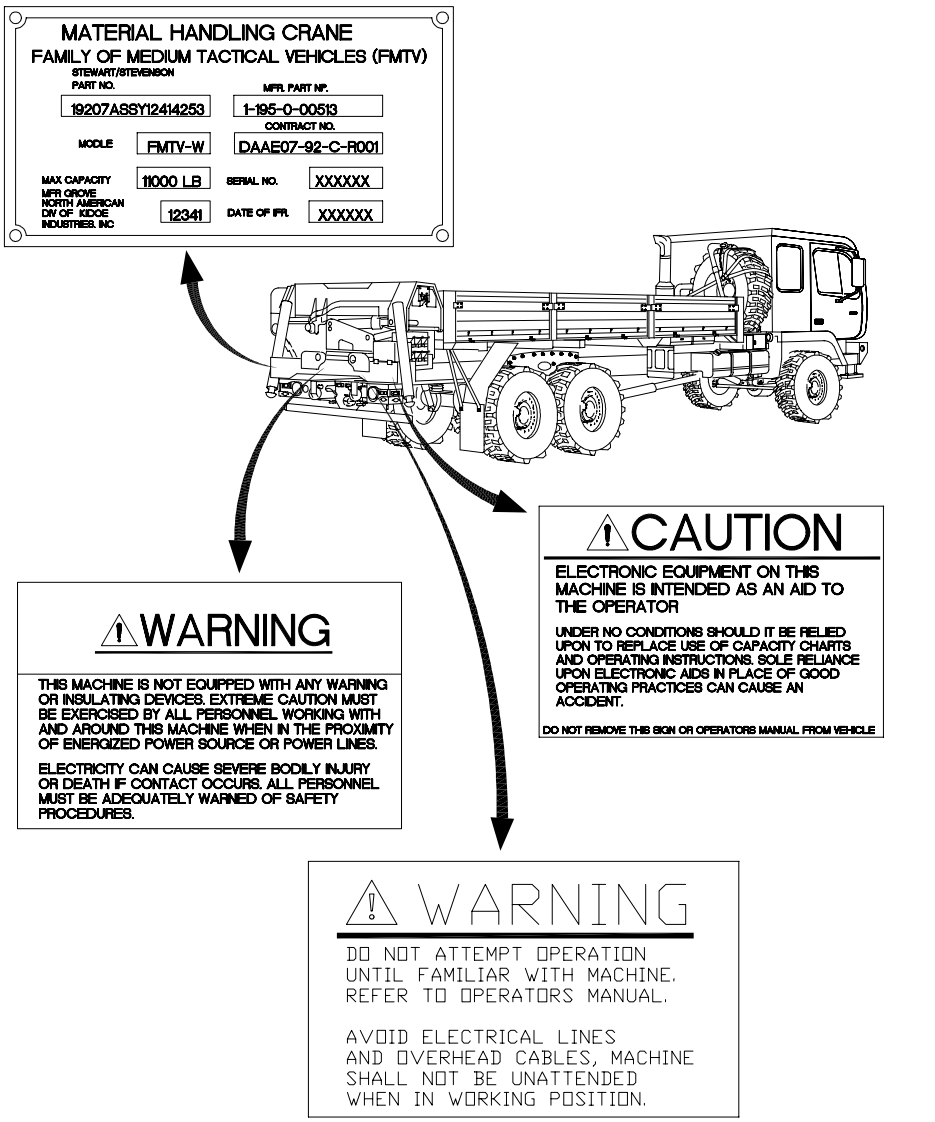




4300B23-

DATA AND INSTRUCTION PLATES - Continued 0043 00

M1084A1/M1086A1 - Continued



4300B24-

END OF OPERATING PROCEDURE

AUXILIARY EQUIPMENT OPERATION 0044 00

INITIAL SETUP:

Maintenance Level
Operator

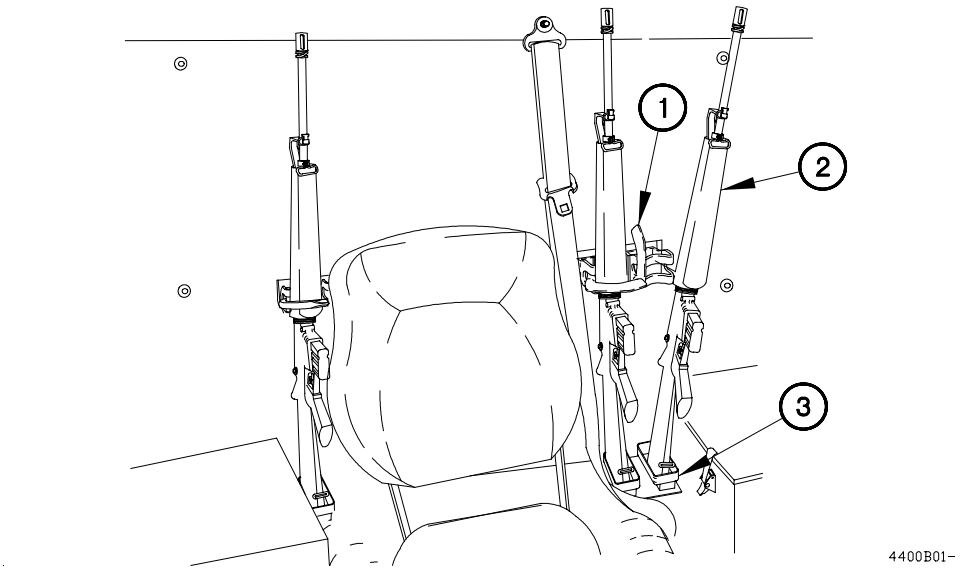
References
TM 3-6665-225-12
TM 3-4230-214-12&P
TM 11-5820-401-10-1
TM 11-5820-890-10-1

GENERAL

This work package provides the data and procedures for operating the auxiliary equipment on the M1083A1 series vehicles. Items covered include Stowing Rifle In Mount, Removing Rifle From Mount, M42 Alarm Mounting Location, M43 Chemical Detector Mounting Location, Decontamination Apparatus Mounting Location, Operating Chemical Alarm Kit, Operating Decontamination Kit, and Operating Radio

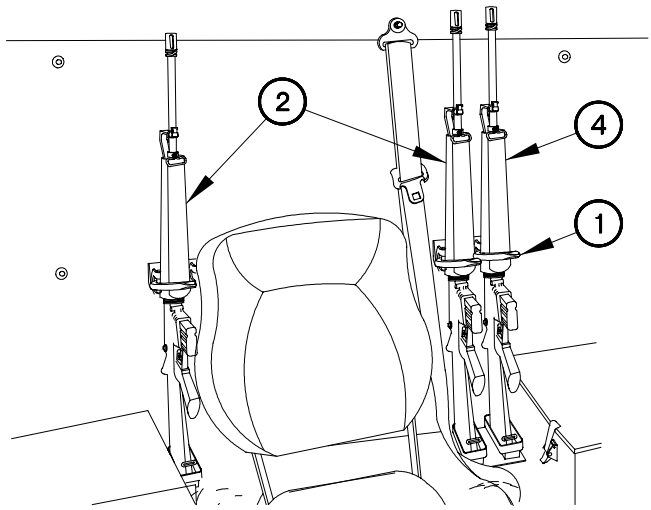
STOW RIFLE IN SMALL ARMS MOUNT (VEHICLE S/N 18,549 OR LOWER)

1. Turn handle (1) up.
2. Position rifle (2) in support (3).
3. Pull out on handle (1).



STOW RIFLE IN SMALL ARMS MOUNT (VEHICLE S/N 18,549 OR LOWER) - Continued

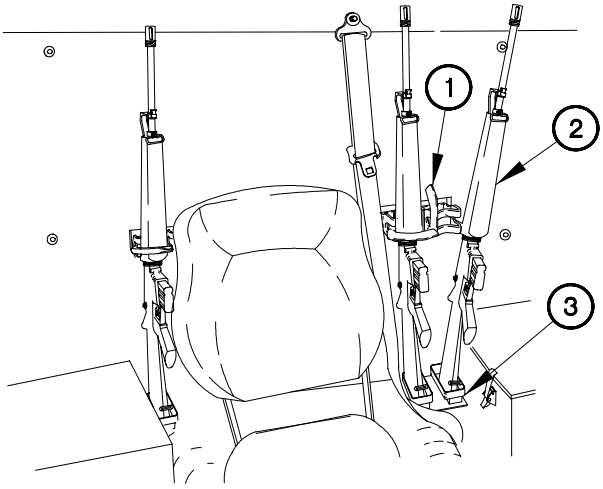
4. Turn handle (1) down over rifle handguard (4).
5. Check that rifle (2) is secure.
6. Perform steps 1 through 5 for remaining rifles.



4400B02-

REMOVE RIFLE FROM SMALL ARMS MOUNT (VEHICLE S/N 18,549 OR LOWER)

1. Pull out on handle (1).
2. Turn handle (1) up.
3. Remove rifle (2) from support (3).

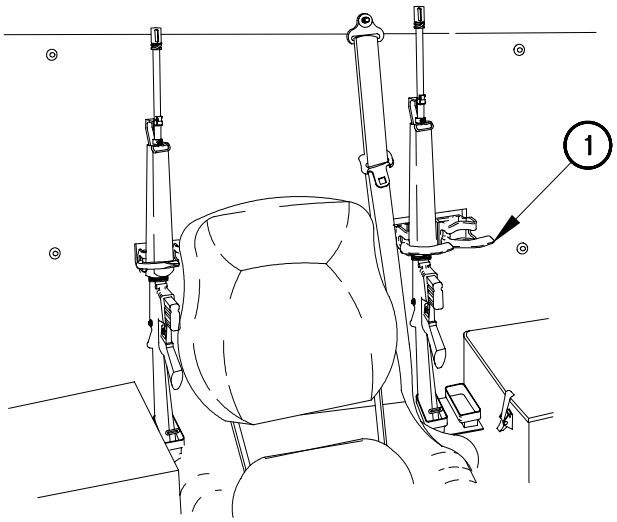


4400B03-

REMOVE RIFLE FROM SMALL ARMS MOUNT (VEHICLE S/N 18,549 or LOWER) – Continued

4. Turn handle (1) down to the horizontal position.

5. Perform steps 1 through 4 for remaining rifles



4400b04-

STOW RIFLE IN SMALL ARMS MOUNT (VEHICLE S/N 18,550 OR HIGHER)

1. Remove pin (1) from track (2).

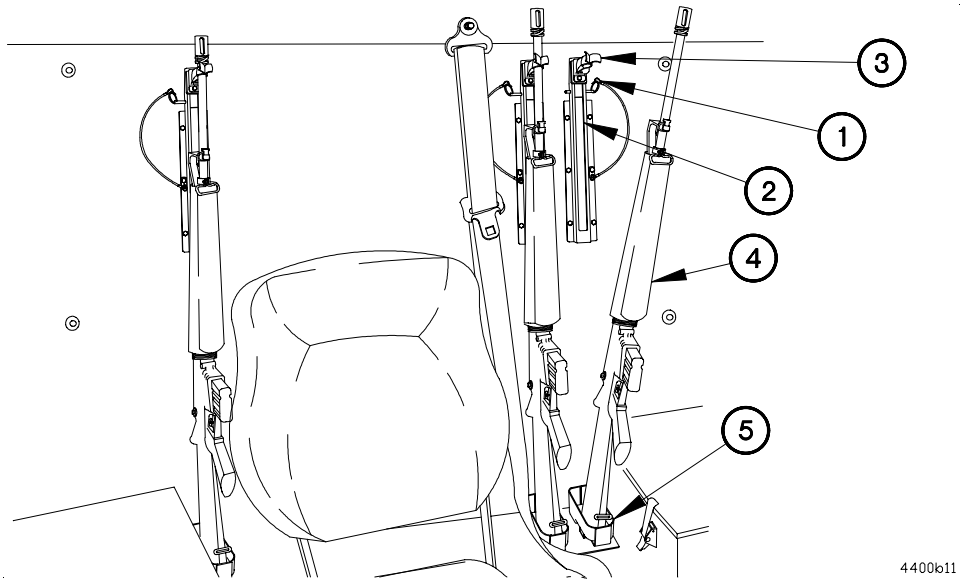
2. Move clip (3) to desired height.

3. Install pin (1) in track (2).

4. Open clip (3).

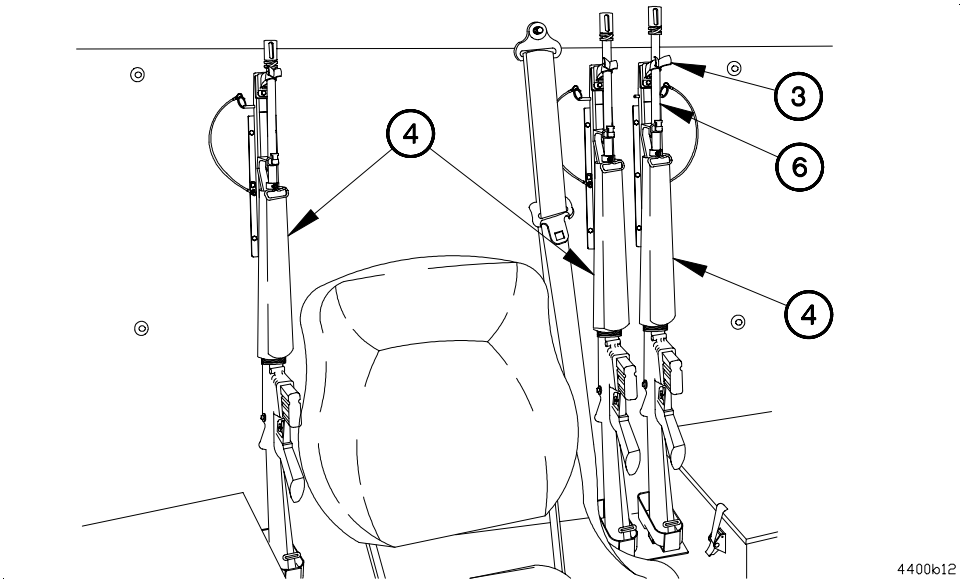
5. Position rifle (4) in support (5).

STOW RIFLE IN SMALL ARMS MOUNT (VEHICLE S/N 18,550 or HIGHER) – Continued



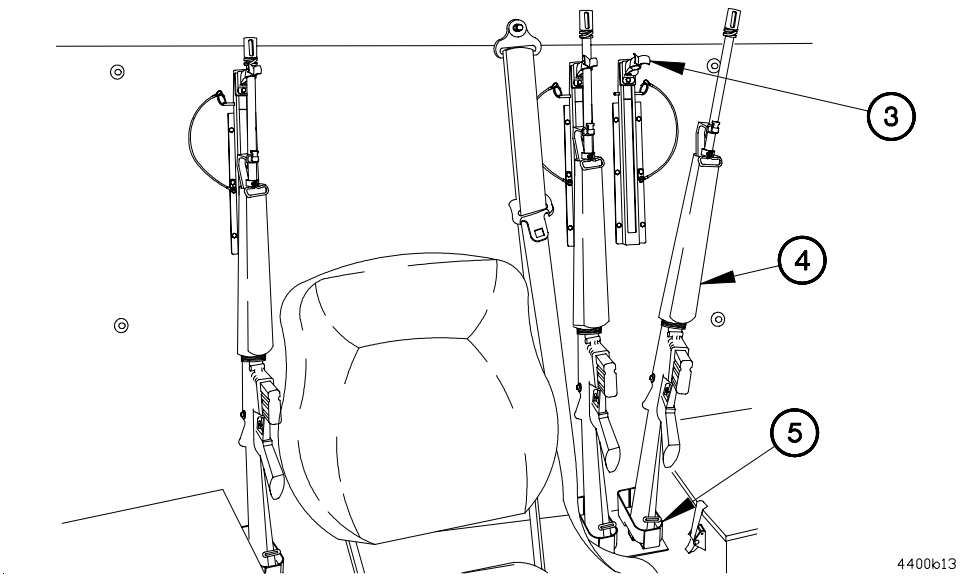
6. Close clip (3) around rifle handguard (6).

7. Check that rifle (4) is secure.

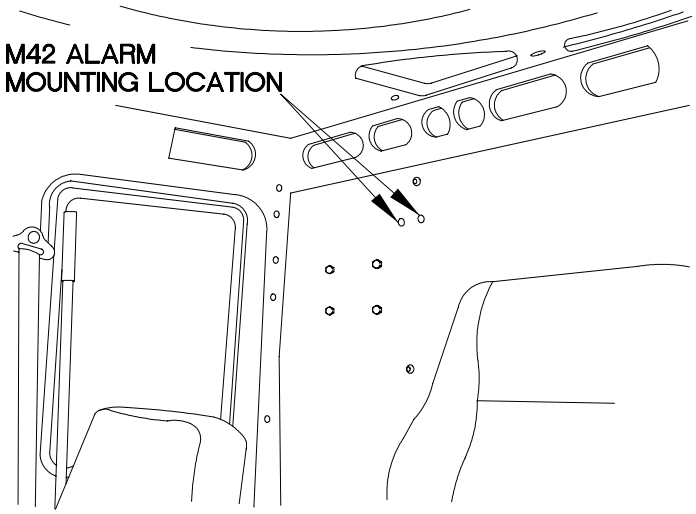


REMOVE RIFLE FROM SMALL ARMS MOUNT (VEHICLE S/N 18,550 or LOWER)

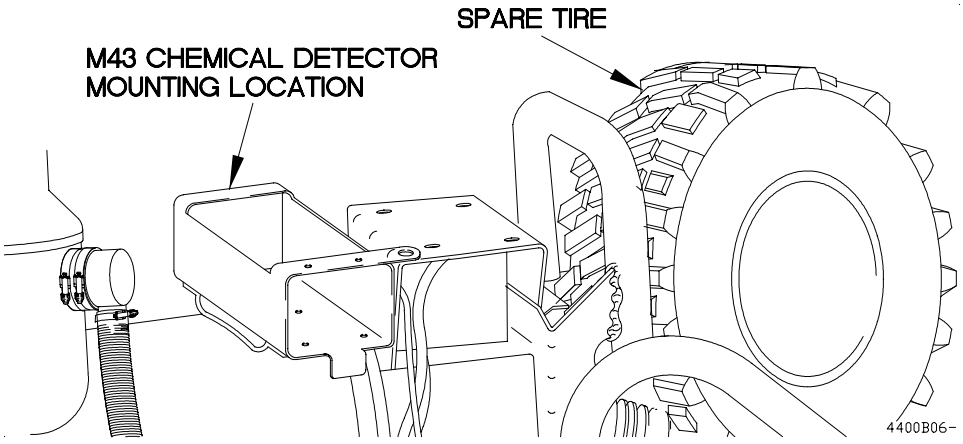
1. Open clip (3).
2. Remove rifle (4) from support (5).
3. Close clip (3).
4. Perform Steps 1 through 3 for remaining rifles.



M42 ALARM MOUNTING LOCATION

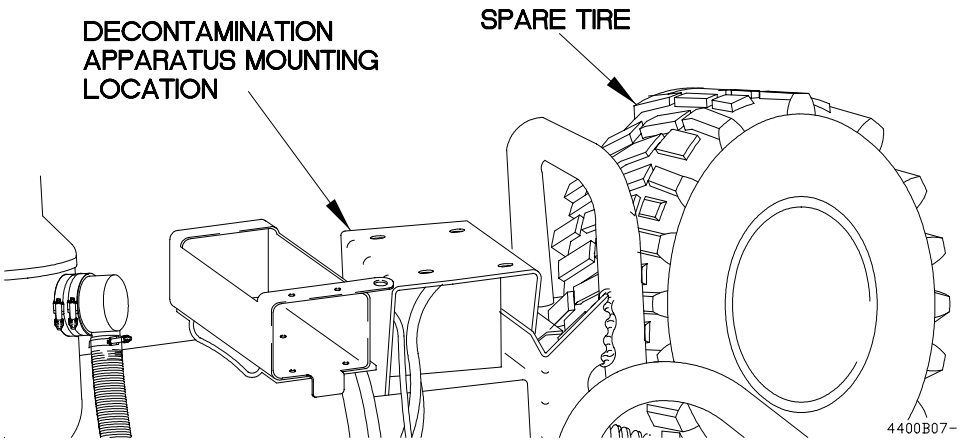


M43 CHEMICAL DETECTOR MOUNTING LOCATION



AUXILIARY EQUIPMENT OPERATION - Continued 0044 00

DECONTAMINATION APPARATUS MOUNTING LOCATION



OPERATE CHEMICAL ALARM KIT

Refer to TM 3-6665-225-12 for operating instructions.

OPERATE DECONTAMINATION KIT

Refer to TM 3-4320-214-12&P for operating instructions.

OPERATE RADIO

Radio equipment will be mounted in cab on rear panel. Refer to TM 11-5820-401-10-1 to operate Radio Set AN/VRC-46 or TM 11-5820-890-10-1 to operate Radio Set AN/VRC-90A.

END OF OPERATING PROCEDURE

OPERATION IN EXTREME HEAT 0045 00

INITIAL SETUP:

Maintenance Level
Operator

References
TM 9-6140-200-14
FM 21-10
FM 21-11
WP 0018 00
WP 0099 00
WP 0104 00

GENERAL

This work package provides the data and procedures for safely operating M1083A1 series vehicles in extreme heat.

VEHICLE OPERATION

WARNING

When mission requires the vehicle Operator and crew to remain in a stationary FMTV vehicle with the engine running in outside temperatures above 90° F (32° C), vehicle Operator and crew must observe proper safety precautions to prevent heat stress injury. Refer to FM 21-10 Field Hygiene and Sanitation, and FM 21-11 First Aid for Soldiers for proper precautions and preventive measures. Failure to comply may result in injury to personnel.

WARNING

When mission requires the vehicle Operator and crew to operate the FMTV vehicle in outside temperatures above 90° F (32° C) with the windows closed, vehicle Operator and crew must observe proper safety precautions to prevent heat stress injury. Refer to FM 21-10 Field Hygiene and Sanitation, and FM 21-11 First Aid for Soldiers for proper precautions and preventive measures. Failure to comply may result in injury to personnel.

OPERATION IN EXTREME HEAT - Continued 0045 00

VEHICLE OPERATION - Continued

CAUTION

When operating in temperatures above 100° F (38° C), extra care must be taken to prevent overheating the engine. Watch WATER TEMP gage, STOP ENGINE indicator, and COOLANT TEMP indicator closely. Failure to comply may result in damage to equipment.

Check oil levels often and keep operating strain as low as possible. Vehicle cooling and lubrications systems support each other. Failure of one system will rapidly cause failure of the other system. Failure to comply may result in damage to equipment.

Idle engine to cool down. Idling cools engine faster than quick shutdown and may prevent damage to engine from excessive heat. Failure to comply may result in damage to equipment.

OPERATION IN EXTREME HEAT - Continued 0045 00

VEHICLE OPERATION - Continued

CAUTION

Use low gear ranges only when necessary. Failure to comply may result in damage to equipment.

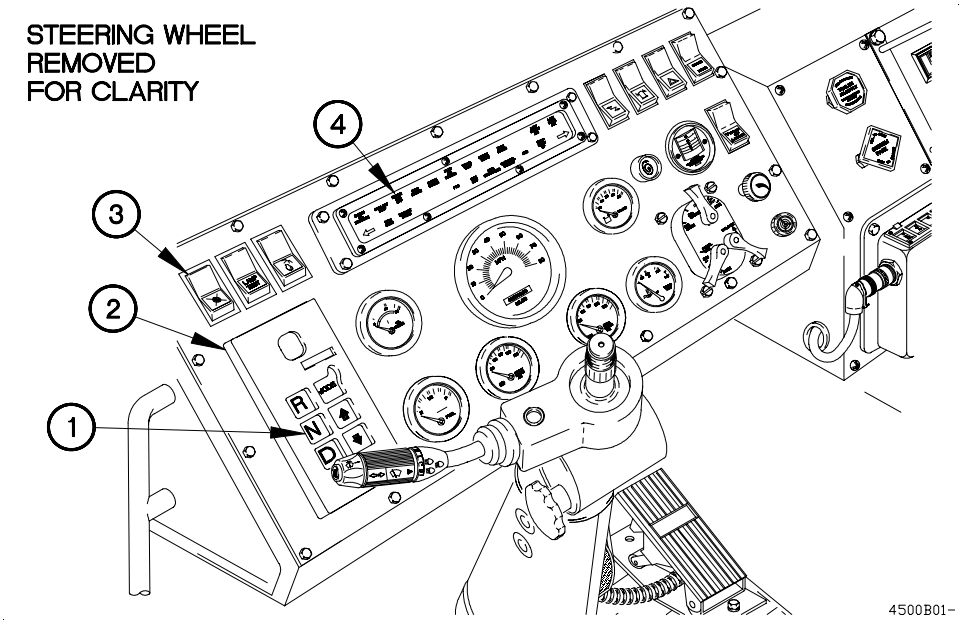
1. Push N (Neutral) select button (1) on WTEC III Transmission Pushbutton Shift Selector (TPSS) (2) while engine is running. Idle engine for approximately two minutes before engine shutdown.

CAUTION

Do not operate vehicle with engine fan off switch in the on position. Ensure ENGINE FAN OFF indicator is not illuminated. Failure to comply may result in damage to equipment.

Placing the engine fan off switch in the on position will cause the fan not to operate. Failure to comply may result in damage to equipment.

2. Check that engine fan off switch (3) is in the off position and the ENGINE FAN OFF indicator (4) is not illuminated.



OPERATION IN EXTREME HEAT - Continued 0045 00

VEHICLE OPERATION - Continued

CAUTION

Never operate engine for more than 30 seconds at full throttle while vehicle is not moving. Transmission oil temperature will become too hot. Failure to comply may result in damage to equipment.

3. If the TRANS TEMP indicator (5) illuminates and WATER TEMP gage (6) reads near 230° F (110° C), transmission oil is overheating:

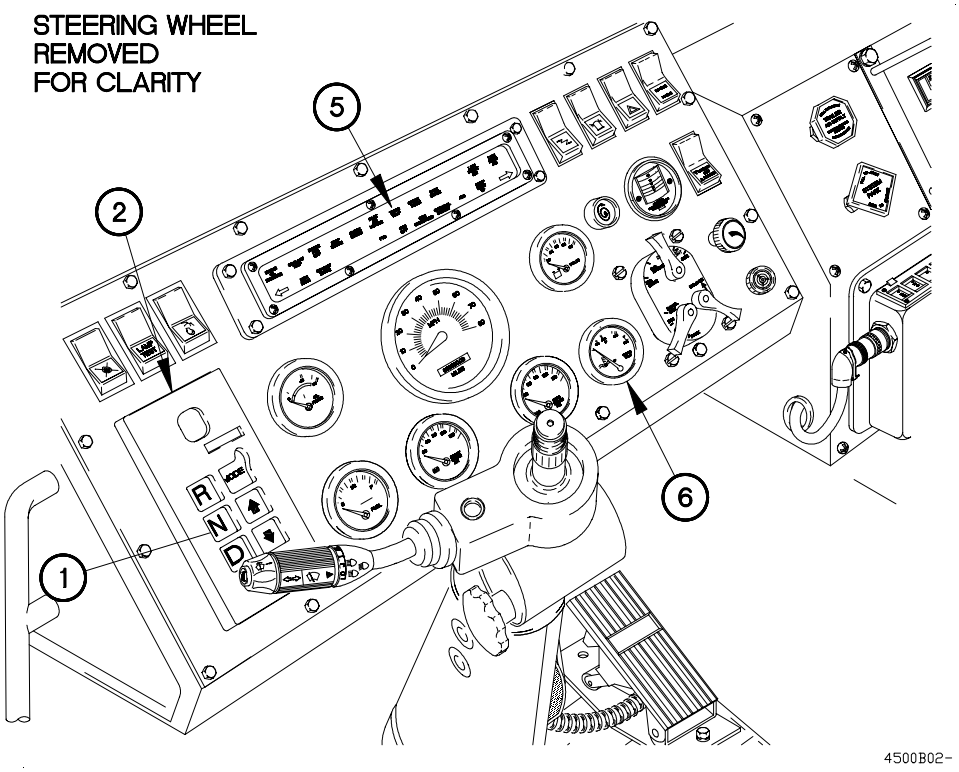
   a. Stop vehicle.

   b. Press the N (Neutral) select button (1) on WTEC III TPSS (2).

   c. Allow engine to operate at idle for three minutes.

   d. Continue normal vehicle operation when TRANS TEMP indicator (5) goes out.

   e. Shut down engine (WP 0018 00) and notify Unit Maintenance if TRANS TEMP indicator (5) does not go out.



OPERATION IN EXTREME HEAT - Continued 0045 00

VEHICLE OPERATION - Continued

4. Check cooling system often for the following conditions:

    a. Low coolant level in radiator overflow tank (WP 0099 00, Table 1, Item 3).

    b. Cracked or leaking radiator hoses (WP 0099 00, Table 4, Item 61).

    c. Radiator fins clogged with dust, leaves, or insects.

NOTE

Batteries do not hold charge well in extreme heat. Batteries will be tagged for use in tropical conditions or extreme heat. Batteries will have a white circle or dot painted on top. Battery electrolyte must be changed to adjust for such conditions. Refer to TM 9-6140-200-14 for procedures.

5. Check battery electrolyte level daily (WP 0104 00). If electrolyte level is low, service with distilled water.

6. In hot, damp climates check body and chassis often. Notify Unit Maintenance if any of the following conditions are found:

    a. Signs of pitting or paint blistering on metal surfaces.

    b. Signs of mildew, mold, or fungus on fabrics and rubber.

END OF OPERATING PROCEDURE

OPERATION IN EXTREME DUST 0046 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0099 00
WP 0103 00
WP 0105 00

GENERAL

This work package provides the data and procedures for safely operating M1083A1 series vehicles in extreme dust.

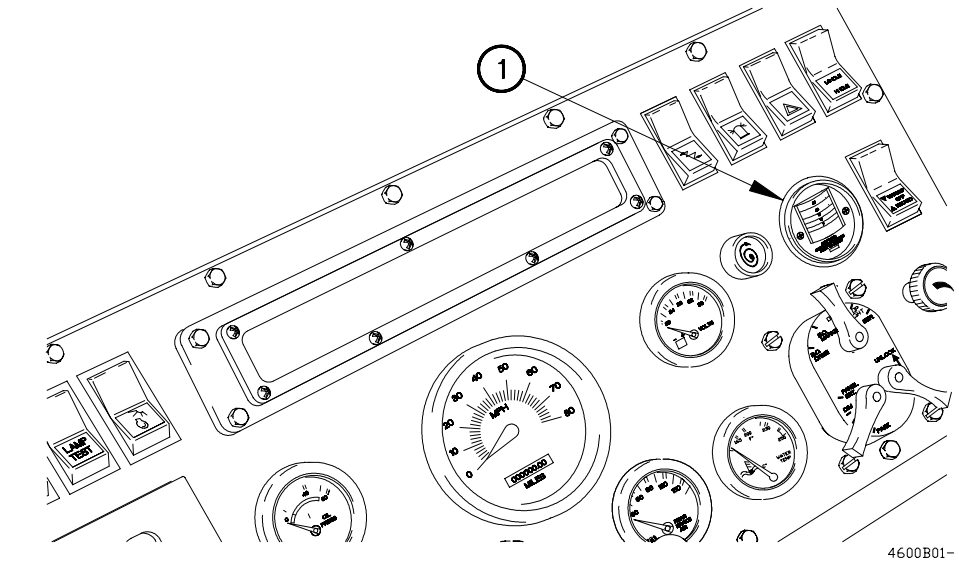
VEHICLE OPERATION

CAUTION

Check AIR FILTER RESTRICTION GAUGE often. If yellow diaphragm enters red zone (greater than 25 in.), shut down engine immediately and service air filter (WP 0105 00). Failure to comply may result in damage to equipment.

1. Service air filter (WP 0105 00). Check other gages and indicator lights on instrument panel assembly (1) to be sure dust does not affect other equipment.

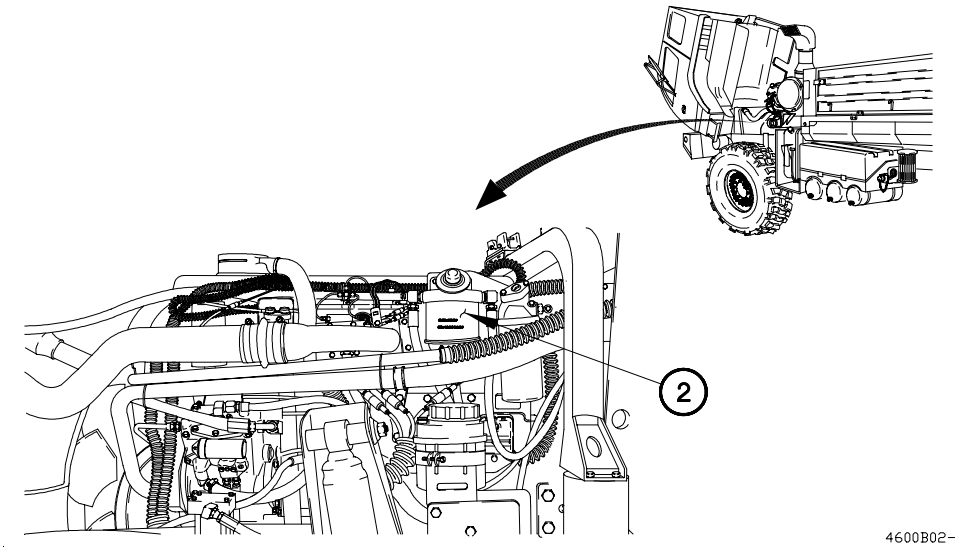
2. Allow as much distance as possible between vehicles and operate at low speeds.



OPERATION IN EXTREME DUST- Continued 0046 00

VEHICLE OPERATION - Continued

3. Check and drain fuel/water separator (2) at stops (WP 0099 00, Table 3, Item 4).



4. Park vehicle so that front of vehicle does not face into wind, when possible.

5. Cover air intake, radiator, and cab with tarp during extended shutdown.

CAUTION

Keep glass surfaces covered with tarp as much as possible in blowing dust conditions. Failure to comply may result in scratched glass surfaces.

6. Cover glass surfaces when not needed for operation. Take extra care when cleaning glass to prevent scratching surfaces.

CAUTION

Do not direct high-pressure water stream at glass surfaces, seals, air intake, exhaust outlet, or any other component of vehicle that could be easily damaged by high-pressure water stream. Failure to comply may result in damage to equipment.

7. Clean dust from wheels, axles, universal joints, steering mechanism, and radiator as soon as possible (WP 0103 00).

END OF OPERATING PROCEDURE

OPERATION IN FOREST OR ON ROCKY TERRAIN 0047 00

INITIAL SETUP:

Maintenance Level
Operator

GENERAL

This work package provides the data and procedures for safely operating the M1083A1 series vehicles in a forest or on rocky terrain.

VEHICLE OPERATION

WARNING

Avoid driving diagonally across a hill. Vehicle could roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

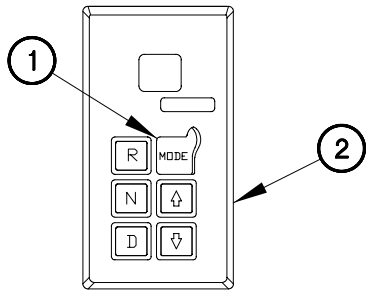
CAUTION

Ensure vehicle has enough clearance before driving over rough terrain. Rough terrain can damage components under vehicle. Failure to comply may result in damage to equipment.

Ensure vehicle can clear overhanging tree limbs. Failure to comply may result in damage to equipment.

Ensure that mirrors will not be damaged by rocks or trees by adjusting mirrors to keep rear of vehicle visible. Failure to comply may result in damage to equipment.

Push MODE select button (1) on WTEC III Transmission Pushbutton Shift Selector (TPSS) (2) to select desired transmission gear.



4700B01-

END OF OPERATING PROCEDURE

OPERATION IN SAND OR MUD 0048 00

INITIAL SETUP:

Maintenance Level	References
Operator	WP 0103 00
	WP 0105 00

GENERAL

This work package provides the data and procedures for safely operating the M1083A1 series vehicles in sand or mud.

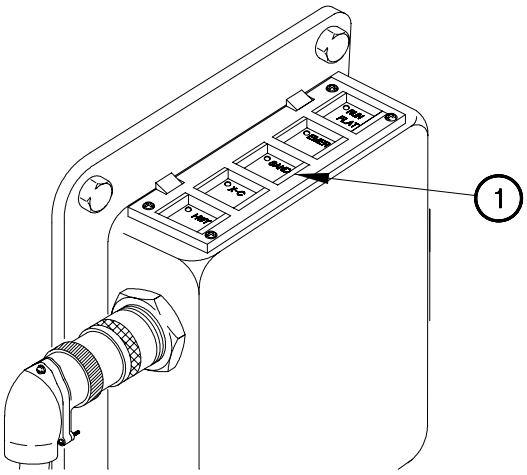
VEHICLE OPERATION

CAUTION

Keep glass surfaces covered with a tarp during blowing sand conditions. Use care when cleaning to prevent scratching glass surfaces. Failure to comply may result in scratched glass surfaces.

Check AIR FILTER RESTRICTION GAUGE often. If yellow diaphragm enters red zone (greater than 25 in.), shut down engine immediately and service air filter (WP 0105 00). Failure to comply may result in damage to equipment.

1. Press CTIS mode to SAND (1).



4800B01-

OPERATION IN SAND OR MUD - Continued 0048 00

VEHICLE OPERATION - Continued

WARNING

Operating in water or mud causes brake linings to get wet and can impair vehicle braking. Dry brakes by driving vehicle about 500 ft (153 m) while applying service brakes often. If adequate braking is not restored by drying brakes, notify Unit Maintenance. Failure to comply may result in serious injury to personnel or damage to equipment.

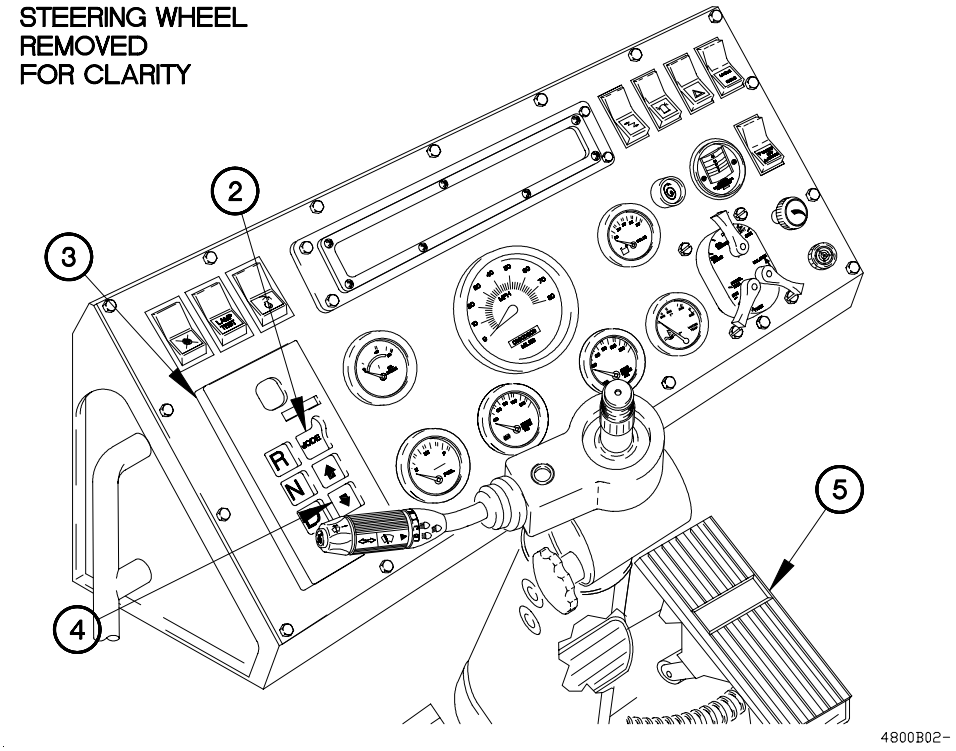
2. Push mode select button (2) on WTEC III Transmission Pushbutton Shift Selector (TPSS) (3) to select desired transmission gear.

3. Accelerate slowly so tires do not spin and dig in sand or mud.

4. Press lower gear range button (4) on WTEC III TPSS (3).

5. Keep accelerator pedal (5) steady after vehicle reaches desired speed.

6. Turn vehicle slowly when in loose sand or mud.



OPERATION IN SAND OR MUD - Continued 0048 00

VEHICLE OPERATION - Continued

WARNING

Do not straddle or drive on sides of sand mounds. Loose sand will not support vehicle on steep slopes. Avoid driving diagonally across a hill. Vehicle may roll over. Failure to comply may result in serious injury or death to personnel or damage to equipment.

7. Steer vehicle straight up and down hills when possible. When driving across a hill is necessary, choose the lowest angle possible, keep vehicle moving, and avoid quick, sharp turns.

8. To move vehicle forward and turn after vehicle is stopped in loose sand or mud:

   a. Press MODE select button (2) on WTEC III TPSS (3).

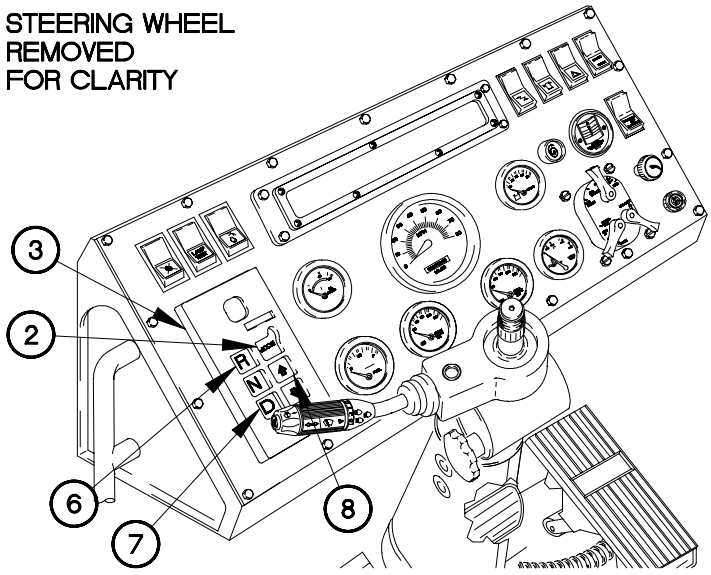
   b. Press R (Reverse) select button (6) on WTEC III TPSS (3).

   c. Move vehicle straight back approximately 20 ft (6.1 m).

   d. Stop vehicle.

   e. Press D (Drive) select button (7) on WTEC III TPSS (3).

   f. Press higher gear select button (8) on WTEC III TPSS (3).



4800B03-

OPERATION IN SAND OR MUD - Continued 0048 00

VEHICLE OPERATION - Continued

8. To move vehicle forward and turn after vehicle is stopped in loose sand or mud: - Continued.

    g. Move vehicle forward.

    h. Gradually turn vehicle as speed is obtained and vehicle is moving forward smoothly

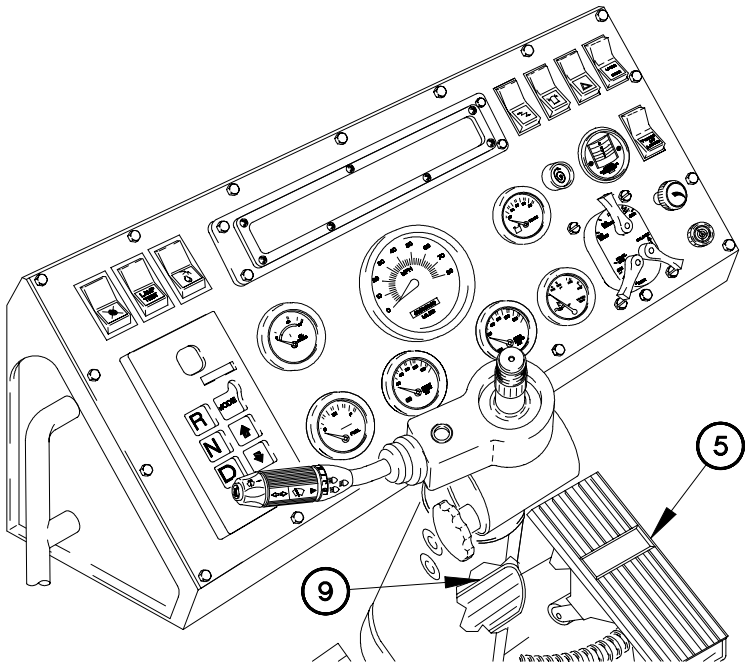
9. If vehicle starts to skid:

    a. Release accelerator pedal (5).

    b. Steer in direction of skid until vehicle stops skidding.

    c. Press brake pedal (9) lightly when vehicle is under control.

    d. Press accelerator pedal (5) slowly and steer vehicle on straight course.



4800B04-

OPERATION IN SAND OR MUD - Continued 0048 00

VEHICLE OPERATION - Continued

10. To park vehicle:

    a. Park vehicle so it does not face into the wind whenever possible.

    b. Clean mud off vehicle as soon as possible (WP 0103 00).

CAUTION

Do not direct high-pressure water stream at glass surfaces, seals, air intake, exhaust outlet, or any other components of vehicle that could be easily damaged by high-pressure water stream. Failure to comply may result in damage to equipment.

    c. Clean mud from wheels, brakes, axles, universal joints, steering mechanism, radiator, and transmission auxiliary oil cooler as soon as possible (WP 0103 00).

END OF OPERATING PROCEDURE

OPERATION IN DESERT ENVIRONMENT 0049 00

INITIAL SETUP:

Maintenance Level	REFERENCE
Operator	FM 90-3 WP 0045 00 WP 0046 00 WP 0048 00

GENERAL

This work package provides the data and procedures for safely operating the M1083A1 series vehicles in a desert environment.

VEHICLE OPERATION

NOTE

FM 90-3 contains detailed instructions for living in desert environment.

1. Principles of operation in extreme heat, extreme dust, and in sand or mud (WP 0045 00, WP 0046 00, WP 0048 00) apply to desert environment operation.

CAUTION

Vehicle must be properly prepared for temperature changes in desert environment. Failure to comply may result in damage to vehicle.

2. Temperatures can change as much as 70° F (40° C) between day and night.

3. Due to expansion and contraction of fluids and air, care should be taken when filling fuel tanks and fluid reservoirs to prevent overflow when temperatures change.

END OF OPERATING PROCEDURE

VEHICLE OPERATION IN COLD ENVIRONMENT 32° F TO -25° F (0° C to -32° C)

0050 00

INITIAL SETUP:

Maintenance Level:
Operator

References:
FM 31-70
FM 9-207
FM 31-70

References -Continued:
FM 31-71
FM 21-305
WP 0018 00
WP 0028 00
WP 0041 00
WP 0068 00

GENERAL

This work package provides the data and procedures for safely operating the M1083A1 series vehicles in a cold environment 32° F to -25° F (0° C to -32° C). Items covered include Cold Environment Operation and Central Tire Inflation System (CTIS) Cold Weather Operation.

COLD ENVIRONMENT OPERATIONS

WARNING

Wear arctic clothing when cab temperatures fall and remain below 30° F (-1° C). Cold stress preventative measures in FM 31-70 should be applied when vehicle cab temperatures fall and remain below 30° F (-1° C). Failure to comply may result in serious injury or death to personnel.

When operating the vehicle in snowy or icy conditions, apply the brake pedal momentarily, every few miles. This will ensure that brake linings do not become encrusted with snow or ice. Failure to comply may result in injury to personnel or damage to equipment.

CAUTION

Before operating vehicle ensure the vehicle has been prepared for cold weather environment in accordance with FM 9-207. Refer to FM 31-70, FM 31-71, and FM 21-305 for additional information on operation in cold environment. Failure to comply may result in damage to equipment.

Monitor instrument panel assembly gages closely. If there are any unusual readings, stop vehicle and shut off engine. Check for cause immediately. Failure to comply may result in damage to equipment.

VEHICLE OPERATION IN COLD ENVIRONMENT 32° F TO -25° F (0° C TO -32° C) - Continued 0050 00

COLD ENVIRONMENT OPERATIONS - Continued

CAUTION

Park in shelter when possible. If shelter is not available, park so vehicle does not face into wind. Follow procedures in FM 9-207 to prevent vehicle from freezing in place. Failure to comply may result in damage to equipment.

Fuel filter should be drained before topping off fuel tank. Keep fuel tank as full as possible during cold weather operations. Moisture will form in fuel tank as it cools. Moisture will freeze and block fuel supply to engine. Failure to comply may result in damage to equipment.

All snow and ice should be removed from vehicle as soon as possible. Snow and ice may slow or prevent movement of equipment. Failure to comply may result in damage to equipment.

1. Install tire chains, as required (WP 0069 00).

2. Start engine (WP 0018 00).

CAUTION

In cold environments M1084A1/M1086A1 and M1089A1 Material Handling Crane (MHC) must be exercised for 10 minutes before normal operation. Failure to comply may result in damage to equipment.

3. Exercise Material Handling Crane (MHC) before normal operation (WP 0028 00 for M1084A1/M1086A1, WP 0041 00 for M1089A1).

VEHICLE OPERATION IN COLD ENVIRONMENT 32° F TO -25° F (0° C TO -32° C) - Continued

0050 00

CTIS COLD WEATHER OPERATION

NOTE

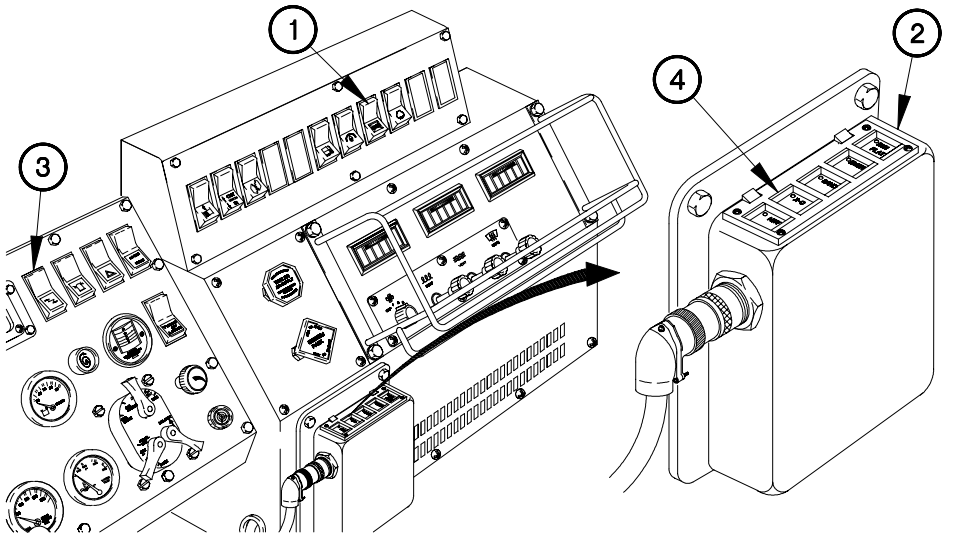
When temperatures are below -15° F (-26° C), CTIS air leaks may occur when the vehicle is started. This is indicated by four or five flashing mode lights on the CTIS ECU. When CTIS seals warm up and air leakage stops, the CTIS ECU should automatically reset and the CTIS ECU selected mode illuminate steady. When four or five mode lights are flashing perform steps 1 and 2.

1. Position CTIS on/off switch (1) to off by pressing the bottom half of the switch.
2. Drive vehicle for approximately 15-30 minutes or until CTIS ECU (2) resets.

NOTE

If CTIS ECU does not reset, perform steps 3 through 5. If CTIS ECU does not reset after performing steps 3 and 5, notify Unit Maintenance.

3. Position master power switch (3) to off.
4. Position master power switch (3) to on.
5. Depress cross-country mode (XC) (4) on CTIS ECU (2).



5000B01-

VEHICLE OPERATION IN COLD ENVIRONMENT 32° F TO -25° F (0° C TO -32° C) - Continued

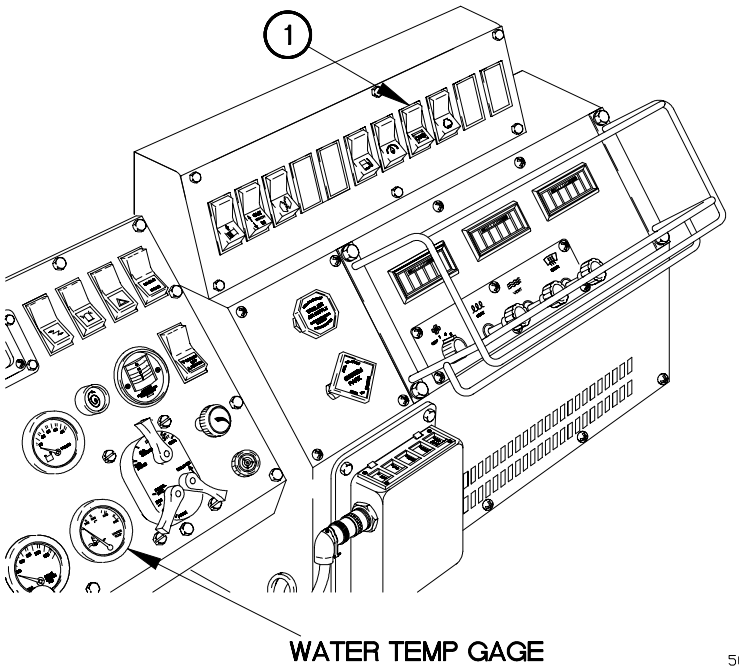
0050 00

CTIS COLD WEATHER OPERATION - Continued

NOTE

Perform step 6 when CTIS ECU resets or WATER TEMP gage reaches a minimum of 100° F (38° C).

6. Position CTIS on/off switch (1) to on by pressing top half of switch.



5000B02-

END OF OPERATING PROCEDURE

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION 0051 00

INITIAL SETUP:

Maintenance Level
Operator

References
FM 31-70
WP 0018 00

References - Continued
WP 0022 00
WP 0053 00
WP 0072 00
WP 0081 00
WP 0099 00

WARNING

Wear arctic clothing when cab temperatures fall and remain below 30° F (-1° C). Cold stress preventative measures in FM 31-70 should be applied when vehicle cab temperatures fall and remain below 30° F (-1° C). Failure to comply may result in serious injury or death to personnel.

GENERAL

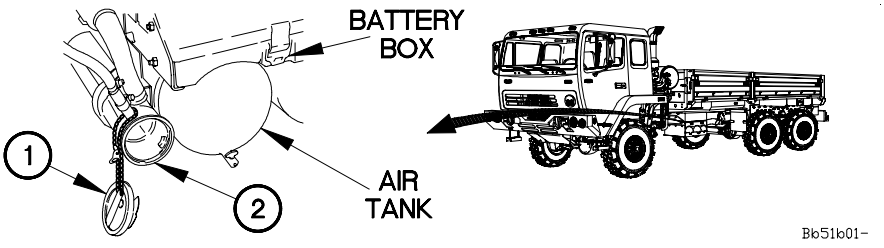
This work package provides the data and procedures for starting operations in arctic temperatures, -26° F to -50° F (-32° C to -46° C). Items covered include Swingfire Heater Operation, Swingfire Heater Removal, Start Engine (Arctic) and Shut Down Engine (Arctic).

SWINGFIRE HEATER OPERATION

CAUTION

Vehicle coolant must be visible in upper sightglass of radiator overflow tank before starting swingfire heater operations. Failure to comply may result in damage to equipment.

1. Remove cap (1) from swingfire tube (2).



ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

SWINGFIRE HEATER OPERATION - Continued

WARNING

Gasoline is highly flammable. Do not operate swingfire heater while filling gas tank. Do not smoke or have open fires within 25 ft (7.6 m) of area when filling gas tank. Failure to comply may result in serious injury or death to personnel.

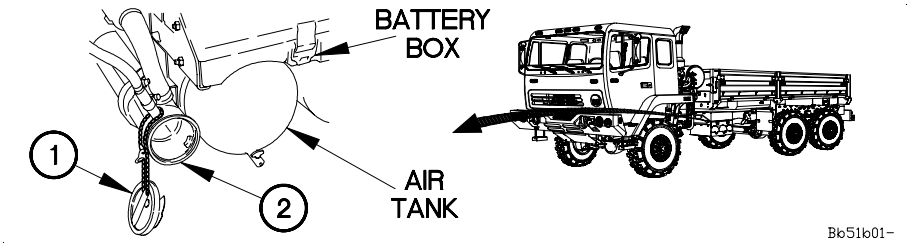
CAUTION

Swingfire heater gas tank holds 1 gal (3.7 L) of leaded or unleaded gasoline. Do not use diesel fuel or other fuels. Failure to comply may result in damage to equipment.

2. Remove cap (3) from gas tank (4) of swingfire heater (5).

3. Fill gas tank (4) with gasoline.

4. Install cap (3) on gas tank (4).



ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

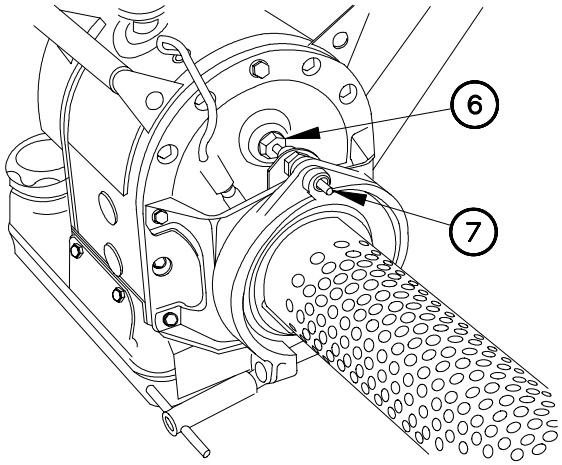
0051 00

SWINGFIRE HEATER OPERATION - Continued

CAUTION

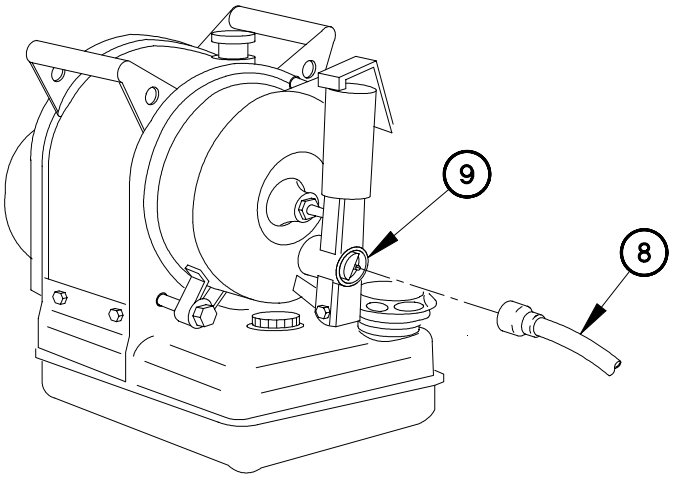
Pressure pin must spring back when released. If pressure spring does not spring back when released, notify Unit Maintenance. Failure to comply may result in damage to equipment.

5. Check air shut-off valve (6) operation by pushing pressure pin (7) in and releasing.



Bb51b03-

6. Connect electric start cable (8) to connector (9).



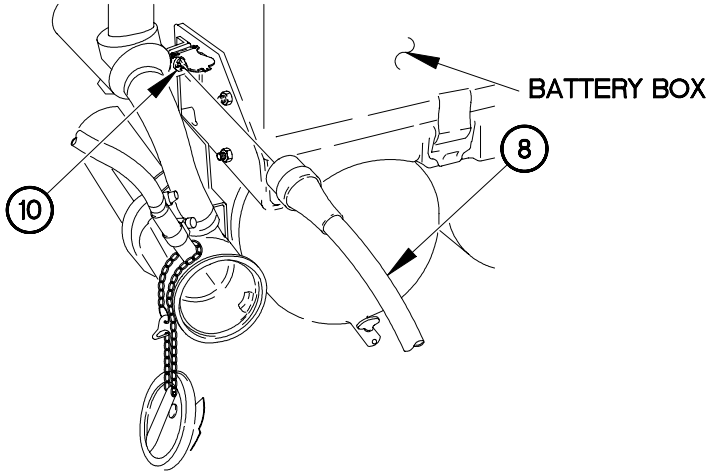
Bb51b04-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

SWINGFIRE HEATER OPERATION - Continued

7. Connect electric start cable (8) to swingfire connector (10).

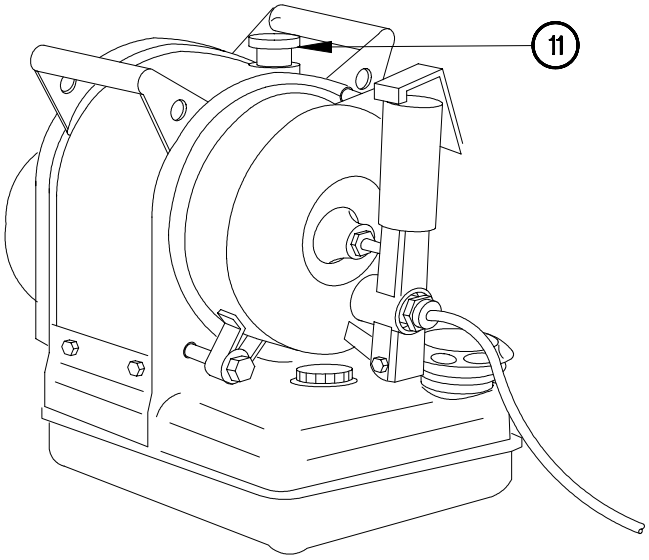


Bb51b05-

NOTE

Fuel regulator knob is adjusted by turning the knob right to close and left to open.

8. Close fuel regulator knob (11).



Bb51b06-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

SWINGFIRE HEATER OPERATION – Continued

NOTE

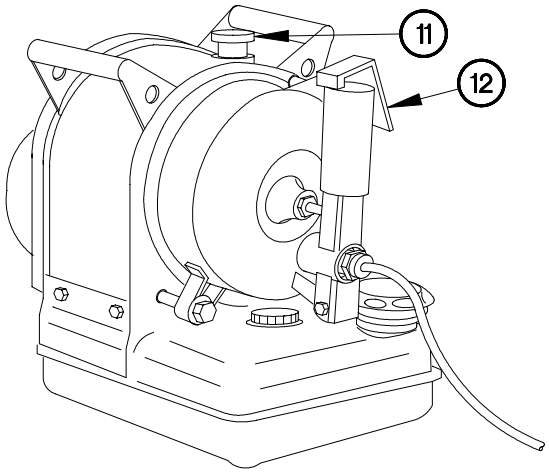
Swingfire heater igniter operation time depends on outside air temperature. When operating igniter, refer to Table 1.

9. Firmly compress handle (12) to operate igniter for minimum period of time indicated (refer to Table 1).

Table 1. Swingfire Heater Igniter Time/Temperature.

Minimum Operating Time	Temperature
3 minutes	-26° F (-32° C) to -30° F (-34° C)
4 minutes	-30° F (-34° C) to -40° F (-40° C)
5 minutes	-40° F (-40° C) to -50° F (-46° C)

10. Turn fuel regulator knob (11) to the left 1 to 1 1/2 turns.



Bb51b07-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

SWINGFIRE HEATER OPERATION - Continued

WARNING

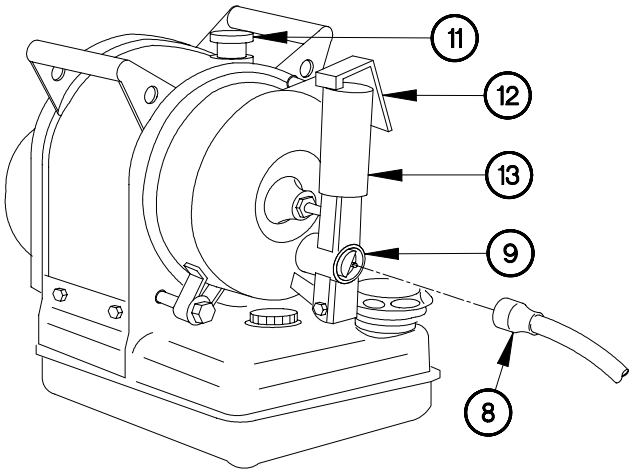
Exhaust fumes from swingfire heater are poisonous. Do not operate swingfire heater in a closed room. Ensure adequate ventilation is available. If personnel become dizzy, seek immediate medical attention. Failure to comply may result in serious injury or death to personnel.

NOTE

Operate pump lever until fuel regulator has been adjusted and pulsating sounds become steady.

Fuel regulator knob is adjusted by turning the knob right to close and left to open.

11. Operate pump lever (13).
12. Adjust fuel regulator knob (11) until pulsating sounds are steady.
13. When swingfire heater operates steadily, stop operating pump lever (13).
14. Release handle (12) on pump lever (13).
15. Remove electric start cable (8) from connector (9).

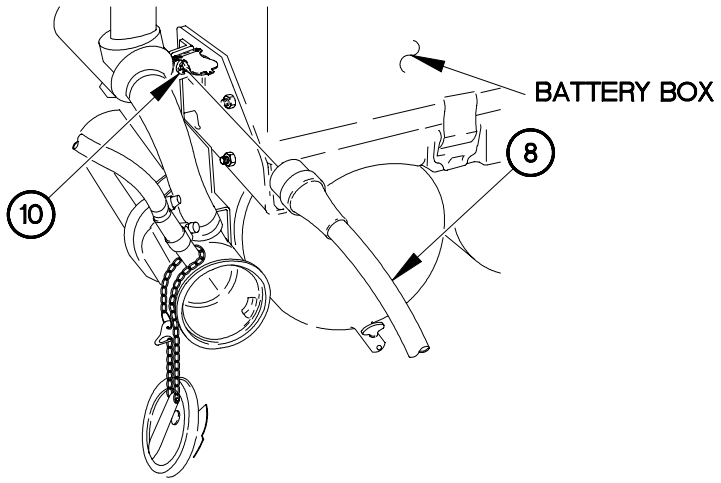


B0516008-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

SWINGFIRE HEATER OPERATION - Continued

16. Remove electric start cable (8) from swingfire connector (10).



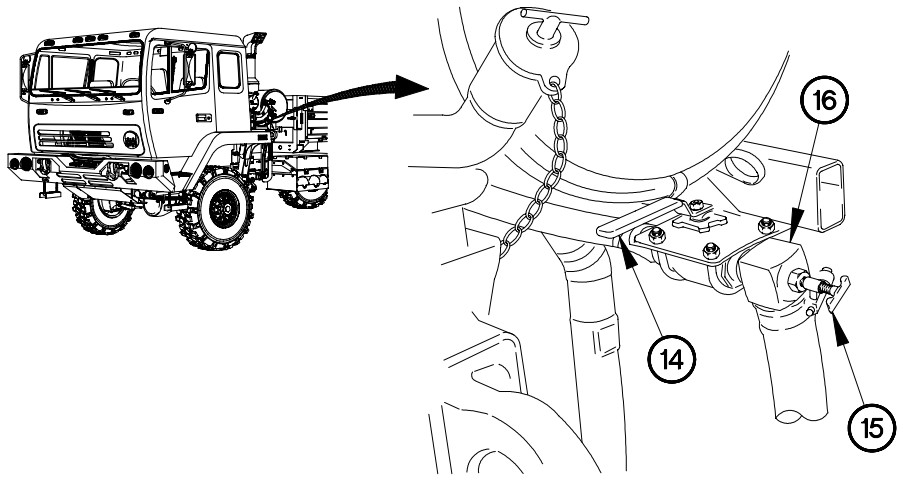
Bb51b09-

17. Position swingfire valve (14) in the closed position.

NOTE

A small amount of coolant should seep out of 90-degree fitting.

18. Open bleed valve (15) on 90-degree fitting (16).



Bb51b10-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

SWINGFIRE HEATER OPERATION - Continued

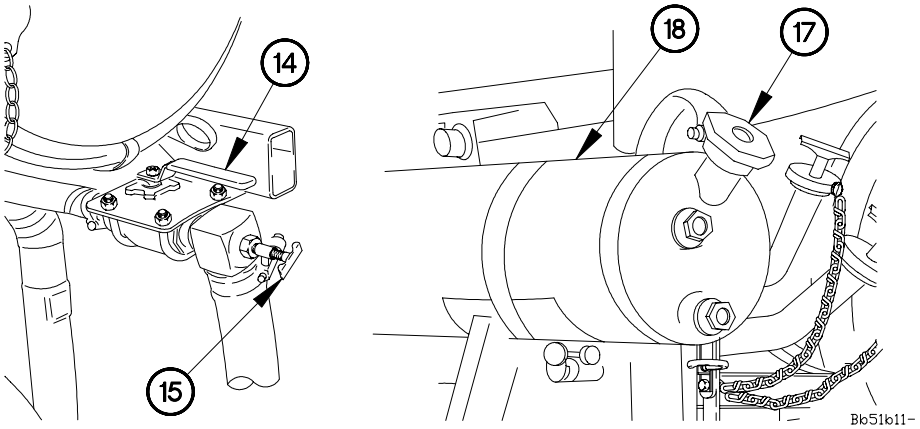
NOTE

When radiator cap is open on radiator overflow tank, coolant seepage should increase to a flow with intermittent air releases. The flow should be steady after approximately 10 seconds.

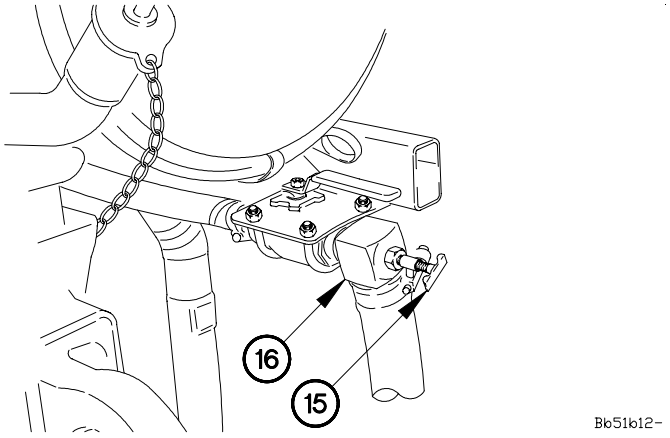
19. Open radiator cap (17) on radiator overflow tank (18).

20. When a steady flow of coolant is visible at bleed valve (15), position swingfire valve (14) to the open position.

21. If bubbles appear after swingfire valve is opened, close swingfire valve and repeat steps 17 through 20 until no bubbles appear.



22. Close bleed valve (15) on 90-degree fitting (16).



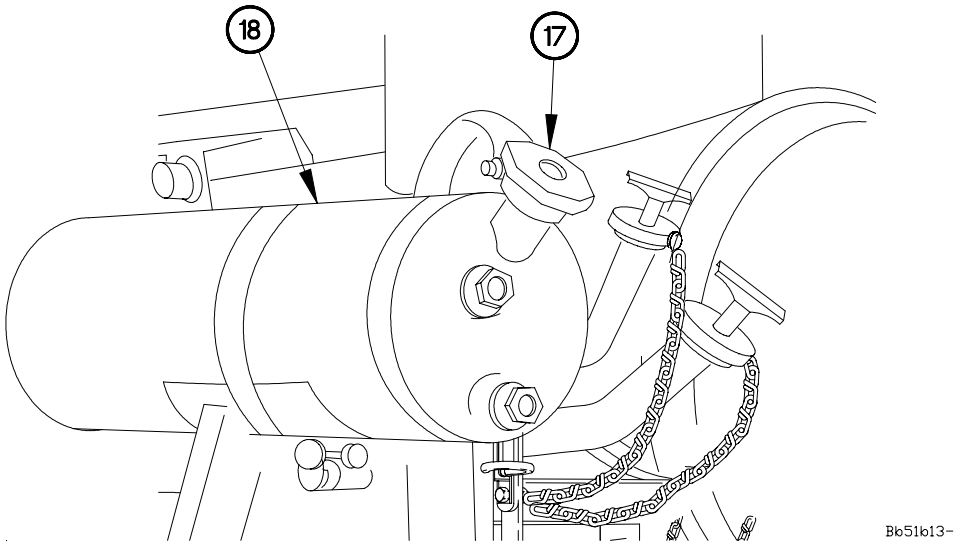
ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

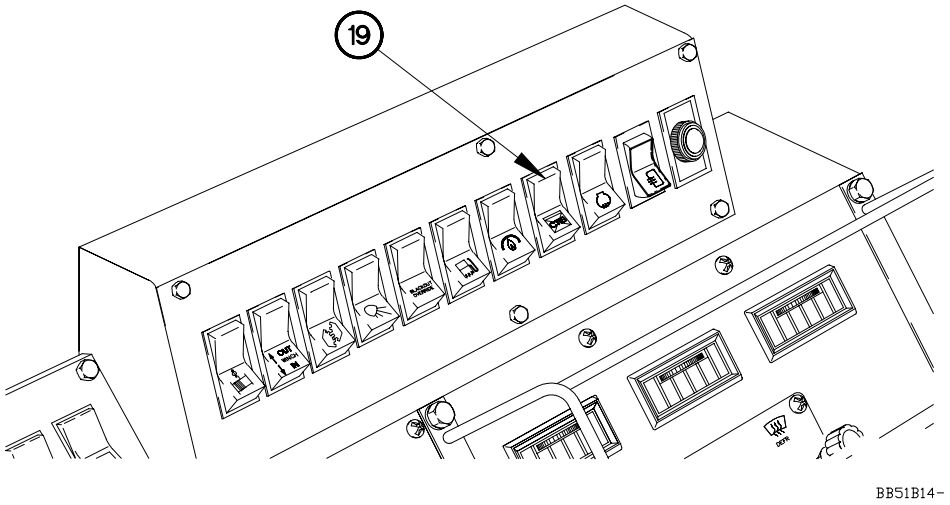
SWINGFIRE HEATER OPERATION - Continued

23. Add coolant to radiator overflow tank (18) (WP 0099, Table 1, Item 3).

24. Close radiator cap (17) on radiator overflow tank (18).



25. Position CTIS on/off switch (19) to off.

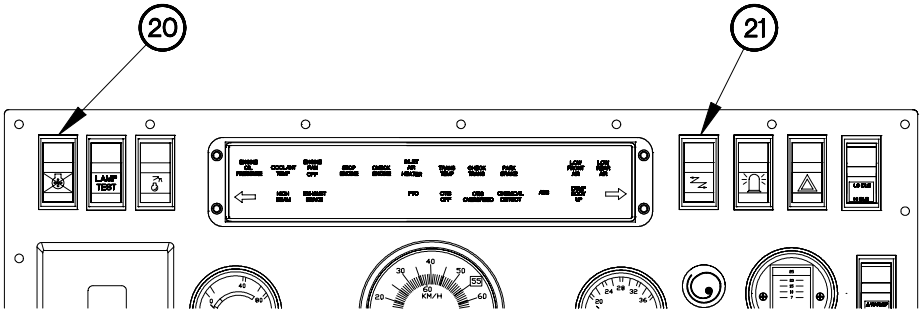


ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

SWINGFIRE HEATER OPERATION - Continued

26. Position engine fan off switch (20) to on.

27. Position master power switch (21) to on.



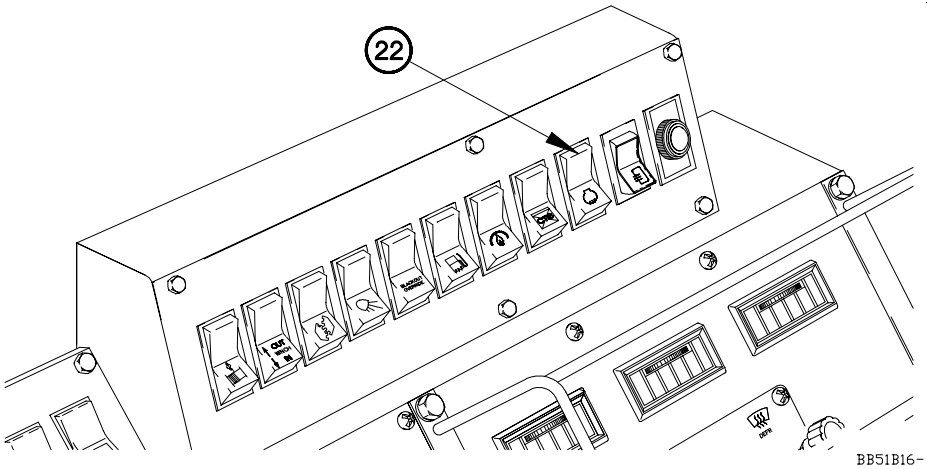
BB51B15-

NOTE

ENGINE OIL PRESSURE, CHECK TRANS, PARK BRAKE, ABS, LOW FRONT AIR, and LOW REAR AIR indicators will remain on until operating pressures are achieved or manually released.

Auxiliary panel mounted arctic engine preheat indicator light will come on steady. If light flashes when master power switch is turned on, go to WP 0080 00, Special Purpose Kits Troubleshooting.

28. Position swingfire circulation pump switch (22) to on.



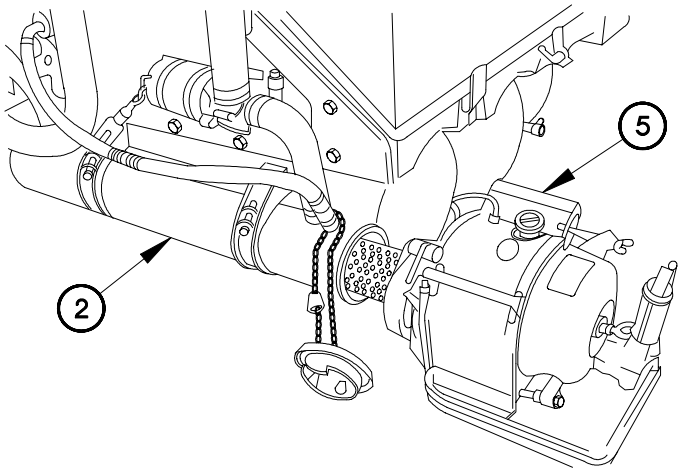
BB51B16-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

SWINGFIRE HEATER OPERATION - Continued

29. Insert swingfire heater (5) in swingfire tube (2).



Bb51b17-

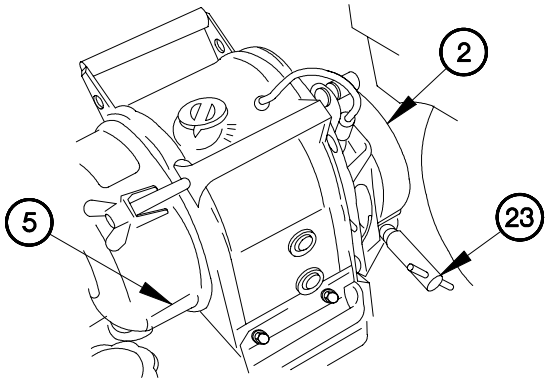
30. Tighten clamp (23) to secure swingfire heater (5) to swingfire tube (2).

NOTE

Adjustments of the fuel regulator knob may be required to keep swingfire heater operating.

Fuel regulator knob is adjusted by turning the knob right to close and left to open.

31. Operate swingfire heater (5) for a minimum of 40 minutes.



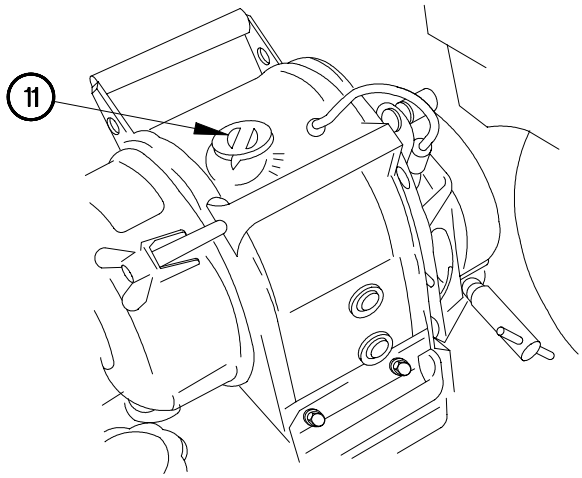
Bb51b18-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

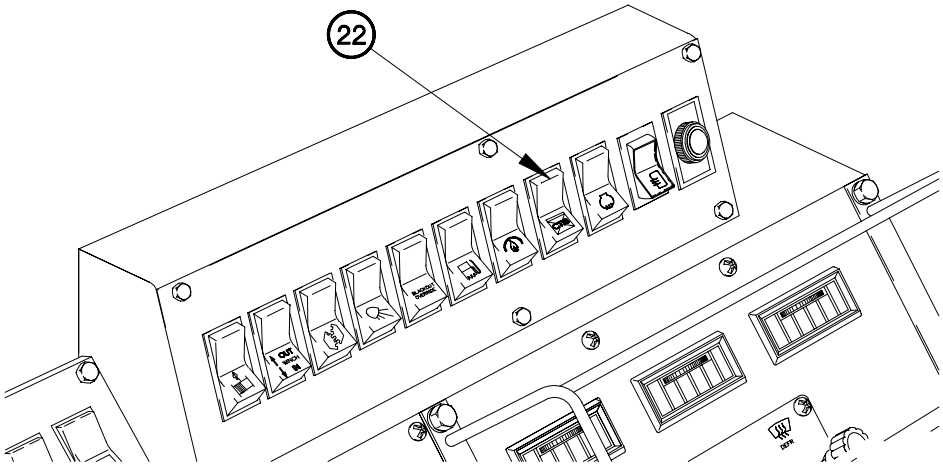
SWINGFIRE HEATER OPERATION - Continued

32. Close fuel regulator knob (11).



Bb51b19-

33. Position swingfire circulation pump switch (22) to off.



BB51B20-

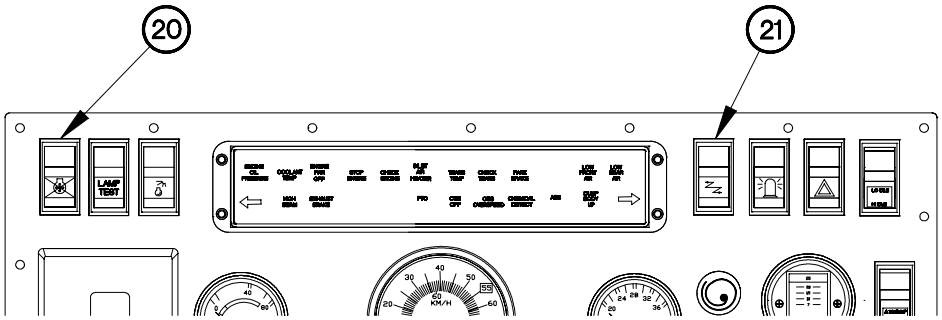
ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

SWINGFIRE HEATER OPERATION - Continued

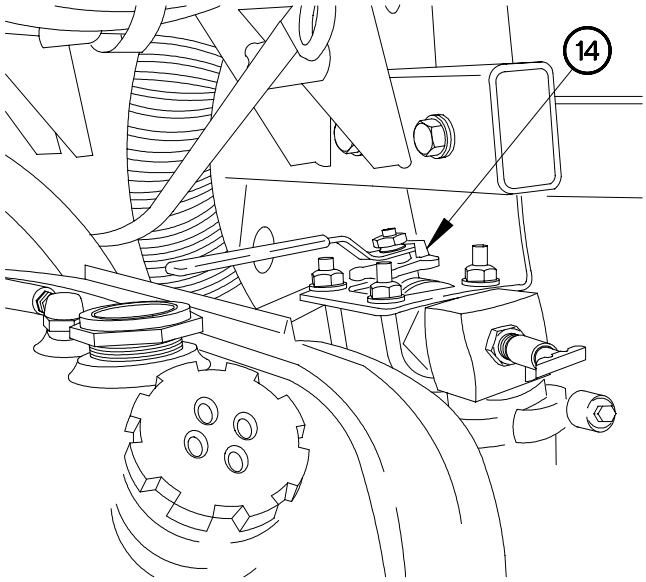
34. Position master power switch (21) to off.

35. Position engine fan off switch (20) to off.



BB51B21-

36. Position swingfire valve (14) in the closed position.



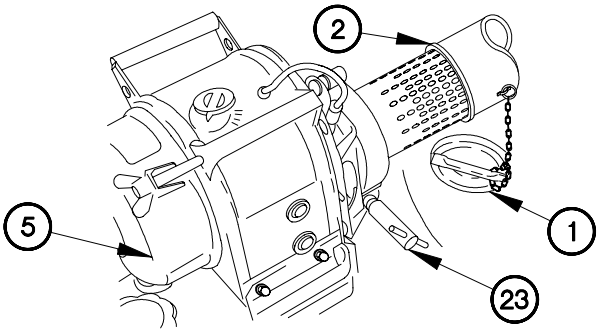
Bb51b22-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

REMOVE SWINGFIRE HEATER

1. Loosen clamp (23) on swingfire heater (5).
2. Remove swingfire heater (5) from swingfire tube (2).
3. Install cap (1) on swingfire tube (2).



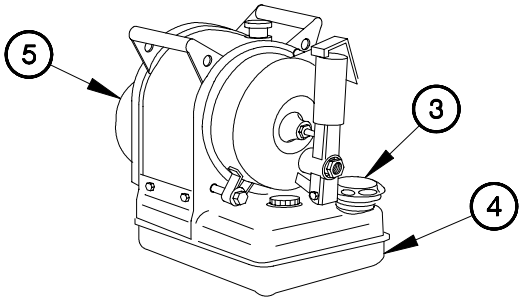
Bb51b23-

WARNING

Gasoline is highly flammable. Do not smoke or have open flames within 25 feet of area when draining tank. Failure to comply may result in serious injury or death to personnel.

Allow swingfire heater to cool down before draining gasoline from swingfire heater gas tank. Failure to comply may result in serious injury or death to personnel.

4. Remove cap (3) from gas tank (4) of swingfire heater (5).
5. Drain gasoline from gas tank (4) to container.
6. Install cap (3) on gas tank (4).



Bb51b24-

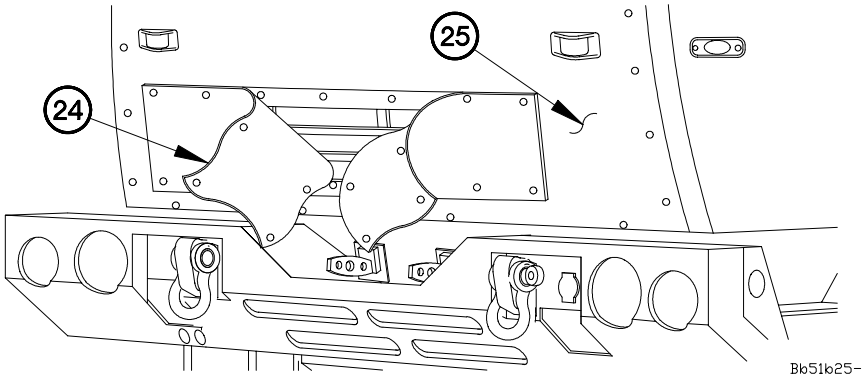
ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

START ENGINE (ARCTIC)

CAUTION

Cab arctic cover may be left on vehicle in temperatures up to 40° F (4° C), except when engine requires, such as in extreme off-road conditions or when vehicle is fully loaded. Ensure flaps are adjusted so that engine temperature is maintained before 165° F (74° C) and 210° F (100° C) during vehicle operation. Failure to comply may result in damage to equipment.

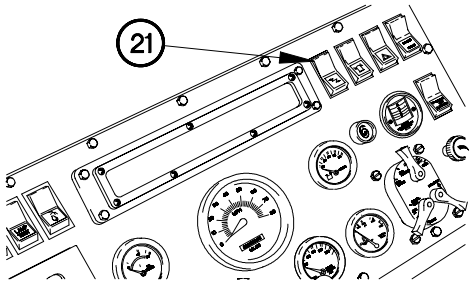
1. Close two flaps (24) on cab arctic cover (25).



2. Perform swingfire heater operation (WP 0044 00).

3. Remove swingfire heater (WP 0044 00).

4. Position master power switch (21) to on.



ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

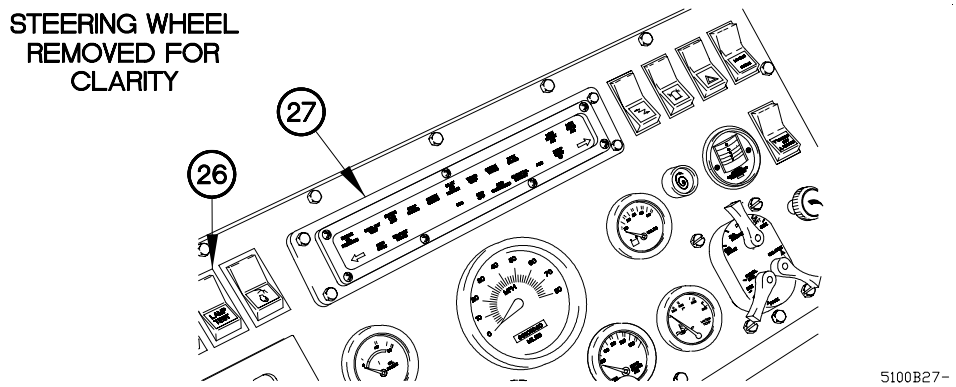
START ENGINE (ARCTIC) - Continued

NOTE

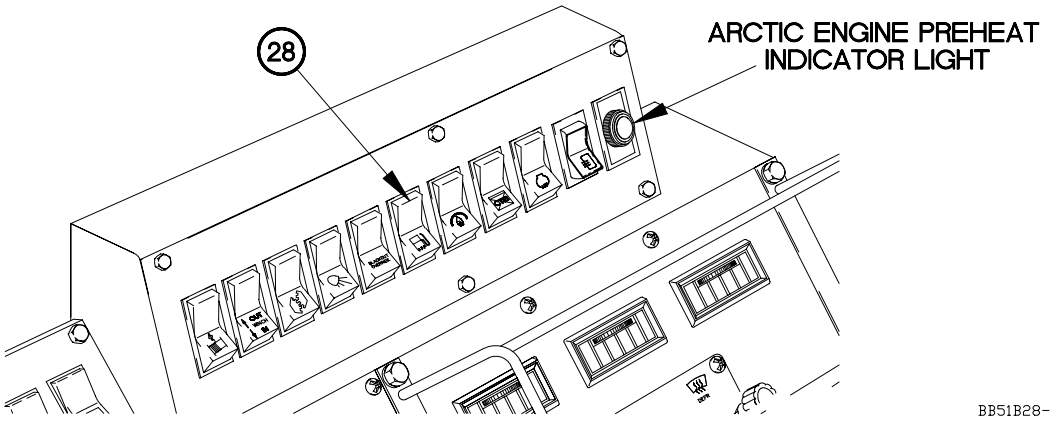
ENGINE OIL PRESSURE, CHECK TRANS, PARK BRAKE, ABS, LOW FRONT AIR, and LOW REAR AIR indicators will remain on until operating pressures are achieved or manually released.

Auxiliary panel mounted arctic engine preheat indicator light will come on steady. If light flashes when master power switch is turned on, go to WP 0080 00, Special Purpose Kits Troubleshooting.

5. Press LAMP TEST switch (26) to verify that all warning indicators illuminate on lighted indicator display (27).



6. Position fuel preheat switch (28) to on.



ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

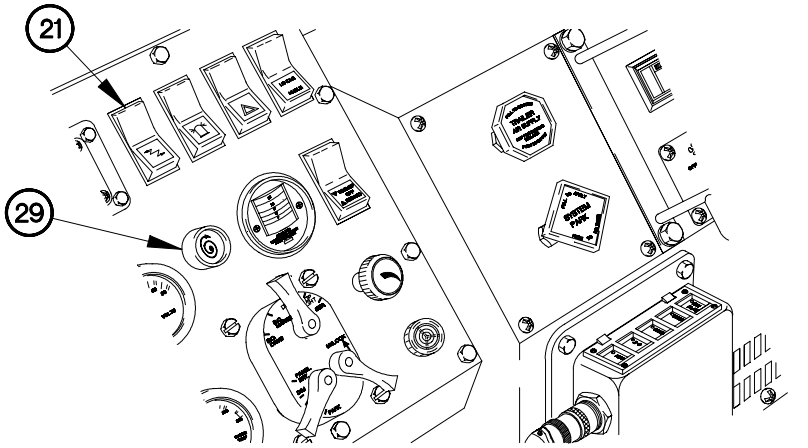
START ENGINE (ARCTIC) - Continued

7. Cycle master power switch (21) to off, then position to on.

NOTE

Auxiliary panel mounted arctic engine preheat indicator light will come on steady. At the end of pre-heat time, light will go off, indicating arctic engine preheat is in cold start mode and the engine can be started.

8. Press starter pushbutton (29) until engine starts.



BB51B29-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

START ENGINE (ARCTIC) - Continued

NOTE

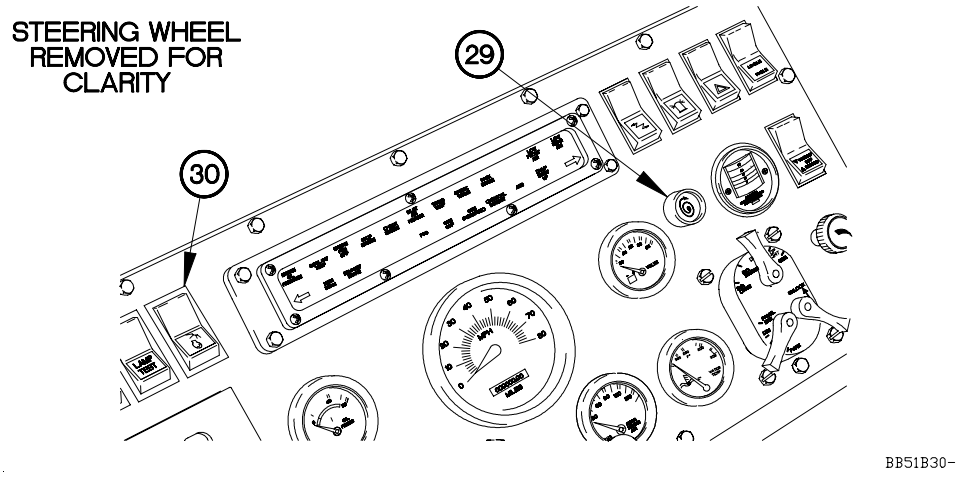
After engine starts and maintains low idle speed for 2 minutes, engine idle speed may increase. If idle speed increases, engine will maintain increased idle speed until engine reaches a predetermined temperature or after operating for 12 minutes at increased idle speed. Engine speed may be returned to low idle speed to begin vehicle operations by pressing and releasing accelerator pedal.

9. Repeat steps 7 and 8 until engine has started, engine speed has increased over cranking speed, and engine maintains speed.

NOTE

Auxiliary panel mounted arctic engine preheat indicator light comes on steady after engine is started. The light remains on until engine coolant temperature stabilizes.

10. Release starter pushbutton (29) when engine starts.



BB51B30-

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

START ENGINE (ARCTIC) - Continued

CAUTION

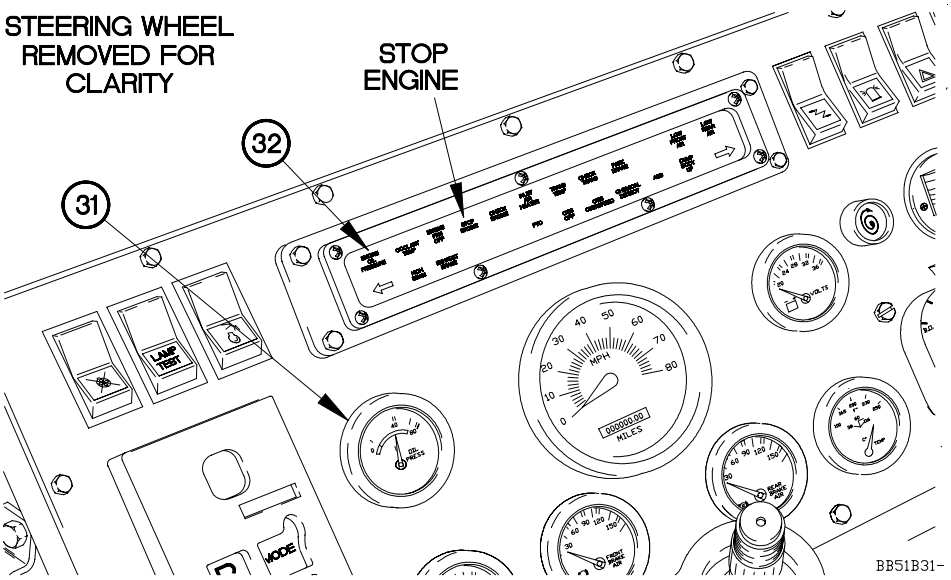
If STOP ENGINE indicator flashes (red) to warn Operator about a potential engine failure, shut down engine immediately and perform Engine System Troubleshooting (WP 0072 00). Failure to comply may result in damage to equipment.

If OIL PRESS gage does not show engine oil pressure of 15-80 psi within 10-15 seconds after starting engine, shut down engine immediately and perform Engine System Troubleshooting (WP 0072 00). Failure to comply may result in damage to equipment.

NOTE

Oil pressure will increase when engine speed increases and will decrease when engine speed decreases.

11. Check that OIL PRESS gage (31) reads between 15 psi and 80 psi. If OIL PRESS gage reads in red zone (0 to 7 psi) and ENGINE OIL PRESSURE indicator (32) is illuminated, shut down engine (WP 0018 00) and perform Engine System Troubleshooting (WP 0072 00).



ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

START ENGINE (ARCTIC) - Continued

WARNING

Do not drive vehicle until windshield is sufficiently clear of frost/ice. Failure to comply may result in serious injury or death to personnel.

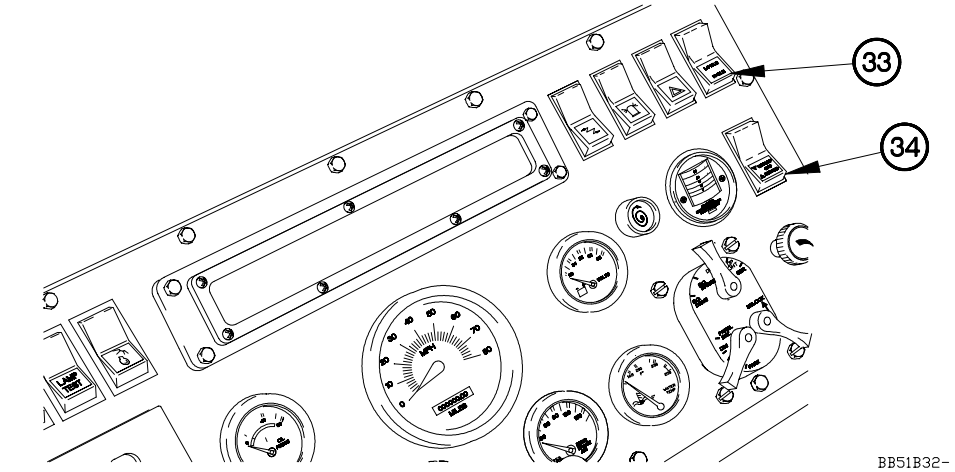
12. Operate cab arctic heater (WP 0053 00).

13. Position LO IDLE/HI IDLE SWITCH (33) to HI IDLE.

NOTE

EXHAUST BRAKE indicator will illuminate WARMUP/OFF/RETARD switch is positioned to WARMUP.

14. Position WARMUP/OFF/RETARD switch (34) to WARMUP.



NOTE

Operate windshield defrost on maximum setting.

15. Operate windshield defrost (WP 0022 00).

16. Operate cab heat (WP 0022 00).

ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued

0051 00

START ENGINE (ARCTIC) - Continued

NOTE

Engine will warm up to normal operating temperature of 165° F (74° C) more quickly if engine is under a load, such as driving.

Vehicle performance, including heater/defroster, will be reduced when engine coolant temperature is less than 165° F (74° C). Avoid conditions requiring maximum engine performance until coolant temperature reaches 165° F (74° C).

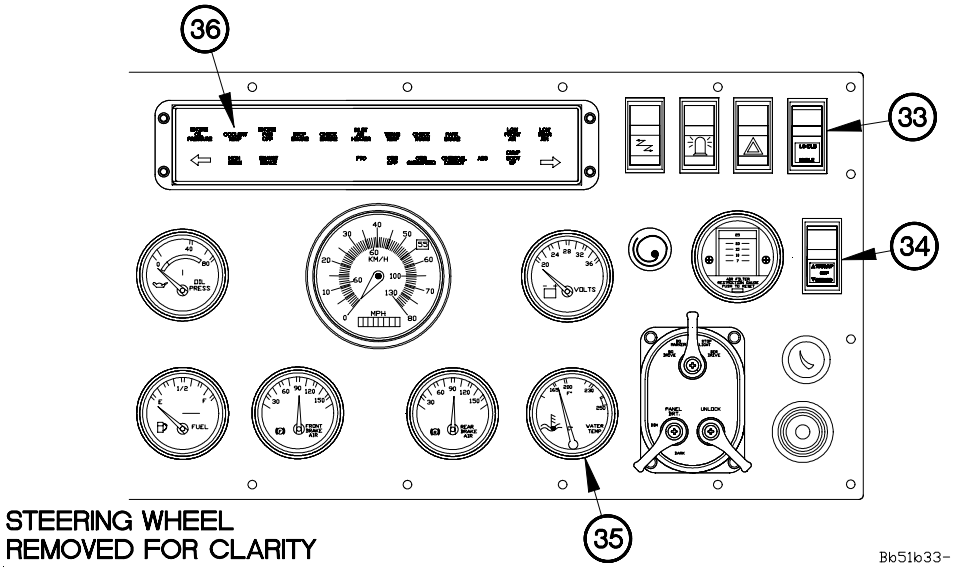
17. Check that WATER TEMP gage (35) reads less than 230° F (110° C). If WATER TEMP gage reads in the red zone or COOLANT TEMP indicator (36) is illuminated, shut down engine (WP 0018 00) and perform Engine System Troubleshooting (WP 0072 00).

NOTE

Perform steps 20 and 21 when windshield is clear of frost/ice and prior to driving.

18. Position WARMUP/OFF/RETARD switch (34) OFF.

19. Position LO IDLE/HI IDLE switch (33) to LO IDLE.



ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

START ENGINE (ARCTIC) - Continued

NOTE

If FRONT BRAKE AIR and REAR BRAKE AIR pressure gages do not read between 75-120 psi after engine warms up, shut down engine (WP 0018 00) and perform Air System Troubleshooting (WP 0081 00).

LOW FRONT AIR and LOW REAR AIR indicators will illuminate (red) and audible alarm will sound until air pressure is between 75-85 psi.

20. Check that FRONT BRAKE AIR pressure gage (37) and REAR BRAKE AIR pressure gage (38) read between 75-120 psi.

21. Check that VOLTS gage (39) reads between 26 and 30 volts.

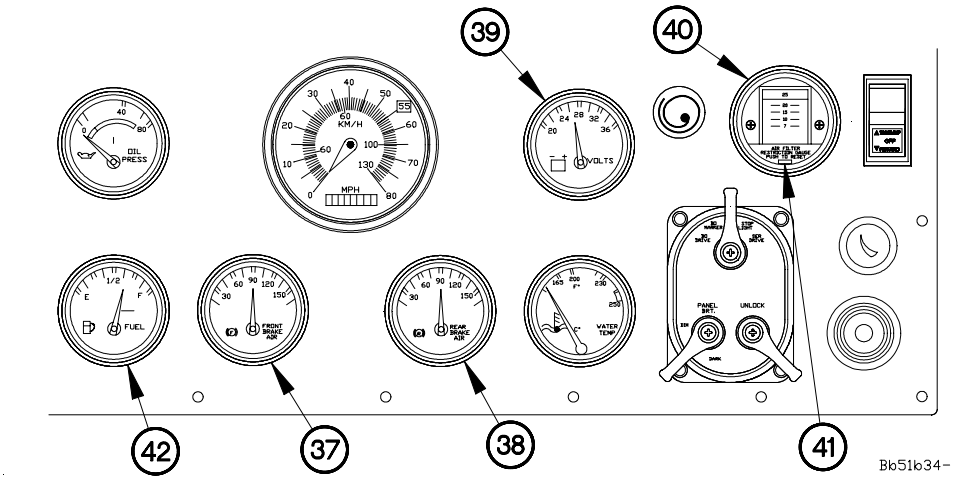
22. Check that AIR FILTER RESTRICTION GAUGE (40) reads below 25 in.

    a. Press reset button (41) if AIR FILTER RESTRICTION GAUGE (40) reads greater than 25 in. (in red area).

    b. Shut down engine (WP 0018 00) and notify Unit Maintenance if AIR FILTER RESTRICTION GAUGE (40) still reads greater than 25 in. (in red area).

23 Check that FUEL gage (42) shows sufficient fuel to accomplish mission.

24. Select desired transmission operating range (WP 0018 00).



ARCTIC START FROM -26° F TO -50° F (-32° C TO -46° C) OPERATION - Continued 0051 00

SHUT DOWN ENGINE (ARCTIC)

CAUTION

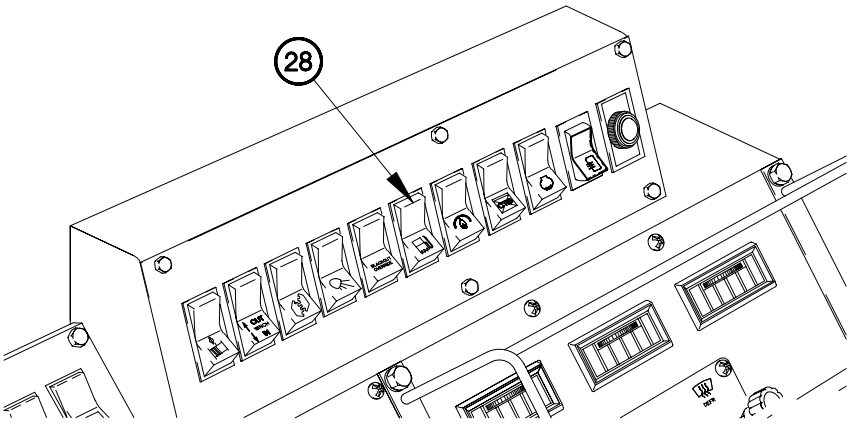
Water temperature must be maintained at a minimum of 165° F (74° C) for 1 to 3 minutes prior to engine shutdown. Failure to comply may result in damage to equipment.

When outside temperatures are below -26° F (-32° C), do not continuously operate engine at high idle without WARMUP/OFF/RETARD switch in WARMUP position. Failure to comply may result in damage to equipment.

NOTE

During temporary engine shutdown, perform tasks quickly to minimize loss of engine temperature.

1. Position fuel preheat switch (28) to off.
2. Shut down engine (WP 0018 00).



BB51B35-

END OF OPERATING PROCEDURE

VEHICLE OPERATION IN EXTREME COLD ENVIRONMENT, -26°F TO -65°F (-32°C TO -54°C) 0052 00

INITIAL SETUP:

Maintenance Level
Operator

References
FM 31-70
WP 0050 00
WP 0051 00
WP 0053 00

GENERAL

This work package provides the data and procedures for operating the M1083A1 series vehicles in an extreme cold environment, -26° F to -65° F (-32° C to -54° C).

VEHICLE OPERATION

WARNING

Wear arctic clothing when cab temperatures fall and remain below 30° F (-1° C). Cold stress preventative measures in FM 31-70 should be applied when vehicle cab temperatures fall and remain below 30° F (-1° C). Failure to comply may result in serious injury or death to personnel.

Do not touch extremely cold metal (below -26° F, [-32° C]). Bare skin may freeze to cold metal. Failure to comply may result in injury to personnel.

NOTE

Refer to (WP 0051 00) Arctic Start from -26° F to -65° F (-32° C to -54° C) when operating in extreme cold environment.

1. Perform vehicle operation in cold environment -26° F to -65° F (-32° C to -54° C) (WP 0050 00).

2. Operate cab arctic heater (WP 0053 00).

END OF OPERATING PROCEDURE

CAB ARCTIC HEATER OPERATION 0053 00

INITIAL SETUP:

Maintenance Level	References
Operator	WP 0018 00
	WP 0050 00

GENERAL

This work package provides the data and procedures for operating the cab arctic heater. Items covered include Operate Cab Arctic Heater and Shut Down Cab Arctic Heater.

OPERATE CAB ARCTIC HEATER

CAUTION

Engine must be running before operating the cab arctic heater. Failure to comply may cause excessive drain on batteries.

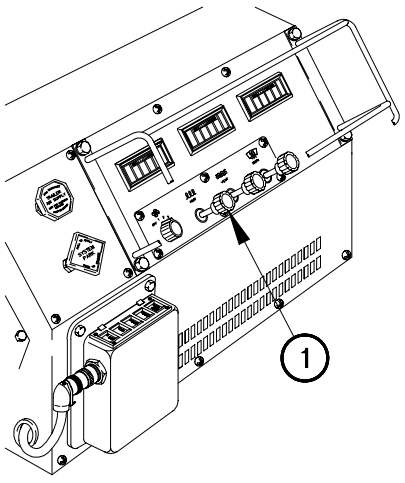
1. Start engine (WP 0018 00).

2. Perform CTIS cold weather operation (WP 0050 00).

CAUTION

Heater knob must be pulled to fully extended position before cab arctic heater is turned on. Failure to comply may result in damage to equipment.

3. Pull HEAT knob (1) to fully extended position.



5300B01-

CAB ARCTIC HEATER OPERATION - Continued 0053 00

OPERATE CAB ARCTIC HEATER - Continued

CAUTION

CTIS ON/OFF switch must be in the off position before arctic heater switch is turned on. Failure to comply may result in damage to equipment.

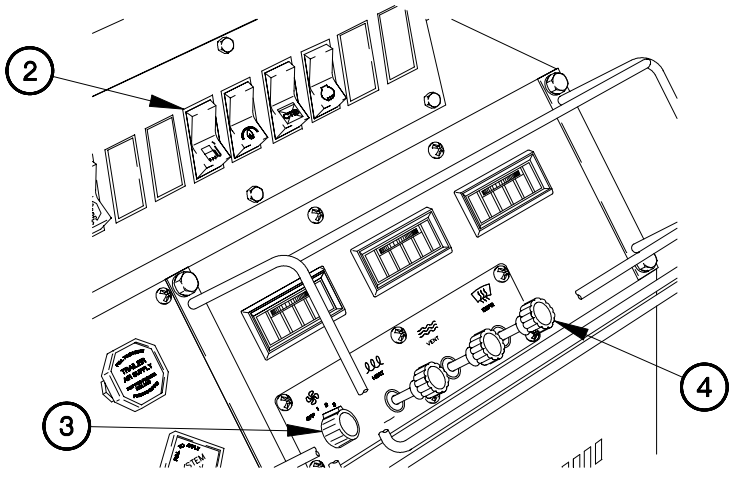
4. Position cab arctic heater switch (2) to on.

5. Turn FAN knob (3) to number 3 position.

NOTE

Perform step 6 if windshield needs defrosting.

6. Pull DEFR knob (4) to fully extended position.



CAB ARCTIC HEATER OPERATION - Continued 0053 00

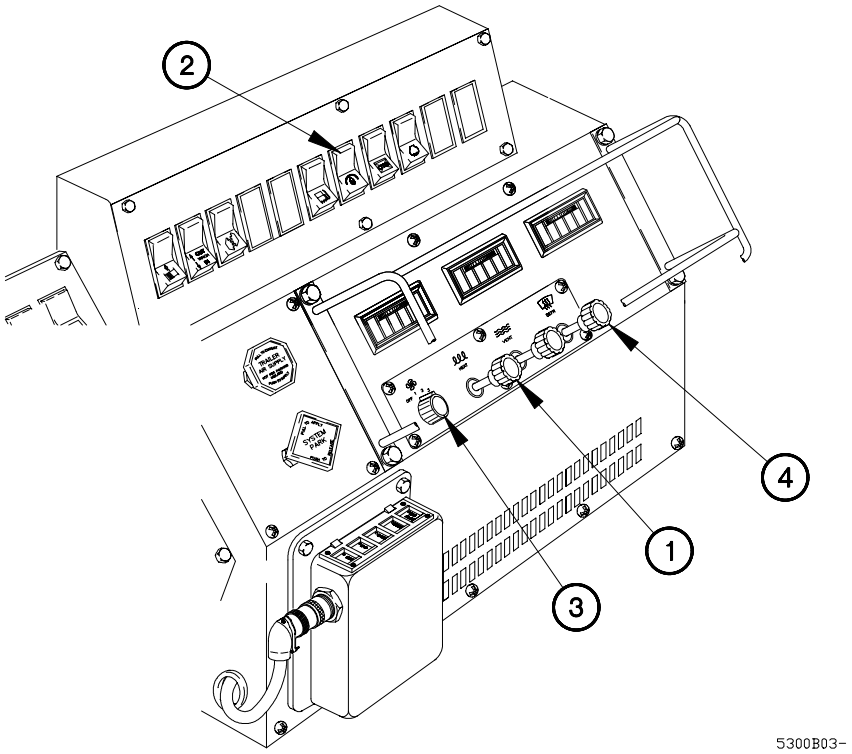
SHUT DOWN CAB ARCTIC HEATER

1. Position cab arctic heater switch (2) to off.

NOTE

Perform step 2 if defroster was used.

2. Push in DEFR knob (4).
3. Turn FAN knob (3) to OFF position.
4. Push in HEAT knob (1).



END OF OPERATING PROCEDURES

CARGO AREA ARCTIC HEATER OPERATION 0054 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0099 00
WP 0018 00
TM 9-2450-207-14&P

GENERAL

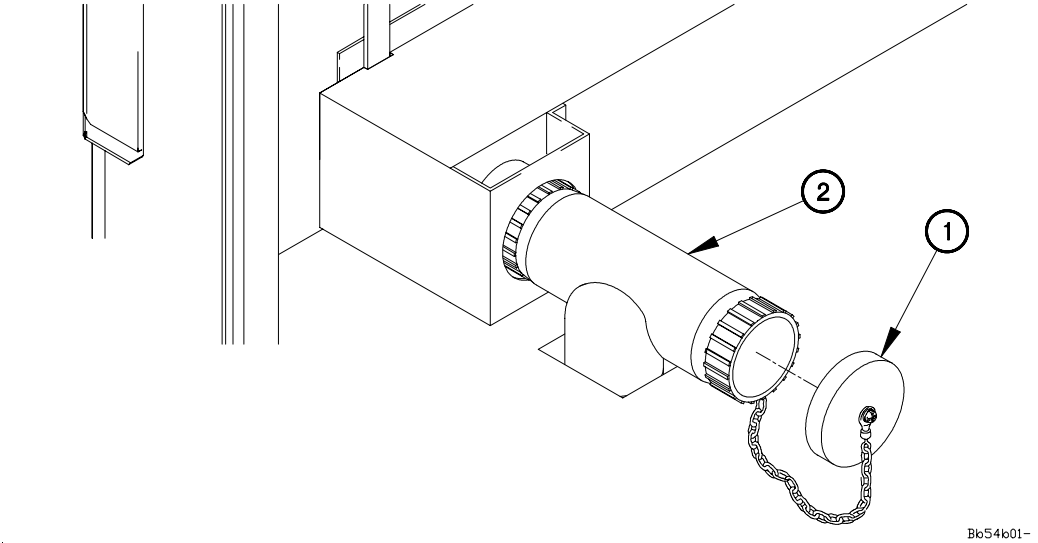
This work package provides the data procedures for safely operating the cargo area arctic heater on M1083A1 series vehicles. Items covered include Cargo Area Arctic Heater Start and Cargo area arctic heater Manual Shutdown.

CARGO AREA ARCTIC HEATER START

NOTE

Perform step (1) on M1083A1.

1. Remove two caps (1) from ducts (2) (WP 0047 00).



CARGO AREA ARCTIC HEATER OPERATION - Continued 0054 00

CARGO AREA ARCTIC HEATER START- Continued

2. For more information on the cargo area arctic heater, refer to TM 9-2450-207-14&P.

WARNING

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU.

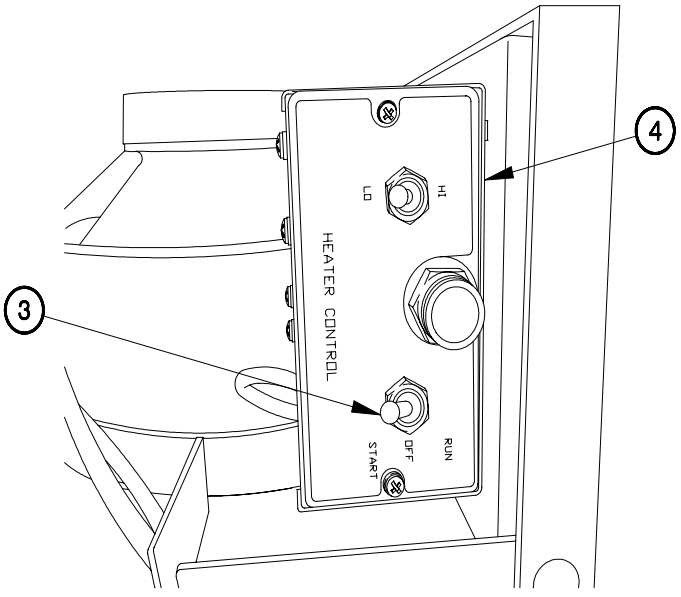
DO NOT operate cargo area arctic heater or engine in an enclosed area without adequate ventilation. NEVER sleep in a vehicle when heater is operating or the engine is idling. Failure to comply may result in serious injury or death to personnel.

CAUTION

Cargo area arctic heater can be started with either the engine running or by turning on the toggle switch on the front of the cargo area arctic heater. Failure to operate the cargo area arctic heater kit without the engine running over a period of time will result in batteries becoming discahrged.

3. Start engine (WP 0018 00).

4. Position START/OFF/RUN switch (3) on control box (4) to START for a minimum of 4 seconds.



B0054b02-

CARGO AREA ARCTIC HEATER OPERATION - Continued 0054 00

CARGO AREA ARCTIC HEATER START- Continued

NOTE

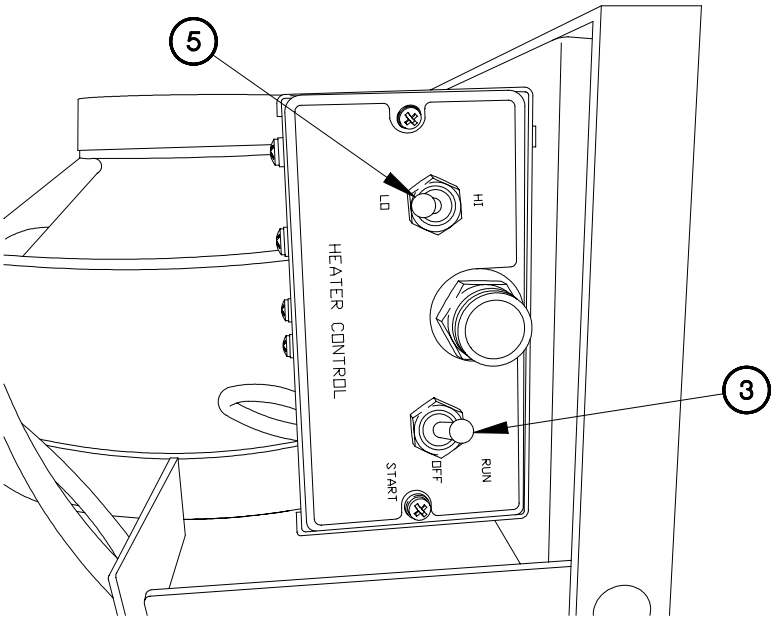
The heater performs several diagnostic functions prior to full operation for the first couple of minutes.

5. Position START/OFF/RUN switch (3) to RUN.

NOTE

The Diagnostic Display will display a code of 07 for LO and a 14 for HI during normal operation.

6. Position LO/HI switch (5) as required.



Bb54b03-

CARGO AREA ARCTIC HEATER OPERATION - Continued 0054 00

CARGO AREA ARCTIC HEATER MANUAL SHUTDOWN

1. For further information on the cargo area arctic heater, refer to TM 9-2450-207-14&P.

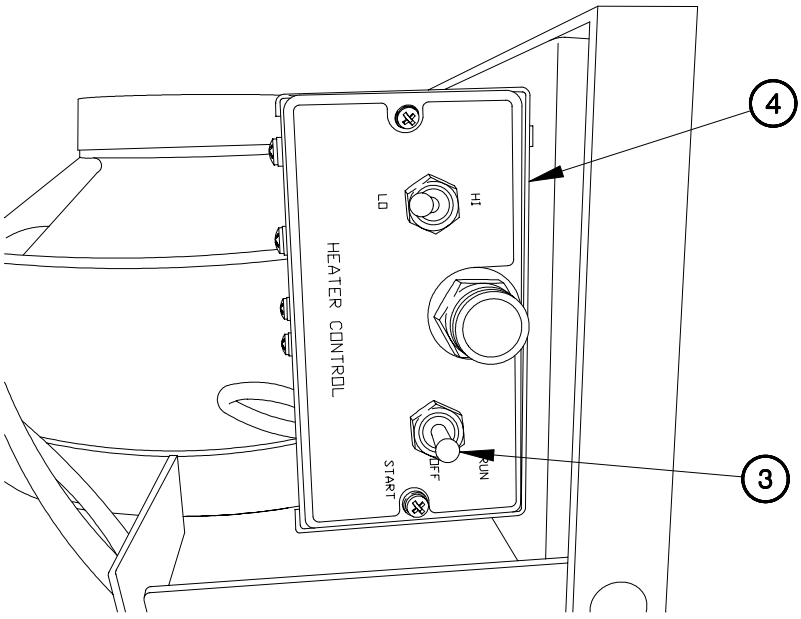
WARNING

Allow heater and exhaust pipe to cool before touching. Failure to comply may result in injury to personnel.

NOTE

Cargo area arctic heater will purge for approximately four minutes after switch is turned to OFF then it will shutdown completely.

2. Position START/OFF/RUN switch (3) to OFF on control box (4).



Bb54b04-

END OF OPERATING PROCEDURE

PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT 0055 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0018 00
WP 0019 00
WP 0020 00
WP 0042 00

GENERAL

This work package provides the data and procedures for preparing the M1083A1 series vehicles for internal air transport. Items covered include Front Tire Deflation, Cab Air Spring Deflation, Compressing Suspension, Folding Mirrors, Unfolding Mirrors Decompressing Suspension, Cab Air Inflation, and Front Tire Inflation.

FRONT TIRE DEFLATION

1. Depress emergency (EMER) on CTIS ECU (WP 0020 00).

NOTE

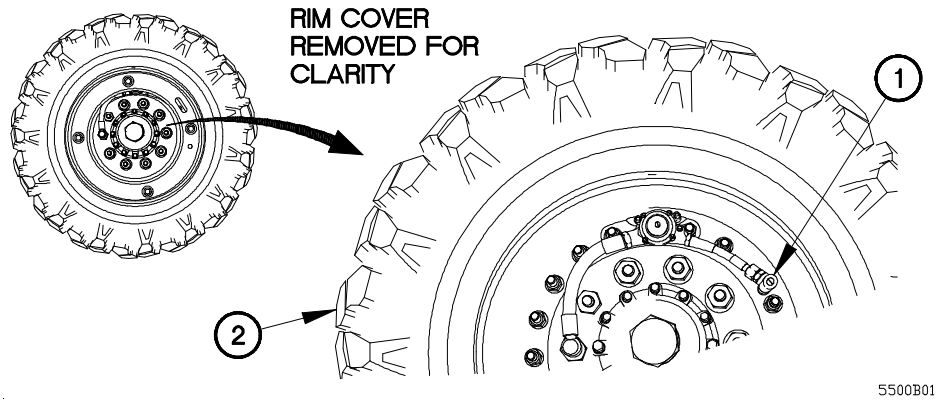
Left and right front tires are deflated the same way. Left front tire shown.

Tires will deflate until approximately 10 psi (69 kPa) remains in tire (except M1089A1).

M1089A1 tires will deflate until approximately 12 psi (83 kPa) remains in tire.

Some resistance may be felt when turning kneeling valve. Valve will not operate properly if it is not turned 1/2 turn (180 degrees).

2. Turn kneeling valve (1) 1/2 turn to left (180 degrees) to release air from front tire (2).



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

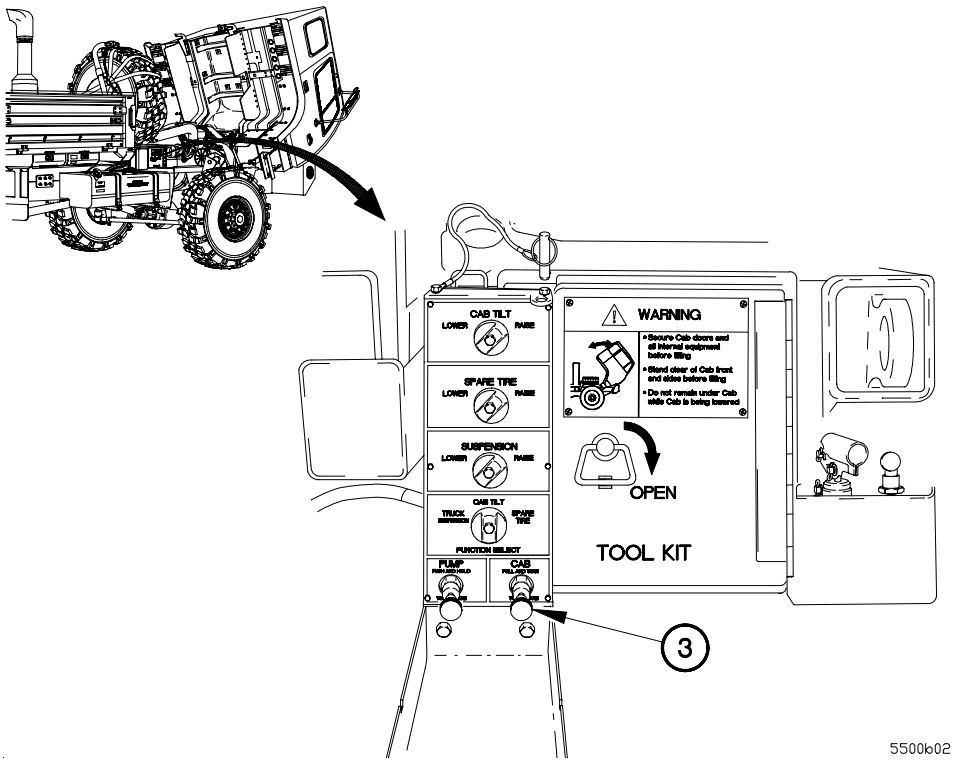
CAB AIR SPRING DEFLATION

1. Start engine and allow air pressure to reach 120 psi (827 kPa) (WP 0018 00).
2. Shut down engine (WP 0018 00).

NOTE

Allow time for air spring to fully deflate. Approximately 30 seconds.

3. Turn cab knob (3) to left and pull out.
4. Raise cab (WP 0019 00).



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

CAB AIR SPRING DEFLATION - Continued

5. Remove quick release pin (4) from bracket (5).

NOTE

Use socket wrench bar handle, P/N 619147, located in tool box, to aid in pinning air springs.

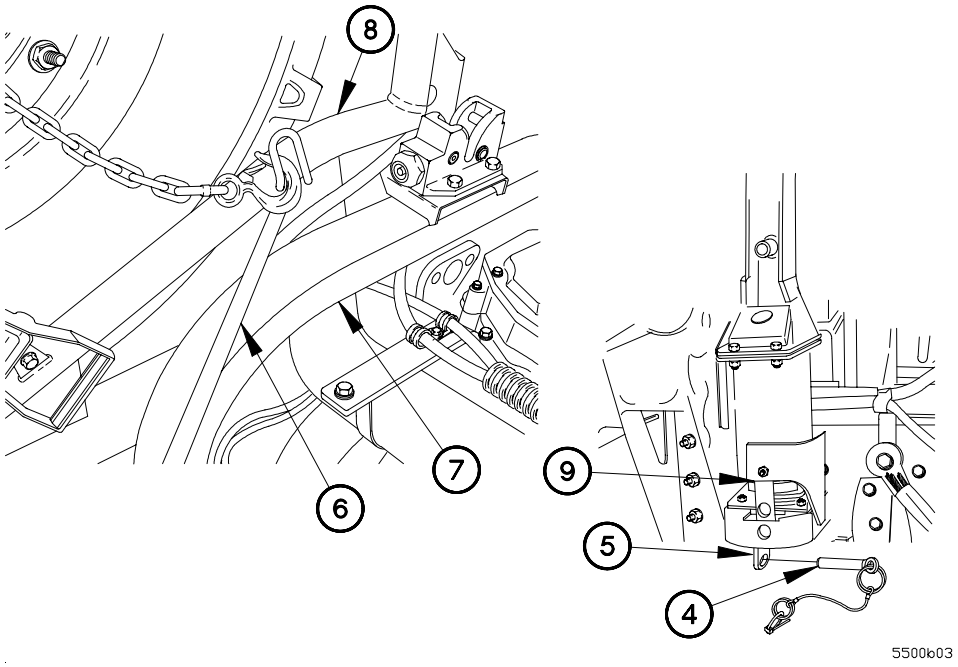
Socket wrench bar handle locations are shown for left and right side. Refer to following illustration for details.

Perform steps (6) through (8) on right side of vehicle.

6. Place socket wrench bar handle (6) on top of rear cab support (7) and under spare tire retainer (8) for leverage.

7. Push down on rear cab support (7) with socket wrench bar handle (6).

8. Install quick release pin (4) in cab air spring bracket (9).



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

CAB AIR SPRING DEFLATION - Continued

NOTE

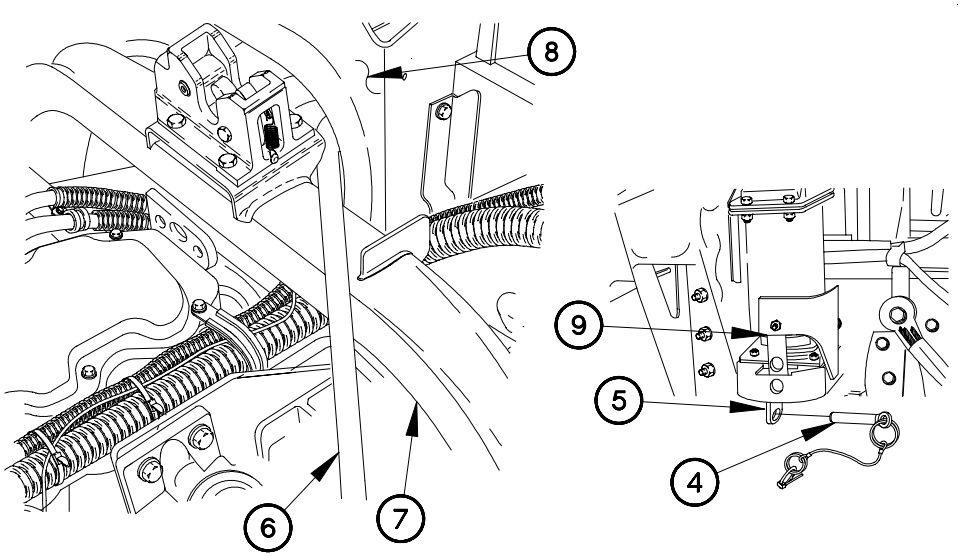
Perform steps (9) through (12) on left side air spring.

9. Remove quick release pin (4) from bracket (5).
10. Place socket wrench bar handle (6) on top of rear cab support (7) and under spare tire retainer (8) for leverage.
11. Push down on rear cab support (7) with socket wrench bar handle (6).
12. Install quick release pin (4) in cab air spring bracket (6).

NOTE

Perform step (13) if vehicle is being prepared for highway or rail shipment.

13. Lower cab (WP 0019 00).



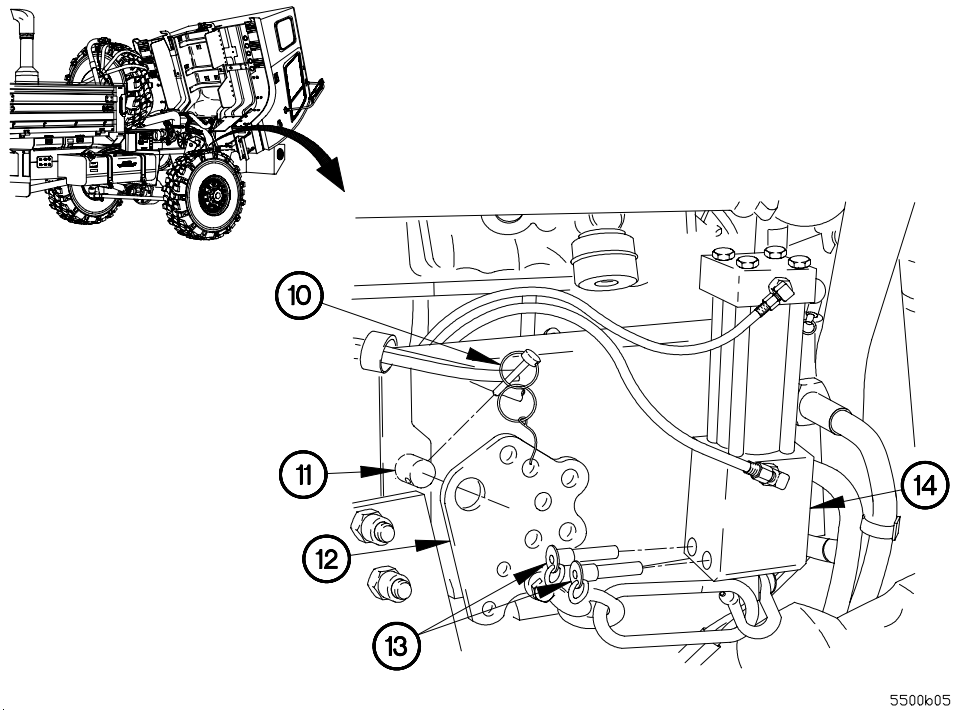
PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

COMPRESSING SUSPENSION

NOTE

Left and right side suspension compression plates are removed the same way. Right side suspension compression plate shown.

1. Remove retaining pin (10) from stud (11).
2. Remove suspension compression plate (12) from stud (11).
3. Remove two safety pins (13) from compression cylinder (14).
4. Perform steps (1) through (3) on left side of vehicle.

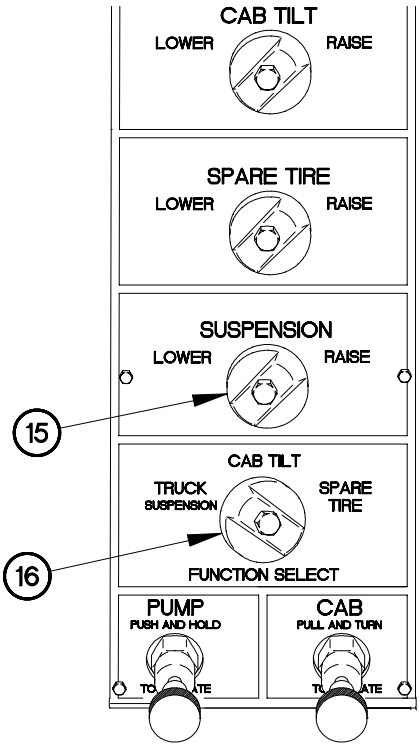


PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

COMPRESSING SUSPENSION - Continued

5. Position SUSPENSION knob (15) to RAISE.

6. Position FUNCTION SELECT knob (16) to TRUCK SUSPENSION.



5500b06

PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

COMPRESSING SUSPENSION - Continued

NOTE

Use back-up hydraulic pump (WP 0042 00) if pressing PUMP knob does not accomplish step (7).

7. Press and hold PUMP knob (17) until suspension compression plate (12) can be installed on axle stud (18).

WARNING

Both suspension compression plates must be installed on axle studs. Failure to comply may result in serious injury or death to personnel.

NOTE

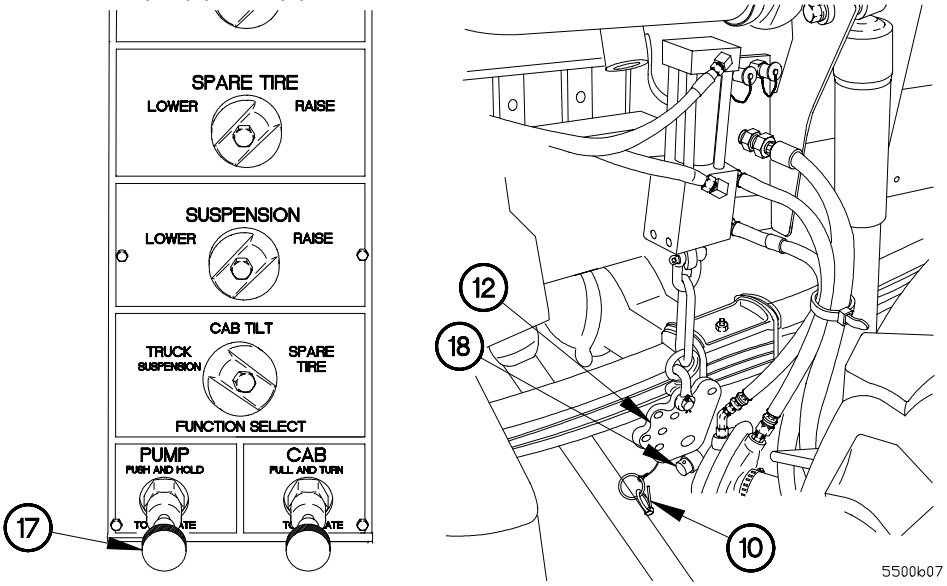
Left and right side suspension compression plates are installed on axle studs the same way. Right side suspension compression plate shown.

8. Install suspension compression plate (12) on axle stud (18).

9. Install pin (10) in axle stud (18).

10. Turn wheels to the left.

11. Perform steps (8) and (9) on left side of vehicle.



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

COMPRESSING SUSPENSION – Continued

12. Position SUSPENSION knob (15) to LOWER.

NOTE

Suspension is fully compressed when cylinder rod is fully retracted and safety pins can be installed in compression cylinder.

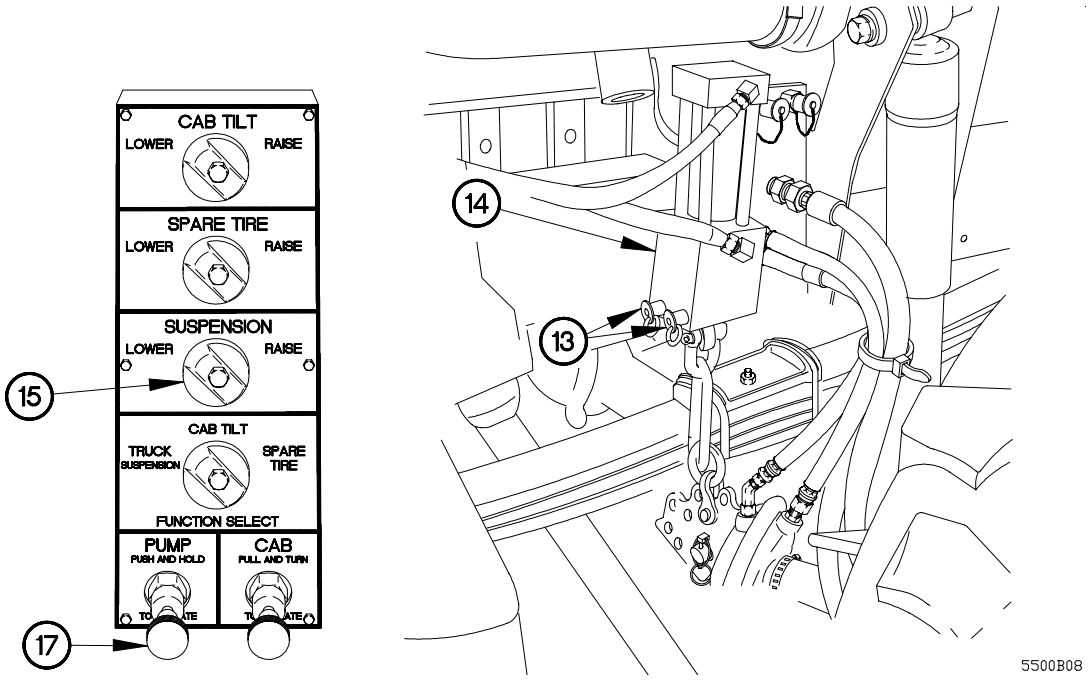
Use back-up hydraulic pump (WP 0042 00) if pressing PUMP knob does not accomplish step (12).

13. Press and hold PUMP knob (17) until suspension is fully compressed.

14. Install two safety pins (13) in compression cylinder (14).

15. Perform step (14) on left side of vehicle.

16. Lower cab (WP 0019 00).



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

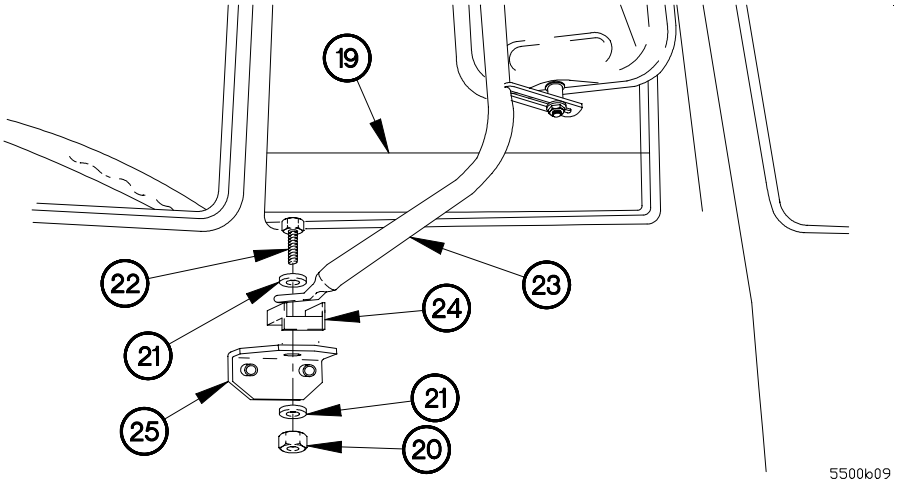
FOLDING MIRRORS

NOTE

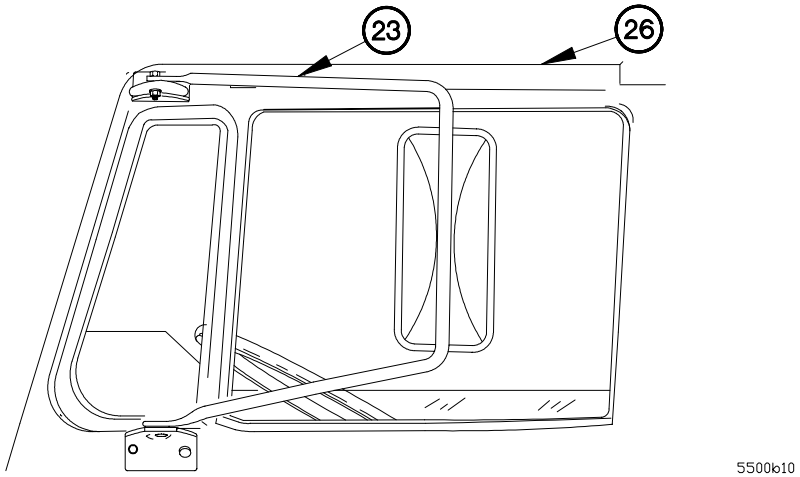
Left and right side mirrors are folded the same way. Left side mirror shown.

Perform steps (1) through (6) for vehicle S/N 15,675 or lower.

1. Roll window (19) down completely.
2. Remove nut (20), two washers (21), and screw (22) from mirror assembly (23).
3. Remove clip (24) from bracket (25).



4. Fold mirror assembly (23) in toward door (26).

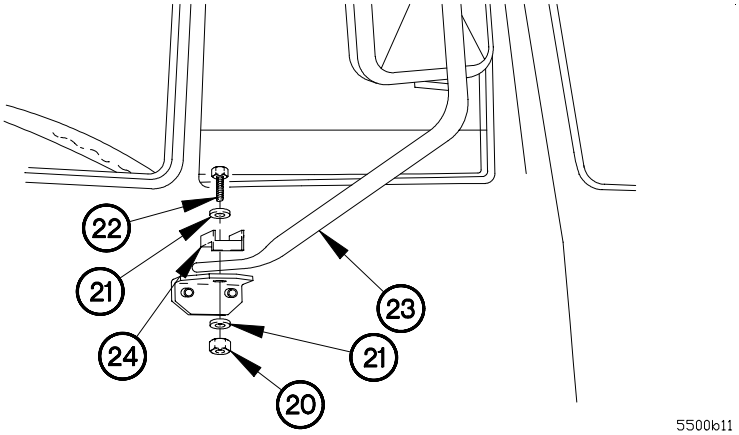


PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

FOLDING MIRRORS - Continued

5. Install clip (24), two washers (21), screw (22), and nut (20) on mirror assembly (23).

6. Perform steps (1) through (5) on right side of vehicle.



5500b11

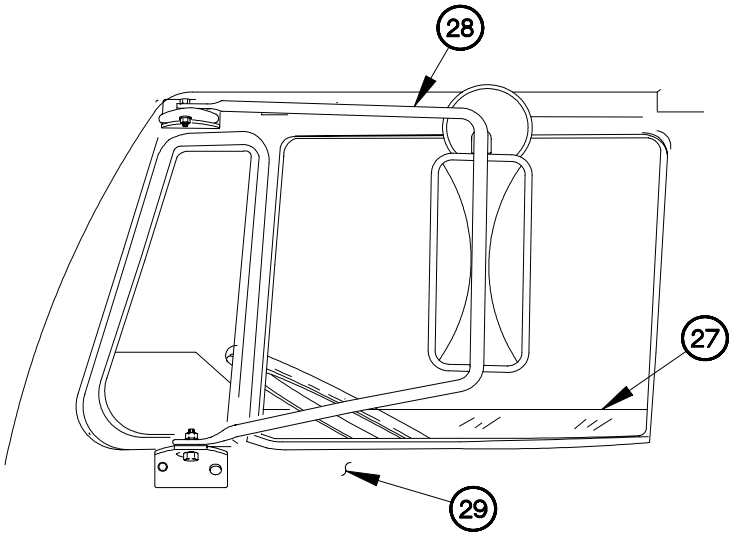
NOTE

Perform steps (7) through (9) on vehicle S/N 15,676 or higher.

7. Roll window (27) down completely.

8. Fold mirror assembly (28) in toward door (29).

9. Perform steps (7) and (8) on right side of vehicle.



5500B22

PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

UNFOLDING MIRRORS

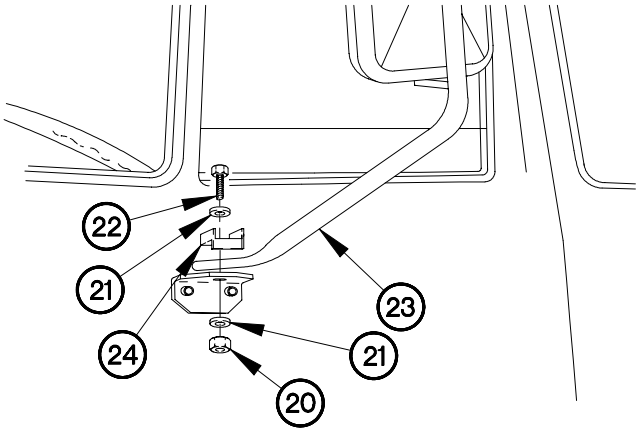
NOTE

Left and right side mirrors are unfolded the same way. Left side mirror shown.

Perform steps (1) through (5) on vehicle S/N 15,675 or lower.

1. Remove nut (20), screw (22), two washers (21), and clip (24) from mirror assembly (23).

2. Unfold mirror assembly (23).



5500b12

PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

UNFOLDING MIRRORS - Continued

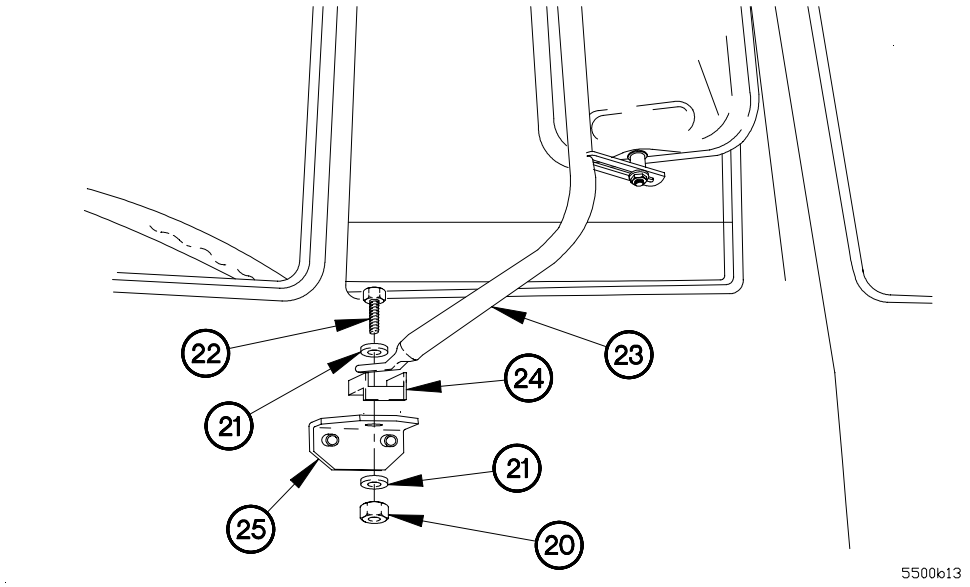
3. Install clip (24) between mirror assembly (23) and bracket (25).

NOTE

Notify Unit Maintenance to tighten nuts to 21-27 lb-ft (29-37 N·m).

4. Install two washers (21), screw (22), and nut (20).

5. Perform steps (1) through (4) on right side of vehicle.



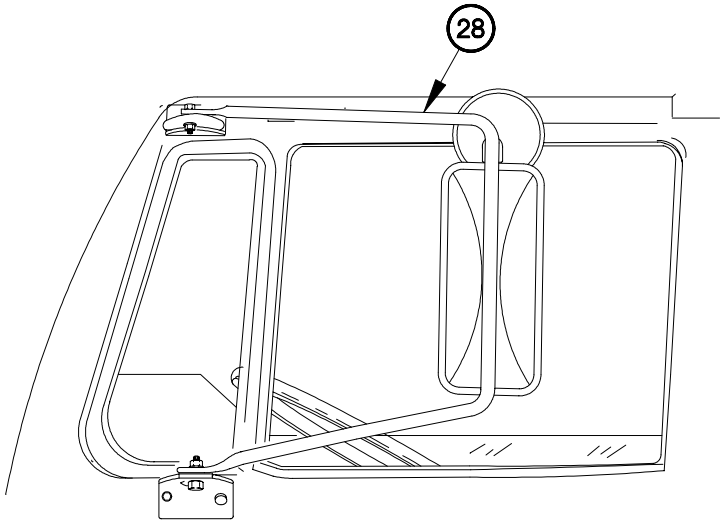
NOTE

Perform step (6) on vehicle S/N 15,676 or higher.

6. Unfold mirror assembly (28).

PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

UNFOLDING MIRRORS - Continued



5500B23

DECOMPRESSING SUSPENSION

1. Start engine and allow air pressure to reach 120 psi (827 Kpa). (WP 0018 00).

2. Raise cab (WP 0019 00).

CAUTION

Ensure area above cab is adequate before raising suspension. Failure to comply may result in damage to equipment.

Do not operate vehicle off road without both air springs unpinned and deflated. Failure to comply may result in damage to equipment.

3. Position SUSPENSION knob (15) to LOWER.

4. Position FUNCTION SELECT knob (16) to TRUCK SUSPENSION.

NOTE

Use backup hydraulic pump (WP 0042 00) if pressing PUMP knob does not accomplish step (5).

5. Press and hold PUMP knob (17) until two safety pins (13) can be removed from compression cylinder (14).

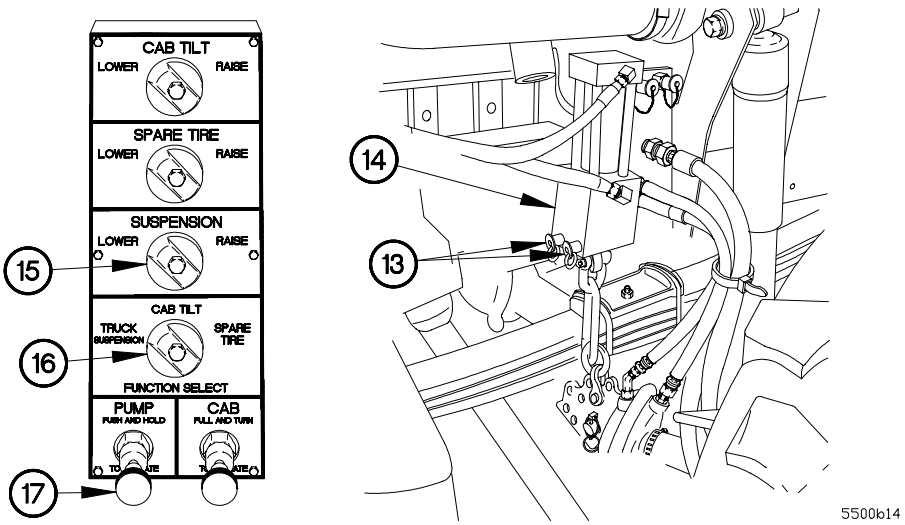
PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

DECOMPRESSING SUSPENSION – Continued

NOTE

Left and right side safety pins are removed from compression cylinders the same way. Right side safety pins shown.

6. Remove two safety pins (13) from compression cylinder (14).



7. Position SUSPENSION knob (15) to RAISE.

NOTE

Use backup hydraulic pump (WP 0042 00) if pressing PUMP knob does not accomplish step (8).

7. Press and hold PUMP knob (17) until vehicle returns to normal height and suspension compression plate (12) is loose.

WARNING

Both suspension compression plates must be removed from axle studs. Failure to comply may result in serious injury or death to personnel.

PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

DECOMPRESSING SUSPENSION - Continued

NOTE

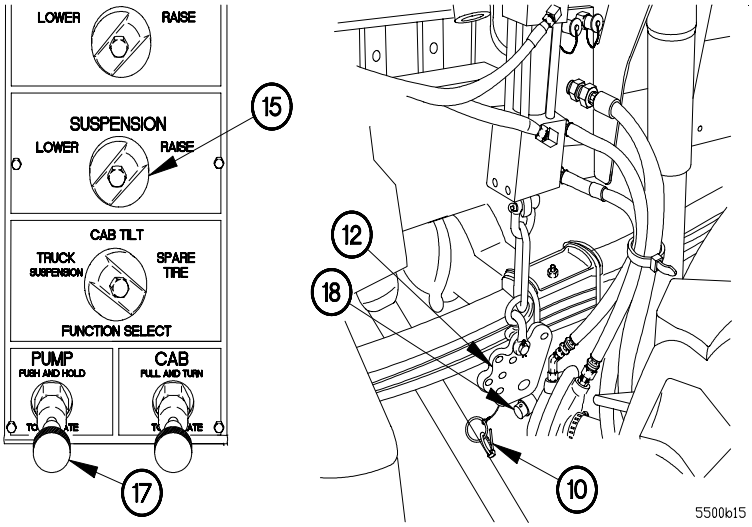
Left and right suspension compression plates are removed the same way. Right side suspension compression plate shown.

9. Remove pin (10) from axle stud (18).

10. Remove suspension compression plate (12) from axle stud (18).

11. Turn wheels to the left.

12. Perform steps (9) and (10) on left side of vehicle.



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

DECOMPRESSING SUSPENSION - Continued

13. Position SUSPENSION knob (15) to LOWER.

NOTE

Use backup hydraulic pump (WP 0042 00) if pressing PUMP knob does not accomplish step 14.

14. Press PUMP knob (17) until cylinder rod (27) is fully retracted and two safety pins (13) can be inserted in compression cylinder (14).

NOTE

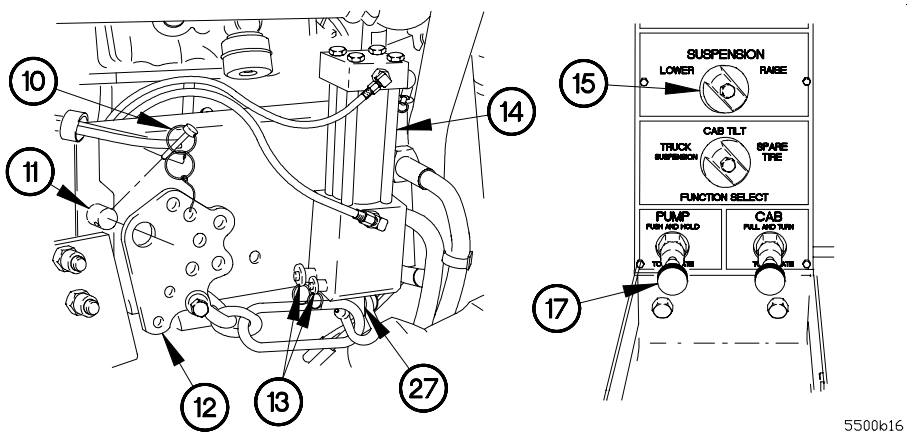
Left and right side suspension compression plates are installed the same way. Right side suspension compression plate shown.

15. Install two safety pins (13) in compression cylinder (14).

16. Install suspension compression plate (12) on stud (11).

17. Install pin (10) in stud (11).

18. Lower cab (WP 0019 00).



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

CAB AIR SPRING INFLATION

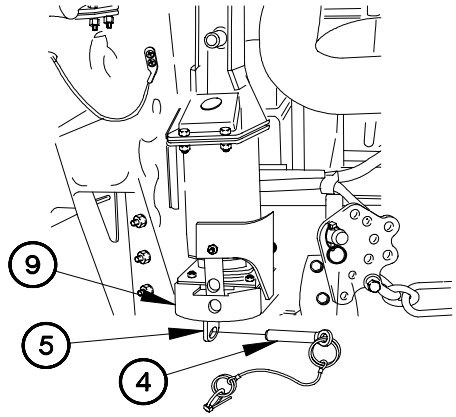
CAUTION

Do not operate vehicle off-road without both air springs unpinned and inflated. Failure to comply may result in damage to equipment.

NOTE

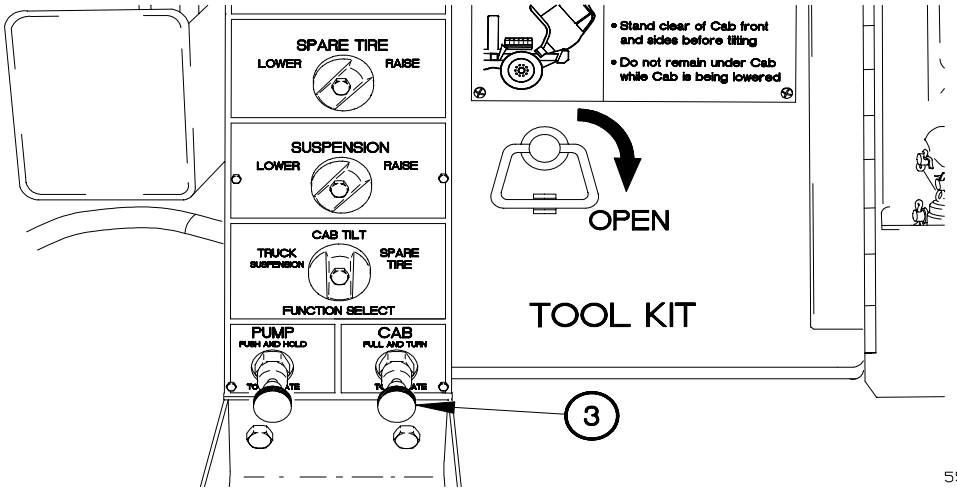
Left and right side cab air springs are inflated the same way. Right side cab air spring shown.

1. Remove quick release pin (4) from air spring (9).
2. Install quick release pin (4) in air spring bracket (5).
3. Perform steps 1 and 2 on left side of vehicle.



5500b17

8. Press and turn CAB knob (3) to the right.



5500b18

PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

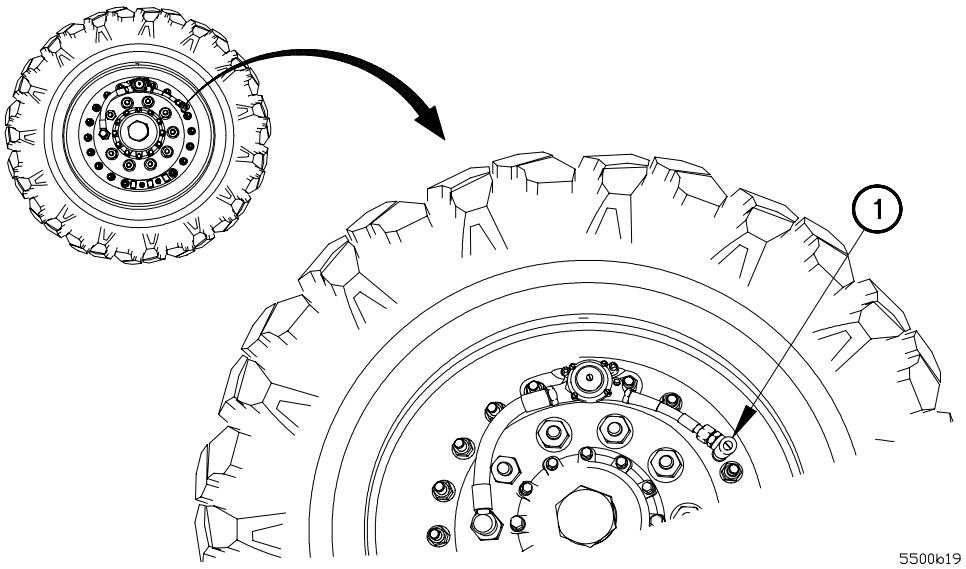
FRONT TIRE INFLATION

NOTE

Drive vehicle clear of aircraft before performing this procedure.

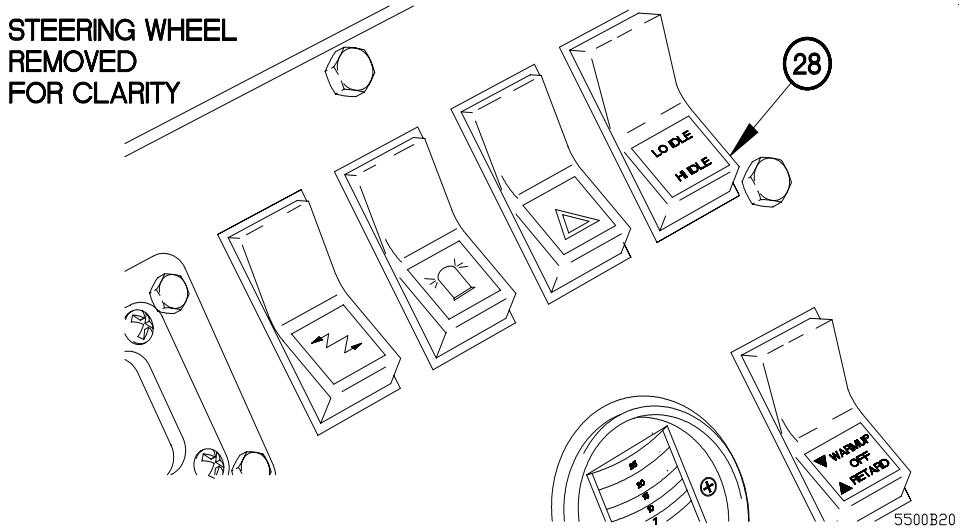
Left and right front tires are inflated the same way. Left front tire shown.

1. Turn kneeling valve (1) 1/2 turn to right to fully close valve.



2. Start engine (WP 0018 00).

3. Press LO IDLE/HI IDLE switch (28) to engage HI IDLE.



PREPARATION FOR INTERNAL AIR TRANSPORT, HIGHWAY, OR RAIL SHIPMENT Continued 0055 00

FRONT TIRE INFLATION - Continued

CAUTION

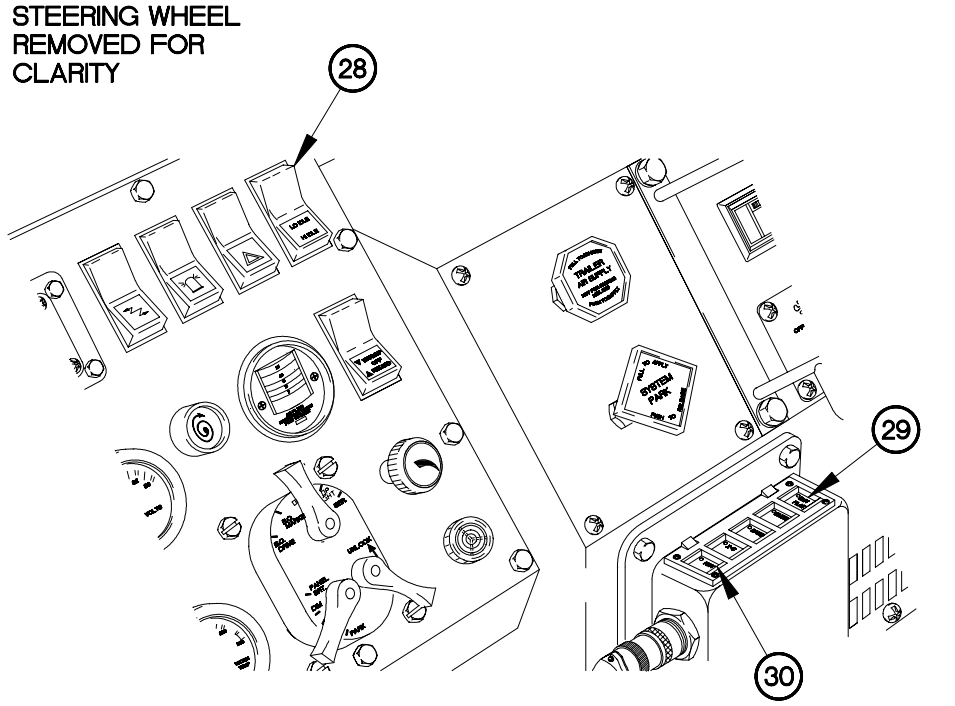
Vehicle may be driven while tires are inflating, but is restricted to first gear and on smooth surfaces. Failure to comply may result in damage to equipment.

NOTE

After one minute of inflation any gear range/speed may be selected and no terrain restriction exists.

4. Press RUN FLAT (29) and HIGHWAY (30) modes at same time (WP 0020 00).

5. Press LO IDLE/HI IDLE switch (28) to engage LO IDLE.



END OF WORK PACKAGE.

M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT 0056 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)
Release Tool (Item 29, Table 1, WP 0112 00)

GENERAL

This work package provides the data and procedures for preparing the M1088A1 Tractor for air or ship transport. Items covered include Sliding Fifth Wheel To The Rear and Sliding Fifth Wheel To The Front.

POSITIONING SLIDING FIFTH WHEEL TO THE REAR

WARNING

Never stand against or between tractor tires, stand between tractor and trailer, allow anyone behind trailer during movement, or allow anyone to stand on opposite side of operator during fifth wheel release. Always chock trailer tires before coupling, connect trailer brakes air supply and set trailer brakes before sliding fifth wheel. Use release tool when releasing and engaging slide latch lever. Failure to comply may result in serious injury or death to personnel.

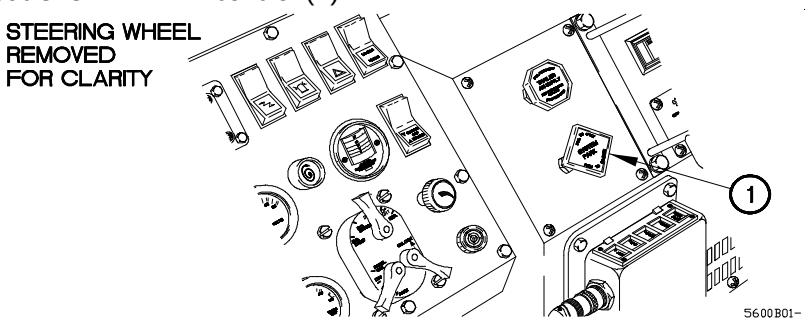
CAUTION

The fifth wheel must be positioned all the way to the rear for all trailers when loading/unloading from air or ship transport. Failure to comply may result in damage to equipment.

NOTE

The fifth wheel is in the forward position for all trailers except the M900 series or XM1098 during normal operation.

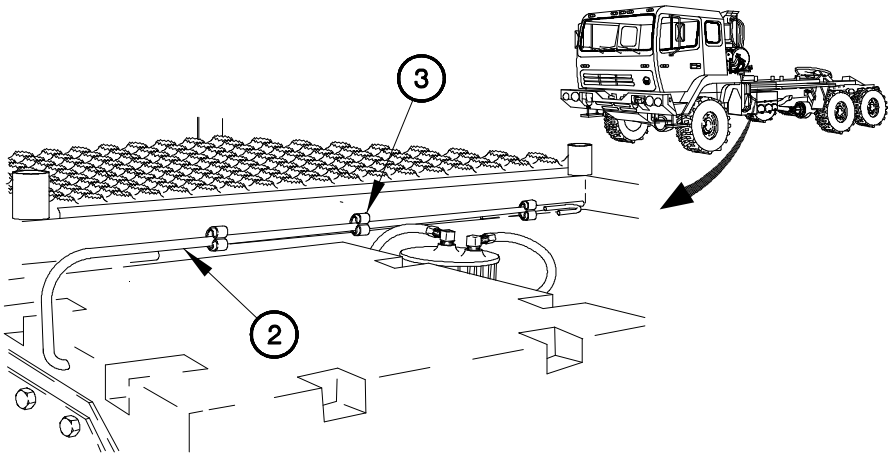
1. Pull out SYSTEM PARK control (1).



M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

POSITIONING SLIDING FIFTH WHEEL TO THE REAR - Continued

2. Remove release tool (2) from stowage brackets (3).

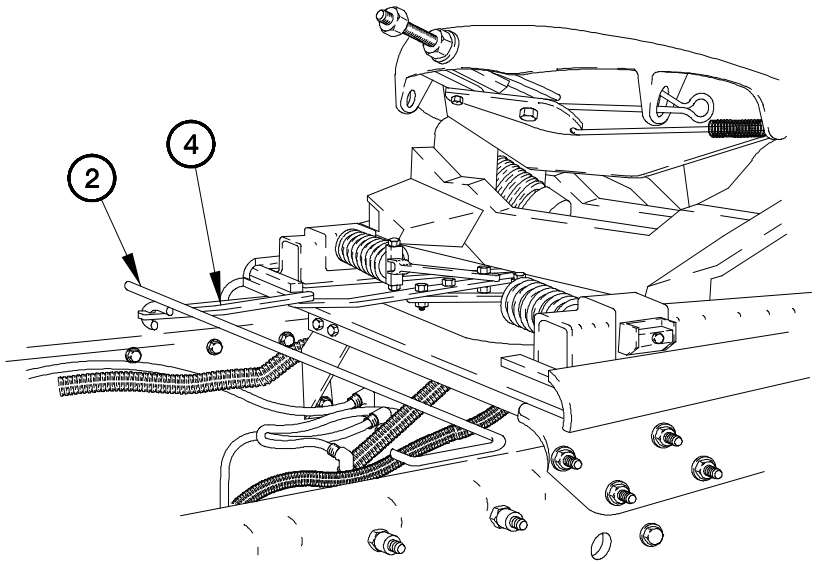


5600B02-

NOTE

Slide latch release lever will lock into place automatically when release tool is pulled.

3. Pull slide latch release lever (4) to the locked open position with release tool (2).



5600B03-

M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

POSITIONING SLIDING FIFTH WHEEL TO THE REAR - Continued

4. Push down on trailer service brake valve (5).

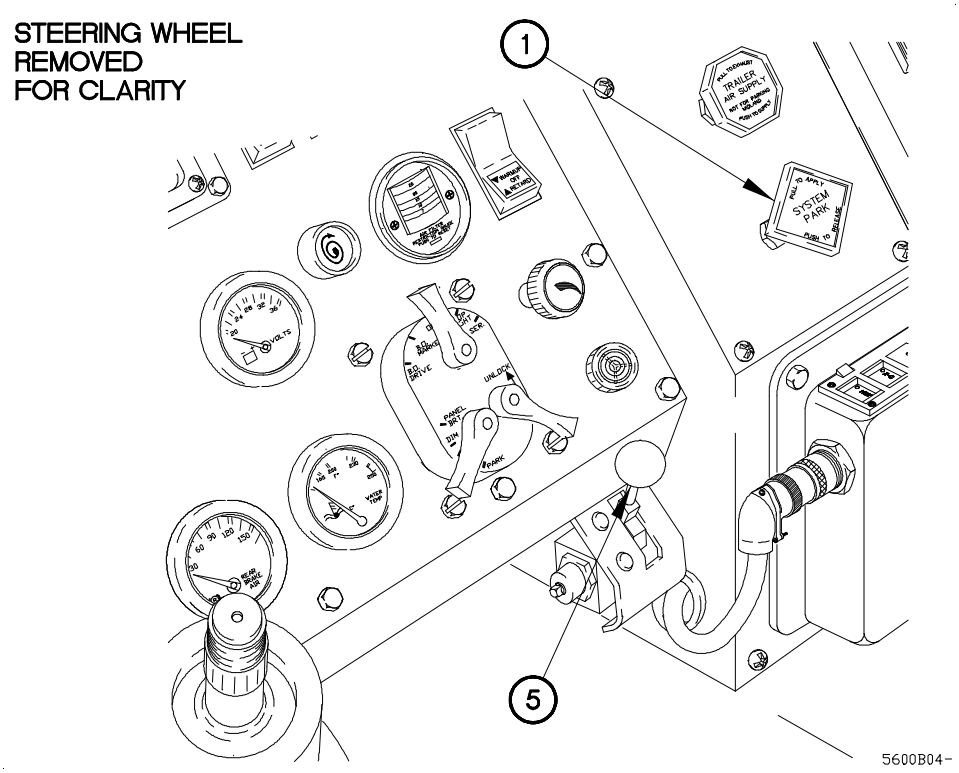
5. Push in SYSTEM PARK control (1).

NOTE

The following step requires the aid of an assistant.

6. Very slowly drive tractor forward until fifth wheel reaches the rear stop blocks.

7. Pull out SYSTEM PARK control (1).



M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

POSITIONING SLIDING FIFTH WHEEL TO THE REAR - Continued

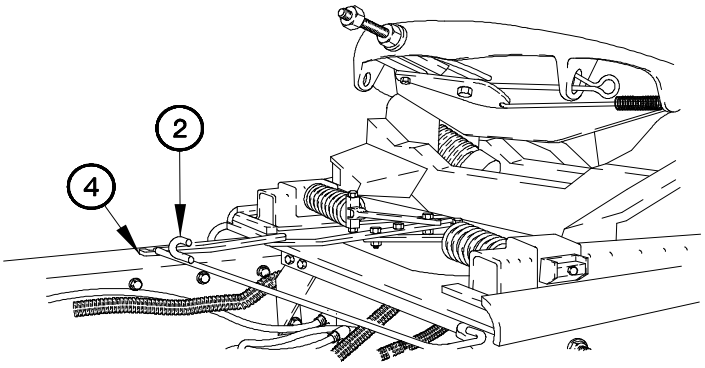
WARNING

Use release tool with hook side up when closing slide latch release lever. Failure to comply may result in injury to personnel.

NOTE

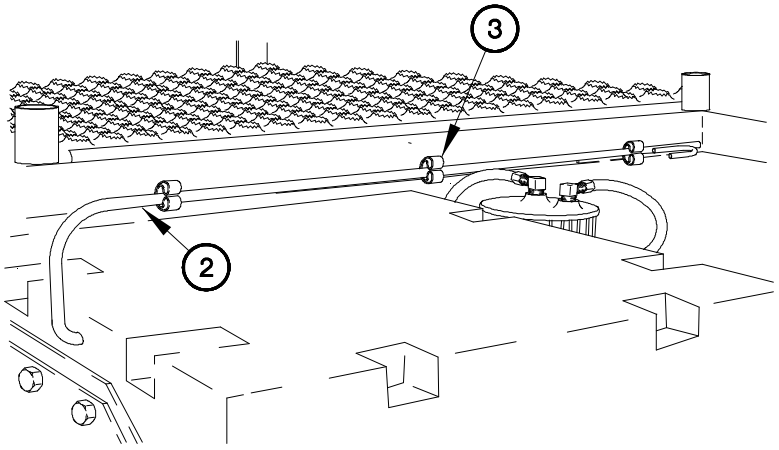
Slide carriage will lock into place automatically when slide latch release lever is tripped.

8. Close slide latch release lever (4) by pushing slide latch release lever with the point of the release tool (2).



5600B05-

9. Install release tool (2) in stowage brackets (3).



5600B06-

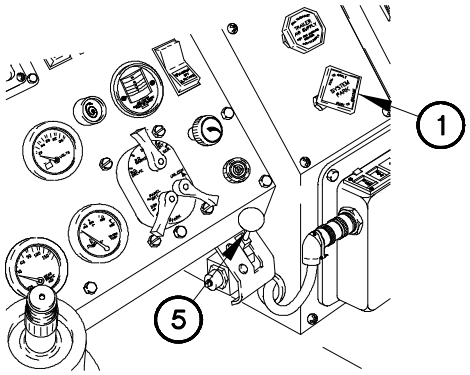
M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

POSITIONING SLIDING FIFTH WHEEL TO THE REAR - Continued

10. Push in SYSTEM PARK control (1).

11. Pull up on trailer service brake valve (5).

STEERING WHEEL REMOVED FOR CLARITY



5600B07-

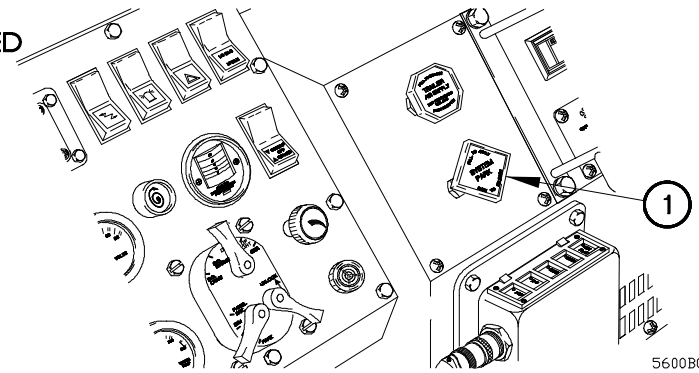
POSITIONING FIFTH WHEEL TO THE FRONT

WARNING

Never stand against or between tractor tires, stand between tractor and trailer, allow anyone behind trailer during movement, or allow anyone to stand on opposite side of operator during fifth wheel release. Always chock trailer tires before coupling, connect trailer brakes air supply and set trailer brakes before sliding fifth wheel. Use release tool when releasing and engaging slide latch lever. Failure to comply may result in injury or death to personnel.

1. Pull out SYSTEM PARK control (1).

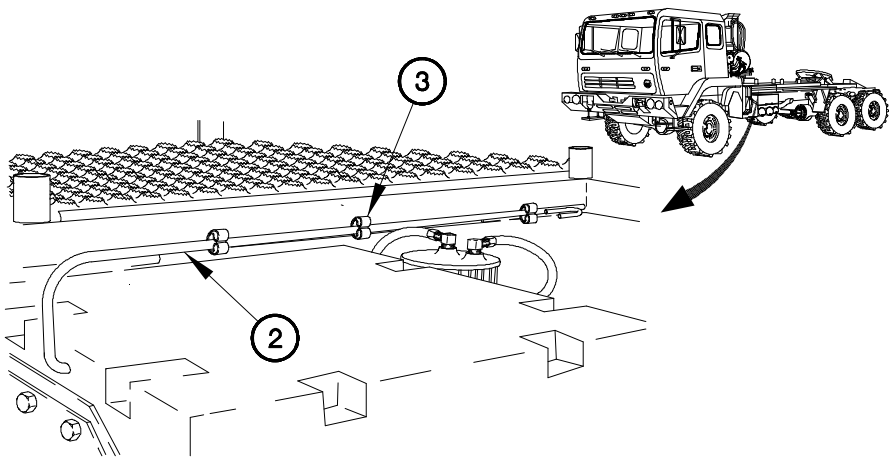
STEERING WHEEL REMOVED FOR CLARITY



5600B08-

POSITIONING FIFTH WHEEL TO THE FRONT - Continued

2. Remove release tool (2) from stowage brackets (3).

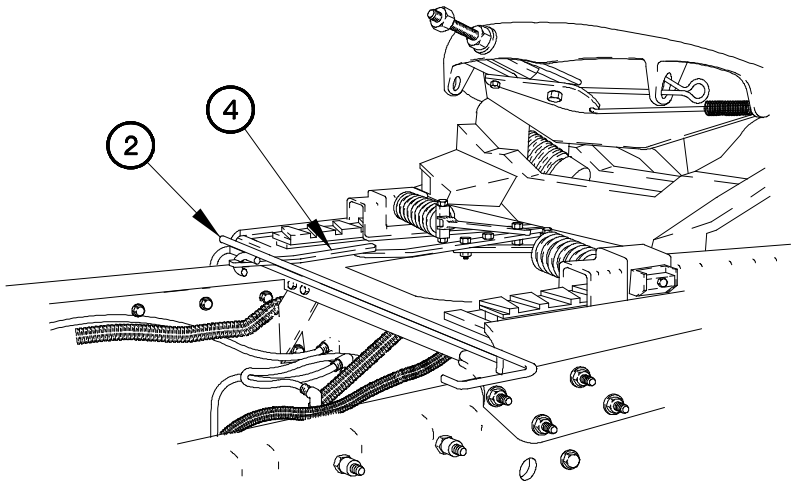


5600B09-

NOTE

Slide latch release lever will lock into place automatically when release tool is pulled.

3. Pull slide latch release lever (4) to the locked open position with release tool (2).



5600B10-

M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

POSITIONING FIFTH WHEEL TO THE FRONT – Continued

CAUTION

Perform the following four steps on all trailers except M900 series or XM1098. Failure to comply may result in damage to equipment.

4. Push down on trailer service brake valve (5).

5. Push in SYSTEM PARK control (1).

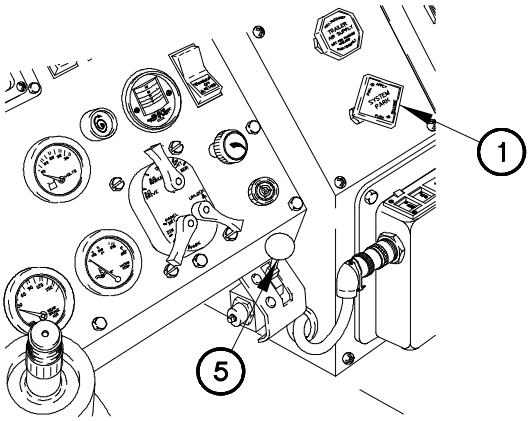
NOTE

The following step requires the aid of an assistant.

6. Very slowly drive tractor/trailer rearward until fifth wheel reaches the front stop blocks (trailer resistance will be felt).

7. Pull out SYSTEM PARK control (1).

STEERING WHEEL REMOVED FOR CLARITY



5600B11-

CAUTION

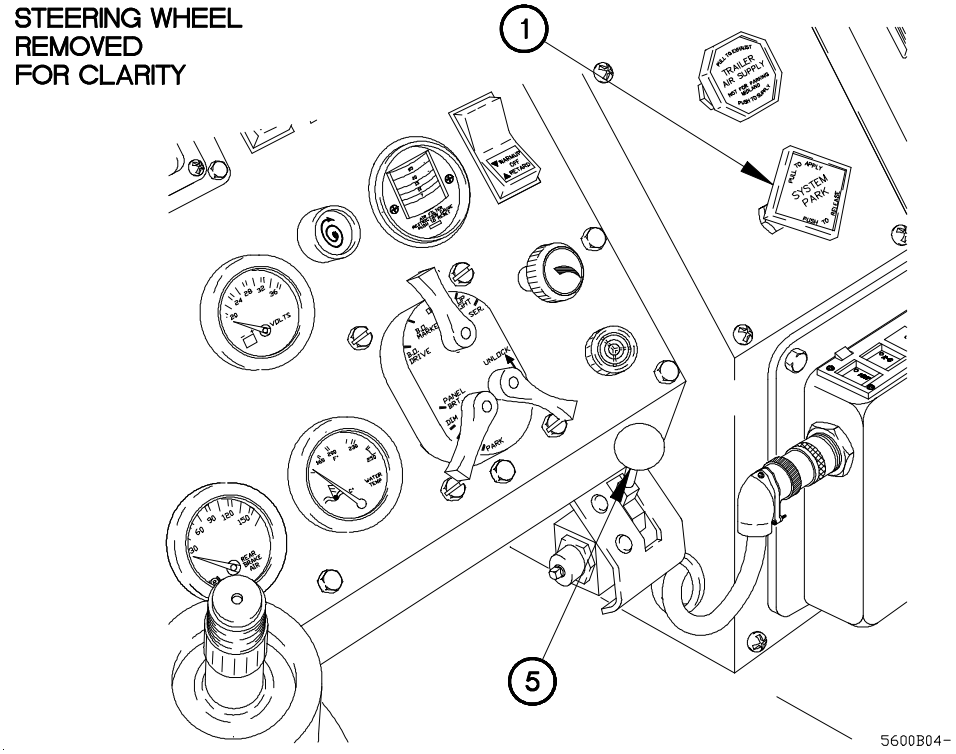
Perform the following three steps on M900 or XM1098 trailer. Failure to comply may result in damage to equipment.

8. Push down on trailer service brake valve (5).

9. Push in SYSTEM PARK control (1).

M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

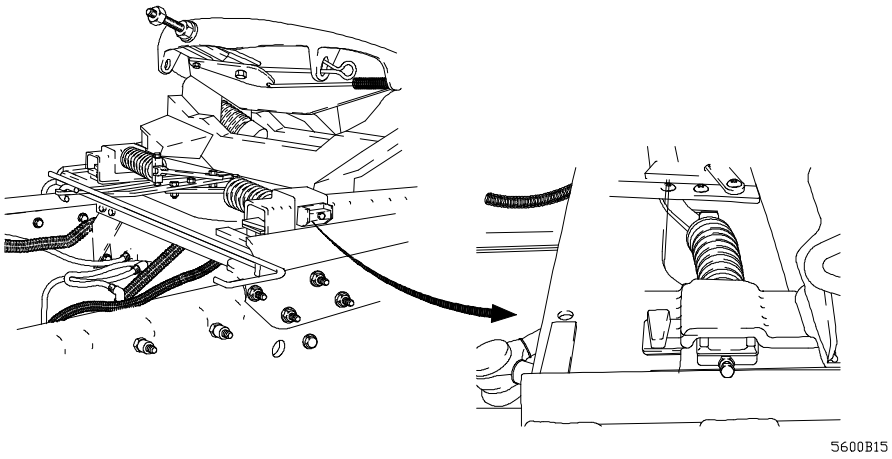
POSITIONING FIFTH WHEEL TO THE FRONT – Continued



NOTE

The following step requires the aid of an assistant.

10. Very slowly drive tractor rearward until fifth wheel reaches the third notch as shown.



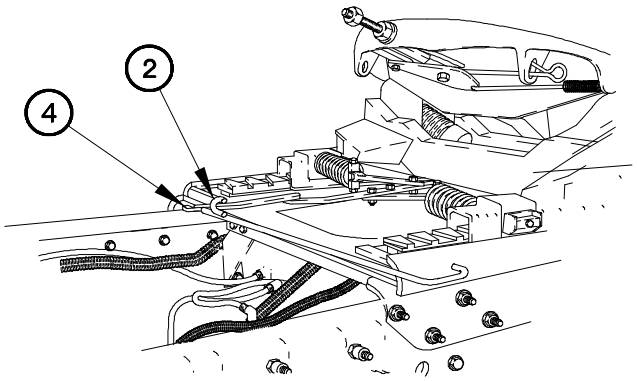
M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

POSITIONING FIFTH WHEEL TO THE FRONT - Continued

NOTE

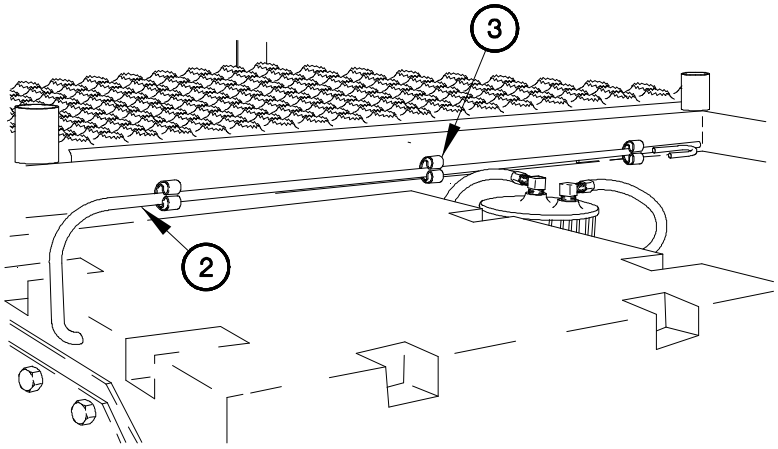
Slide carriage will lock into place automatically when slide latch release lever is tripped.

11. Close slide latch release lever (4) by pushing slide latch release lever down with the point of the release tool (2).



5600B12-

12. Install release tool (2) in stowage brackets (3).



5600B13-

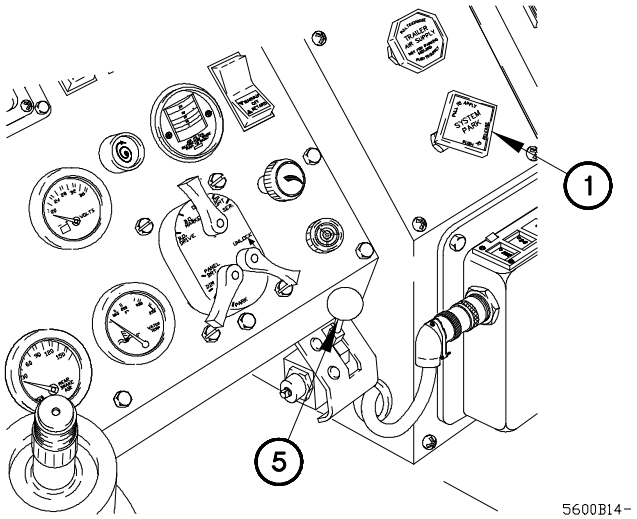
M1088A1 TRACTOR PREPARATION FOR AIR OR SHIP TRANSPORT - Continued 0056 00

POSITIONING FIFTH WHEEL TO THE FRONT – Continued

13. Push in SYSTEM PARK control (1).

14. Pull up on trailer service brake valve (5).

STEERING WHEEL REMOVED FOR CLARITY



END OF OPERATING PROCEDURE

FIRE EXTINGUISHER OPERATION 0057 00

INITIAL SETUP:

Maintenance Level
Operator

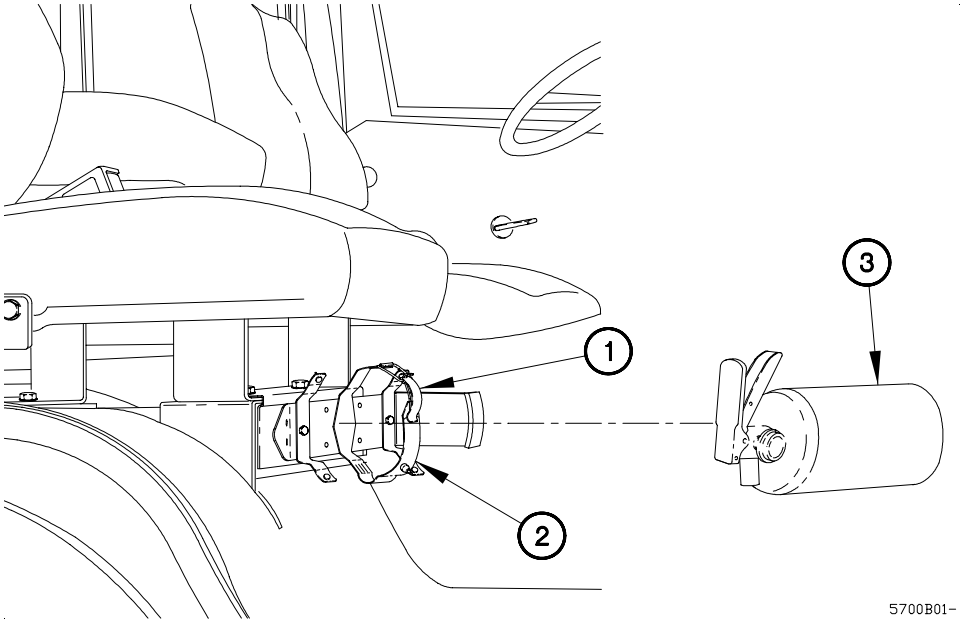
Tools/Special Tools
Extinguisher, Fire (Item 22, Table 2, WP 0112 00)

GENERAL

This work package provides the data and procedures for fire extinguisher operation. Items covered include Fire Extinguisher Removal (All Models), Fire Extinguisher Operation (All Models), Fire Extinguisher Installation (All Models), Fire Extinguisher Removal (M1089A1), Fire Extinguisher Operation (M1089A1), and Fire Extinguisher Installation (M1089A1).

FIRE EXTINGUISHER REMOVAL (ALL MODELS)

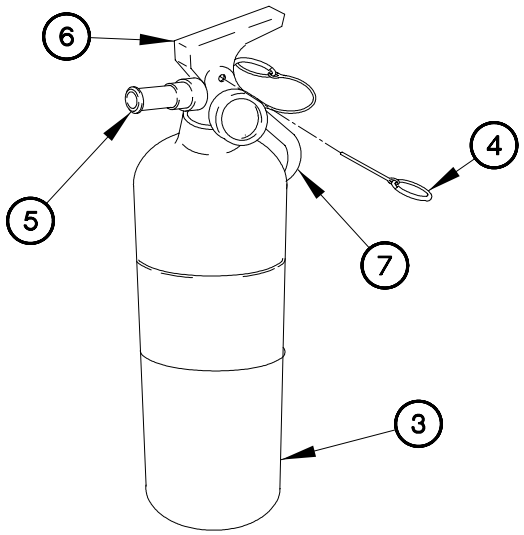
1. Pull up on latch (1) to open clamp (2).
2. Remove fire extinguisher (3) from clamp (2).



FIRE EXTINGUISHER OPERATION - Continued 0057 00

FIRE EXTINGUISHER OPERATION (ALL MODELS)

1. Remove safety pin (4) from fire extinguisher (3).
2. Holding fire extinguisher (3) upright, point nozzle (5) at base of fire from approximately 8 ft (2.4 m).
3. Squeeze together handle (6) and lever (7).
4. Spray discharge in a side-to-side motion at base of fire.
5. Release handle (6) and lever (7) when fire is out.
6. Install safety pin (4) in fire extinguisher (3).
7. Notify Unit Maintenance to replace fire extinguisher (3).

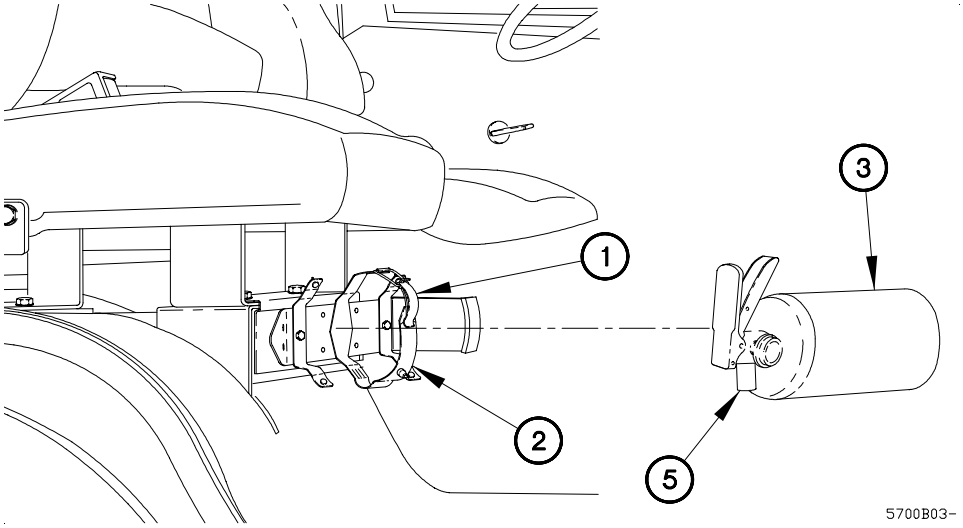


5700B02-

FIRE EXTINGUISHER OPERATION - Continued 0057 00

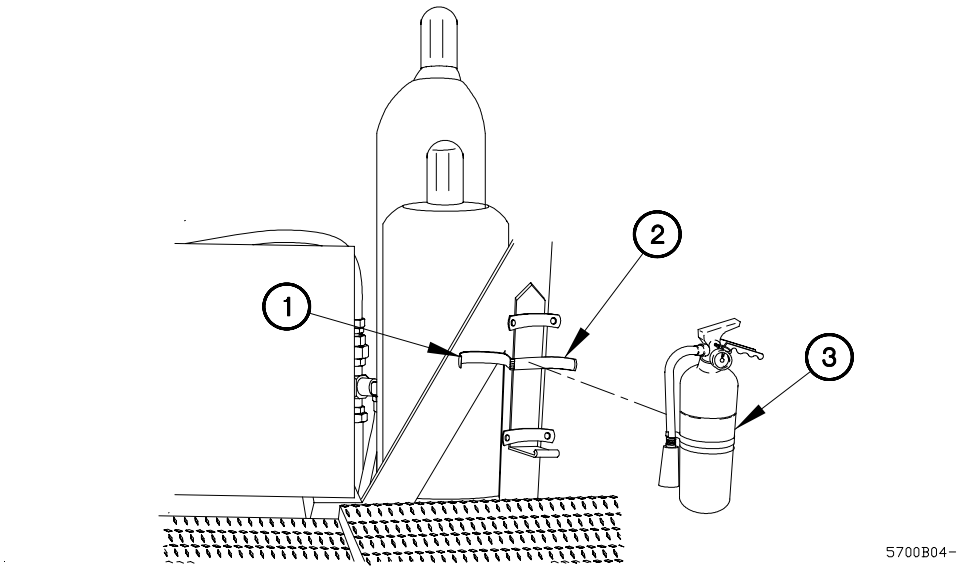
FIRE EXTINGUISHER INSTALLATION (ALL MODELS)

1. Install fire extinguisher (3) in clamp (2) with nozzle (5) pointing down.
2. Push down on latch (1) to secure fire extinguisher (3) in clamp (2).



FIRE EXTINGUISHER REMOVAL (M1089A1)

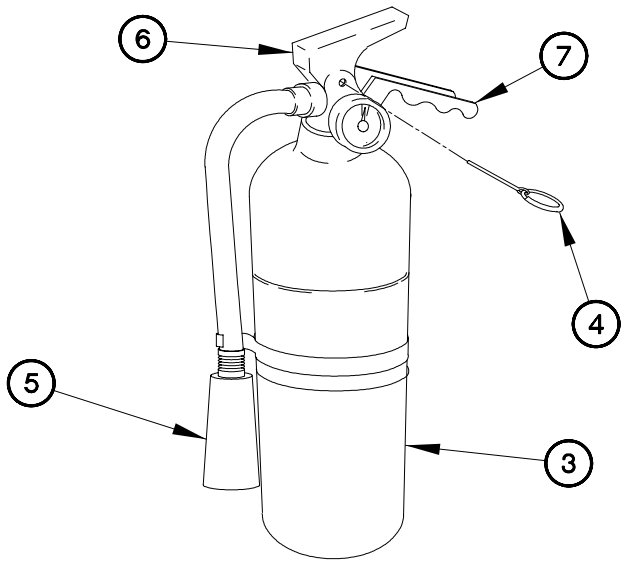
1. Pull up on latch (1) to open clamp (2).
2. Remove fire extinguisher (3) from clamp (2).



FIRE EXTINGUISHER OPERATION - Continued 0057 00

FIRE EXTINGUISHER OPERATION (M1089A1)

1. Remove safety pin (4) from fire extinguisher (3).
2. Holding fire extinguisher (3) upright, point nozzle (5) at base of fire from approximately 8 ft. (2.4 m).
3. Squeeze together handle (6) and lever (7).
4. Spray discharge in a side-to-side motion at base of fire.
5. Release handle (6) and lever (7) when fire is out.
6. Install safety pin (4) in fire extinguisher (3).
7. Notify Unit Maintenance to replace fire extinguisher (3).

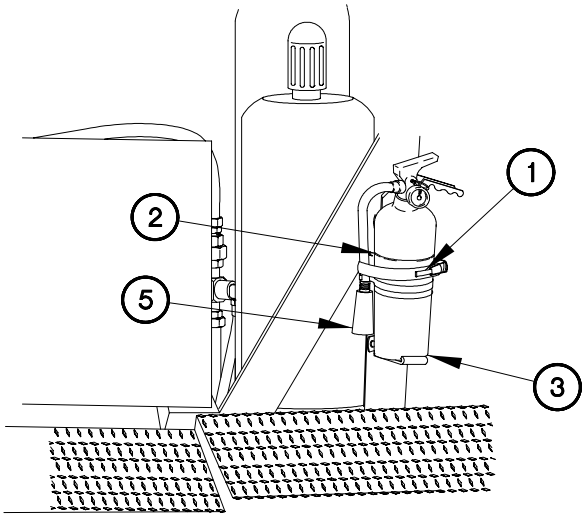


5700B05-

FIRE EXTINGUISHER OPERATION - Continued 0057 00

FIRE EXTINGUISHER INSTALLATION (M1089A1)

1. Install fire extinguisher (3) in clamp (2) with nozzle (5) pointing down.
2. Push down on latch (1) to secure fire extinguisher (3) in clamp (2).



5700B06-

END OF OPERATING PROCEDURE

HIGHWAY EMERGENCY MARKER KIT SETUP 0058 00

INITIAL SETUP:

Maintenance Level
Operator

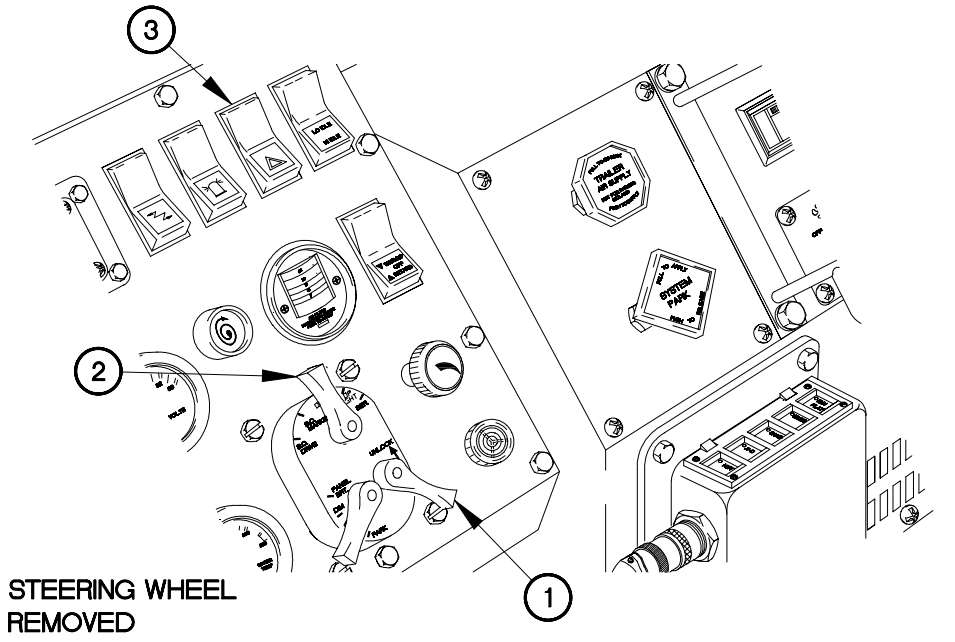
Tools/Special Tools
Chock, Wheel (Item 18, Table 2, WP 0112 00)
Warning Device Kit (Item 47, Table 2, WP 0112 00)

GENERAL

This work package provides the data and procedures for highway emergency marker kit setup. Items covered include Preparing Markers For Use; Placing Markers On Undivided, Straight Highway; Placing Markers On Undivided, Curved Highway; Placing Markers On Undivided Highway With Hills; Placing Markers On Divided Highway Or One Way Road; and Stowing Markers.

PREPARING MARKERS FOR USE

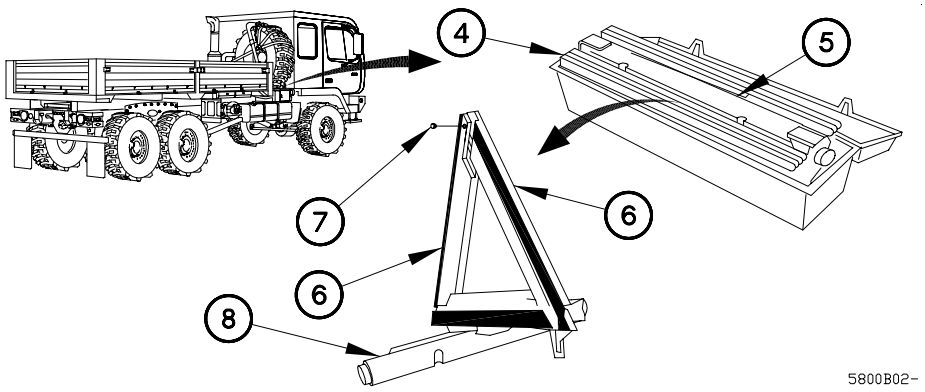
1. Lift up and hold UNLOCK lever (1).
2. Position main selector lever (2) to STOP LIGHT.
3. Position hazard lights switch (3) to on.



HIGHWAY EMERGENCY MARKER KIT SETUP - Continued 0058 00

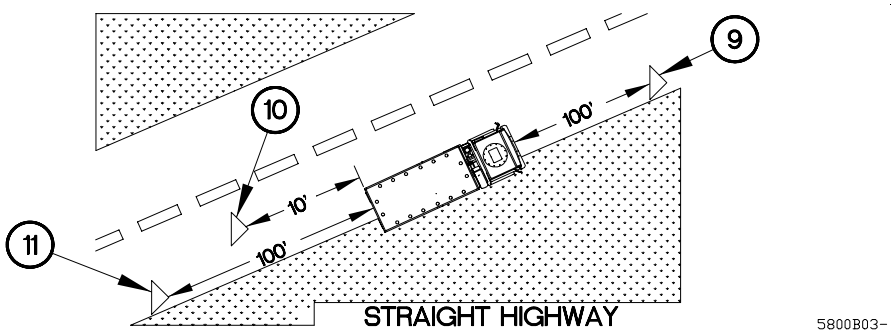
PREPARING MARKERS FOR USE - Continued

4. Remove emergency marker kit (4) from tool box.
5. Remove three markers (5) from emergency marker kit (4).
6. Attach two ends of marker arms (6) with pin (7).
7. Rotate marker arms (6) approximately 1/2 turn on base (8).
8. Perform steps 4 through 6 for second and third markers.



PLACING MARKERS ON UNDIVIDED, STRAIGHT HIGHWAY

1. Place one marker (9) approximately 100 ft (30 m) in front of vehicle with marker facing approaching traffic.
2. Place second marker (10) approximately 10 ft (3 m) behind vehicle and about 5 ft (1.5 m) out from side of vehicle with marker facing approaching traffic.
3. Place third marker (11) approximately 100 ft (30 m) behind vehicle with marker facing approaching traffic.



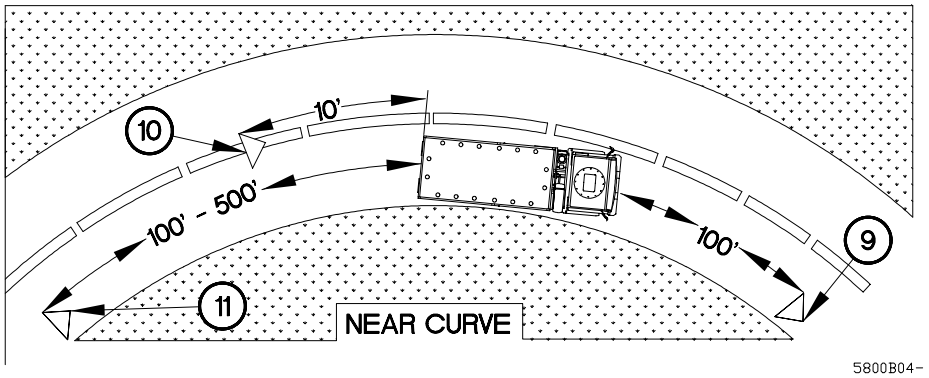
HIGHWAY EMERGENCY MARKER KIT SETUP - Continued 0058 00

PLACING MARKERS ON UNDIVIDED, CURVED HIGHWAY

1. Place one marker (9) approximately 100 ft (30 m) in front of vehicle with marker facing approaching traffic.

2. Place second marker (10) approximately 10 ft (3 m) behind vehicle and about 5 ft (1.5 m) out from side of vehicle with marker facing approaching traffic.

3. Place third marker (11) approximately 100 to 500 ft (30 to 150 m) behind vehicle with marker facing approaching traffic and visible before traffic reaches curve.



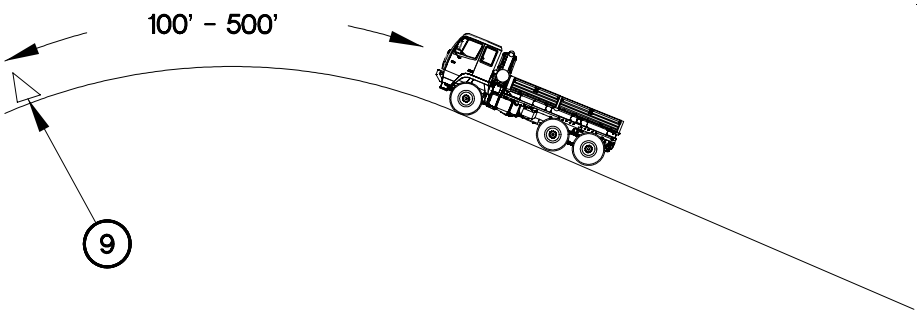
5800B04-

PLACING MARKERS ON UNDIVIDED HIGHWAY WITH HILLS

WARNING

Vehicle must be secure. Chock wheels when stopped on incline. Vehicle may roll downhill. Failure to comply may result in serious injury to death to personnel or damage to equipment.

1. Place one marker (9) approximately 100 to 500 ft (30 to 150 m) in front of vehicle with marker facing approaching traffic and visible before traffic reaches top of hill.



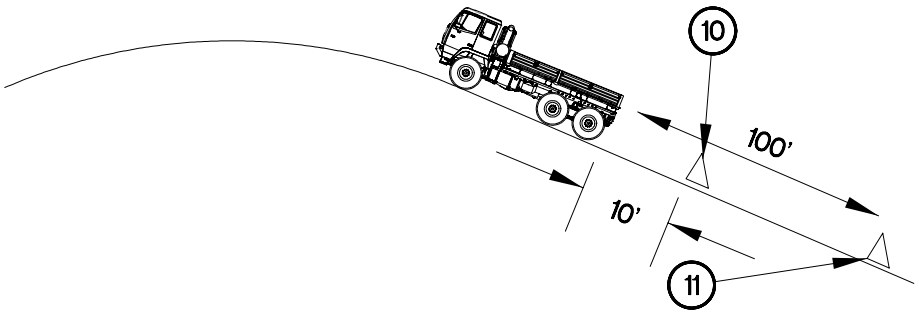
5800B05-

HIGHWAY EMERGENCY MARKER KIT SETUP - Continued 0058 00

PLACING MARKERS ON UNDIVIDED HIGHWAY WITH HILLS - CONTINUED

2. Place second marker (10) approximately 10 ft (3 m) behind vehicle and about 5 ft (1.5 m) out from side of vehicle with marker facing approaching traffic.

3. Place third marker (11) approximately 100 ft (30 m) behind vehicle with marker facing approaching traffic.



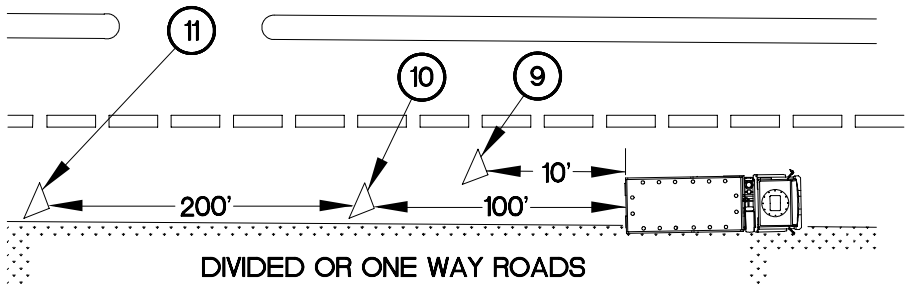
5800B06-

PLACING MARKERS ON DIVIDED HIGHWAY OR ONE WAY ROAD

1. Place one marker (9) approximately 10 ft (3 m) behind vehicle and about 5 ft (1.5 m) out from one side of vehicle with marker facing approaching traffic.

2. Place second marker (10) approximately 100 ft (30 m) behind vehicle with marker facing approaching traffic.

3. Place third marker (11) approximately 200 ft (60 m) behind second marker with marker facing approaching traffic.

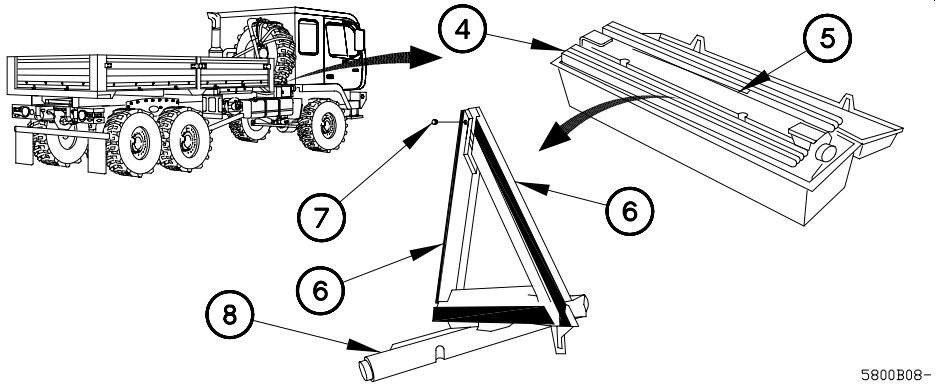


5800B07-

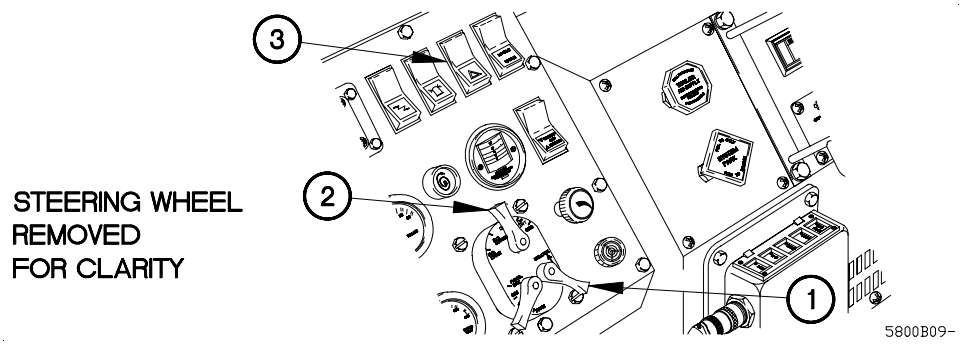
HIGHWAY EMERGENCY MARKER KIT SETUP - Continued 0058 00

STOWING MARKERS

1. Rotate marker arms (6) approximately 1/2 turn on base (8).
2. Separate marker arms (6) by removing pin (7).
3. Fold marker arms (6) down to base (8).
4. Perform steps 1 through 3 for second and third markers.
5. Stow three markers (5) in emergency marker kit (4).
6. Stow emergency marker kit (4) in tool box.



7. Position hazard lights switch (3) to off.
8. Lift and hold UNLOCK lever (1).
9. Position main selection lever (2) to OFF.



END OF OPERATING PROCEDURE

TOWBAR CONNECTION/DISCONNECTION 0059 00

INITIAL SETUP:

Maintenance Level	Personnel Required
Operator	Three

GENERAL

This work package provides the data and procedures for Towbar Connection and Towbar Disconnection.

TOWBAR CONNECTION

WARNING

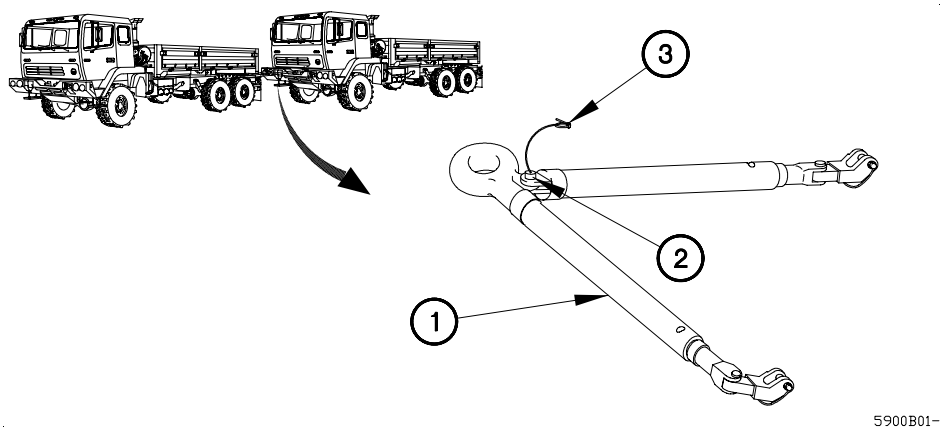
Towing vehicle and disabled vehicle must have parking brakes applied before connecting/disconnecting towbar. Vehicles may roll into each other. Failure to comply may result in serious injury or death to personnel.

Towbar weighs approximately 100 lbs (45 kgs) and requires two or more personnel to carry. Failure to comply may result in injury to personnel.

NOTE

Step 1 requires the aid of an assistant.

1. Position rear of towing vehicle near front of disabled vehicle.
2. Position towbar (1) between vehicles.
3. Remove linchpin (2) from pin (3).



TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR CONNECTION - Continued

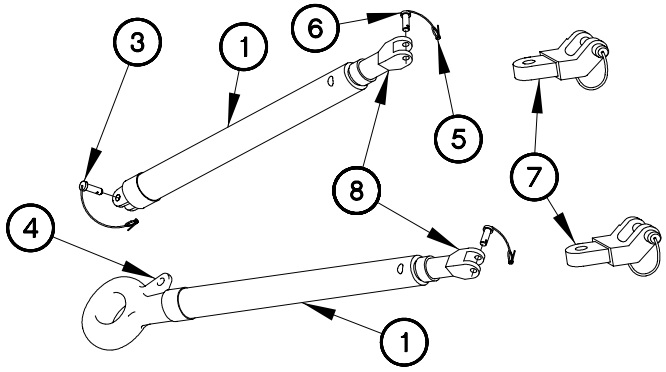
4. Remove pin (3) from towbar (1).

5. Separate towbar (1) at pivot point (4)

NOTE

Left and right side towbar adapters are removed from towbar clevises the same way. Left side shown.

6. Remove two linchpins (5), pins (6), and towbar adapters (7) from towbar clevises (8).

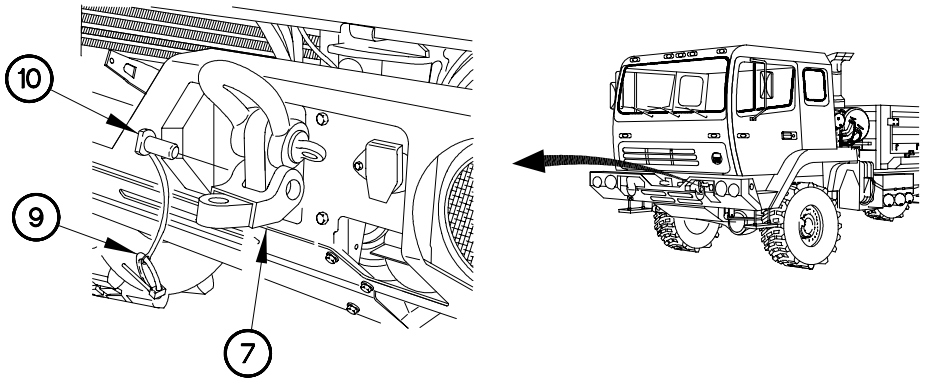


5900B02-

NOTE

Left and right side towbar adapters are installed on tow eyes the same way. Left side shown.

7. Remove two linchpins (9) and pins (10) from towbar adapters (7).



5900B03-

TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR CONNECTION - Continued

NOTE

It may be necessary to remove shackles on some vehicles.

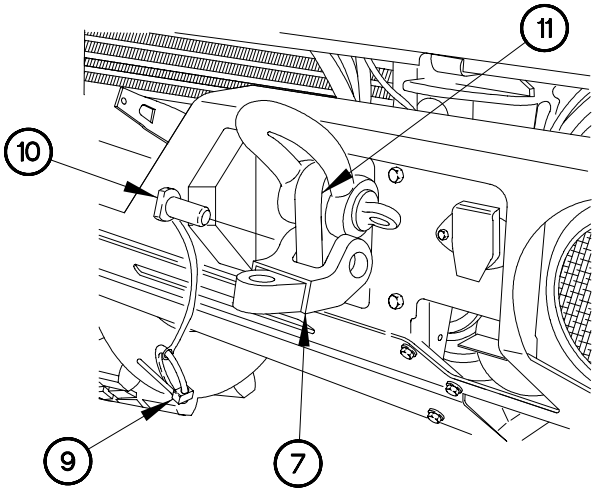
8. Install two towbar adapters (7) on tow eyes (11) of disabled vehicle.

CAUTION

Ensure pins are installed with linchpin holes down. Failure to comply may result in damage to equipment.

9. Position two pins (10) in towbar adapters (7).

10. Install two linchpins (9) in pins (10).



5900B04-

TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR CONNECTION - Continued

WARNING

Towbar weighs approximately 100 lbs (45 kgs) and requires two or more personnel to carry. Failure to comply may result in injury to personnel.

NOTE

Left and right sides of towbar are installed on towbar adapters the same way. Left side shown.

Step 11 requires the aid of an assistant.

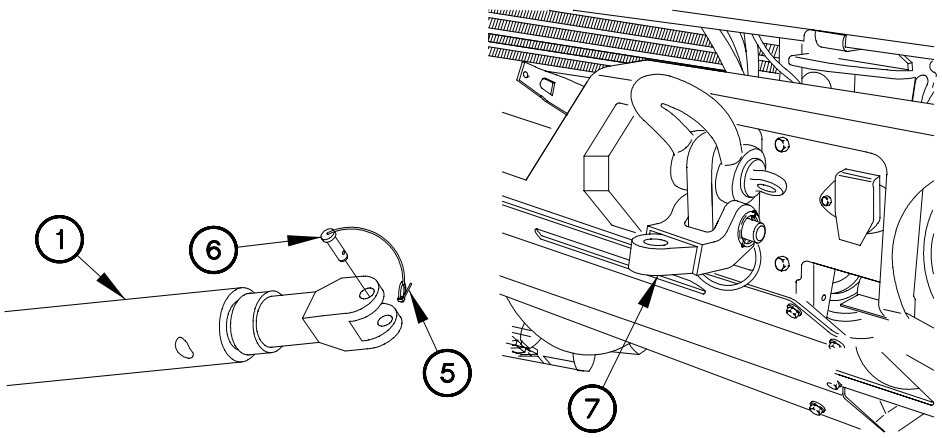
11. Position towbar (1) on two towbar adapters (7).

CAUTION

Ensure pins are installed with linchpin hole down. Failure to comply may result in damage to equipment.

12. Install two pins (6) in towbar (1) and towbar adapters (7).

13. Install two linchpins (5) in pins (6).

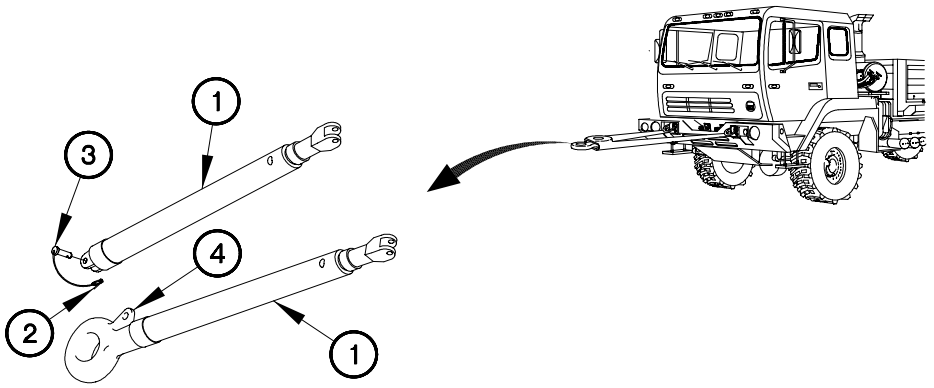


5900B05-

TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

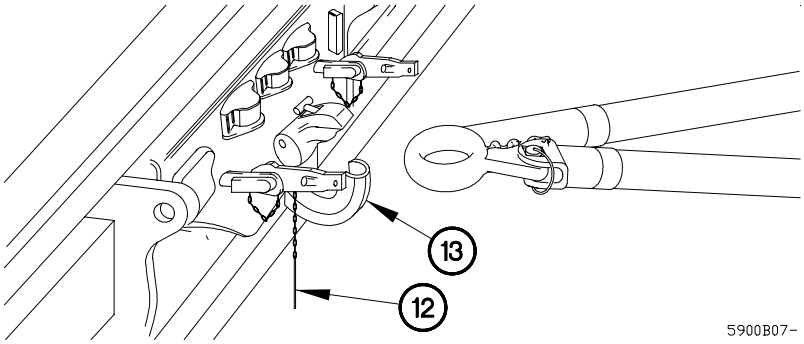
TOWBAR CONNECTION - Continued

14. Align left and right sides of towbar (1) at pivot point (4).
15. Install pin (3) in towbar (1).
16. Install linchpin (2) in pin (3).



5900B06-

17. Remove cotter pin (12) from pintle towing hook (13).
18. Open pintle towing hook (13).



5900B07-

TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR CONNECTION - Continued

WARNING

Ground guide is required to guide vehicle backing up. Failure to comply may result in injury to personnel or damage to equipment.

Do not place hands near pintle hook when connecting/disconnecting towbar with pintle towing hook. Failure to comply may result in injury to personnel.

NOTE

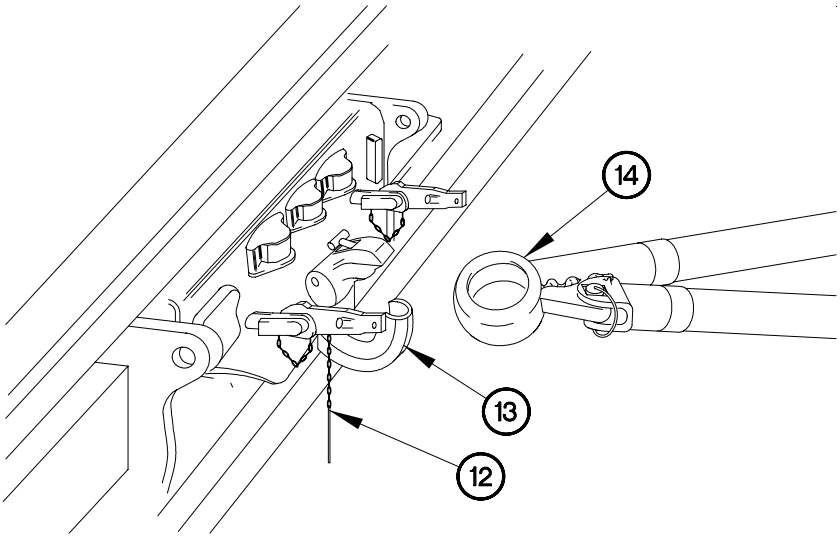
Steps 19 and 20 require the aid of an assistant.

19. Slowly back up towing vehicle until towbar eye (14) is aligned with pintle towing hook (13).

20. Connect towbar eye (14) to pintle towing hook (13).

21. Close pintle towing hook (13).

22. Install cotter pin (12) in pintle towing hook (13).



5900B08-

TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR CONNECTION - Continued

23. Release parking brakes of disabled vehicle (refer to disabled vehicle operator's manual).

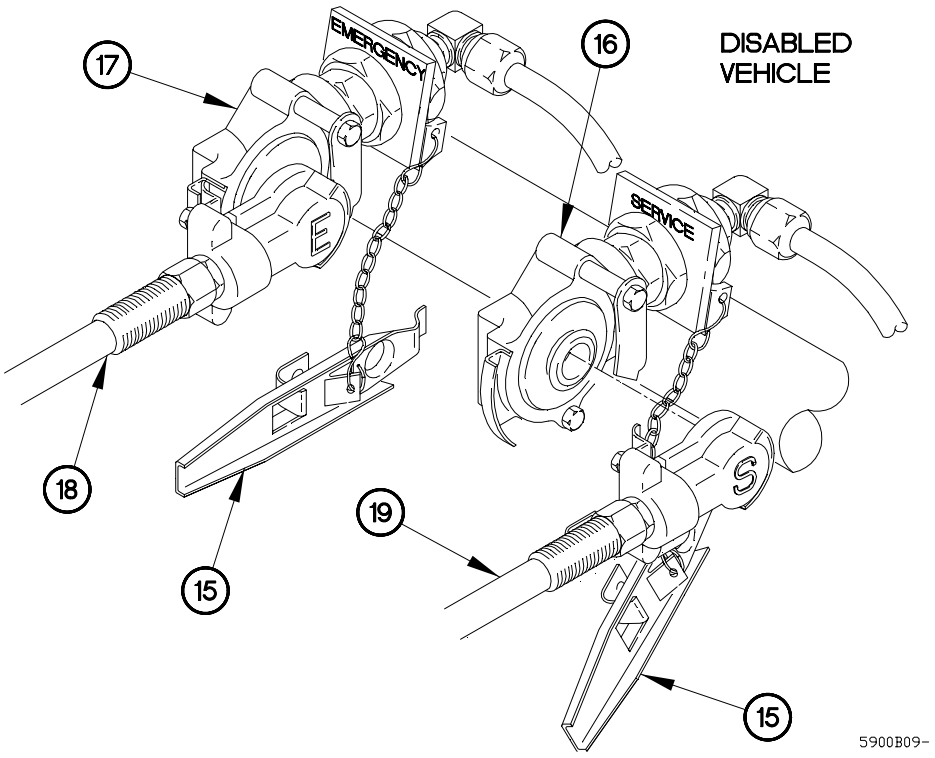
24. Remove two dummy couplings (15) from SERVICE gladhand (16) and EMERGENCY gladhand (17) on front of disabled vehicle.

WARNING

Listen for air leaks coming from the connections at the SERVICE and EMERGENCY gladhands. Failure to comply may result in serious injury or death to personnel or damage to equipment.

25. Connect intervehicular air hose (18) to EMERGENCY gladhand (17) of disabled vehicle.

26. Connect intervehicular air hose (19) to SERVICE gladhand (16) of disabled vehicle.



TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

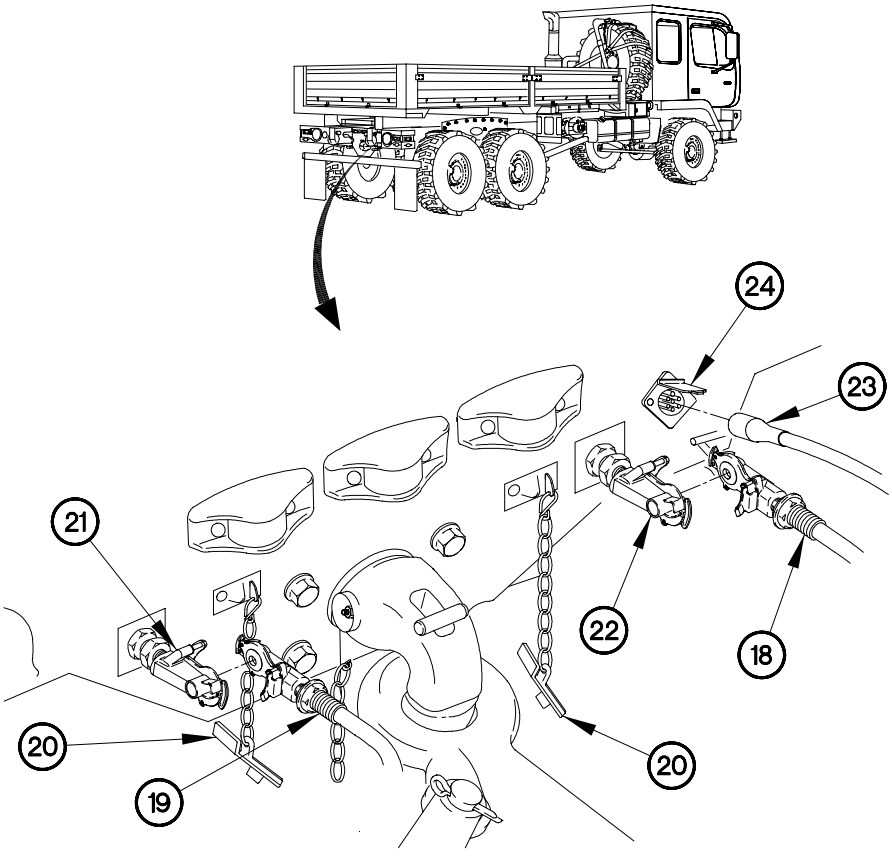
TOWBAR CONNECTION - Continued

27. Remove two dummy couplings (20) from SERVICE gladhand (21) and EMERGENCY gladhand (22) of towing vehicle.

28. Connect intervehicular air hose (18) to EMERGENCY gladhand (22).

29. Connect intervehicular air hose (19) to SERVICE gladhand (21).

30. Connect intervehicular cable (23) to rear receptacle (24) of towing vehicle.



5900B10-

TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

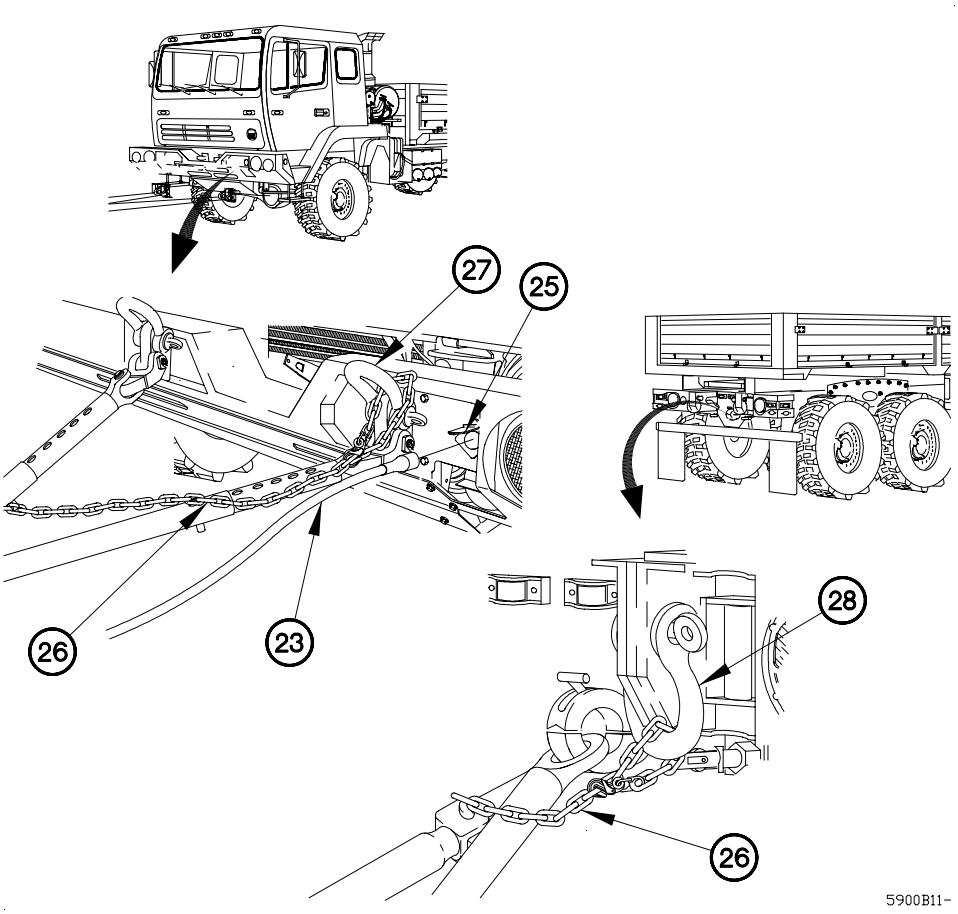
TOWBAR CONNECTION - Continued

31. Connect intervehicular cable (23) to front receptacle (25) of disabled vehicle.

NOTE

Left and right side chains are installed the same way. Right side shown.

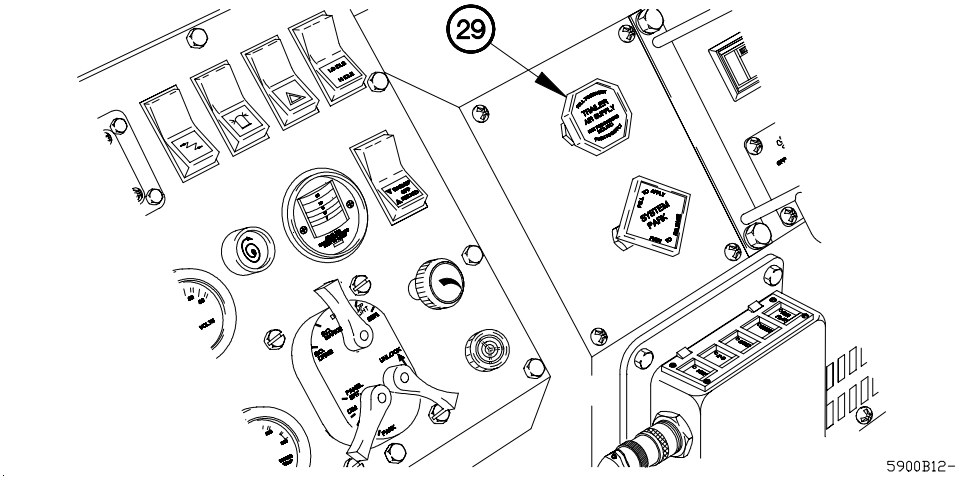
32. Attach two chains (26) to shackles (27) on disabled vehicle and to shackles (28) on towing vehicle.



TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR DISCONNECTION

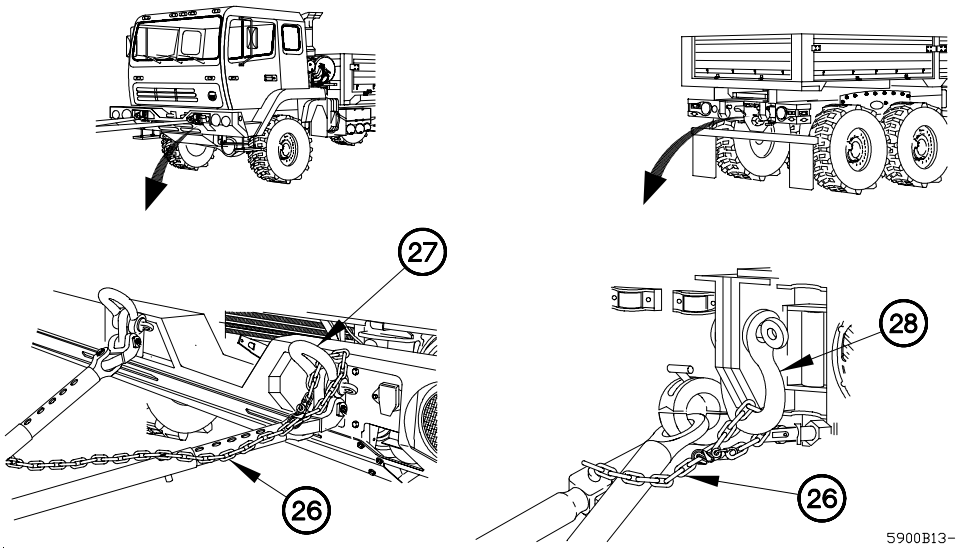
1. Pull out TRAILER AIR SUPPLY control (29) on towing vehicle.



NOTE

Left and right side chains are removed the same way. Right side shown.

2. Disconnect two chains (26) from shackles (28) of towing vehicle and from shackles (27) on disabled vehicle.

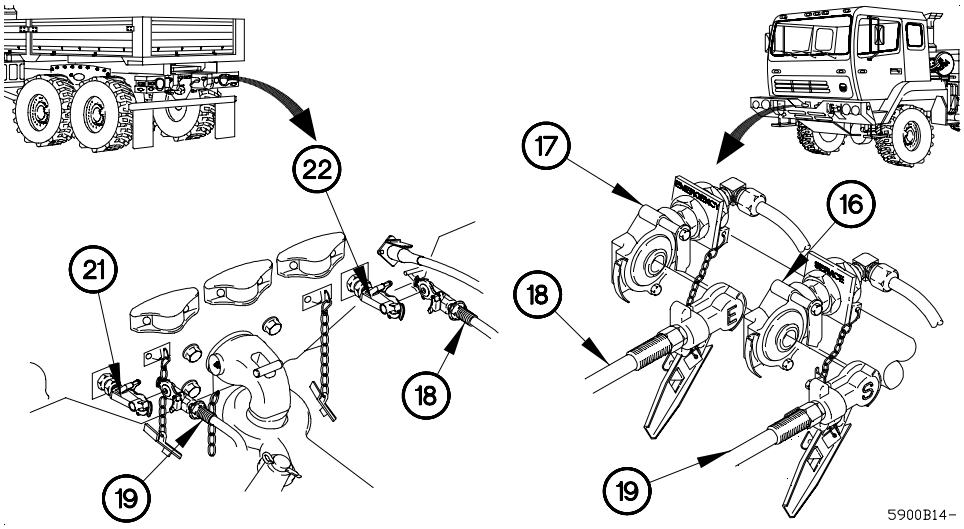


TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR DISCONNECTION - Continued

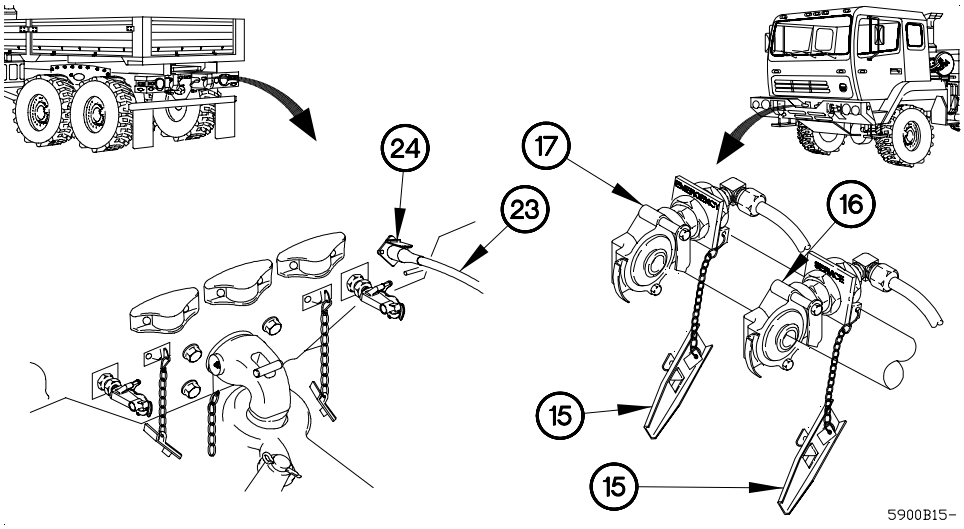
3. Disconnect intervehicular air hose (19) from SERVICE gladhand (21) of towing vehicle and SERVICE gladhand (16) on disabled vehicle.

4. Disconnect intervehicular air hose (18) from EMERGENCY gladhand (22) of towing vehicle and EMERGENCY gladhand (17) on disabled vehicle.



5. Install dummy couplings (15) on SERVICE and EMERGENCY gladhands (16 and 17) of disabled vehicle.

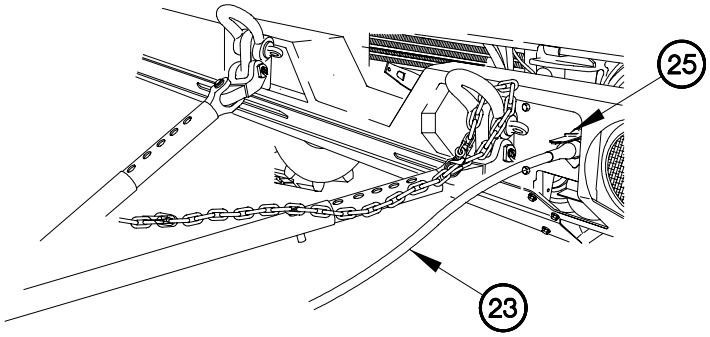
6. Disconnect intervehicular cable (23) from rear receptacle (24) on towing vehicle.



TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR DISCONNECTION - Continued

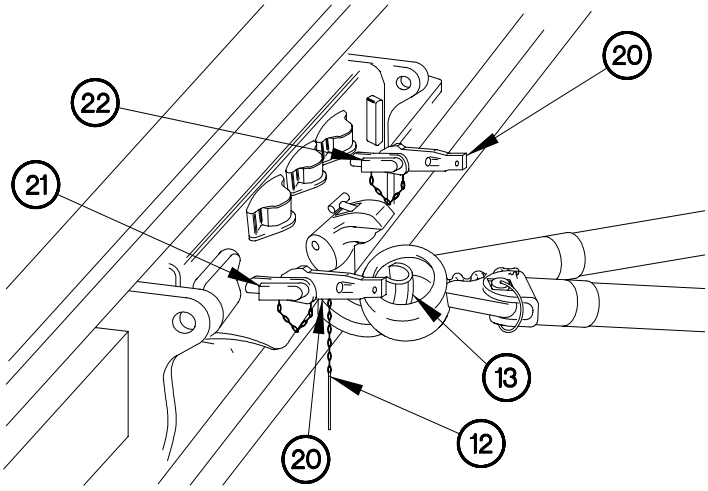
7. Disconnect intervehicular cable (23) from front receptacle (25) on disabled vehicle.



8. Install dummy couplings (20) on SERVICE and EMERGENCY gladhands (21 and 22) of towing vehicle.

9. Remove cotter pin (12) from pintle towing hook (13).

10. Open pintle towing hook (13).



TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR DISCONNECTION - Continued

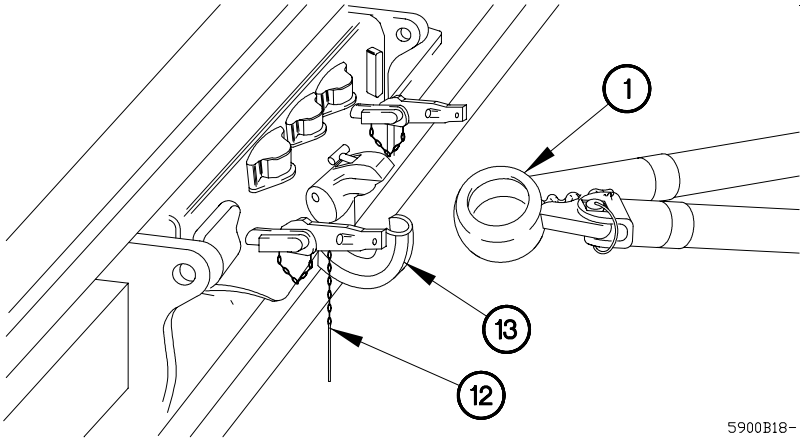
WARNING

Do not place hands near pintle hook when connecting/disconnecting towbar with pintle towing hook. Failure to comply may result in injury to personnel.

NOTE

Steps 11 and 12 require the aid of an assistant.

11. Remove towbar (1) from pintle towing hook (13).
12. Drive towing vehicle forward. When towing vehicle is clear, lower towbar (1) to ground.
13. Close pintle towing hook (13).
14. Install cotter pin (12) in pintle towing hook (13).

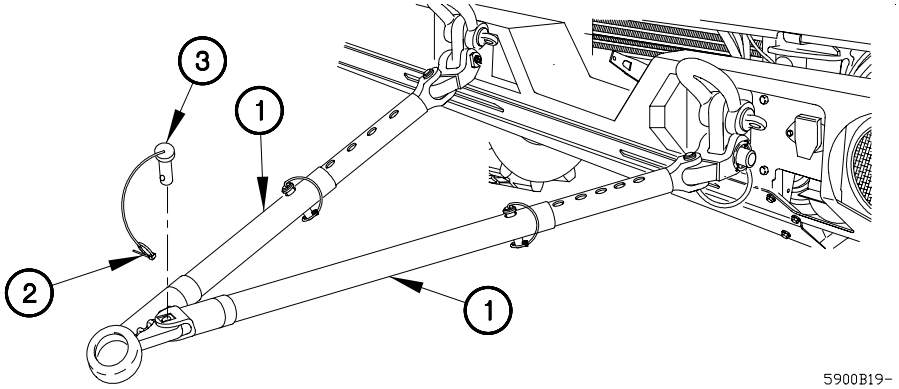


TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR DISCONNECTION - Continued

15. Remove linchpin (2) and pin (3) from towbar (1).

16. Separate left and right sides of towbar (1).



WARNING

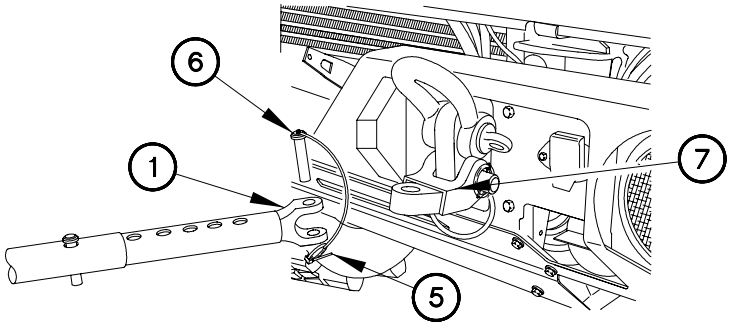
Towbar weighs approximately 100 lbs (45 kgs) and requires two or more personnel to carry. Failure to comply may result in injury to personnel.

NOTE

Left and right sides of towbar are removed the same way. Left side shown.

Step 17 requires the aid of an assistant.

17. Remove two linchpins (5), pins (6), and towbar (1) from two towbar adapters (7).



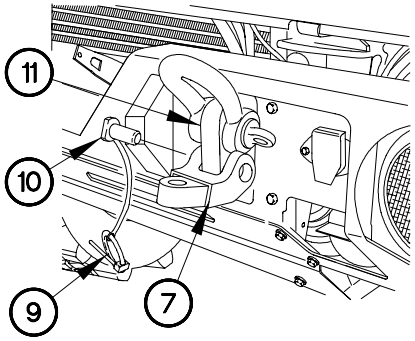
TOWBAR CONNECTION/DISCONNECTION - Continued 0059 00

TOWBAR DISCONNECTION - Continued

NOTE

Left and right side towbar adapters are removed the same way. Left side shown.

18. Remove two linchpins (9), pins (10), and towbar adapters (7) from tow eyes (11).



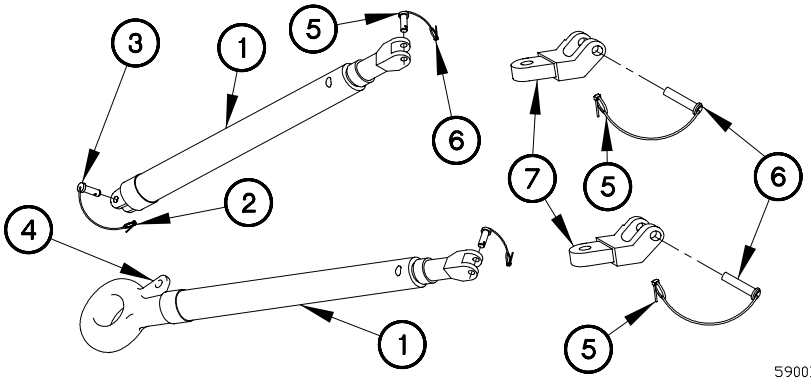
5900B21-

19. Align left and right sides of towbar (1) at pivot point (4).

20. Install two pins (6) and linchpins (5) in towbar adapters (7).

21. Install towbar adapters (7) on towbar (1) with two pins (6) and two linchpins (5).

22. Install pin (3) and linchpin (2) in towbar (1).



5900B22-

END OF OPERATING PROCEDURE

TOWING DISABLED VEHICLE 0060 00

INITIAL SETUP:

Maintenance Level
Operator

References
FM 20-22
FM 21-305
WP 0018 00
WP 0059 00

GENERAL

This work package provides the data and procedures for towing a disabled and vehicle. Items covered include Towbar Connections, Preparation Of Disabled Vehicle (M1078/M1078A1 Or M1083/M1083A1 Series), and Preparation Of Towing Vehicle.

TOWBAR CONNECTION

WARNING

Do not flat tow a fully loaded MTV and trailer combination. The FMTV Wrecker towbar can be damaged if weight capacity is exceeded. Failure to comply may result in serious injury or death to personnel or damage to equipment.

When towing a vehicle with nonfunctional brakes, use extreme caution and reduce/adjust speed accordingly. Failure to comply may result in serious injury or death to personnel or damage to equipment.

Connect towbar between towing vehicle and disabled vehicle (WP 0059 00).

CAUTION

Flat towing is the recommended means of towing. Lift and tow should only be performed in situations that provide no other means to move the disabled vehicle. Lift and tow may damage frame. Failure to comply may result in damage to equipment.

NOTE

If disabled vehicle is a M1078/M1078A1 or M1083/M1083A1 series vehicle, proceed to Preparation of Disabled Vehicle (M1078A1/M1083A1 Series). If disabled vehicle is another series vehicle, refer to Operator's manual for that vehicle.

TOWING DISABLED VEHICLE - Continued 0060 00

PREPARATION OF DISABLED VEHICLE (M1078/M1078A1 OR M1083/M1083A1 SERIES)

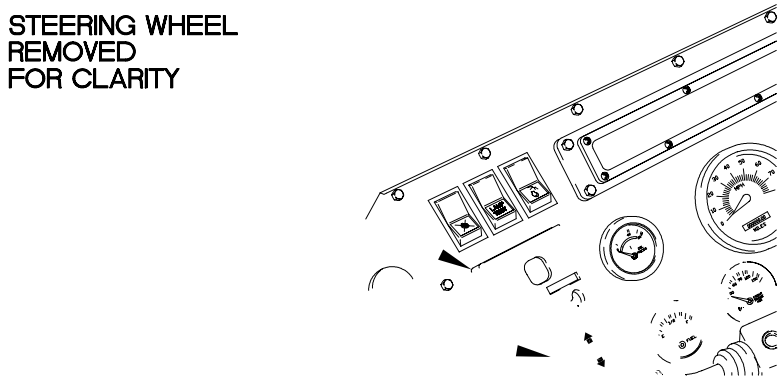
CAUTION

Drive shafts must be disconnected if disabled M1078/M1078A1 or M1083/M1083A1 series vehicle is flat towed (all wheels in contact with ground) over 100 miles (161 km) or if towing speed is over 35 MPH. Failure to comply may result in damage to towed vehicle.

NOTE

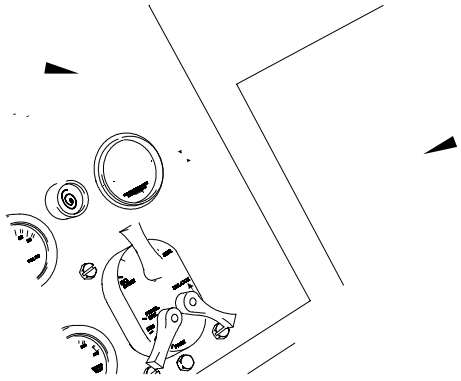
Disabled vehicles must be prepared and moved in accordance with FM 20-22 and FM 21-305.

1. Press N (Neutral) button (1) on WTEC III TPSS (2).



2. Push in SYSTEM PARK control (3).

3. Position hazard lights switch (4) to on.

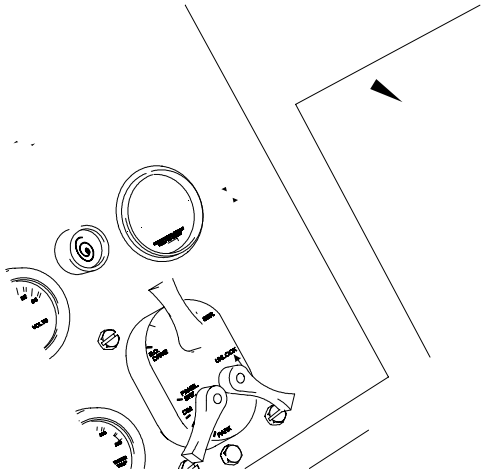


TOWING DISABLED VEHICLE - Continued 0060 00

PREPARATION OF TOWING VEHICLE

1. Start engine (WP 0018 00).

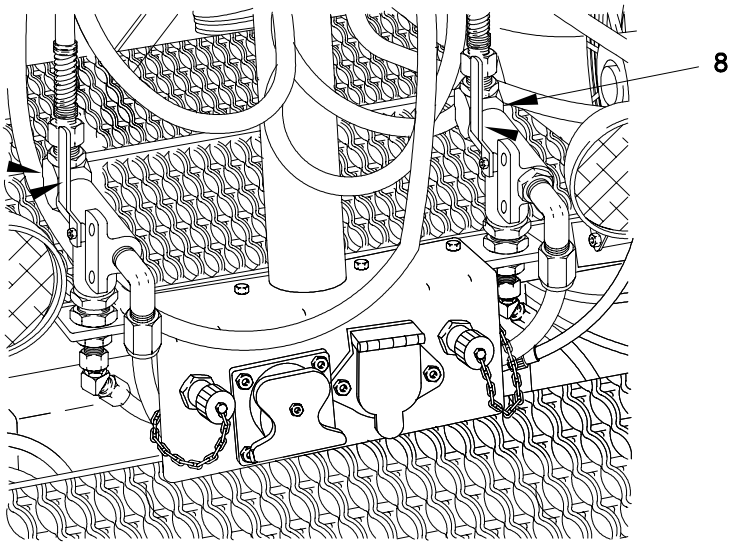
2. Push in TRAILER AIR SUPPLY control (5).



NOTE

If towing vehicle is M1088 or M1088A1, perform step 3.

3. Position gladhand selector valves (6) for SERVICE gladhand (7) and EMERGENCY gladhand (8) to rear gladhand (horizontal).



TOWING DISABLED VEHICLE - Continued 0060 00

PREPARATION OF TOWING VEHICLE - CONTINUED

WARNING

Personnel must not occupy towed vehicle during towing operation. Towed vehicle may become disconnected while being towed. Failure to comply may result in serious injury or death to personnel.

CAUTION

Maximum speed for flat tow of M1078/M1078A1 or M1083/M1083A1 series vehicles is 30 mph (48 km/h). Failure to comply may result in damage to vehicle.

4. Transport disabled vehicle.

END OF OPERATING PROCEDURE

15K SELF-RECOVERY WINCH (SRW) OPERATION 0061 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0018 00

Tool/Special Tool
Gloves, Leather
(Item 9, WP 0114 00)

GENERAL

This work package provides the data and procedures for operating the 15K Self-Recovery Winch (SRW). Items covered include Spooling Cable To Front Of Vehicle, Spooling Cable To Rear Of Vehicle, and 15K SRW Operation.

SPOOLING CABLE TO FRONT OF VEHICLE

WARNING

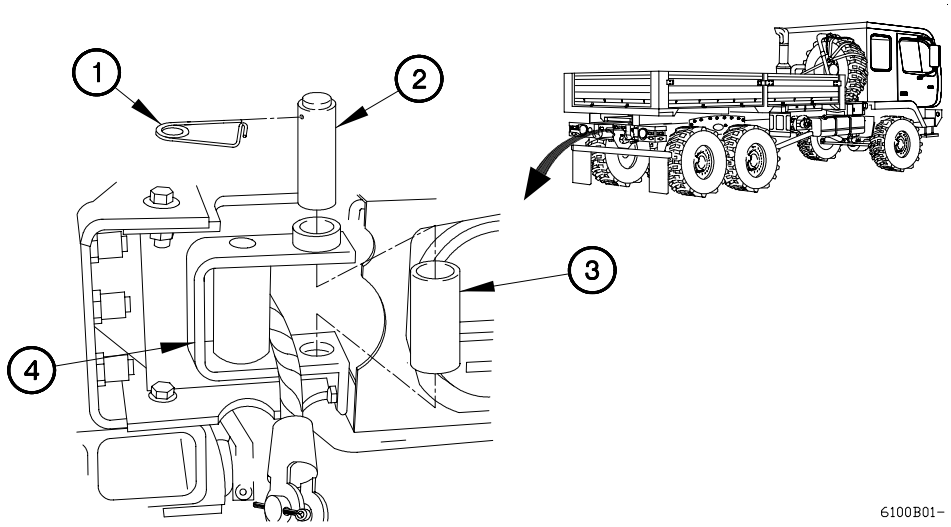
Wear heavy leather-palmed work gloves when handling cable. Cables can become frayed or contain broken wires. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury to personnel.

1. Shut down engine (WP 0018 00).

NOTE

Steps 2 through 6 do not apply to M1088A1 and M1089A1.

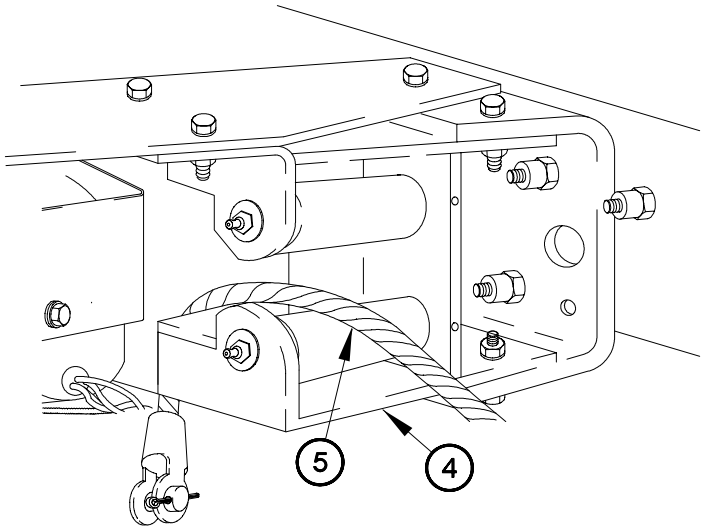
2. Remove retaining pin (1), pin (2), and roller (3) from rear roller support (4).



15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO FRONT OF VEHICLE - Continued

3. Remove cable (5) from rear roller support (4).

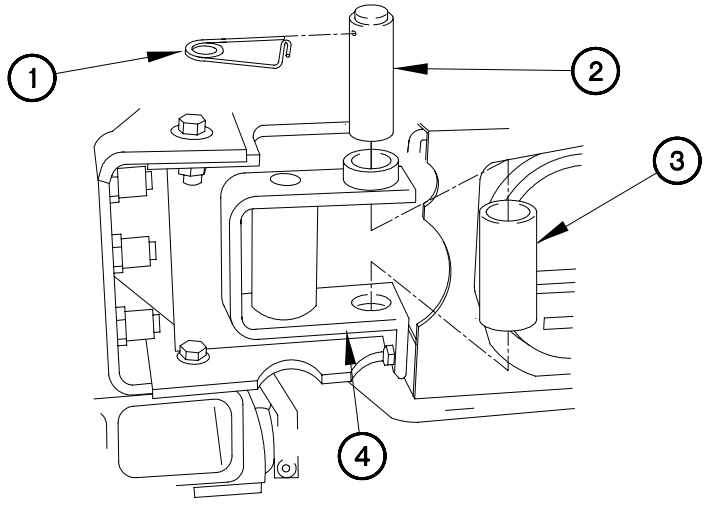


6100B02-

NOTE

Install retaining pin so that clasping end is toward curbside of vehicle.

4. Install roller (3) in rear roller support (4) with pin (2) and retaining pin (1).

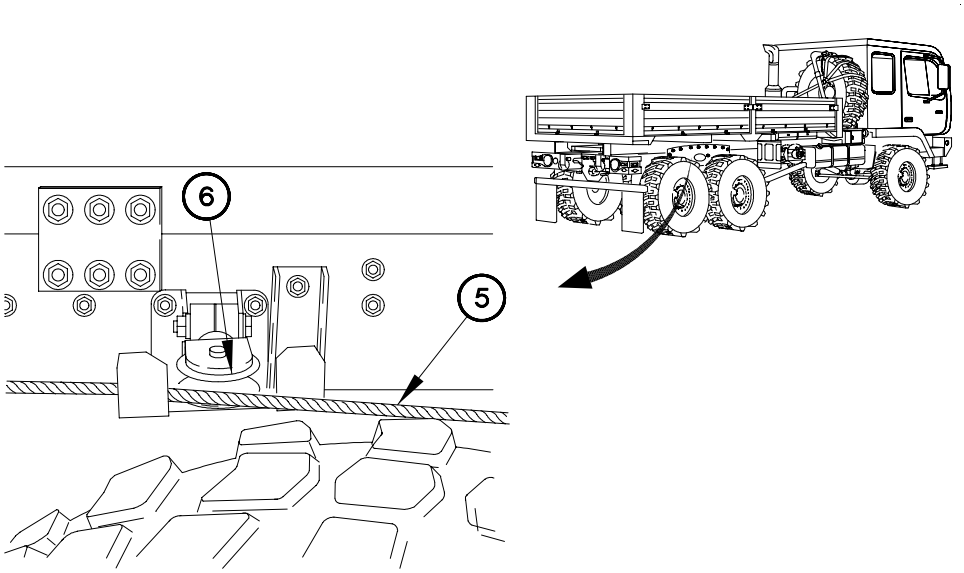


6100B03-

15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

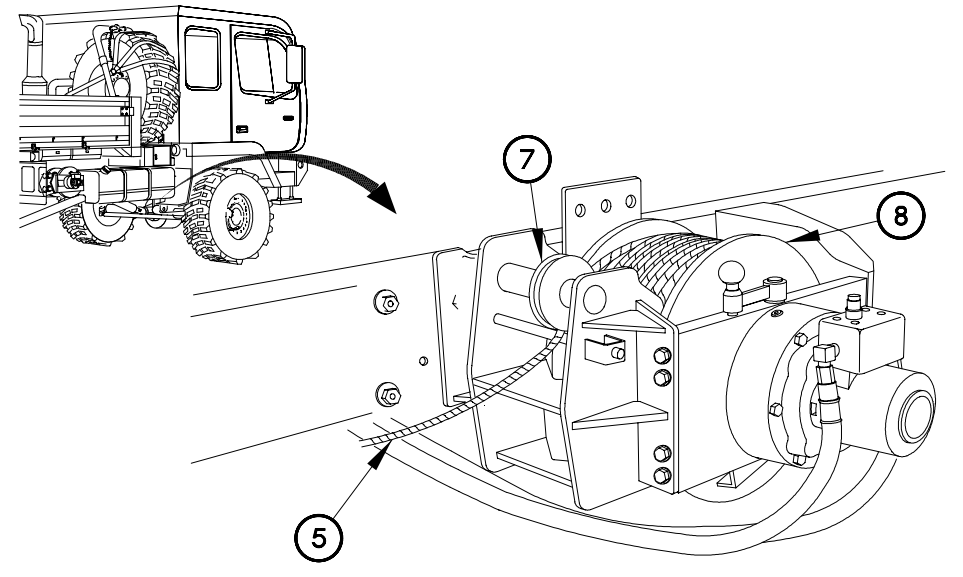
SPOOLING CABLE TO FRONT OF VEHICLE - Continued

5. Remove cable (5) from rear cable pulley (6).



6100B04-

6. Remove cable (5) from rear cable guide (7) on 15K SRW (8).



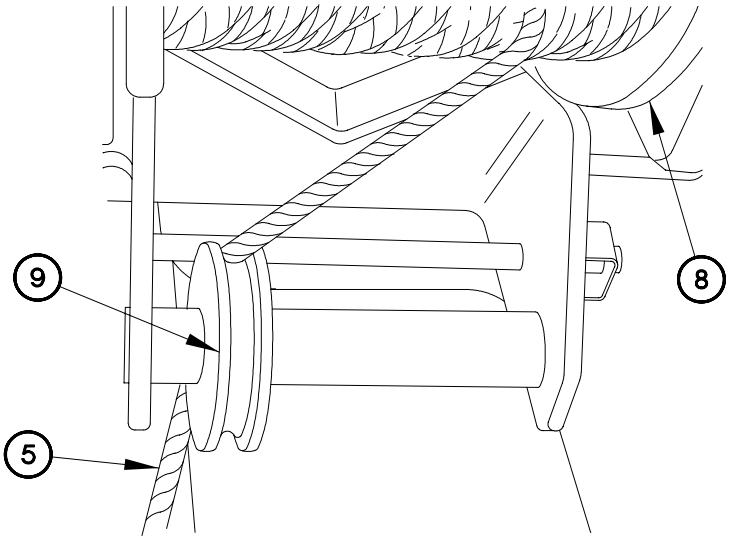
6100B05-

15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO FRONT OF VEHICLE - Continued

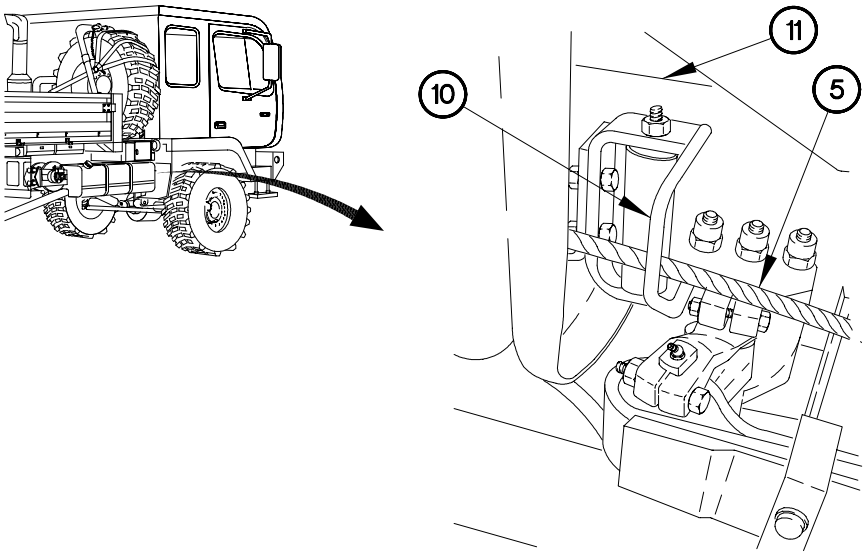
7. Position cable (5) toward front of vehicle.

8. Install cable (5) through front cable guide (9) on 15K SRW (8).



6100B06-

9. Install cable (5) through cable guide (10) behind fuel tank (11).

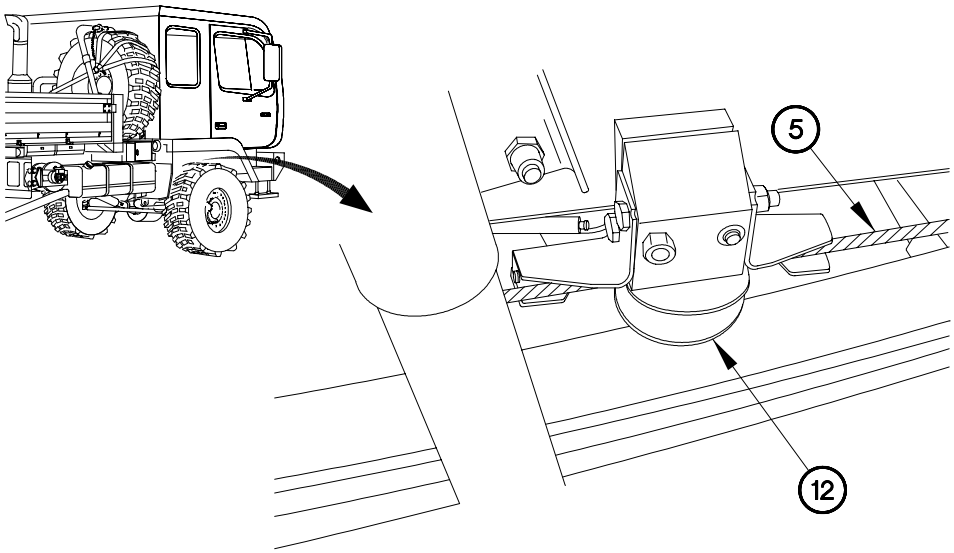


6100B07-

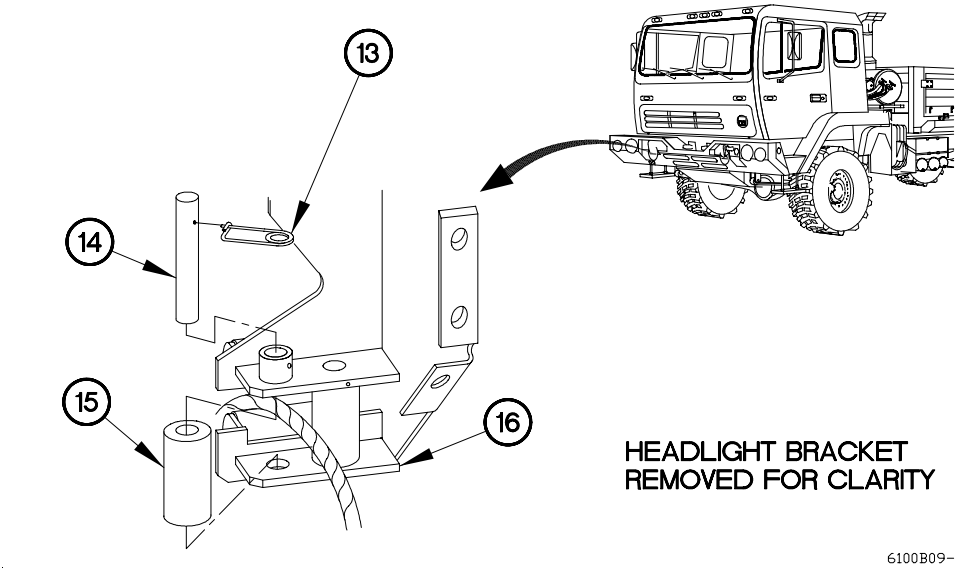
15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO FRONT OF VEHICLE - Continued

10. Install cable (5) through front cable pulley (12).



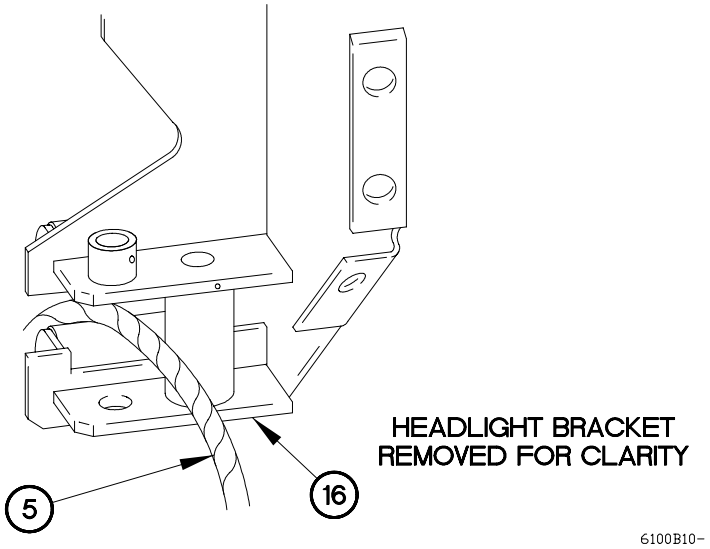
11. Remove retaining pin (13), pin (14), and roller (15) from front roller support (16).



15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO FRONT OF VEHICLE - Continued

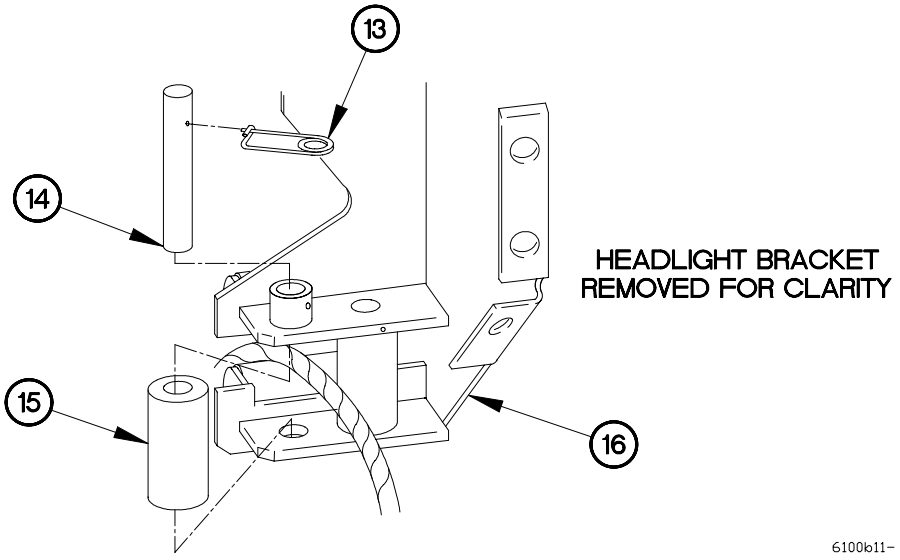
12. Install cable (5) through front roller support (16).



NOTE

Install retaining pin so that clasping end is toward curbside of vehicle.

13. Install roller (15) on front roller support (16) with pin (14) and retaining pin (13).



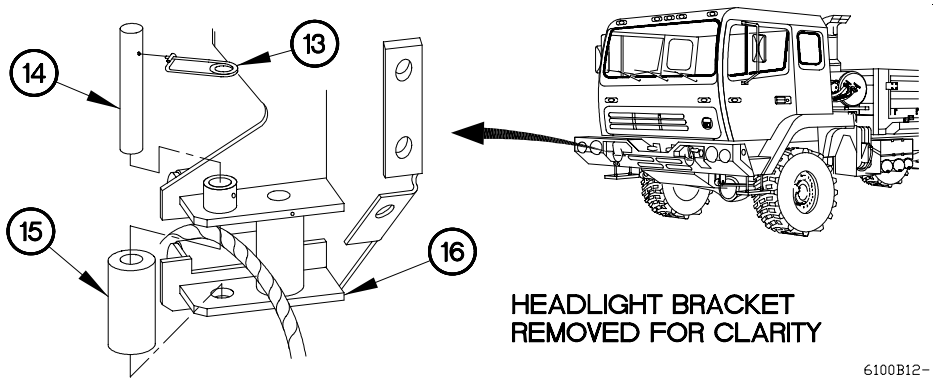
15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO REAR OF VEHICLE

NOTE

M1088A1 and M1089A1 15K SRW cables can be spooled to the front only.

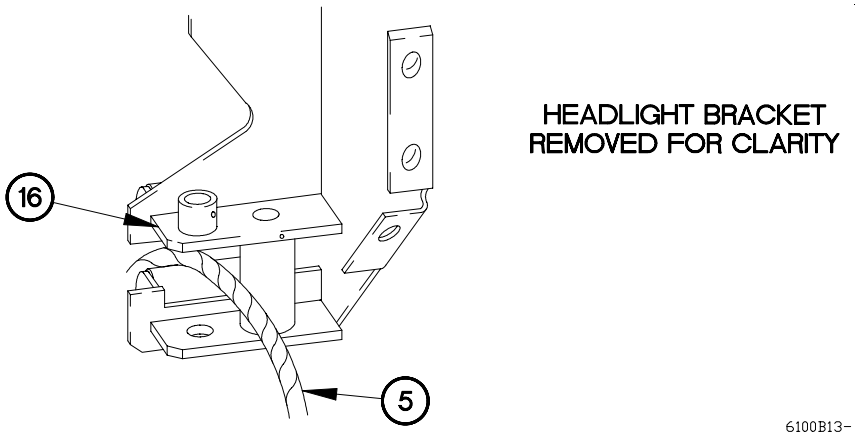
1. Shut down engine (WP 0018 00).
2. Remove retaining pin (13), pin (14), and roller (15) from front roller support (16).



WARNING

Wear heavy leather-palmed work gloves when handling cable. Cables can become frayed or contain broken wires. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury to personnel.

3. Remove cable (5) from front roller support (16).



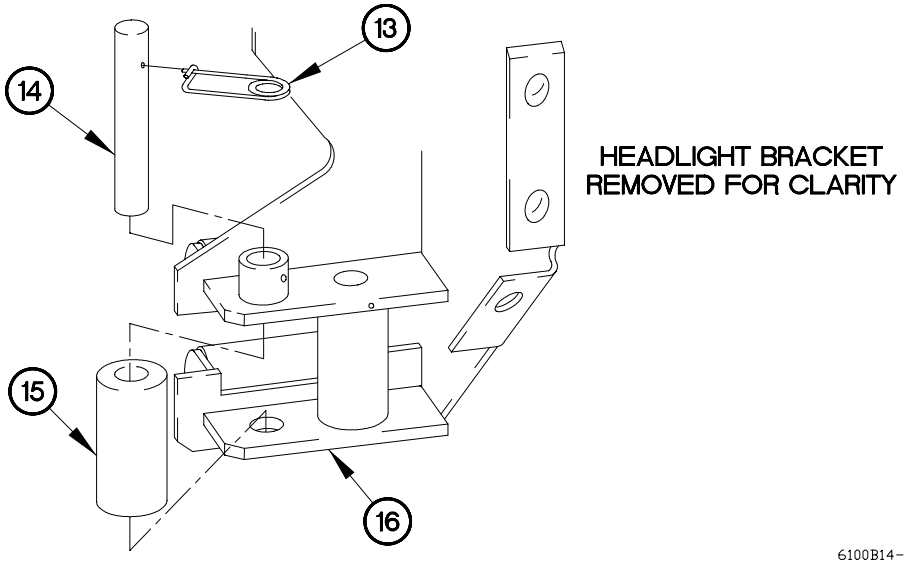
15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO REAR OF VEHICLE - Continued

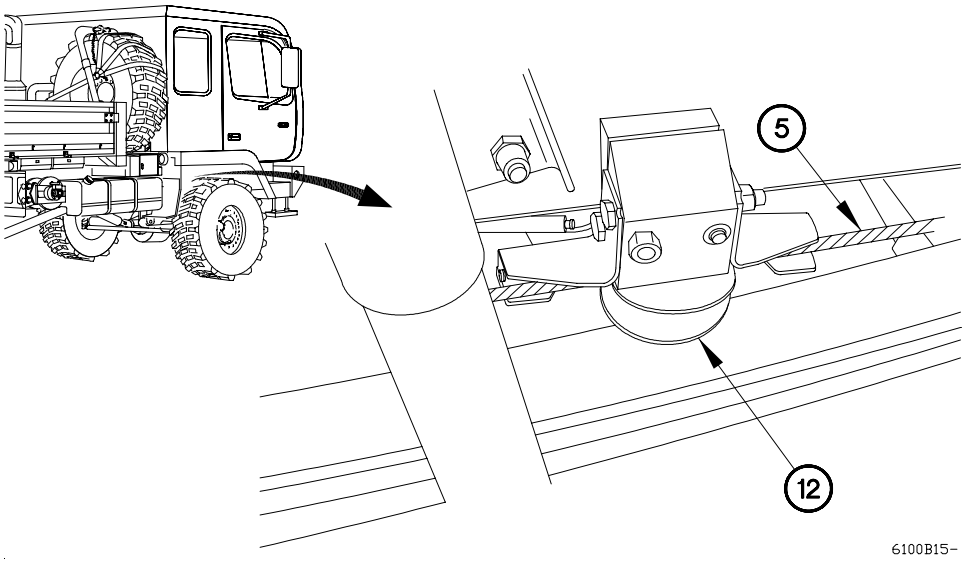
NOTE

Install retaining pin so that clasping end is toward curbside of vehicle.

4. Install roller (15) on front roller support (16) with pin (14) and retaining pin (13).



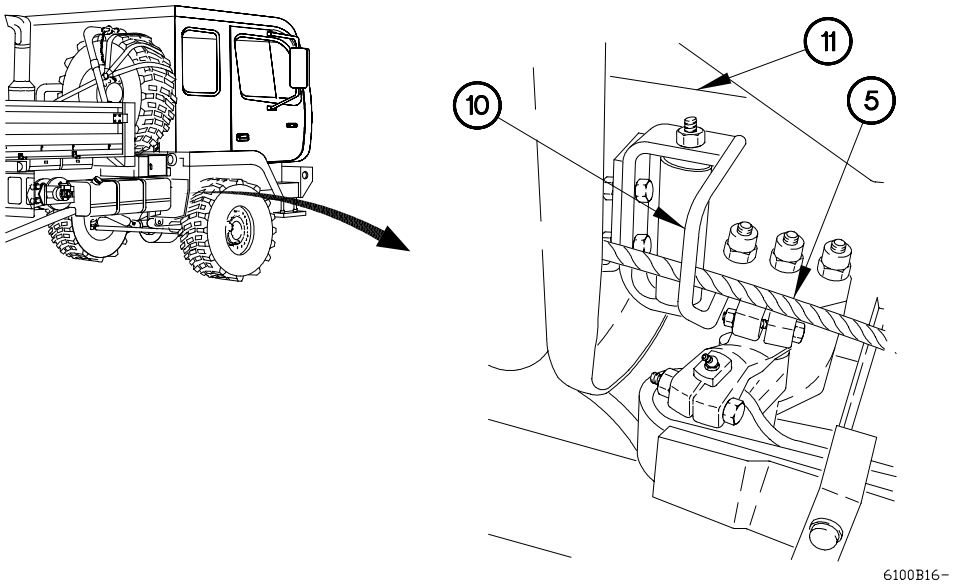
5. Remove cable (5) from front cable pulley (12).



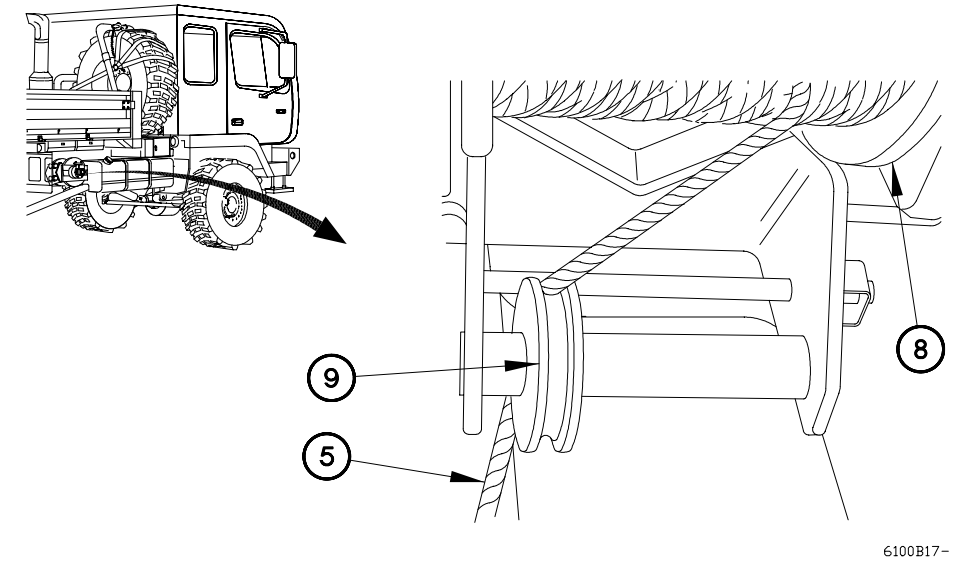
15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO REAR OF VEHICLE - Continued

6. Remove cable (5) from cable guide (10) behind fuel tank (11).



7. Remove cable (5) from front cable guide (9) on 15K SRW (8).

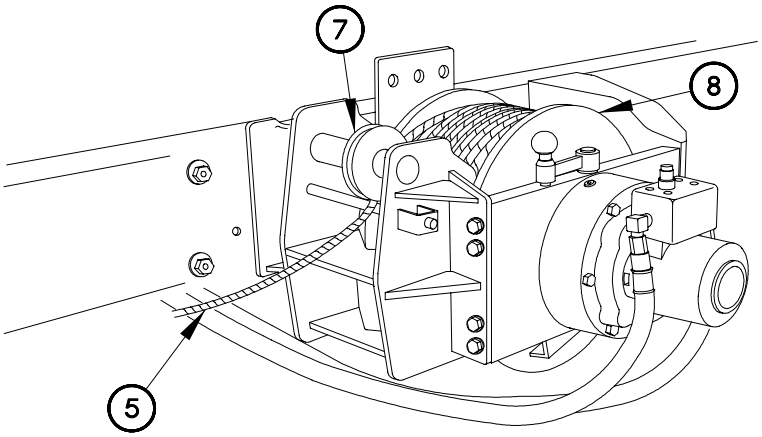


15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO REAR OF VEHICLE - Continued

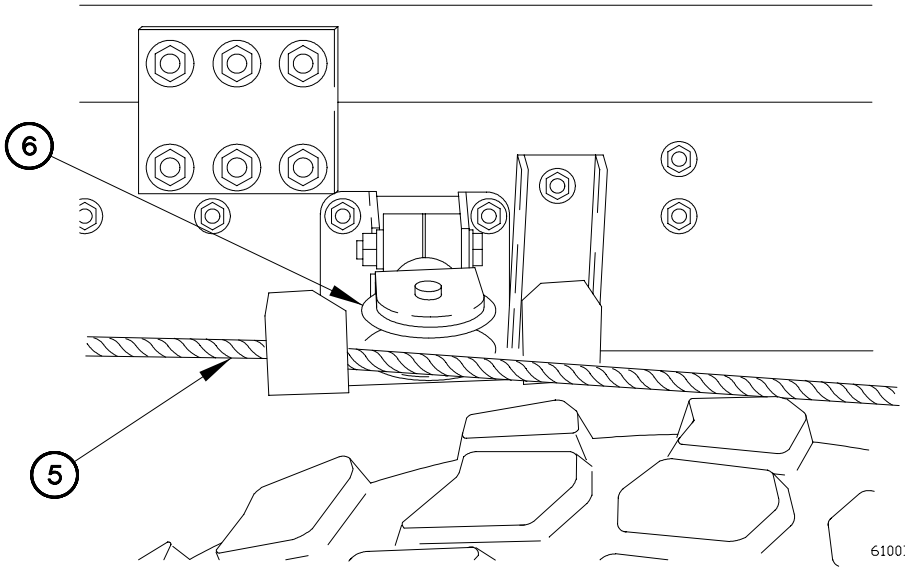
8. Position cable (5) toward rear of vehicle.

9. Install cable (5) through rear cable guide (7) on 15K SRW (8).



6100B18-

10. Install cable (5) through rear cable pulley (6).

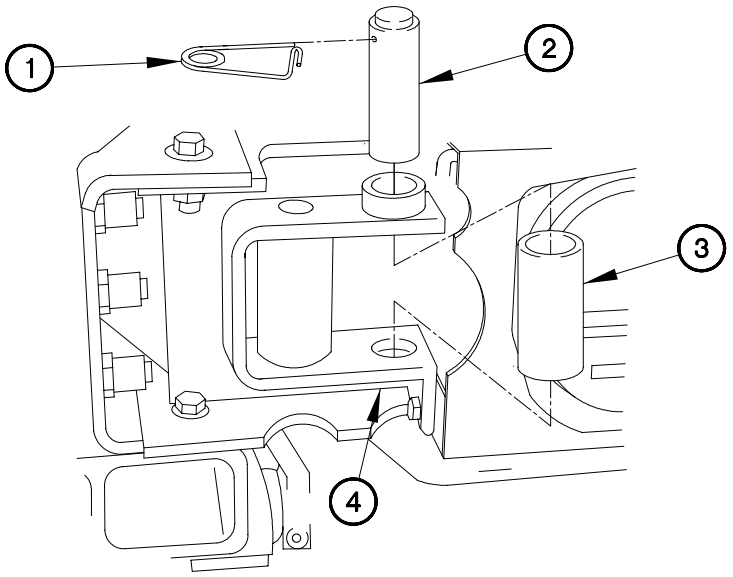


6100B19-

15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

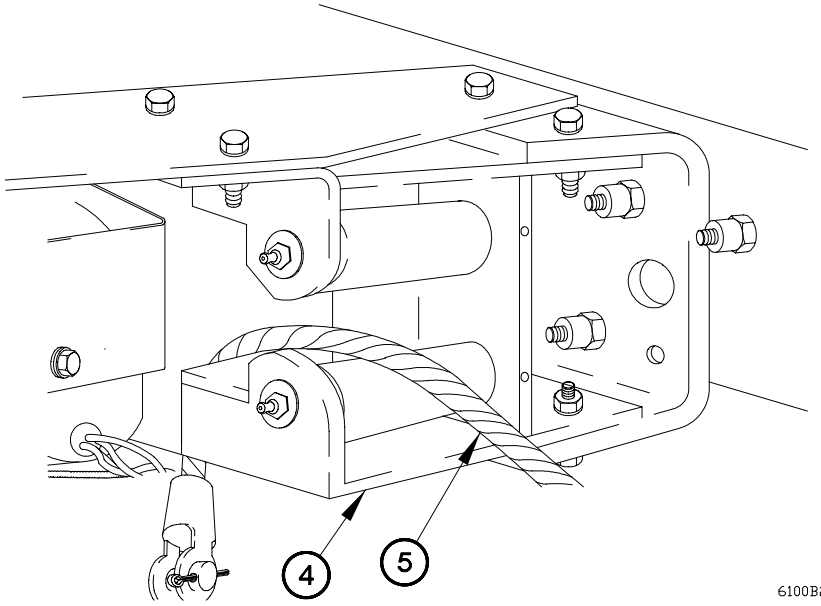
SPOOLING CABLE TO REAR OF VEHICLE - Continued

11. Remove retaining pin (1), pin (2), and roller (3) from rear roller support (4).



6100B20-

12. Install cable (5) through rear roller support (4).

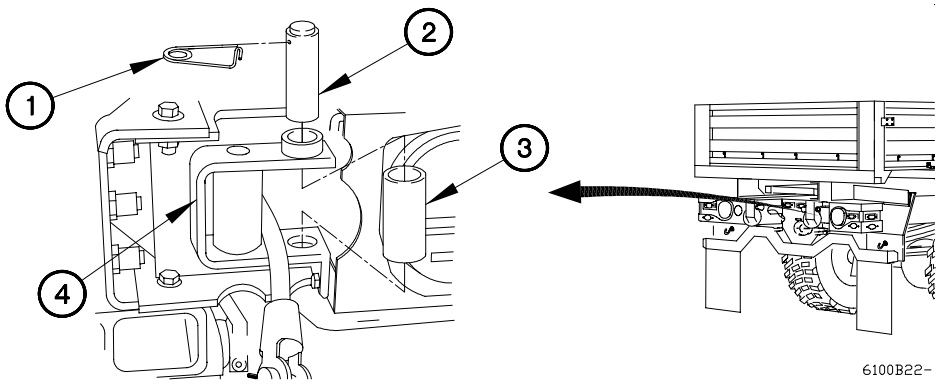


6100B21-

15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

SPOOLING CABLE TO REAR OF VEHICLE - Continued

13. Install roller (3) in rear roller support (4) with pin (2) and retaining pin (1).



15K SRW OPERATION

WARNING

Ensure line pull does not exceed capacity of 15K Self-Recovery Winch (SRW). Failure to comply may result in serious injury or death to personnel.

CAUTION

Ensure that supply valve and return valve on M1089A1 are open before operating hydraulic equipment. Failure to comply may result in damage to equipment.

Table 1. 15K SRW Pull Capacity.

Cable Layer	Maximum Line Pull
Bottom Layer (five wraps)	15,500 lbs (68,944 N)
2nd Layer	13,870 lbs (61,693 N)
3rd Layer	12,550 lbs (55,822 N)
4th Layer	11,460 lbs (50,974 N)
5th Layer	10,540 lbs (46,881 N)
6th Layer	9,760 lbs (43,412 N)
Top Layer	9,090 lbs (40,432 N)

15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

15K SRW OPERATION - Continued

1. Shut down engine (WP 0018 00).

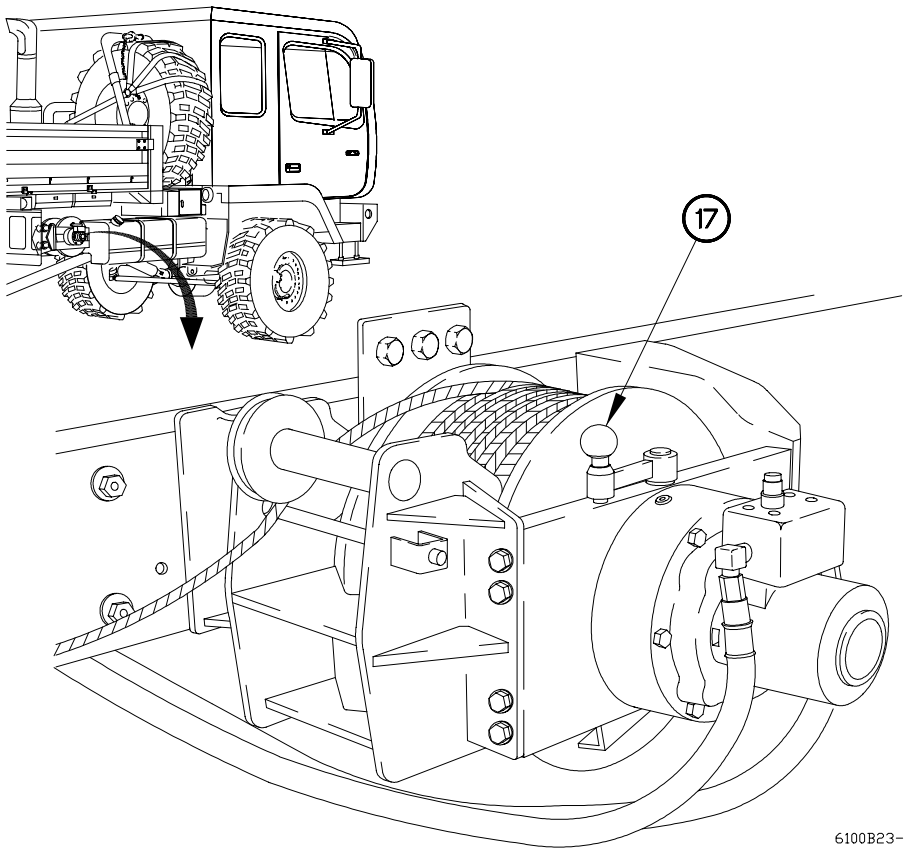
WARNING

There must always be at least five wraps of cable on 15K Self-Recovery Winch (SRW). If load is applied with less than five wraps of cable on 15K SRW, cable may come loose on drum. Failure to comply may result in serious injury or death to personnel.

CAUTION

Do not attempt to pull load over 15K Self-Recovery Winch (SRW) capacity. Failure to comply may result in damage to equipment.

2. Position 15K SRW clutch control lever (17) to DISENGAGED.



15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

15K SRW OPERATION - Continued

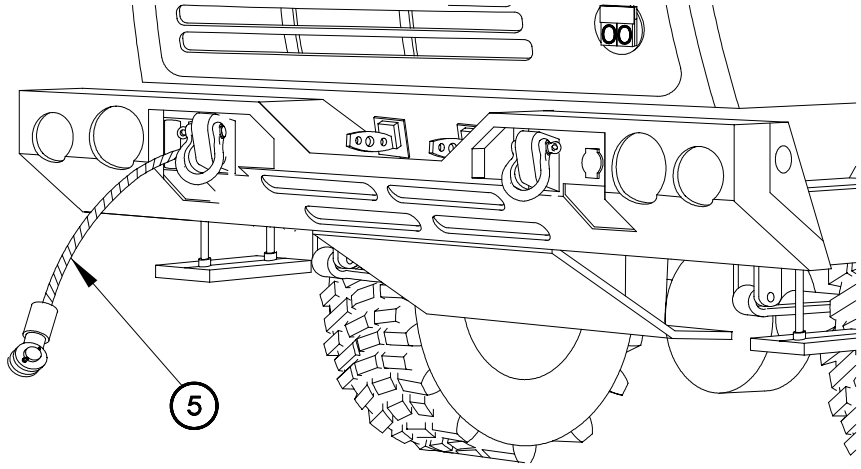
WARNING

Wear heavy leather-palmed work gloves when handling cable. Cables can become frayed or contain broken wires. Never let moving cable slide through hands, even when wearing gloves. Failure to comply may result in injury to personnel.

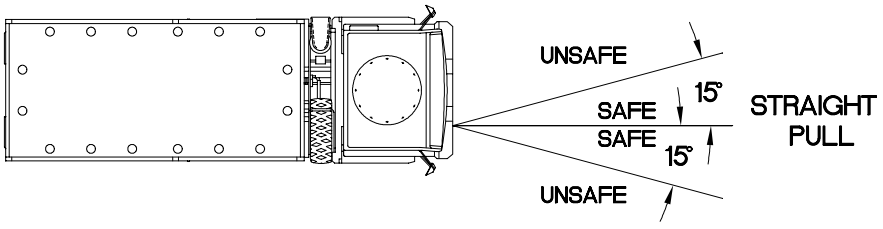
CAUTION

Do not attach cable to any object more than approximately 15 degrees away from a straight 15K Self-Recovery Winch (SRW) pull. Failure to comply may result in damage to equipment.

3. Pull out cable (5) and attach to secure object.



6100B24-



6100B25-

15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

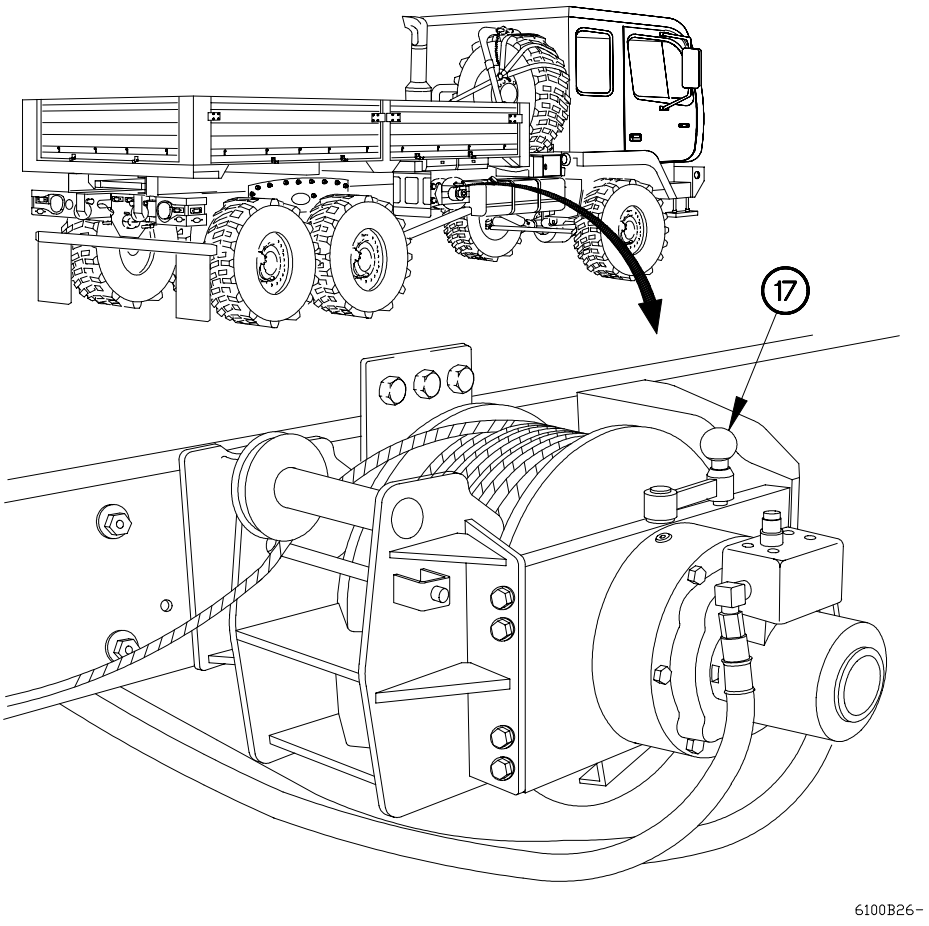
15K SRW OPERATION - Continued

WARNING

Keep all personnel clear of area when tension is on cable. Failure to comply may result in serious injury or death to personnel.

4. Position 15K SRW clutch control lever (17) to ENGAGED.

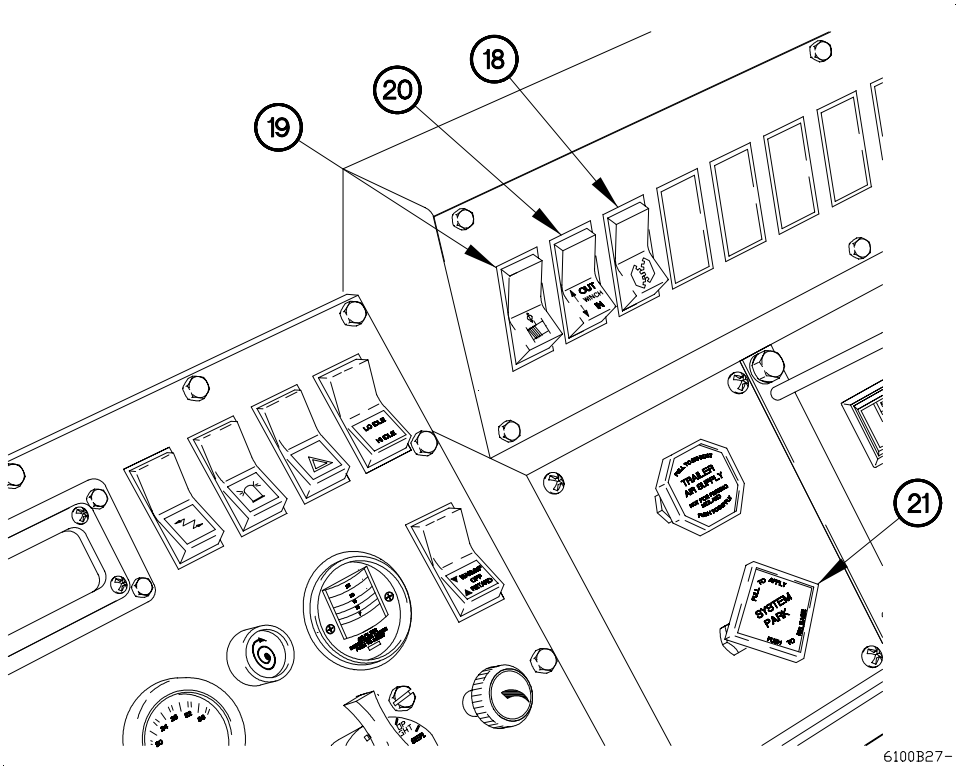
5. Start engine (WP 0018 00).



15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

15K SRW OPERATION - Continued

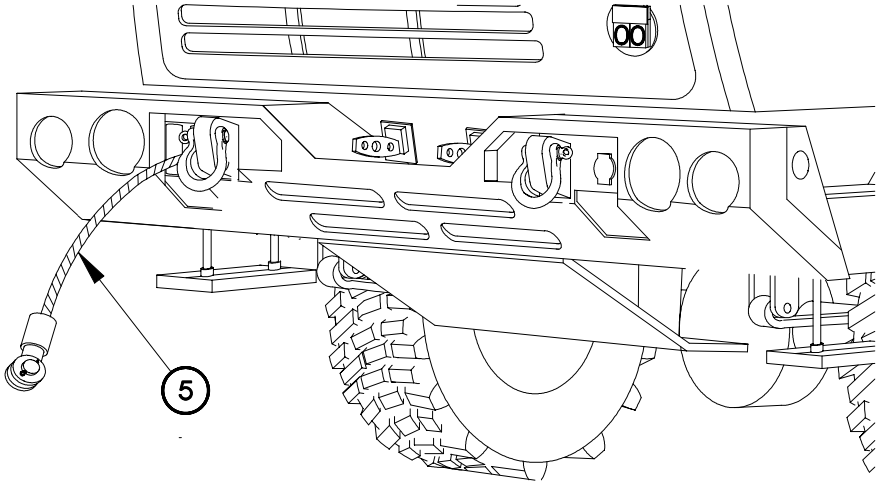
6. Position PTO switch (18) to on.
7. Position winch switch (19) to on.
8. Hold WINCH IN/OUT switch (20) in the WINCH IN position until vehicle is recovered.
9. Release WINCH IN/OUT switch (20).
10. Pull out SYSTEM PARK control (21).



15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

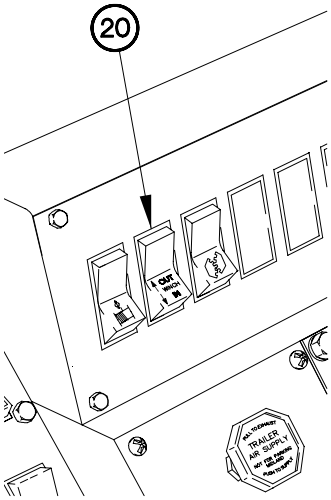
15K SRW OPERATION - Continued

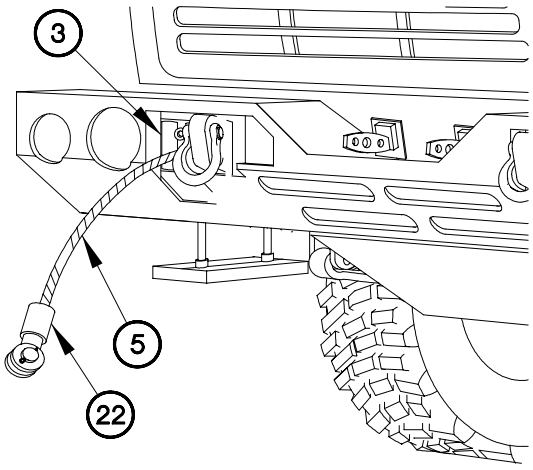
11. Remove cable (5) from secure object.



6100b28-

12. Hold WINCH IN/OUT switch (20) in the WINCH IN position to reel in cable (5) until cable socket (22) contacts rollers (3).





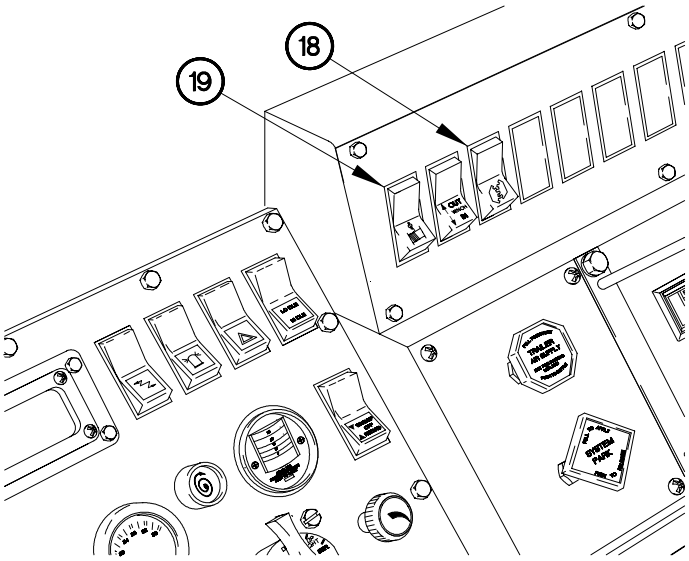
6100B29-

15K SELF-RECOVERY WINCH (SRW) OPERATION - Continued 0061 00

15K SRW OPERATION - Continued

13. Position winch switch (19) to off.

14. Position PTO switch (18) to off.



6100B30-

END OF OPERATING PROCEDURE

EMERGENCY PROCEDURES 0062 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Handle (Item 32, Table 2, WP 0112 00)

References
FM 3-5
TB 700-4
WP 0018 00
WP 0028 00
WP 0041 00

GENERAL

This work package provides the data and procedures for emergency situations. Items covered include Starting Disabled Vehicle; Loss Of Air Pressure; Material Handling Crane (MHC) Operation After Electrical Failure (M1084A1/M1086A1 And M1089A1); Operating MHC Using Manual Override Switch (M1084A1/M1086A1 And M1089A1); Nuclear, Biological, and Chemical (NBC) Decontamination; and Dump Truck Manual Release.

WARNING

Remove rings, bracelets, wristwatches, neck chains, and any other jewelry before working around the vehicle. Jewelry may catch on equipment, or may short across an electrical circuit or battery terminal. Failure to comply may result in serious injury or death to personnel.

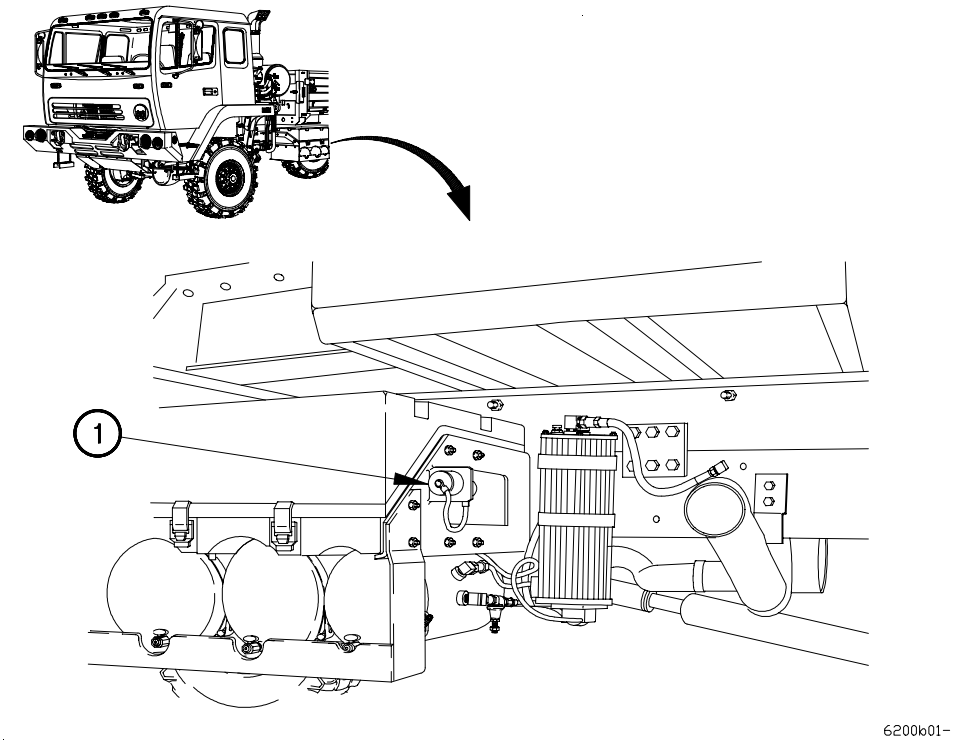
Do not smoke, have open flame, or make sparks near batteries when slave starting vehicle. Batteries can explode. Failure to comply may result in serious injury or death to personnel.

STARTING DISABLED VEHICLE

NOTE

Notify Unit Maintenance if vehicle was started by another vehicle.

1. Position service vehicle next to disabled vehicle so NATO receptacles (1) are facing each other.



WARNING

Ensure master power switch on both vehicles is turned off before connecting NATO Power cable. Vehicles must not touching each other. Failure to comply may result in serious injury or death to personnel.

2. Shut down engine (WP 0018 00).

STARTING DISABLED VEHICLE - Continued

CAUTION

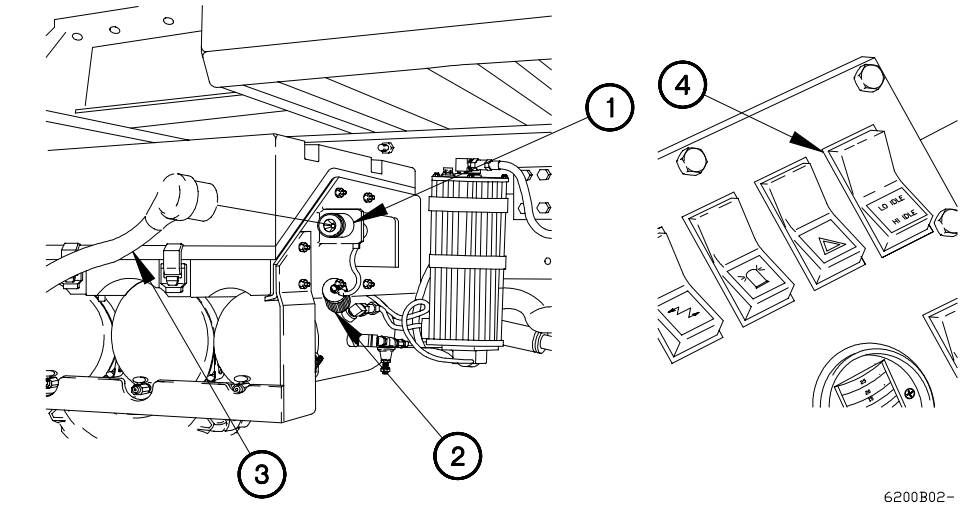
Always connect NATO Power cable to disabled vehicle before connecting it to service vehicle. Failure to comply may result in damage to batteries or cable.

3. Remove cap (2) from NATO receptacle (1) on disabled vehicle.
4. Install NATO power cable (3) on NATO receptacle (1) on disabled vehicle.
5. Remove cap (2) from NATO receptacle (1) on service vehicle.
6. Install NATO power cable (3) on NATO receptacle (1) on service vehicle.

NOTE

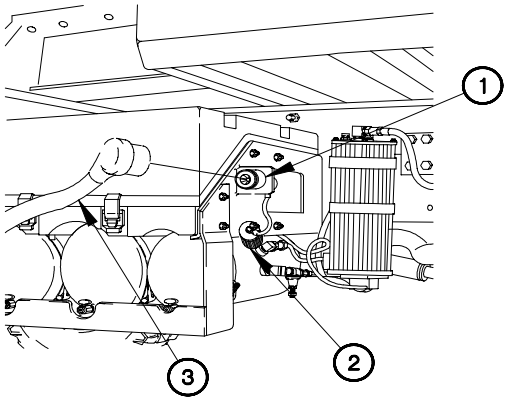
Steps 7 through 9 require the aid of an assistant.

7. Start engine (WP 0018 00) on service vehicle.
8. Press LO IDLE/HI IDLE switch (4) to engage HI IDLE.



STARTING DISABLED VEHICLE - Continued

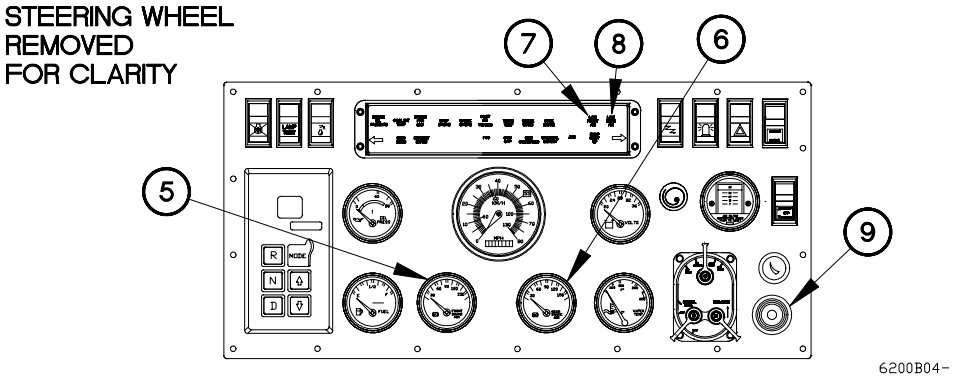
9. Start engine of disabled vehicle (WP 0018 00).
10. Remove NATO Power cable (3) from NATO receptacle (1) on disabled vehicle.
11. Install cap (2) on NATO receptacle (1) on disabled vehicle.
12. Remove NATO Power cable (3) from NATO receptacle (1) on service vehicle.
13. Install cap (2) on NATO receptacle (1) on service vehicle.



6200B03-

LOSS OF AIR PRESSURE

1. Check FRONT BRAKE AIR and REAR BRAKE AIR pressure gages (5 and 6) if LOW FRONT AIR or LOW REAR AIR indicator(s) (7 and 8) illuminate and audible alarm (9) sounds while driving vehicle.



6200B04-

LOSS OF AIR PRESSURE - Continued

WARNING

Rear axle service brakes will not operate if REAR BRAKE AIR pressure gage reads below 75 psi (517 kPa). Rear axle braking will be provided by rear spring brakes for a limited time. Allow greater stopping distance. Discontinue vehicle operation as soon as possible. Failure to comply may result in serious injury or death to personnel.

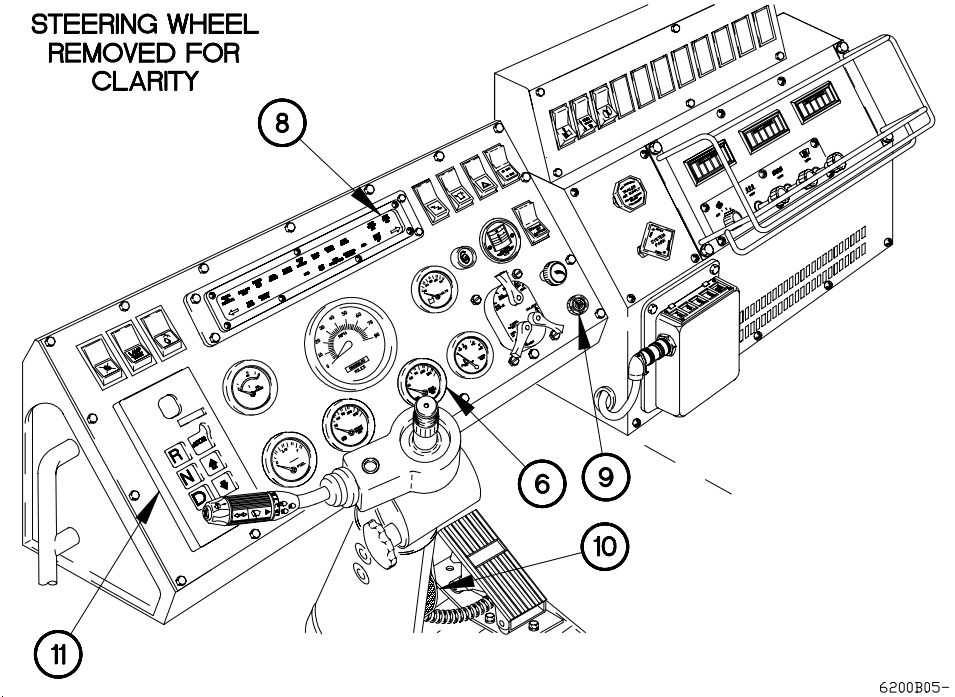
2. If REAR BRAKE AIR pressure gage (6) reads below 75 psi (517 kPa), LOW REAR AIR indicator (8) illuminates, and audible alarm (9) sounds:

   a. Leave additional distance between vehicles.

   b. Apply brake pedal (10) earlier than usual when slowing vehicle.

   c. Downshift to lower gear range using WTEC III TPSS (11).

   d. Notify Unit Maintenance as soon as possible.



6200B05-

LOSS OF AIR PRESSURE - Continued

WARNING

Front axle service brakes will not operate if FRONT BRAKE AIR pressure gage reads below 75 psi (517 kPa). Allow greater stopping distance. Discontinue vehicle operation as soon as possible. Failure to comply may result in serious injury or death to personnel.

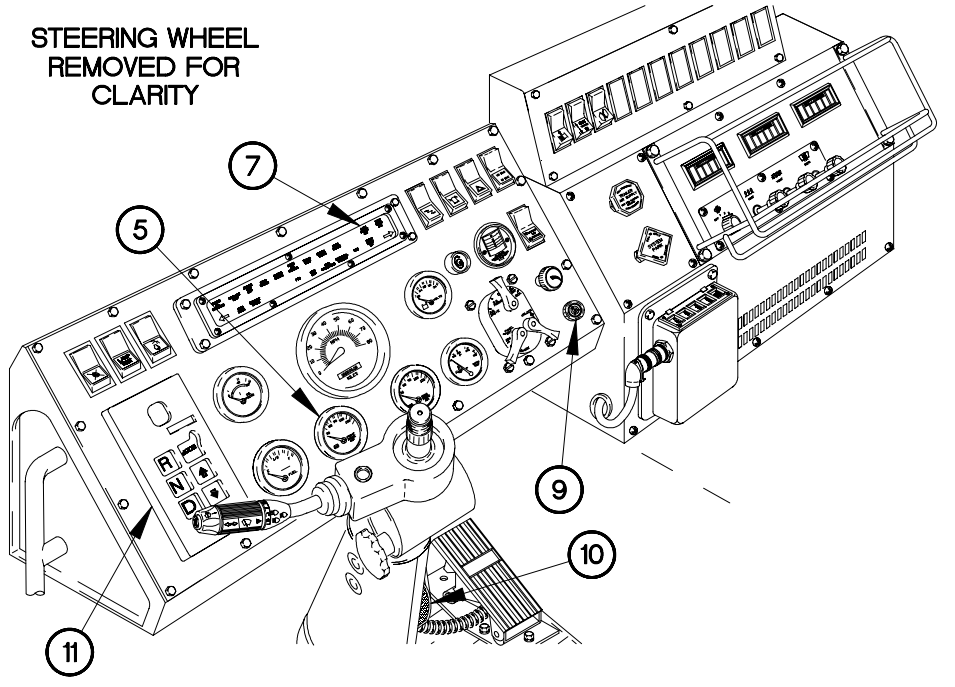
3. If FRONT BRAKE AIR pressure gage (5) reads below 75 psi (517 kPa), LOW FRONT AIR indicator (7) illuminates and audible alarm (9) sounds:

   a. Leave additional distance between vehicles.

   b. Apply brake pedal (10) earlier than usual when slowing vehicle.

   c. Downshift to lower gear range using WTEC III TPSS (11).

   d. Notify Unit Maintenance as soon as possible.



6200B06-

LOSS OF AIR PRESSURE - Continued

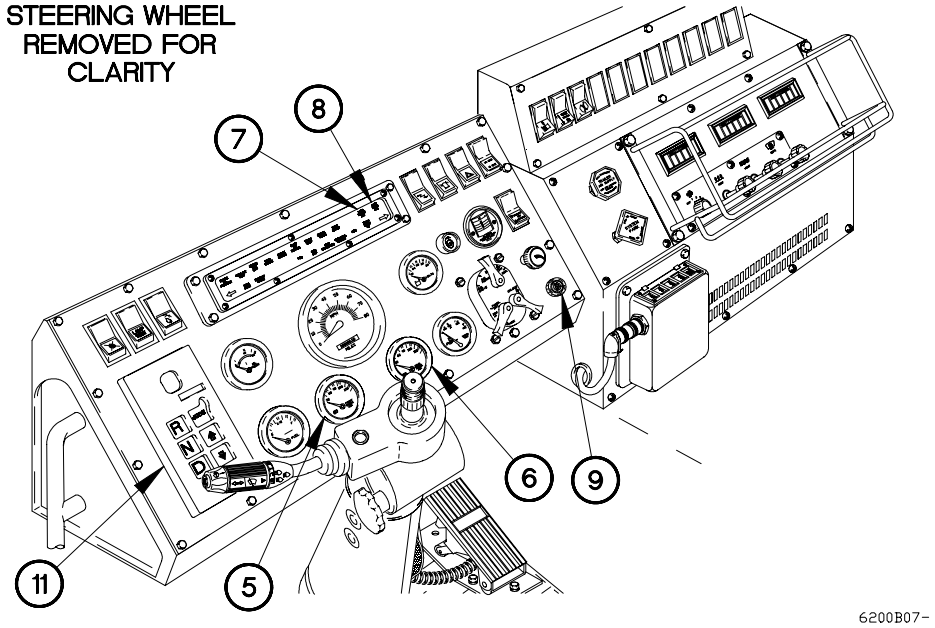
4. If FRONT BRAKE AIR and REAR BRAKE AIR pressure gages (5 and 6) read below 75 psi (517 kPa), LOW FRONT AIR and LOW REAR AIR indicators (7 and 8) illuminate, and audible alarm (9) sounds:

   a. Look for place to stop vehicle without blocking other traffic.

   b. Downshift to lower gear range using WTEC III TPSS (11) to control vehicle speed until place to stop is found.

   c. Stop vehicle.

   d. Notify Unit Maintenance.



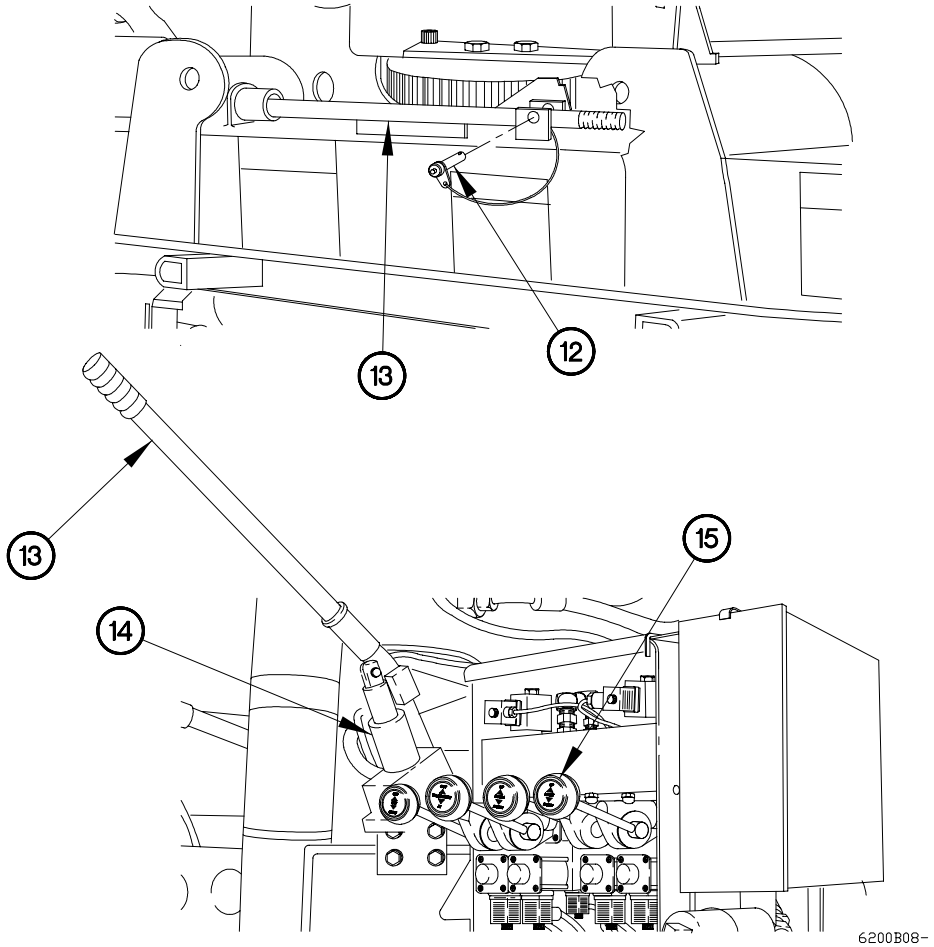
6200B07-

MATERIAL HANDLING CRANE (MHC) OPERATION AFTER ELECTRICAL FAILURE (M1084A1/M1086A1 AND M1089A1)

NOTE

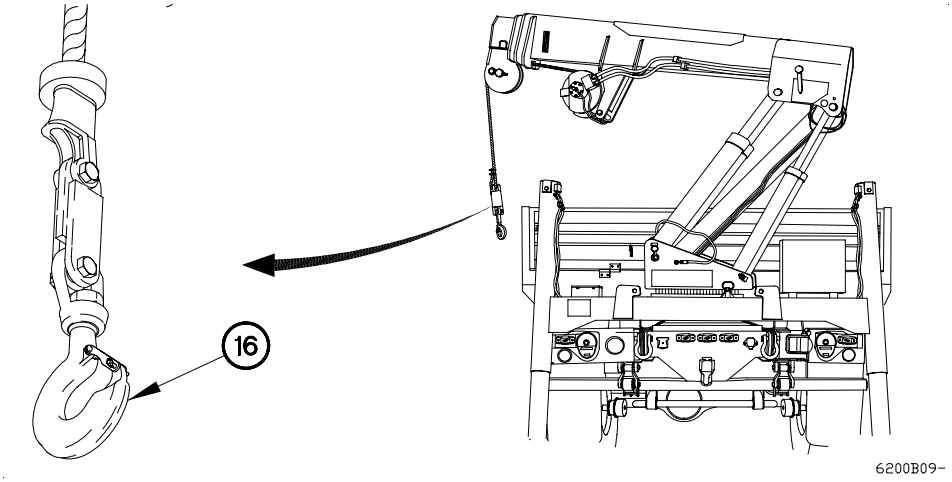
Emergency MHC operation is the same for M1084A1/M1086A1 and M1089A1. M1084A1/M1086A1 MHC shown.

1. Remove retaining pin (12) from pump handle (13).
2. Remove pump handle (13) from stowed position.
3. Install pump handle (13) in manual hydraulic pump (14).
4. Place HOIST lever (15) in DOWN position and operate manual hydraulic pump (14) to lower load as required.



MATERIAL HANDLING CRANE (MHC) OPERATION AFTER ELECTRICAL FAILURE (M1084A1/M1086A1 AND M1089A1) - Continued

5. Disconnect hook assembly (16) from load.

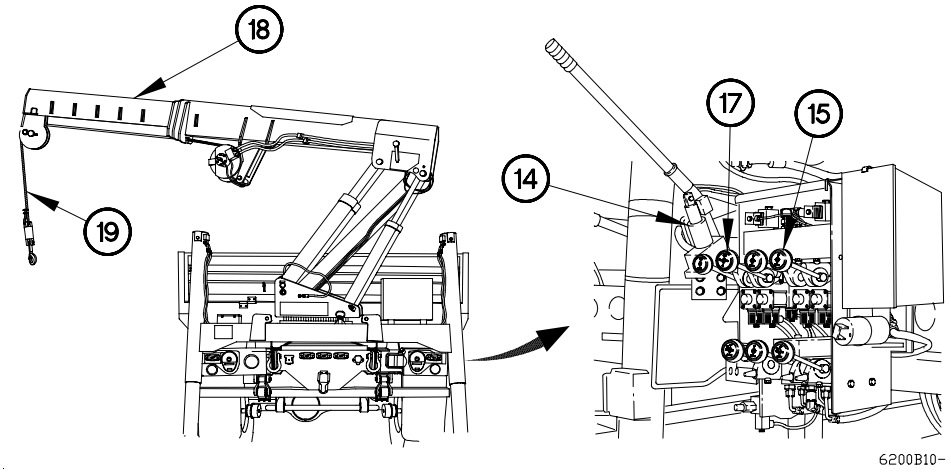


6. Place TELESCOPE lever (17) in the IN position and operate manual hydraulic pump (14) to retract boom (18).

CAUTION

Reel in hoist cable as required so that hook assembly will not contact cargo bed sides or jack cylinder. Failure to comply may result in damage to equipment.

7. Place HOIST lever (15) in UP position and operate manual hydraulic pump (14) to reel in cable (19).

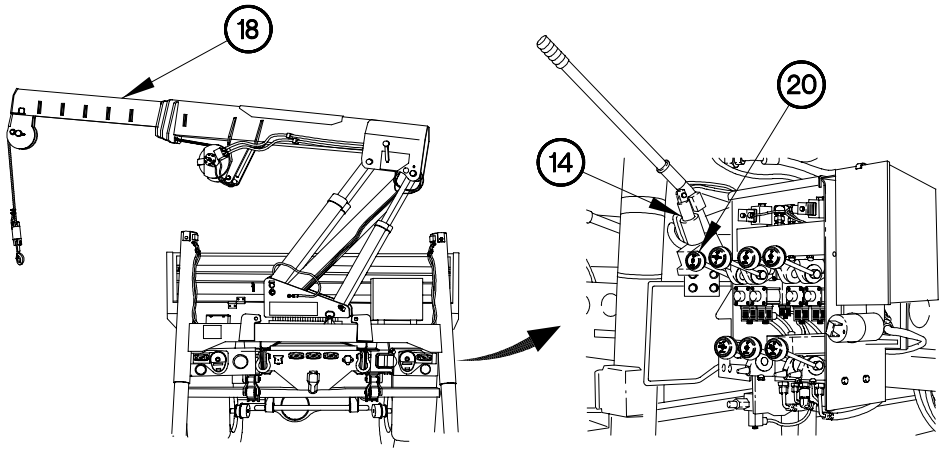


MATERIAL HANDLING CRANE (MHC) OPERATION AFTER ELECTRICAL FAILURE (M1084A1/M1086A1 AND M1089A1) - Continued

NOTE

Position boom so that cable and hook assembly are on driver's side of vehicle and turntable bearing pin holes are aligned.

8. Place SWING lever (20) to CW or to CCW position as required and operate manual hydraulic pump (14) to rotate boom (18).

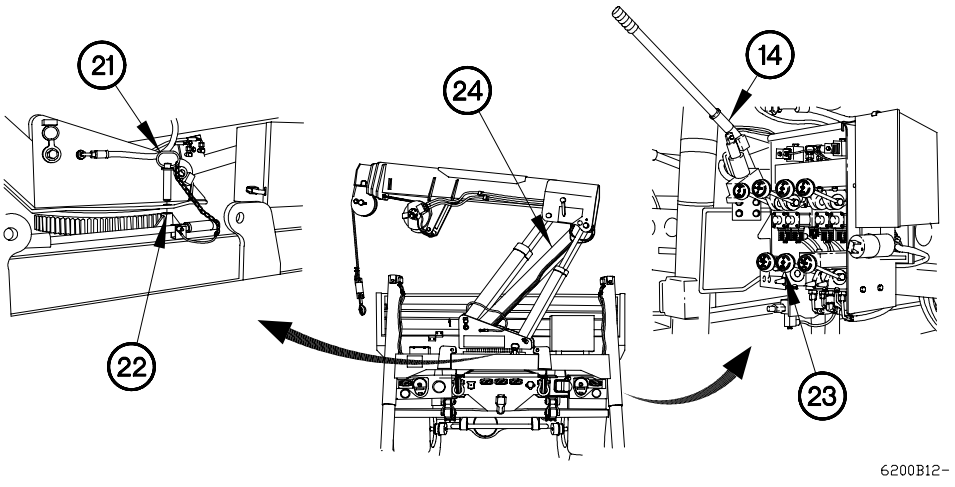


6200B11-

MATERIAL HANDLING CRANE (MHC) OPERATION AFTER ELECTRICAL FAILURE (M1084A1/M1086A1 AND M1089A1) - Continued

9. Install pin (21) in turntable bearing (22).

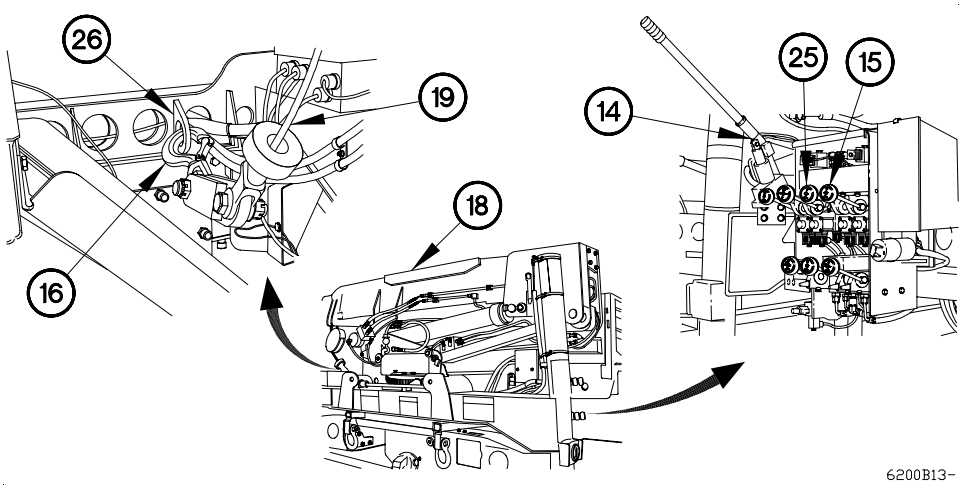
10. Place MAST lever (23) in DOWN position and operate manual hydraulic pump (14) to lower mast (24).



11. Place BOOM lever (25) in DOWN position and operate manual hydraulic pump (14) to fully lower boom (18).

12. Connect hook assembly (16) to stowage ring (26).

13. Place HOIST lever (15) in UP position and operate manual hydraulic pump (14) to remove all slack from cable (19).

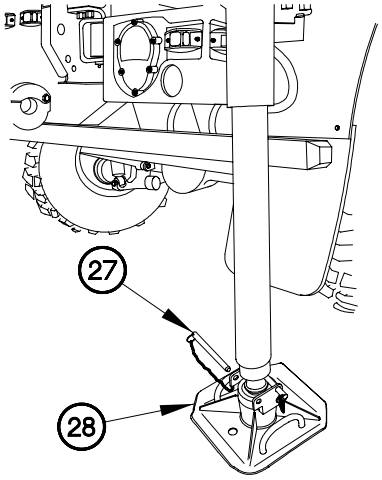


MATERIAL HANDLING CRANE (MHC) OPERATION AFTER ELECTRICAL FAILURE (M1084A1/M1086A1 AND M1089A1) - Continued

NOTE

Both outrigger pads are removed from outriggers the same way. Right outrigger shown.

14. Remove two pins (27) from outrigger pads (28).

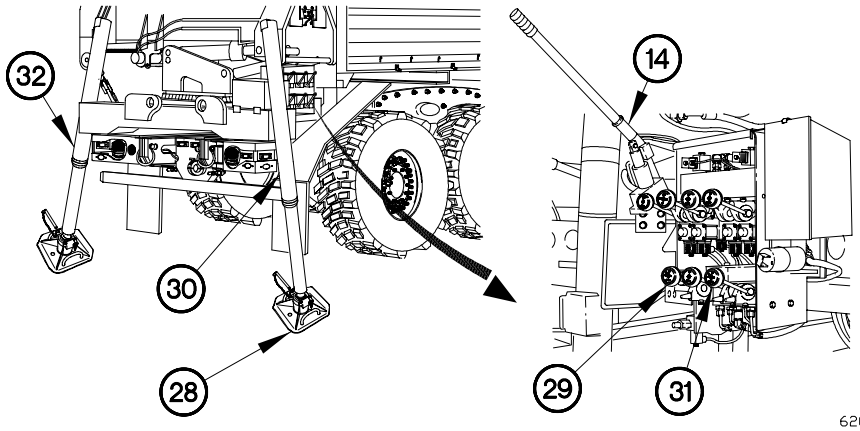


6200B14-

15. Place LH O/R JACK lever (29) in UP position and operate manual hydraulic pump (14) to raise jack cylinder (30).

16. Place RH O/R JACK lever (31) in UP position and operate manual hydraulic pump (14) to raise jack cylinder (32).

17. Stow outrigger pads (28).



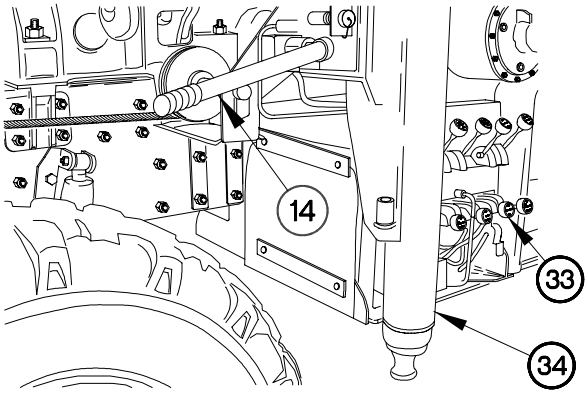
6200B15-

MATERIAL HANDLING CRANE (MHC) OPERATION AFTER ELECTRICAL FAILURE (M1084A1/M1086A1 AND M1089A1) - Continued

NOTE

Perform step 18 if operating M1089A1 MHC.

18. Place O/R JACK lever (33) to IN position and operate manual hydraulic pump (14) to retract outriggers (34).

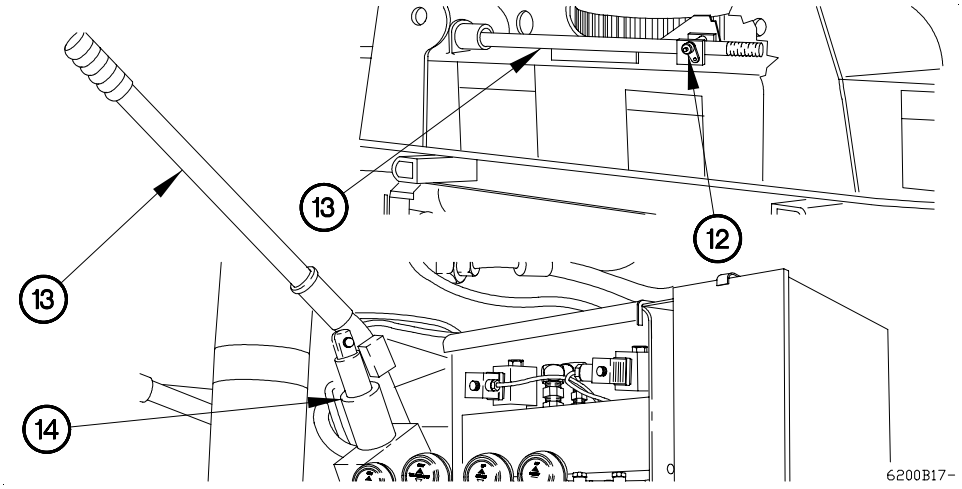


6200B16-

19. Remove pump handle (13) from manual hydraulic pump (14).

20. Stow pump handle (13).

21. Install retaining pin (12) in pump handle (13).



6200B17-

OPERATING MATERIAL HANDLING CRANE (MHC) USING MANUAL OVERRIDE SWITCH (M1084A1/M1086A1 AND M1089A1)

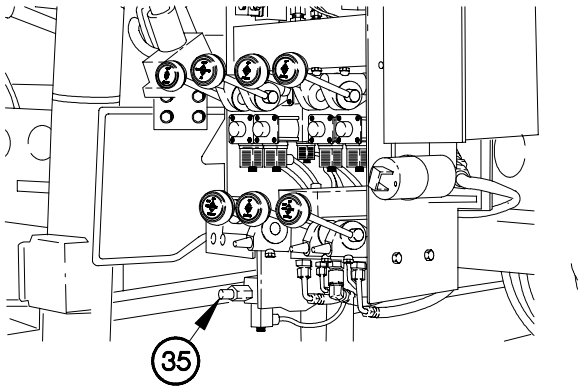
WARNING

Use this procedure in the event of an emergency. Using the MANUAL OVERRIDE switch to operate the Material Handling Crane (MHC) defeats the overload shutdown circuits and allows the MHC to exceed the rated capacity. Failure to comply may result in serious injury or death to personnel or damage to equipment.

NOTE

All MHC functions, except overload lockouts, will operate normally when using the MANUAL OVERRIDE switch.

1. Press and hold MANUAL OVERRIDE switch (35).
2. Operate MHC as long as required to complete mission (WP 0028 00 or WP 0041 00).
3. Release MANUAL OVERRIDE switch (35).
4. Notify Unit Maintenance of possible damage to MHC.



6200B18-

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION

Refer to TB 700-4 for nuclear, biological, and chemical (NBC) defense procedures. Refer to FM 3-5 for chemical, biological, and radiological (CBR) decontamination procedures.

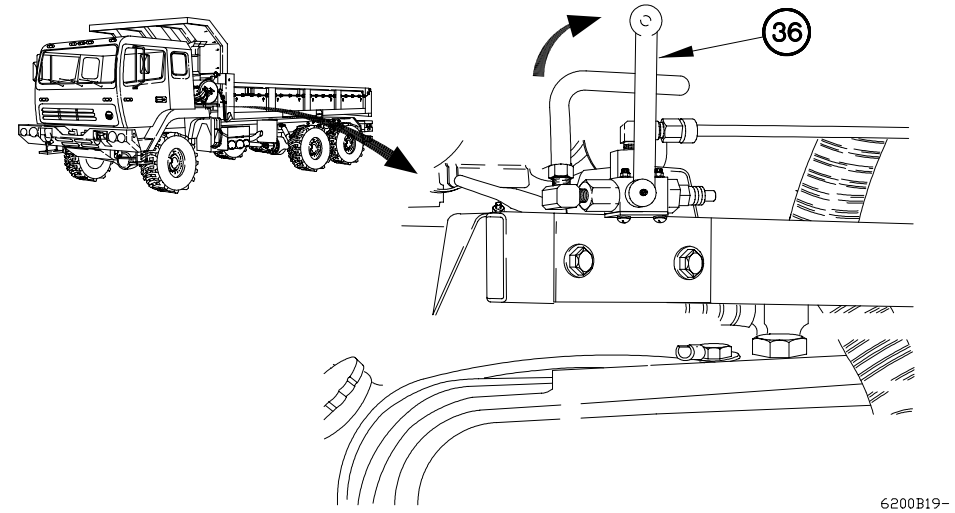
EMERGENCY PROCEDURES - Continued 0062 00

DUMP TRUCK MANUAL RELEASE

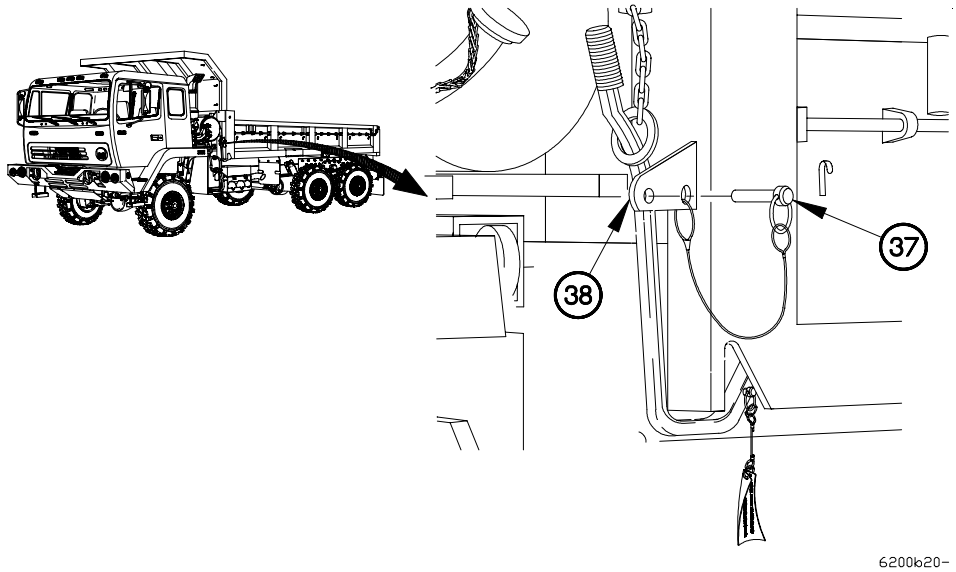
NOTE

This procedure is to be used in the event of electrical or pneumatic failure.

1. Move handle (36) 90 degrees to the right.



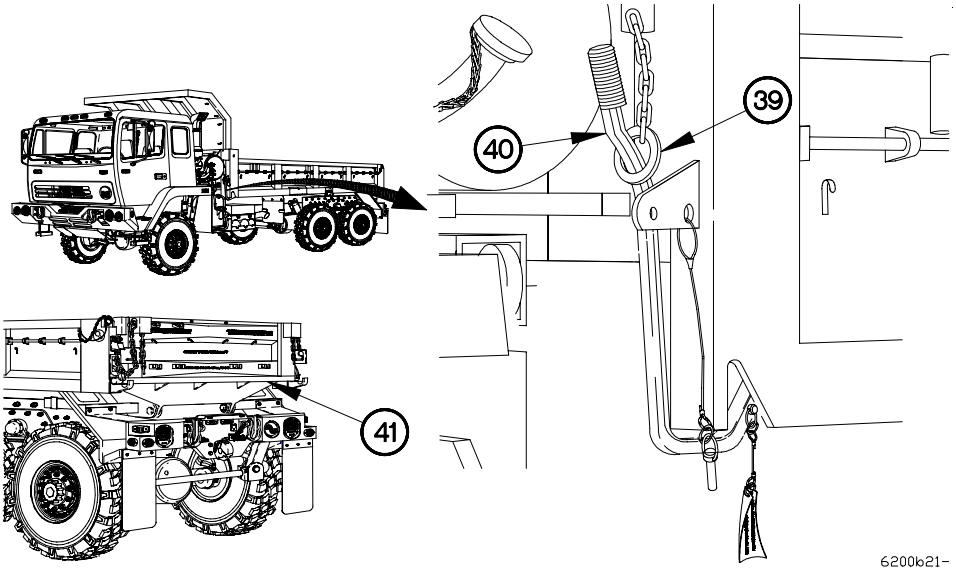
2. Remove lock pin (37) from bracket (38).



DUMP TRUCK MANUAL RELEASE - Continued

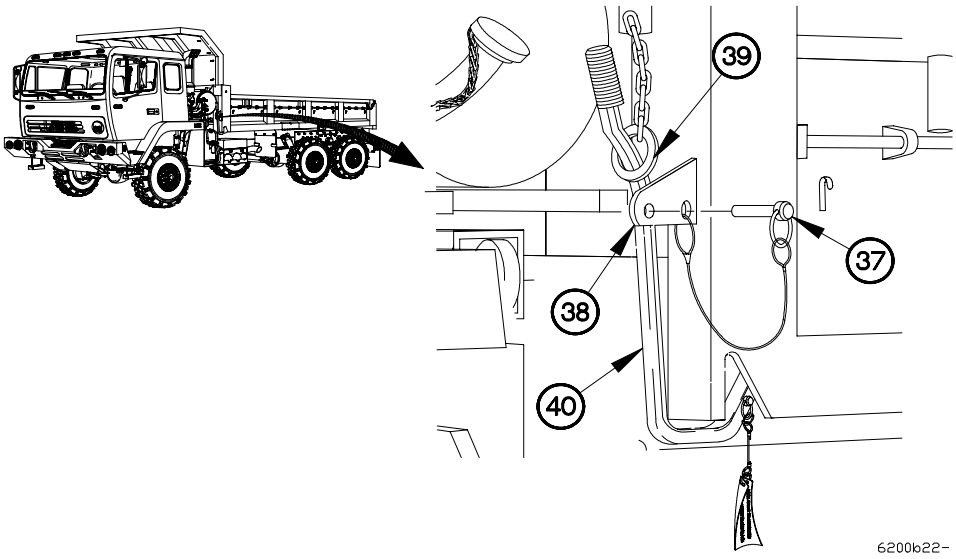
3. Remove safety ring (39) from handle (40).

4. Pull handle (40) downward to unlock tailgate (41).



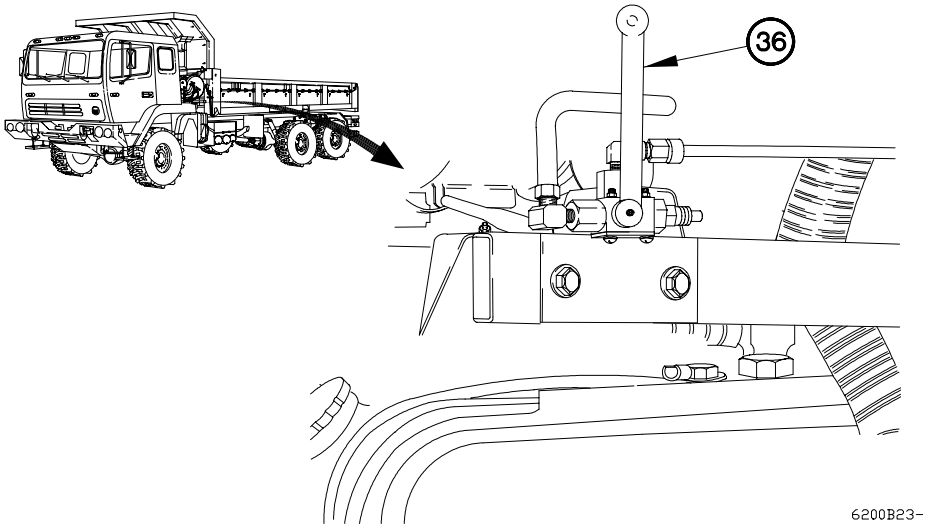
5. Install safety ring (39) on handle (40).

6. Install lock pin (37) in bracket (38).



DUMP TRUCK MANUAL RELEASE - Continued

7. Move handle (36) to upright position.



END OF OPERATING PROCEDURE

PREPARATION FOR MACHINE GUN OPERATION 0063 00

INITIAL SETUP:

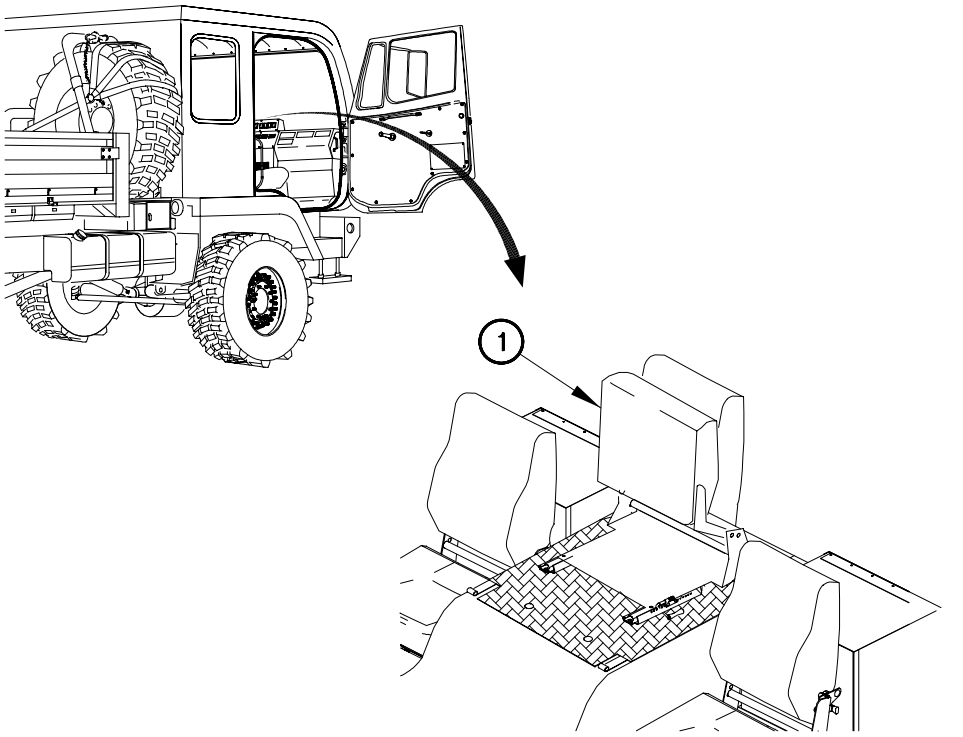
Maintenance Level
Operator

GENERAL

This work package provides the data and procedures to prepare for machine gun operation. Items covered include Raise Machine Gun Ring Lower Platform and Stow Machine Gun Ring Lower Platform.

RAISE MACHINE GUN RING LOWER PLATFORM

1. Fold center seat (1) up.



6300B01-

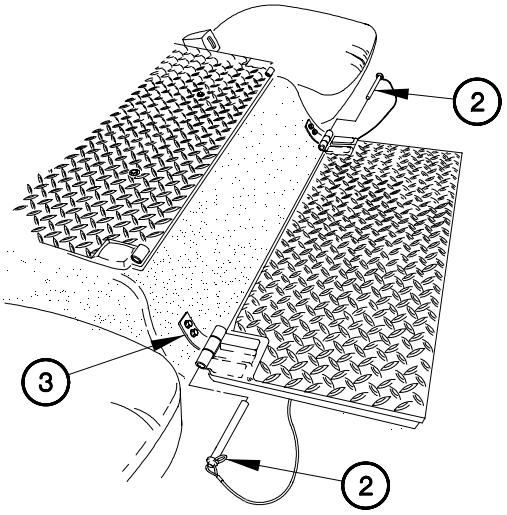
PREPARATION FOR MACHINE GUN OPERATION - Continued 0063 00

RAISE MACHINE GUN LOWER PLATFORM - Continued

CAUTION

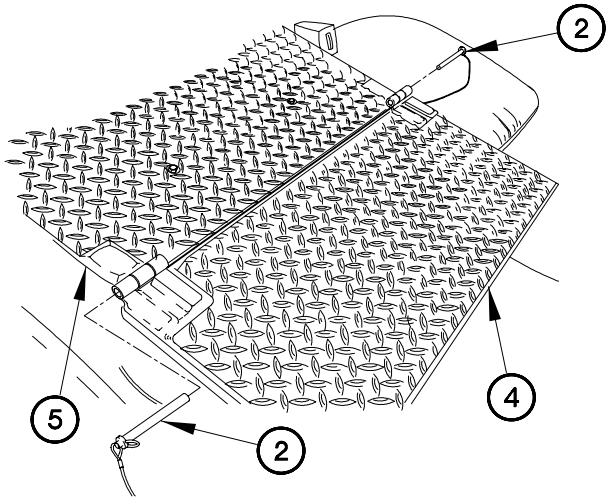
Lower platform must be securely pinned to stowage bracket or upper platform. Failure to comply may result in damage to equipment.

2. Disconnect two quick release pins (2) from storage brackets (3).



6300B02-

3. Connect lower platform (4) to upper platform (5) with two quick release pins (2).

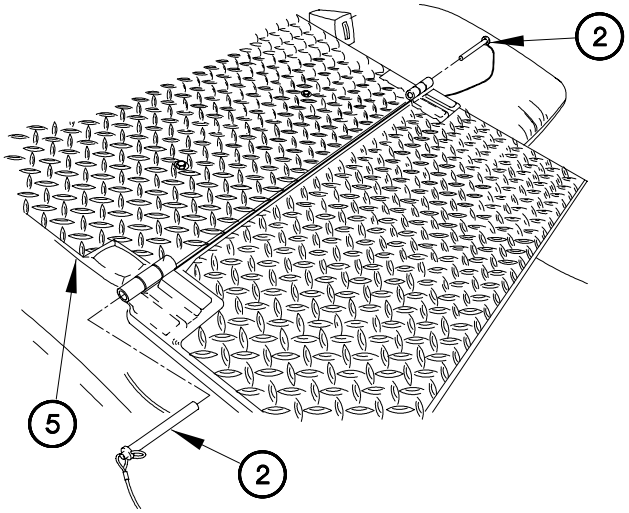


6300B03-

PREPARATION FOR MACHINE GUN OPERATION - Continued 0063 00

STOW MACHINE GUN RING LOWER PLATFORM

1. Disconnect two quick release pins (2) from upper platform (5).

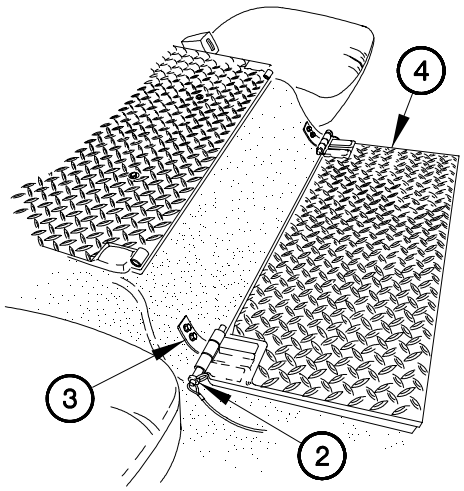


6300B04-

CAUTION

Ensure that quick release pins go completely through lower platform and stowage brackets. Failure to comply may result in damage to equipment.

2. Connect lower platform (4) to storage brackets (3) with two quick release pins (2).

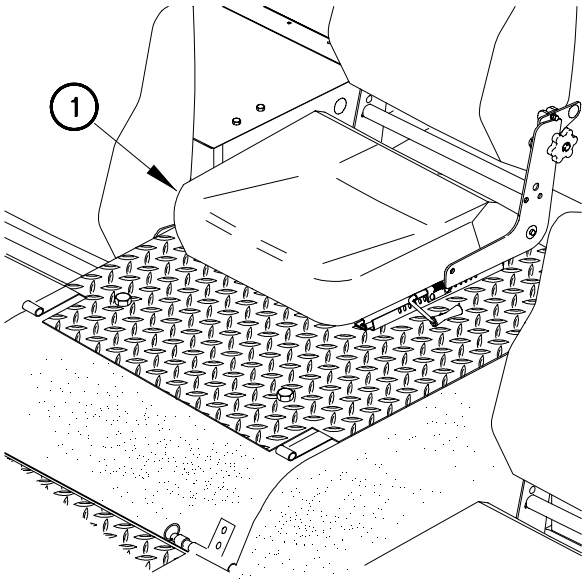


6300B05-

PREPARATION FOR MACHINE GUN OPERATION - Continued 0063 00

STOW MACHINE GUN RING LOWER PLATFORM - Continued

3. Unfold center seat (1).



6300B06-

END OF OPERATING PROCEDURE

HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) 0064 00

INITIAL SETUP:

Maintenance Level
Operator

Tools/Special Tools
Hose, Hydraulic (Item 27, Table 2 WP 0112 00)
Hose, Hydraulic (Item 28, Table 2 WP 0112 00)

References
WP 0018 00
WP 0032 00
WP 0033 00
WP 0035 00
WP 0041 00
WP 0061 00

GENERAL

This work package provides the data and procedures for hydraulic system operation (M1089/M1089A1). Items covered include Connecting Service Vehicle To Hydraulic Power, Operation Of Disabled Vehicle Hydraulic Systems, and Disconnecting Service Vehicle Hydraulic Power.

CONNECTING SERVICE VEHICLE HYDRAULIC POWER

NOTE

The M1089/M1089A1 to M1089A1 hydraulic system procedure provides hydraulic power to a disabled vehicle to stow deployed equipment, stifflegs, underlift assembly, 30K winch cables, 15K self-recovery winch cable, or Material Handling Crane (MHC), and prepare the vehicle for transportation.

1. Position service vehicle next to disabled vehicle with front of service vehicle toward rear of disabled vehicle.

2. Shut down engine of service vehicle (WP 0018 00).

HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) - Continued 0064 00

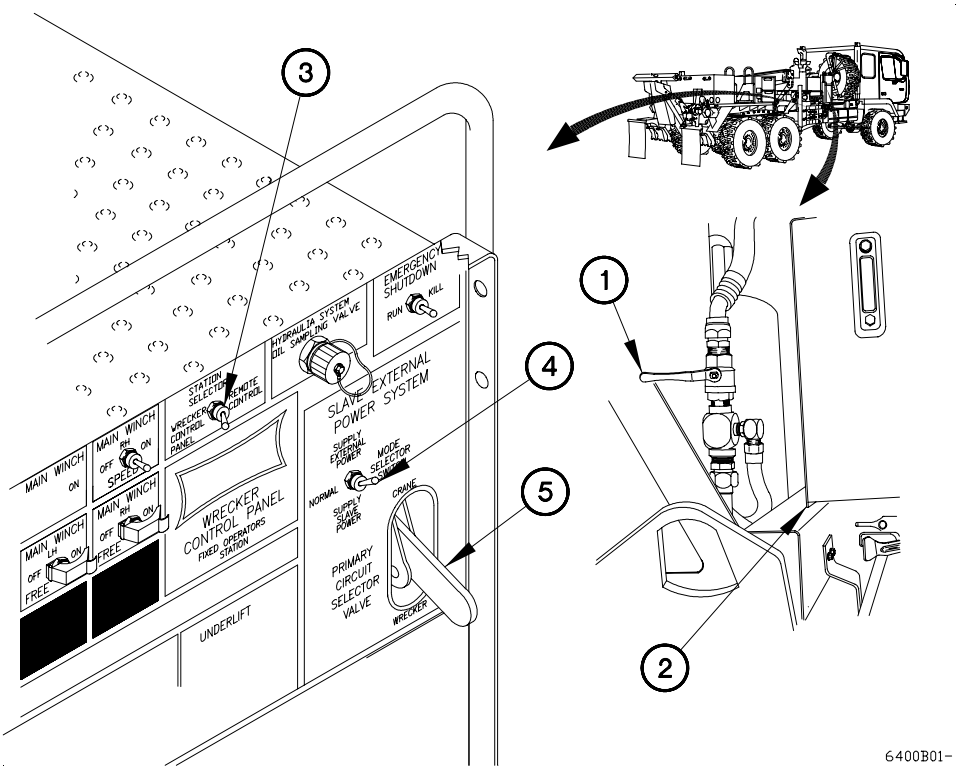
CONNECTING SERVICE VEHICLE HYDRAULIC POWER - Continued

3. Close return valve (1) to hydraulic tank (2) on service vehicle and disabled vehicle.

4. Position STATION SELECTOR SWITCH (3) on service vehicle and disabled vehicle to WRECKER CONTROL PANEL.

5. Position MODE SELECTOR SWITCH (4) on service vehicle to SUPPLY SLAVE POWER.

6. Position PRIMARY CIRCUIT SELECTOR VALVE (5) on service vehicle to WRECKER.



HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) - Continued 0064 00

CONNECTING SERVICE VEHICLE HYDRAULIC POWER - Continued

7. Position SECONDARY CIRCUIT SELECTOR VALVE (6) on service vehicle to LH WINCH.

8. Remove two caps (7) from SLAVE SYSTEM PRESSURE PORT (8) and SLAVE SYSTEM RETURN PORT (9) on service vehicle.

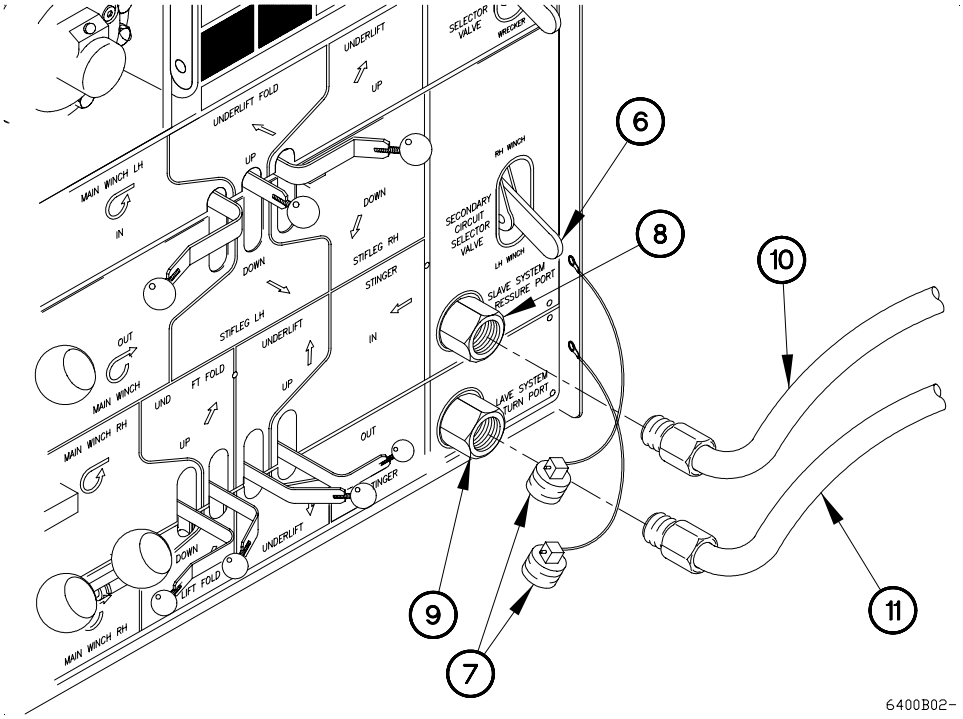
9. Connect hydraulic hose (10) to SLAVE SYSTEM PRESSURE PORT (8) on service vehicle.

10. Connect hydraulic hose (11) to SLAVE SYSTEM RETURN PORT (9) on service vehicle.

11. Remove two caps (7) from SLAVE SYSTEM PRESSURE PORT (8) and SLAVE SYSTEM RETURN PORT (9) on disabled vehicle.

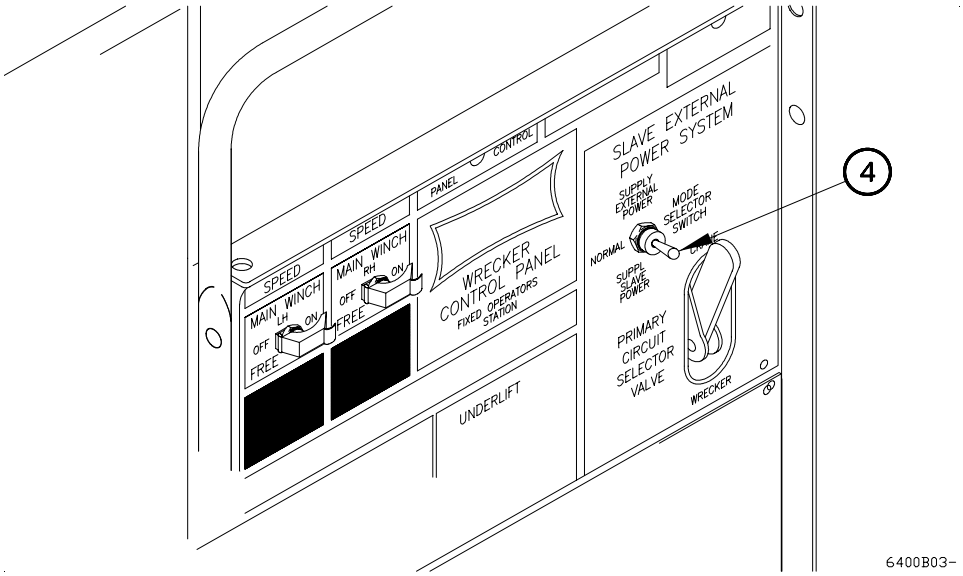
12. Connect hydraulic hose (10) to SLAVE SYSTEM PRESSURE PORT (8) on disabled vehicle.

13. Connect hydraulic hose (11) to SLAVE SYSTEM RETURN PORT (9) on disabled vehicle

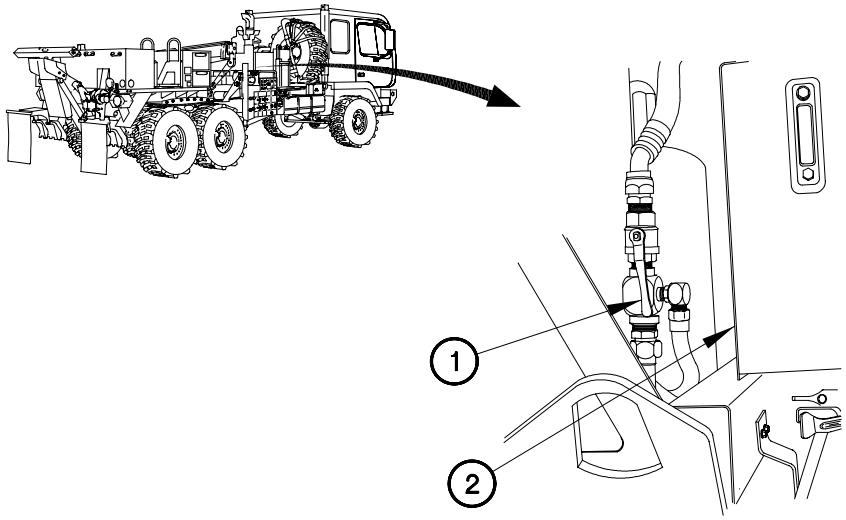


CONNECTING SERVICE VEHICLE HYDRAULIC POWER - Continued

14. Position MODE SELECTOR SWITCH (4) on disabled vehicle to NORMAL.



15. Open return valve (1) to hydraulic tank (2) on service vehicle.

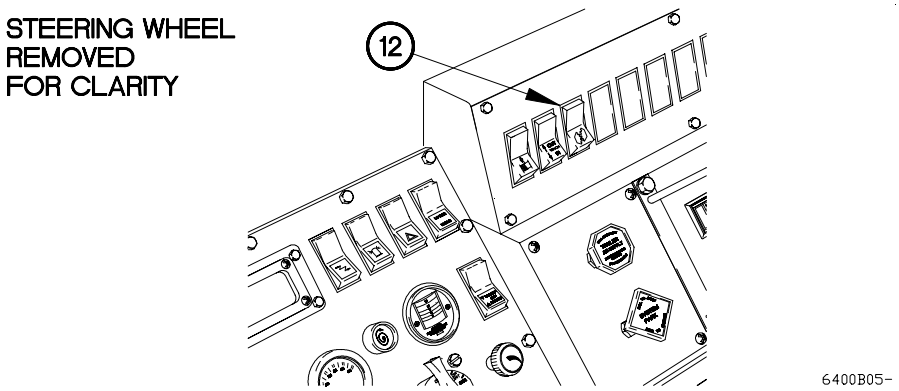


HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) - Continued 0064 00

CONNECTING SERVICE VEHICLE HYDRAULIC POWER - Continued

16. Start engine of service vehicle (WP 0018 00).

17. Position PTO switch (12) to on.



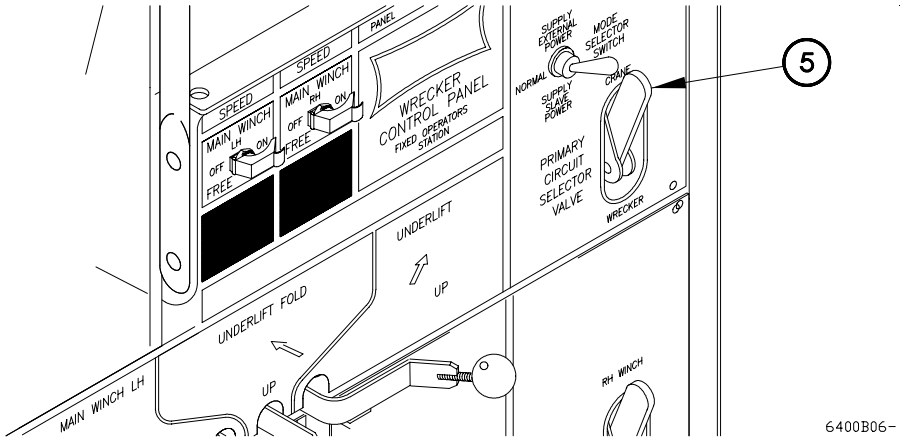
OPERATION OF DISABLED VEHICLE HYDRAULIC SYSTEMS

NOTE

Perform steps 1 and 2 if disabled vehicle MHC must be stowed.

1. On disabled vehicle, position PRIMARY CIRCUIT SELECTOR VALVE (5) to CRANE.

2. Stow MHC (WP 0041 00).



HYDRAULIC SYSTEM OPERATION 0064 00
M1089/M1089A1 TO M1089A1) - Continued

OPERATION OF DISABLED VEHICLE HYDRAULIC SYSTEMS - Continued

NOTE

Perform steps 3, 4, and 5 if disabled vehicle RH winch cable must be recovered.

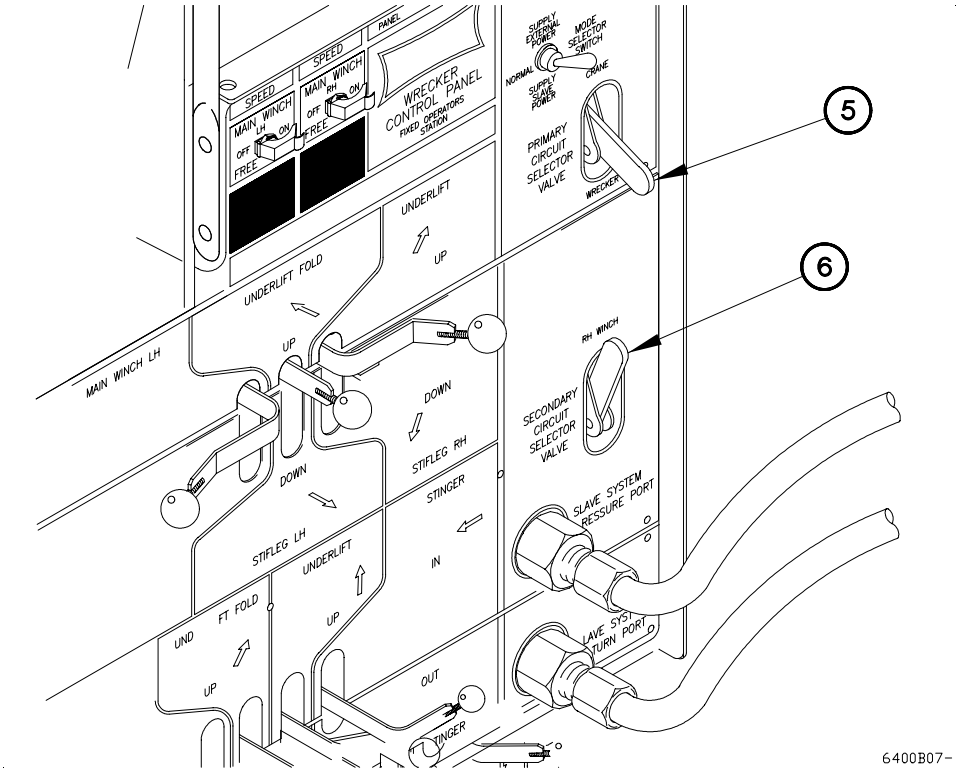
Perform steps 3, 4, and 6 if disabled vehicle underlift assembly must be stowed.

3. On disabled vehicle, position PRIMARY CIRCUIT SELECTOR VALVE (5) to WRECKER.

4. On disabled vehicle, position SECONDARY CIRCUIT SELECTOR VALVE (6) to RH WINCH.

5. Operate RH winch to reel in cable (WP 0033 00).

6. Stow underlift assembly (WP 0035 00).



HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) - Continued 0064 00

OPERATION OF DISABLED VEHICLE HYDRAULIC SYSTEMS - Continued

NOTE

Perform steps 7, 8, and 9 if disabled vehicle LH winch cable must be recovered.

Perform steps 7, 8, and 10 if disabled vehicle LH or RH stiffleg must be raised.

Perform steps 7, 8, and 11 if disabled vehicle 15K Self-Recovery Winch (SRW) cable must be recovered.

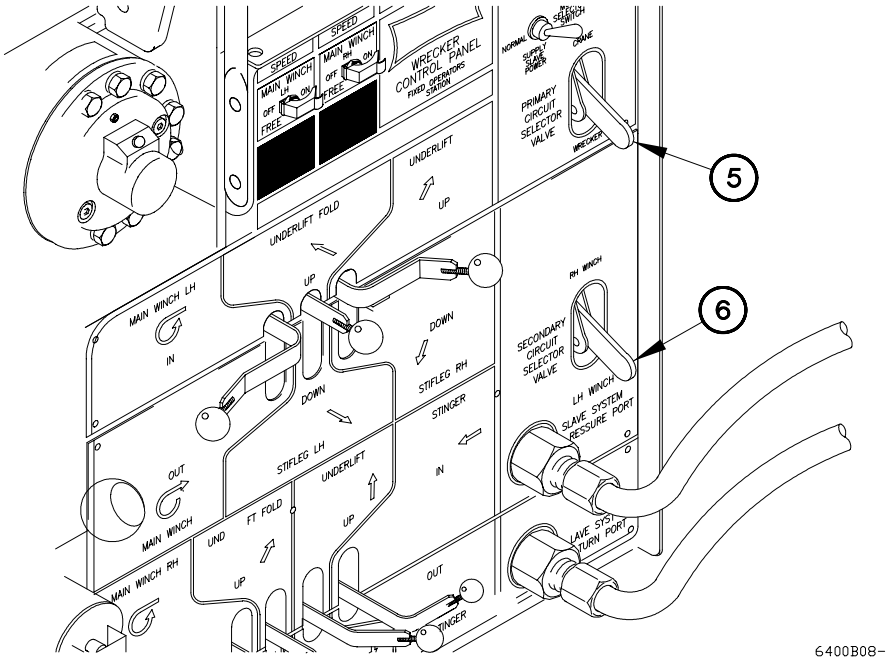
7. On disabled vehicle, position PRIMARY CIRCUIT SELECTOR VALVE (5) to WRECKER.

8. On disabled vehicle, position SECONDARY CIRCUIT SELECTOR VALVE (6) to LH WINCH.

9. Operate LH winch to reel in cable (WP 0033 00).

10. Operate LH or RH stiffleg to raise stiffleg (WP 0032 00).

11. Operate 15K SRW to reel in cable (WP 0061 00).

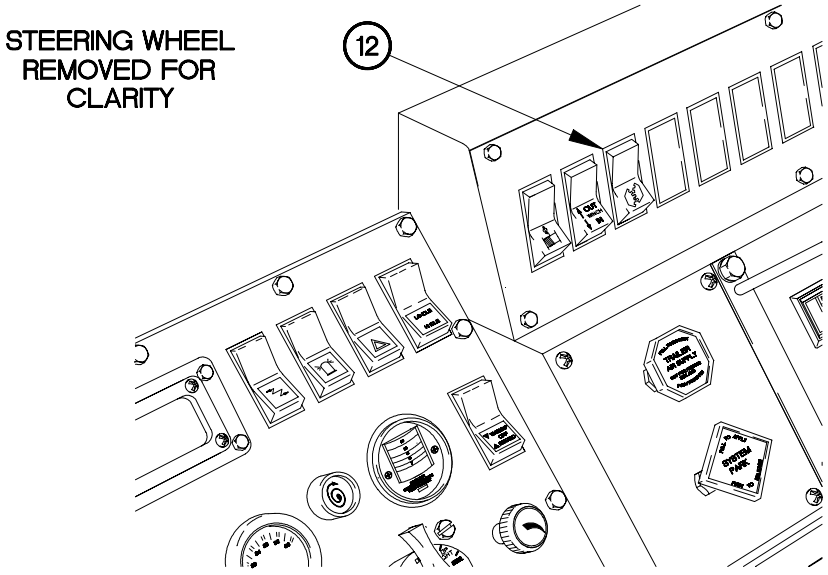


HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) - Continued 0064 00

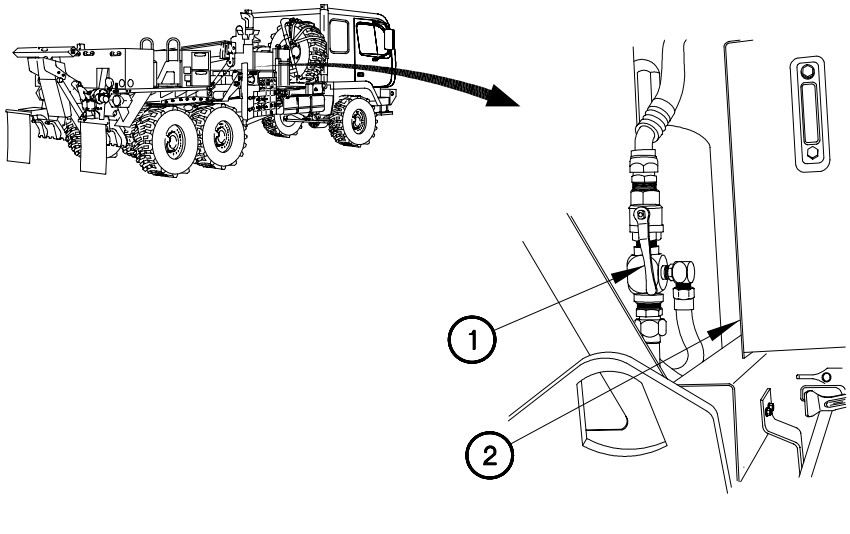
DISCONNECTING SERVICE VEHICLE HYDRAULIC POWER

1. Position PTO switch (12) to off.

2. Shut down engine of service vehicle (WP 0018 00).



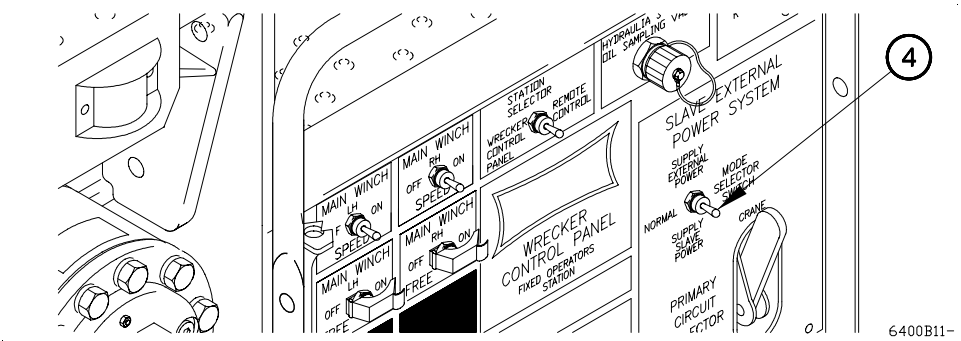
3. Close return valve (1) to hydraulic tank (2) on service vehicle.



HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) - Continued 0064 00

DISCONNECTING SERVICE VEHECILE HYDRAULIC POWER - Continued

4. Position MODE SELECTOR SWITCH (4) on service vehicle to NORMAL.



5. Disconnect hydraulic hose (11) from SLAVE SYSTEM RETURN PORT (9) on disabled vehicle.

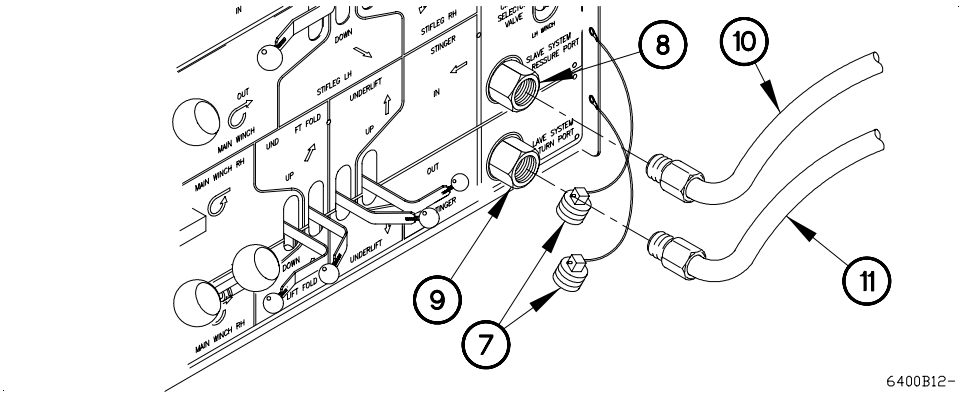
6. Disconnect hydraulic hose (10) from SLAVE SYSTEM PRESSURE PORT (8) on disabled vehicle.

7. Install two caps (7) on SLAVE SYSTEM PRESSURE PORT (8) and SLAVE SYSTEM RETURN PORT (9) on disabled vehicle.

8. Disconnect hydraulic hose (11) from SLAVE SYSTEM RETURN PORT (9) on service vehicle.

9. Disconnect hydraulic hose (10) from SLAVE SYSTEM PRESSURE PORT (8) on service vehicle.

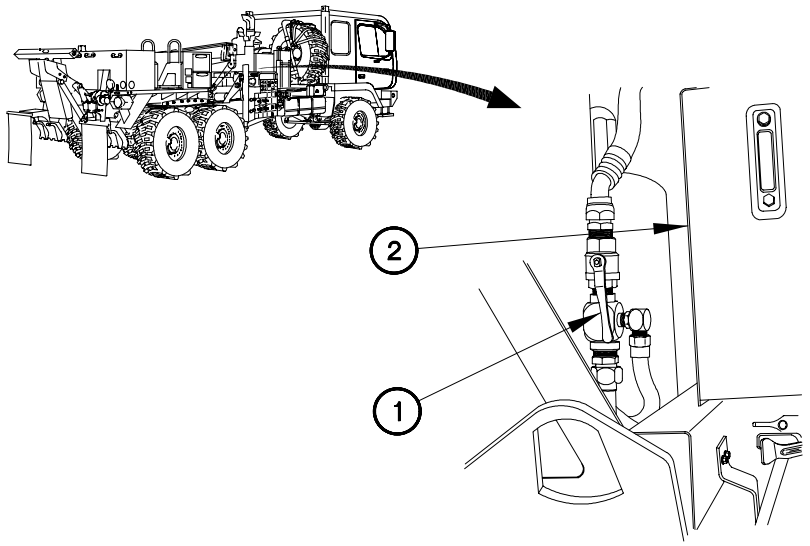
10. Install two caps (7) on SLAVE SYSTEM PRESSURE PORT (8) and SLAVE SYSTEM RETURN PORT (9) on service vehicle.



HYDRAULIC SYSTEM OPERATION (M1089/M1089A1 TO M1089A1) - Continued 0064 00

DISCONNECTING SERVICE VEHICLE HYDRAULIC POWER - Continued

11. Open return valve (1) to hydraulic tank (2) on service vehicle and disabled vehicle.



6400B13-

END OF OPERATING PROCEDURE

M1089A1 EXTERNAL HYDRAULIC POWER OPERATION 0065 00

INITIAL SETUP:

Maintenance Level
Operator

References
WP 0018 00

Tool/Special Tool
Chocks, Wheel (Item 18, Table 2 WP 0112 00)

GENERAL

This work package provides the data and procedures for M1089A1 external hydraulic power operation. Items covered include Preparation Of Vehicle, Preparation To Provide External Hydraulic Power, and External Hydraulic Power Disconnect Procedure.

PREPARATION OF VEHICLE

WARNING

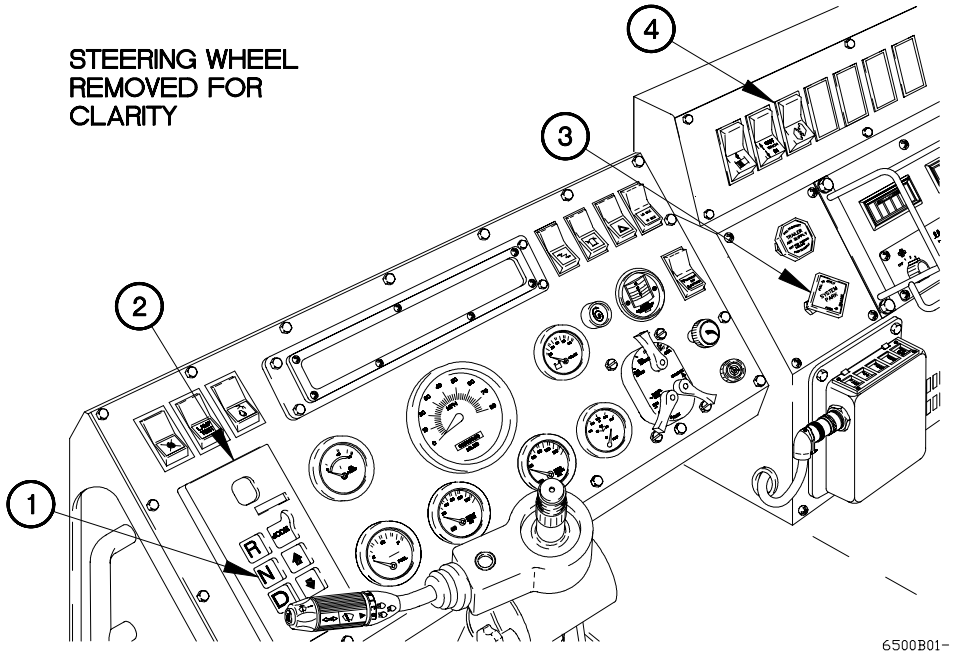
M1089A1 hydraulic hoses are under 3,000 pounds pressure and must be handled carefully to prevent damage or personal injury. Failure to comply may result in serious injury or death to personnel.

1. Chock wheels (WP 0018 00).
2. Start engine (WP 0018 00).

M1089A1 EXTERNAL HYDRAULIC POWER OPERATION - Continued 0065 00

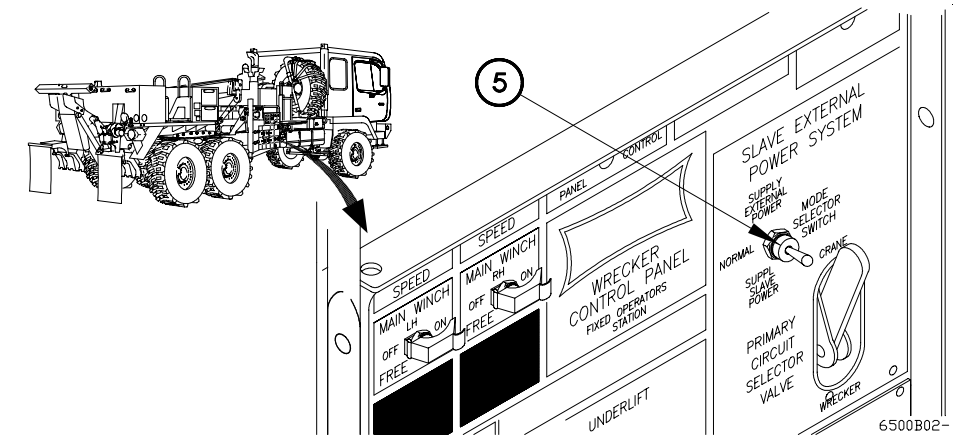
PREPARATION OF VEHICLE - Continued

3. Press N (Neutral) button (1) on WTEC III TPSS (2).
4. Pull out SYSTEM PARK control (3).
5. Position PTO switch (4) to on.



PREPARATION TO PROVIDE EXTERNAL HYDRAULIC POWER

1. Position MODE SELECTOR SWITCH (5) to NORMAL.



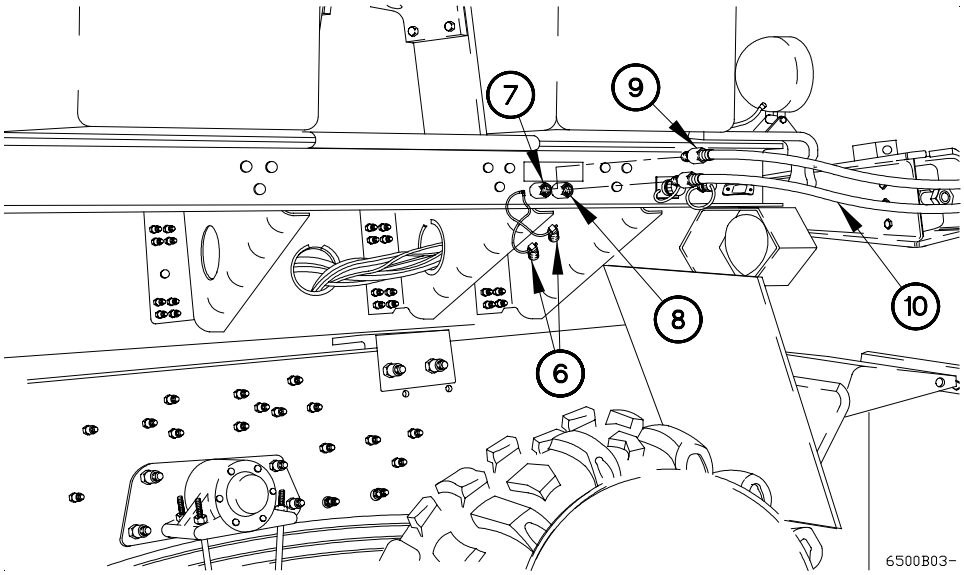
M1089A1 EXTERNAL HYDRAULIC POWER OPERATION - Continued 0065 00

PREPARATION TO PROVIDE EXTERNAL HYDRAULIC POWER - Continued

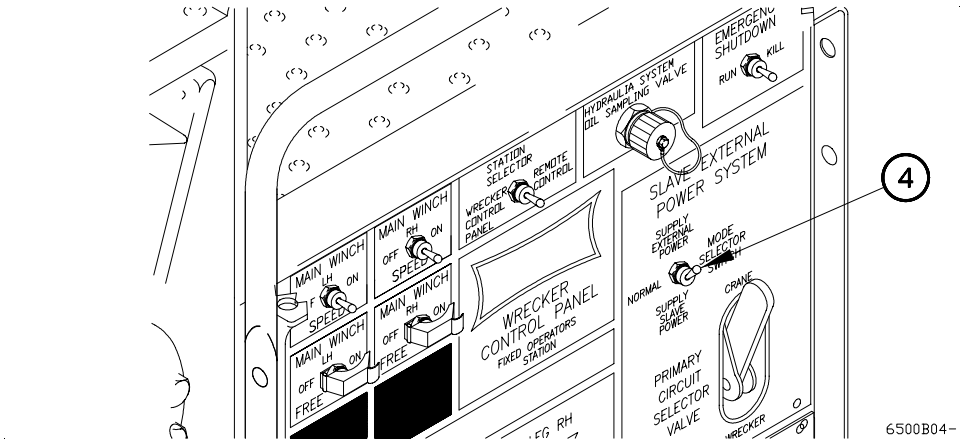
2. Remove two caps (6) from EXTERNAL POWER PORTS PRESSURE port (7) and EXTERNAL POWER PORTS RETURN port (8).

3. Connect hydraulic hose (9) to EXTERNAL POWER PORTS PRESSURE port (7) and external hydraulic tool.

4. Connect hydraulic hose (10) to EXTERNAL POWER PORTS RETURN port (8) and external hydraulic tool.



5. Position MODE SELECTOR SWITCH (4) to SUPPLY EXTERNAL POWER.



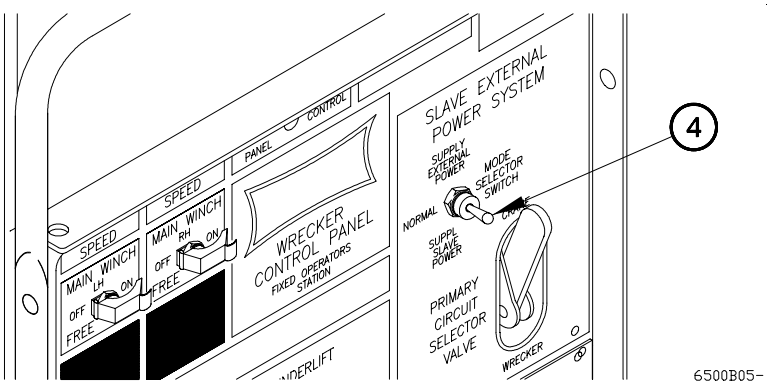
M1089A1 EXTERNAL HYDRAULIC POWER OPERATION - Continued 0065 00

EXTERNAL HYDRAULIC POWER DISCONNECT PROCEDURE

WARNING

MODE SELECTOR SWITCH must be in NORMAL position to relieve pressure before disconnecting hydraulic hoses. Failure to comply may result in serious injury or death to personnel.

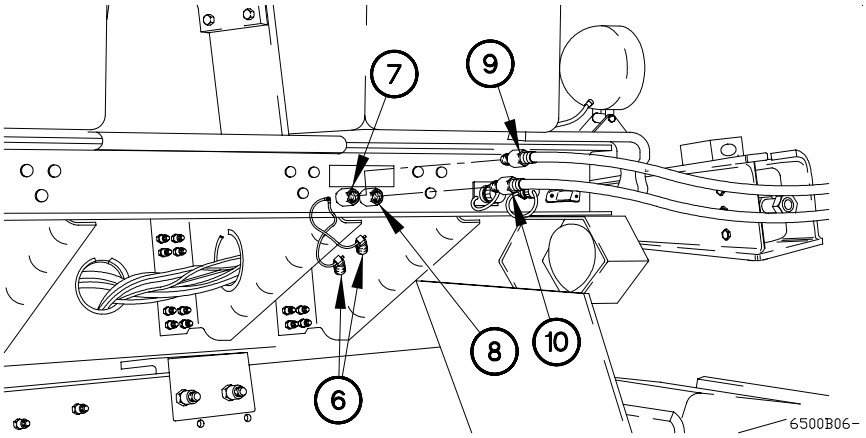
1. Position MODE SELECTOR SWITCH (4) to NORMAL.



2. Disconnect hydraulic hose (9) from EXTERNAL POWER PORTS PRESSURE port (7).

3. Disconnect hydraulic hose (10) from EXTERNAL POWER PORTS RETURN port (8).

4. Install two caps (6) on EXTERNAL POWER PORTS PRESSURE port (7) and EXTERNAL POWER PORTS RETURN port (8).



END OF OPERATING PROCEDURE

AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL 0066 00

INITIAL SETUP:

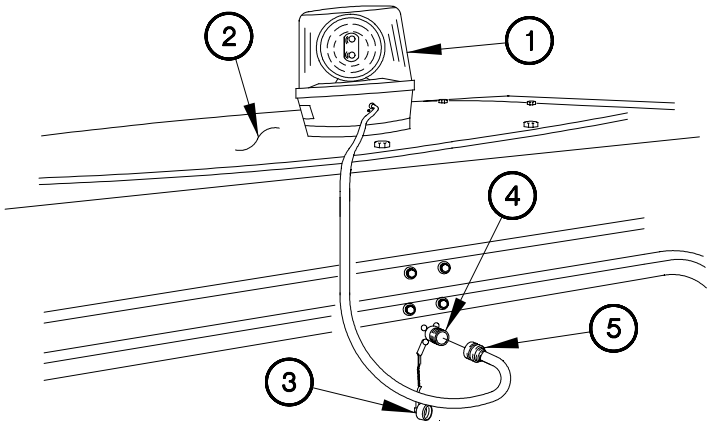
Maintenance Level
Operator

GENERAL

This work package provides the data and procedures for installing and removing the amber warning light kit. Items covered include Install Amber Warning Light (All Models Except M1089A1), Remove Amber Warning Light (All Models Except M1089A1), Install Amber Warning Light (M1089A1), Raise Mast (To Mid-Position) (M1089A1), Raise Mast (To Full Height) (M1089A1), Lower Mast (From Mid-Position) (M1089), Lower Mast (From Full Height) (M1089A1), and Remove Amber Warning Light (M1089A1).

INSTALL AMBER WARNING LIGHT (ALL MODELS EXCEPT M1089A1)

1. Position amber warning light (1) on cab (2).
2. Remove dustcap (3) from connector J62 (4).
3. Connect warning light connector (5) to connector J62 (4).



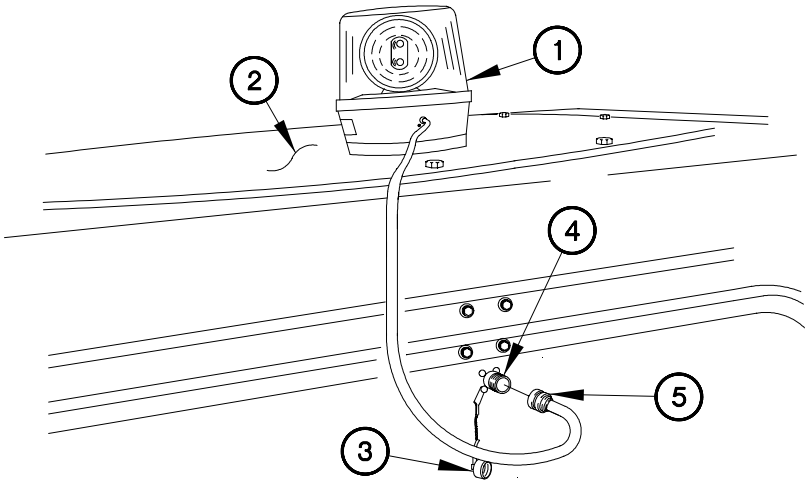
6600B01-

AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued

0066 00

REMOVE AMBER WARNING LIGHT (ALL MODELS EXCEPT M1089A1)

1. Disconnect warning light connector (5) from connector J62 (4).
2. Remove amber warning light (1) from cab (2).
3. Install dustcap (3) on connector J62 (4).



6600B02-

AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued

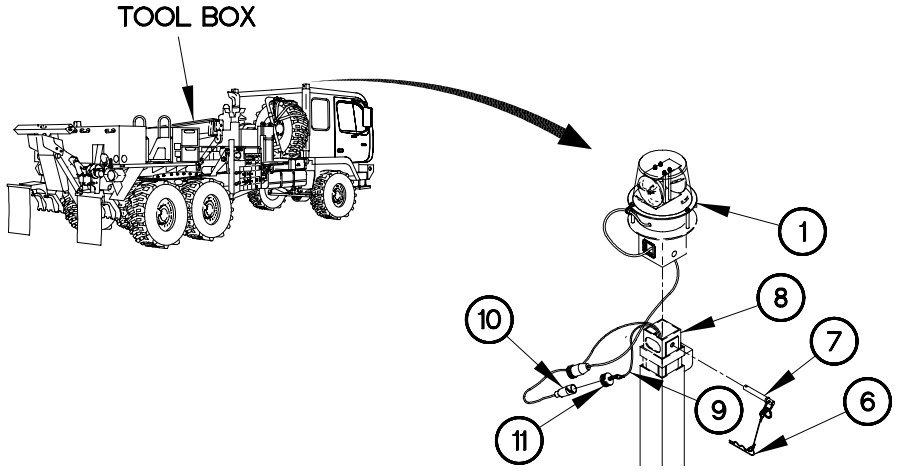
0066 00

INSTALL AMBER WARNING LIGHT (M1089A1)

NOTE

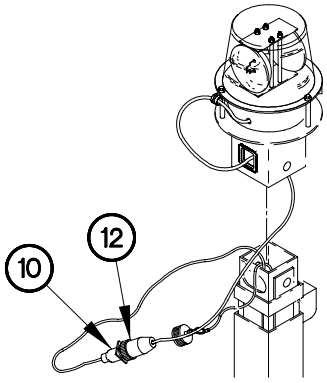
Left and right side amber warning lights are installed the same way. Right side shown.

1. Remove amber warning light (1) from tool box.
2. Remove clevis pin (6) and pin (7) from mast (8).
3. Lift mast lanyard (9) and connector J45 (10) from inside mast (8).
4. Remove dustcap (11) from connector J45 (10).



6600B03–

5. Connect connector J45 (10) to connector (12).



6600B04–

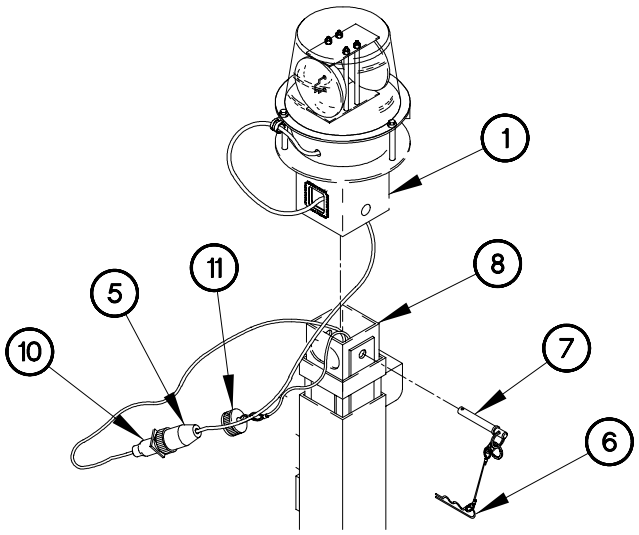
AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued 0066 00

INSTALL AMBER WARNING LIGHT (M1089A1) - Continued

CAUTION

Both electrical connectors must be inserted into mast before amber warning light is installed on mast. Failure to comply may result in damage to equipment.

6. Insert connector J45 (10) and warning light connector (5) into mast (8).
7. Lower dustcap (11) into mast (8).
8. Install amber warning light (1) on mast (8).
9. Install pin (7) in mast (8).
10. Install clevis pin (6) in pin (7).



6600B05–

AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued

RAISE MAST (TO MID-POSITION) (M1089A1)

NOTE

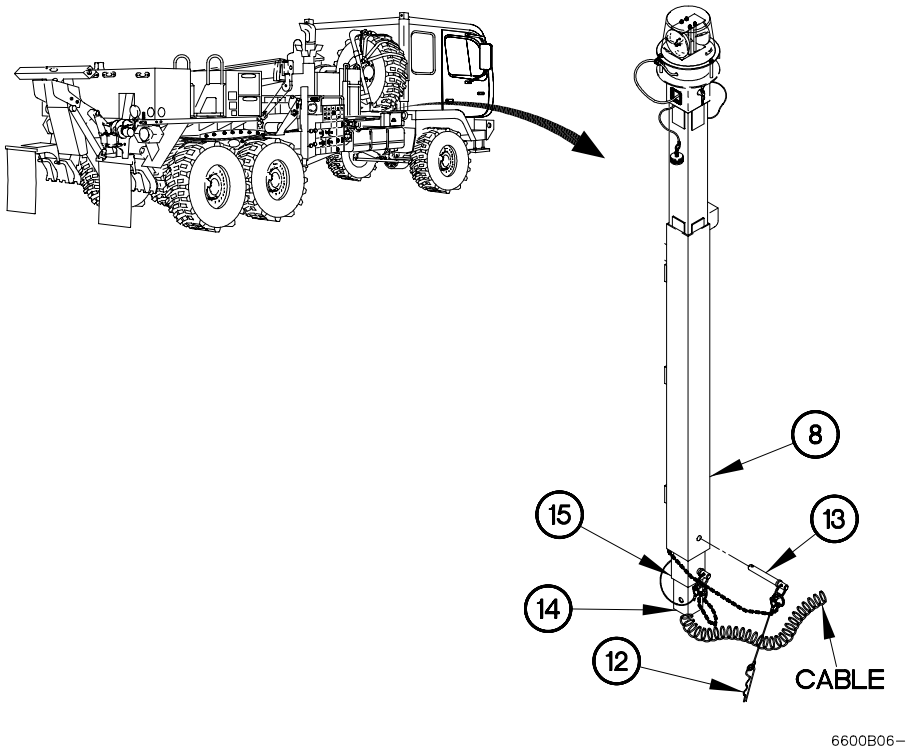
Left and right side masts are raised the same way. Right side shown.

1. Remove clevis pin (12) and pin (13) from mast (8).

CAUTION

Ensure cable has enough slack after inner tube is raised to prevent cable from rubbing against mast. Failure to comply may result in damage to equipment.

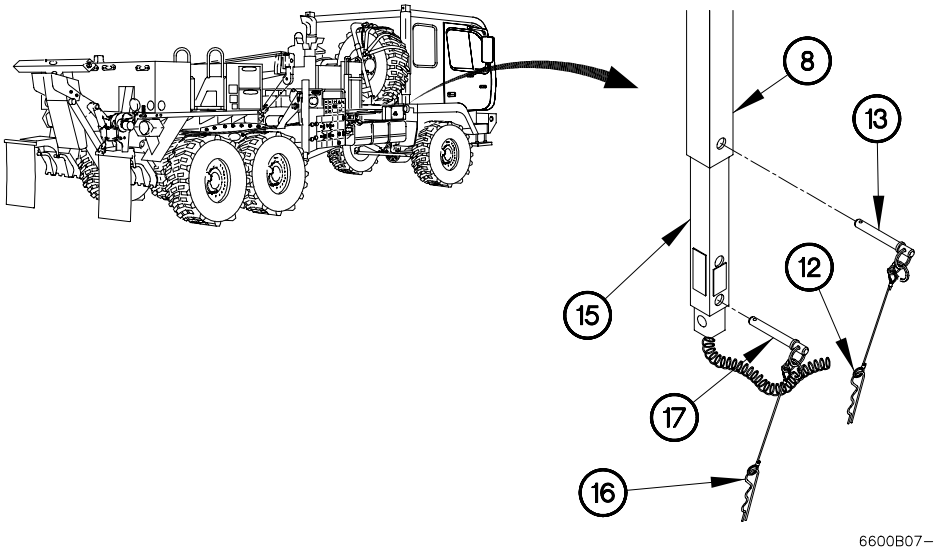
2. Lift up on handle (14) to raise inner tube (15) to mid-position.
3. Install pin (12) in mast (8).
4. Install clevis pin (12) in pin (13).



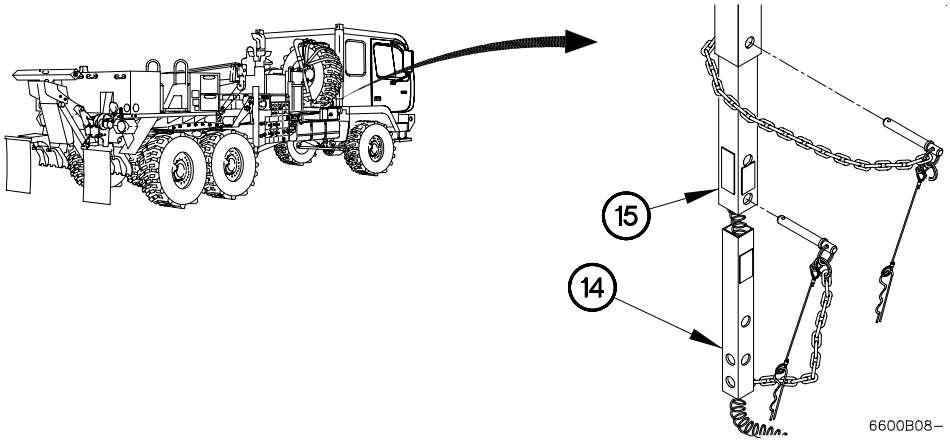
MBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued 0066 00

RAISE MAST (TO FULL HEIGHT) (M1089A1)

1. Remove clevis pin (12) and pin (13) from mast (8).
2. Remove clevis pin (16) and pin (17) from inner tube (15).



3. Remove handle (14) from inner tube (15).
4. Turn handle (14) one quarter turn in either direction.
5. Install handle (14) in inner tube (15).



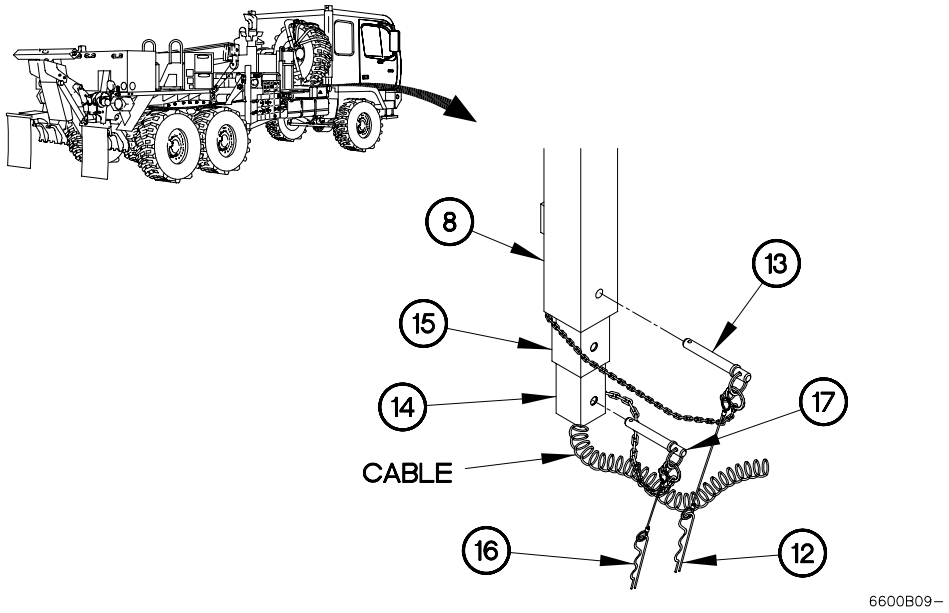
AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued

RAISE MAST (TO FULL HEIGHT) (M1089A1) - Continued

CAUTION

Ensure cable has enough slack after inner tube is raised to prevent cable from rubbing against mast. Failure to comply may result in damage to equipment.

6. Lift up on handle (14) to raise inner tube (15) to full up position.
7. Install pin (13) in mast (8).
8. Install clevis pin (12) in pin (13).
9. Install pin (17) in handle (14).
10. Install clevis pin (16) in pin (17).



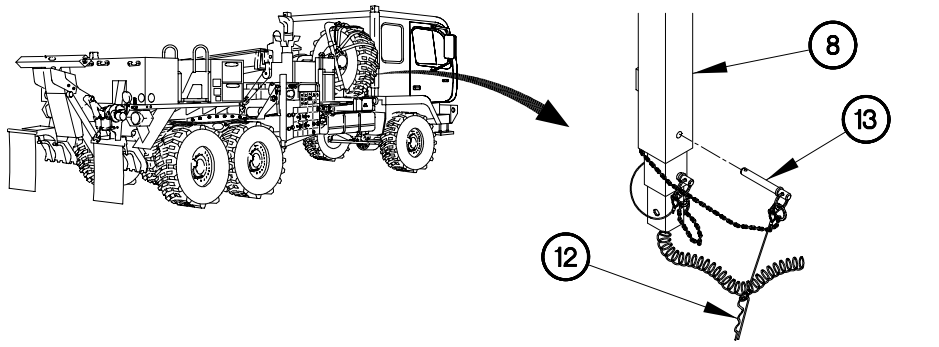
AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued 0066 00

LOWER MAST (FROM MID-POSITION) (M1089A1)

NOTE

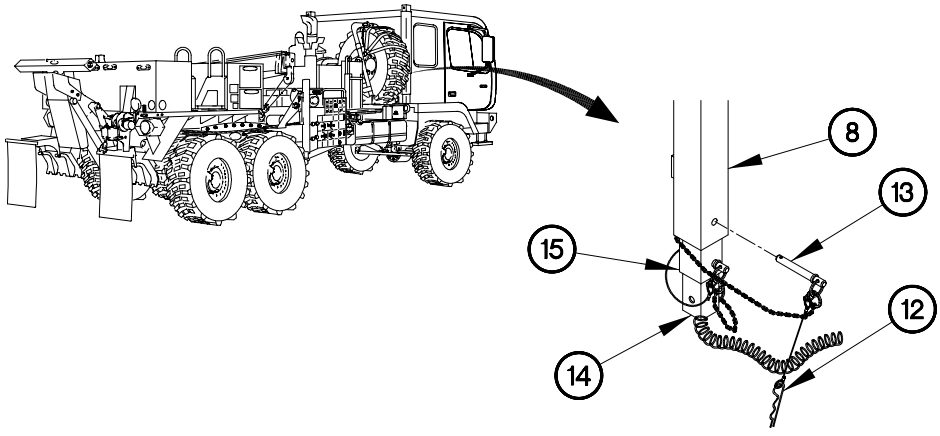
Left and right side masts are lowered the same way. Right side shown.

1. Remove clevis pin (12) and pin (13) from mast (8).



6600B10–

2. Lower inner tube (15) to down position with handle (14).
3. Install pin (13) in mast (8).
4. Install clevis pin (12) in pin (13).

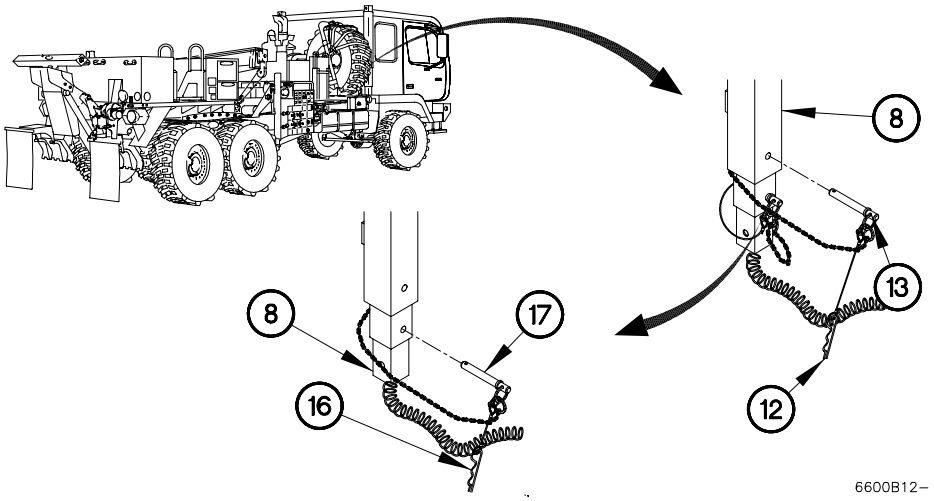


6600B11–

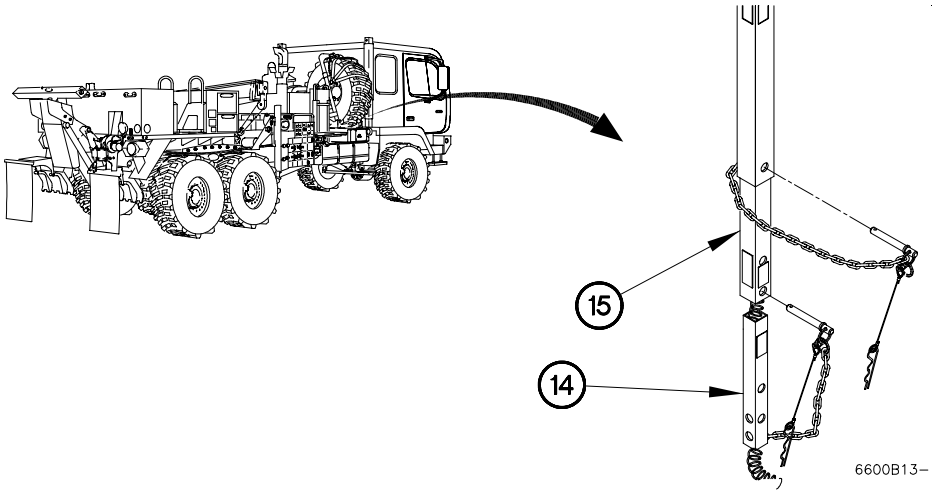
AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued 0066 00

LOWER MAST (FROM FULL HEIGHT) (M1089A1)

1. Remove clevis pin (16) and pin (17) from handle (14).
2. Remove clevis pin (12) and pin (13) from mast (8).



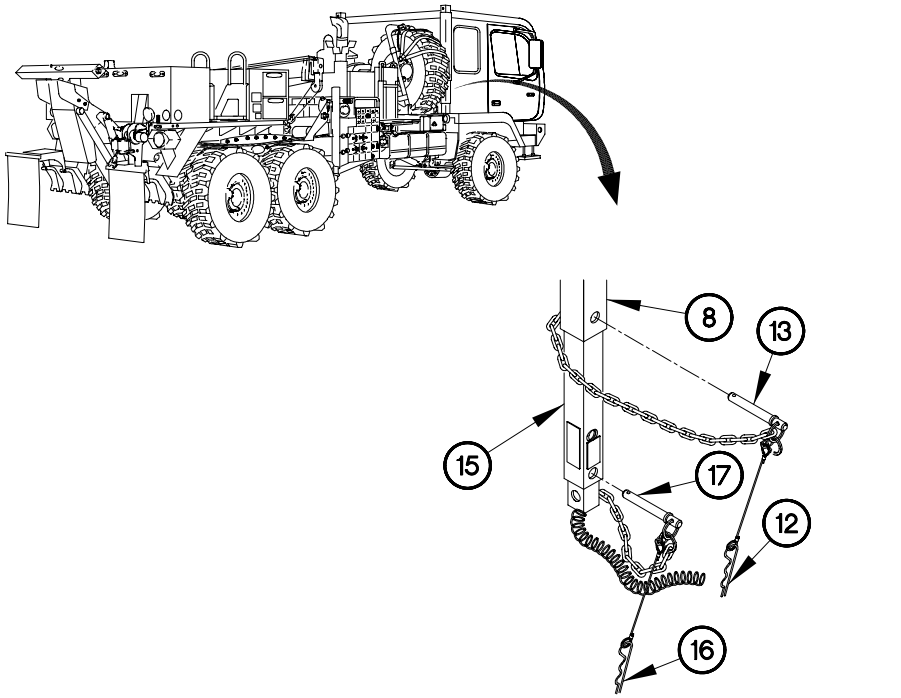
3. Lower handle (14) to full down.
4. Remove handle (14) from inner tube (15).
5. Turn handle (14) one quarter turn in either direction.
6. Install handle (14) in inner tube (15).



AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued 0066 00

LOWER MAST (FROM FULL HEIGHT) (M1089A1) - Continued

7. Install pin (17) in inner tube (15).
8. Install clevis pin (16) in pin (17).
9. Install pin (13) in mast (8).
10. Install clevis pin (12) in pin (13).



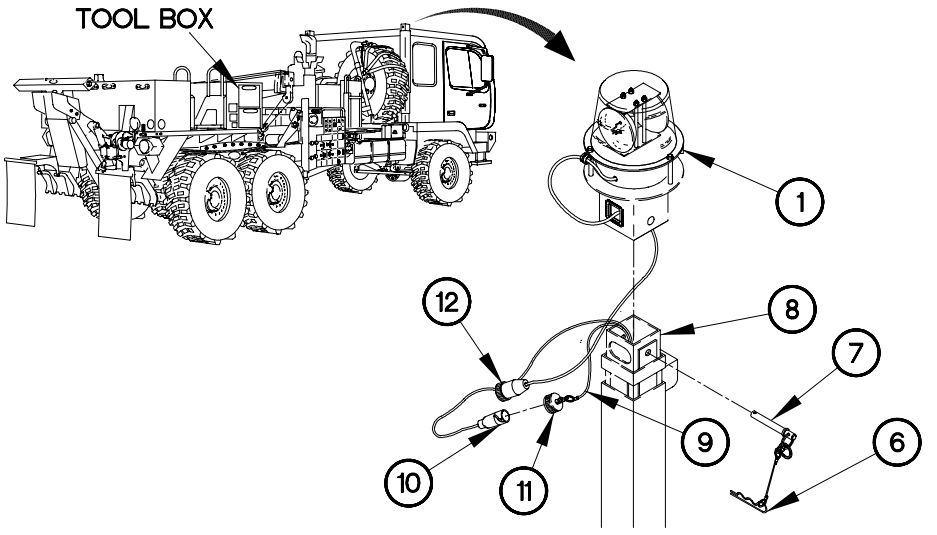
AMBER WARNING LIGHT KIT INSTALLATION/REMOVAL - Continued 0066 00

REMOVE AMBER WARNING LIGHT (M1089A1)

NOTE

Left and right side amber warning lights are removed the same way. Right side shown.

1. Remove clevis pin (6) and pin (7) from mast (8).
2. Lift amber warning light (1) from mast (8).
3. Disconnect connector J45 (10) from connector (12).
4. Install dust dustcap (11) on connector J45 (10).
5. Using lanyard (9), lower connector J45 (10) into mast (8).
6. Install pin (7) in mast (8).
7. Install clevis pin (6) in pin (7).
8. Place amber warning light (1) in tool box.



6600B15–

END OF OPERATING PROCEDURE

STARTING ON HILL OPERATION 0067 00

INITIAL SETUP:

Maintenance Level	Reference
Operator	WP 0018 00

GENERAL

This work package provides the data and procedures for safely starting the M1083A1 series vehicles on a hill.

VEHICLE OPERATION

1. Start engine (WP 0018 00).
2. Apply service brakes (WP 0018 00).
3. Select the desired gear (WP 0018 00).
4. Increase engine speed and slowly release service brakes.

END OF OPERATING PROCEDURE

TIRE CHAINS INSTALLATION/REMOVAL 0068 00

INITIAL SETUP:

Maintenance Level
Operator

Personnel Required
Two

Tools/Special Tools
Chain, Pneumatic Tire, Truck, Single Tire Type (WP 0113 00)

References
WP 0018 00

GENERAL

This work package provides the data and procedures for installing and removing the tire chains on the M1083A1 series vehicles. Items covered include Rear Axle Tire Chain Installation, Intermediate Axle Tire Chain Installation, Read Axle Tire Chain Removal, and Intermediate Axle Tire Chain Removal.

REAR AXLE TIRE CHAIN INSTALLATION

CAUTION

Tire chains must not be used when driving on hard surfaces where there is no wheel slippage. Failure to comply may result in damage to equipment.

When installing tire chains on vehicle rear wheels, ensure CTIS is in highway mode at all times and maximum speed is 10 mph (16 km/h). Failure to comply may result in damage to equipment.

NOTE

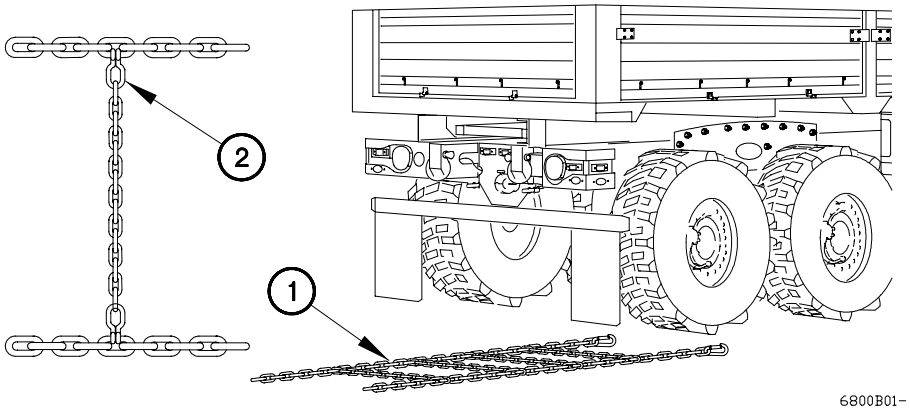
Maximum speed limit for vehicles with tire chains on highways is 10 mph (16 km/h). Maximum speed limit for vehicles with tire chains off highway is 15 mph (24 km/h).

1. Place tire chain (1) on ground with cross chain connecting links (2) facing down.

2. Start engine (WP 0018 00).

TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

REAR AXLE TIRE CHAIN INSTALLATION – Continued



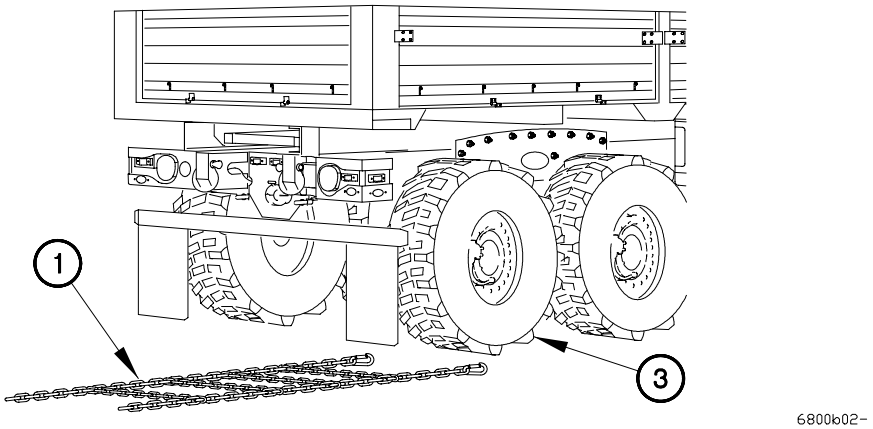
WARNING

Do not back up vehicle without an assistant. Operator has limited vision while backing vehicle. Failure to comply may result in serious injury or death to personnel or damage to equipment.

3. Back vehicle onto tire chain (1) so tire (3) is about one-third of the way upon tire chain.

4. Shut down engine (WP 0018 00).

5. Wrap tire chain (1) around tire (3).



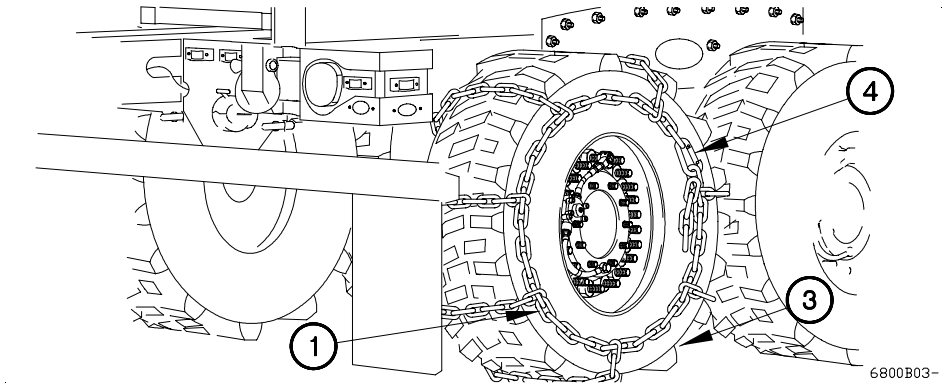
TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

REAR AXLE TIRE CHAIN INSTALLATION – Continued

NOTE

Inside and outside clamps are connected the same way. Outside clamp shown.

6. Connect inside and outside clamps (4) so tire chain (1) is tight around tire (3).

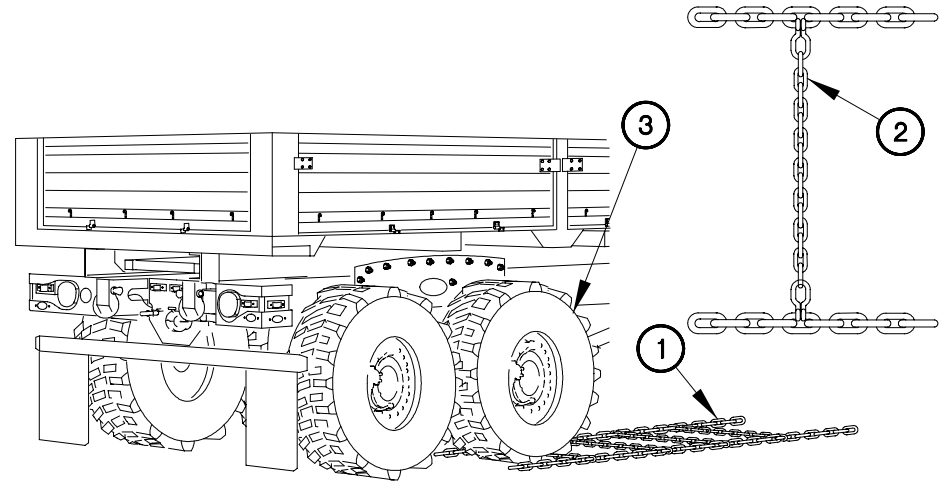


INTERMEDIATE AXLE TIRE CHAIN INSTALLATION

1. Place tire chain (1) on ground with cross chain connecting links (2) facing down.
2. Start engine (WP 0018 00).
3. Drive vehicle onto tire chain (1) so tire (3) is about one-third of the way upon tire chain.
4. Shut down engine (WP 0018 00).

TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

INTERMEDIATE AXLE TIRE CHAIN INSTALLATION – Continued



6800B04-

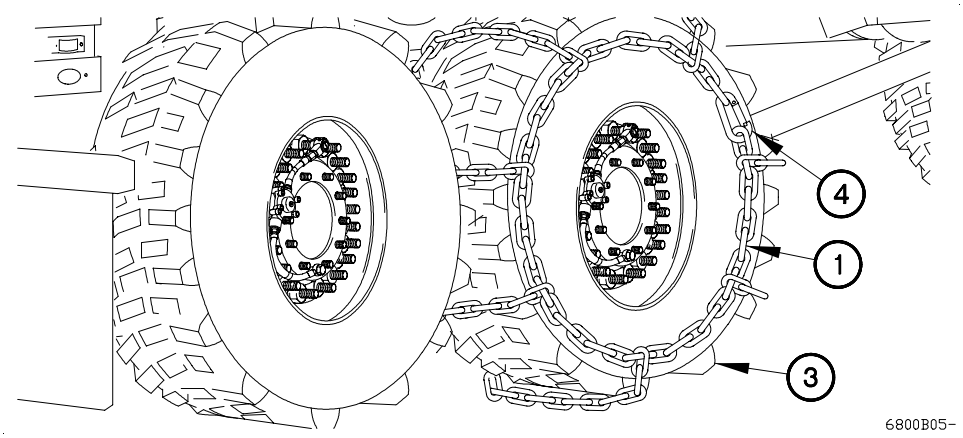
5. Wrap tire chain (1) around tire (3).

NOTE

Inside and outside clamps are connected the same way. Outside clamp shown.

6. Connect inside and outside clamps (4) so tire chain (1) is tight around tire (3).

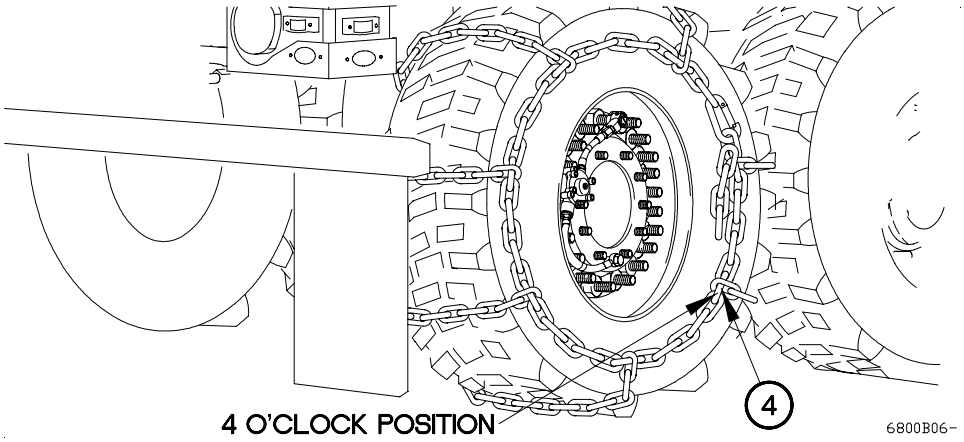
INTERMEDIATE AXLE TIRE CHAIN INSTALLATION – Continued



REAR AXLE TIRE CHAIN REMOVAL

1. Start engine (WP 0018 00).

2. Move vehicle until tire chain clamps (4) to be removed are at the 4 o'clock position.

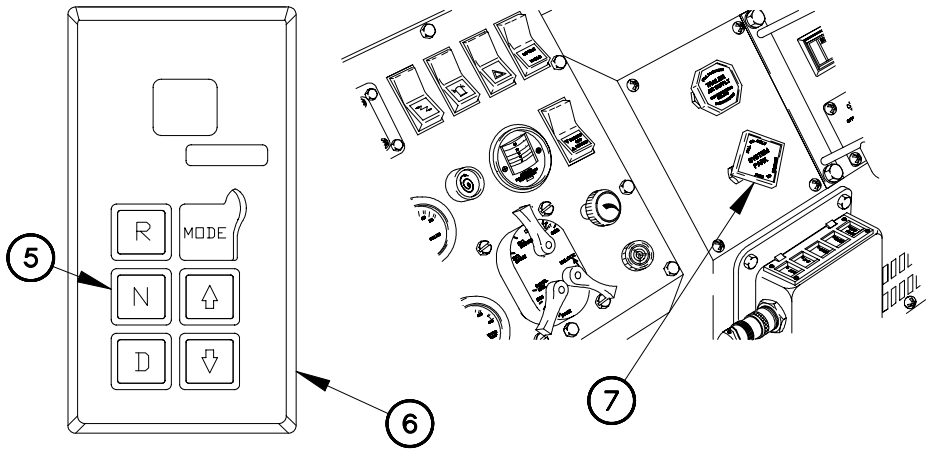


3. Press N (Neutral) button (5) on WTEC III TPSS (6).

4. Pull out SYSTEM PARK control (7).

TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

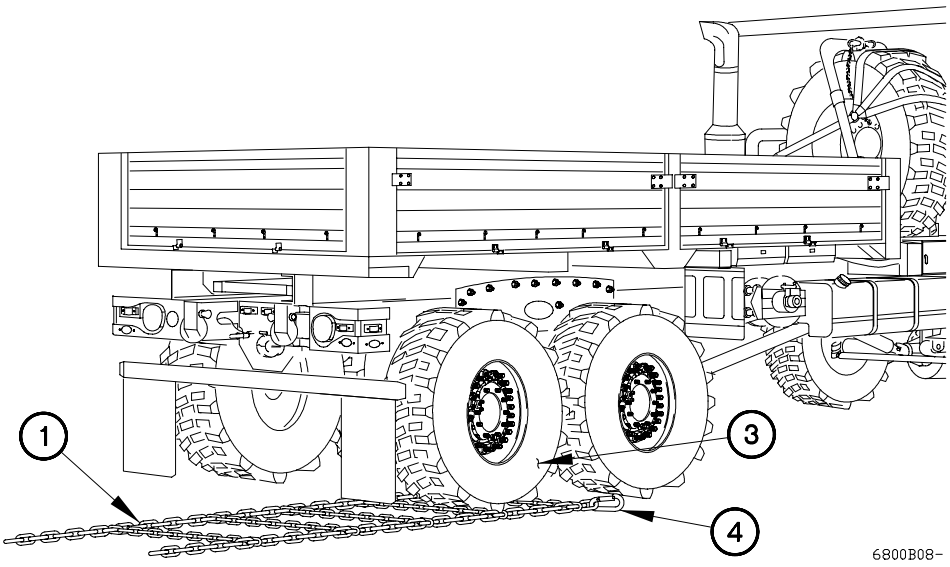
REAR AXLE TIRE CHAIN REMOVAL - Continued



6800B07-

5. Disconnect tire chain clamps (4) on tire chain (1).

6. Unwrap tire chain (1) from tire (3) and spread tire chain on ground.

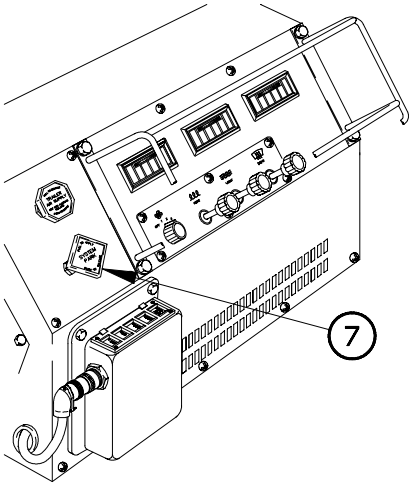


6800B08-

TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

REAR AXLE TIRE CHAIN REMOVAL - Continued

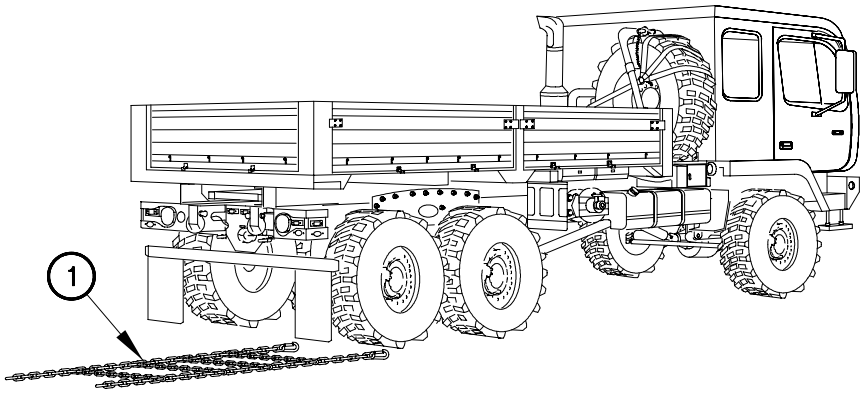
7. Push in SYSTEM PARK control (7).



6800B09-

8. Drive vehicle forward off tire chain (1).

9. Shut down engine (WP 0018 00).



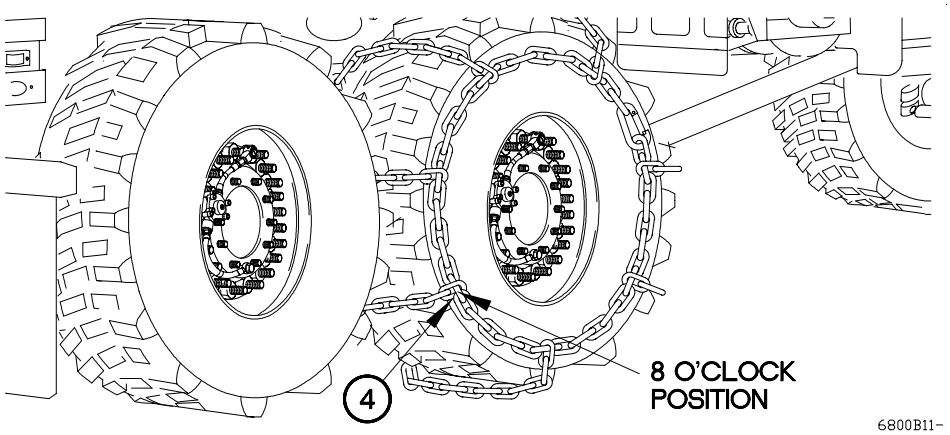
6800B10-

TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

INTERMEDIATE AXLE TIRE CHAIN REMOVAL

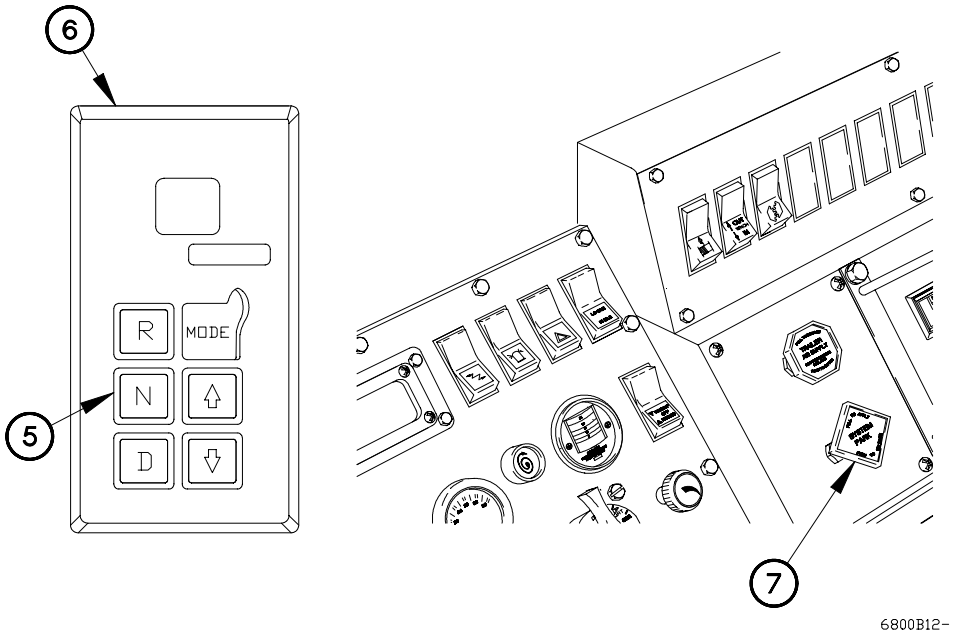
1. Start engine (WP 0018 00).

2. Move vehicle until tire chain clamps (4) to be removed are at the 8 o'clock position.



3. Press N (Neutral) button (5) on WTEC III TPSS (6).

4. Pull out SYSTEM PARK control (7).

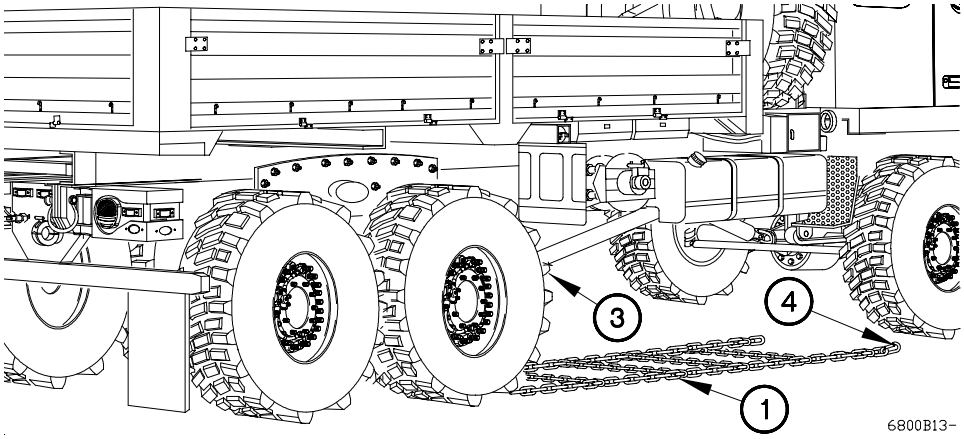


TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

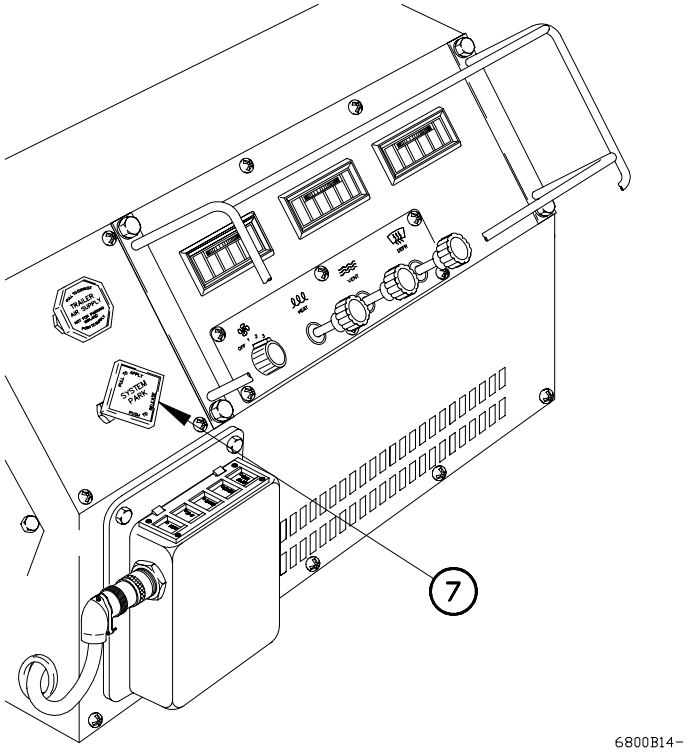
INTERMEDIATE AXLE TIRE CHAIN REMOVAL - Continued

5. Disconnect tire chain clamps (4) on tire chain (1).

6. Unwrap tire chain (1) from tire (3) and spread tire chain on ground.



7. Push in SYSTEM PARK control (7).



TIRE CHAINS INSTALLATION/REMOVAL - Continued 0068 00

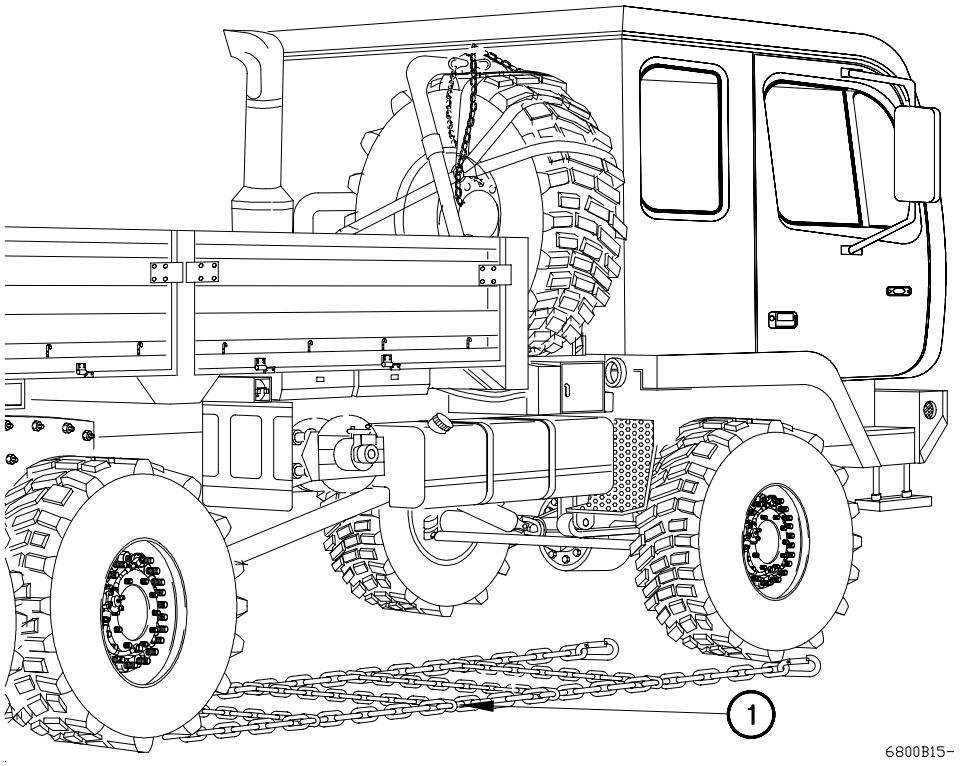
INTERMEDIATE AXLE TIRE CHAIN REMOVAL - Continued

WARNING

Do not back up vehicle without an assistant. Operator has limited vision while backing vehicle. Failure to comply may result in serious injury or death to personnel or damage to equipment.

8. Back vehicle off tire chain (1).

9. Shut down engine (WP 0018 00).



END OF OPERATING PROCEDURE

SNATCH BLOCK INSTALLATION/REMOVAL 0069 00

INITIAL SETUP:

Maintenance Level
Operator

References
FM 20-22
WP 0033 00
WP 0099 00

GENERAL

This work package provides the data and procedures for Installing The Winch Block On The 30K Winch Cable and Removing The Snatch Block From The 30K Winch Cable On The M1089A1 Wrecker.

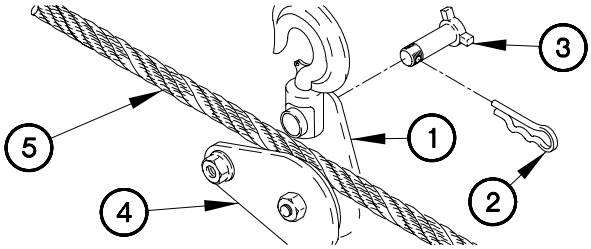
INSTALL SNATCH BLOCK ON 30K WINCH CABLE

1. Remove snatch block (1) from tool box.
2. Remove clevis pin (2) from screw (3).
3. Loosen screw (3) in snatch block (1).
4. Move plate (4) to side to open snatch block (1).
5. Place cable (5) in snatch block (1).
6. Close plate (4) and align holes.
7. Tighten screw (3) in snatch block (1).
8. Install clevis pin (2) in screw (3).

CAUTION

Do not exceed a 30-ton pull on snatch block. Failure to comply may result in damage to equipment.

9. Attach snatch block (1) to disabled vehicle (FM 20-22).



6900B01–

SNATCH BLOCK INSTALLATION/REMOVAL - Continued 0069 00

INSTALL SNATCH BLOCK ON 30K WINCH CABLE - Continued

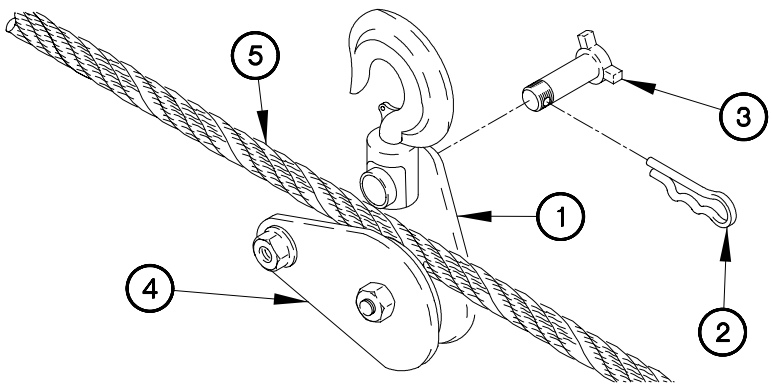
10. Continue with 30K Winch Operation (WP 0033 00).

REMOVE SNATCH BLOCK FROM 30K MAIN WINCH CABLE

CAUTION

Ensure that there is enough slack in cable before removing cable from snatch block. Failure to comply may result in damage to equipment.

1. Remove clevis pin (2) from screw (3).
2. Loosen screw (3) in snatch block (1).
3. Move plate (4) to side to open snatch block (1).
4. Remove cable (5) from snatch block (1).
5. Close plate (4) and align holes.
6. Tighten screw (3) in snatch block (1).
7. Remove snatch block (1) from mired vehicle (FM 20-22)
8. Clean and inspect snatch block (1) for damage (FM 20-22).
9. Lubricate snatch block (1) (WP 0099 00, Table 17, Item 1)
10. Stow snatch block (1) in tool box.
11. Continue with 30K winch operation (WP 0033 00).



6900B02–

END OF OPERATING PROCEDURE

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M1089A1 Right 30K Winch Does Not Operate	0093 00
M1089A1 Stifflegs/Left 30K Winch/15K Self-Recovery Winch Do Not Operate	0093 00
M1089A1 Stinger/Telescopic Lift Cylinders/ Fold Cylinder/Right 30K Winch Do Not Operate	0093 00
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Remove Snatch Block From 30K Winch Cable	0069 00
Winch Left or Right Freespool Function Does Not Operate From Wrecker Control Panel	0076 00
Winch Left or Right Speed Function Does Not Operate From WRECKER CONTROL PANEL	0076 00
Winch Operation	0033 00
Winch Operation With Load	0033 00
Winch Operation Without Load	0033 00
Wrecker Left or Right 30K Winch Cable Drum Tensioner Does Not Operate	0097 00
Wrecker Left or Right 30K Winch Freespool Does Not Operate	0097-00

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Preparation for Internal Air Transport, Highway or Rail Shipment 0055 00
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Transport System Troubleshooting 0091 00
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- Rear Axle Tire Chain Installation 0068 00
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Subject — WP Sequence No.

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Subject WP Sequence No.

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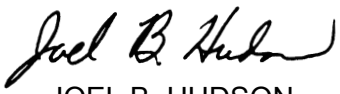
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By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0411101

By Order of the Secretary of the Air Force:

RONALD R. FOGLEMAN
General, United States Air Force
Chief of Staff

Official:

HENRY VICCELLIO, JR.
General, United States Air Force
Commander, Air Force Materiel Command

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 381092, requirements for TB 9-2320-392-10-1.

METRIC CONVERSION CHART

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches Square	Centimeters	6.451
Square Feet Square	Meters	0.093
Square Yards Square	Meters	0.836
Square Miles Square	Kilometers	2.590
Acres Square	Hectometers	0.405
Cubic Feet Cubic	Meters	0.028
Cubic Yards Cubic	Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.35
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Centimeters	Cubic Inch	0.060
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

TEMPERATURE CONVERSIONS

5/9 (°F-32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 C° + 32 = F°