TM 9-2320-211-20-3-2
T.O. 36A12-1C-422-1-3

TECHNICAL MANUAL

VOLUME 3 OF 3

PART 2 OF 2

MAINTENANCE

ORGANIZATIONAL LEVEL

5-TON, 6X6, M39 SERIES TRUCKS (MULTIFUEL)

TRUCK, CHASSIS: M40A2C, M61A2, M63A2; TRUCK, CARGO: M54A2, M54A2C, M55A2; TRUCK, DUMP: M51A2; TRUCK, TRACTOR: M52A2; TRUCK, WRECKER, MEDIUM: M543A2

NOTE:

THE STYLE OF THIS TM IS EXPERIMENTAL. IT IS BEING **TRIED** BY THE ARMY ONLY ON A LIMITED BASIS

Chapter 13
Wheel System

Chapter 14
Steering System

Chapter 15
Frame and Towing Attachments

Chapter 16
Springs and Shock Absorbers

Chapter 17
Body, Cab, Hood, and Hull

Chapter 18
Winch, Hoist and Crane

Chapter 19
Body Accessory Items

Chapter 20
Nonelectrical Gages

Chapter 21
Material Used In Conjunction With Major Items

Appendix A
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DEPARTMENTS OF THE ARMY AND THE AIR FORCE

DECEMBER 1980

WARNING

EXHAUST GASES CAN BE DEADLY

Exposure to exhaust gases produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, and coma. Permanent brain damage or death can result from severe exposure.

Carbon monoxide occurs in the exhaust fumes of fuel burning heaters and internal combustion engines, and becomes dangerously concentrated under conditions of inadequate ventilation. The following precautions must be observed to insure the safety of personnel whenever fuel burning heater(s) or engine of any vehicle is operated for maintenance purposes or tactical use.

Do not operate heater or engine of vehicle in an enclosed area unless it is adequately ventilated.

Do not idle engine for long periods wit bout maintaining adequate ventilation in personnel compartments.

Do not drive any vehicle with inspection plates or cover plates removed unless necessary for maintenance purposes.

Be alert at all times during vehicle operation for exhaust odors and exposure symptoms. If either are present, immediately ventilate personnel compartments. If symptoms persist, remove affected personnel from vehicle and treat as follows: expose to fresh air; keep warm; do not permit physical exercise; if necessary, administer artificial respiration.

If exposed, seek prompt medical attention for possible delayed onset of acute lung congestion. Administer oxygen if available.

The best defense against exhaust gas poisoning is adequate ventilation.

WARNING

Serious or fatal injury to personnel may result
if the following instructions are not complied with.

Do not use a wire brush or compressed air to clean face and brake drum. There may be asbestos dust on the drum which can be dangerous to your health if you breathe it in.

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a, fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

Eye shields must be worn when using compressed air. Eye injury can occur if eye shields are not used.

Do not dry wheel bearings with compressed air. Spinning bearings may explode and cause serious injury to personnel.

Do not work on tire until all the air is out of it. Stand clear of retaining ring to avoid injury if the ring should fly off.

WARNING - Cont

Be careful when inflating tires. Remounted tires should always be inflated in a safety cage. If a safety cage is not available, turn tire and rim over with outer hub-side down.

Leave transmission jack in place under mounting bracket for support. Failure to do this may let mounting bracket fall, causing injury to personnel and damage to equipment.

Keep hands away from wheels when jacking up truck. Wheels may turn as they clear the ground. Personnel can be injured.

Always wear protective gloves when handling winch cable. Do not let winch cable slip through hands. Rusty or broken wires can cause serious injury.

Unlock cab door assembly carefully. It has been freed and may fall, causing injury to personnel.

Always use hand THROTTLE to control engine speed when operating winch. Avoid sudden changes in speed or high speed. Rough, jerky operation may cause broken shear pins and snapped cables, damage to truck or injury to personnel may result.

Rear winch assembly is heavy. Rig hoist chain on rear winch assembly so that it does not slide. Sliding of rear winch assembly could cause serious injury to personnel and damage to equipment.

Do not work on hot hydraulic system. Hot hydraulic oil can burn personnel.

Never work under a raised dump body unless safety hoist braces are in position. Dump body could drop down, causing death or injury to personnel working under it.

Hold lower boom roller assembly when taking out cap screws. Boom roller assembly is heavy. Dropping it could result in injury to personnel and damage to equipment.

Smoking, sparks or open flame are not allowed within 50 feet of work area when working on fuel system components.

Do not let tool touch battery and truck. This will cause a direct short, arcing, tool will heat to red hot, and battery may explode. This can cause serious injury to personnel and damage to equipment.

***TM 9-2320-211-20-3-2**

T.O. 36A12-1C-422-1-3

TECHNICAL MANUAL
NO. 9-2320-211-20-3-2
TECHNICAL ORDER
NO. 36A12-1C-422-1-3

DEPARTMENTS OF THE ARMY
AND
THE AIR FORCE
WASHINGTON, DC, 10 December 1980

TECHNICAL MANUAL

VOLUME 3 OF 3

PART 2 OF 2

MAINTENANCE

ORGANIZATIONAL LEVEL

5-TON, 6X6, M39 SERIES TRUCKS (MULTIFUEL)

Model		NSN without Winch	NSN with Winch
Chassis	M40A2C	2320-00-969-4114	
	M61A2	2320-00-055-9264	2320-00-965-0321
	M63A2	2320-00-226-6251	2320-00-285-3757
Truck, Cargo	M54A2	2320-00-055-9266	2320-00-055-9265
	M54A2C	2320-00-926-0874	2320-00-926-0874
	M55A2	2320-00-073-8476	2320-00-055-9259
Truck, Dump	M51A2	2320-00-055-9262	2320-00-055-9263
Truck, Tractor	M52A2	2320-00-055-9260	2320-00-055-9261
Truck, Wrecker, Medium	M543A2		2320-00-055-9258

Current as of 25 Jul 80.

*This manual together with TM 9-2320-211-20-1, 10 December 1980; TM 9-2320-211-20-2-1, 10 December 1980; TM 9-2320-211-20-2-2, 10 December 1980 and TM 9-2320-211-20-3-1, 10 December 1980 supersedes so much of TM 9-2320-211-20, 1 June 1973 as pertains to multifuel vehicles including all changes.

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedure, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Tank-Automotive Command, ATTN: DRSTA-MB, Warren, Michigan 48090. A reply will be furnished to you.

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CHAPTER 13

WHEEL SYSTEM GROUP MAINTENANCE

Section I. SCOPE

13-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for front wheel assembly, rear wheel assembly, and tires for which there are authorized corrective maintenance tasks at the organizational maintenance level.

13-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. FRONT WHEEL ASSEMBLY

13-3. FRONT WHEEL AND BRAKE DRUM ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS:
- Wheel bearing nut wrench, pn 7076869
- 3/4-inch socket wrench
- 10-inch socket handle
- Torque wrench, 150 pound-feet capacity
- Portable bearing lubricator, NSN 4930-00-704-1852
- Hand grease gun, NSN 4930-00-253-2478
- Wheel lift truck

SUPPLIES:
- Hub and brake drum drive flange gasket
- Artillery and automotive grease, type GAA MIL-G-10924
- Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked on level ground, engine off, handbrake set.

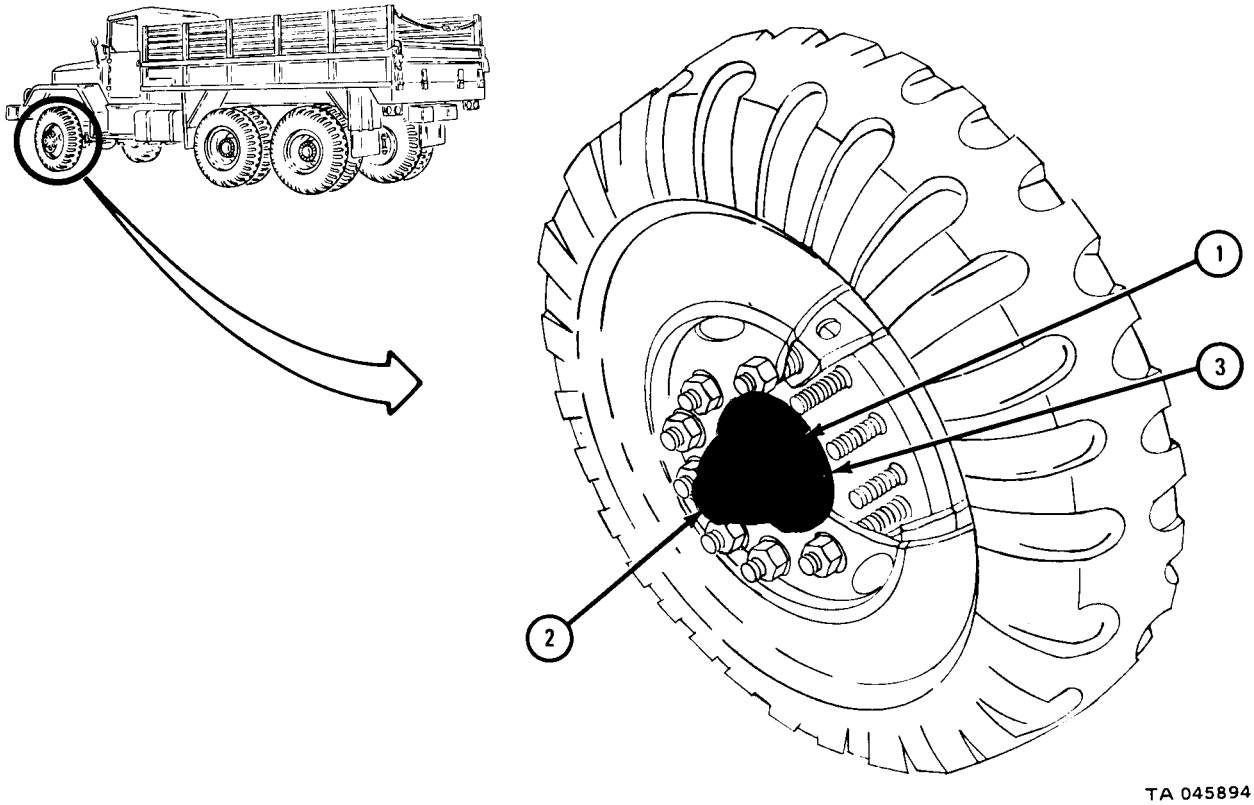
a. Preliminary Procedure. Jack up front wheel. Refer to part 1, para 10-3.

b. Removal.

FRAME 1

1. Using 10-inch socket handle with 3/4-inch socket wrench, unscrew and take off 10 capscrews and lockwashers (1), flange (2), and gasket (3). Throw away gasket.

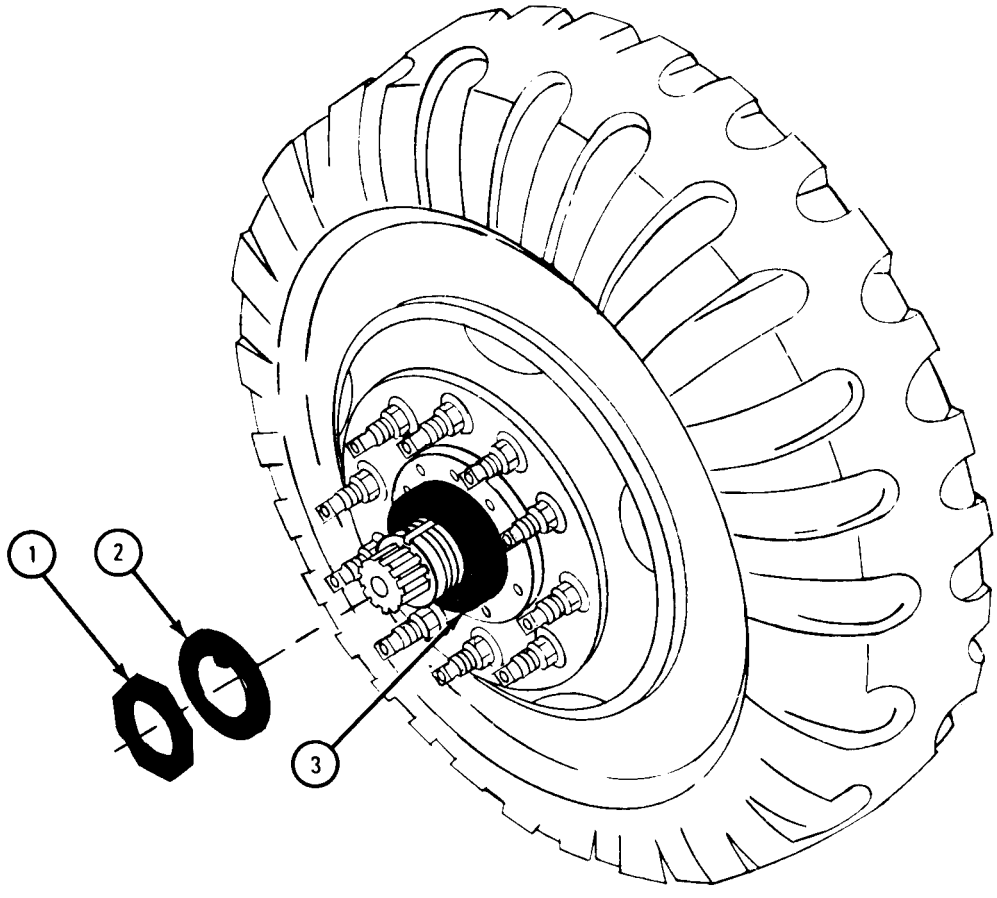
GO TO FRAME 2



FRAME 2

1. Using wheel bearing nut wrench with socket handle, unscrew and take off locknut (1). Take off adjusting nut lockwasher (2).
2. Using wheel bearing nut wrench with socket handle, unscrew and take off adjusting nut (3).

GO TO FRAME 3

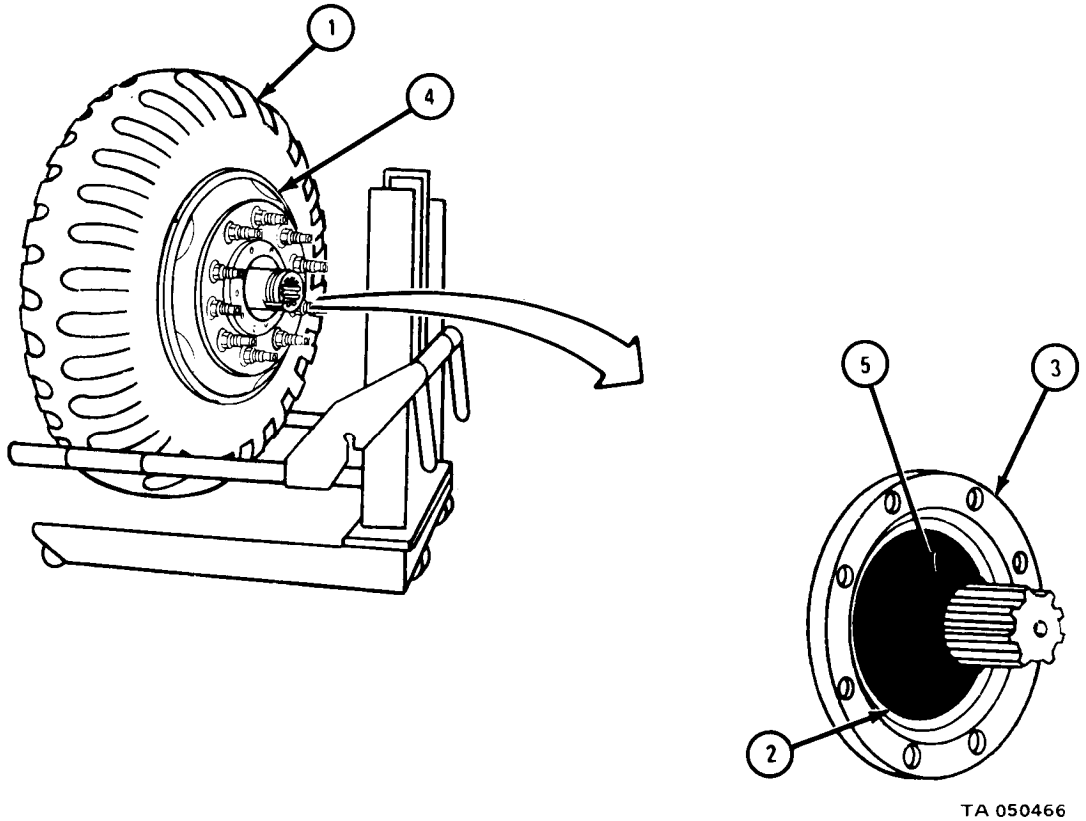


TA 050465

FRAME 3

1. Put wheel lift truck under front tire (1) as shown.
2. Jack up wheel lift truck until lift arms just touch tire (1).
3. Shake top of tire (1) until outer wheel bearing cone (2) moves out of hub (3). Take off outer wheel bearing cone.
4. Level lift arms on wheel lift truck until wheel and brake drum assembly (4) can be pulled straight off spindle (5).
5. Pull wheel lift truck and wheel and brake drum assembly (4) away from truck.

END OF TASK



TA 050466

c. Replacement.

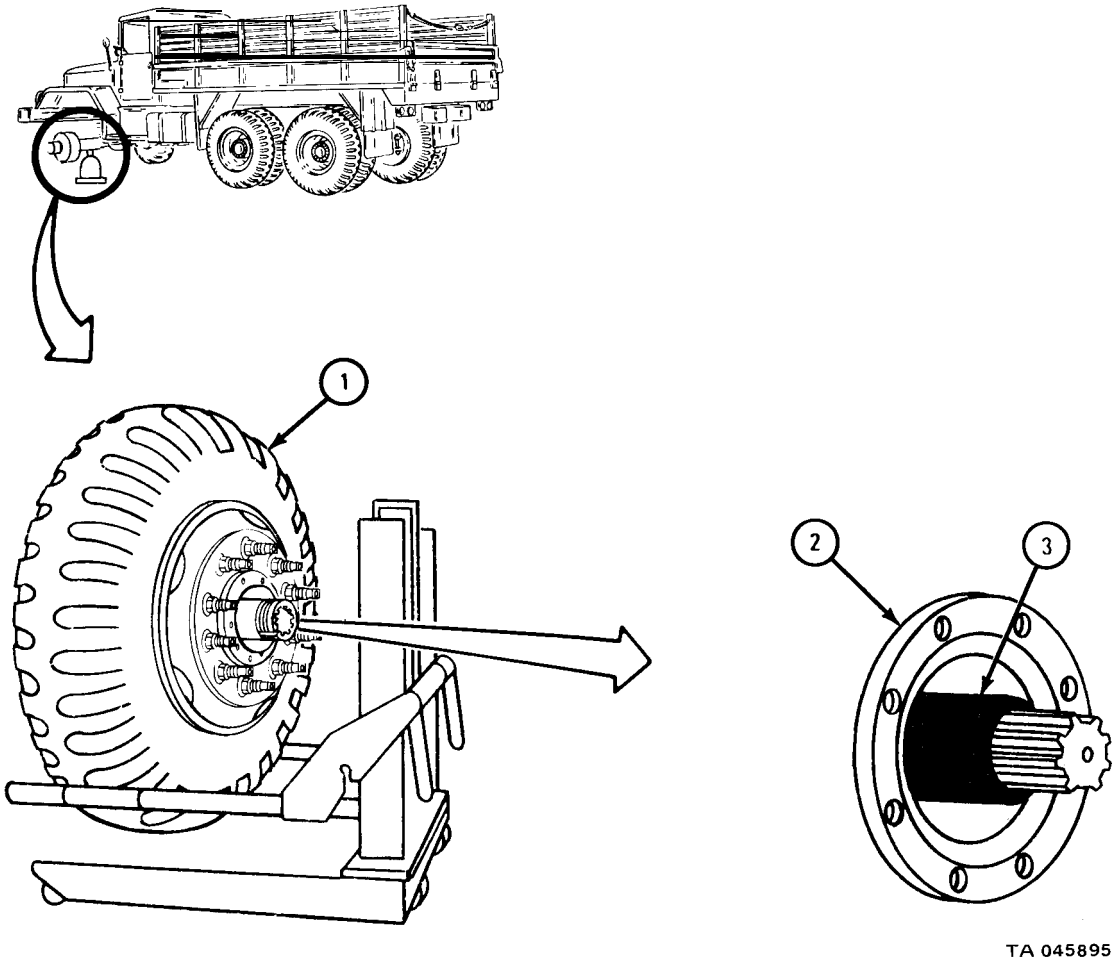
FRAME 1

CAUTION

Do not slide lip of seal over threaded spindle. Seal can be damaged.

1. Push wheel lift truck and wheel and brake drum assembly (1) toward truck so that hub (2) goes on spindle (3) as shown.

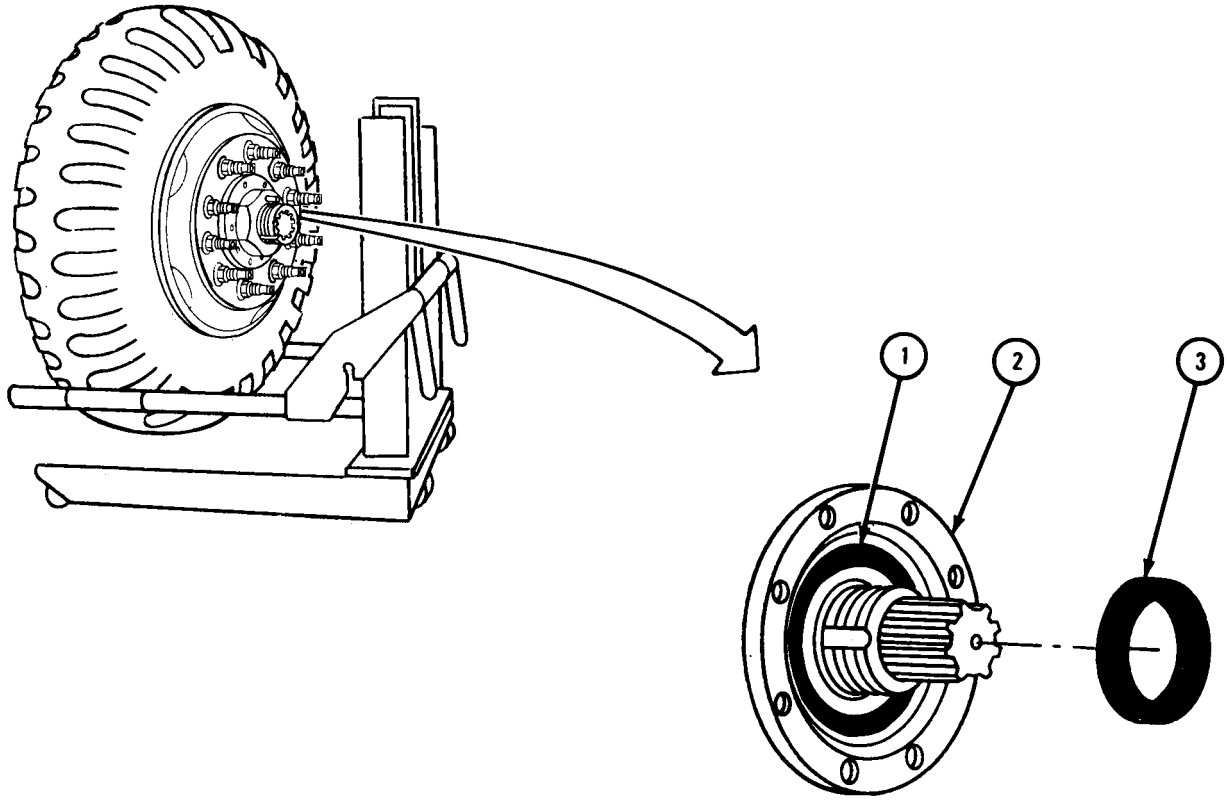
GO TO FRAME 2



FRAME 2

1. Using portable bearing lubricator and hand grease gun, grease outer wheel bearing cone (1).
2. Put outer wheel bearing cone (1) in hub (2) as shown.
3. Using wheel bearing nut wrench and socket handle, screw on adjusting nut (3).
4. Lower wheel lift truck and take it away from truck.

GO TO FRAME 3

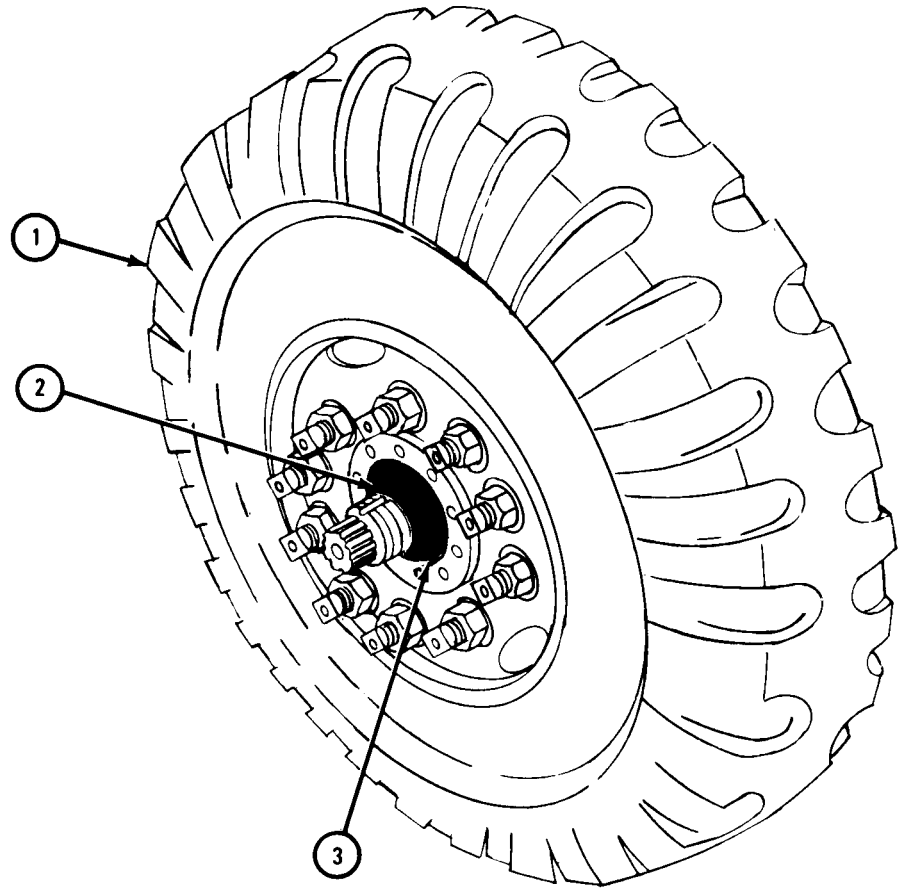


TA 050468

FRAME 3

1. Check brake adjustment. Refer to Part 1, para 12-8.
2. While turning wheel (1) and using wheel bearing nut wrench with socket handle, tighten adjusting nut (2) until wheel binds. Then back off adjusting nut 1/8-turn.
3. Put one hand on bottom and one hand on top of wheel (1). Push with one hand and pull with the other hand. If wheel bearing cone (3) is adjusted right, there will be very little wobble.

GO TO FRAME 4

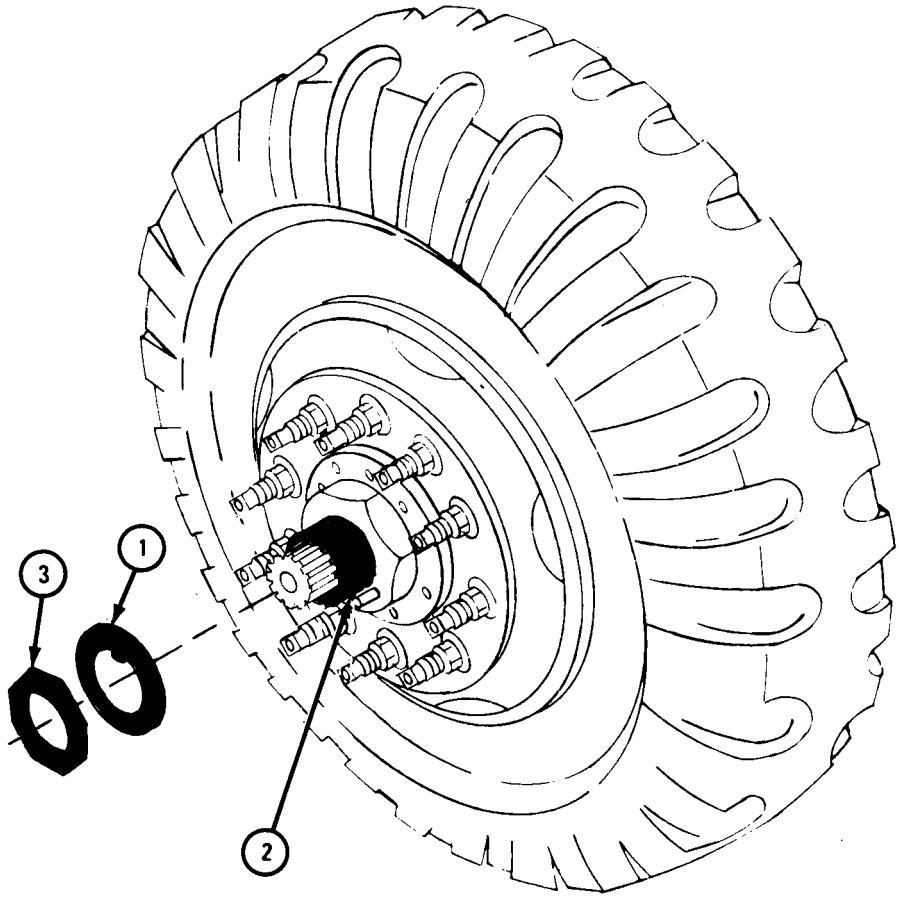


TA 050469

FRAME 4

1. Put adjusting nut lockwasher (1) on spindle (2) so that tab on lockwasher fits in keyway in spindle.
2. Using wheel bearing nut wrench with socket handle, screw on and tighten locknut (3).

GO TO FRAME 5



TA 050470

FRAME 5

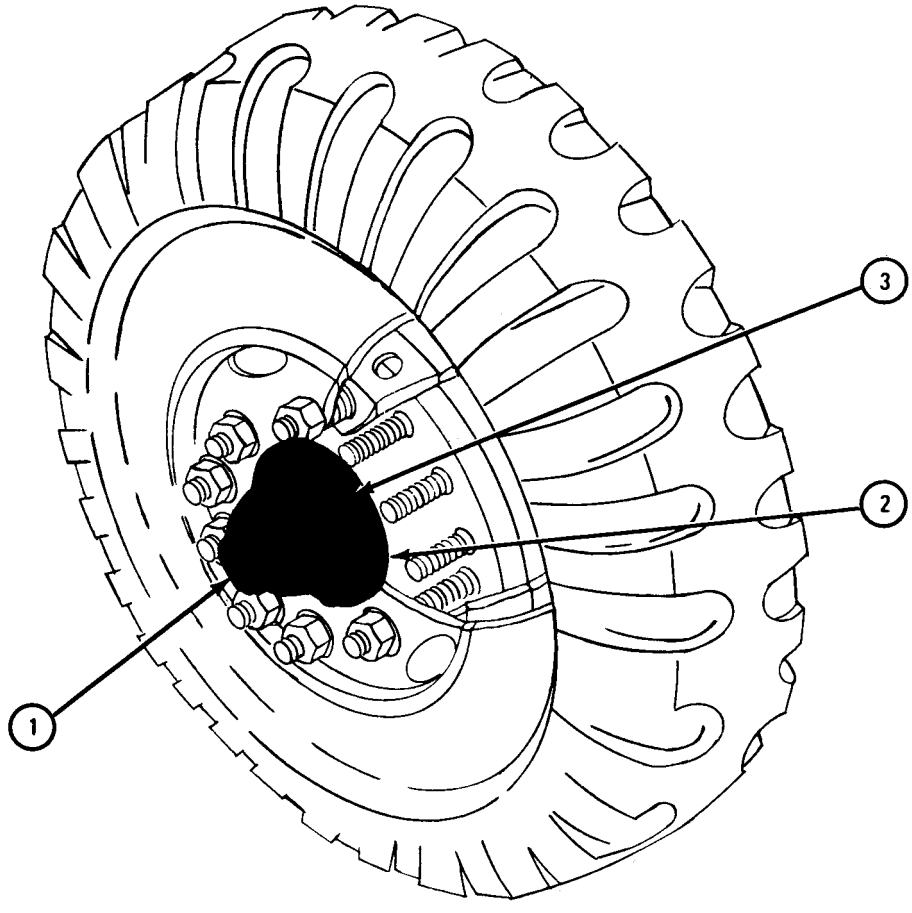
1. Hold flange (1) and gasket (2) in place. Using 3/4-inch socket wrench and socket handle, screw in 10 lockwashers and capscrews (3).
2. Using torque wrench, tighten capscrews (3) to 81 to 104 pound-feet.

NOTE

Follow-on Maintenance Action Required:

Jack down truck. Refer to Part 1, para 10-3.

END OF TASK



TA 048433

13-4. FRONT HUB AND BRAKE DRUM ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS : 3/4-inch socket wrench
Breaker bar
Wheel bearing nut wrench, pn 7076869
Torque wrench, 150 pound-feet capacity
Portable bearing lubricator, NSN 4930-00-704-1852
Hand grease gun, NSN 4930-00-253-2478

SUPPLIES : Hub and drum drive flange gasket
Grease, solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Artillery and automotive grease, type GAA, MIL-G-10924

PERSONNEL: Two

EQUIPMENT CONDITION : Truck parked on level ground, engine off, handbrake set.

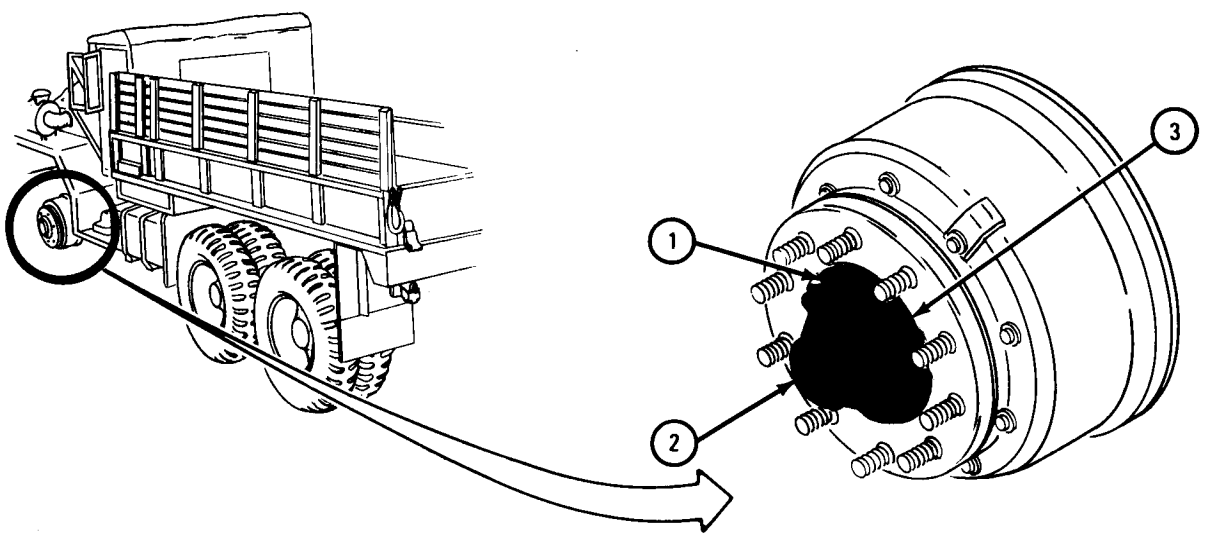
a. Preliminary Procedure. Jack up truck and remove front wheel. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 3/4-inch wrench, and breaker bar, unscrew and take off 10 cap screws and 10 lockwashers (1). Hold flange (2) and gasket (3) to keep them from falling.
2. Take off flange (2) and gasket (3). Throw gasket away.

GO TO FRAME 2



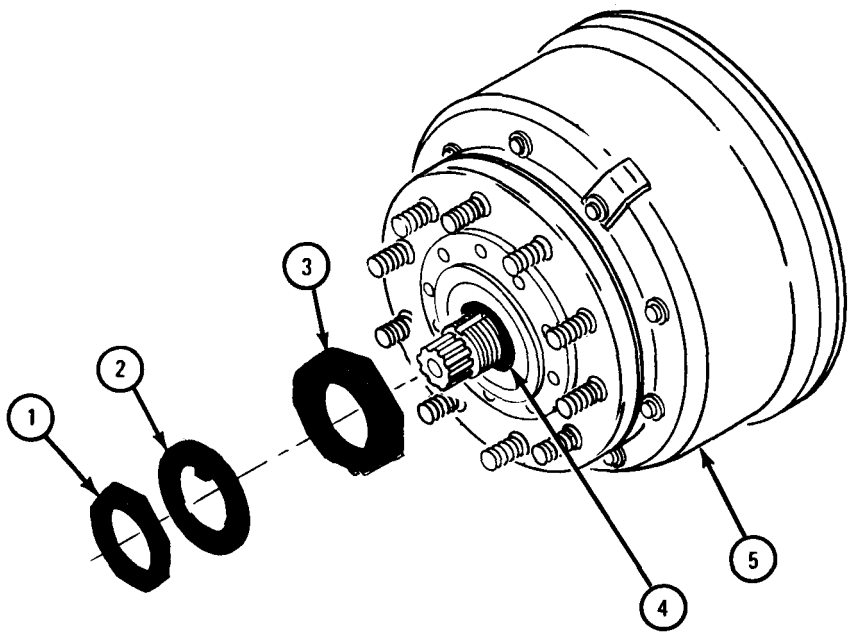
FRAME 2

1. Using wheel bearing nut wrench, unscrew and take off locknut (1) and washer (2).
2. Using wheel bearing nut wrench, unscrew and take off adjusting nut (3).
3. Take outer bearing cone (4) out of hub and brake drum assembly (5).

Soldiers A and B

4. Take off hub and brake drum assembly (5).

END OF TASK



TA 048427

c. Cleaning and Inspection. Clean and inspect wheel bearing cones and cups. Refer to Part 1, para 1-3.

d. Replacement.

FRAME 1

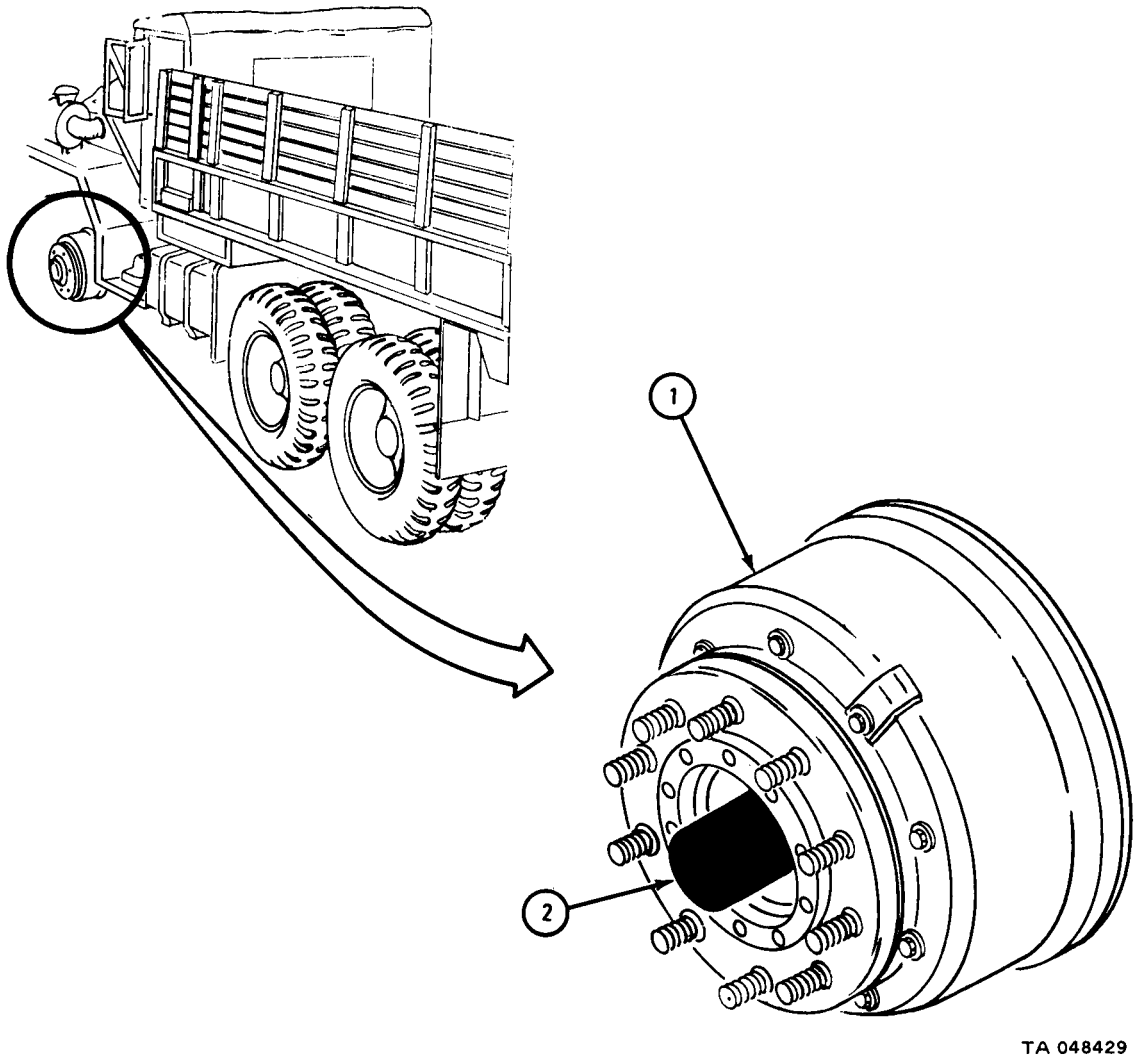
CAUTION

Do not let seal slide on threads as this can damage seal.

Soldiers A and B

1. Put hub and brake drum assembly (1) on spindle (2).

GO TO FRAME 2



FRAME 2

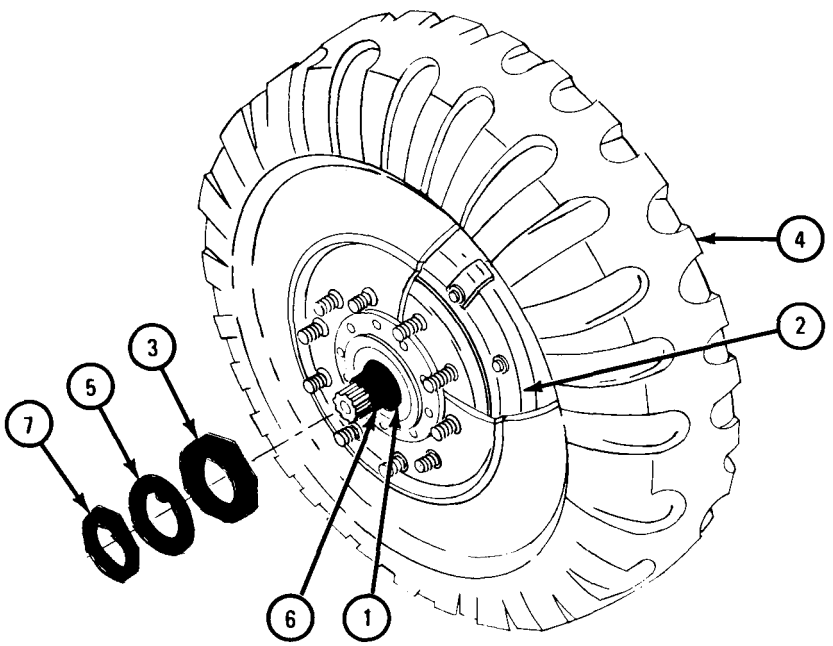
1. Using portable bearing lubricator and hand grease gun, grease outer bearing cone (1).
2. Put outer bearing cone (1) in hub and drum assembly (2).
3. Using wheel bearing nut wrench, screw on adjusting nut (3).
4. Replace front wheel but do not jack down truck. Refer to TM 9-2320-211-10.
5. While turning wheel (4), using wheel bearing nut wrench, tighten adjusting nut (3) until wheel binds.
6. Using wheel bearing nut wrench, back off adjusting nut (3) 1/8 turn.
7. Put one hand on bottom and one hand on top of wheel (4). Push with one hand and pull with other hand.

NOTE

If bearings are adjusted correctly, there will be hardly any play or wobble.

8. Put on washer (5) so that tab on washer fits in keyway in spindle (6).
9. Using wheel bearing nut wrench, screw on and tighten locknut (7).

GO TO FRAME 3



TA 048430

FRAME 3

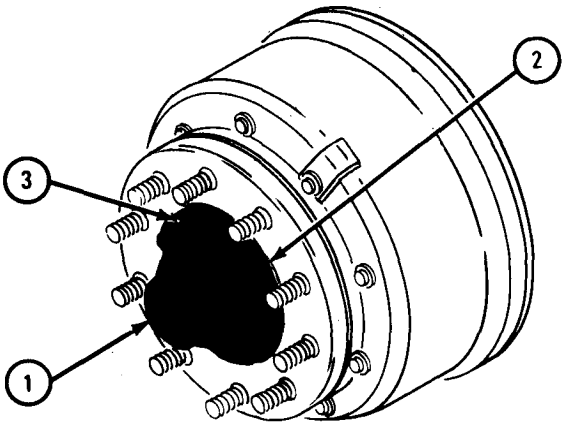
1. Hold flange (1) and gasket (2) in place. Using 3/4-inch wrench, screw on 10 lockwashers and 10 cap screws (3).
2. Using jack, lower wheels to ground.
3. Using torque wrench and 3/4-inch socket wrench, tighten cap screws (3) to 81 to 104 pound-feet.

NOTE

Follow-on Maintenance Action Required:

Check brake adjustment. Refer to Part 1, para 12-8 and 12-9.

END OF TASK



TA 048433

13-5. FRONT AND REAR HUB AND BRAKE DRUM ASSEMBLY REPAIR.

TOOLS : 11/16-inch wrench
Brass Hammer
Wood block, 4 X 4 X 18 inches (2)
Arbor press
Ballpeen hammer
Brass drift
Stiff brush

SUPPLIES : None

PERSONNEL : Two

EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Remove hub and brake drum assembly. For front hub and brake drum assembly, refer to para 13-4. For rear hub and brake drum assembly, refer to para 13-10.

b. Front Hub and Brake Drum.

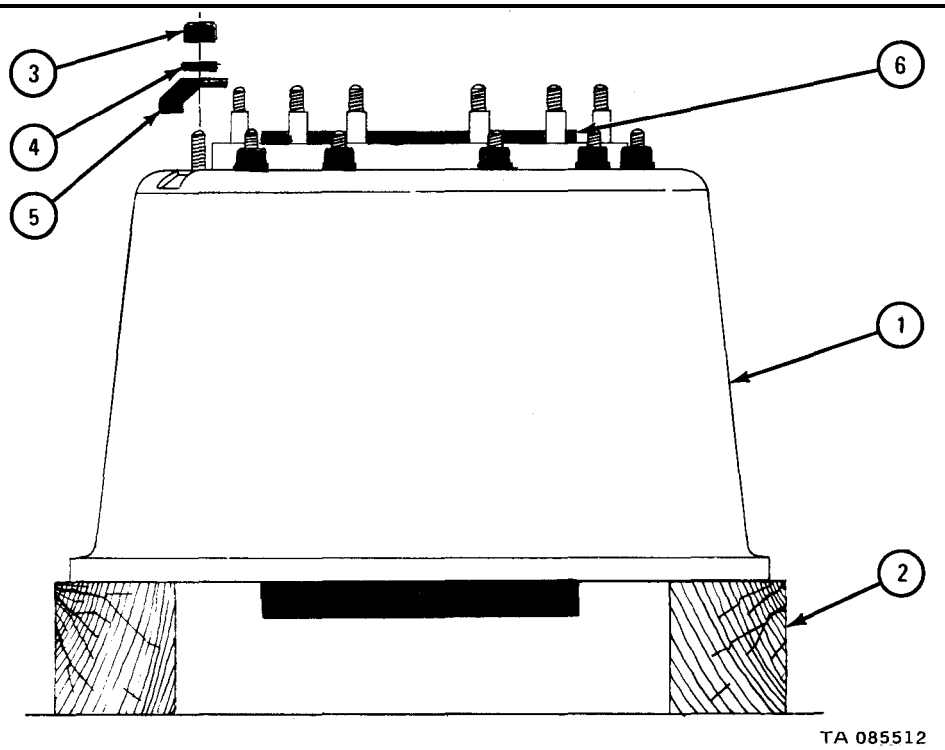
(1) Disassembly.

FRAME 1

Soldiers A and B

1. Put drum (1) on top of two wood blocks (2) as shown.
2. Using 11/16-inch wrench, unscrew and take off 10 nuts (3) and washers (4). Take off inspection cover (5).
3. Using brass hammer, tap hub assembly (6) out of drum (1).

GO TO FRAME 2



FRAME 2

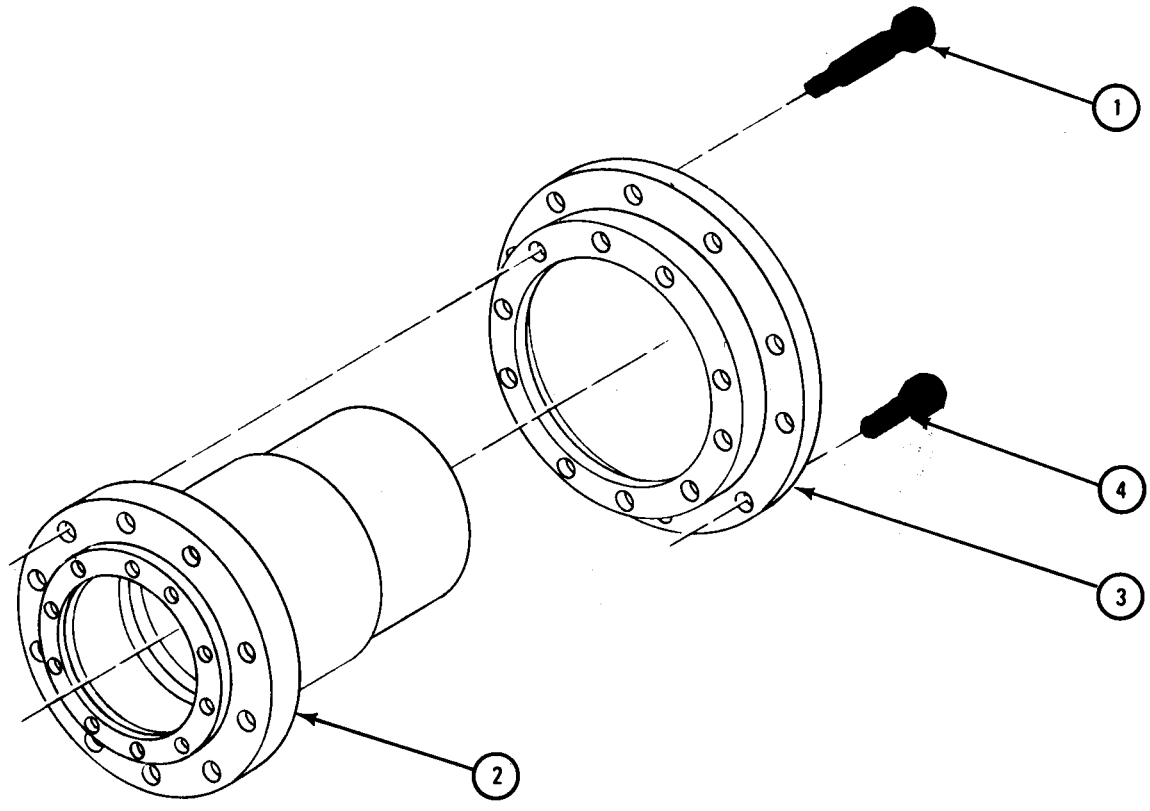
1. Using hammer and brass drift, drive out and throw away 10 wheel studs (1).

Soldiers A and B

2. Take hub (2) out of hub adapter (3) .

3. Using hammer and brass drift, drive out and throw away 10 studs (4).

GO TO FRAME 3

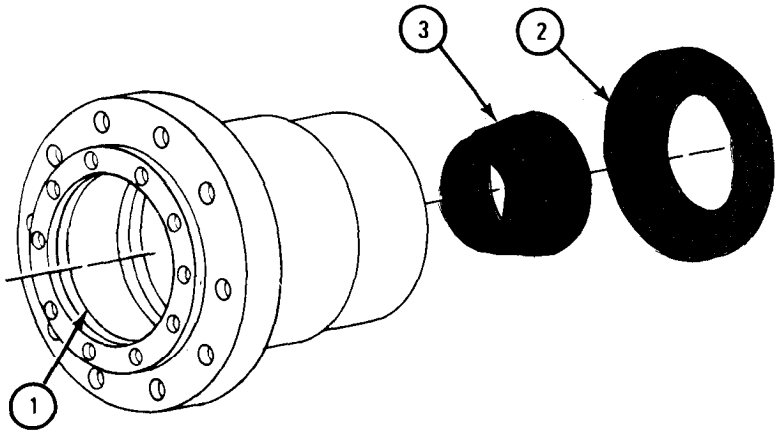


TA 085514

FRAME 3

1. Working through front of hub (1) and using hammer and brass drift, tap out seal (2) and wheel bearing cone (3).

END OF TASK



TA 087550

(2) Cleaning, inspection and repair.

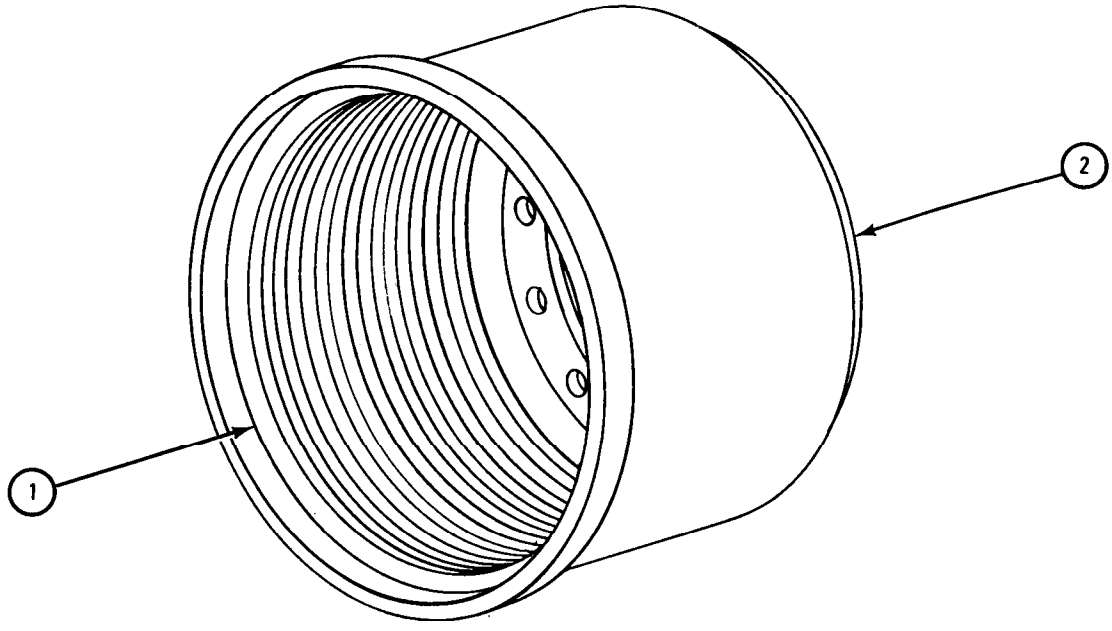
FRAME 1

WARNING

Do not use a wire brush or compressed air to clean face (1) and brake drum (2). There may be asbestos dust on the drum which can be dangerous to your health if you breathe it in.

1. Clean dirt or mud from brake drum (2) using a brush and water.
2. Check that drum (2) is not cracked. If drum is cracked, throw it away and get a new one.
3. Check that face (1) of drum (2) is not scored as shown. If drum is scored, tell direct support maintenance.

GO TO FRAME 2



TA 085513

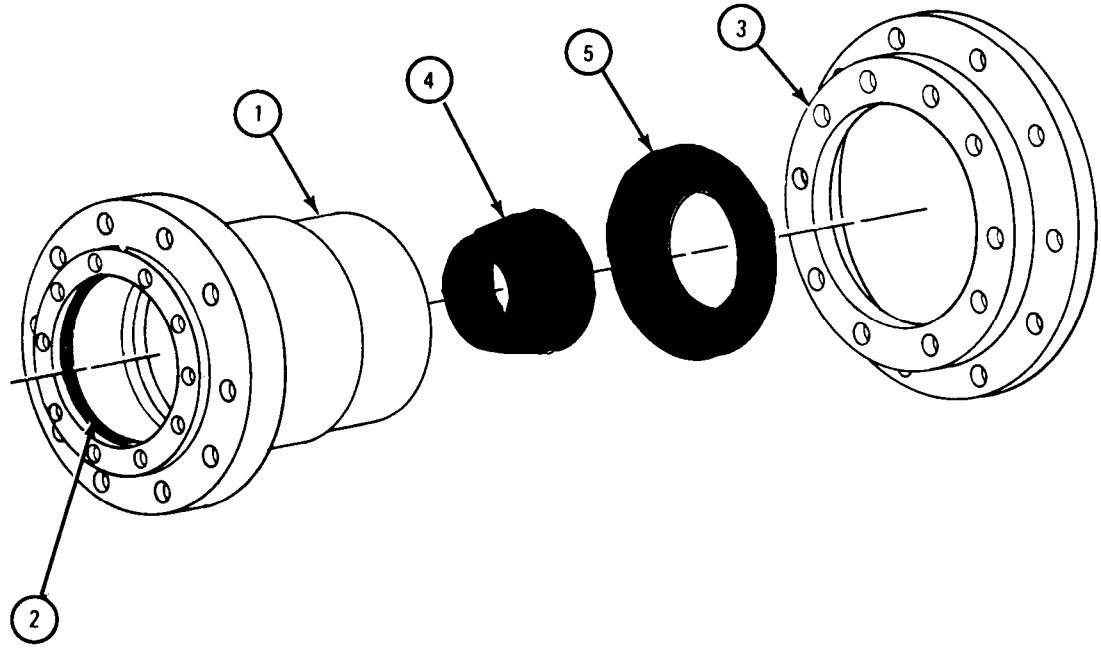
FRAME 2

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

1. Clean hub (1) with solvent and let it dry.
2. Check that hub (1) is not cracked. If hub is cracked, throw it away and get a new one.
3. Check that inner and outer wheel bearing cups (2) are tight inside hub (1) . If cups are loose, remove inner and outer wheel bearing cups. Refer to para 13-7. Throw away hub and get a new one,
4. Check that adapter (3) is not cracked or warped. If adapter is damaged, throw it away and get a new one.
5. Check bearing cone (4) and seal (5). Refer to front wheel bearing cones and seal inspection and lubrication, para 13-6.

END OF TASK



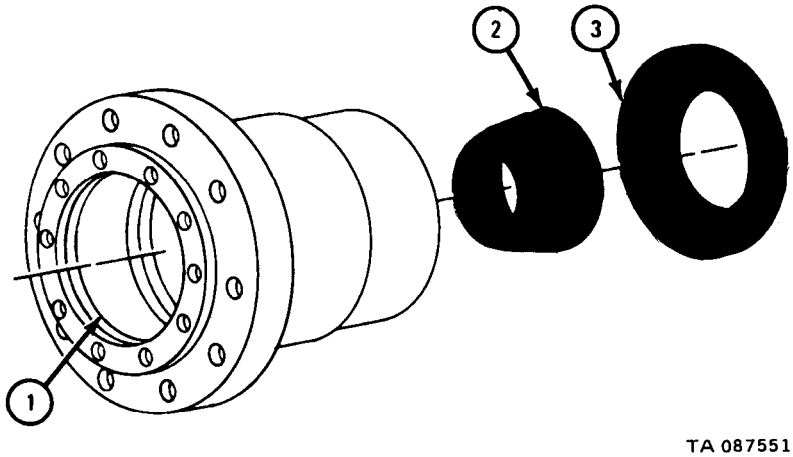
TA 085515

(3) Assembly.

FRAME 1

1. If new hub (1) is used, replace inner and outer wheel bearing cups. Refer to para 13-7.
2. Put wheel bearing cone (2) and seal (3) in rear of hub (1). Using hammer and brass drift, tap seal in place.

GO TO FRAME 2



TA 087551

FRAME 2

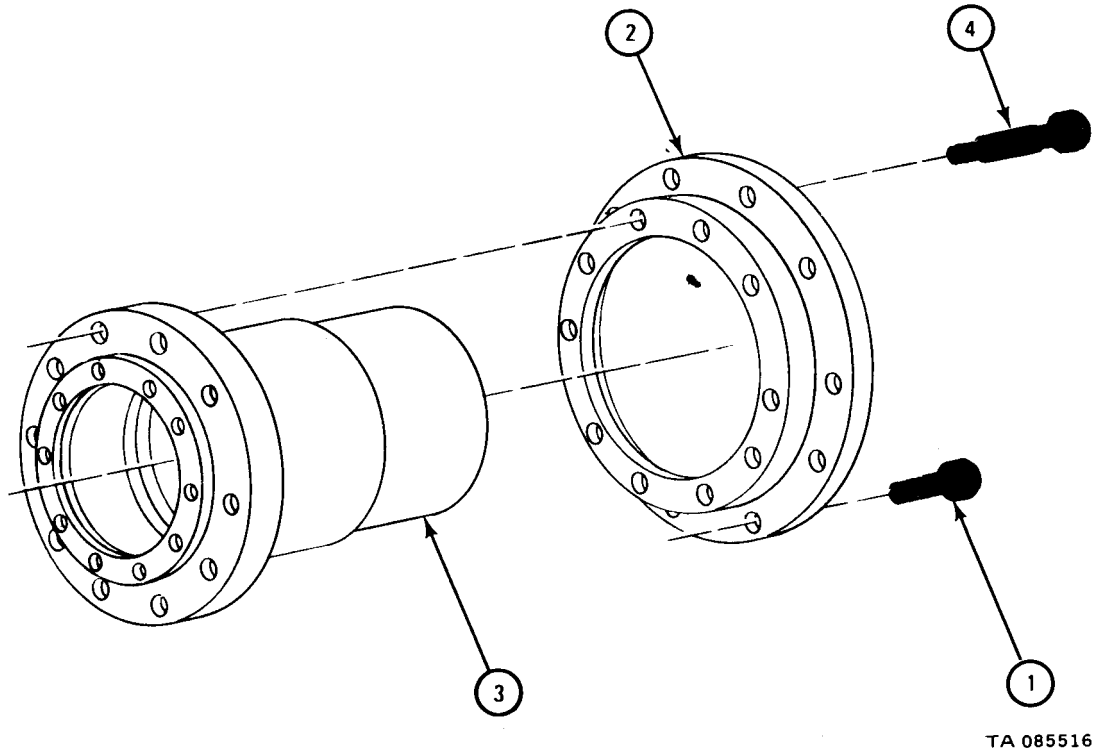
1. Using hammer and brass drift, drive 10 studs (1) into outside row of holes of hub adapter (2).

Soldiers A and B

2. Aline holes in hub adapter (2) with holes in hub (3).

3. Using hammer and brass drift, drive in 10 wheel studs (4).

GO TO FRAME 3



FRAME 3

Soldiers A and B

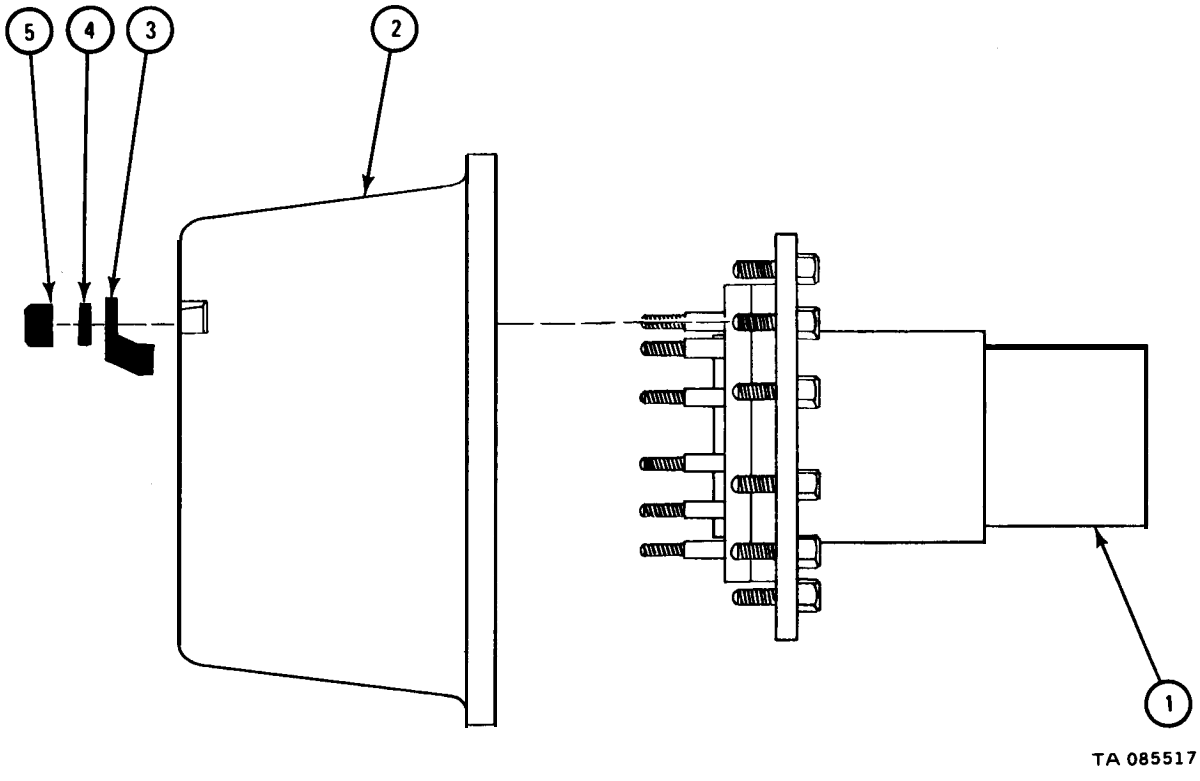
1. Aline 10 shorter studs on hub (1) with holes in drum (2). Put hub into drum.
2. Put inspection cover (3) on stud next to inspection hole in drum (2) so hole is covered.
3. Using 11/16-inch wrench, screw on and evenly tighten 10 washers (4) and nuts (5).

NOTE

Follow-on Maintenance Action Required:

Replace front hub and brake drum assembly. Refer to para 13-4.

END OF TASK



c. Rear Hub and Brake Drum.

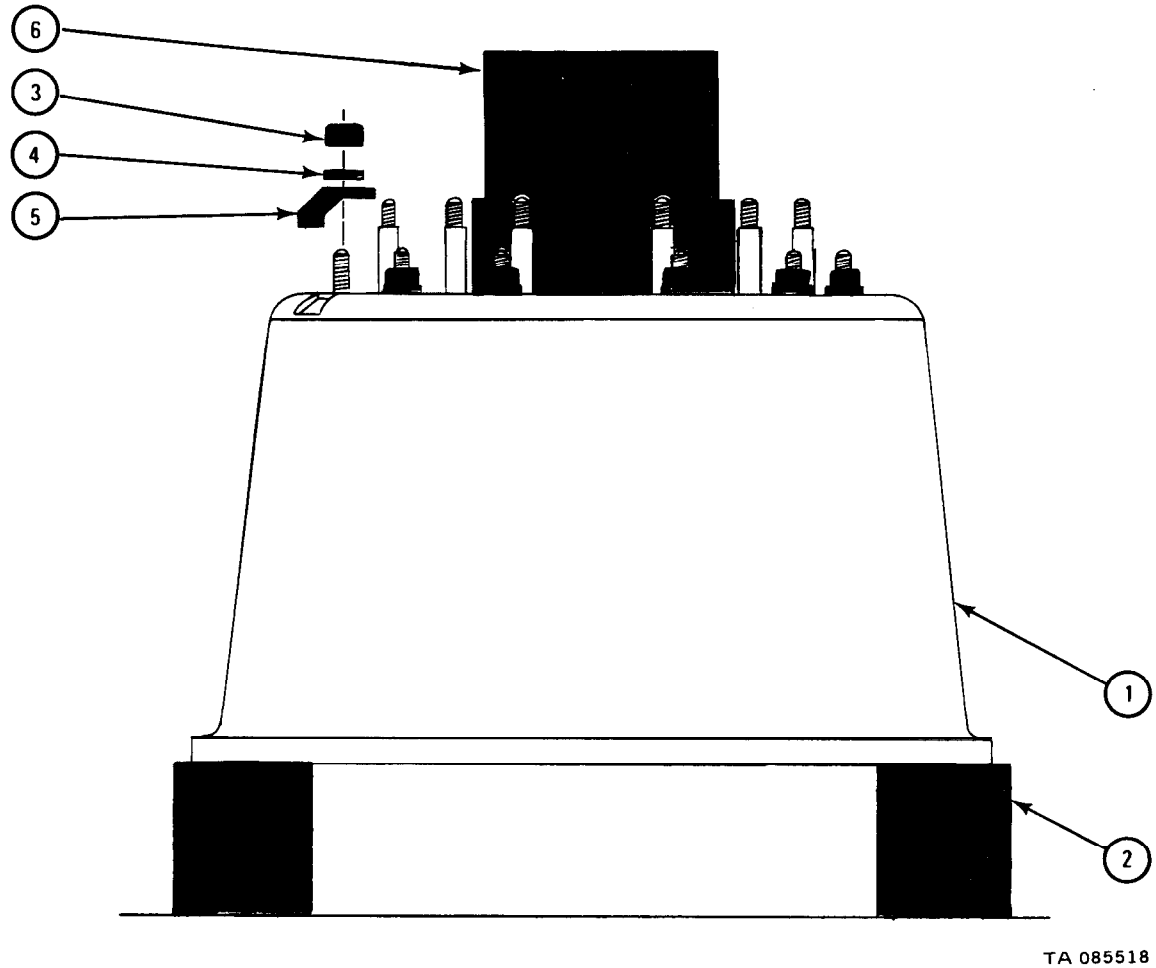
(1) Disassembly.

FRAME 1

Soldiers A and B

1. Put drum (1) on top of two wood blocks (2) as shown.
2. Using 11/16-inch wrench, unscrew and take off 10 nuts (3) and washers (4). Take off inspection cover (5) .
3. Using brass hammer, tap hub assembly (6) out of drum (1).

GO TO FRAME 2

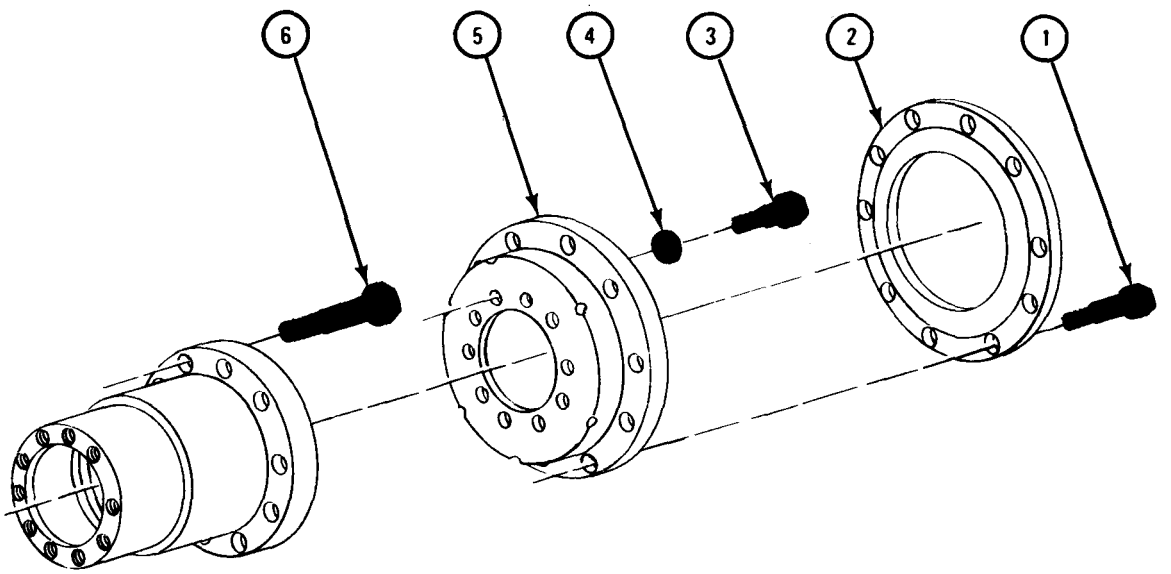


FRAME 2

Soldiers A and B

1. Using hammer and brass drift, drive out and throw away 10 studs (1). Take off deflector (2).
2. Using 11/16-inch wrench, unscrew and take out eight cap screws (3) and lockwashers (4).
3. Take off backing plate (5).
4. Using hammer and brass drift, drive out and throw away 10 wheel studs (6) .

GO TO FRAME 3

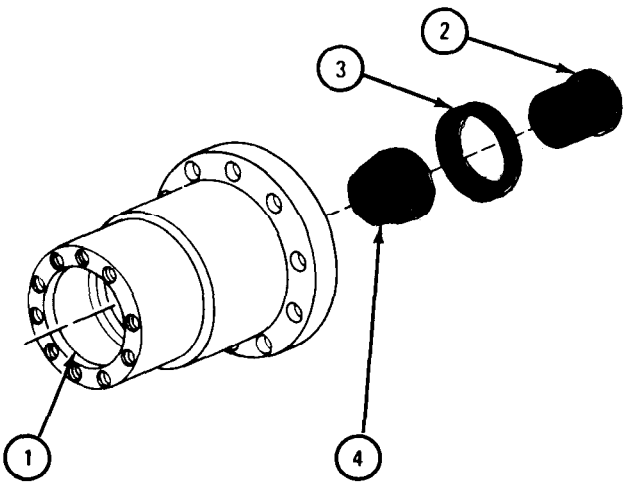


TA 085519

FRAME 3

1. Working through front of hub (1) and using hammer and brass drift, tap out wiper (2), seal (3), and wheel bearing cone (4).

END OF TASK



TA 087552

(2) Cleaning, inspection and repair.

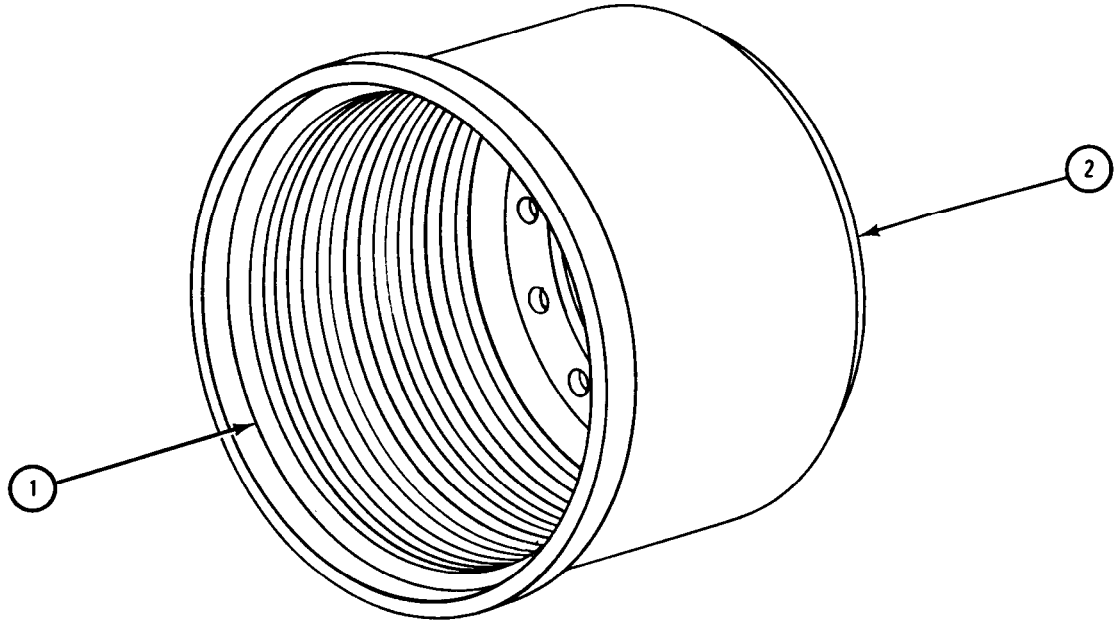
FRAME 1

WARNING

Do not use a wire brush or compressed air to clean face (1) or brake drum (2). There may be asbestos dust on the drum which can be dangerous to your health if you breathe it in.

1. Clean dirt or mud from brake drum (2) using a brush and water.
2. Check that drum (2) is not cracked. If drum is cracked, throw it away and get a new one.
3. Check that face (1) of drum (2) is not scored as shown. If drum is scored, tell direct support maintenance.

GO TO FRAME 2



TA 085513

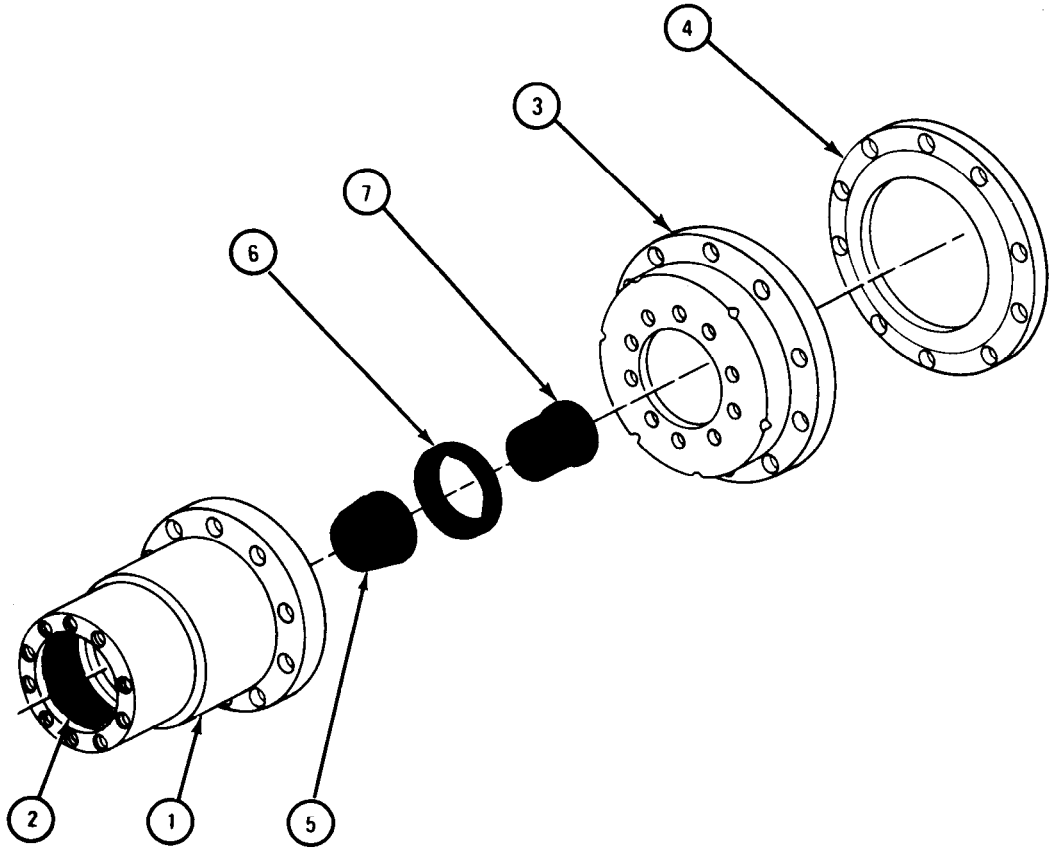
FRAME 2

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

1. Clean hub (1) with solvent and let it dry.
2. Check that hub (1) is not cracked. If hub is cracked, throw it away and get a new one.
3. Check that inner and outer wheel bearing cups (2) are tight inside hub (1). If cups are loose, remove inner and outer wheel bearing cups. Refer to para 13-12. Throw away hub and get a new one.
4. Check that backing plate (3) , and deflector (4) are not cracked or warped. If parts are damaged, throw them away and get new ones.
5. Check bearing cone (5) , seal (6) and wiper (7). Refer to rear wheel bearing cones and seals inspection and lubrication, para 13-11.

END OF TASK



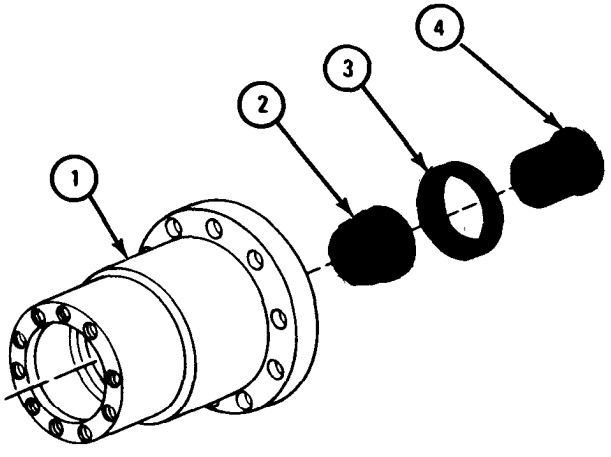
TA 085520

(3) Assembly.

FRAME 1

1. If new hub (1) is used, replace inner and outer wheel bearing cups. Refer to para 13-12.
2. Put wheel bearing cone (2), seal (3), and wiper (4) in rear of hub (1). Using hammer and brass drift, tap seal in place.

GO TO FRAME 2



TA 087553

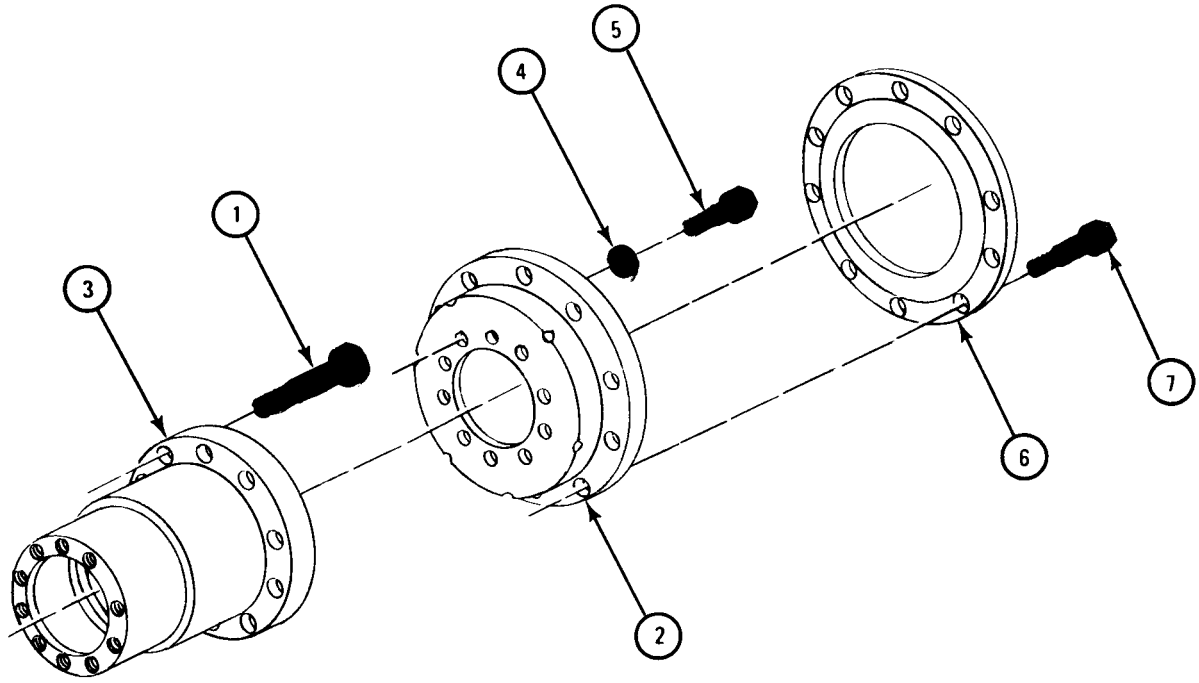
FRAME 2

1. Using hammer and brass drift, drive in 10 wheel studs (1).

Soldiers A and B

2. Aline inside row of holes in backing plate (2) with threaded holes in hub (3).
3. Using 11/16-inch wrench, screw in and tighten eight washers (4) and capscrews (5).
4. Aline holes in deflector (6) with holes in backing plate (2).
5. Using hammer and brass drift, drive in 10 studs (7).

GO TO FRAME 3



TA 085521

FRAME 3

Soldiers A and B

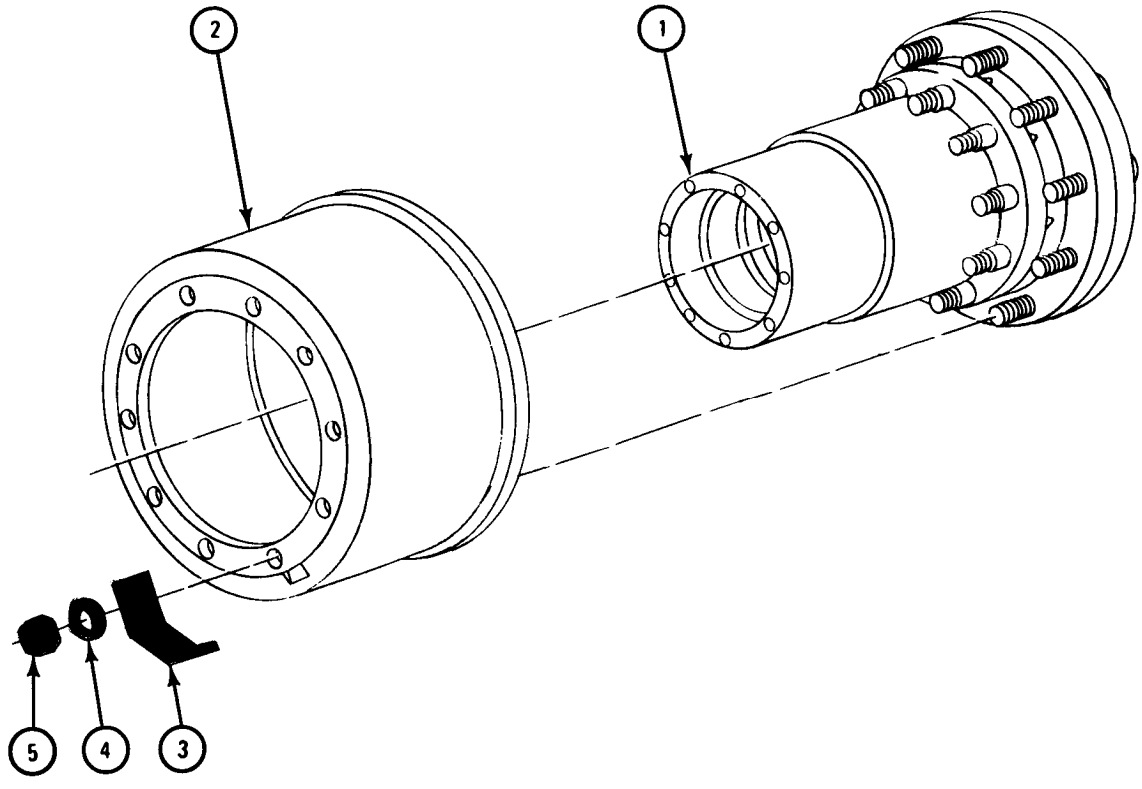
1. Aline 10 shorter studs on hub (1) with 10 holes in drum (2) . Put hub into drum.
2. Put inspection cover (3) on stud next to inspection hole in drum (2) so hole is covered.
3. Using 11/16-inch wrench, screw on and evenly tighten 10 washers (4) and nuts (5).

NOTE

Follow-on Maintenance Action Required:

Replace rear hub and brake drum assembly. Refer to para 13-10.

END OF TASK



TA 085522

13-6. FRONT WHEEL BEARING CONES AND SEAL REMOVAL AND REPLACEMENT FOR SERVICE.

TOOLS : Portable bearing lubricator, NSN 4930-00-704-1852
Hand grease gun, NSN 4930-00-253-2478
Medium ballpeen hammer
3/4 x 10-inch brass drift

SUPPLIES : Artillery and automotive grease, type GAA, MIL-G-10924
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Clean rags

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked on level ground, engine off, handbrake set.

a. Preliminary Procedure. Remove front wheel and brake drum assembly. Refer to para 13-3.

b. Removal.

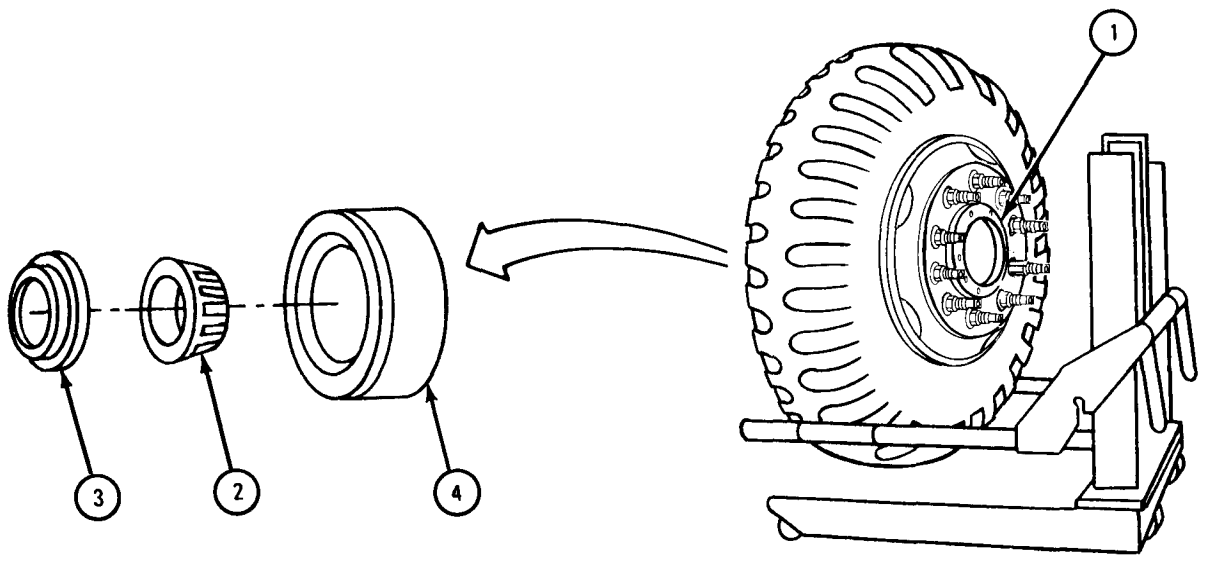
FRAME 1

NOTE

Outer wheel bearing cone is taken out during removal of front wheel and drum assembly.

1. Working through front of hub (1) and using hammer and brass drift, tap out inner wheel bearing cone (2) and seal (3) from hub (4).

END OF TASK



TA 050471

c. Cleaning.

NOTE

This task is for both inner and outer wheel bearing cones.

FRAME 1

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

CAUTION

Do not spin bearings at any time. Spinning will seriously damage bearings.

After cleaning, keep bearings clean and dry. Dirt and moisture can damage bearings.

NOTE

All old lubricant must be taken off bearings during cleaning. Do soaking and rapping steps over as necessary to take off all old lubricant.

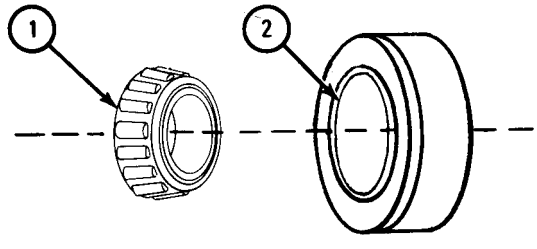
1. Using degreaser and solvent, soak bearing cone (1) to loosen lubricant.
2. If lubricant is left on bearing cone (1) after soaking, clap bearing against heel of hand to loosen lubricant.

WARNING

Do not dry wheel bearing with compressed air. Spinning bearings may explode and cause serious injury to personnel.

3. Let bearing cone (1) dry.
4. Using clean rags, wipe all old grease from hub (2).

END OF TASK



TA 050472

d. Inspection.

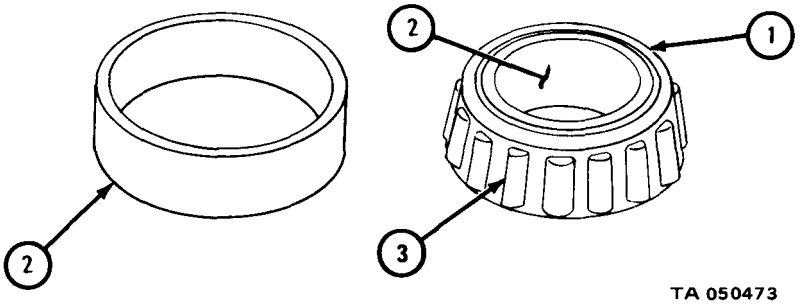
FRAME 1

NOTE

Inner and outer wheel bearing cups are inside of hub. If wheel bearing cone (1) or cup (2) needs replacing, do wheel bearing cones and seals removal and replacement. Refer to para 13-7.

1. Hold wheel bearing cone (1) and turn it slowly to check all sides of bearing cone.
2. Check that bearing cone (1) has not overheated. Bearing cone will turn blue where it has overheated. Throw away overheated bearing cone.
3. Check that cups (2) are not brinelled (dented or scored). Throw away brinelled bearing cup.
4. Check that cups (2) and bearing rollers (3) are not spalled (chipped or pitted). Throw away spalled bearing cones or cups.

END OF TASK



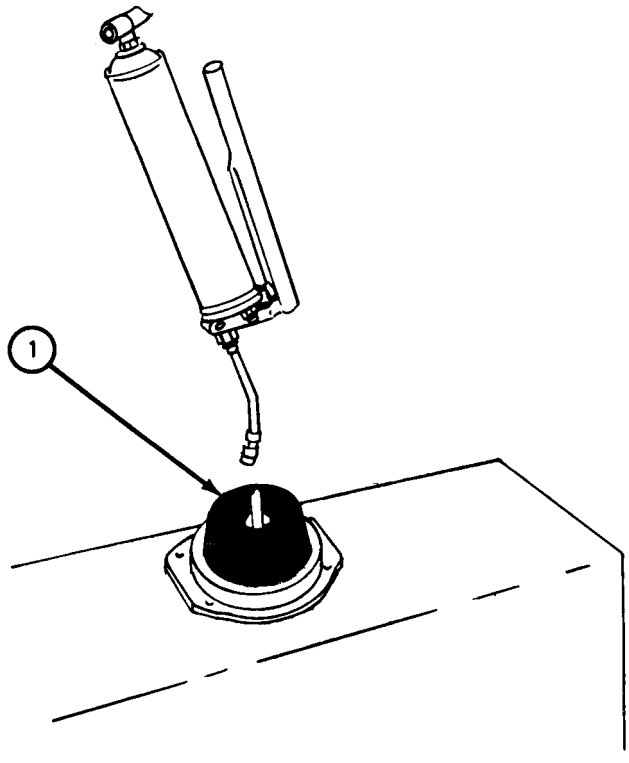
TA 050473

e. Lubrication.

FRAME 1

1. Put wheel bearing cone (1) into portable bearing lubricator as shown.
2. Using hand grease gun, grease wheel bearing cone (1) until grease comes out of sides of bearing.

END OF TASK



TA 082024

f. Replacement.

FRAME 1

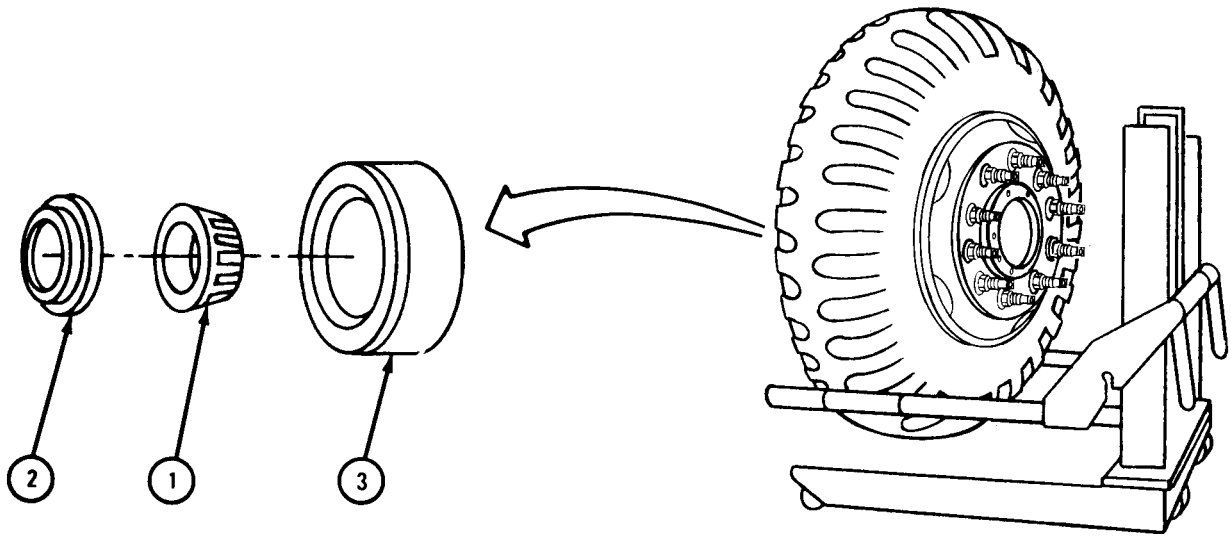
1. Put in inner wheel bearing cone (1).
2. Using brass drift and hammer, tap in seal (2).
3. Using clean rag, wipe all grease from seal (2) and hub (3) .

NOTE

Follow-on Maintenance Action Required:

Replace front wheel and brake drum assembly. Refer to para 13-3.

END OF TASK



TA 050474

13-7. FRONT INNER AND OUTER WHEEL BEARINGS AND SEAL REMOVAL AND REPLACEMENT.

TOOLS : 18-inch brass drift
Hammer
Portable bearing lubricator, NSN 4930-00-704-1852
Hand grease gun, NSN 4930-00-253-2478
Drop light

SUPPLIES: Artillery and automotive grease, type GAA, MIL-G-10924
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Clean rags
Inner wheel bearing seal

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked on level ground, engine off, handbrake set.

a. Preliminary Procedure. Remove front hub and brake drum assembly. Refer to para 13-3.

b. Removal.

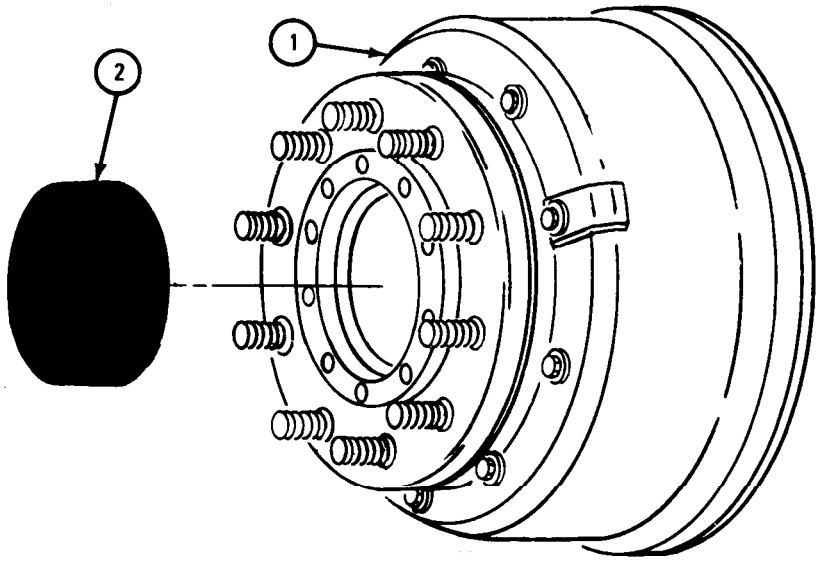
NOTE

Outer wheel bearing cone is taken out during front hub and brake drum assembly removal.

FRAME 1

1. Working through inside of hub (1) using hammer and brass drift, tap outer edges of bearing cup (2) until bearing cup comes out.
2. Turn over hub and brake drum assembly (1).

GO TO FRAME 2

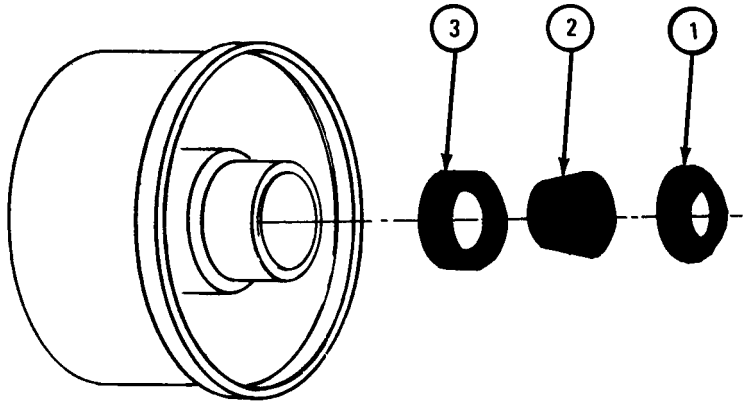


TA 082022

FRAME 2

1. Using hammer and seal remover and replacer, tap out seal (1).
2. Take out inner wheel bearing cone (2).
3. Using bearing cup puller, take out inner wheel bearing cup (3).

END OF TASK



TA 082023

c. Cleaning.

NOTE

This task is for both inner and outer wheel bearing cones.

FRAME 1

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

All old lubricant must be taken off bearing cones (1) during cleaning. Soak bearing cones as long as needed to take off all old lubricant.

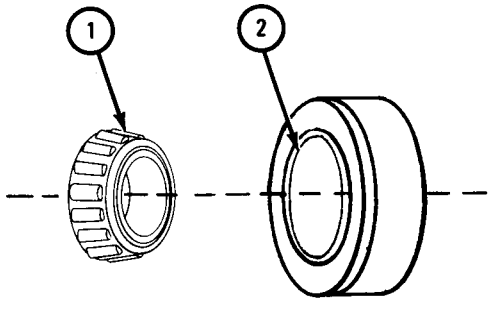
1. Soak bearing cone (1) in solvent.
2. Rinse bearing cone (1) in clean solvent.

WARNING

Do not dry bearing with compressed air. Spinning bearings may explode and cause serious injury to personnel.

3. Let bearing cone (1) dry.
4. Using clean rags, wipe all old grease from inside hub (2).

END OF TASK



TA 050472

d. Inspection.

FRAME 1

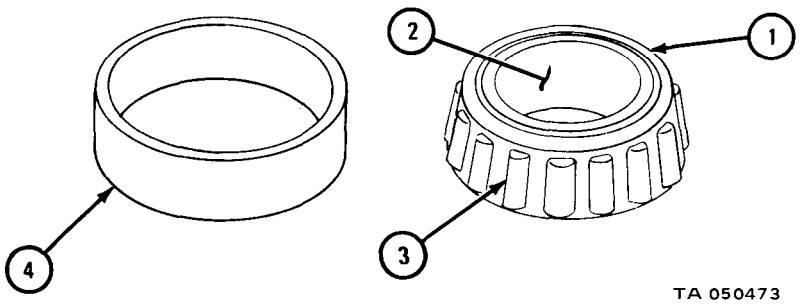
1. Place drop light behind bearing assembly.
2. Hold wheel bearing cone (1) and turn inner race (2) slowly.
3. Check that bearing rollers (3) and wheel bearing cone (1) have no cracks, flaking, pitting or long or deep scratches.
4. Check that wheel bearing cone (1) has not overheated. Wheel bearing cone will turn blue where it has overheated.
5. Check that bearing cups (4) have no dents or small depressions.

NOTE

If bearing rollers (3) are damaged, throw away bearing cone (1) and get a new one.

6. Check that bearing cups (4) and bearing rollers (3) are not splintered or chipped.
7. Throw away damaged parts and get new ones.

END OF TASK



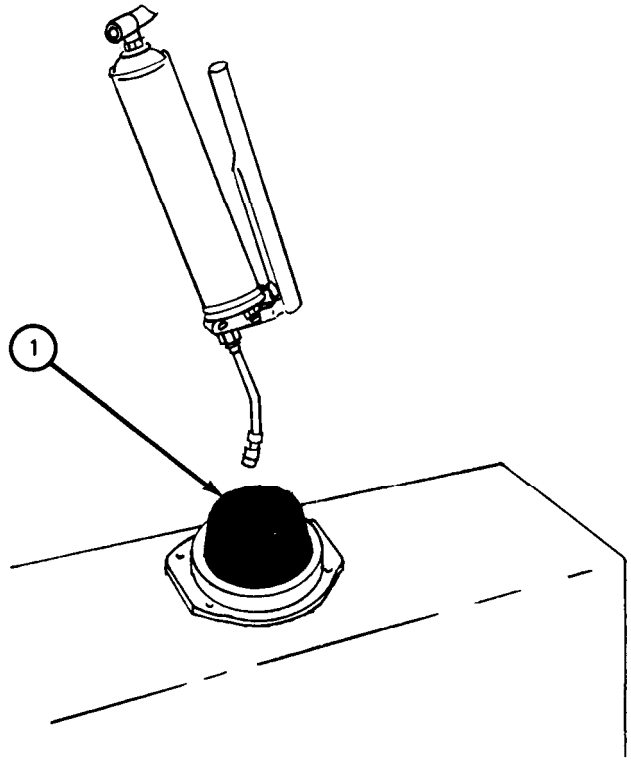
TA 050473

e. Lubrication.

FRAME 1

1. Put wheel bearing cone (1) into portable bearing lubricator as shown.
2. Using hand grease gun, grease wheel bearing cone (1) until the grease comes out of sides of bearing.

END OF TASK



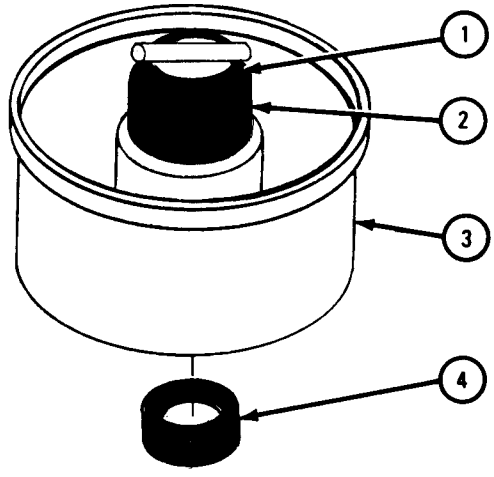
TA 082024

f. Replacement.

FRAME 1

1. Put wheel bearing cup (1) into hub (2) as shown.
2. Using hammer and brass drift, lay brass drift on top of wheel bearing cup (1) as shown. Tap brass drift until wheel bearing cup is in hub (2).
3. Using hammer and brass drift, tap sides of wheel bearing cup (1) evenly all around until it is seated inside hub (2).
4. Turn over hub and brake drum assembly (3) and do steps 1 through 3 again for outer wheel bearing cup (4).

GO TO FRAME 2



TA 082025

FRAME 2

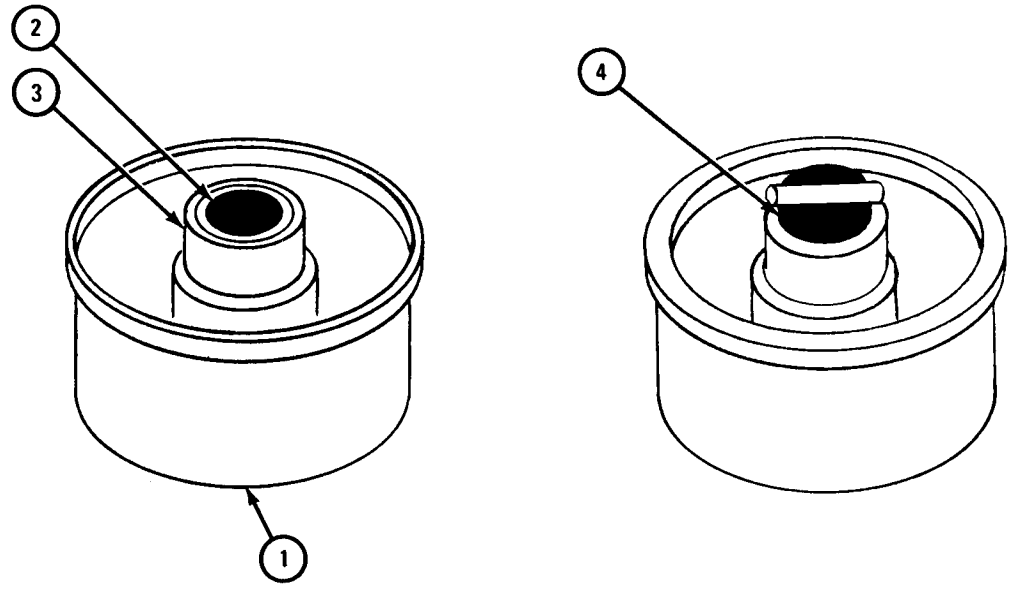
1. Turn over hub and brake drum assembly (1) as shown.
2. Put inner wheel bearing cone (2) in hub (3).
3. Put seal (4) into hub (3) as shown.
4. Using hammer and brass drift, lay brass drift on top of seal (4) as shown. Tap brass drift until seal is in hub (3).
5. Using hammer and brass drift, tap sides of seal (4) evenly all around until it is seated inside hub (3).
6. Using clean rag, wipe off all grease around hub (3) and top of seal (4).

NOTE

Follow-on Maintenance Action Required:

Replace front hub and brake drum. Refer to para 13-3.

END OF TASK



TA 048428

13-8. WHEEL STUDS REMOVAL AND REPLACEMENT.

TOOLS : Heavy ballpeen hammer
3/4 x 10-inch punch
2 x 4 x 8-inch wood block (2)

SUPPLIES: Lubricating oil, ICE, OE/HDO 10, MIL-L-2104

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

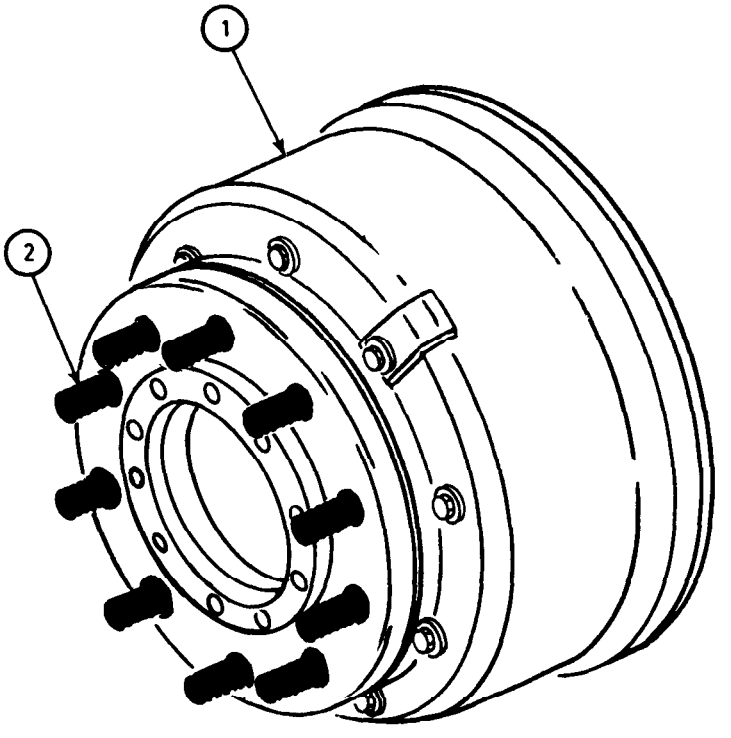
a. Preliminary Procedure. Remove hub and brake drum assembly. For front hub and brake drum assembly, refer to para 13-3. For rear hub and brake drum assembly, refer to para 13-10.

b. Removal.

FRAME 1

1. Put hub and brake drum assembly (1) on floor and using hammer, drive out 10 studs (2).

END OF TASK



TA 045828

c. Replacement.

FRAME 1

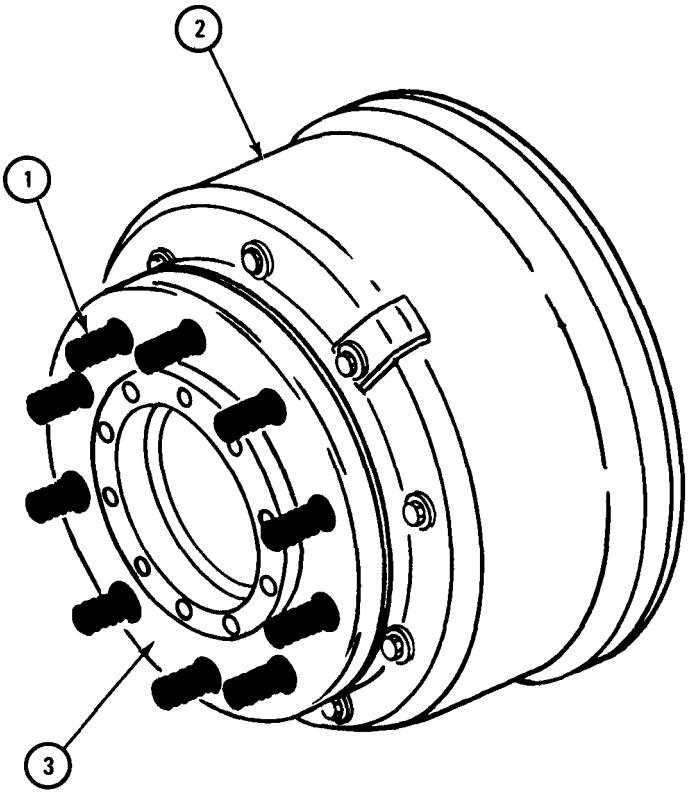
1. Place very light film of oil on 10 studs (1).
2. Put hub and brake drum assembly (2) on wood blocks and using hammer and punch, drive studs (1) into hub (3).

NOTE

Follow-on Maintenance Action Required:

Replace hub and brake drum assembly. For front hub and brake drum assembly, refer to para 13-3. For rear hub and brake drum assembly, refer to para 13-10.

END OF TASK



TA 045829

Section III. REAR WHEEL ASSEMBLY

13-9. REAR WHEELS AND BRAKE DRUM ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS : Wheel bearing nut wrench.
3/4-inch socket wrench
Torque wrench, 150 pound-feet capacity
10-inch socket handle
Portable bearing lubricator.
Hand grease gun.
Wheel lift truck

SUPPLIES : Rear axle shaft gasket
Artillery and automotive grease, type GAA, MIL-G-10924
Solvent, dry cleaning, type II (SD-2) , Fed. Spec P-D-680

PERSONNEL: One

EQUIPMENT CONDITION : Truck parked on level ground, engine off, handbrake set.

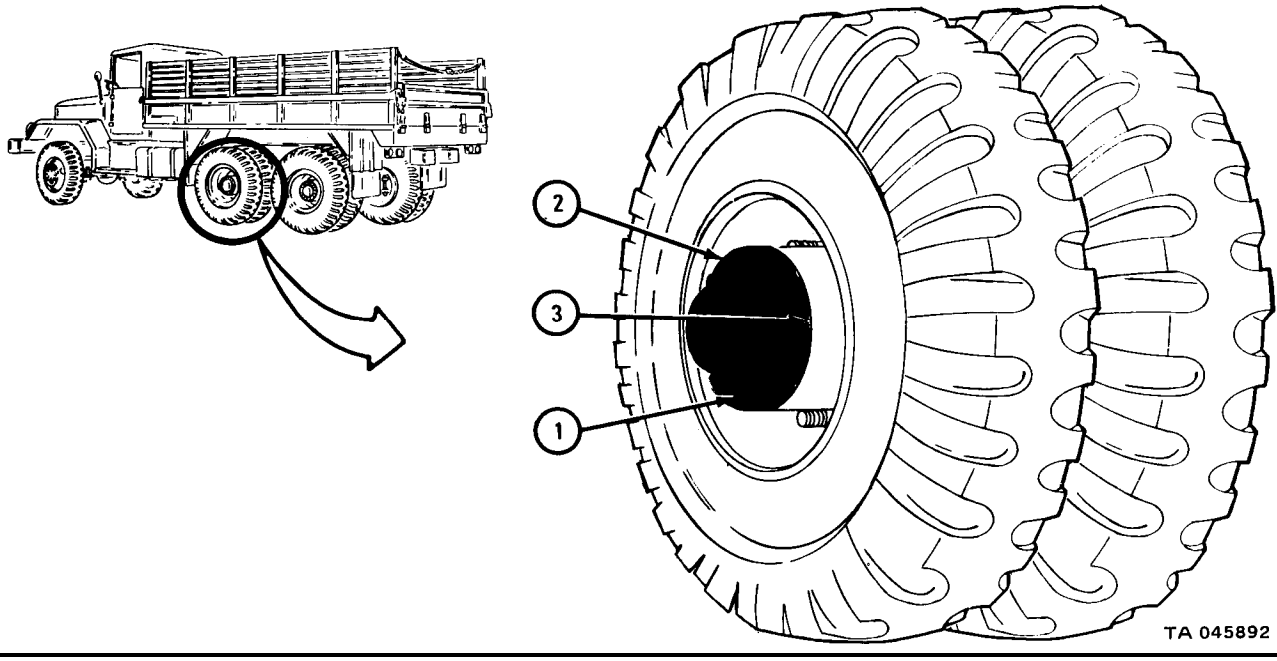
a. Preliminary Procedure. Jack up rear wheel. Refer to Part 1, para 10-3.

b. Removal.

FRAME 1

1. Using 3/4-inch socket wrench with socket handle, unscrew and take out 10 cap-screws and lockwashers (1).
2. Take out flange and shaft assembly (2) and gasket (3). Throw away gasket.

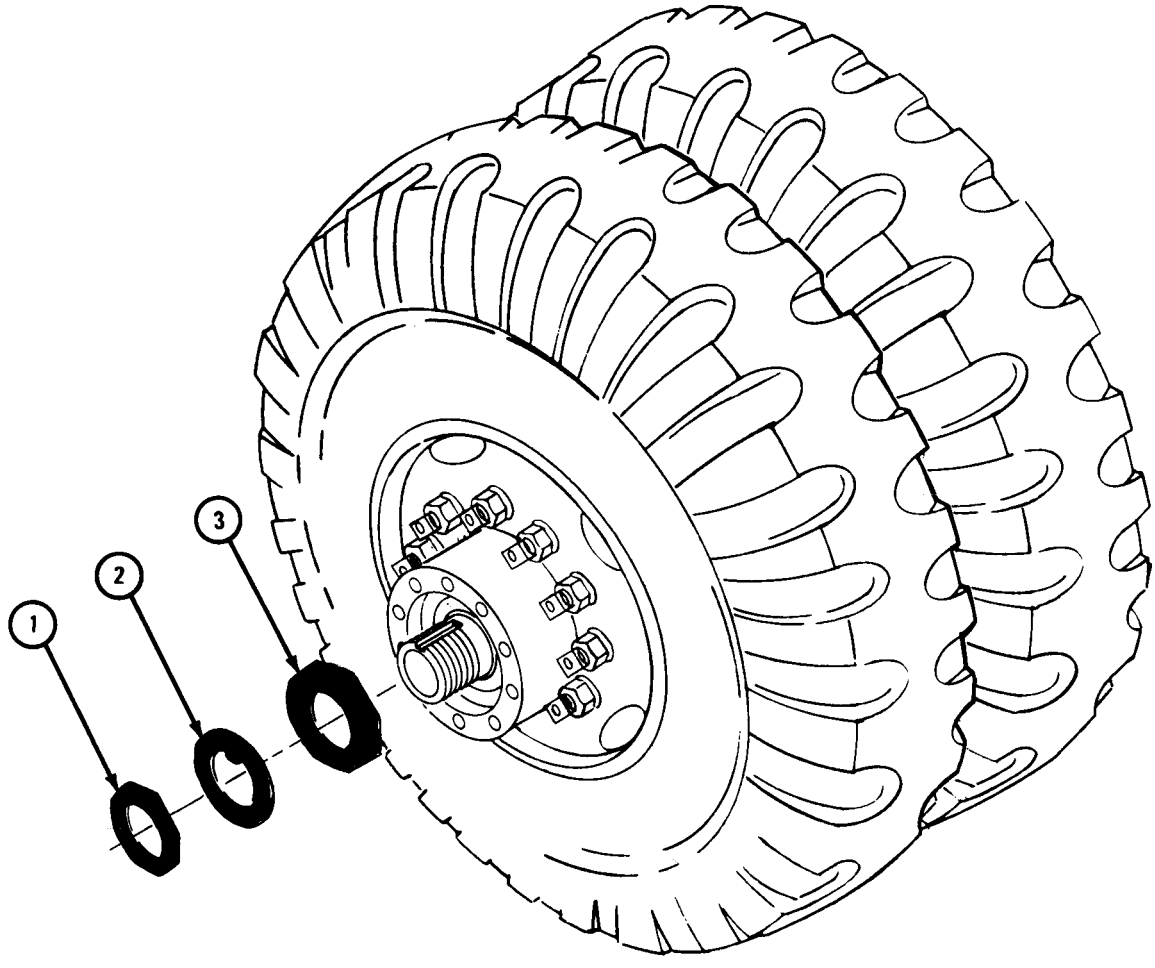
GO TO FRAME 2



FRAME 2

1. Using wheel bearing nut wrench with socket handle, unscrew and take off locknut (1) and lockwasher (2).
2. Using wheel bearing nut wrench with socket handle, unscrew and take off adjusting nut (3).

GO TO FRAME 3

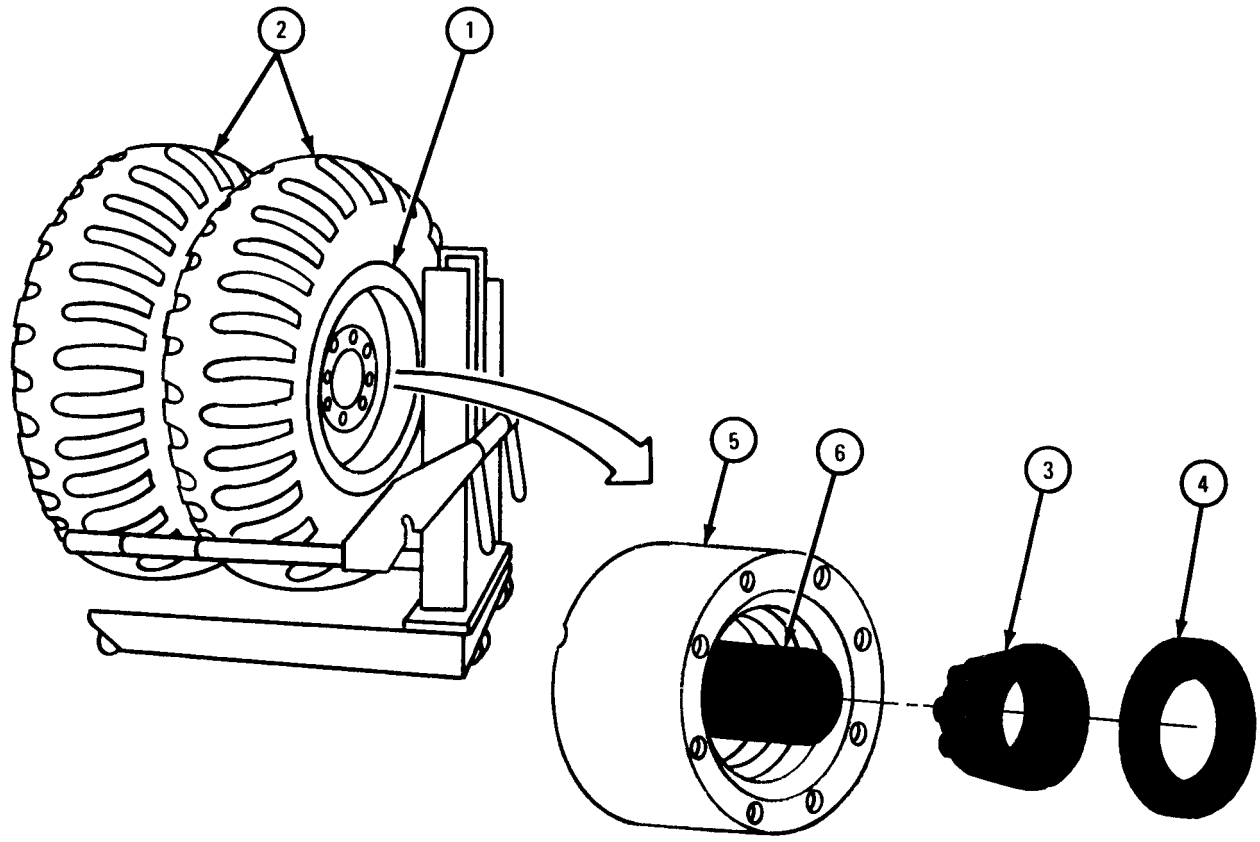


TA 050478

FRAME 3

1. Put wheel lift truck under rear wheels and brake drum assembly (1) as shown.
2. Jack up wheel lift truck until lift arms just touch tires (2).
3. Shake top of tires (2) until outer wheel bearing cone (3) and outer seal (4) move out of hub (5).
4. Take off outer wheel bearing cone (3) and outer seal (4).
5. Level lift arms on wheel lift truck until rear wheels and brake drum assembly (1) can be pulled straight off spindle (6).
6. Pull wheel lift truck and rear wheels and drum assembly (1) away from truck.

END OF TASK



c. Replacement.

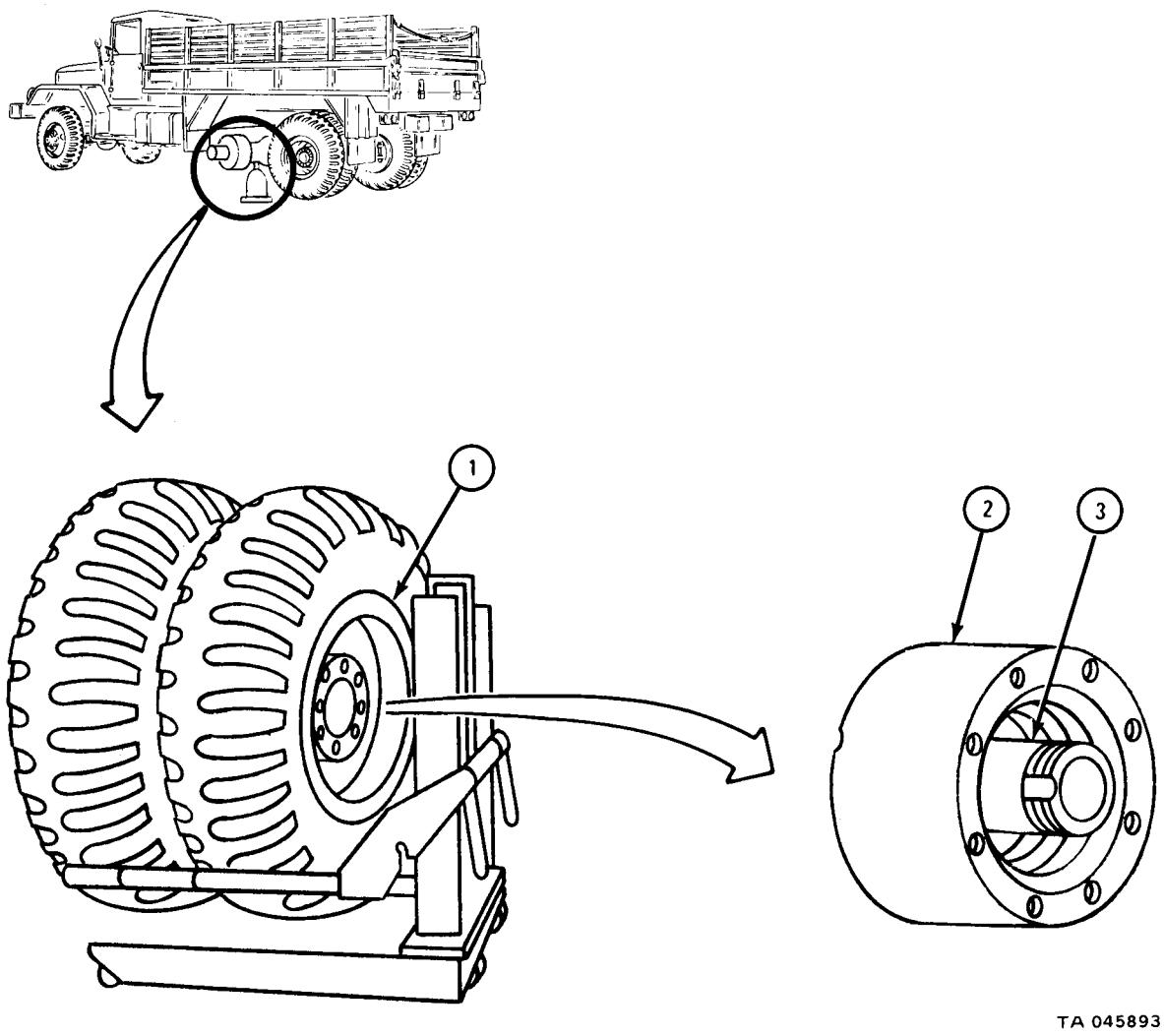
CAUTION

Do not slide lip of seal over threaded end of spindle. Seal can be damaged.

FRAME 1

1. Push wheel lift truck and wheels and drum assembly (1) toward truck so that hub (2) goes on spindle (3) as shown.

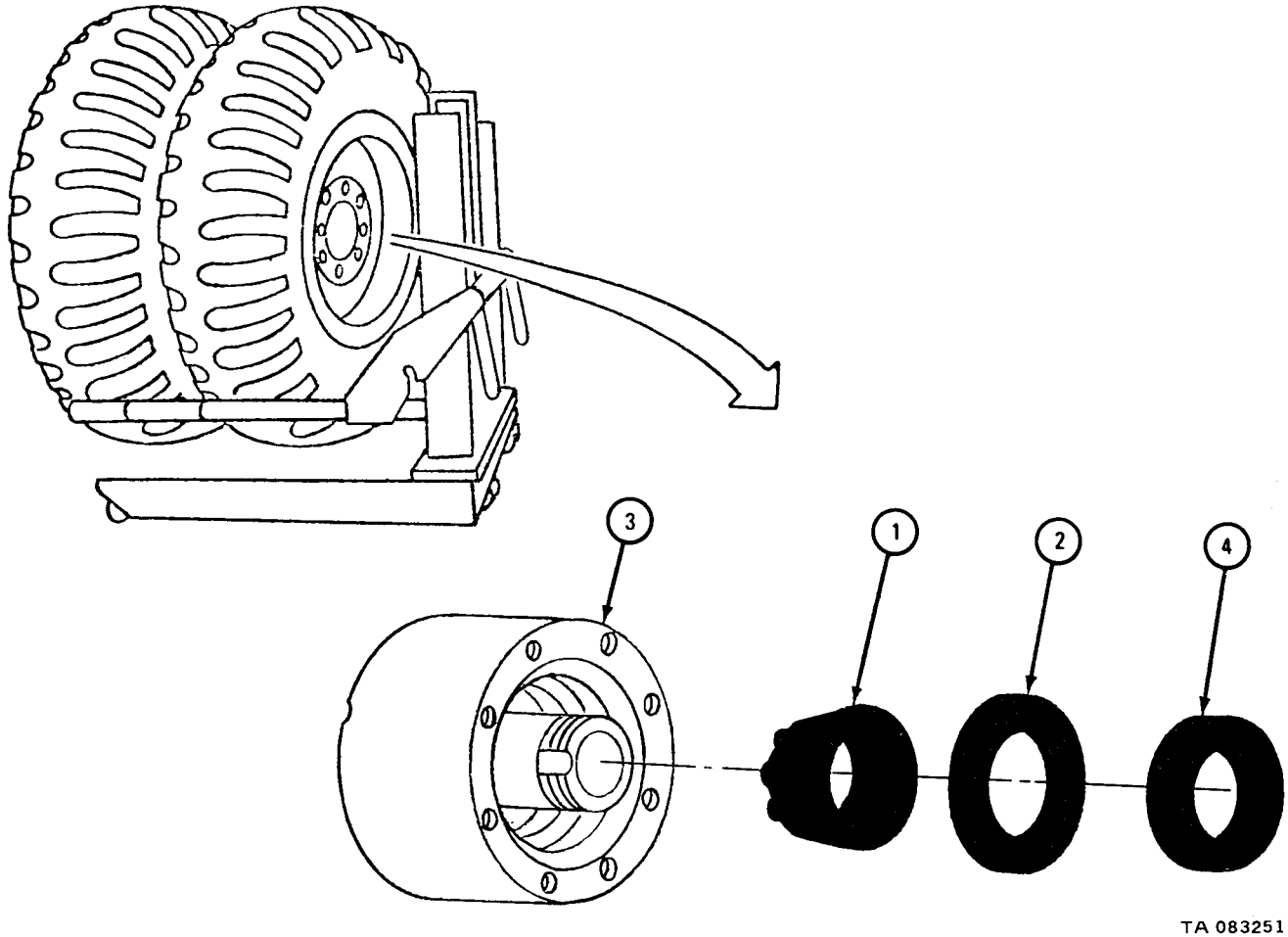
GO TO FRAME 2



FRAME 2

1. Using portable bearing lubricator and hand grease gun, grease outer wheel bearing cone (1).
2. Put outer wheel bearing cone (1) and outer seal (2) in hub (3) as shown.
3. Using wheel bearing nut wrench and socket handle, screw on adjusting nut (4).
4. Lower wheel lift truck and take it away from truck.

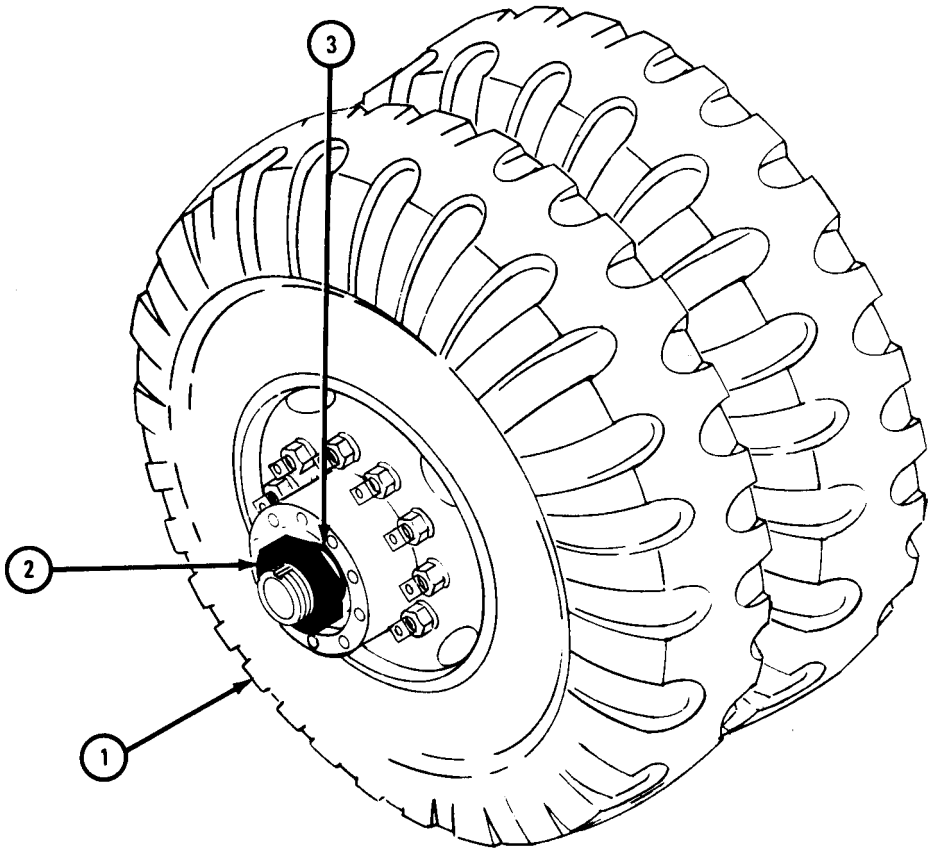
GO TO FRAME 3



FRAME 3

1. Check brake adjustment. Refer to Part 1, para 12-8 and 12-9.
2. While turning rear wheels (1) and using wheel bearing nut wrench with socket handle, tighten adjusting nut (2) until wheels bind. Then back off adjusting nut 1/8 turn.
3. Put one hand on bottom and one hand on top of wheels (1). Push with one hand and pull with the other hand. If wheel bearing (3) is adjusted correctly, there will be very little wobble.

GO TO FRAME 4

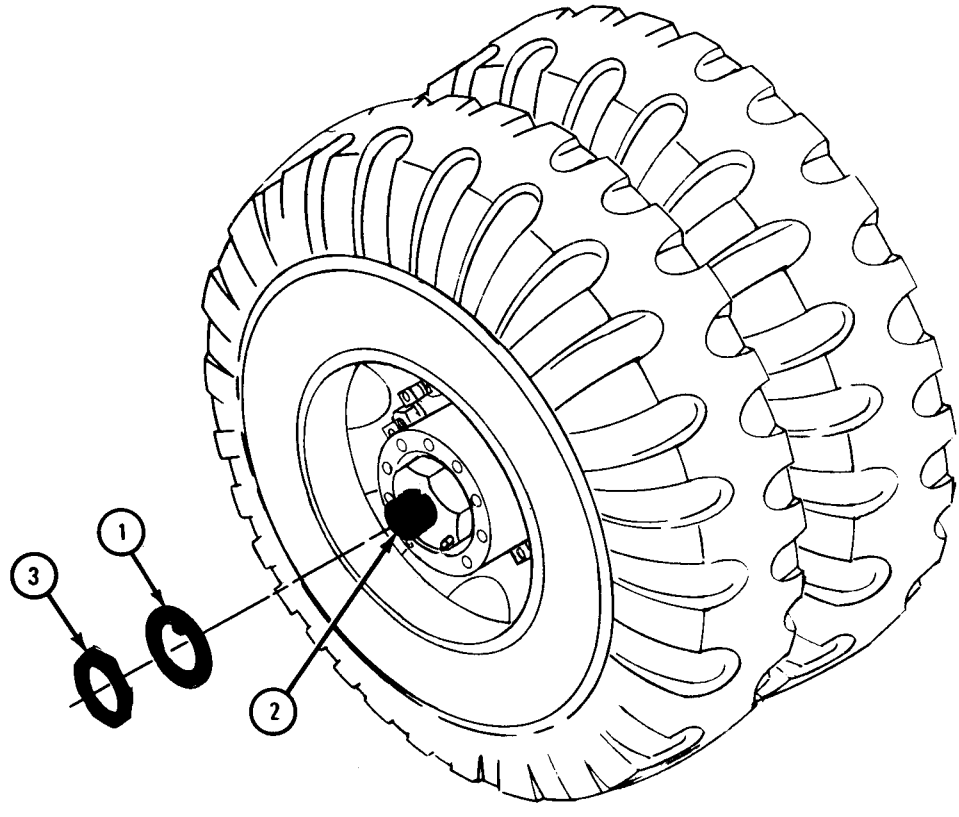


TA 050480

FRAME 4

1. Put lockwasher (1) on spindle (2) so that tab on washer fits in keyway in spindle.
2. Using wheel bearing nut wrench with torque wrench, screw on locknut (3) and tighten it to 50 pound-feet.
3. Jack down rear wheels. Refer to Part 1, para 10-3.

GO TO FRAME 5

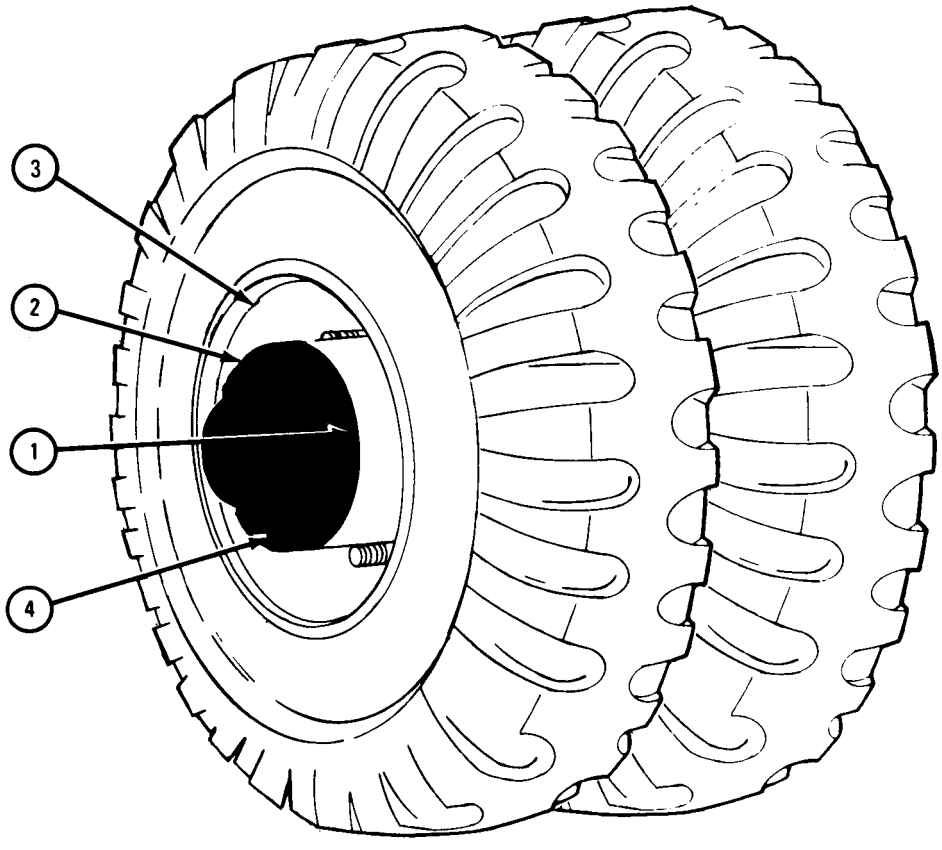


TA 050481

FRAME 5

1. Put gasket (1) and flange and shaft assembly (2) in hub and brake drum assembly (3) as shown.
2. Using 3/4-inch wrench, screw in 10 lockwashers and cap screws (4).
3. Using torque wrench with 3/4-inch socket wrench, tighten capscrews (4) to 81 to 104 pound-feet.

END OF TASK



TA 050482

13-10. REAR HUB AND BRAKE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS : 3/4-inch wrench
Wheel bearing nut wrench, pn 7076869
Torque wrench, 150 pound-feet capacity
Portable bearing lubricator, NSN 4930-00-704-1852
Hand grease gun, NSN 4930-00-253-2478

SUPPLIES : Rear axle shaft gasket
Artillery and automotive grease, type GAA, MIL-G-10924
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: Two

EQUIPMENT CONDITION : Truck parked on level ground, engine off, hand-brake set.

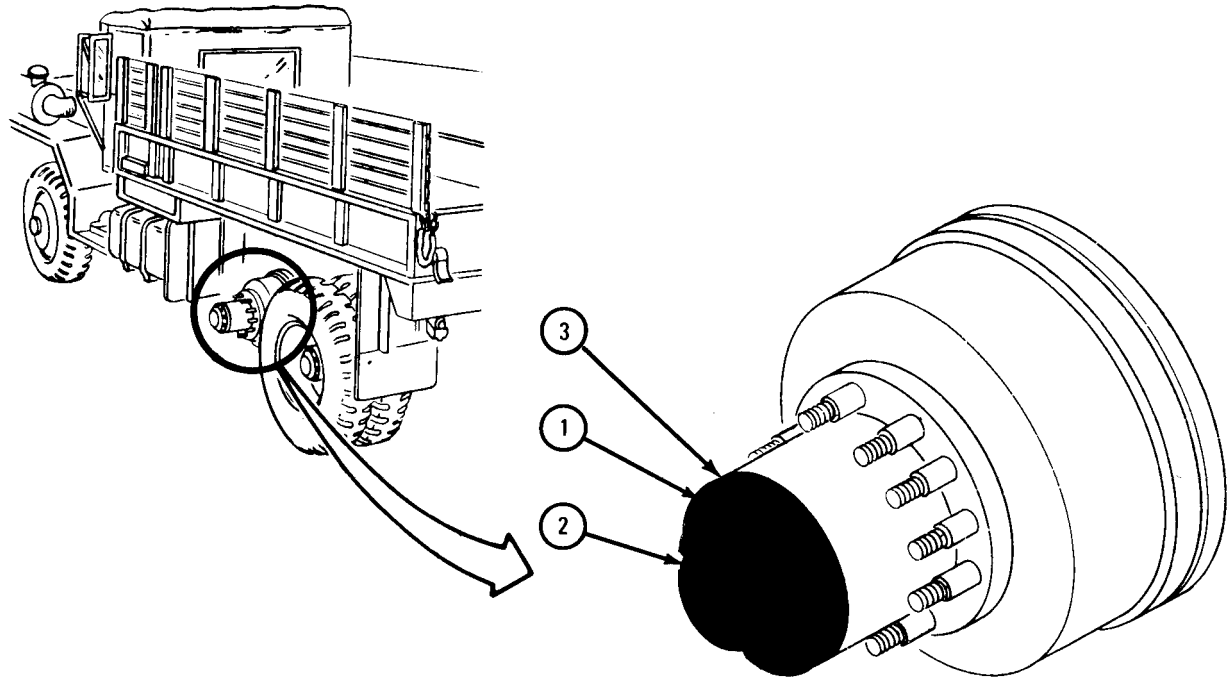
Preliminary Procedures. Remove outer and inner rear wheels. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 3/4-inch wrench, unscrew and take off 10 screws and lockwashers (1).
2. Take out flange and shaft assembly (2) and gasket (3). Throw gasket away.

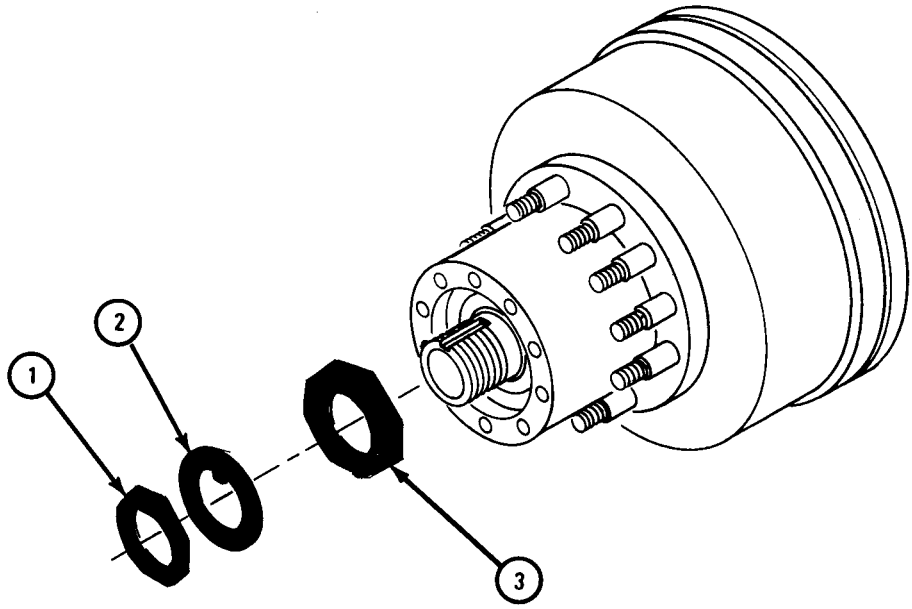
GO TO FRAME 2



FRAME 2

1. Using wheel bearing nut wrench, unscrew and takeoff locknut (1) and washer (2).
2. Using wheel bearing nut wrench, unscrew and takeoff adjusting nut (3).

GO TO FRAME 3



TA 048437

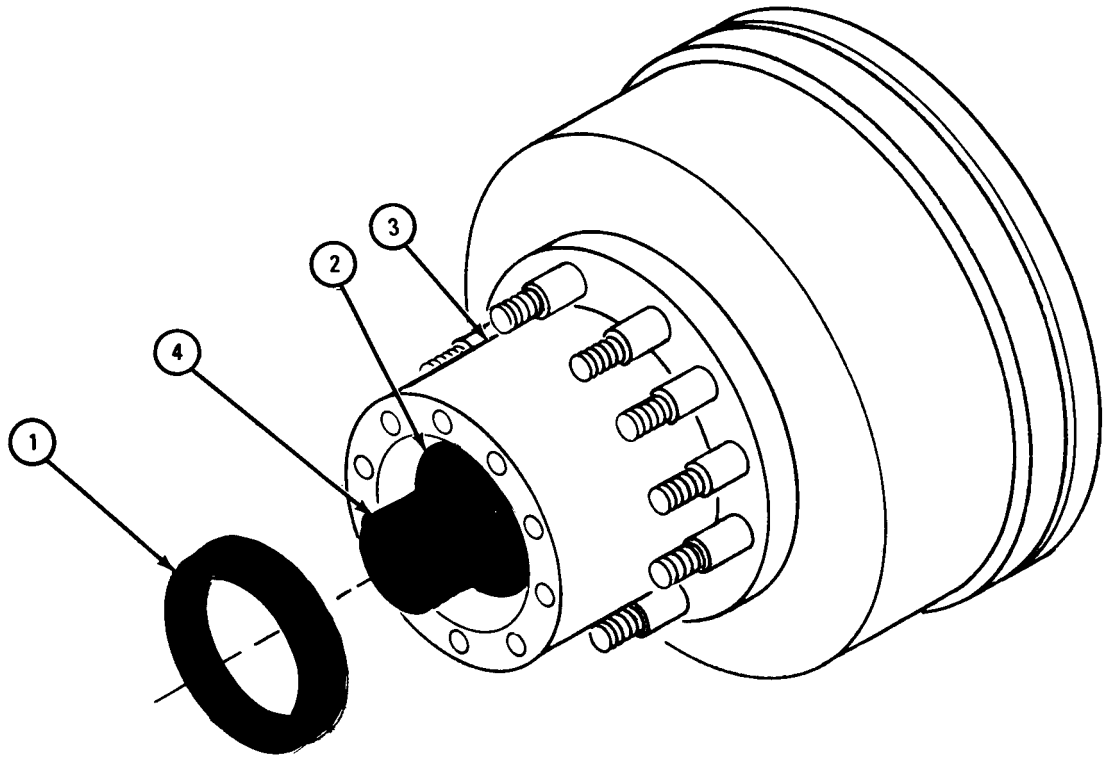
FRAME 3

1. Take out outer seal (1).
2. Take out outer bearing cone (2).

Soldiers A and B

3. Take hub and brake drum assembly (3) off of spindle (4).

END OF TASK



TA 048438

c. Cleaning and Inspection. Clean and inspect wheel bearing cones and cups . Refer to para 13-12.

d. Replacement.

FRAME 1

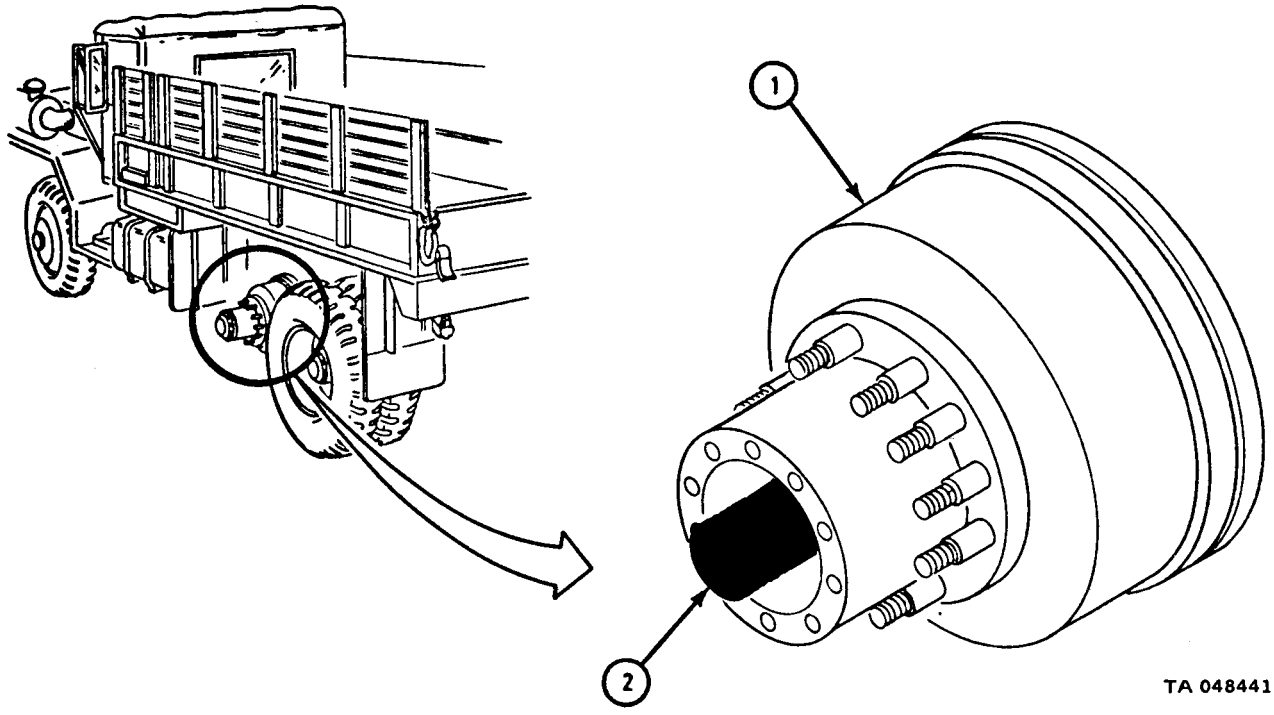
CAUTION

Do not let seal slide on spindle threads as this can damage inner seal lip,

Soldiers A and B

1. Put hub and drum assembly (1) on spindle (2).

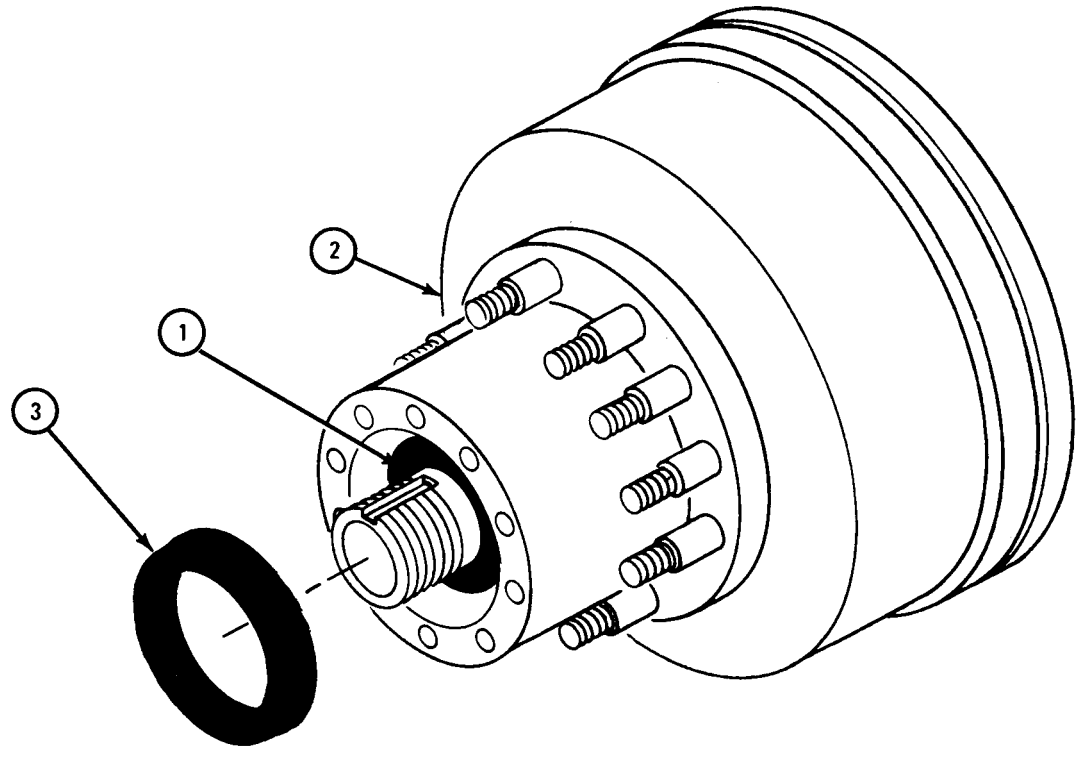
GO TO FRAME 2



FRAME 2

1. Using portable bearing lubricator and hand grease gun, grease outer bearing cone (1).
2. Put outer bearing cone (1) in hub and brake drum assembly (2).
3. Put outer seal (3) in place.

GO TO FRAME 3



TA 048442

FRAME 3

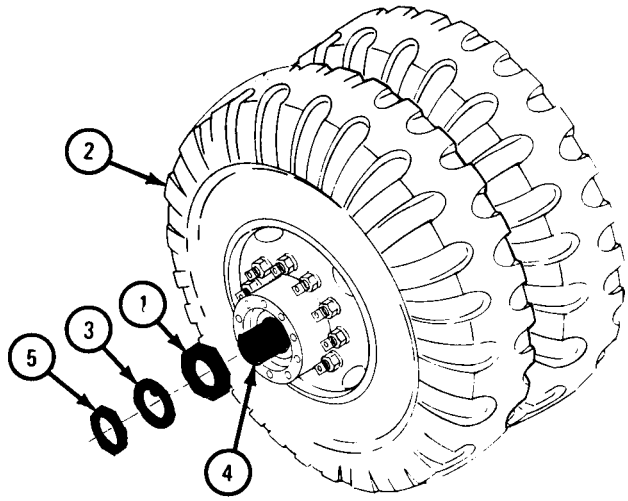
1. Using wheel bearing nut wrench, screw on adjusting nut (l).
2. Replace inner and outer rear wheels. Refer to TM 9-2320-211-10.
3. While turning wheel (2), using wheel bearing nut wrench, tighten adjusting nut (1) until wheel binds.
4. Using wheel bearing nut wrench, back off adjusting nut (1) 1/8 turn.
5. Put one hand on bottom and one hand on top of wheel (2). Push with one hand and pull with other hand to check bearing adjustment.

NOTE

If bearings are adjusted correctly, there will be hardly any play or wobble.

6. Put on washer (3) so that tab on washer fits in keyway in spindle (4).
7. Using wheel bearing nut wrench, screw on and tighten locknut (5).

GO TO FRAME 4

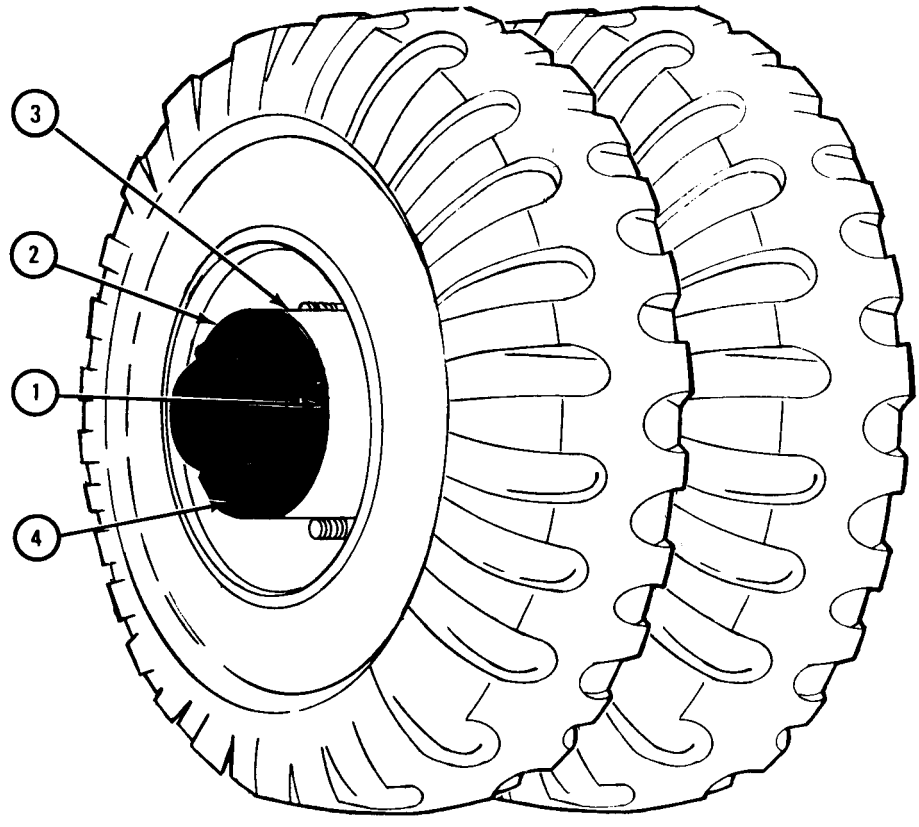


TA 048443

FRAME 4

1. Jack down wheels. Refer to TM 9-2320-211-10.
2. Check brake adjustment. Refer to Part 1, para 12-8 and 12-9.
3. Put gasket (1) and flange and shaft assembly (2) in hub and brake drum assembly (3).
4. Using 3/4-inch wrench, screw on 10 lockwashers and 10 screws (4). Using torque wrench, tighten screws to 81 to 104 pound-feet.

END OF TASK



TA 048444

13-11. REAR WHEEL BEARING CONES AND SEALS REMOVAL AND REPLACEMENT FOR SERVICE.

TOOLS: Portable bearing lubricator, NSN 4930-00-704-1852
Hand grease gun, NSN 4930-00-253-2478
3/4 x 10-inch brass drift pin
Medium ballpeen hammer

SUPPLIES : Artillery and automotive grease, type GAA, MIL-G-10924
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Clean rags

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked on level ground, engine off, hand-brake set.

a. Preliminary Procedure. Remove rear wheels and brake drum assembly. Refer to para 13-9.

b. Removal.

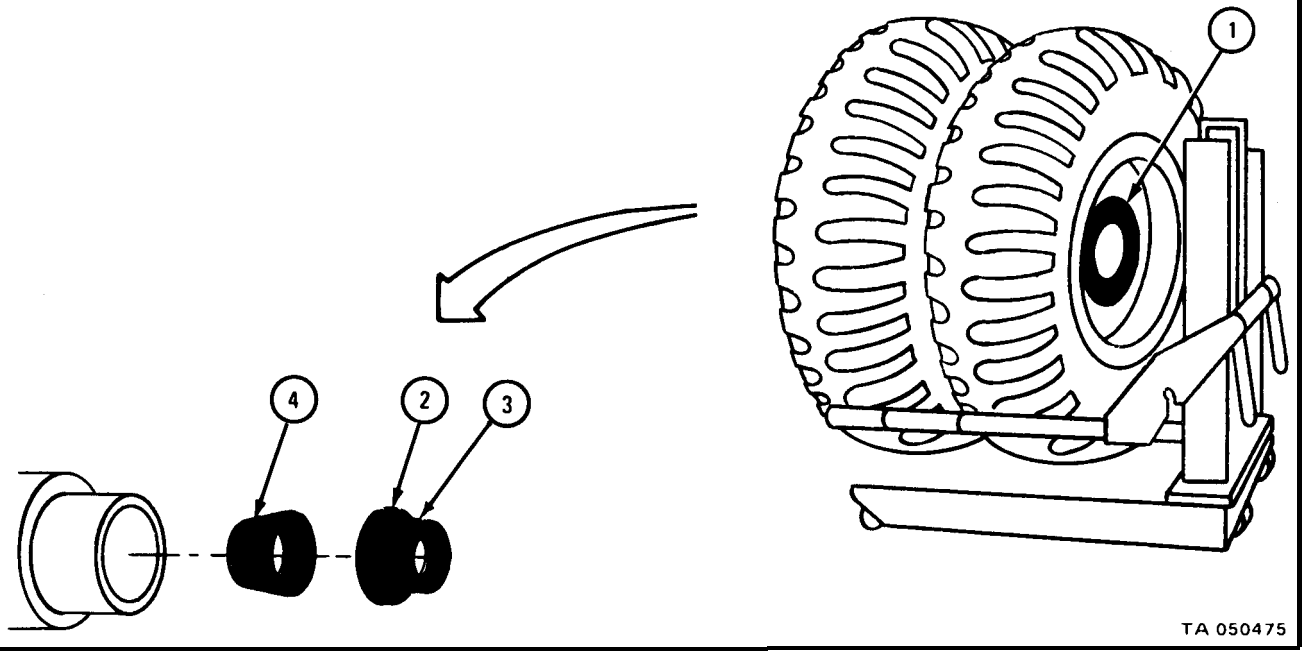
FRAME 1

NOTE

Outer wheel bearing cone and seal are taken out during rear wheels and brake drum assembly removal.

1. Working through front of hub (1) and using hammer and brass drift, tap out wiper (2), seal (3), and inner wheel bearing cone (4).

END OF TASK



c. Cleaning.

NOTE

This task is for both inner and outer wheel bearing cones.

FRAME 1

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

CAUTION

Do not spin bearings at anytime. Spinning will seriously damage bearings. After cleaning, keep bearings clean and dry. Dirt and moisture can damage bearings.

NOTE

All old lubricant must be taken off bearings during cleaning. Do soaking and rapping steps over as necessary to take off all old lubricant.

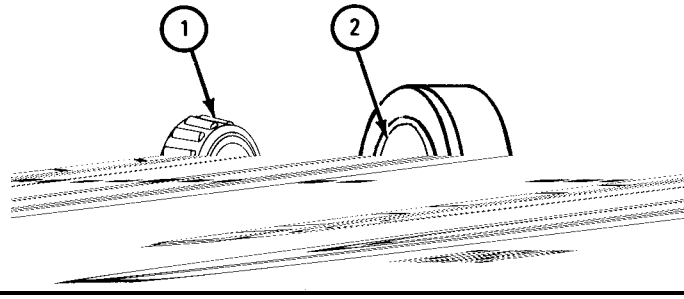
1. Using degreaser and solvent, soak bearing cone (1) to loosen lubricant.
2. If lubricant is left on bearing cone (1) after soaking, rap bearing cone against heel of hand to loosen lubricant.

WARNING

Do not dry wheel bearing with compressed air. Spinning bearings may explode and cause serious injury to personnel.

3. Let wheel bearing cone (1) dry.
4. Using clean rags, wipe all old grease from hub (2).

END OF TASK



d. Inspection.

FRAME 1

NOTE

Inner and outer wheel bearing cups are inside hub . If wheel bearing cone (1) or cup (4) needs replacing, do wheel bearing cones and seals removal and replacement. Refer to para 13-12.

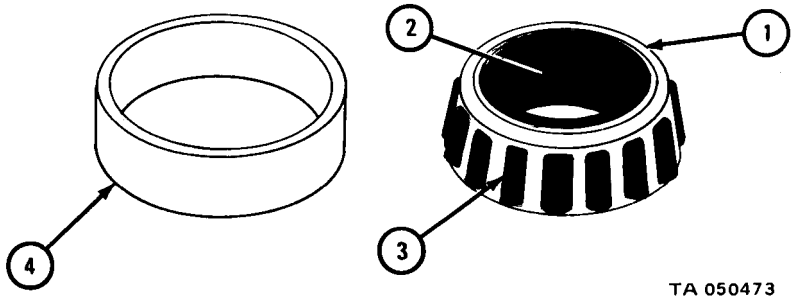
1. Place drop light behind bearing assembly.
2. Hold wheel bearing cone (1) and turn inner race (2) slowly.
3. Check that bearing rollers (3) and wheel bearing cone (1) have no cracks, flaking, pitting or long or deep scratches.
4. Check that wheel bearing cone (1) has not overheated. Wheel bearing cone will turn blue where it has overheated.
5. Check that bearing cups (4) have no dents on small depressions.

NOTE

If bearing rollers (3) are damaged, throw away bearing cone (1) and get a new one.

6. Check that bearing cups (4) and bearing rollers (3) are not splintered or chipped.
7. Throw away damaged parts and get new ones.

END OF TASK



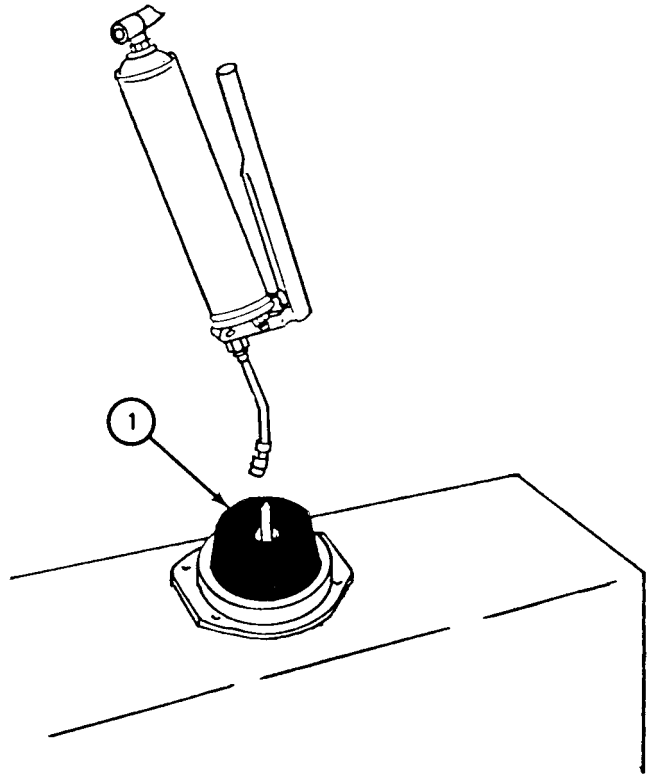
TA 050473

e. Lubrication.

FRAME 1

1. Put wheel bearing cone (1) into portable bearing lubricator as shown.
2. Using hand grease gun, grease wheel bearing cone (1) until grease comes out of sides of bearing.

END OF TASK



f. Replacement.

FRAME 1

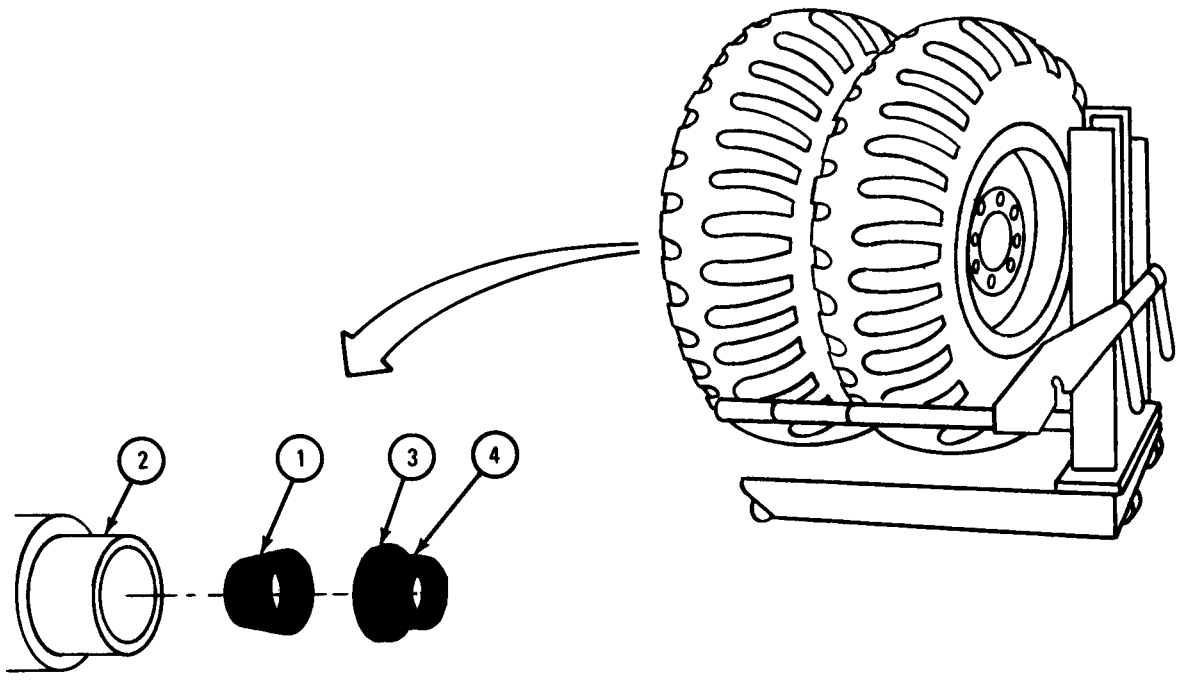
1. Put inner wheel bearing cone (1) in hub (2).
2. Using hammer and brass drift pin, tap in seal (3) and wiper (4).
3. Using clean rag, wipe all grease from seal (3) and hub (2).

NOTE

Follow-on Maintenance Action Required:

Replace rear wheels and drum assembly. Refer to para 13-9.

END OF TASK



TA 050476

13-12. REAR INNER AND OUTER WHEEL BEARINGS AND SEALS REMOVAL AND REPLACEMENT.

TOOLS: Brass drift
Bearing cup puller
Seal remover and replacer
Hammer
Portable bearing lubricator, NSN 4930-00-704-1852
Hand grease gun, NSN 4930-00-253-2478

SUPPLIES: Clean rags
Artillery and automotive grease, type GAA, MIL-G-10924
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked on level ground, engine off, hand-brake set.

a. Preliminary Procedure. Remove rear hub and brake drum assembly. Refer to para 13-10.

NOTE

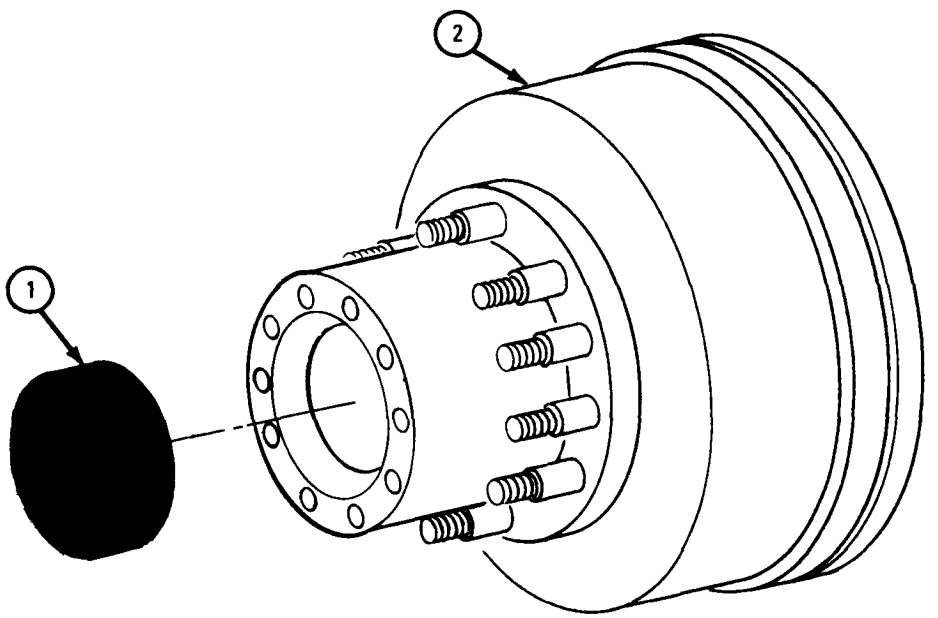
Outer wheel bearing and seal are taken out during rear hub and drum assembly removal.

b. Removal.

FRAME 1

1. Using bearing cup puller, take out outer bearing cup (1).
2. Turn over hub and brake drum assembly (2).

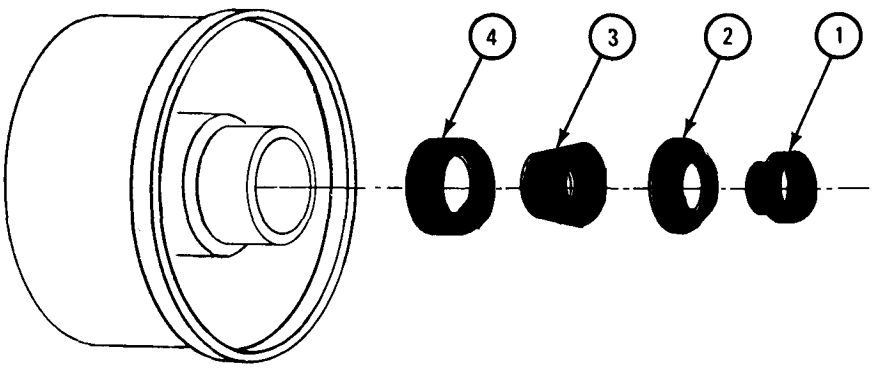
GO TO FRAME 2



FRAME 2

1. Using hammer and seal remover and replacer, tap out wiper (1) and inner seal (2). Throw away seal.
2. Take out inner wheel bearing cone (3).
3. Using bearing cup puller, take out inner wheel bearing cup (4).

END OF TASK



TA 102648

c. Cleaning.

NOTE

This task is for both inner and outer wheel bearing cones.

FRAME 1

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

CAUTION

Do not spin bearings at any time. Spinning will seriously damage bearings.

After cleaning, keep bearings clean and dry. Dirt and moisture can damage bearings.

NOTE

All old lubricant must be taken off bearings during cleaning. Do soaking and clapping steps over as necessary to take off all old lubricant.

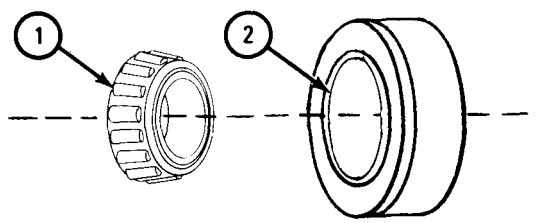
1. Using degreaser and solvent, soak bearing cone (1) to loosen lubricant.
2. If lubricant is left on bearing cone (1) after soaking, clap bearing cone against heel of hand to loosen lubricant.

WARNING

Do not dry wheel bearing with compressed air. Spinning bearings may explode and cause serious injury to personnel.

3. Let wheel bearing cone (1) dry.
4. Using clean rags, wipe all old grease from hub (2).

END OF TASK



TA 102649

d. Inspection.

FRAME 1

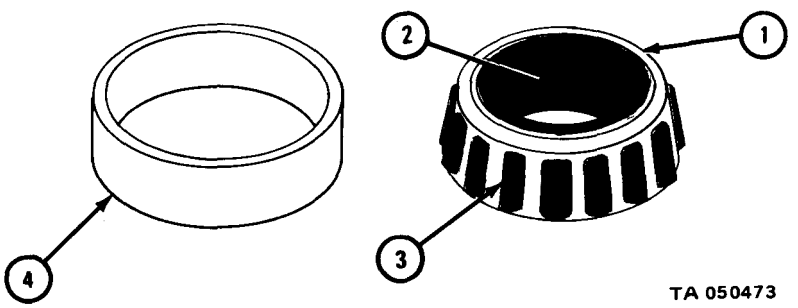
1. Place drop light behind bearing assembly.
2. Hold wheel bearing cone (1) and turn inner race (2) slowly.
3. Check that bearing rollers (3) and wheel bearing cone (1) have no cracks, flaking, pitting or long or deep scratches.
4. Check that wheel bearing cone (1) has not overheated. Wheel bearing cone will turn blue where it has overheated.
5. Check that bearing cups (4) have no dents or small depressions.

NOTE

If bearing rollers (3) are damaged, throw away bearing cone (1) and get a new one.

6. Check that bearing cups (4) and bearing rollers (3) are not splintered or chipped.
7. Throw away damaged parts and get new ones.

END OF TASK



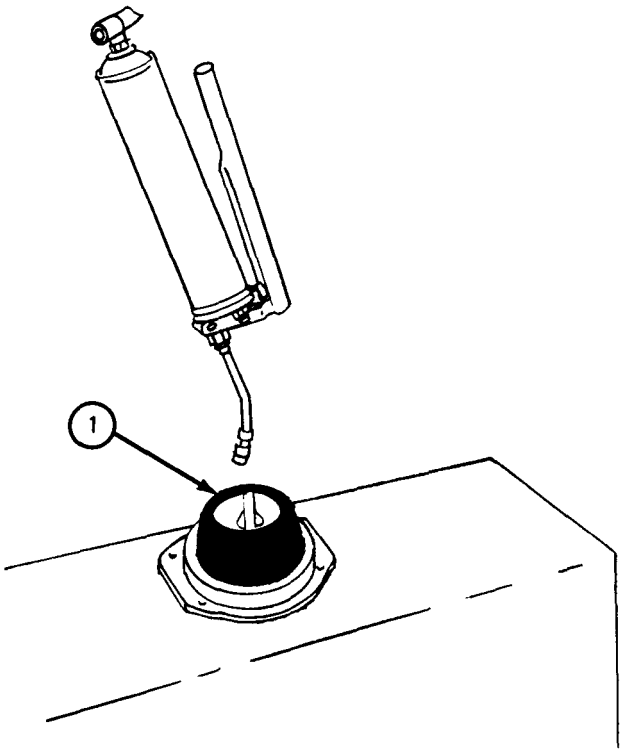
TA 050473

e. Lubrication.

FRAME 1

1. Put wheel bearing cone (1) into portable bearing lubricator as shown.
2. Using hand grease gun, grease wheel bearing cone (1) until grease comes out of sides of bearing.

GO TO FRAME 2



TA 102966

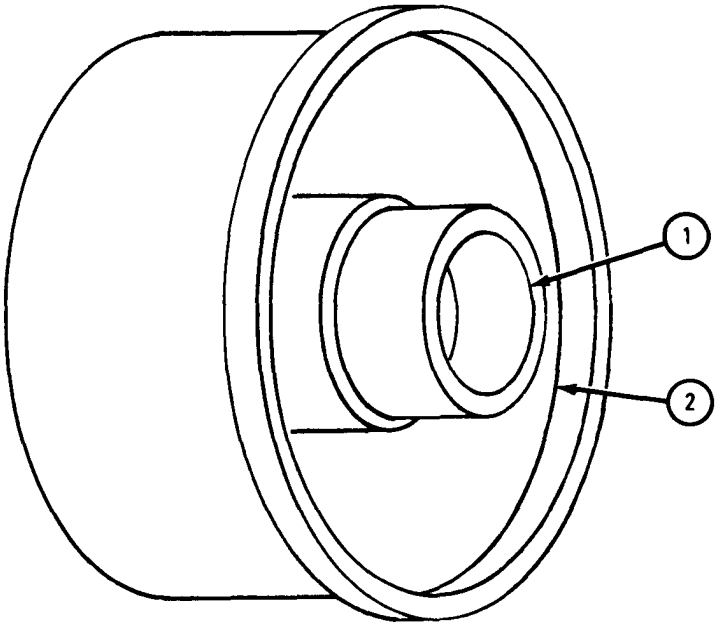
FRAME 2

1. Using clean rag, clean all old grease from inside of hub (1).

CAUTION

Do not get any grease on face of brake drum (2). Grease on brake drum will cause brakes to pull or grab.

END OF TASK



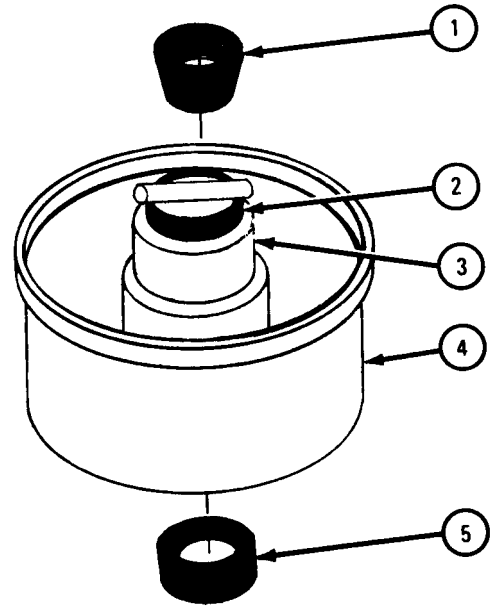
TA 102967

f. Replacement.

FRAME 1

1. Put wheel bearing cone (1) into inner wheel bearing cup (2). Put wheel bearing cup into hub (3) as shown. Take wheel bearing cone out of wheel bearing cup.
2. Using hammer and brass drift, lay brass drift on top of wheel bearing cup (2) as shown. Tap brass drift until wheel bearing cup is in hub (3).
3. Using hammer and brass drift, tap sides of wheel bearing cup (2) evenly all around until it is seated all the way down inside hub (3).
4. Turn over hub and brake drum assembly (4) and do steps 1 through 3 again for outer wheel bearing cup (5).

GO TO FRAME 2



TA 102968

FRAME 2

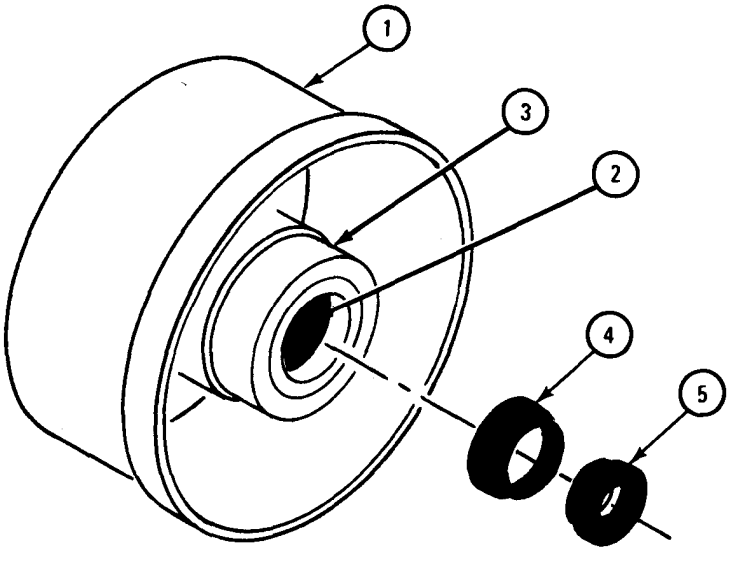
1. Turn over hub and brake drum assembly (1) as shown.
2. Put inner wheel bearing cone (2) in hub (3).
3. Using seal remover and replacer and hammer, tap in seal (4) and wiper (5).

NOTE

Follow-on Maintenance Action Required:

Replace rear hub and brake drum assembly. Refer to para 13-10.

END OF TASK



TA 102969

Section IV. TIRES

13-13. PNEUMATIC TIRE AND TUBE REMOVAL AND REPLACEMENT.

TOOLS: Curve spoon tire iron
Locking ring tire iron
Tire demounter
3-pound mallet
2 x 4 x 12-inch wood block (3)

SUPPLIES: None

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

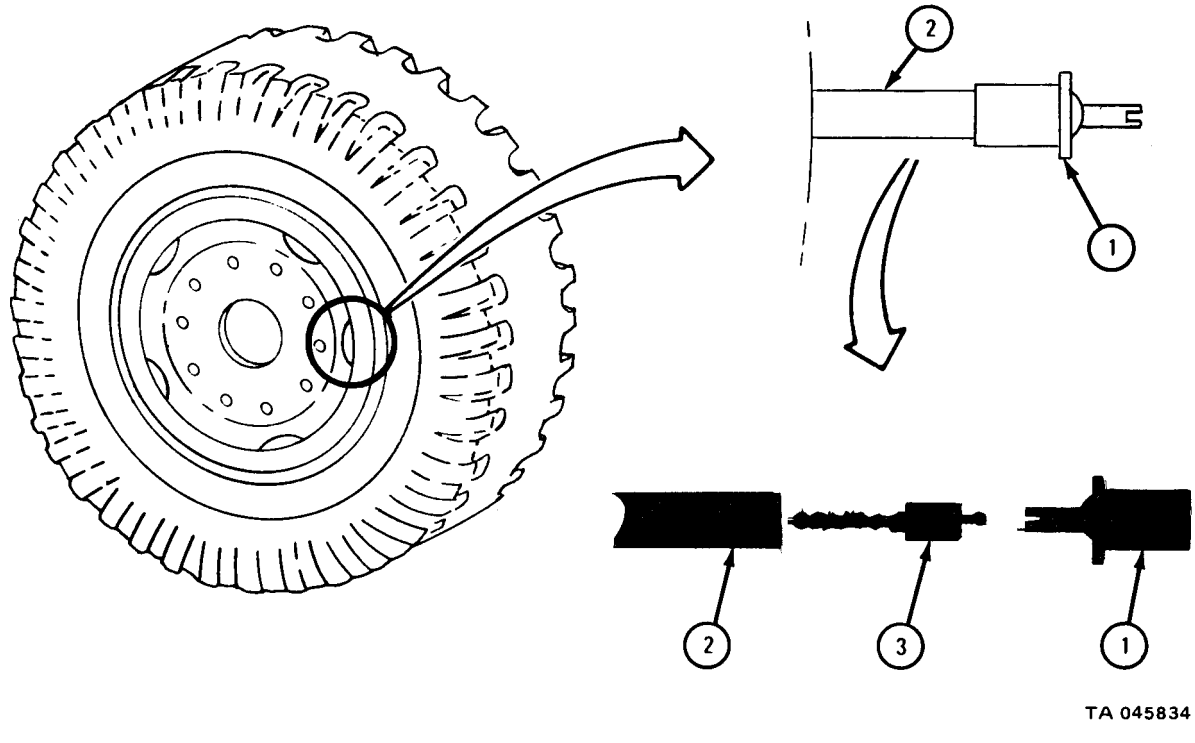
a. Preliminary Procedure. Remove wheel from truck. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Unscrew tire valve cap (1) from valve stem (2).
2. Using tire valve cap (1) as tool, unscrew valve core (3) out of valve stem (2). Air will come out of tire.

GO TO FRAME 2



FRAME 2

WARNING

Do not work on tire until all the air is out of it. Stand clear of retaining ring to avoid injury if the ring should fly off.

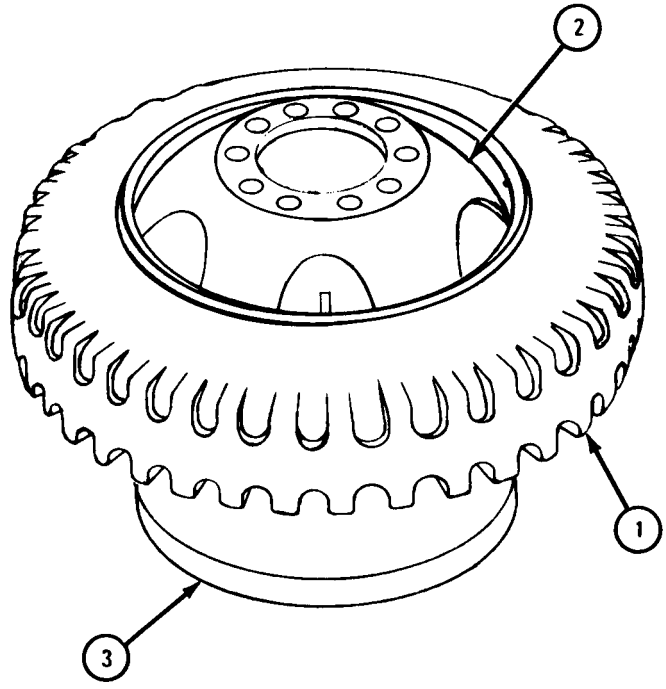
NOTE

Put soap and water solution on tire bead to help in the removal of the tire (1) from rim (2).

Soldiers A and B

1. When all of the air is out of tire (1), put tire and rim (2) on demounter base (3).

GO TO FRAME 3



TA 045835

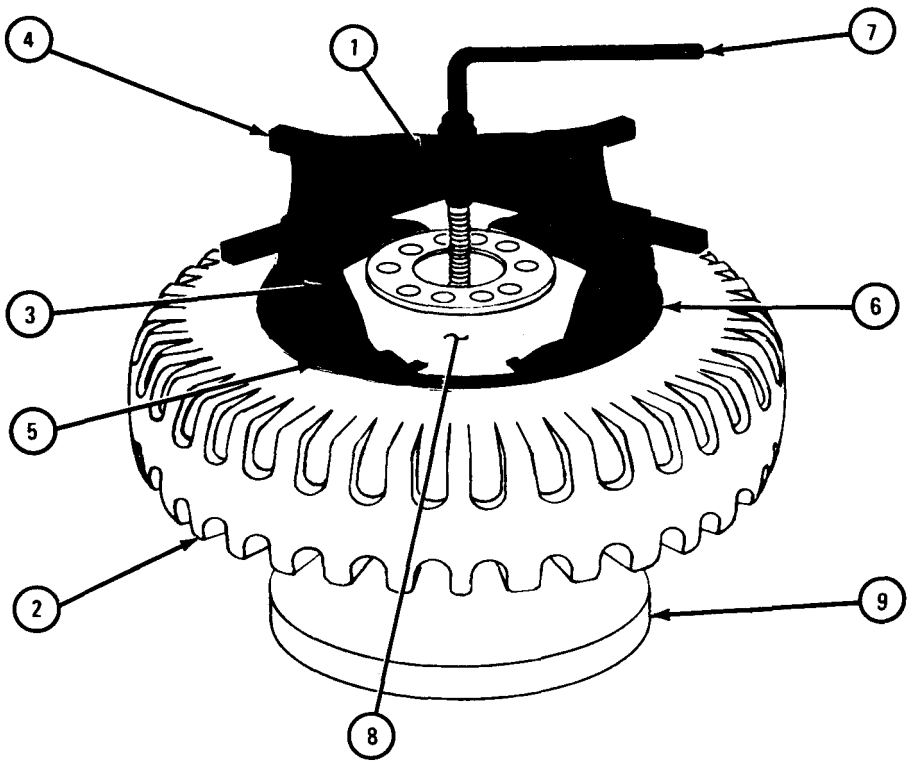
FRAME 3

1. Put demounter (1) in place on tire and rim assembly (2).
2. Slide four bead breaker feet (3) into position on cross arms (4) and seat bead breaker feet on tire bead (5) against retaining ring (6).
3. Screw in handle (7) until tire bead (5) breaks away from rim (8).
4. Unscrew handle (7) until tire bead (5) breaks away from rim (8).

Soldiers A and B

5. Turn tire and rim assembly (2) over on demounter base (9). Do steps 1 through 4 again on other side of tire and rim assembly.
6. Take tire and rim assembly (2) off demounter base (9).

GO TO FRAME 4

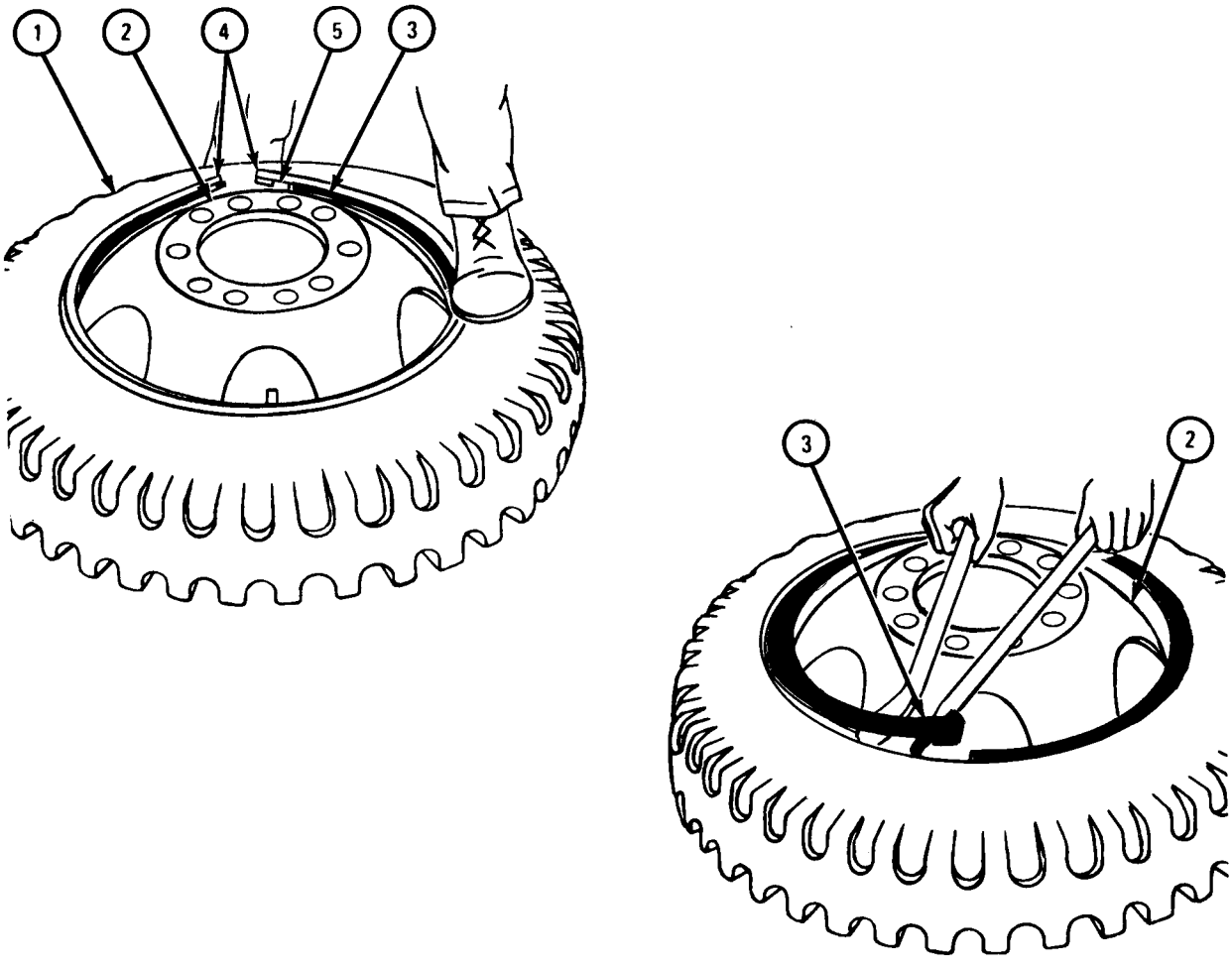


TA 045836

FRAME 4

1. Put tire (1) and rim (2) on a hard flat surface.
2. Using foot, push tire (1) down from retaining ring (3) at joining ends (4).
3. Put one tire iron between joining ends (4) and other tire iron into notch (5).
4. Using both tire irons, pry retaining ring (3) open and out of rim (2) by sliding one tire iron after the other as shown.

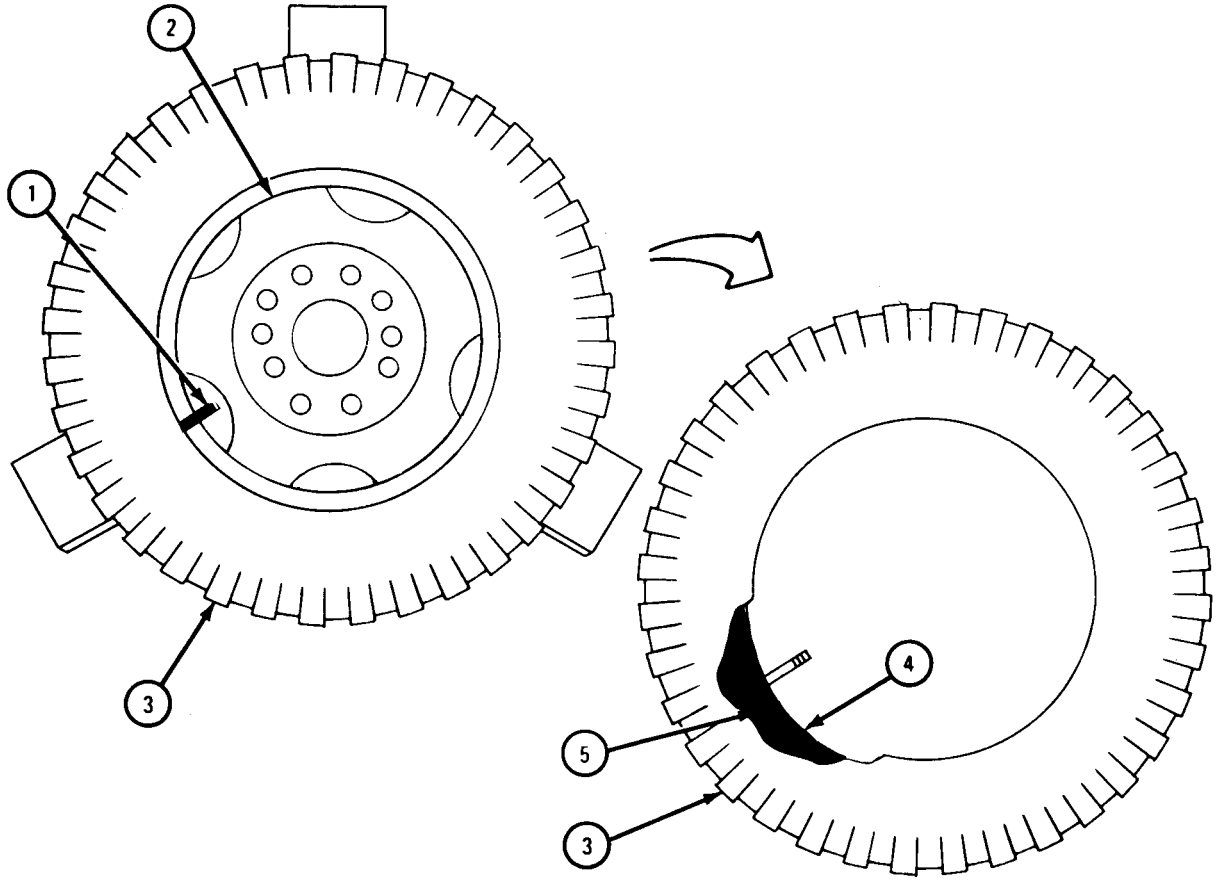
GO TO FRAME 5



FRAME 5

1. Push valve stem (1) through rim (2) so it stays inside tire (3).
2. Put tire (3) on wood blocks. Using foot, push rim (2) down and out of tire.
3. Lift tire (3) off blocks and rim (2).
4. Take tire liner (4) and tube (5) out of tire (3) .

END OF TASK



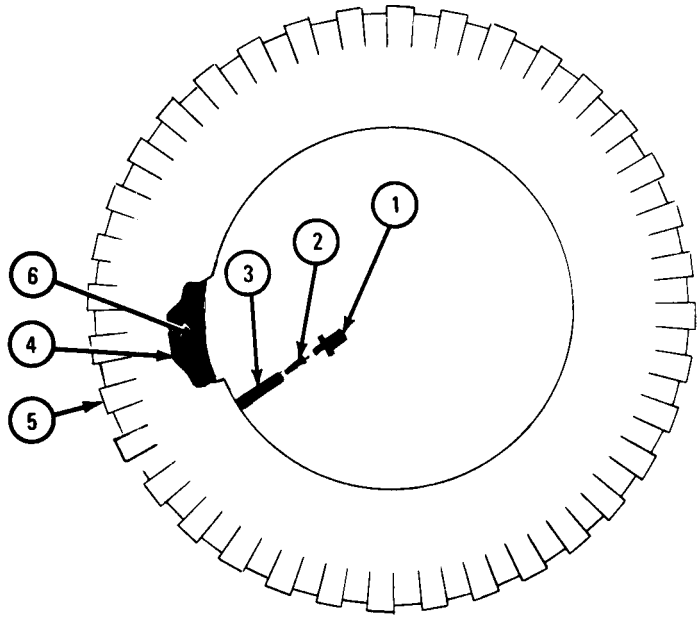
TA 083937

c. Replacement.

FRAME 1

1. Using valve cap (1) as tool, screw valve core (2) into valve stem (3).
2. Put tube (4) into tire (5).
3. Put just enough air in tube (4) so tube holds shape. Refer to TM 9-2320-211-10 for tire inflation procedures.
4. Put tire liner (6) over valve stem (3) and into tire (5). Make sure tube (4) and tire liner are straight and not pinched.

GO TO FRAME 2

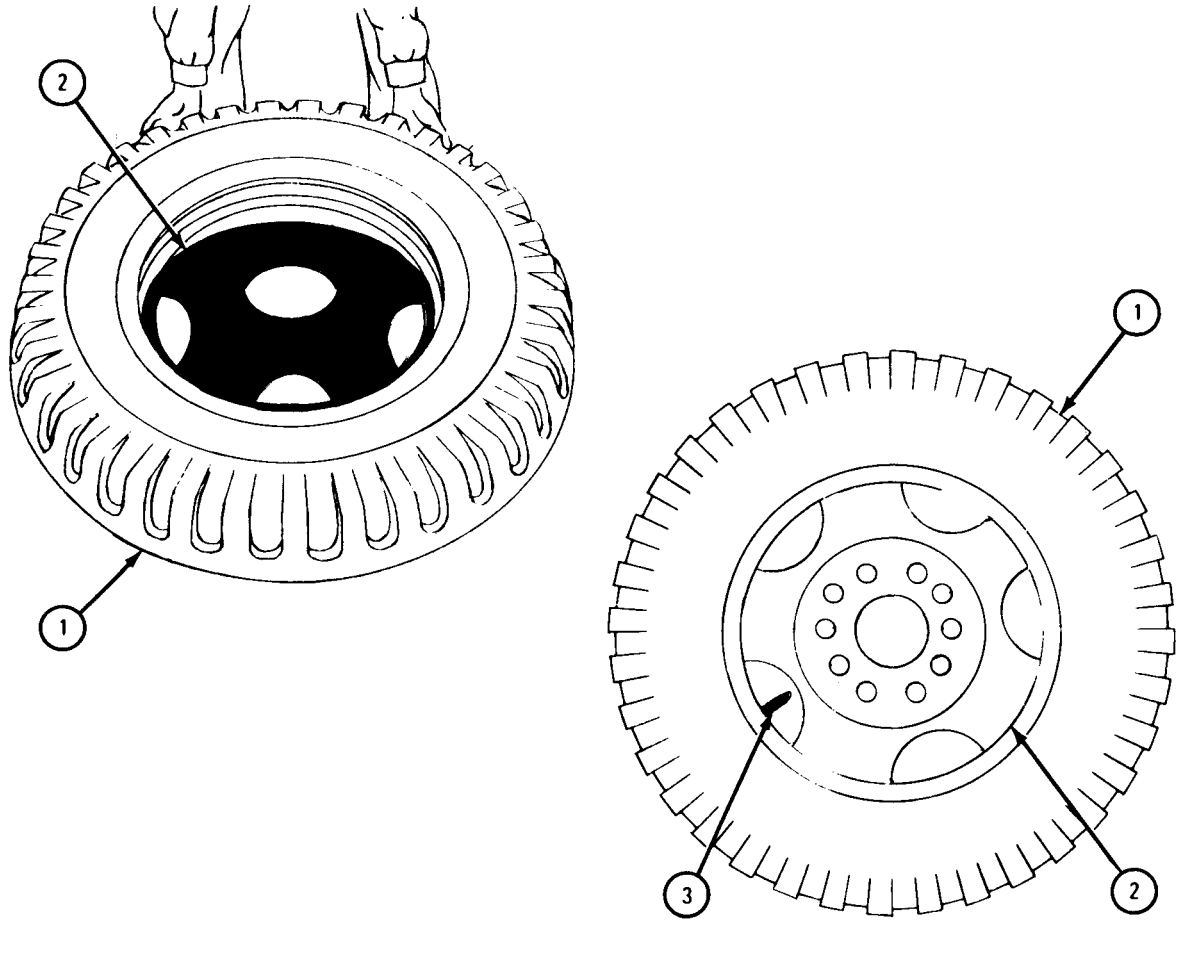


TA 080858

FRAME 2

1. Put tire (1) onto rim (2) so that valve stem (3) will point to high part of rim (2). Valve stem must line up with hole in rim.
2. Put valve stem (3) through hole in rim (2).
3. Seat tire (1) firmly onto rim (2).

GO TO FRAME 3



TA 083938

FRAME 3

1. Put end (1) of retaining ring (2) into rim groove (3) of rim (4). Check that the end is caught in the rim groove.
2. Using locking ring tire iron, put it in slot (5) in retaining ring (2). Pry iron toward out side of rim (4) forcing retaining ring into rim groove (3).
3. Using foot, walk retaining ring (2) into rim groove (3) until it is seated fully all the way around rim (4).
4. Using mallet, hammer all the way around on retaining ring (2) to make sure that it is fully caught in rim groove (3).

WARNING

Be careful when inflating tire. Remounted tires should always be inflated in a safety cage. If a safety cage is not available, turn tire and rim over with outer hub-side down.

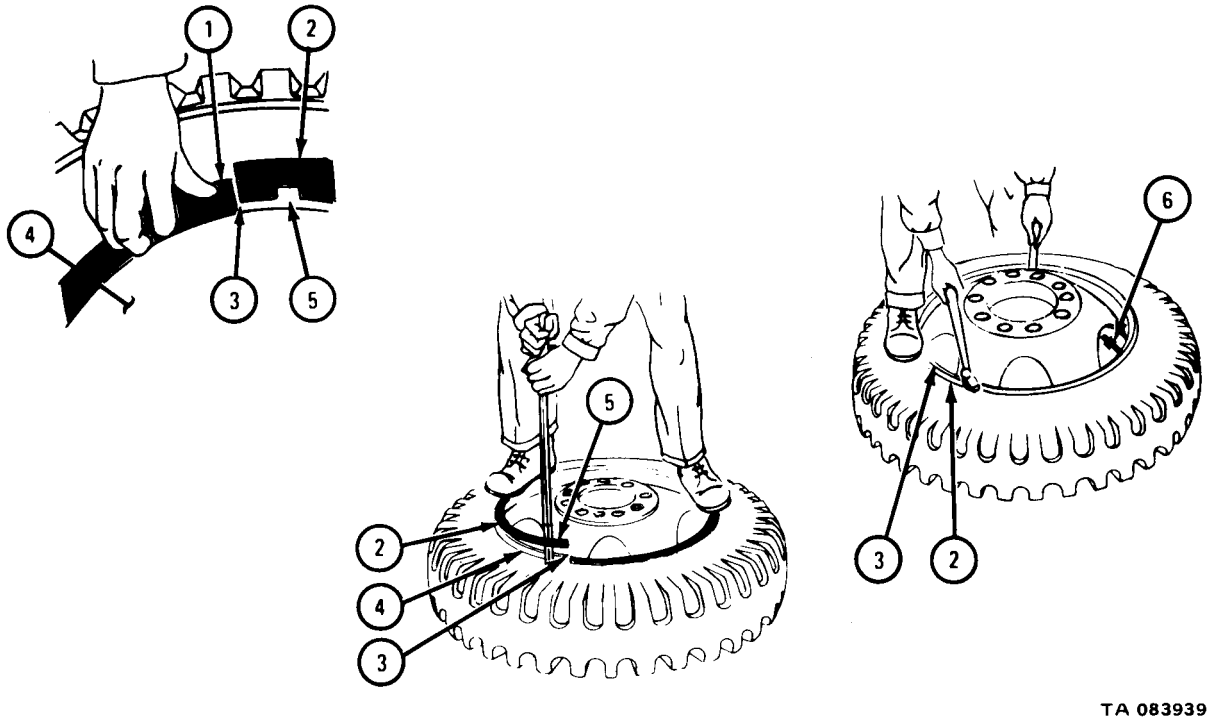
5. Put air in tire. Refer to TM 9-2320-211-10. Screw on valve cap (6) after inflating tire.

NOTE

Follow-on Maintenance Action Required:

Replace tire on truck. Refer to TM 9-2320-211-10.

END OF TASK



TA 083939

CHAPTER 14

STEERING SYSTEM GROUP MAINTENANCE

Section I. SCOPE

14-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for the mechanical steering gear assembly, steering hoses, lines, and fittings, and steering reservoir for which there are authorized corrective maintenance tasks at the organizational maintenance level.

14-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. MECHANICAL STEERING GEAR ASSEMBLY

14-3. FRONT WHEEL ALINEMENT.

TOOLS: Toe-in gage
15/16-inch wrench (2)
10-inch pipe wrench

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked on smooth level ground, wheels in straight ahead position, engine off, handbrake set.

a. Preliminary Procedures.

(1) Put air in front tires to correct pressure. Refer to TM 9-2320-211-10.

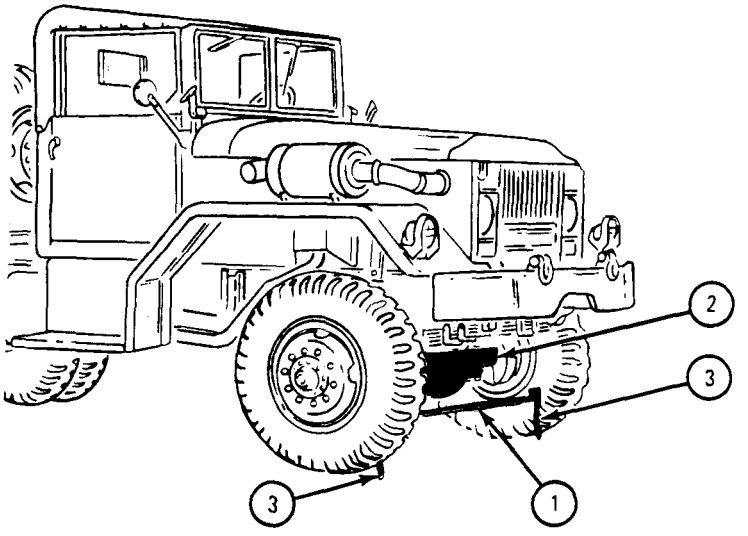
(2) Check wheel bearing adjustment. Refer to para 13-4.

b. Toe-in Check and Adjustment.

FRAME 1

1. Place toe-in gage (1) between front wheels at middle of tire as far in front of axle (2) as possible.
2. Move toe-in gage (1) up and down until chains (3) just touch the ground.

GO TO FRAME 2

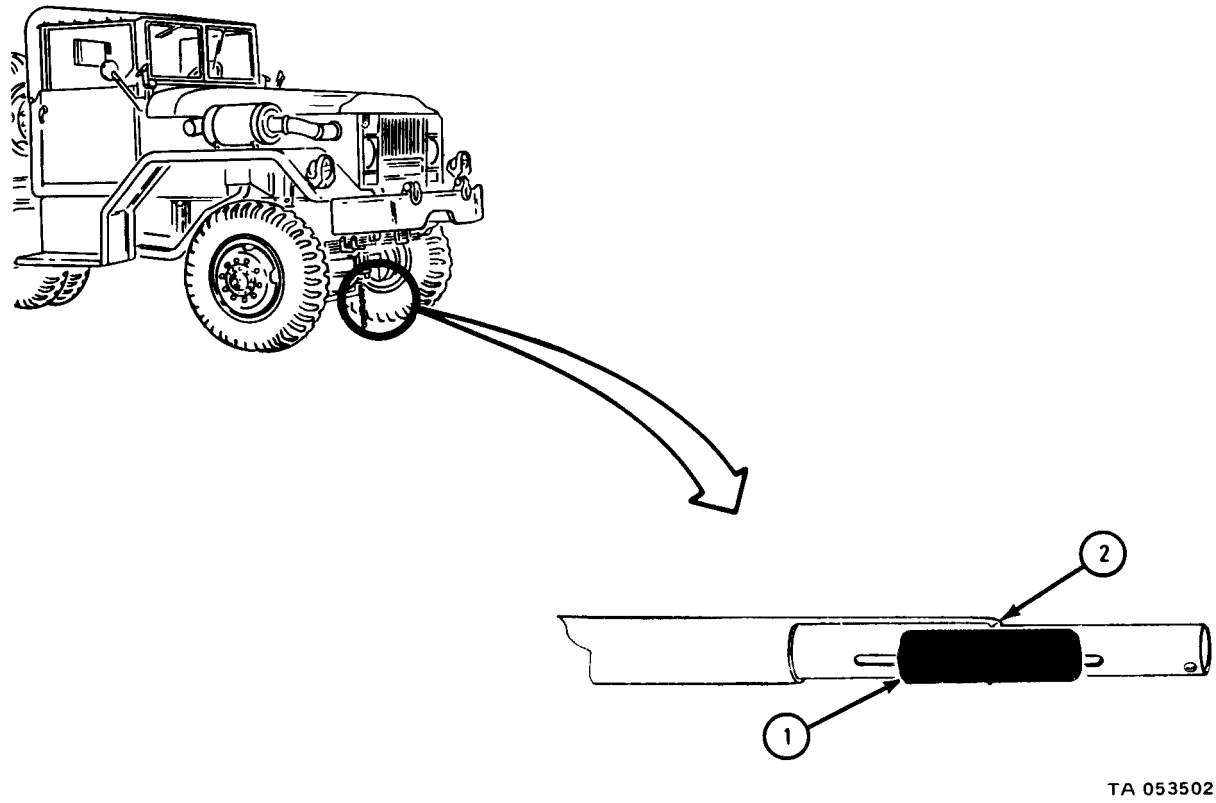


TA 053501

FRAME 2

1. Move scale (1) so that pointer (2) reads zero.

GO TO FRAME 3



TA 053502

FRAME 3

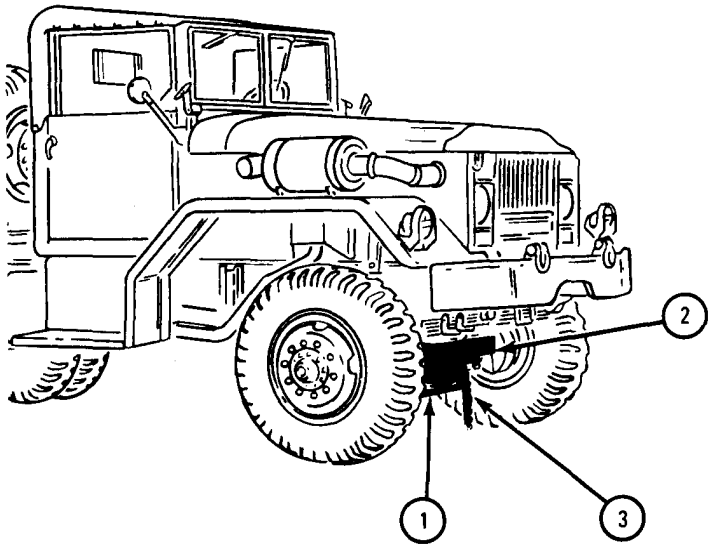
Soldier A 1. Start engine. Refer to TM 9-2320-211-10.

2. With toe-in gage (1) in place, move truck forward so that toe-in gage is in back of axle (2) and chains (3) just touch the ground.

Soldier B 3. Tell soldier A when chains (3) just touch the ground.

Soldier A 4. Stop engine. Refer to TM 9-2320-211-10.

GO TO FRAME 4

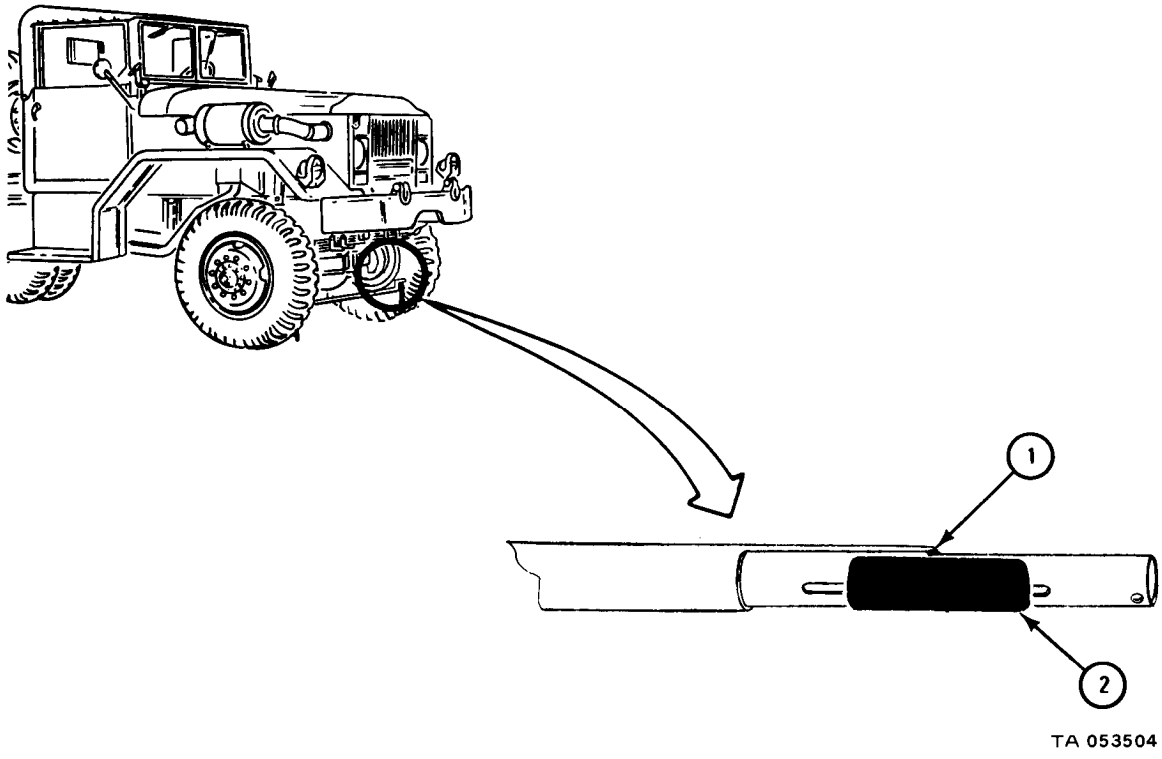


TA 053503

FRAME 4

1. Read position of pointer (1) on scale (2). Pointer should read -1/6 to -3/16 inch TOE IN.

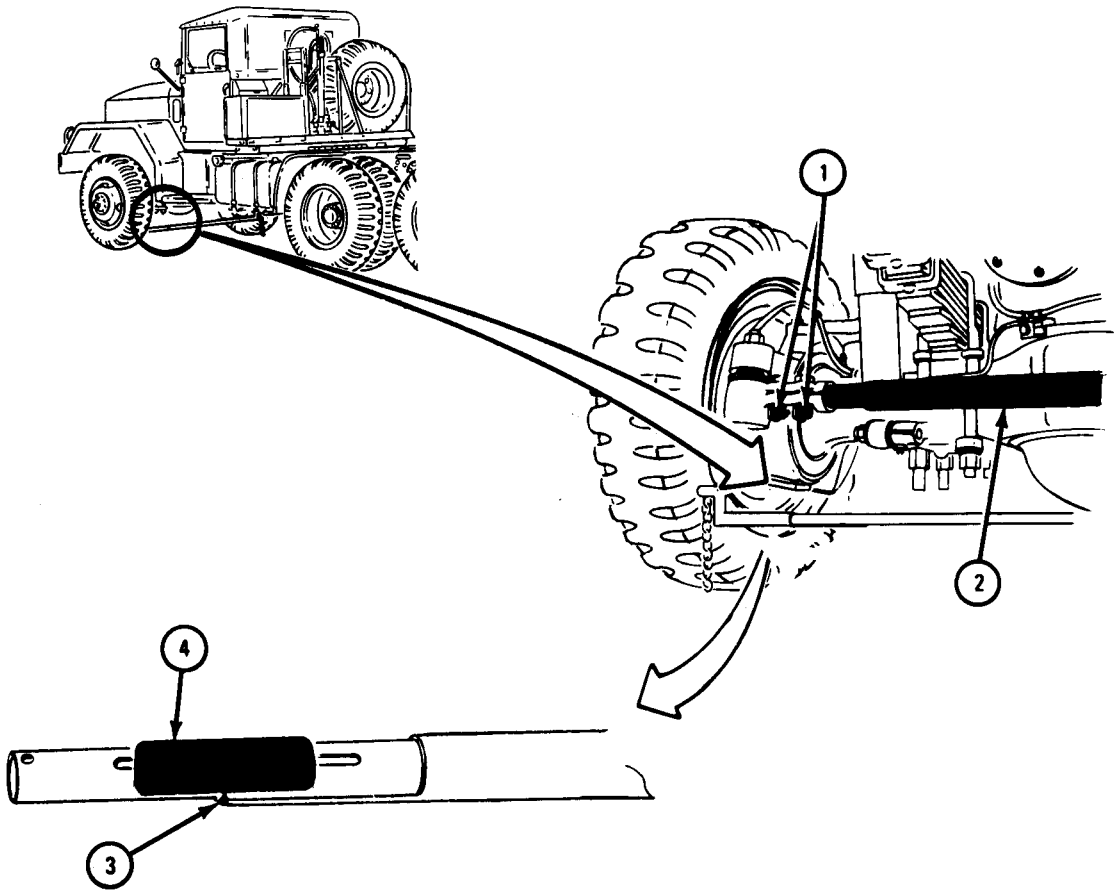
IF READING IS NOT WITHIN GIVEN LIMITS, LEAVE TOE-IN GAGE IN PLACE AND GO TO FRAME 5.
IF READING IS WITHIN GIVEN LIMITS, GO TO FRAME 6



FRAME 5

1. Using wrenches, loosen two nuts (1) at each end of tie rod (2).
2. Using pipe wrench, turn tie rod (2) until pointer (3) reads -1/16 to -3/16 inch TOE IN on scale (4).
3. Using wrenches, tighten two nuts (1) at each end of tie rod (2).

GO TO FRAME 6

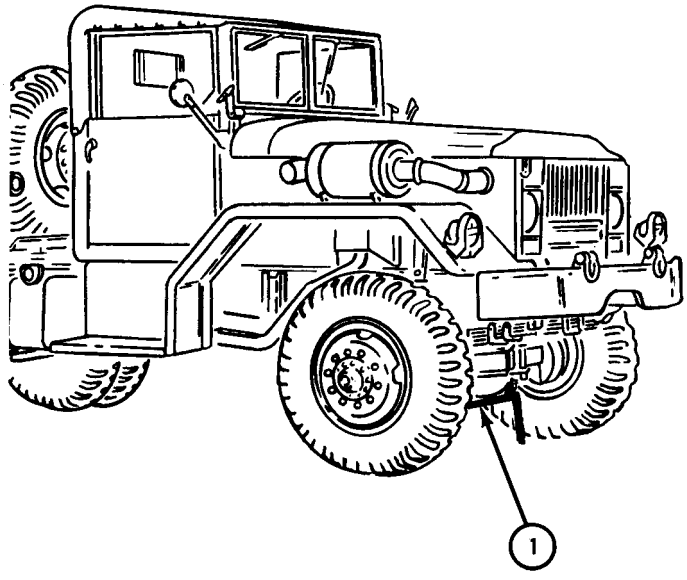


TA 053505

FRAME 6

1. Take off toe-in gage (1).

END OF TASK



TA 053506

14-4. PITMAN ARM REMOVAL AND REPLACEMENT.

TOOLS: 1 13/16-inch wrench
7/8-inch wrench
Hammer
Puller
Torque wrench, 600 pound-feet capacity

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

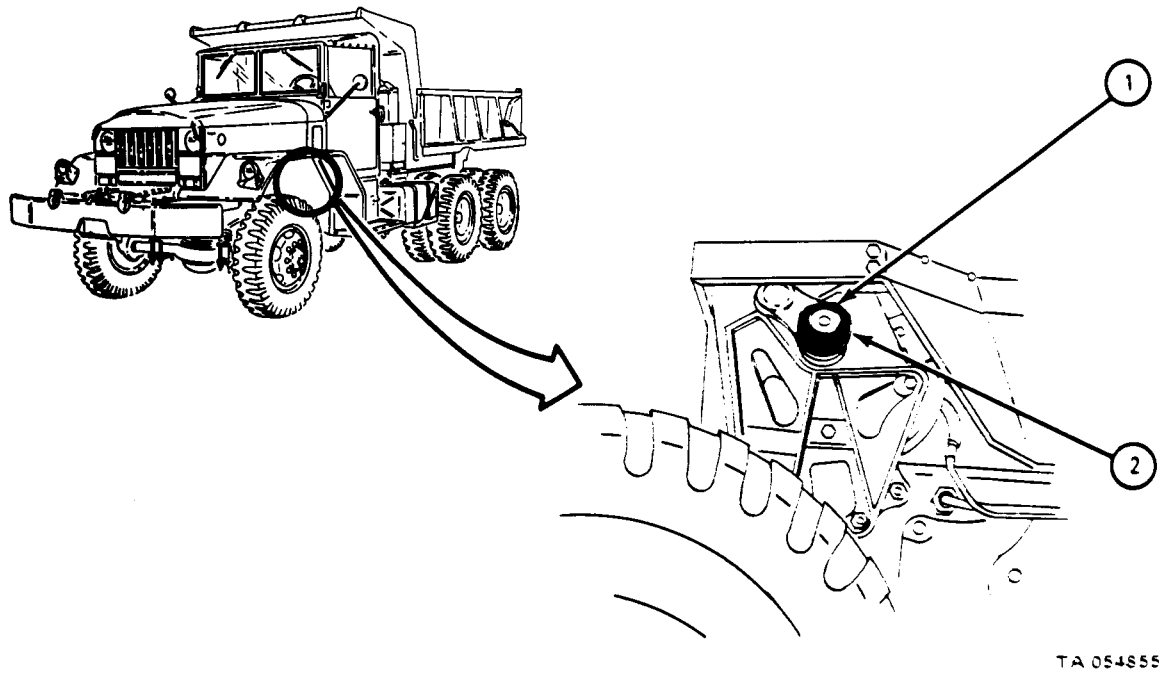
a. Preliminary Procedure. Remove upper drag link from pitman arm. Refer to para 14-6.

b. Removal.

FRAME 1

1. Using 1 13/16-inch wrench, unscrew and take off nut (1).
2. Take off lockwasher (2).

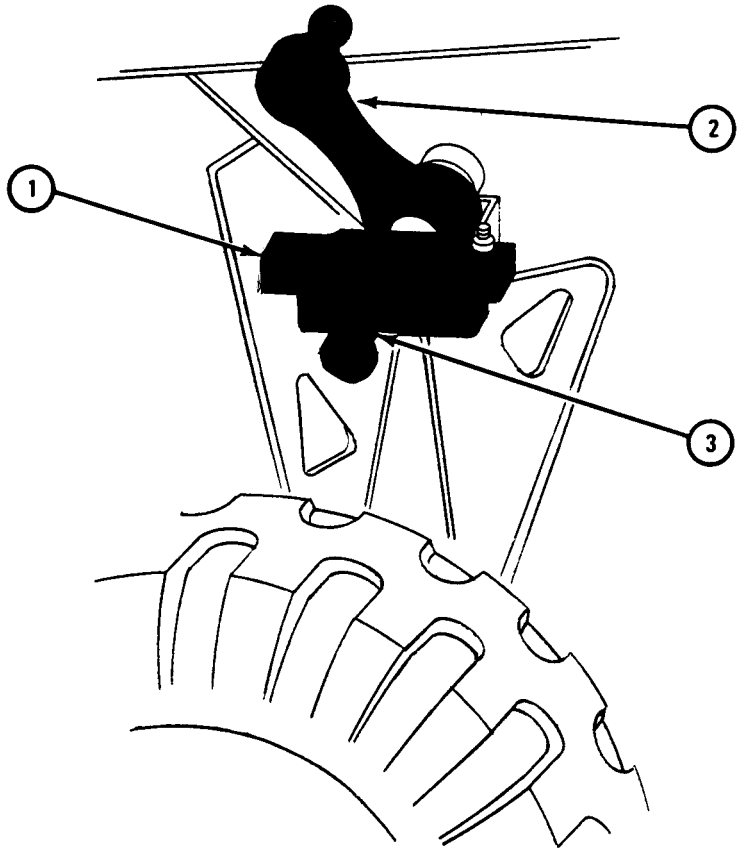
GO TO FRAME 2



FRAME 2

1. Put puller (1) on pitman arm (2).
2. Using 7/8-inch wrench, screw in bolt (3). If pitman arm does not come off, tap bolt with hammer and screw bolt in again.
3. Do step 2 again until pitman arm (2) is loose.
4. Take off puller (1) and pitman arm (2).

END OF TASK



TA 054856

c. Replacement.

FRAME 1

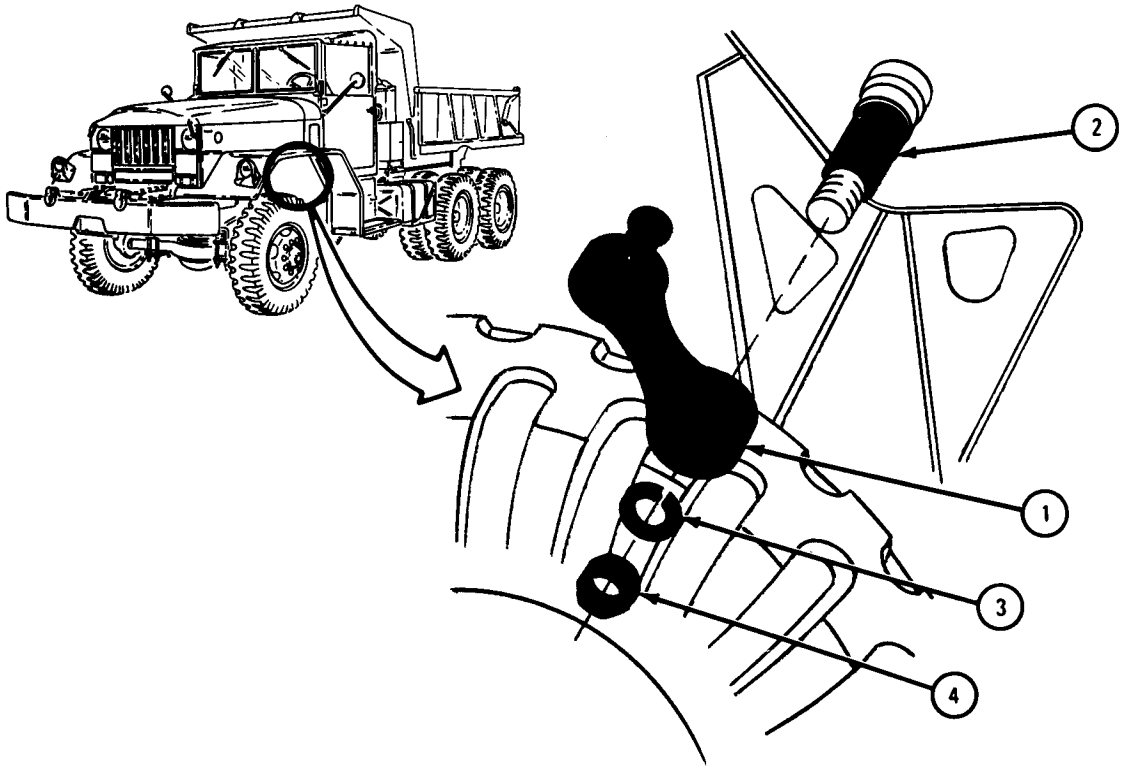
1. Turn steering wheel all the way to the right. Counting the turns, turn steering wheel all the way to the left.
2. Turn steering wheel to the right one half the number of turns counted. The steering wheel is now centered.
3. Put pitman arm (1) in place on splined shaft (2) with pitman arm pointed straight up and ball socket facing in toward truck.
4. Using hammer, tap pitman arm (1) near splined shaft (2) until threaded end of splined shaft comes through pitman arm. Be careful not to hit splined shaft.
5. Put lockwasher (3) on splined shaft (2). Using 1 13/16-inch wrench, screw on and tighten nut (4).
6. Using torque wrench, tighten nut (4) to 400 pounds-feet.

NOTE

Follow-on Maintenance Action Required:

Replace upper drag link. Refer to para 14-6.

END OF TASK



TA 054857

14-5. STEERING TIE ROD ASSEMBLY AND TIE ROD END REMOVAL AND REPLACEMENT.

TOOLS: Pliers
15/16-inch wrench (2)
Tie rod end puller
Small hammer
Chisel
Pipe wrench
1 5/16-inch socket wrench
Ratchet handle
Puller kit

SUPPLIES: None

PERSONNEL: One

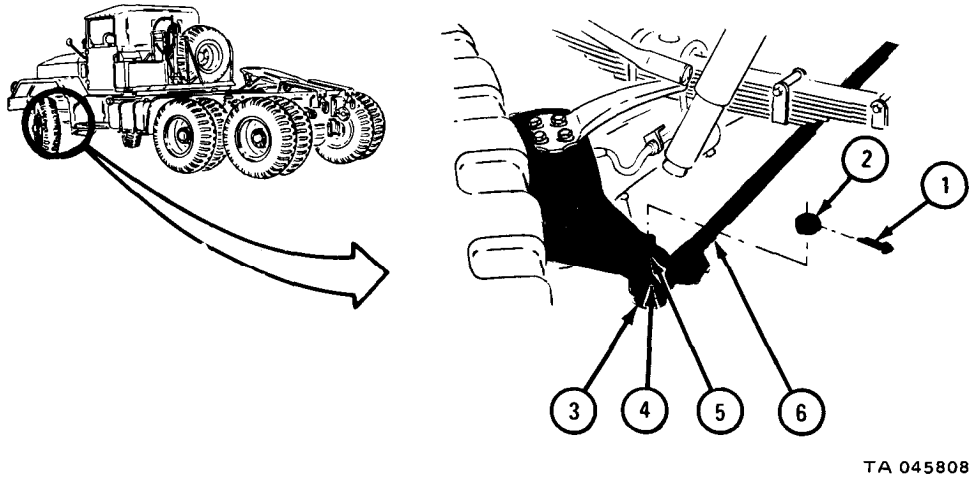
EQUIPMENT CONDITION: Truck parked on level surface, engine off, handbrake set.

a. Removal of Tie Rod Assembly.

FRAME 1

1. Jack up and support front axle housing. Refer to Part 1, para 10-3.
2. Using pliers, take out cotter pin (1).
3. Using 1 5/16-inch socket wrench with ratchet handle, unscrew and take off nut (2).
4. Using puller, take tie rod end (3) out of steering knuckle (4). If necessary, using hammer, hit steering knuckle to loosen tie rod end. Do not drop loose parts on tie rod end.
5. Screw nut (2) onto ball stud (5).
6. Do steps 2 through 5 again for other end of tie rod assembly (6).
7. Take out tie rod assembly (6).

END OF TASK



TA 045808

b. Removal of Tie Rod End.

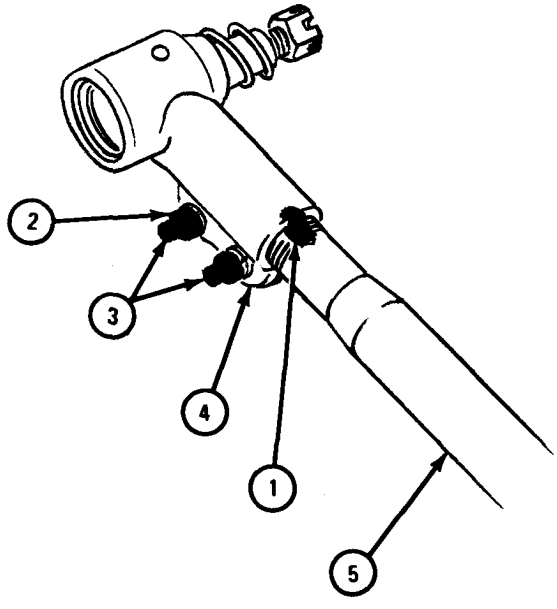
FRAME 1

NOTE

This task is the same for both tie rod ends (4) except that on left side of truck, tie rod end has left hand threads. On right side of truck, tie rod end has right hand threads.

1. If there is a tack weld (1) as shown, using hammer and chisel, carefully break tack weld. Do not damage threads.
2. Using 15/16-inch wrenches, loosen two nuts (2) on two screws (3).
3. Using pipe wrench, unscrew and take off tie rod end (4). Note number of turns needed to take off tie rod end.
4. Do steps 1 through 3 again for other end of tie rod assembly (5).

END OF TASK



TA 045809

c. Replacement of Tie Rod End.

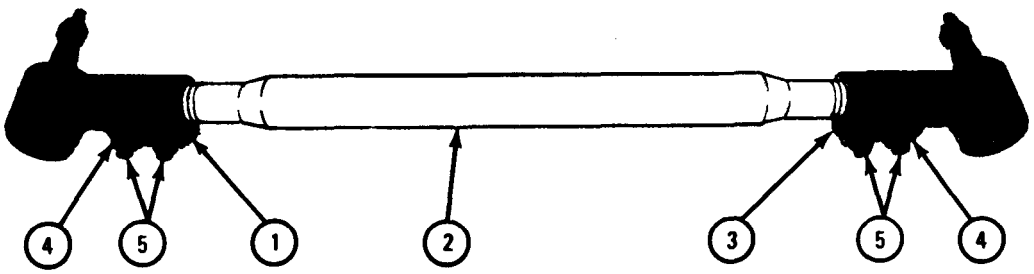
FRAME 1

NOTE

This task is the same for both tie rod ends (1) except that on left side of truck, tie rod end has left hand threads. On right side of truck, tie rod end has right hand threads.

1. Using pipe wrench, screw tie rod end (1) onto tie rod (2), using number of turns noted.
2. Using pipe wrench, screw tie rod end (3) onto tie rod (2), using number of turns noted.
3. Using 15/16-inch wrenches, tighten four nuts (4) on four screws (5).

END OF TASK



TA 045810

d. Replacement of Tie Rod Assembly.

FRAME 1

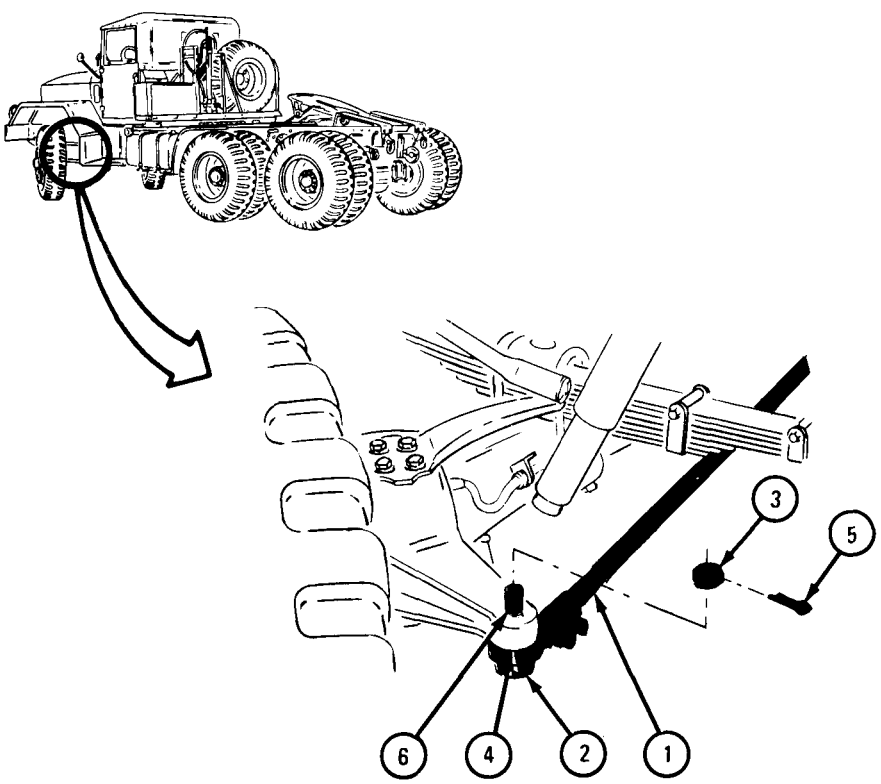
1. Put tie rod assembly (1) under truck. Make sure that tie rod end (2) with left hand threads is on left side of truck.
2. Unscrew and take off nut (3).
3. Put tie rod end (2) into steering knuckle (4) and hold it in place.
4. Using 15/16-inch socket wrench with ratchet handle, screw on and tighten nut (3).
5. Put cotter pin (5) through nut (3) and ball stud (6).
6. Using pliers, bend ends of cotter pin (5) around nut (3).
7. Do steps 2 through 6 again for other end of tie rod assembly (1).
8. Remove supports and lower front axle housing. Refer to Part 1, para 10-3.

NOTE

Follow-on Maintenance Action Required:

1. Adjust toe-in. Refer to para 14-3.
2. Lubricate tie rod assembly. Refer to LO 9-2320-211-12.

END OF TASK



14-6. UPPER AND LOWER DRAG LINKS REMOVAL, REPLACEMENT, CHECK, AND ADJUSTMENT.

NOTE

This task is the same for upper and lower drag links.
This task is shown for the lower drag link.

TOOLS: 1/2-inch drive ratchet handle
1/2-inch drive screwdriver bit
6-inch pliers

SUPPLIES: Cotter pin (2)
Clean rag

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

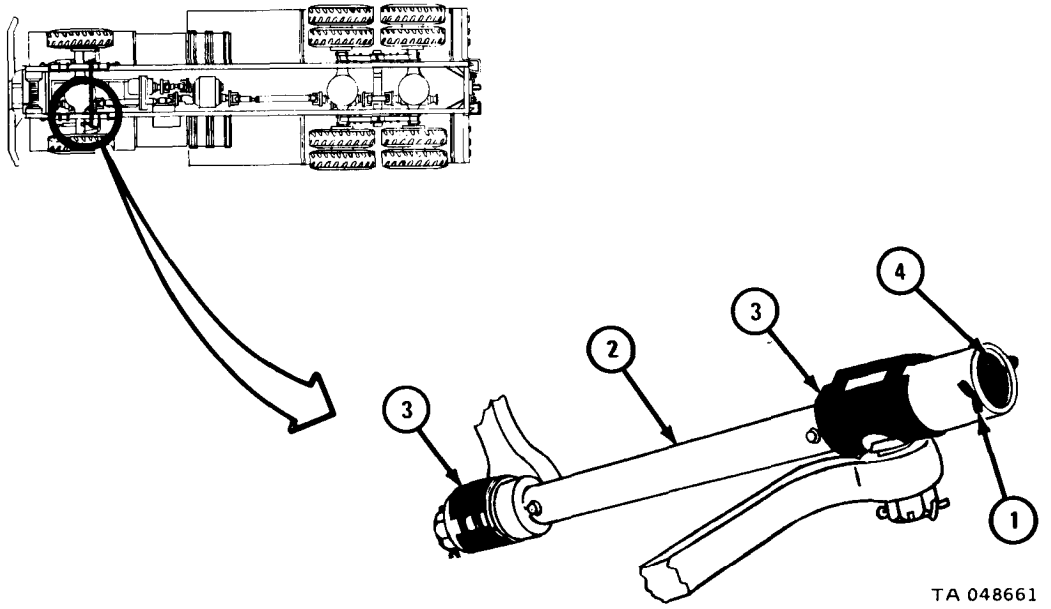
a. Preliminary Procedure. Park truck with front wheels pointing straight ahead. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using pliers, take out two cotter pins (1), one from each end of drag link (2). Throw away cotter pins.
2. Using pliers, unhook two dust shields (3), one from each end of drag link (2).
3. Using screwdriver bit, unscrew two plugs (4) at ends of drag link so that 1 inch of thread shows.
4. Using clean rag, wipe off grease from drag link (2).

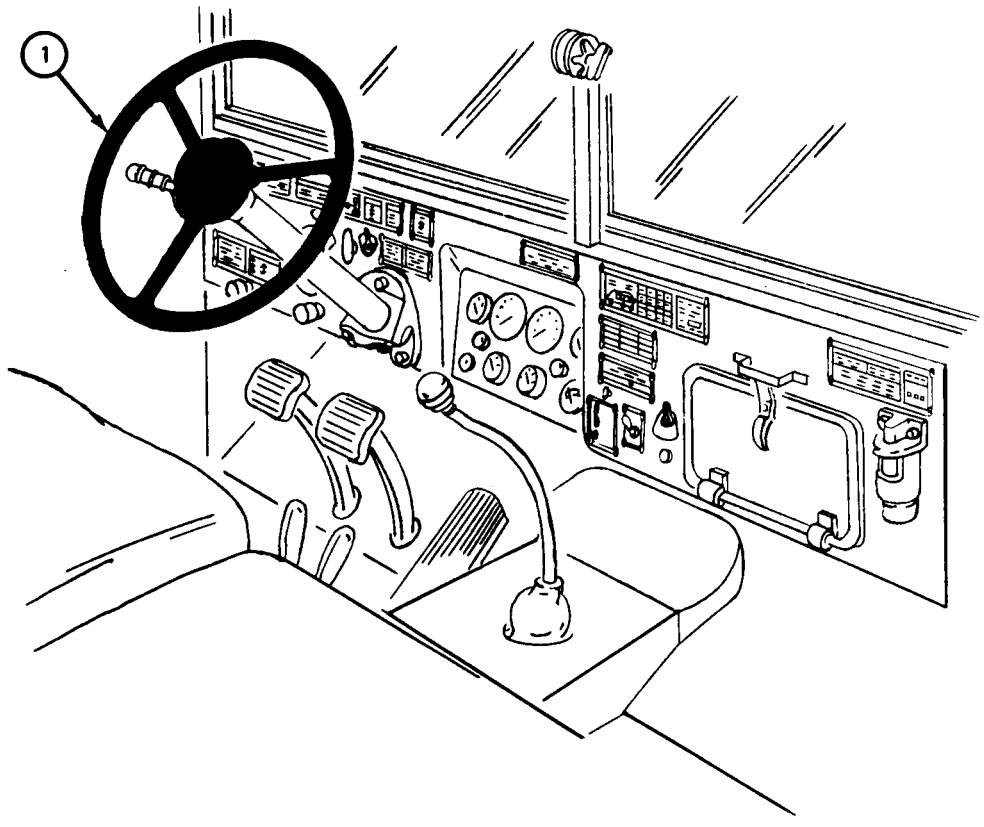
GO TO FRAME 2



FRAME 2

1. Turn steering wheel (1) in both directions to loosen drag link ends.

GO TO FRAME 3

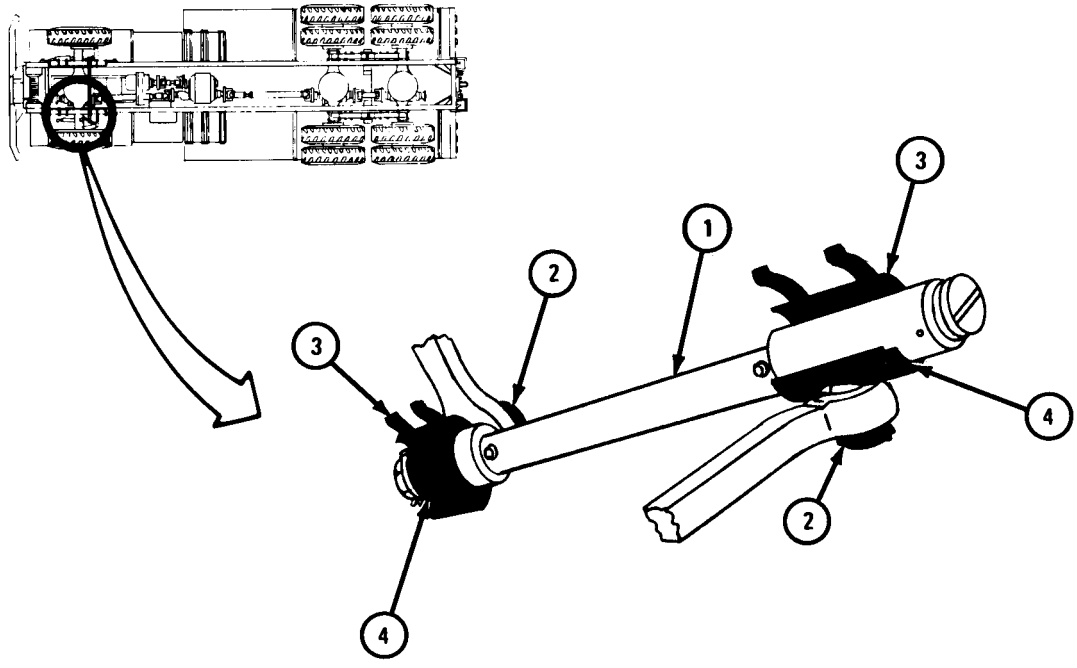


TA 048662

FRAME 3

1. Working under trUck, take off drag link (1) from ball studs (2).
2. Take off two dust shields (3) and two felt pads (4) from two ball studs (2).

END OF TASK



TA 048663

c. Replacement.

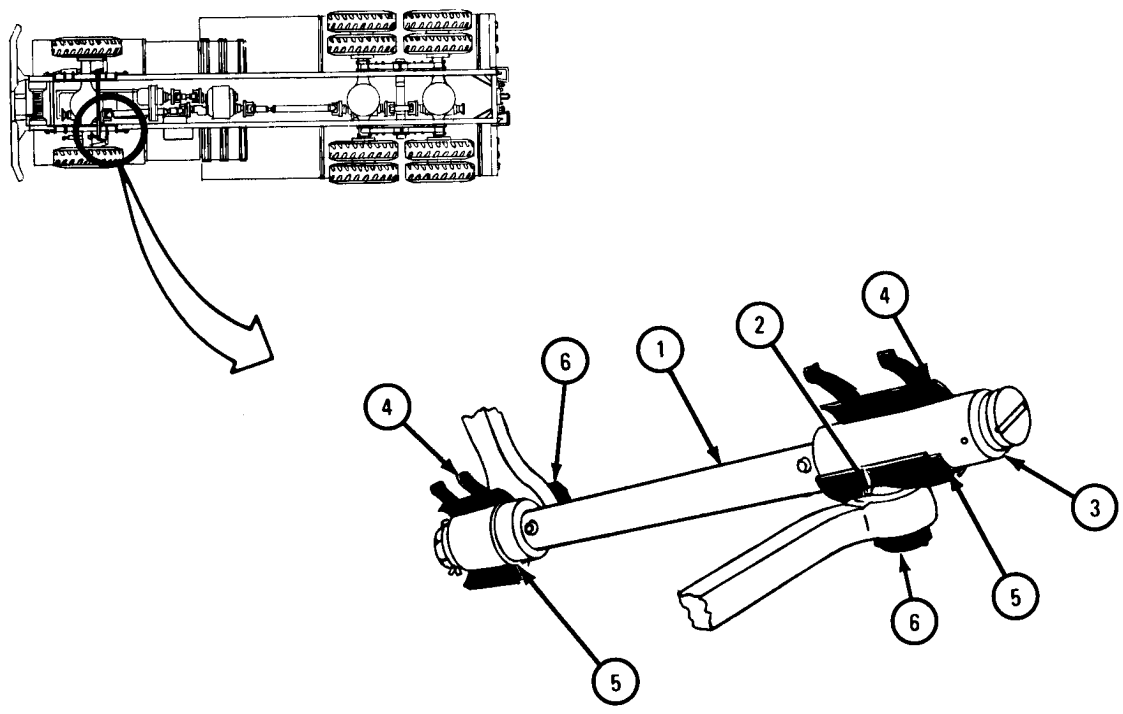
FRAME 1

NOTE

The front end of the drag link assembly (1) is the end with the greatest distance between ball stud opening (2) and threaded end of drag link (3).

1. Put two dust shields (4) and two felt pads (5) on two ball studs (6) as shown.
2. Put drag link (1) on two ball studs (6) as shown. Hold drag link in place.

GO TO FRAME 2



TA 048664

FRAME 2

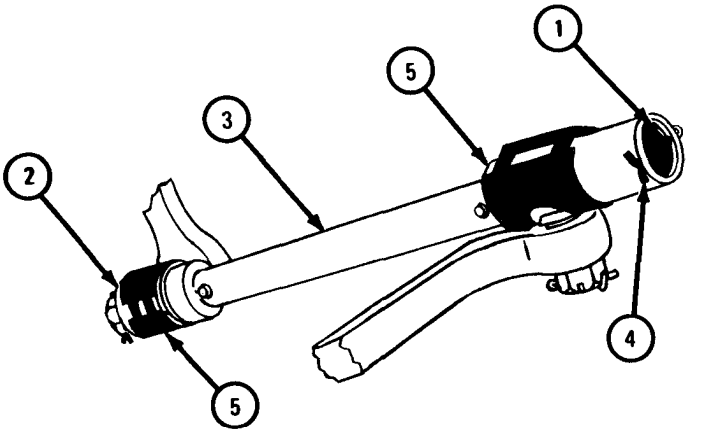
1. Using screwdriver bit, screw in and tighten front plug (1) and rear plug (2). Back off plugs until screw slot in plugs aline with cotter pin holes in drag link (3).
2. Using pliers, put cotter pin (4) in each end of drag link (3) and bend open ends of cotter pins.
3. Put two tabs on each dust shield (5) in slots on other end of dust shield. Using pliers, pull tabs and bend them back as shown.

NOTE

Follow-On Maintenance Action Required:

Do drag link check and adjustment. Refer to para 14-6d.

END OF TASK



TA 048865

d. Check.

FRAME 1

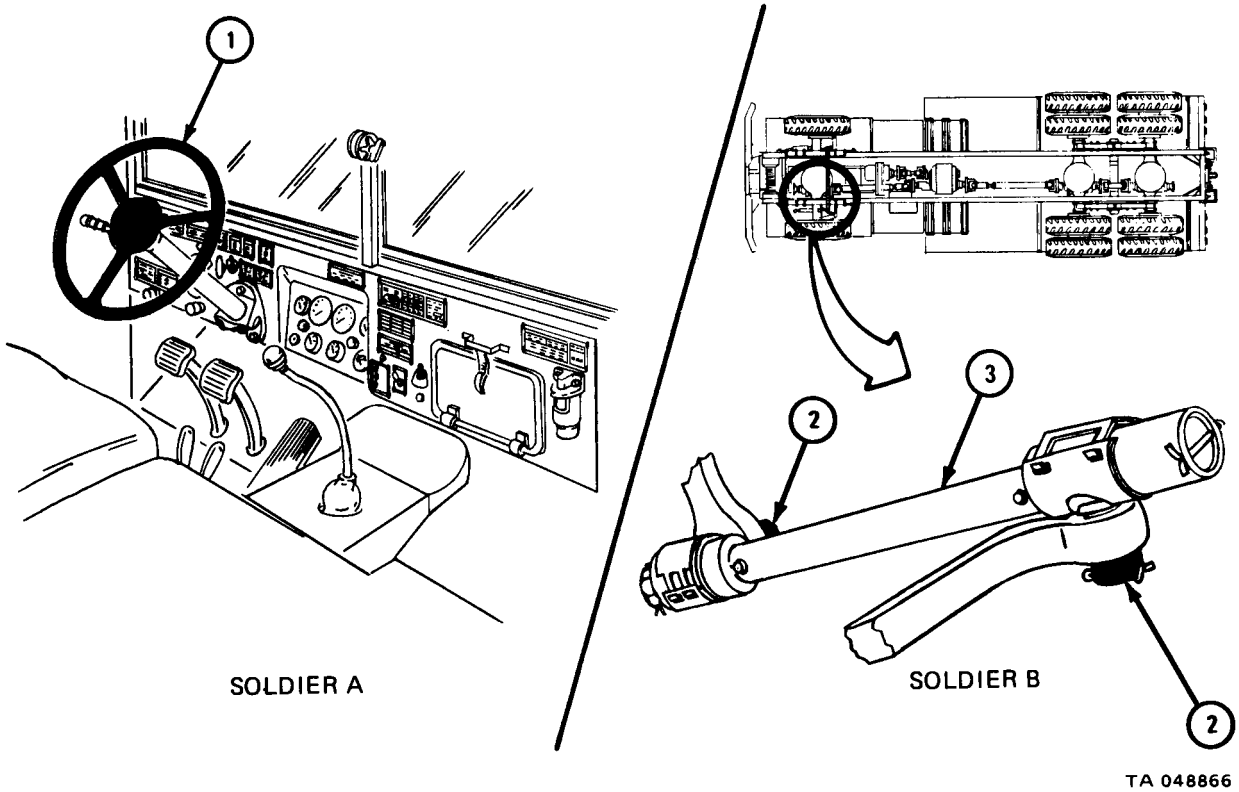
Soldier A 1. Turn steering wheel (1) back and forth just enough to feel free play, about 2 inches each way.

Soldier B 2. Check that two ball studs (2) do not move back and forth inside drag link (3).

3. If there is movement inside drag link (3), do drag link adjustment. Refer to paragraph 14-6e. If the drag link adjustment is good, do step 4.

4. Lubricate drag link. Refer to LO 9-2320-211-12.

END OF TASK

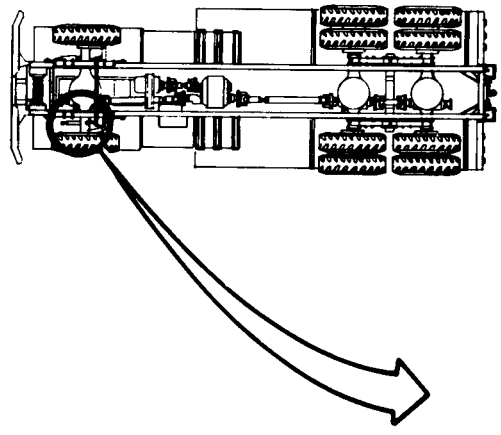


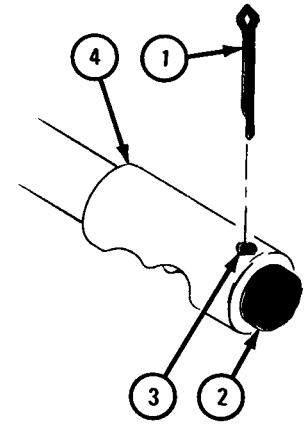
e. Adjustment.

FRAME 1

1. Using pliers, take out cotter pin (l).
2. Using screwdriver bit, tighten plug (2), then loosen until slot in plug alines with cotter pin holes (3) in end of drag link (4).
3. Using pliers, put in cotter pin (1) and bend open ends.
4. Do steps 1 through 3 again for other end of drag link (4).
5. Lubricate drag link. Refer to LO 9-2320-211-12.

END OF TASK





TA 045801

14-7. DRAG LINK RELAY LEVER REMOVAL AND REPLACEMENT .

TOOLS: Pliers
7/16-inch wrench
1/2-inch drive ratchet
1/2-inch drive screwdriver bit
3/4-inch wrench (2)
Hammer
Brass drift

SUPPLIES : Dust shield (2)

PERSONNEL: One

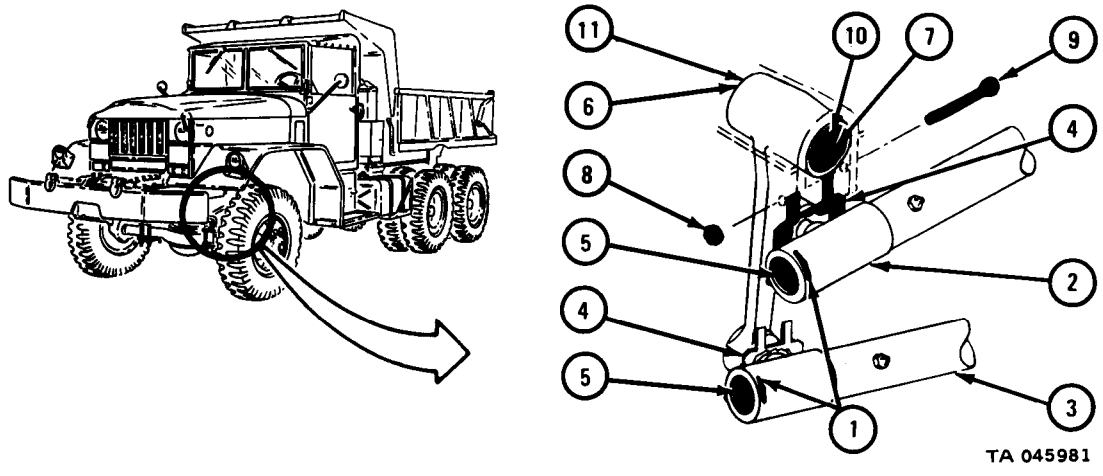
EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using pliers, pull out cotter pin (1) from upper drag link (2) and lower drag link (3). Throw away cotter pins.
2. Using pliers, unhook dust shield with felt pad (4) from upper and lower drag links (2 and 3).
3. Using screwdriver bit, unscrew plug (5) at end of upper and lower drag links (2 and 3) until one inch of thread shows.
4. Pull two drag links (2 and 3) away from relay lever (6).
5. Take off two dust shields with felt pads (4) and throw them away.
6. Using 7/16-inch wrench, unscrew and take out grease fitting (7).
7. Using 3/4-inch wrenches, unscrew nut (8) and take out bolt (9).
8. Using hammer and brass drift, drive out pin (10) at point (11) and take off lever (6).

END OF TASK



b. Replacement.

FRAME 1

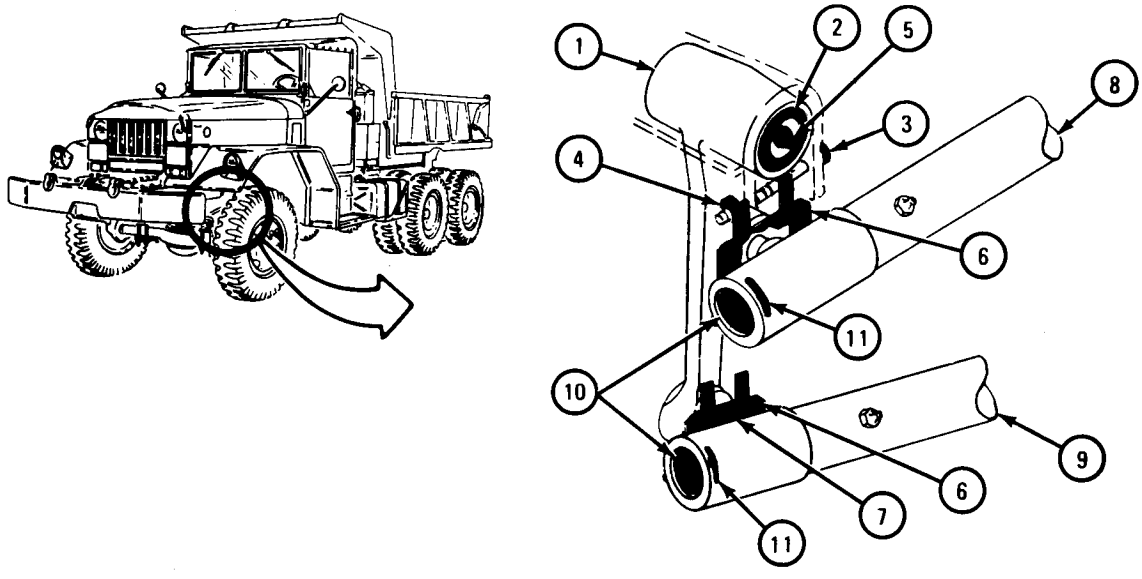
1. Put relay lever (1) in place as shown.
2. Using hammer and brass drift pin, tap shaft (2) through relay lever (1). Put screw (3) in place.
3. Using 3/4-inch wrenches, tighten nut (4).
4. Using 7/16-inch wrench, screw in and tighten grease fitting (5).
5. Put dust shield with felt pad (6) on each of two ball studs (7).
6. Press upper drag link (8) onto one ball stud (7) and lower drag link (9) onto other ball stud on relay lever (1).
7. Using screwdriver bit, screw in and tighten two plugs (10) into two drag links (8 and 9). Back plugs off until slot alines with holes for cotter pins (11).
8. Using pliers, put cotter pin (11) through each drag link (8 and 9) and plug (10). Bend open ends of cotter pins.
9. Snap dust shield with felt pads (6) around each drag link (8 and 9).

NOTE

Follow-on Maintenance Action Required:

1. Lubricate drag links. Refer to LO 9-2320-211-12.
2. Adjust drag links. Refer to para 14-6.

END OF TASK



TA 045982

14-8. STEERING WHEEL ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 1 1/8-inch socket wrench
1 1/4-inch socket wrench
Torque wrench, 150 pound-feet capacity
Steering wheel puller

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Remove horn button assembly. Refer to Part 1, para 7-38.

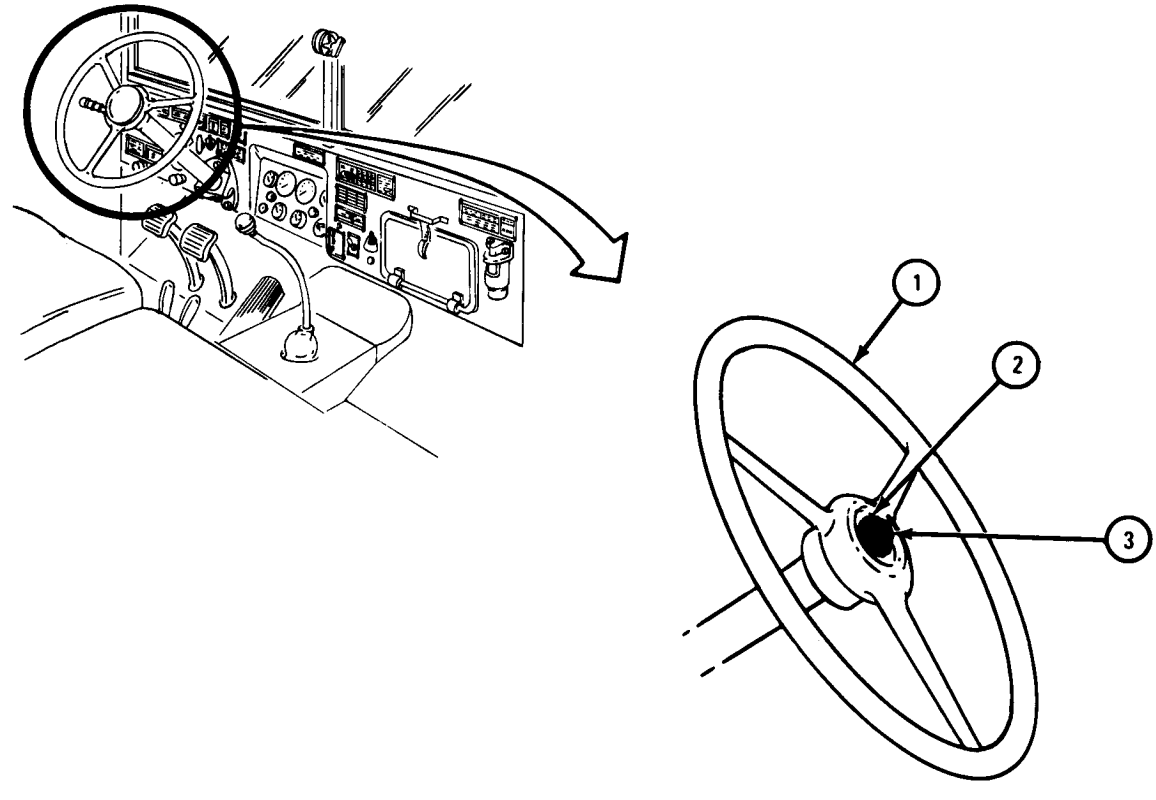
b. Removal.

FRAME 1

Soldier A 1. Hold steering wheel (1).

Soldier B 2. Using 1 1/4-inch wrench, unscrew nut (2) until it is level with top of shaft (3).

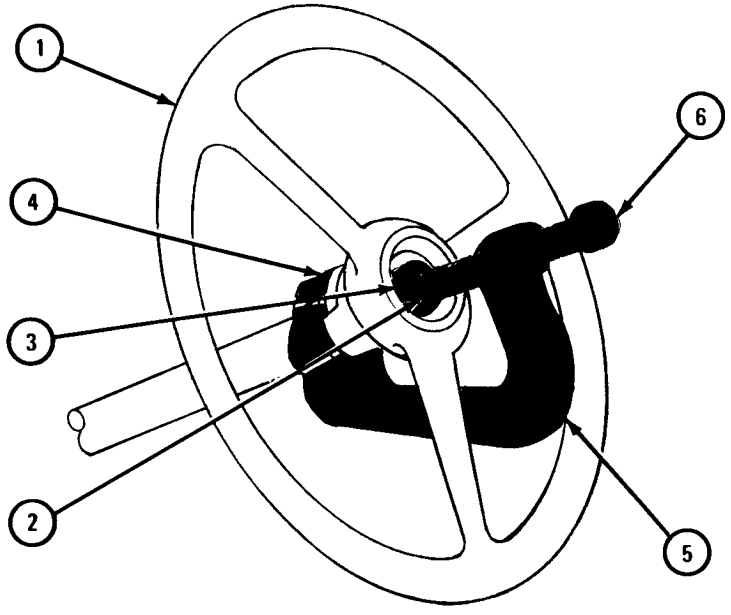
GO TO FRAME 2



FRAME 2

1. Turn steering wheel (1) to the drive straight ahead position. Refer to TM 9-2320-211-10.
2. Put adapter (2) in center of steering wheel nut (3).
3. Put adapter (4) over steering column.
4. Put puller (5) over adapters (2 and 4) as shown.
5. Using 1 1/8-inch wrench, screw in puller screw (6) until steering wheel (1) pops loose.
6. Take off puller (5) and adapters (2 and 4).
7. Using 1 1/4-inch wrench, unscrew and take off nut (3).
8. Take off steering wheel (1).

END OF TASK



TA 046391

c. Replacement.

FRAME 1

NOTE

Steering wheel (1) must be put on steering column (2) so that spokes form a Y when looked at from driver's seat and front wheels must point straight ahead.

1. Put steering wheel (1) on steering column (2). Mesh splines on wheel with splines on column.

Soldier A 2. Hold steering wheel (1).

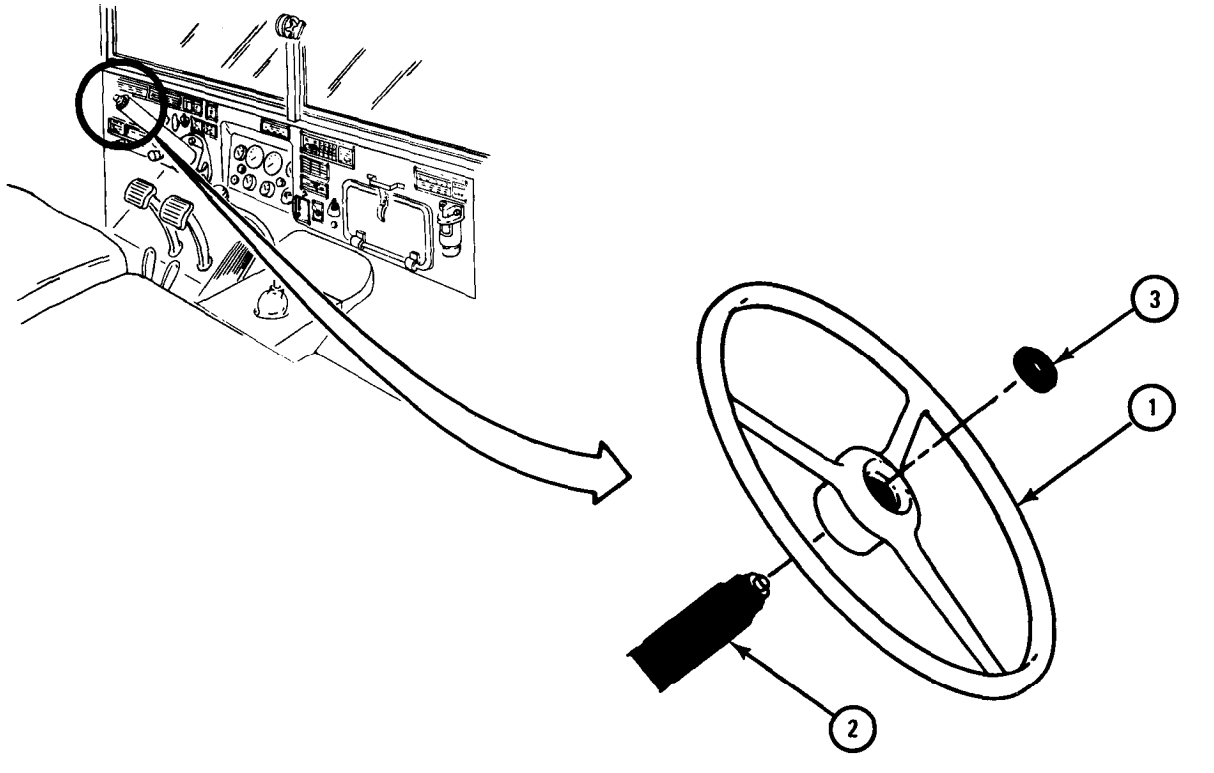
Soldier B 3. Using 1 1/4-inch wrench, screw on nut (3). Using torque wrench, tighten nut to 55 to 65 pound-feet.

NOTE

Follow-on Maintenance Action Required:

Replace horn button assembly. Refer to Part 1, para 7-38.

END OF TASK



14-9. STEERING KNUCKLE ARM CHECK AND ADJUSTMENT.

TOOLS: Torque wrench, 600 pound-feet capacity

SUPPLIES: None

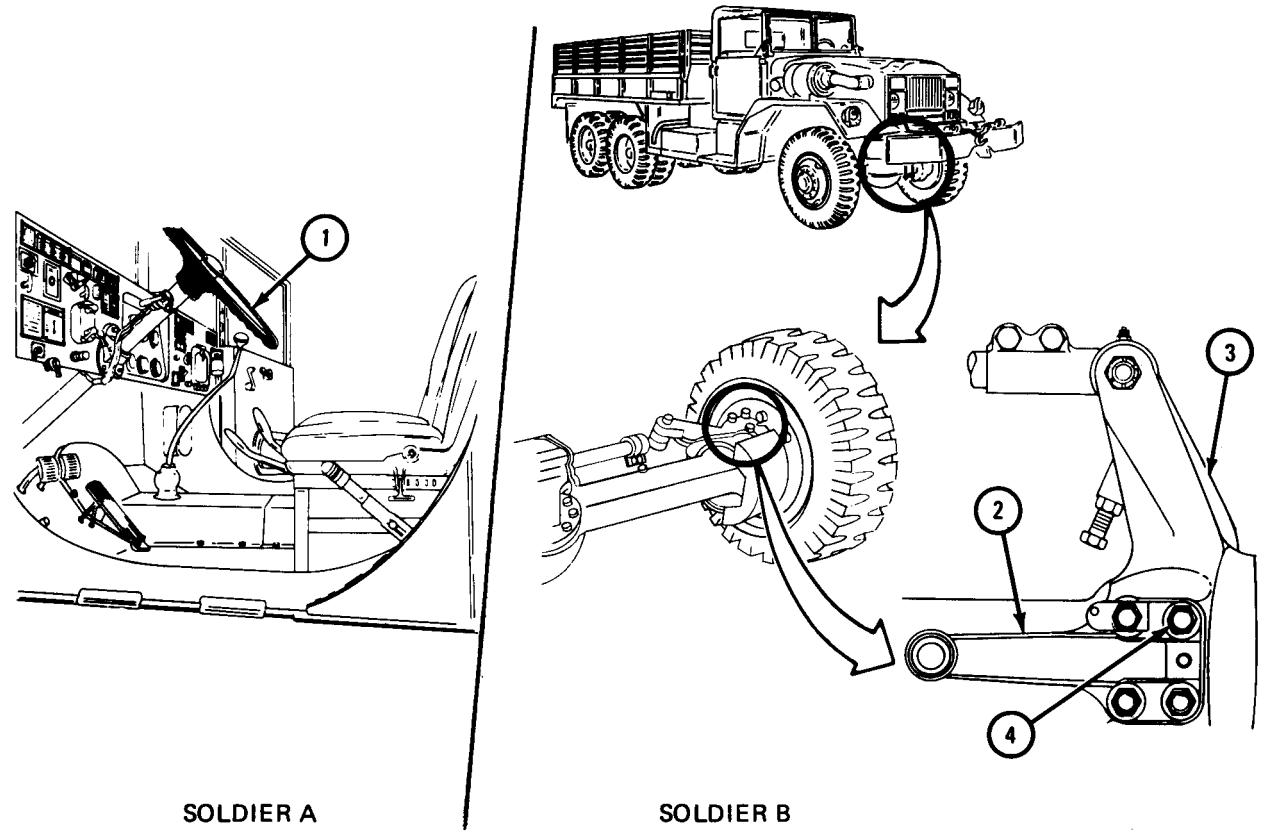
PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

FRAME 1

Soldier A	1.	Turn steering wheel (1) about 2 inches to right and left several times.
Soldier B	2.	Check that there is no play between steering knuckle arm (2) and steering knuckle (3).
	3.	If there is any play between these parts, using torque wrench, tighten four nuts (4) to 155 to 200 pound-feet.
Soldiers A and B	4.	Do steps 1 through 3 again. If there is still play between steering knuckle arm (2) and steering knuckle (3), tell direct support maintenance.

END OF TASK



14-10. STEERING MECHANISM REMOVAL AND REPLACEMENT.

NOTE

This task is the same for both sides of front axle assembly except where noted.

TOOLS : 7/16-inch wrench
9/16-inch wrench
7/8-inch wrench
15/16-inch wrench
l-inch wrench
1 1/2-inch wrench
Torque wrench, 600 pound-feet capacity
6-inch pliers
Bearing remover, pn 7950127
Bearing remover and replacer, pn 7950130
Bearing replacer, pn 7950129
8-ounce hammer
Stud remover and replacer

SUPPLIES: Axle shaft seal (2)
Axle shaft seal assembly (2)
Trunnion bearing spacer set

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Jack up front of truck and put safety jacks under frame rails behind front axle. Refer to Part 1, para 10-4.

(2) Remove front tires and wheels. Refer to TM 9-2320-211-10.

(3) Remove front hub and brake drum assembly. Refer to para 13-4.

(4) Tell direct support to remove backing plate assembly.

(5) Remove tie rod assembly. Refer to para 14-5.

(6) Remove drag link. Refer to para 14-6.

(7) Remove front moisture seal and dust boots. Refer to Part 1, para 11-4.

(8) Tell direct support to remove steering control power cylinder.

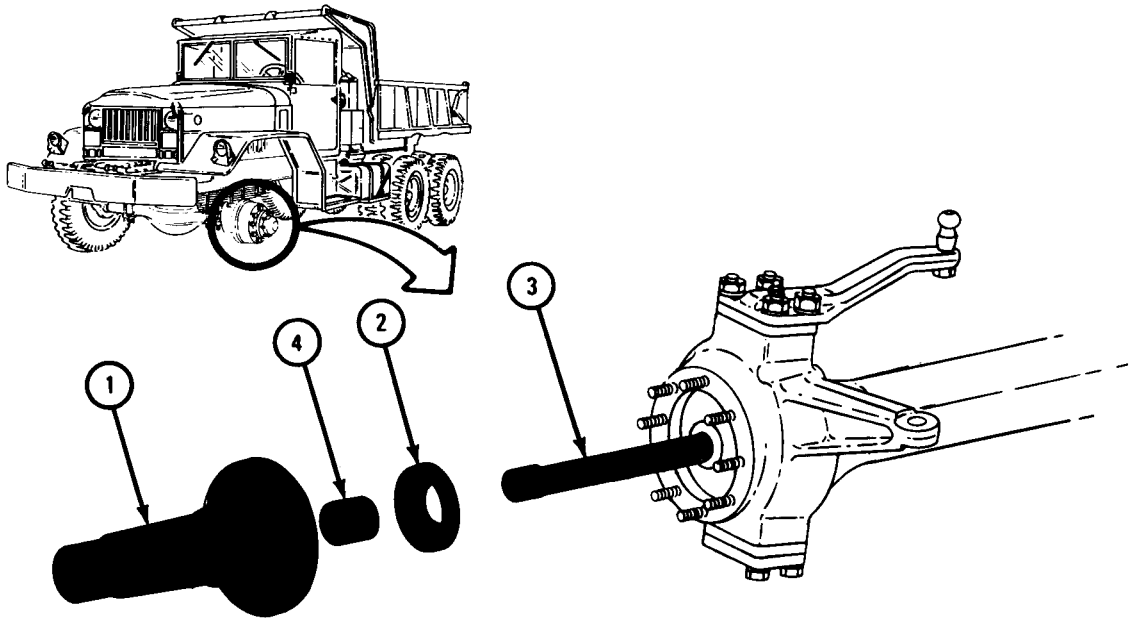
(9) Drain front axle. Refer to LO 9-2320-211-12.

b. Removal.

FRAME 1

1. Using hammer, tap spindle (1) to loosen it.
2. Take off spindle (1).
3. Take washer (2) off axle shaft (3).
4. Using bearing remover, take spindle bearing sleeve (4) out of spindle (l).

GO TO FRAME 2

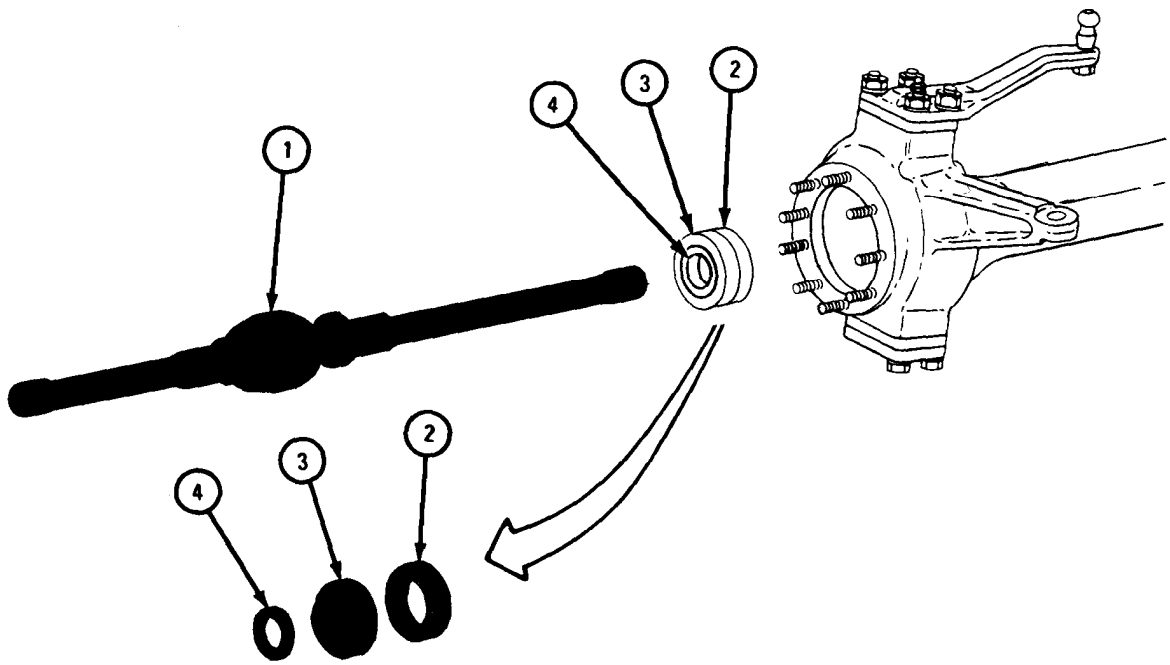


TA 087154

FRAME 2

1. Pull out axle shaft (l).
2. Takeout axle shaft seal assembly (2) with axle shaft seal (3) and washer (4).
3, Take axle shaft seal (3) off axle shaft seal assembly (2). Throw away seal.

FOR LEFT SIDE OF AXLE, GO TO FRAME 3.
FOR RIGHT SIDE OF AXLE, GO TO FRAME 4

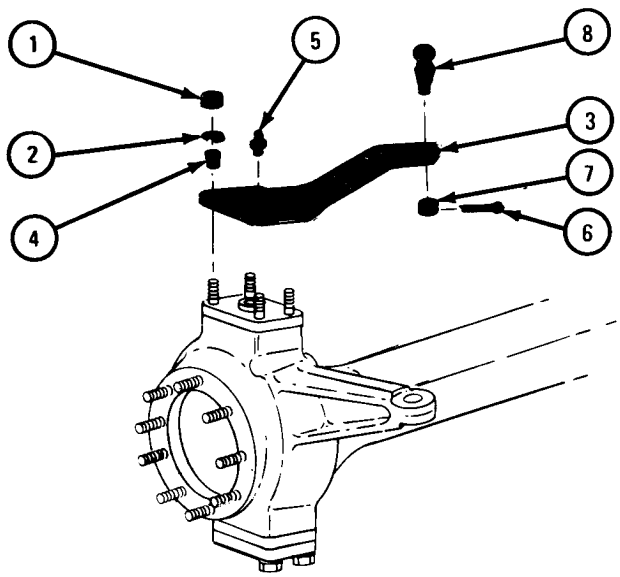


TA 087155

FRAME 3

1. Using l-inch wrench, unscrew and take off four nuts (1) and lockwashers (2).
2. Using hammer, tap steering arm (3) lightly.
3. Take off steering arm (3) and four split dowels (4).
4. Using 7/16-inch wrench, take out grease fitting (5).
5. Using pliers, pull out and throw away cotter pin (6).
6. Using 1 l/2-inch wrench, unscrew and take off nut (7).
7. Take out ball and stud assembly (8).

GO TO FRAME 4

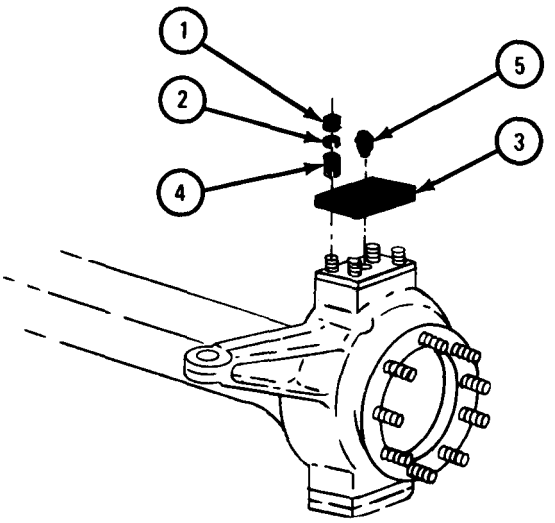


TA 087156

FRAME 4

1. Using 1-inch wrench, unscrew and takeoff four nuts (1) and lockwashers (2).
2. Using hammer, tap sleeve plate (3) lightly.
3. Take off sleeve plate (3) and four split dowels (4).
4. Using 7/16-inch wrench, unscrew and take out grease fitting (5).

GO TO FRAME 5

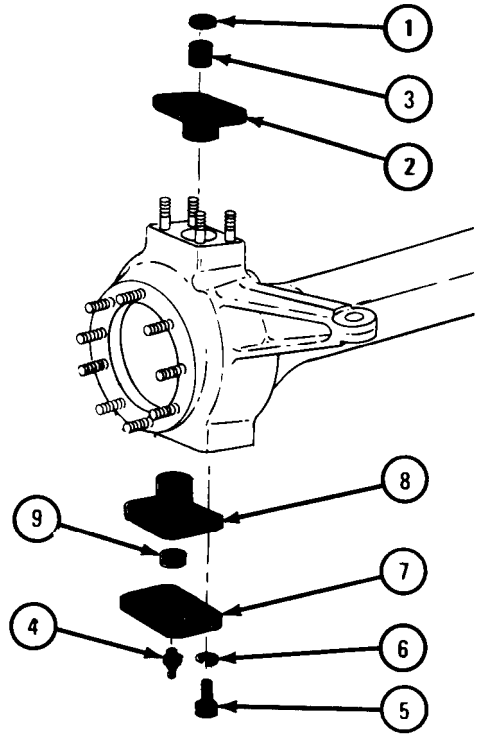


TA 087157

FRAME 5

1. Takeout spacer (l).
2. Takeoff sleeve (2) with bearing (3).
3. Using bearing remover and replacer, take bearing (3) out of sleeve (2).
4. Using 7/16-inch wrench, unscrew and take out grease fitting (4).
5. Using 15/16-inch wrench, unscrew and take out two screws (5) and lock-washers (6).
6. Take off sleeve plate (7) and sleeve (8) with bearing (9).
7. Using bearing remover and replacer, take bearing (9) out of sleeve (8).

GO TO FRAME 6



TA 087158

FRAME 6

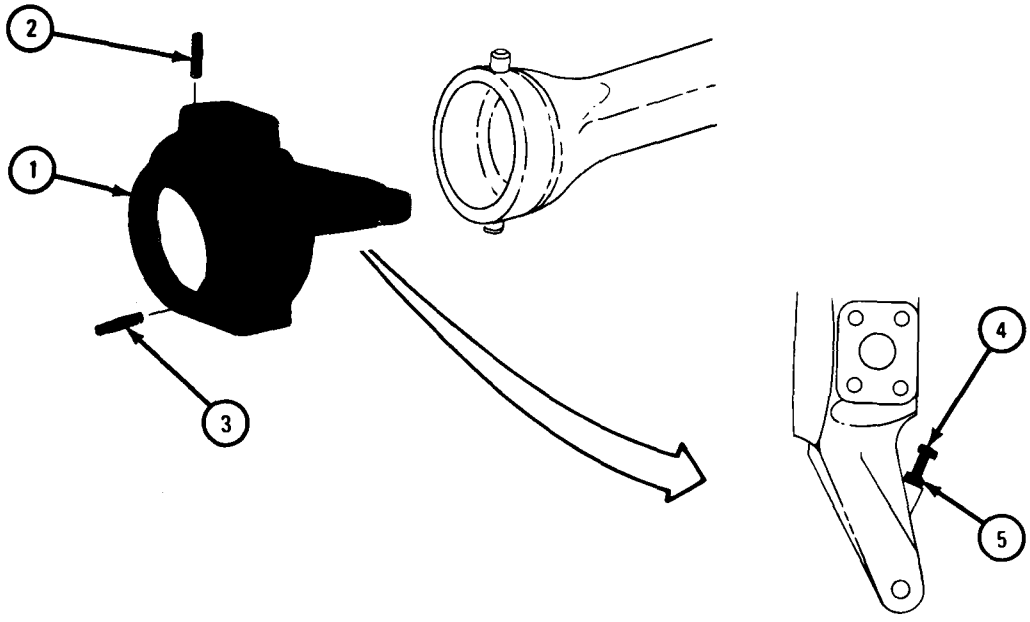
1. Takeoff steering knuckle (1).

NOTE

Do not take out studs unless they are damaged.

2. Using stud remover and replacer, unscrew and take out four studs (2) and ten studs (3).
3. Using hammer, knock welds off screw (4) and nuts (5).
4. Using 7/8-inch and l-inch wrenches, unscrew and take out screw (4) and nut (5).

END OF TASK



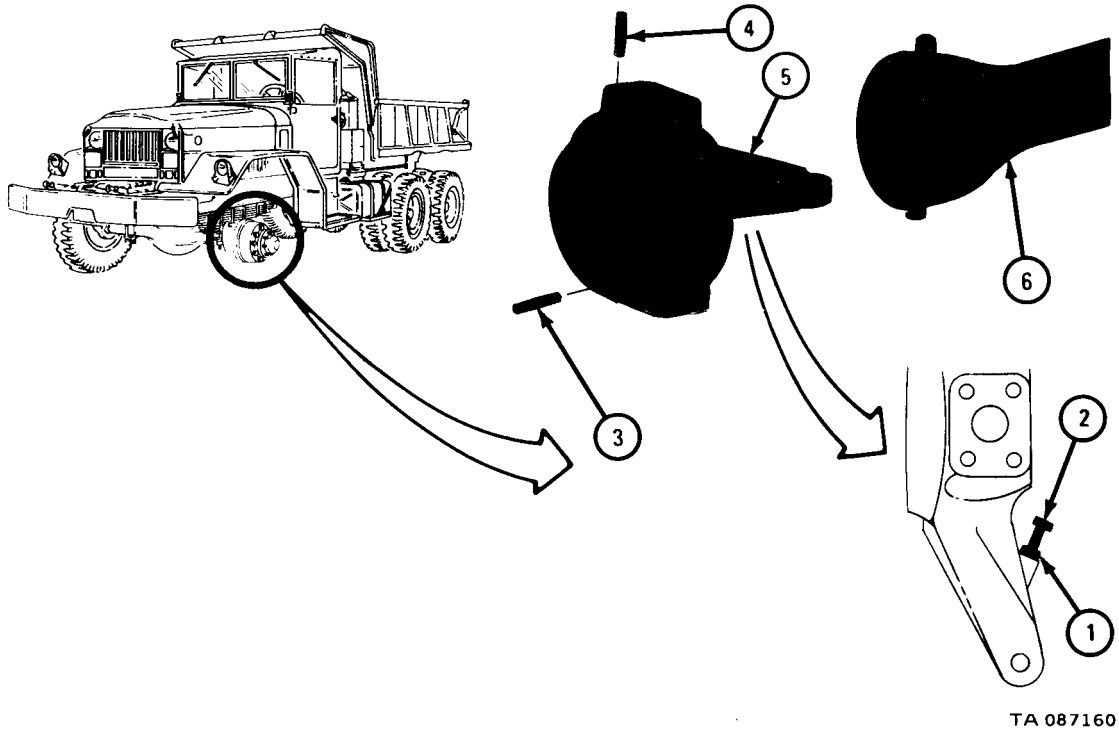
TA 087159

c. Replacement.

FRAME 1

1. Using 7/8-inch wrench, screw nut (1) on screw (2).
2. Using l-inch wrench, screw in screw (2).
3. Using stud remover and replacer, screw in ten studs (3) and four studs (4).
4. Put steering knuckle (5) in place on axle housing (6).

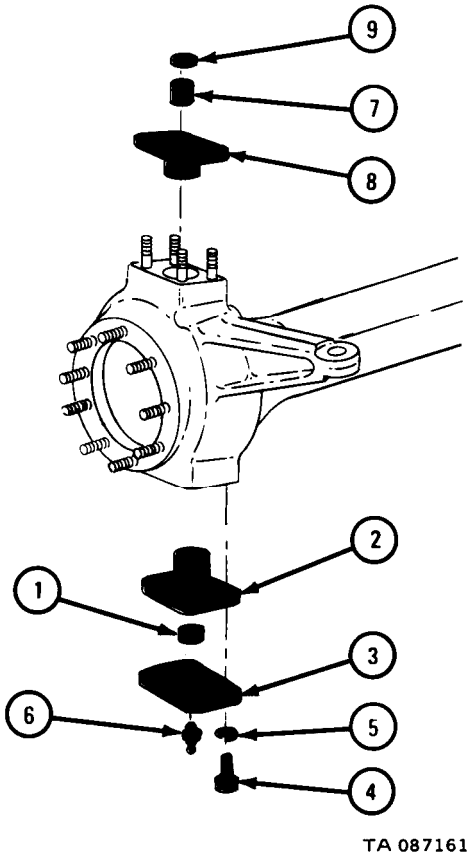
GO TO FRAME 2



FRAME 2

1. Using bearing remover and replacer, put bearing (1) in sleeve (2).
2. Put sleeve (2) in place.
3. Put sleeve plate (3) in place.
4. Using 15/16-inch wrench, screw in two screws (4) and lockwashers (5).
5. Using 7/16-inch wrench, screw in grease fitting (6).
6. Using bearing remover and replacer, put bearing (7) in sleeve (8).
7. Put sleeve (8) in place.
8. Put spacer (9) in place.

FOR LEFT SIDE OF FRONT AXLE, GO TO FRAME 3.
FOR RIGHT SIDE OF FRONT AXLE, GO TO FRAME 4

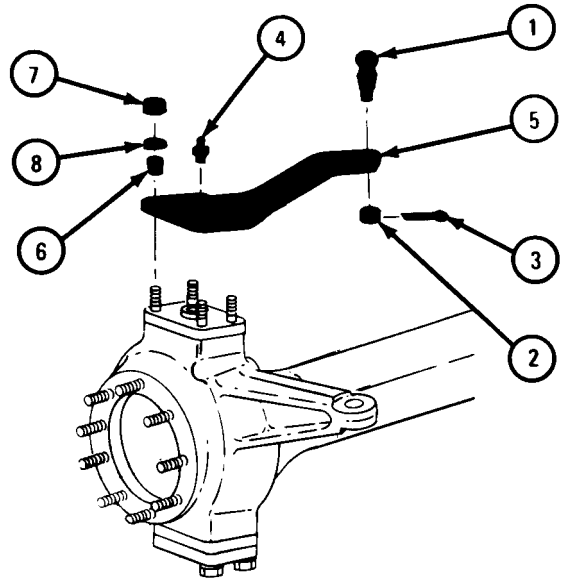


TA 087161

FRAME 3

1. Put ball and stud assembly (1) in place.
2. Using 1 1/2-inch wrench, screw on and tighten nut (2), alining holes for cotter pin (3).
3. Using pliers, put in cotter pin (3) and bend open ends.
4. Using 7/16-inch wrench, screw in and tighten grease fitting (4).
5. Put steering arm (5) and four split dowels (6) in place.
6. Using l-inch wrench, and torque wrench, screw on and tighten four nuts (7) and lockwashers (8) to 155 to 200 pound-feet.

GO TO FRAME 4

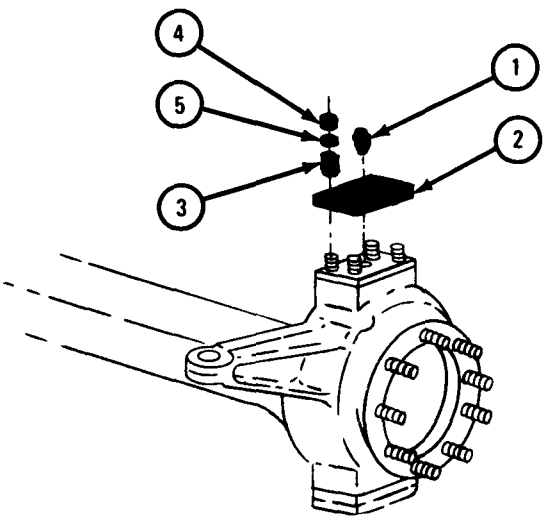


TA 087162

FRAME 4

1. Using 7/16-inch wrench, screw in and tighten grease fitting (1) in sleeve plate (2).
2. Put sleeve plate (2) and four split dowels (3) in place.
3. Using l–inch wrench, and torque wrench, screw on and tighten four nuts (4) and lockwashers (5) to 155 to 200 pound-feet.

GO TO FRAME 5

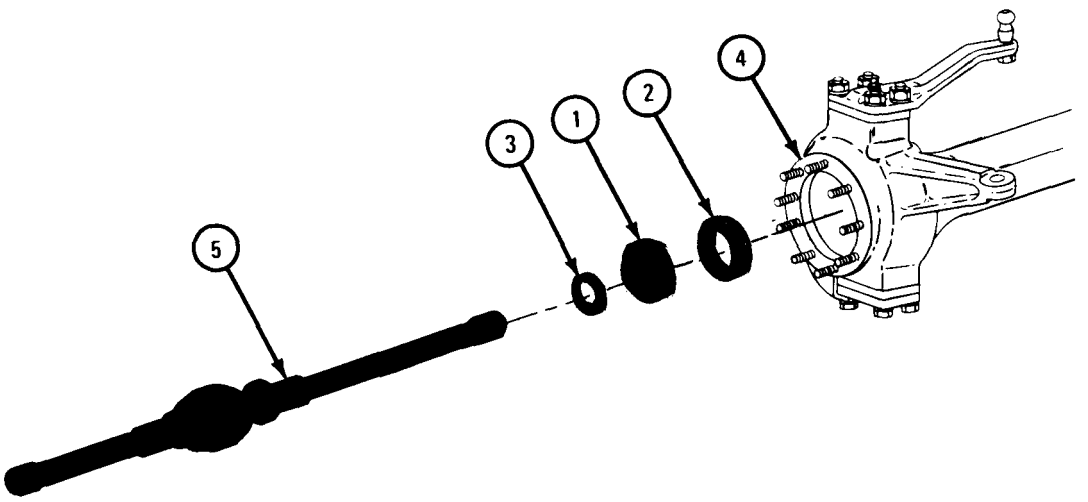


TA 087163

FRAME 5

1. Put axle shaft seal (1) on axle shaft seal assembly (2).
2. Put washer (3) on axle shaft seals (l).
3. Put washer (3), seal (1), and seal assembly (2) in axle housing (4).
4. Put in axle shaft (5).

GO TO FRAME 6



TA 087164

FRAME 6

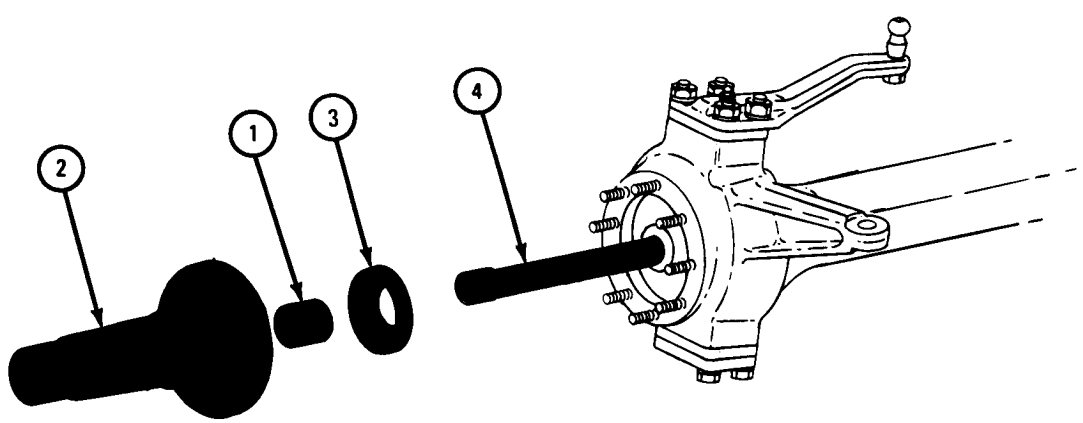
1. Using bearing replacer, put spindle bearing sleeve (1) in place in spindle (2).
2. Put washer (3) in place on axle shaft (4).
3. Put spindle (2) in place.

NOTE

Follow-on Maintenance Action Required:

1. Replace moisture seal and dust boot. Refer to Part 1, para 11-4.
2. Tell direct support to replace steering control power cylinder.
3. Replace drag link. Refer to para 14-6.
4. Replace tie rod assembly. Refer to para 14-5.
5. Replace backing plate assembly. Tell direct support maintenance.
6. Replace front hub and brake drum assembly. Refer to para 13-4.
7. Replace front wheels and tires. Refer to TM-9-2320-211-10.
8. Grease front axle assembly. Refer to LO 9-2320-211-12.
9. Take out safety jacks and lower truck. Refer to Part 1, para 10-4.
10. Fill front axle. Refer to LO 9-2320-211-12.
11. Do wheel alinement. Refer to para 14-3.

END OF TASK



TA 087165

Section III. STEERING HOSES, LINES, AND FITTINGS

14-11. POWER STEERING HOSES, LINES, AND FITTINGS REMOVAL AND REPLACEMENT.

NOTE

This procedure is typical and is the same for all types of hoses, lines, and fittings used on the power steering system. Refer to figure 14-1, used as a support diagram for troubleshooting each system.

TOOLS: l-gallon container
1 1/4-inch wrench
1 1/2-inch wrench
1 3/8-inch wrench

SUPPLIES: Rags
Tags
Caps
Thread tape, MIL-T-27730A
Lubricating oil, ICE, OE/HDO IO, MIL-L-2104

PERSONNEL: One

EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Open hood. Refer to TM 9-2320-211-10.

(2) Drain power steering reservoir. Refer to LO 9-2320-211-12.

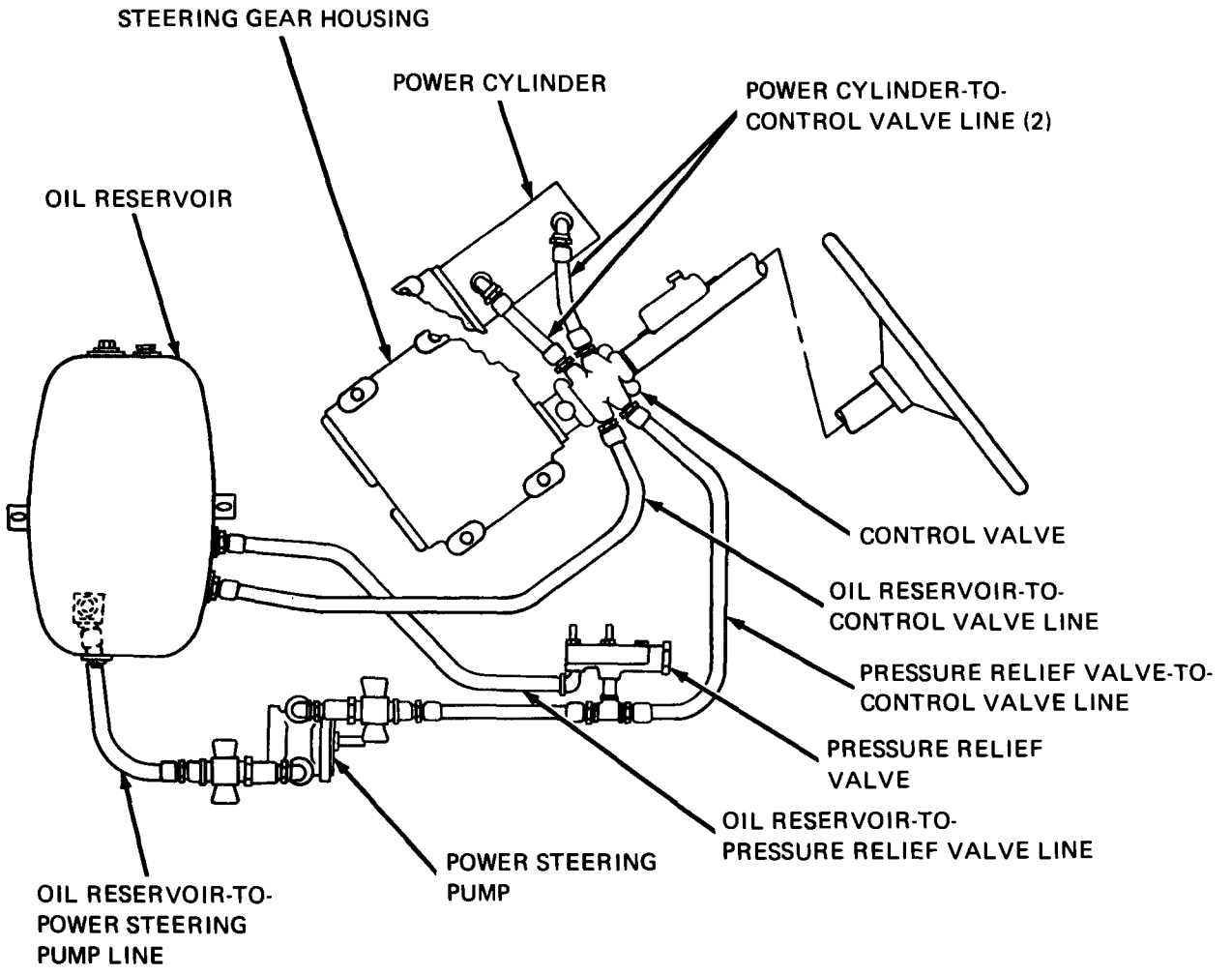


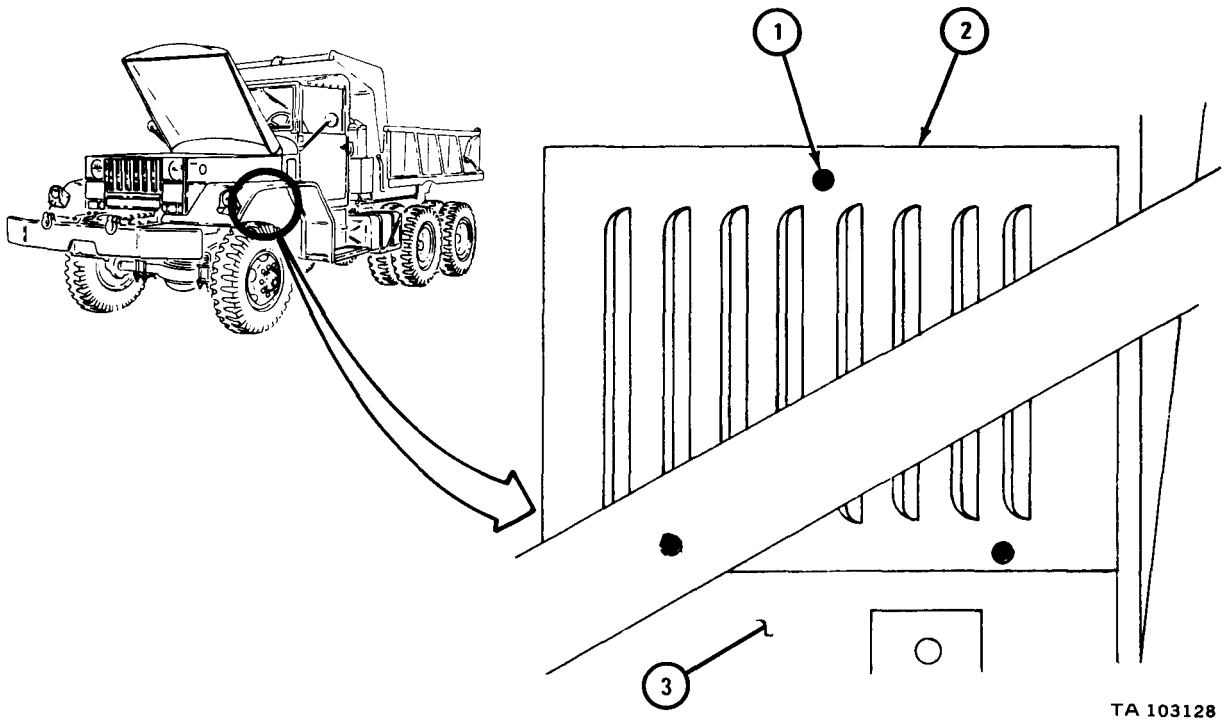
Figure 14-1. Power Steering System

b. Removal.

FRAME 1

1. Turn three fasteners (1) to the left to unlock them.
2. Take off power steering access panel (2) from inside of left front fender housing (3).

GO TO FRAME 2



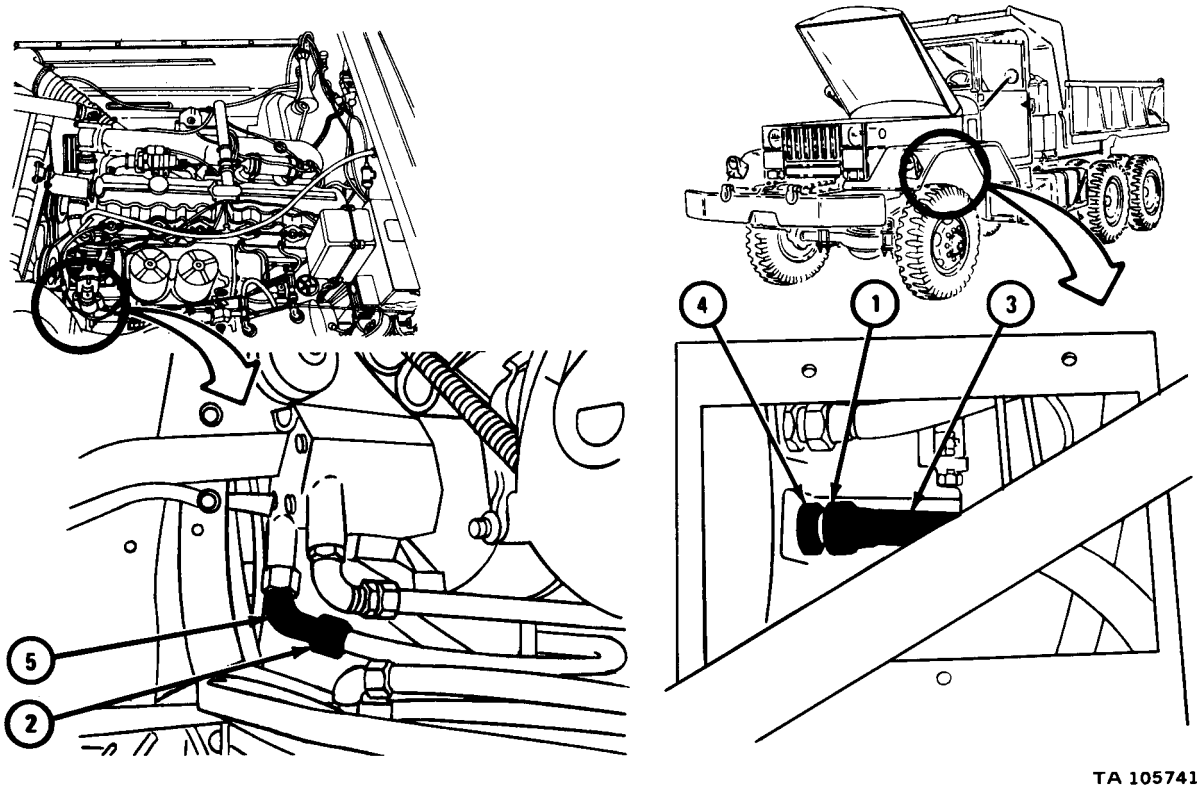
FRAME 2

NOTE

Before taking off hydraulic line, tag both sides of connection to be sure line is put back in the same place. Cap all open hydraulic lines and plug all open ports to keep dirt out of system.

1. Place container under truck below power steering pump.
2. Using 1 1/2-inch wrench, unscrew nut (1).
3. Using 1 1/4-inch wrench, unscrew nut (2) and take off hose (3).
4. Using 1 3/8-inch wrench, unscrew and take out reducer (4).
5. Using 1 1/4-inch wrench, unscrew elbow (5).

END OF TASK



TA 105741

c. Replacement.

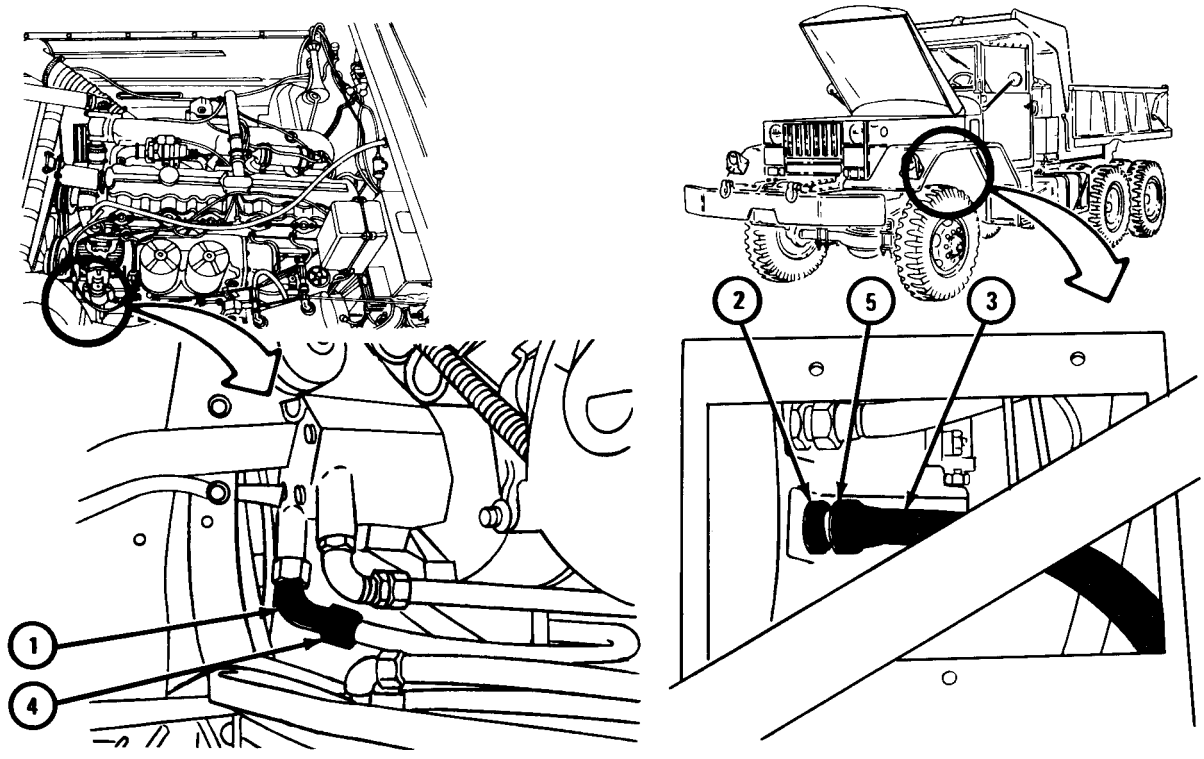
FRAME 1

NOTE

Wrap threads of fittings with thread tape.

1. Take caps and plug off hydraulic line and port.
2. Using 1 1/4-inch wrench, screw in and tighten elbow (1).
3. Using 1 3/8-inch wrench, screw in and tighten reducer (2).
4. Using 1 3/8-inch wrench, put hose (3) in place and tighten nut (4).
5. Using 1 1/2-inch wrench, screw on and tighten nut (5).

GO TO FRAME 2



TA 113696

FRAME 2

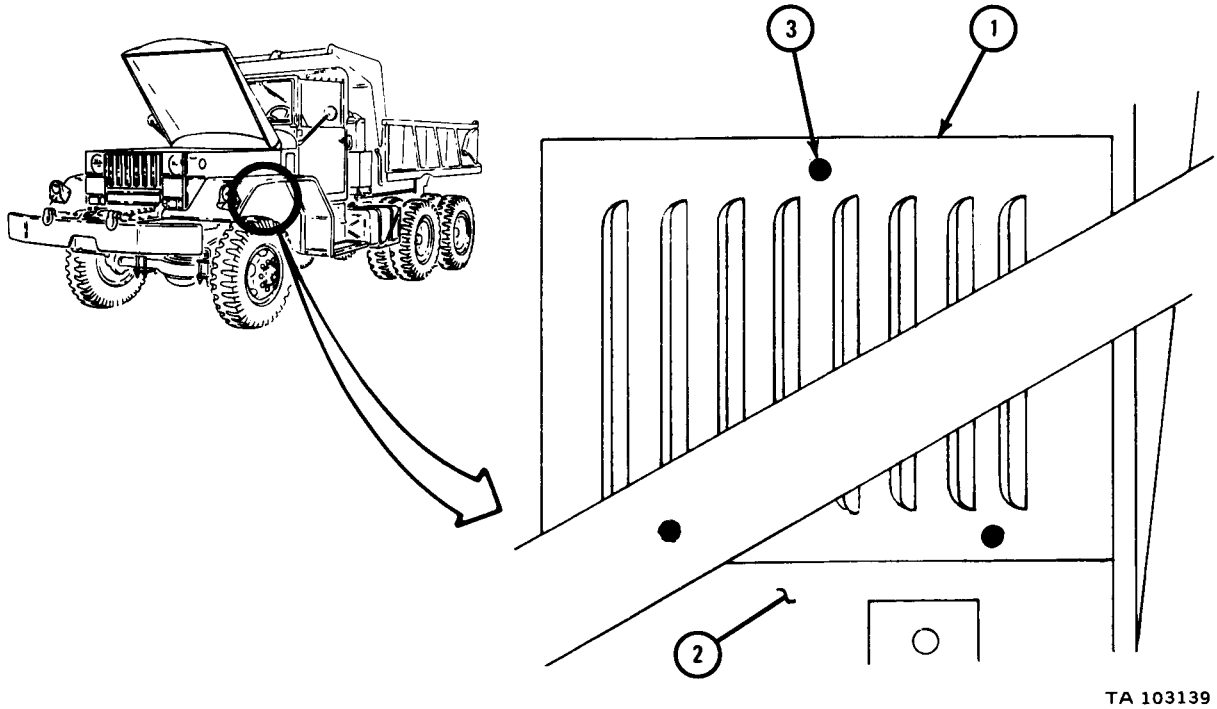
1. Put power steering access panel (1) in place inside of left front fender housing (2).
2. Turn three fasteners (3) to right to lock them.

NOTE

Follow-on Maintenance Action Required:

1. Fill power steering reservoir. Refer to LO 9-2320-211-12.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



Section IV. STEERING RESERVOIR

14-12. HYDRAULIC STEERING OIL RESERVOIR REMOVAL AND REPLACEMENT.

TOOLS:
- 15/16-inch wrench
- 1 1/2-inch wrench (2)
- 11/16-inch wrench
- 7/16-inch wrench (2)
- 1-inch wrench
- 9/16-inch wrench
- 1-gallon container

SUPPLIES:
- Lubricating oil, ICE, OE/HDO 10, MIL-L-2104
- Tags
- Dust caps

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Open hood and left side panel. Refer to TM 9-2320-211-10.

(2) Drain hydraulic steering oil reservoir. Refer to LO 9-2320-211-12.

b. Removal.

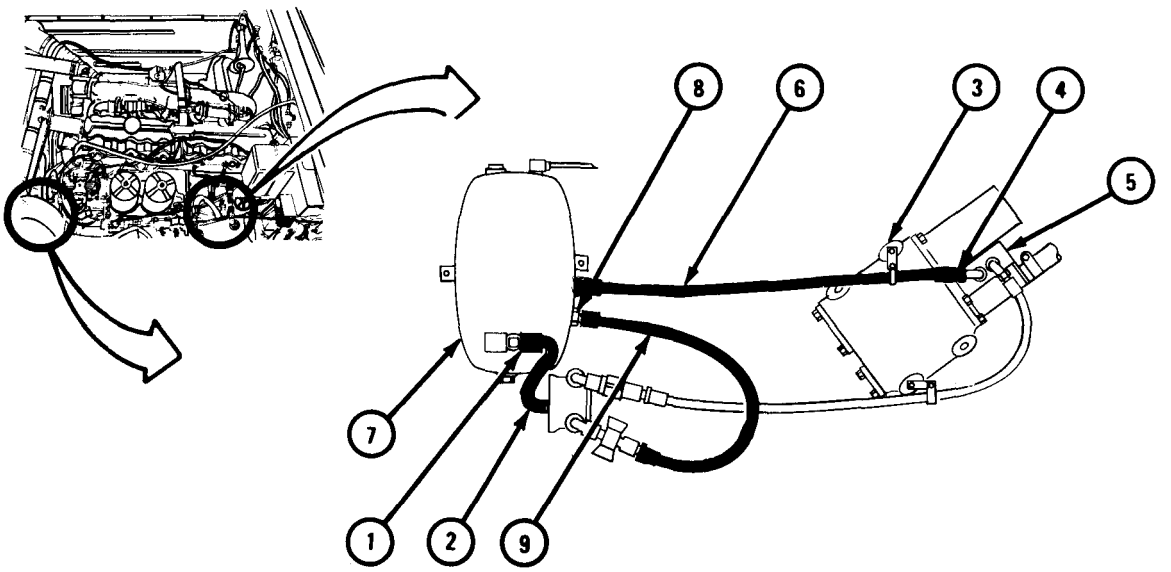
FRAME 1

NOTE

Before taking off hydraulic lines, tag both sides of connection to be sure lines are put back in the same place. Cap all open hydraulic lines and plug all open hydraulic lines and open ports to keep dirt out of system.

1. Using 11/16-inch wrench, unscrew sleeve nut (1) on hydraulic line (2). Move hydraulic line away.
2. Using 7/16-inch wrenches, take off nut (3).
3. Using l-inch wrench, unscrew sleeve nut (4) from steering gear (5).
4. Using 15/16-inch wrench, unscrew hose (6) from reservoir (7).
5. Using 1 1/2-inch wrenches, unscrew sleeve nut (8) from reservoir (7). Move hydraulic lines (6 and 9) away.

GO TO FRAME 2



TA 048981

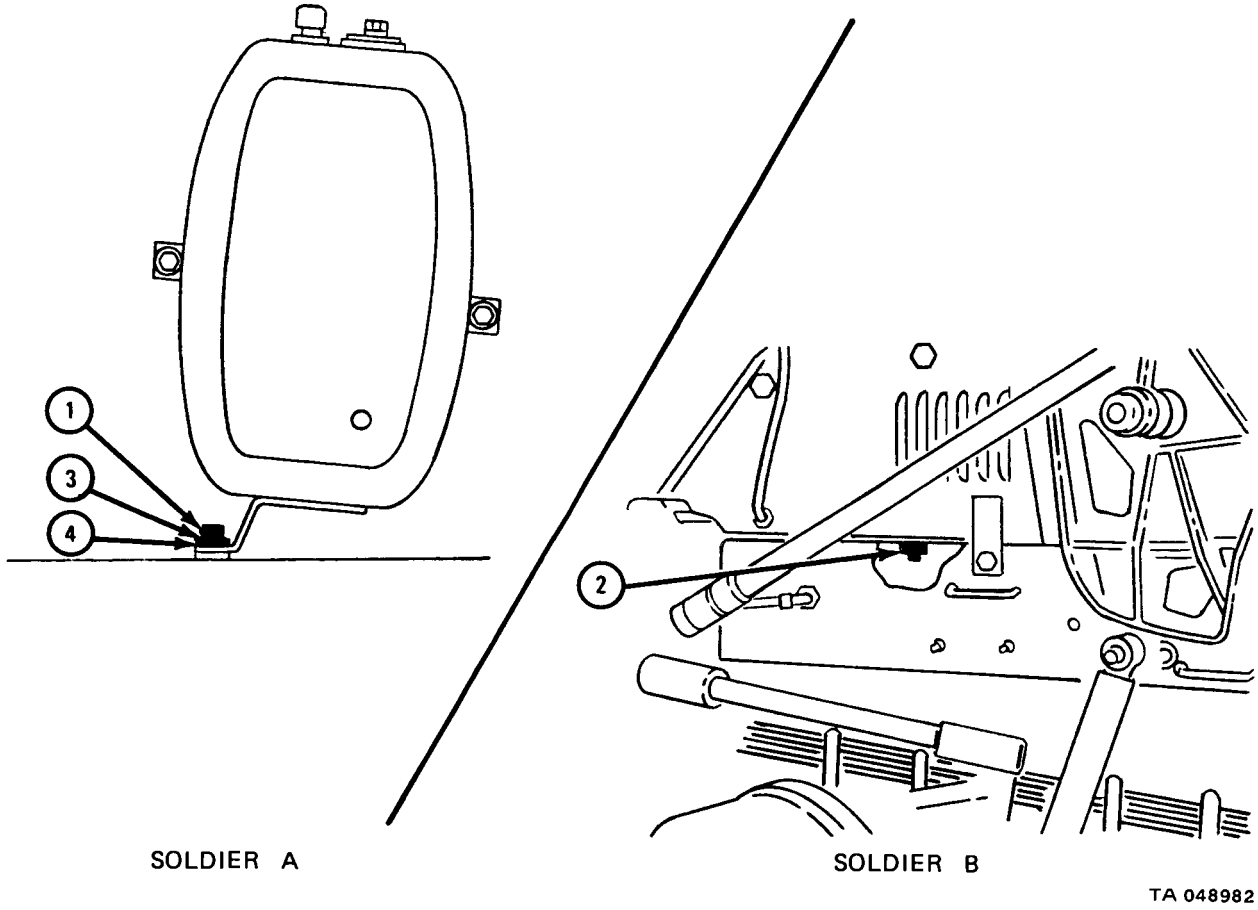
FRAME 2

Soldier A 1. Working in engine compartment and using 9/16-inch wrench, hold screw (1). Tell soldier B when ready.

Soldier B 2. Working under left front frame and using 9/16-inch wrench, unscrew and take off safety nut (2).

Soldier A 3. Take off screw (1), washer (3), and cushion (4).

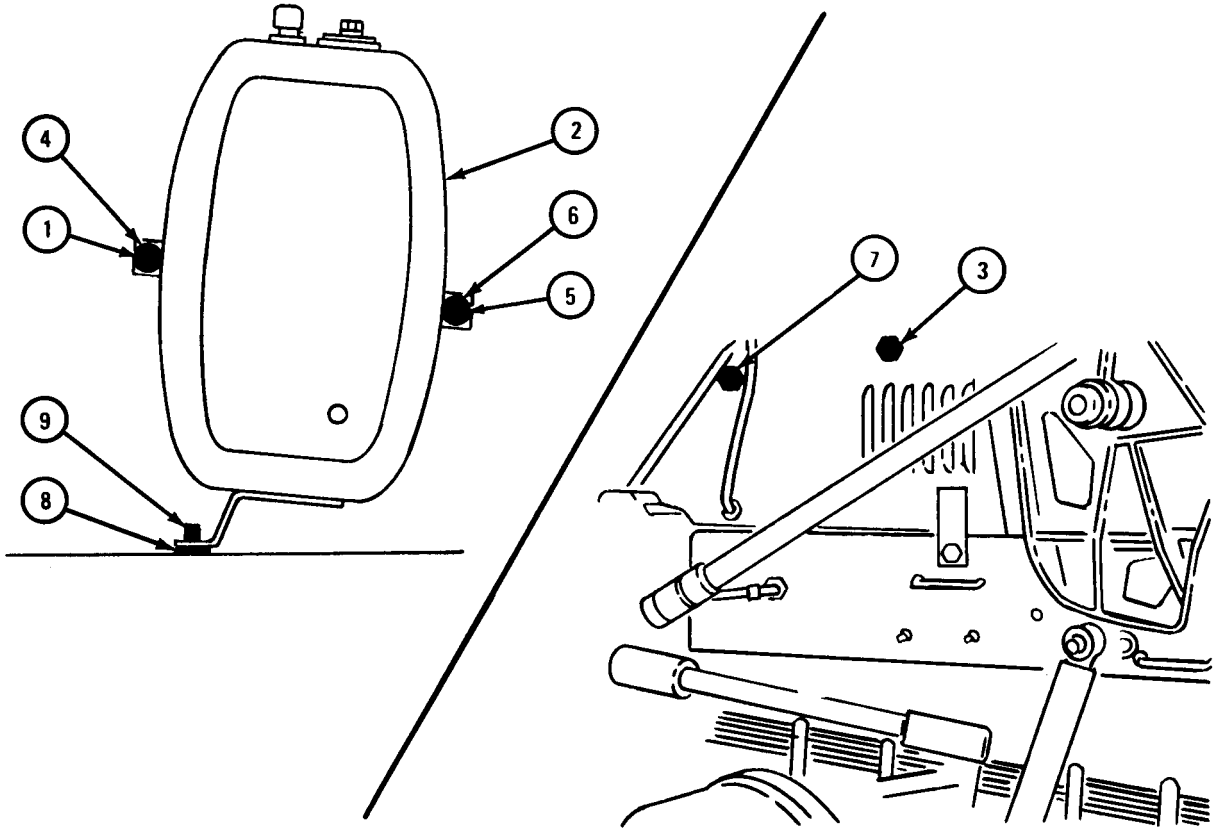
GO TO FRAME 3



FRAME 3

Soldier A 1.	Working in engine compartment and using 9/16-inch wrench, hold nut (1). At the same time, hold reservoir (2). Tell soldier B when ready.
Soldier B 2.	Working under left front fender, and using 9/16-inch wrench, unscrew and take off screw (3).
Soldier A 3.	Take off nut (1) and two washers (4).
Soldiers A and B 4.	Do steps 1 through 3 again for nut (5), two washers (6), and screw (7) at other side of reservoir (2).
Soldier A 5.	Lift reservoir (2) off truck and take out cushion (8) and spacer (9).

END OF TASK

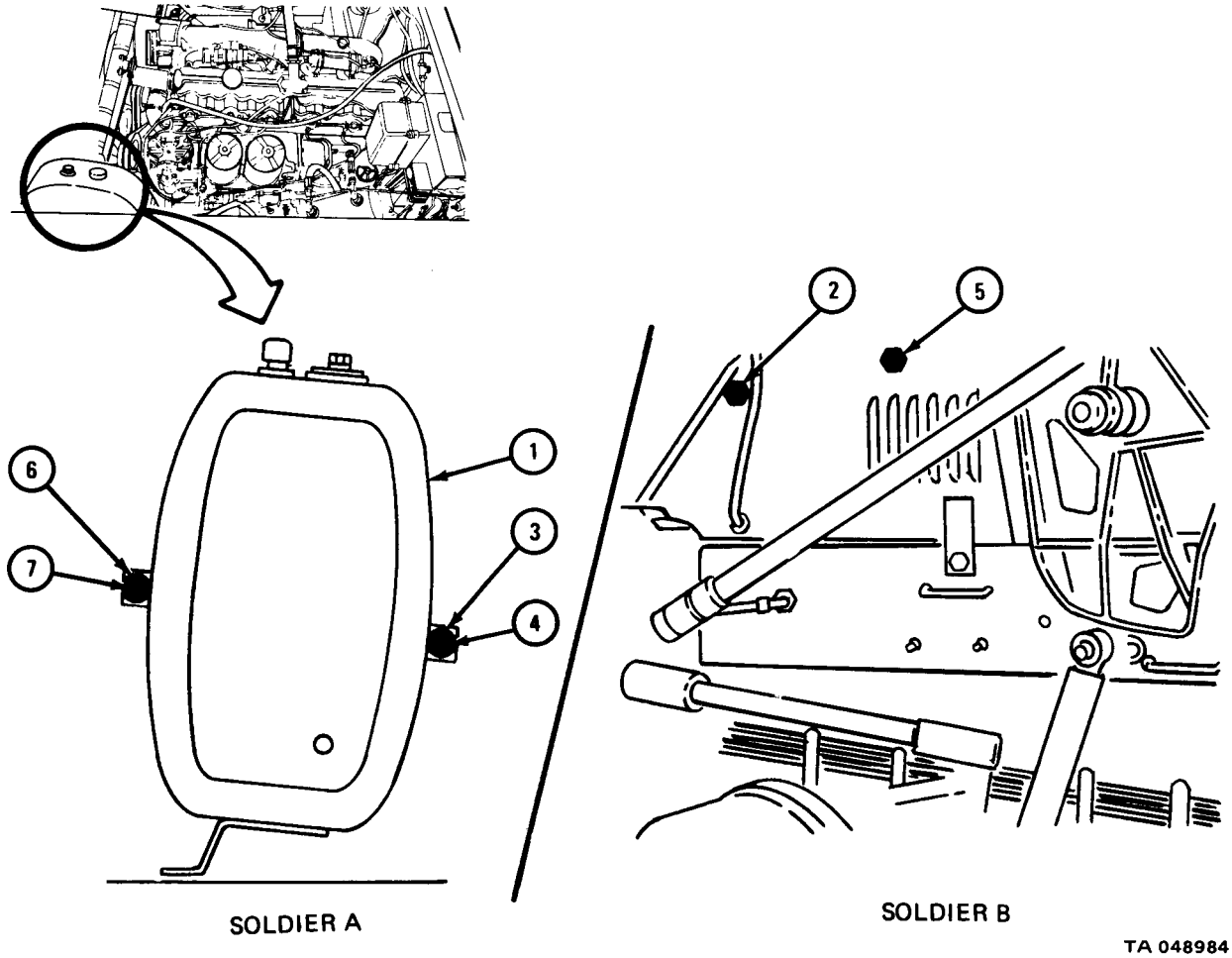


c. Replacement.

FRAME 1

Soldier A	1.	Put reservoir (1) into place on left side of engine compartment. Aline mounting holes and hold reservoir in position.
Soldier B	2.	Working under left front fender, put screw (2) through mounting hole as shown. Using 9/16-inch wrench, hold screw in place. Tell soldier A when ready.
Soldier A	3.	Using 9/16-inch wrench, screw on and tighten two washers (3) and nut (4).
Soldiers A and B	4.	Do steps 2 and 3 again for screw (5), two washers (6), and nut (7) at other side of reservoir (1).

GO TO FRAME 2



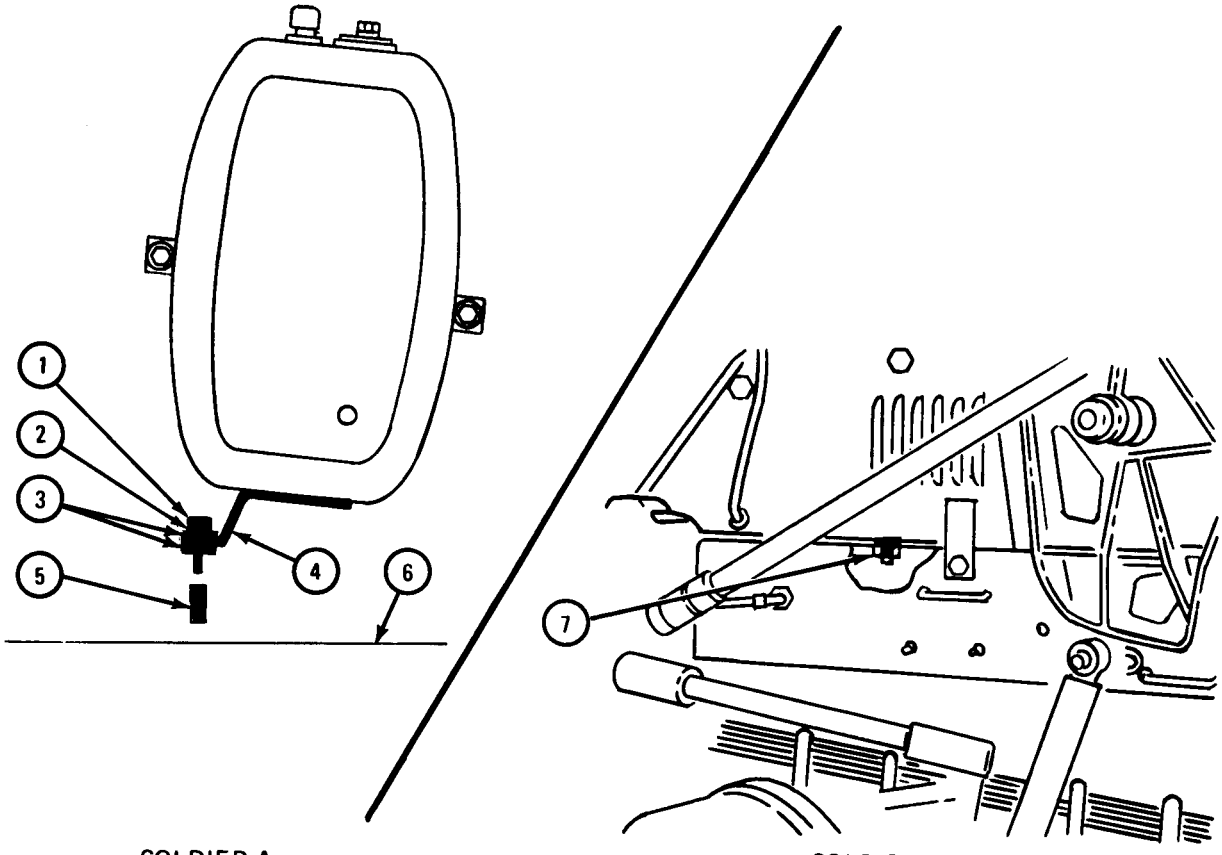
FRAME 2

Soldier A 1. Working in engine compartment, put screw (1) through washer (2), mounting cushion (3), and hole in mounting bracket (4). Put another cushion (3) on screw and slide spacer (5) over screw into cushions.

2. Put screw (1) through frame (6) and tell soldier B when ready.

Soldier B 3. Working under left front frame, and using 9/16-inch wrench, screw on and tighten safety nut (7).

GO TO FRAME 3



FRAME 3

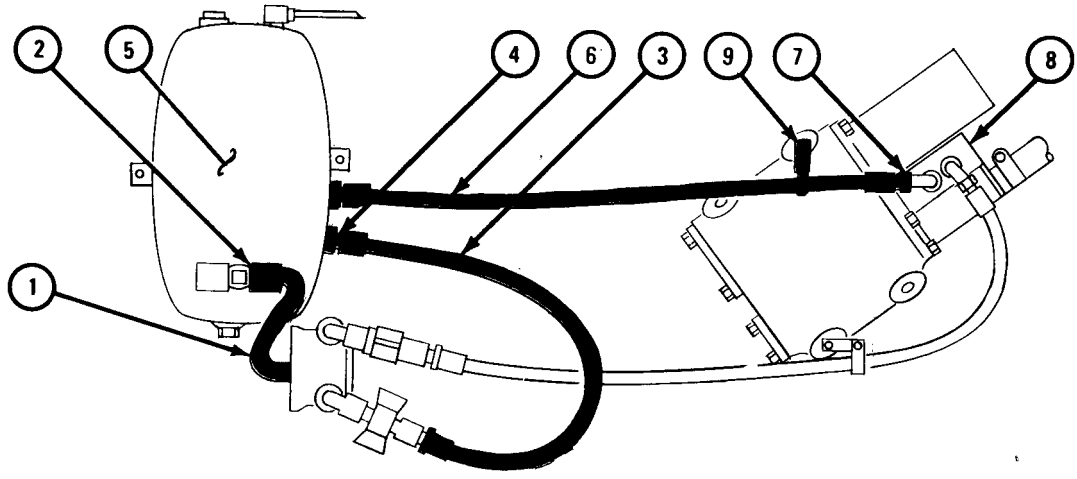
1. Put on hydraulic line (1). Using 11/16-inch wrench, screw on sleeve nut (2).
2. Put on hydraulic line (3). Using 1 1/2-inch wrenches, screw sleeve nut (4) onto reservoir (5).
3. Using 15/16-inch wrench, screw hose (6) onto reservoir (5).
4. Using l-inch wrench, screw sleeve nut (7) onto steering gear (8).
5. Using 7/16-inch wrenches, screw on and tighten nut (9).

NOTE

Follow-on Maintenance Action Required:

1. Fill hydraulic steering oil reservoir. Refer to LO 9-2320-211-12.
2. Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



TA 048986

CHAPTER 15

FRAME AND TOWING ATTACHMENTS GROUP MAINTENANCE

Section I. SCOPE

15-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for frame components, pintles and towing attachments, spare wheel carrier, and fifth wheel assembly for which there are authorized corrective maintenance tasks at the organizational maintenance level.

15-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. FRAME COMPONENTS

15-3. BUMPERS REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench (2)
15/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

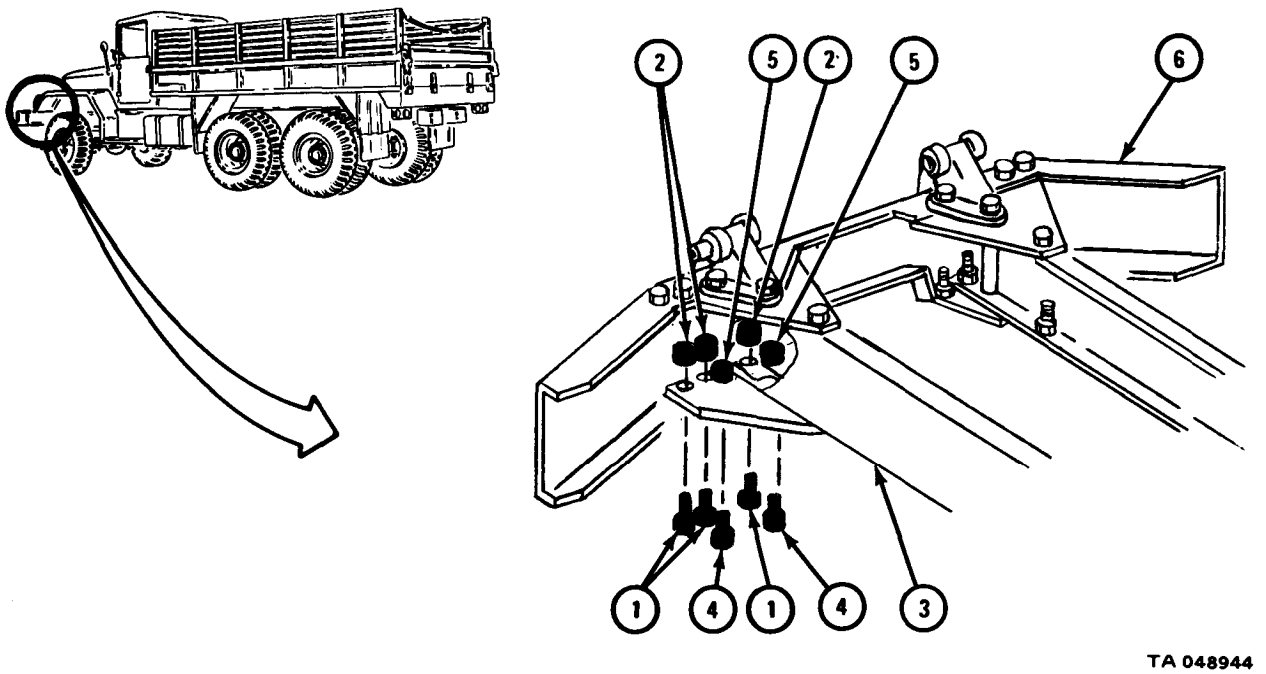
a. Removal.

(1) Front bumper.

FRAME 1

1. Using 3/4-inch wrenches, unscrew and takeoff three screws (1) and nuts (2). One of the screws is inside frame member (3).
2. Using 15/16-inch wrenches, unscrew and take off two screws (4) and nuts (5). One of the screws is inside frame member (3).
3. Do steps 1 and 2 again on other side of bumper (6).

GO TO FRAME 2

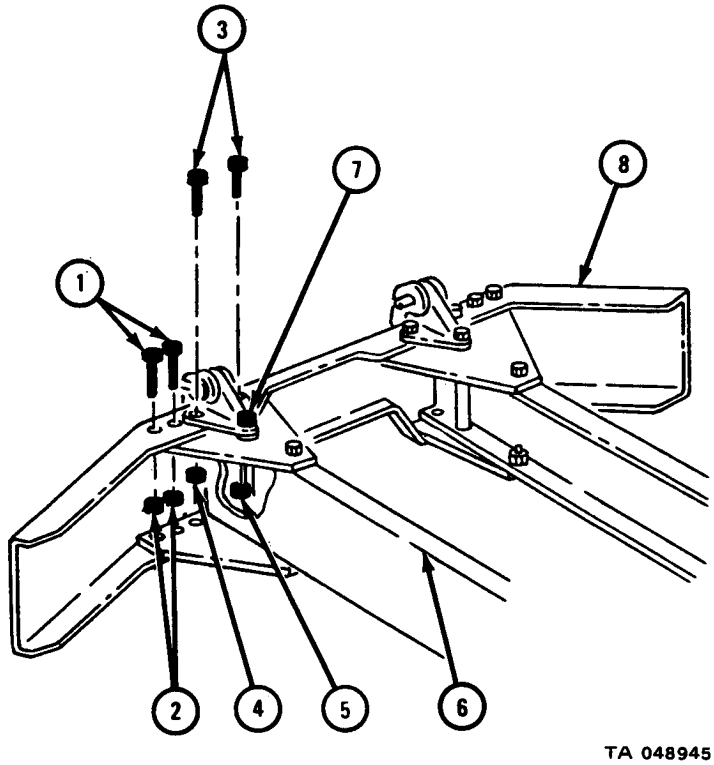


TA 048944

FRAME 2

1. Using 3/4-inch wrenches, unscrew and take off two screws (1) and nuts (2).
2. Using 15/16-inch wrenches, unscrew and take off two screws (3), nut (4), and nut (5) inside of frame member (6).
3. Using 15/16-inch wrenches, loosen bolt (7).
4. Do steps 1 through 3 again on other side of bumper (8).
5. Pull bumper (8) forward and take it off.

END OF TASK



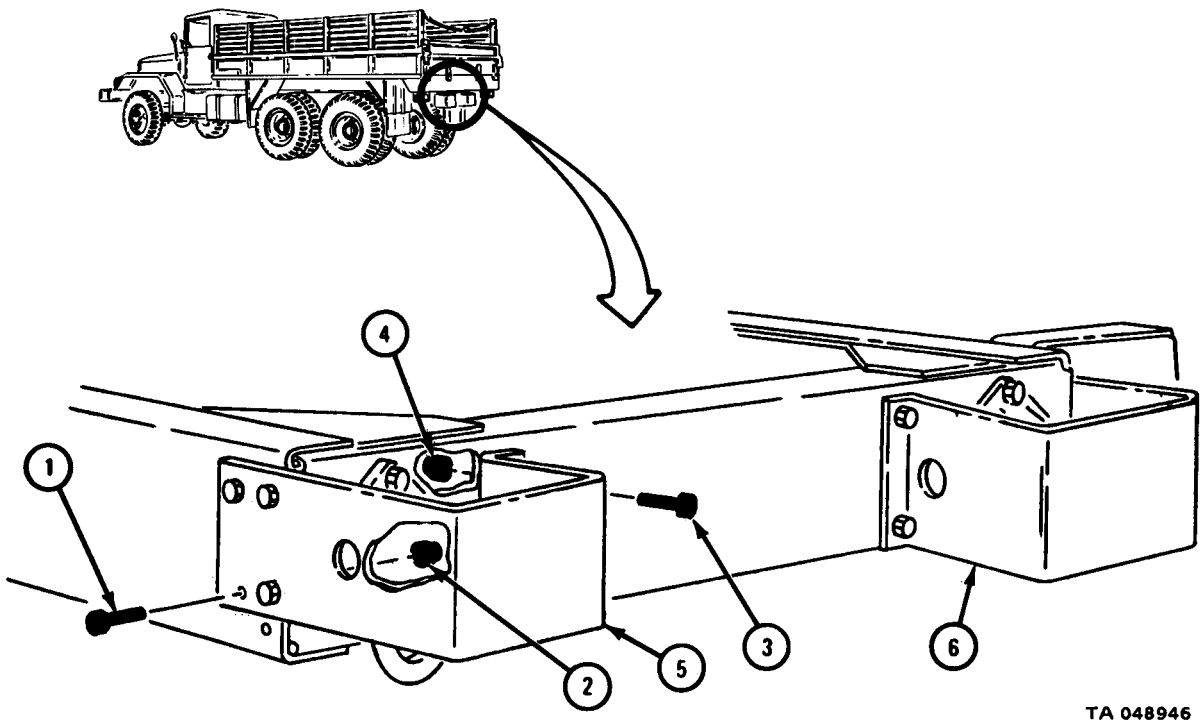
TA 048945

(2) Rear bumperettes.

FRAME 1

1. Using 3/4-inch wrenches, unscrew and take off four screws (1) and nuts (2).
2. Using 3/4-inch wrenches, unscrew and take off two screws (3) and nuts (4). Takeoff bumperette (5).
3. Do steps 1 and 2 again for other bumperette (6).

END OF TASK



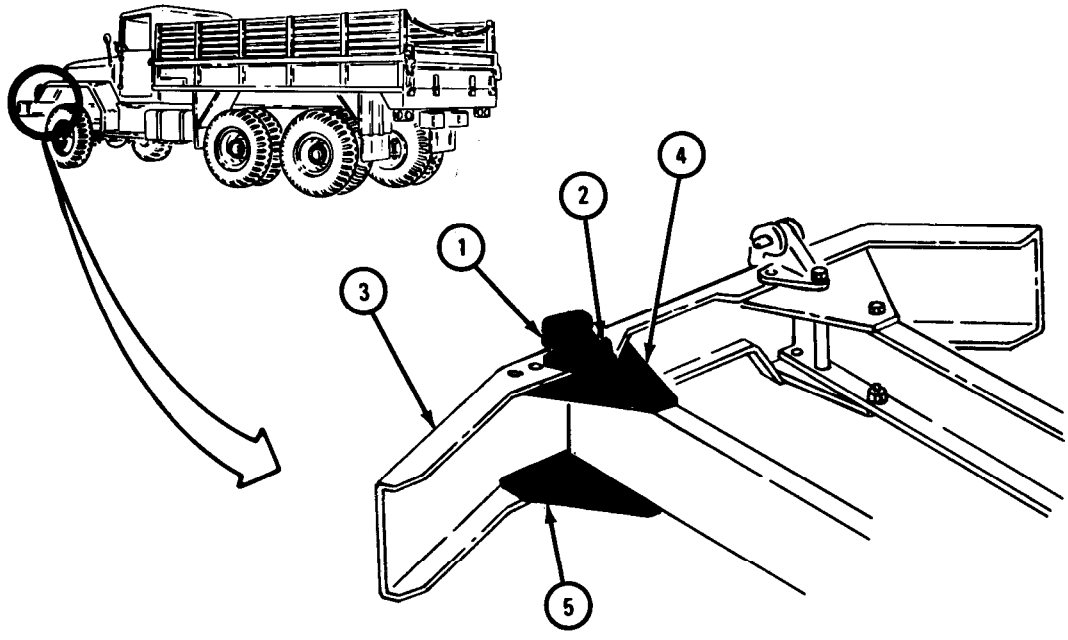
b. Replacement.

(1) Front bumper.

FRAME 1

1. Move lifting shackle (1) up out of the way.
2. Pull up on shackle bracket (2) and hold it. Slide upper lip of bumper (3) into place between shackle bracket and upper bumper bracket (4). Do again for other side of bumper.
3. Push bottom lip of bumper (3) into place under lower bumper bracket (5). Do again for other side of bumper.
4. Aline holes in bumper (3) with holes in shackle bracket (2), upper bumper bracket (4), and lower bumper bracket (5) on both sides of bumper.

GO TO FRAME 2

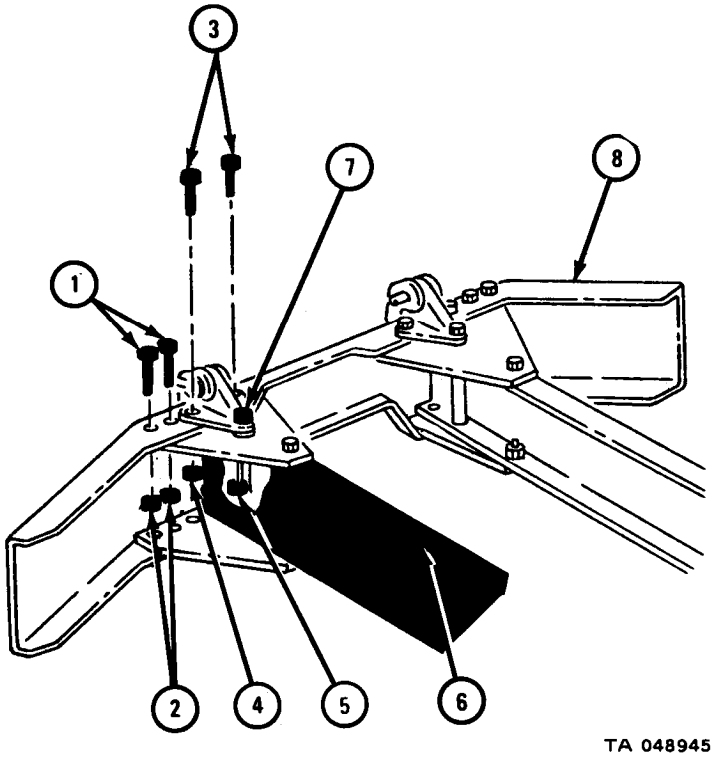


TA 048947

FRAME 2

1. Using 3/4-inch wrenches, screw in and tighten two screws (1) and nuts (2).
2. Using 15/16-inch wrenches, screw in and tighten two screws (3), nuts (4), and nut (5) on inside of frame member (6).
3. Using 15/16-inch wrench, tighten bolt (7).
4. Do steps 1 through 3 again for other side of bumper (8).

GO TO FRAME 3

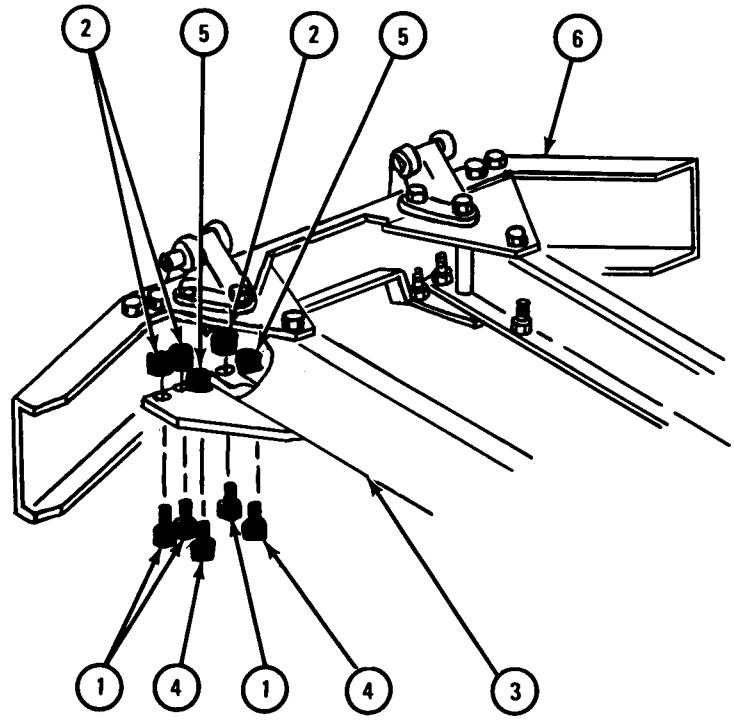


TA 048945

FRAME 3

1. Using 3/4-inch wrenches, screw in and tighten three screws (1) and nuts (2). One of the screws is inside frame member (3).
2. Using 15/16-inch wrenches, screw in and tighten two screws (4) and nuts (5). One of the screws is inside frame member (3).
3. Do steps 1 and 2 again for other side of bumper (6).

END OF TASK



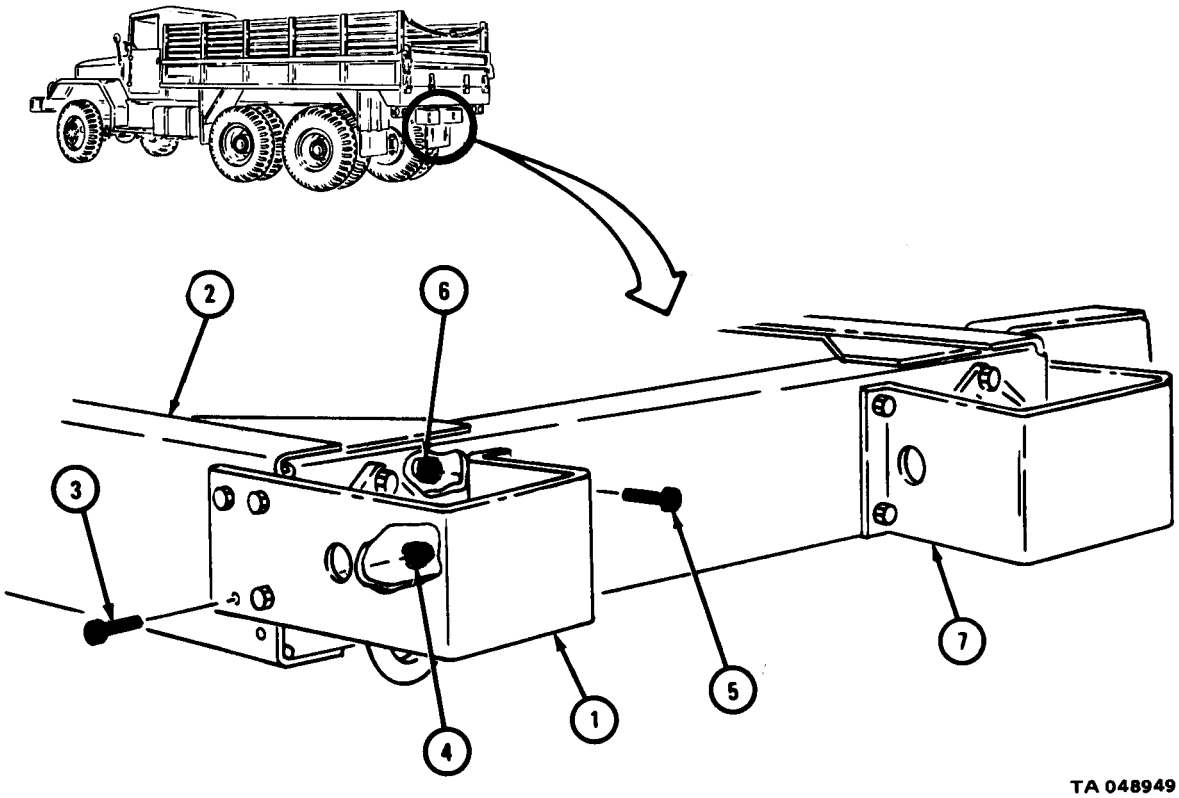
TA 048948

(2) Rear bumperettes.

FRAME 1

1. Put bumperette (1) in place on frame (2), aline holes and hold it. Put four screws (3) through outside holes.
2. Using 3/4-inch wrenches, screw in and tighten four screws (3) and nuts (4).
3. Using 3/4-inch wrenches, screw in and tighten two screws (5) and nuts (6).
4. Do steps 1 through 3 again for other bumperette (7).

END OF TASK



Section III. PINTLES AND TOWING ATTACHMENTS

15-4. TOWING PINTLE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 9/32-inch wrench
7/16-inch wrench
3/4-inch wrench
15/16-inch wrench
1 1/8-inch wrench
Transmission jack
Pliers

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

Removal.

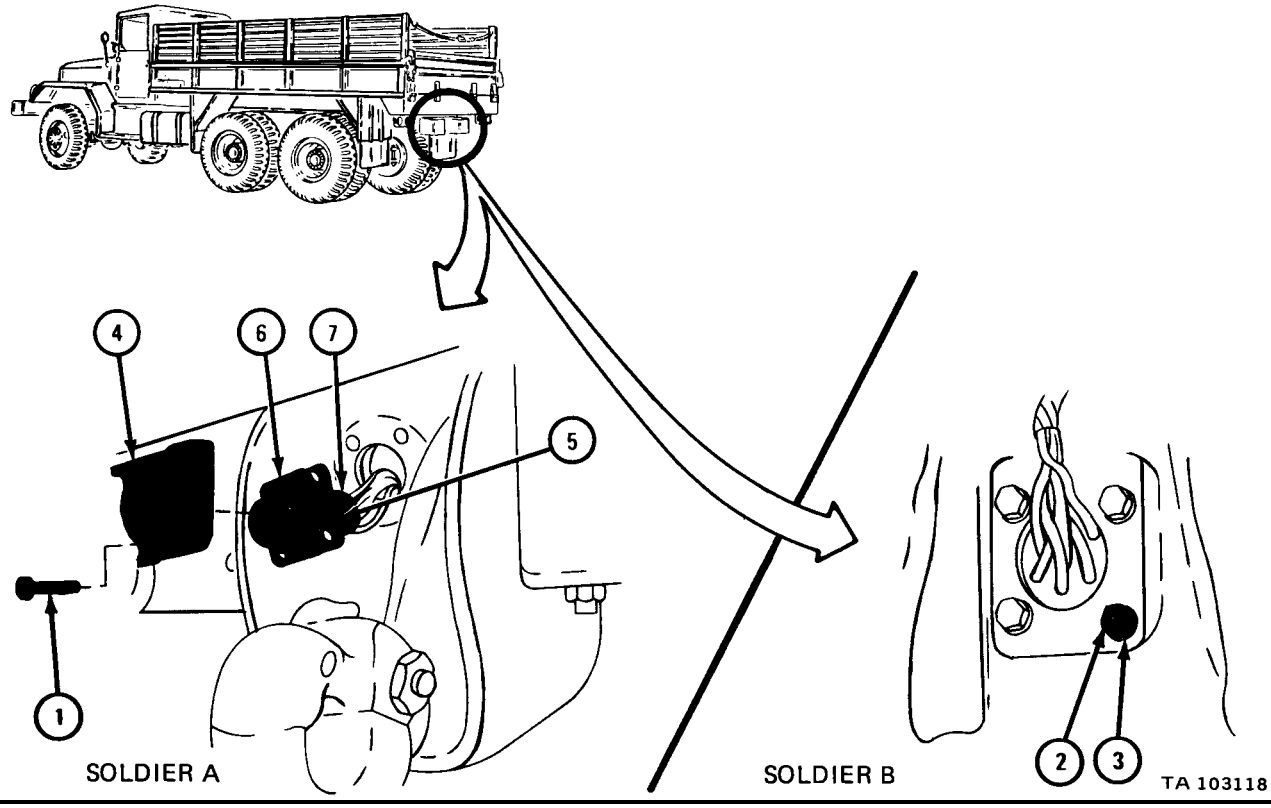
FRAME 1

Soldier A 1. Hold bolts (1) with 7/16-inch wrench.

Soldier B 2. Working inside of frame of truck and using 7/16-inch wrench, unscrew and take off four nuts (2) and lockwashers (3).

Soldier A 3. Take out four bolts (1) and cover (4). Take off retainer plate (5). Pull out connector (6) and unscrew coupling (7). Take off connector (6).

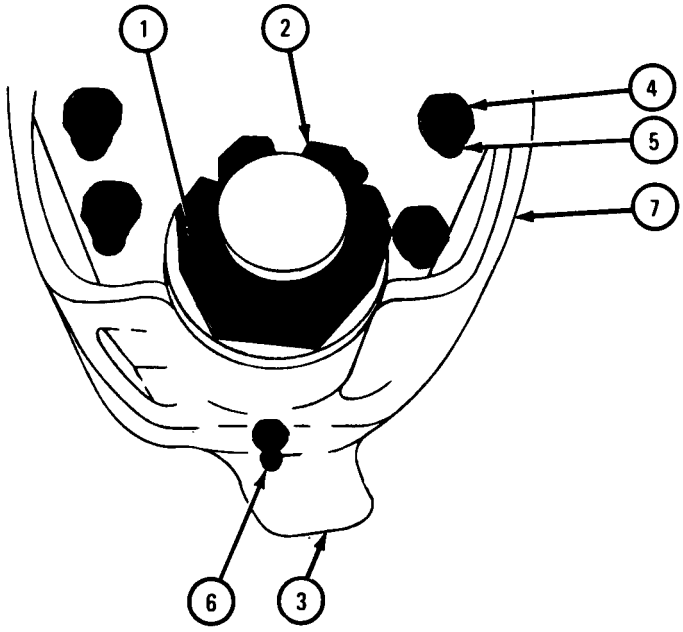
GO TO FRAME 2



FRAME 2

1. Using pliers, take out cotter pin (1). Take off nut and washer (2). Takeout pintle hook (3).
2. Using 1 1/8-inch wrenches, unscrew and take off four nuts (4). Take out four bolts (5).
3. Using 9/32-inch wrench, unscrew and takeout lubrication fitting (6).
4. Place transmission jack under mounting bracket (7) for support.

GO TO FRAME 3



TA 103119

FRAME 3

Soldier A 1. Hold bolts (1) with 1 1/8-inch wrench.

Soldier B 2. Working inside of frame of truck and using 1 1/8-inch wrench, unscrew and take off four nuts (2).

WARNING

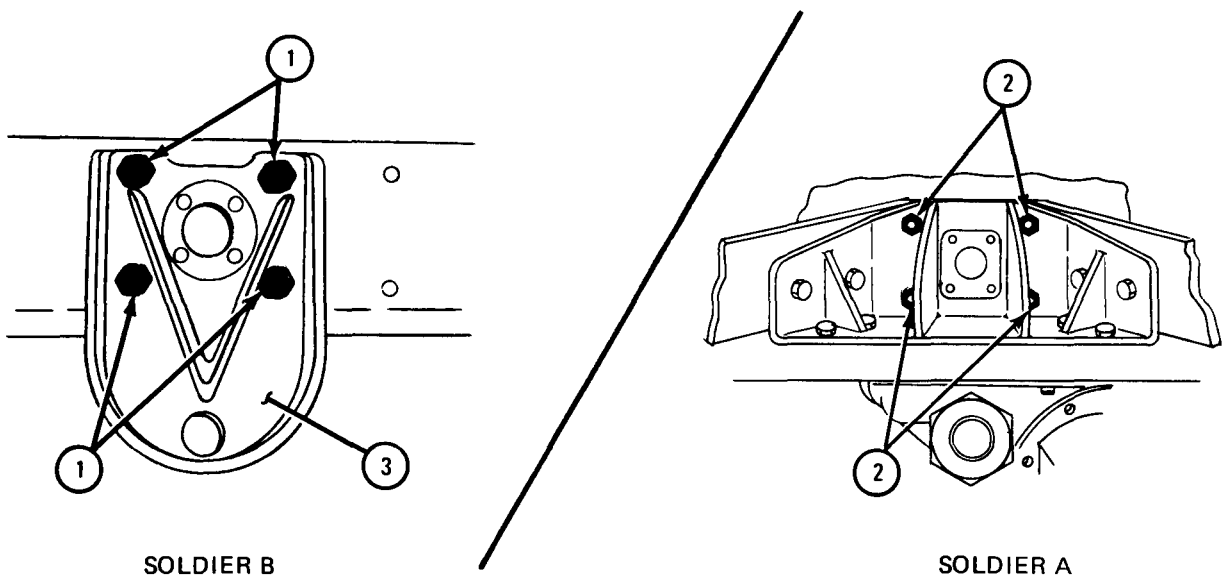
Do not take out bolts (1) while soldier A is under truck. Pintle and mounting bracket (3), may fall, causing injury to personnel and damage to equipment.

Soldier A 3. Hold mounting bracket (3) steady.

Soldier B 4. Take out four bolts (1).

5. Using transmission jack, slowly lower pintle and mounting bracket (3) to floor.

GO TO FRAME 4



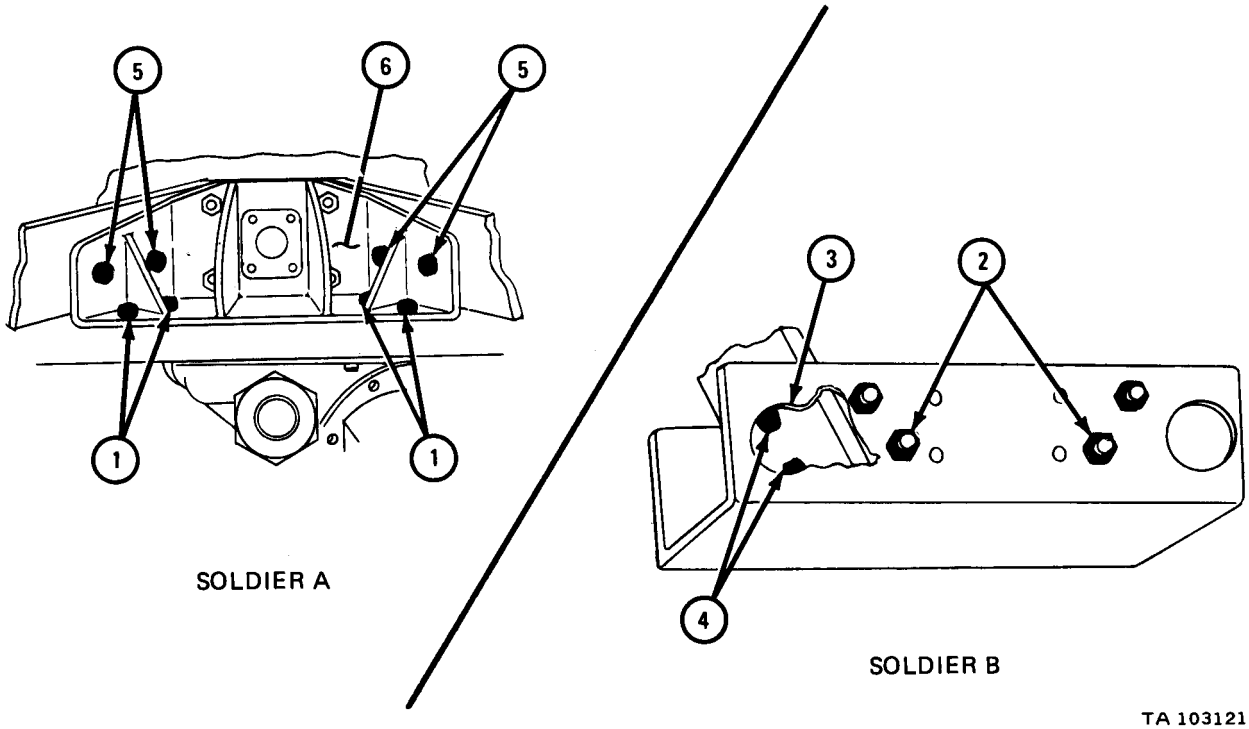
SOLDIER B SOLDIER A

TA 103120

FRAME 4

Soldier A 1.	Working inside frame of truck and using 15/16-inch wrench, hold four bolts (1).
Soldier B 2.	Working under truck and using 15/16-inch wrench, unscrew and take out four nuts (2).
Soldier A 3.	Take out four bolts (1).
Soldier B 4.	Using 3/4-inch wrench and reaching in through hand hole (3), hold two nuts (4).
Soldier A 5.	Using 3/4-inch wrench, unscrew and take out two bolts (5).
Soldiers A and B 6.	Do steps 4 and 5 again for other side of reinforcement (6).

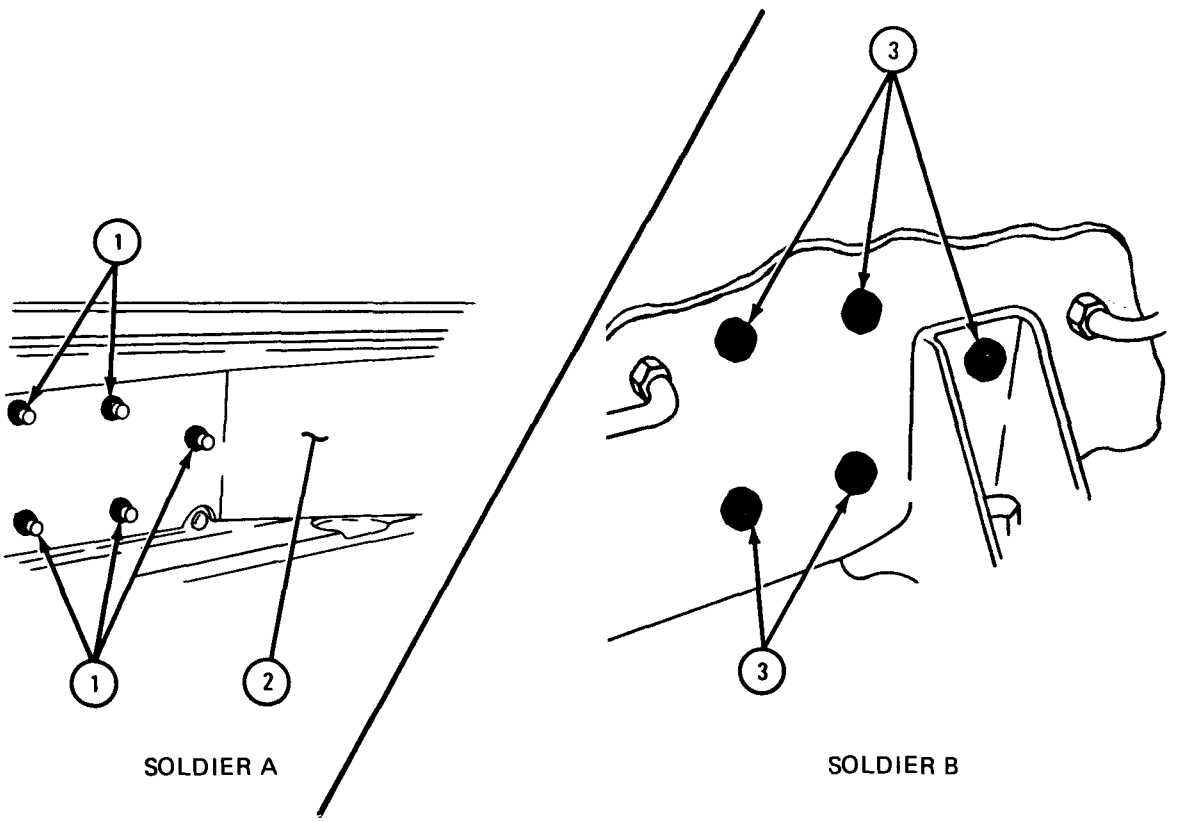
GO TO FRAME 5



FRAME 5

Soldier A 1.	Working inside frame of truck and using 3/4-inch wrench, hold five nuts (1) and hold brace (2).
Soldier B 2.	Working on side of truck and using 3/4-inch wrench, unscrew and take out five bolts (3).
Soldier A 3.	Take out brace (2).
Soldiers A and B 4.	Do steps 1 through 3 on other side of truck.

END OF TASK

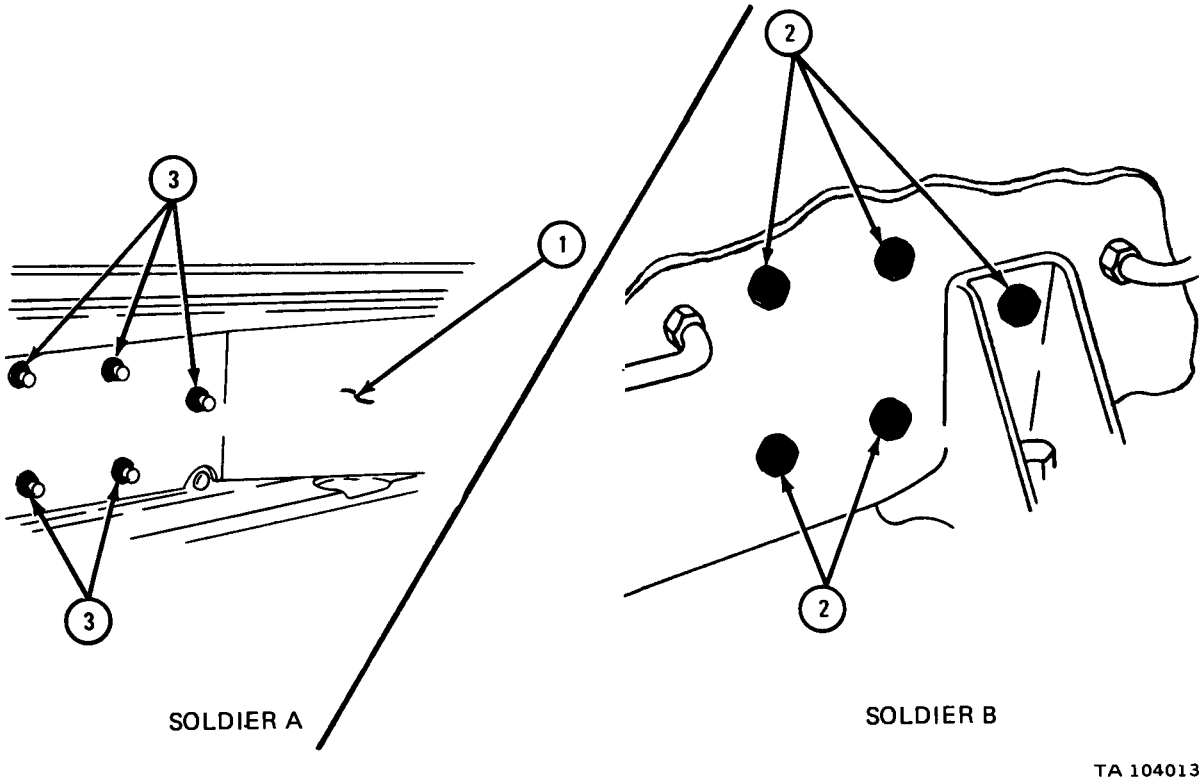


b. Replacement.

FRAME 1

Soldier A 1.	Working inside frame of truck, put on brace (1) and aline holes with holes in frame.
Soldier B 2.	Working on side of truck, put in five bolts (2). Using 3/4-inch wrench, hold five bolts (2).
Soldier A 3.	Using 3/4-inch wrench, screw on and tighten five nuts (3).
Soldiers A and B 4.	Do steps 1 through 3 on other side of truck.

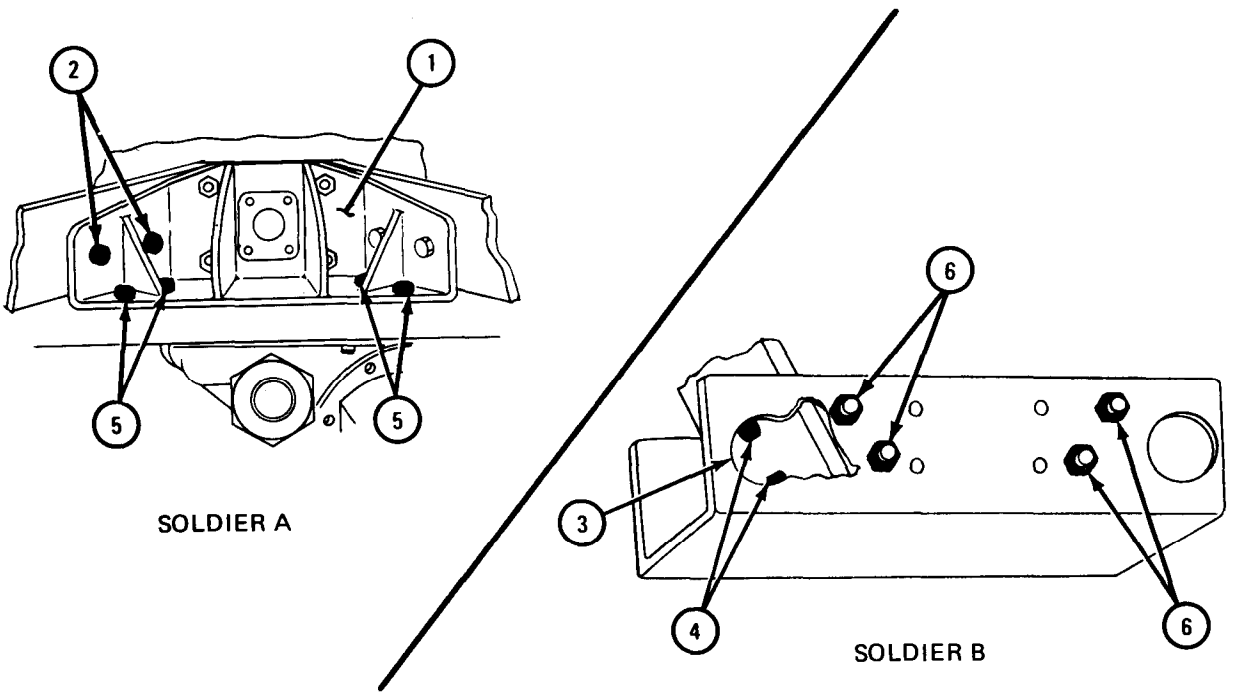
GO TO FRAME 2



FRAME 2

Soldiers A and B 1.	Working inside frame of truck, put on reinforcement (1). Line up bolt holes.
Soldier A 2.	Put in two bolts (2). Using 3/4-inch wrench, hold bolts (2).
Soldier B 3.	Working under truck, reach through hand hole (3) and using 3/4-inch wrench, screw on and tighten two nuts (4).
Soldiers A and B 4.	Do steps 2 and 3 again on other side of reinforcement (1).
Soldier A 5.	Put in four bolts (5). Using 15/16-inch wrench, hold bolts (5).
Soldier B 6.	Using 15/16-inch wrench, screw on and tighten four nuts (6).

GO TO FRAME 3



FRAME 3

Soldier A 1. Hold mounting bracket (1) steady on transmission jack.

Soldier B 2. Using transmission jack, lift mounting bracket (1) up to frame (2).

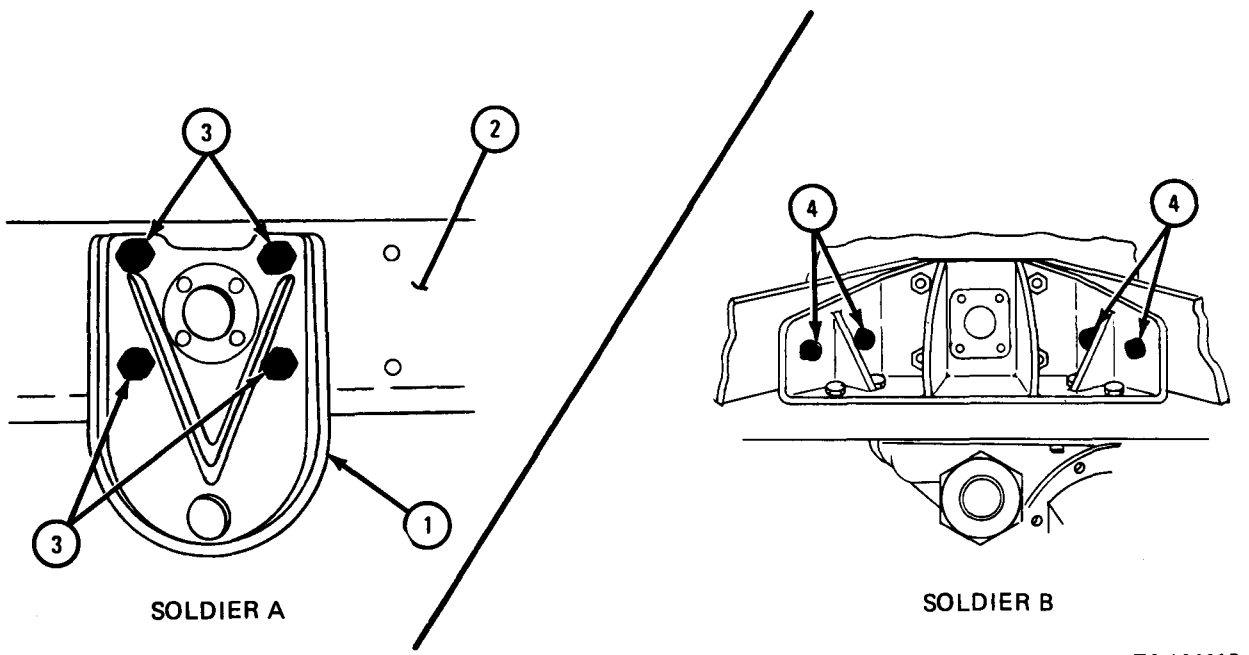
Soldier A 3. Aline bolt holes and put in four bolts (3). Using 1 1/8-inch wrench, hold bolts (3).

WARNING

Leave transmission jack in place under mounting bracket (1) for support. Failure to do this may let mounting bracket fall, causing injury to personnel and damage to equipment.

Soldier B 4. Working inside frame of truck, and using 1 1/8-inch wrench, screw on and tighten four nuts (4). Take out transmission jack.

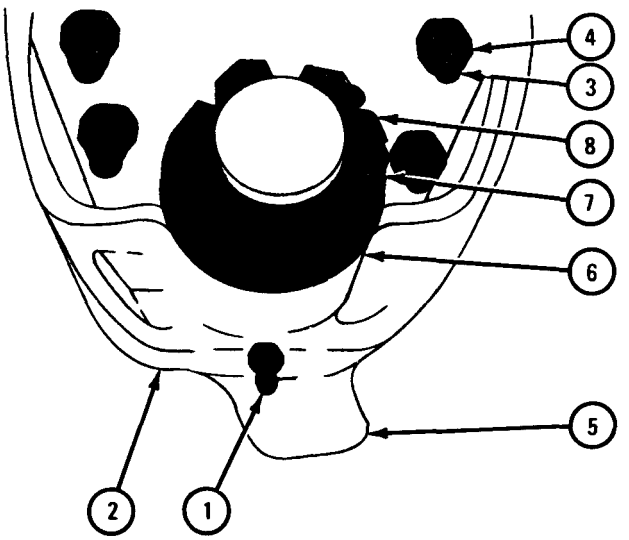
GO TO FRAME 4



FRAME 4

1. Using 9/32-inch wrench, screw in and tighten lubrication fitting (1) into mounting bracket (2).
2. Put in four bolts (3). Using 1 1/8-inch wrenches, screw on and tighten four nuts (4).
3. Put pintle hook (5) in mounting bracket (2).
4. Put on washer (6). Screw on nut (7) only tight enough so pintle hook (5) can still turn easily.
5. Line up a slot on nut (7) with hole in pintle hook (5) and put in cotter pin (8). Using pliers, bend over ends of cotter pin.

GO TO FRAME 5



TA 104016

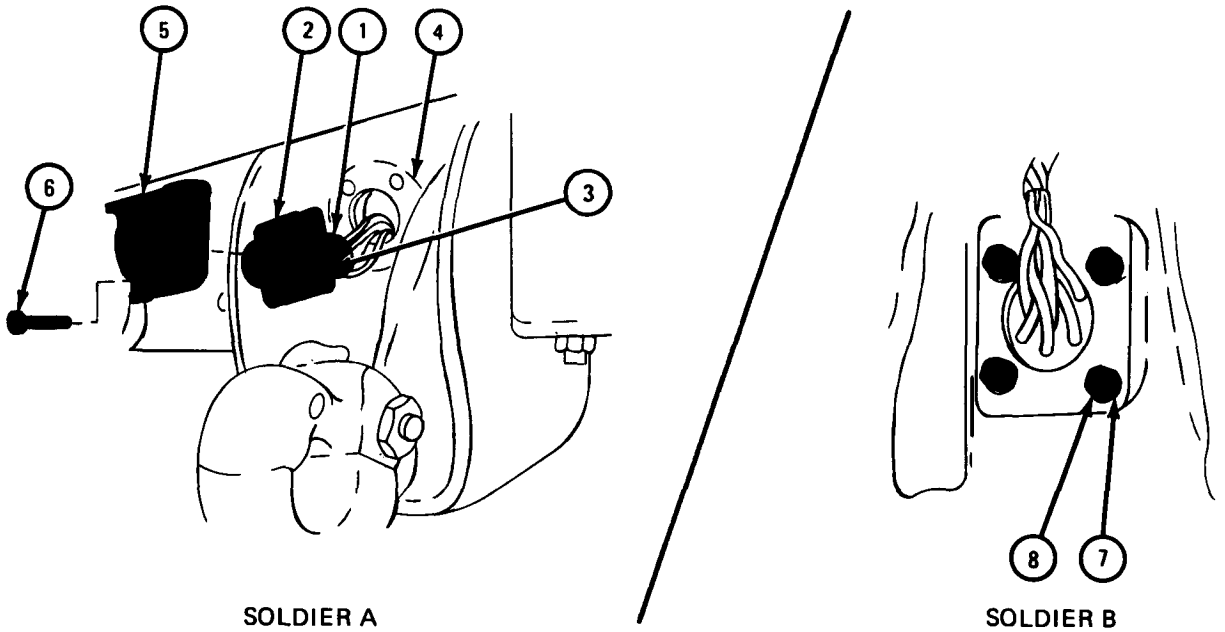
FRAME 5

Soldier A 1. Screw coupling (1) into connector (2). Put on retainer plate (3), connector (2) and mounting bracket (4), and aline bolt holes of connector.

2. Put on cover (5). Put in four bolts (6). Hold bolts with 7/16-inch wrench.

Soldier B 3. Working inside of frame of truck, put on lockwashers (7). Using 7/16-inch wrench, screw on and tighten four nuts (8).

END OF TASK



SOLDIER A

SOLDIER B

TA 104017

15-5. TOWING PINTLE REMOVAL AND REPLACEMENT.

TOOLS: Pliers
12-inch adjustable automatic wrench
0.010-inch feeler gage

SUPPLIES: None

PERSONNEL: One

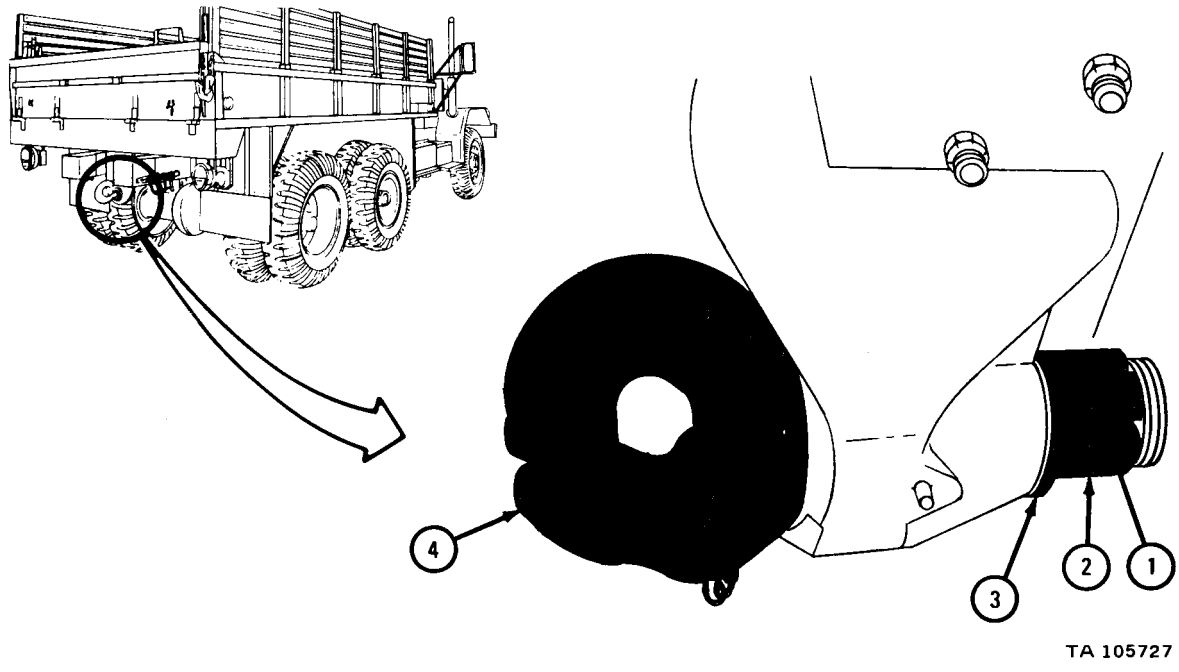
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using pliers, take out cotter pin (1) and throw it away.
2. Using wrench, unscrew and take off slotted nut (2) and thrust washer (3).
3. Take out towing pintle assembly (4).

END OF TASK



b. Replacement.

FRAME 1

1. Push towing pintle assembly (1) through hole in bracket (2).
2. Put on thrust washer (3). Using wrench, screw on slotted nut (4).
3. Place feeler gage (5) between thrust washer (3) and bracket (2).
4. Using wrench, tighten slotted nut (4) until feeler gage (5) barely slides in and out.

NOTE

Towing pintle assembly (1) should turn freely with no side motion.

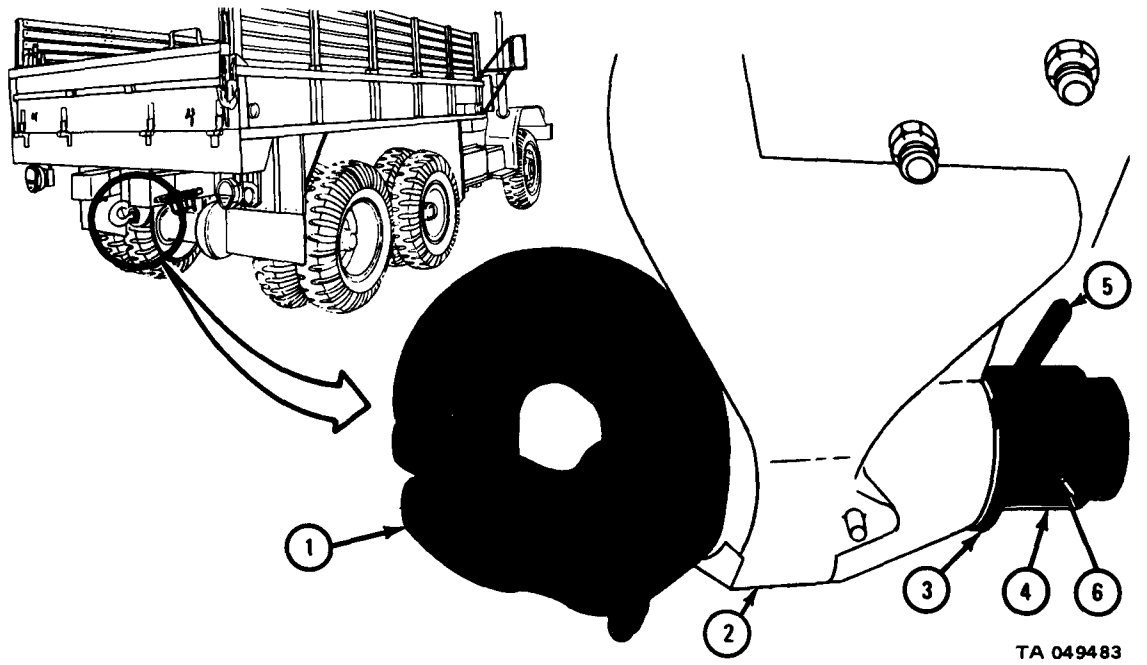
5. Using pliers, push cotter pin (6) through holes in slotted nut (4) and towing pintle assembly (1). Bend open ends of cotter pin.

NOTE

Follow-on Maintenance Action Required:

Lubricate towing pintle assembly. Refer to LO 9-2320-211-12.

END OF TASK



15-6. FRONT LIFTING SHACKLE BRACKET REMOVAL AND REPLACEMENT.

NOTE

This task is the same for both right and left front lifting shackle brackets. This task is shown for right front lifting shackle bracket.

TOOLS: 15/16-inch wrench (2)
15/16-inch socket with breaker bar

SUPPLIES: None

PERSONNEL: One

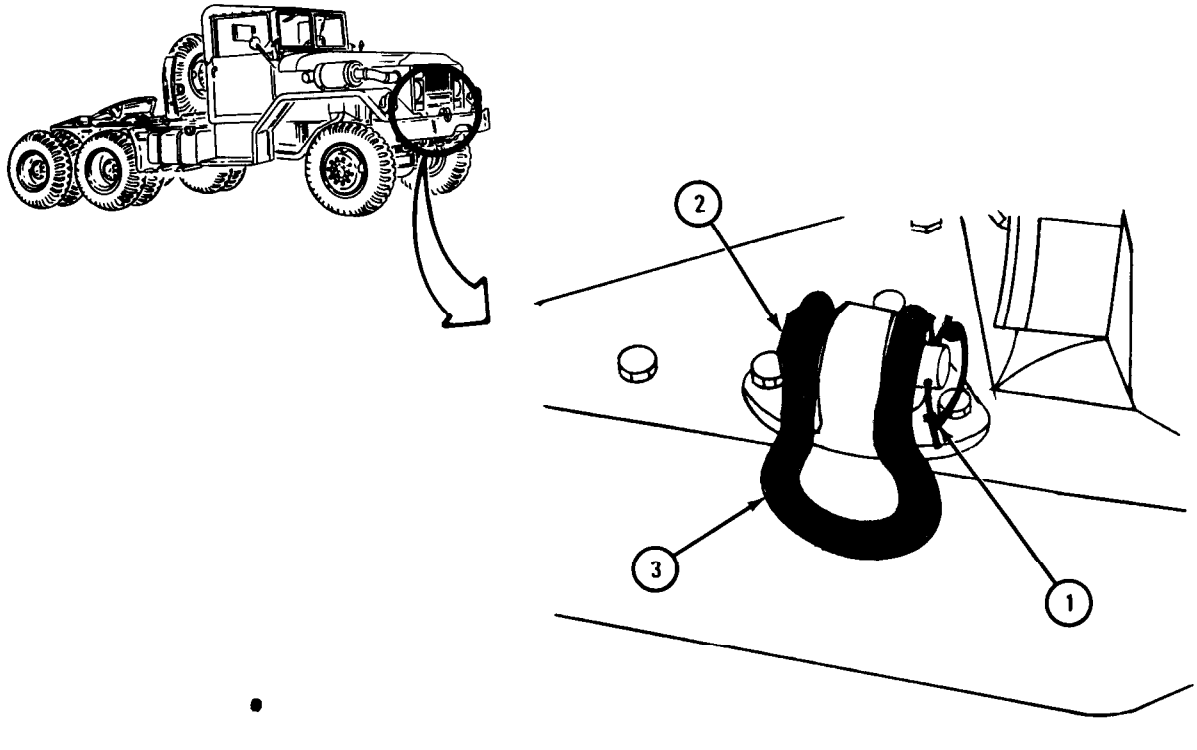
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal

FRAME 1

1. Unhook and pull out clip (1) . Pull out pin (2) and take off shackle (3).

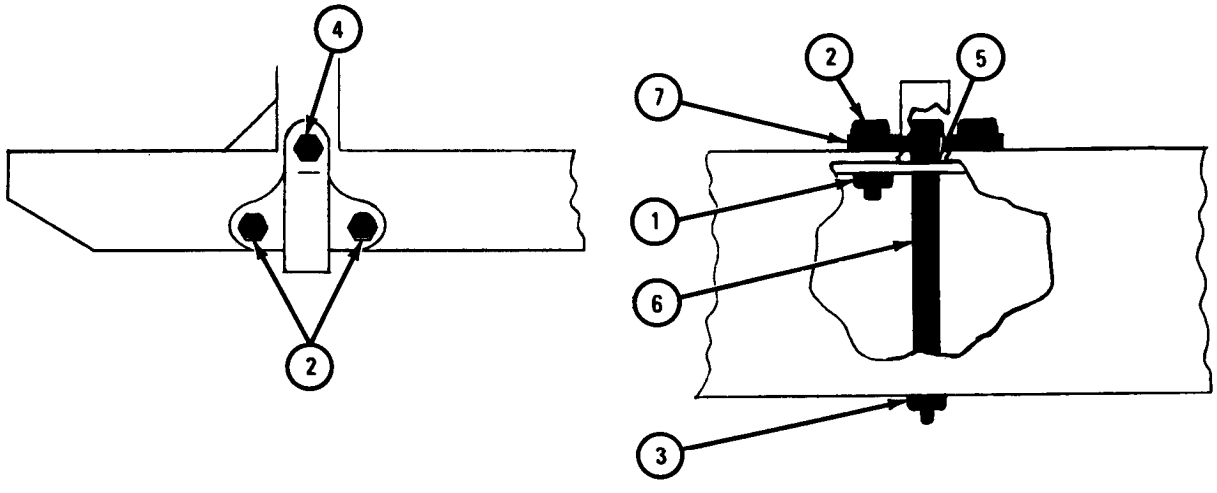
GO TO FRAME 2



FRAME 2

1. Using 15/16-inch wrench and socket with breaker bar, unscrew and take off two nuts (1) and two screws (2).
2. Using 15/16-inch wrench and socket with breaker bar, unscrew and take off nut (3) and screw (4). Take out spacer (5 and 6) and bracket (7).

END OF TASK



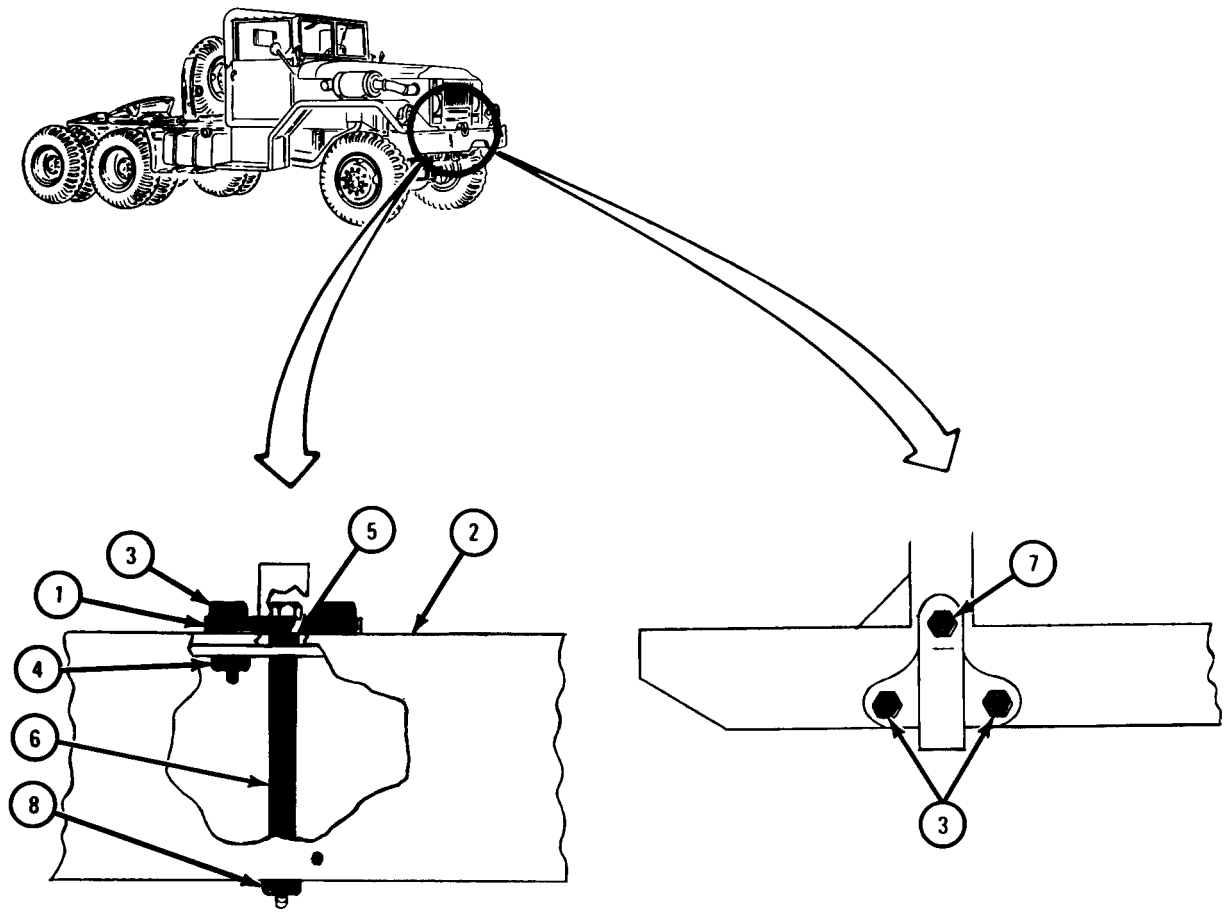
TA 050194

b. Replacement.

FRAME 1

1. Put bracket (1) in place on bumper (2), alining holes. Push two screws (3) through holes in bracket.
2. Using 15/16-inch wrenches, screw on and tighten two nuts (4).
3. Put spacers (5 and 6) in place and push screw (7) through spacers. Using 15/16-inch wrenches, screw on and tighten nut (8).

GO TO FRAME 2



FRONT VIEW

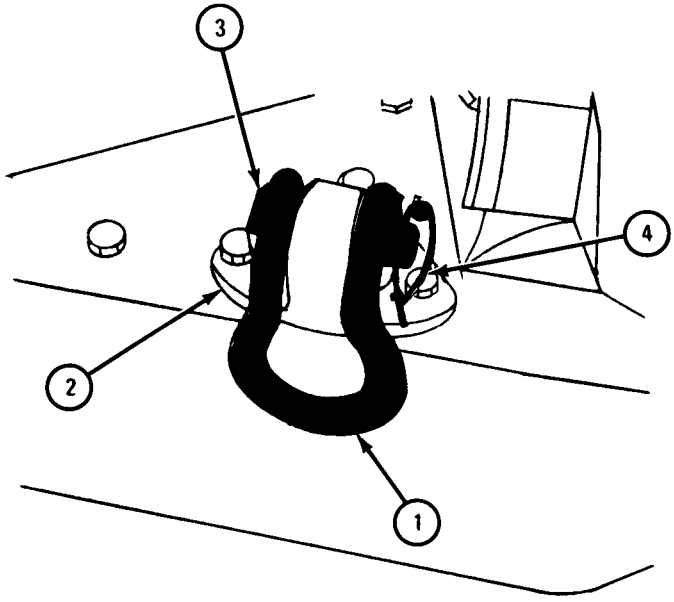
TOP VIEW

TA 045899

FRAME 2

1. Put shackle (1) in place on bracket (2), alining holes.
2. Push pin (3) through holes in shackle (1) and bracket (2). Push clip (4) through hole in pin and close clip.

END OF TASK



TA 050196

15-7. REAR LIFTING SHACKLE REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench (2)
15/16-inch wrench (2)

SUPPLIES : Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set,

a. Preliminary Procedure. Remove air coupling and bracket. Refer to Part 1, para 12-21.

b. Removal.

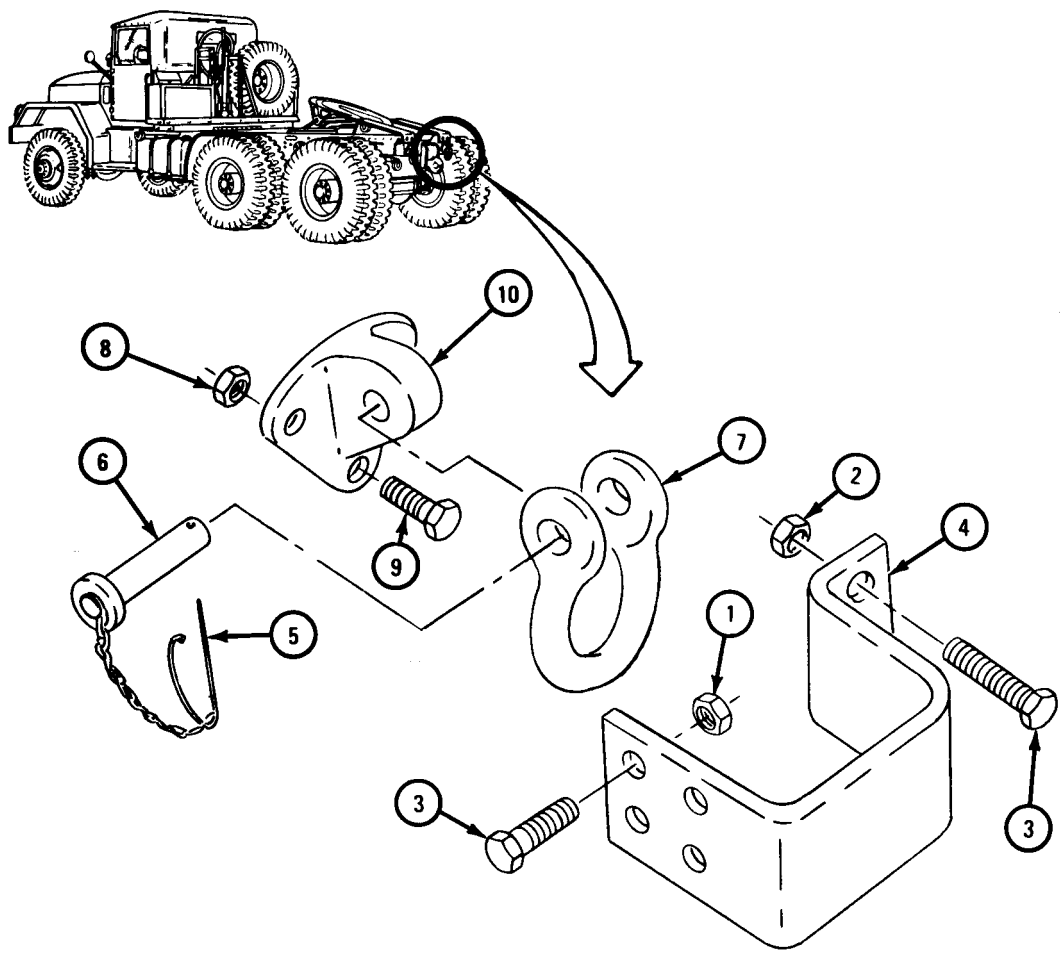
FRAME 1

NOTE

Bumperette (4) may not be on all models.

1. Using 3/4-inch wrenches, unscrew and take out four nuts (1).
2. Using 3/4-inch wrenches, unscrew and take out two nuts (2). Take out six screws (3) with bumperette (4).
3. Pull out pin (5). Take out pin (6) and shackle (7).
4. Using 15/16-inch wrenches, unscrew and take out three nuts (8). Take out three screws (9) and bracket (10).
5. Repeat steps (1, 2, 3, and 4) for other side.

END OF TASK



c. Cleaning.

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

Clean all parts before inspection, after repair, and before assembly.

(1) Clean inner and outer surfaces of metallic parts and all areas that might get oil or grease with dry cleaning solvent.

(2) Remove sludge and gum deposits with a stiff brush.

(3) Steam cleaning may be used to take off grease and dirt after dry cleaning solvent has been used.

(4) Dry with clean rags.

(5) Rust must be taken off using a wire brush.

(6) Refer to Part 1, para 1-3 for more cleaning steps.

d. Replacement.

FRAME 1

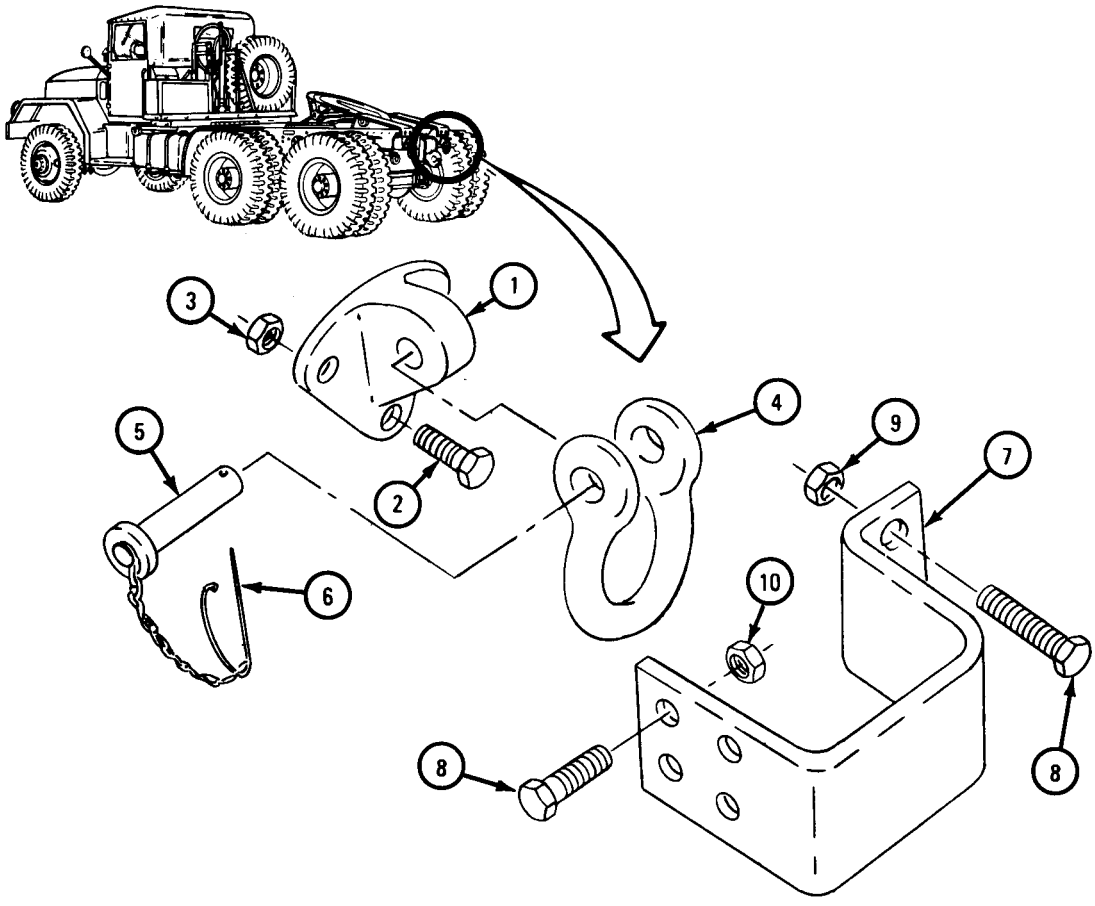
1. Put bracket (1) against truck. Put in three screws (2).
2. Using 15/16-inch wrenches, screw on three nuts (3).
3. Put shackle (4) over bracket (1). Put in pin (5). Put in pin (6) and close.
4. Hold bumperette (7) against truck. Put in six screws (8).
5. Using 3/4-inch wrenches, screw on two nuts (9).
6. Using 3/4-inch wrenches, screw on four nuts (10).
7. Do steps (1, 2, 3, 4, and 5) again for other side.

NOTE

Follow-on Maintenance Action Required:

Replace air coupling and bracket. Refer to Part 1, para 12-21.

END OF TASK



Section IV. SPARE WHEEL CARRIER

15-8. SPARE WHEEL CARRIER REMOVAL, REPAIR, AND REPLACEMENT (TRUCK M51A2).

TOOLS: General mechanic's tool kit

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

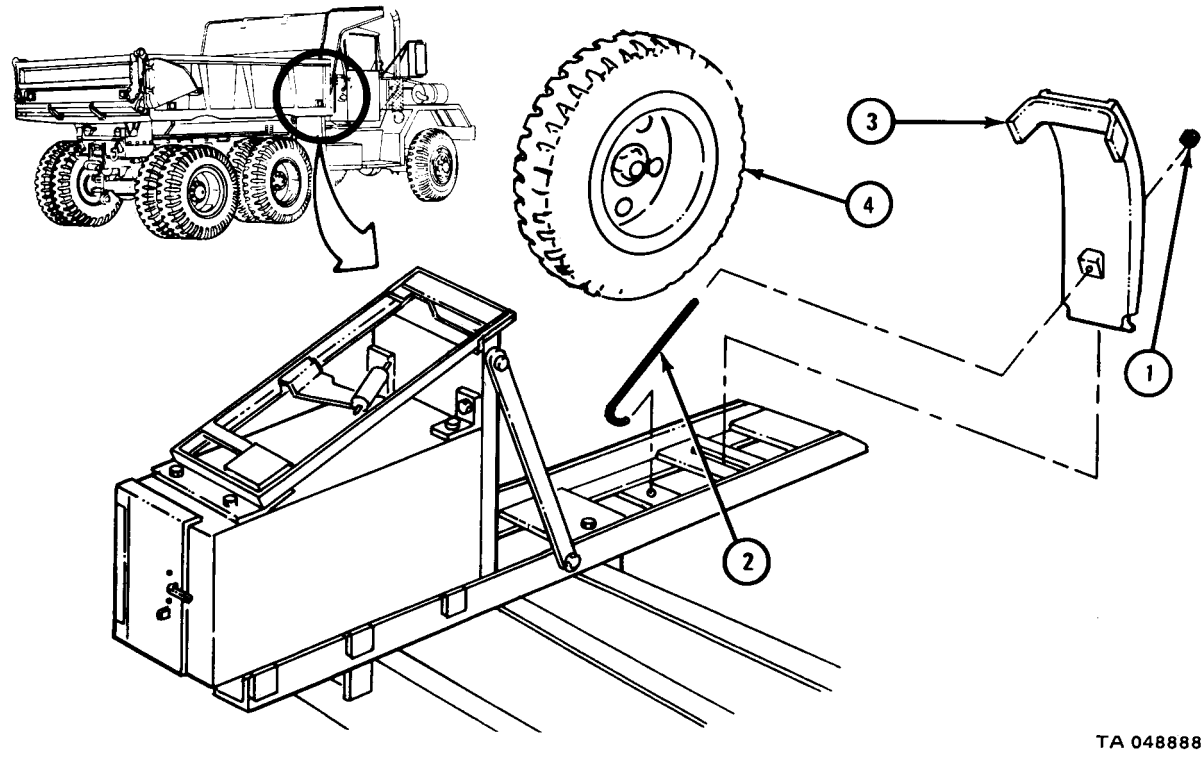
FRAME 1

1. Using wrench, unscrew and take off nut (1). Drop down J-bolt (2).
2. Lift off support clamp (3).

Soldiers A and B

3. Roll out spare tire and wheel assembly (4).

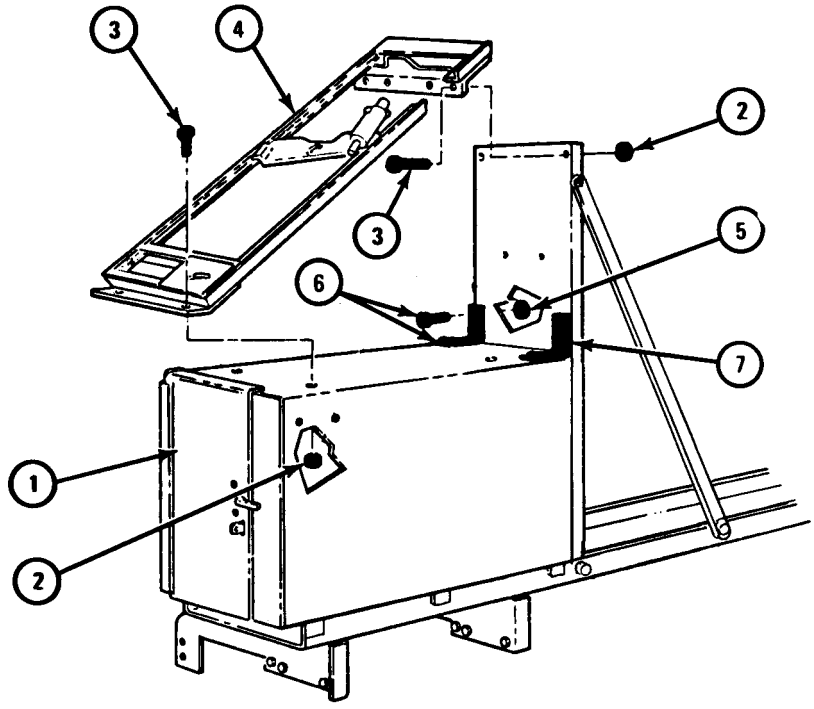
GO TO FRAME 2



FRAME 2

1. Open toolbox door (1).
2. Using wrenches, unscrew and take off four nuts (2).
3. Take out four screws (3) and lift off bracket (4).
4. Using 5/8-inch wrenches, unscrew and take off four nuts (5).
5. Take out four screws (6) and take off two brackets (7).

GO TO FRAME 3

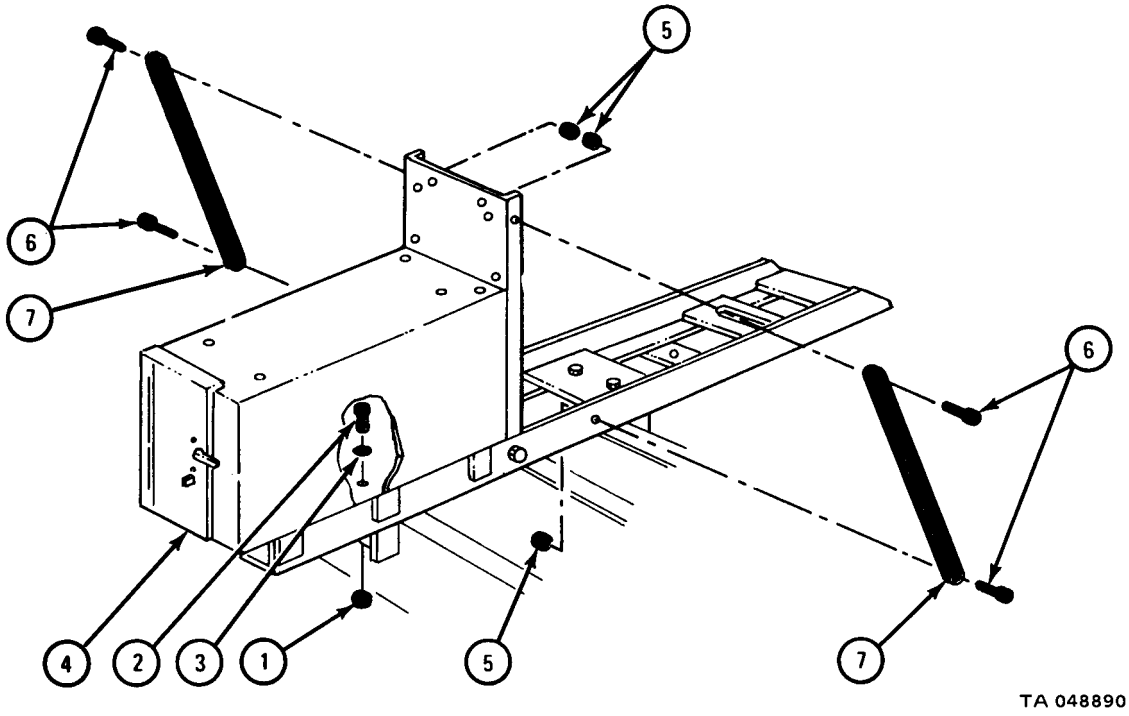


TA 048889

FRAME 3

1. Using wrenches, unscrew and take off six nuts (1).
2. Take out six screws (2) with washers (3) and lift off tool box (4).
3. Using 5/8-inch wrenches, unscrew and take off four nuts (5).
4. Take out four screws (6) and take off two braces (7).

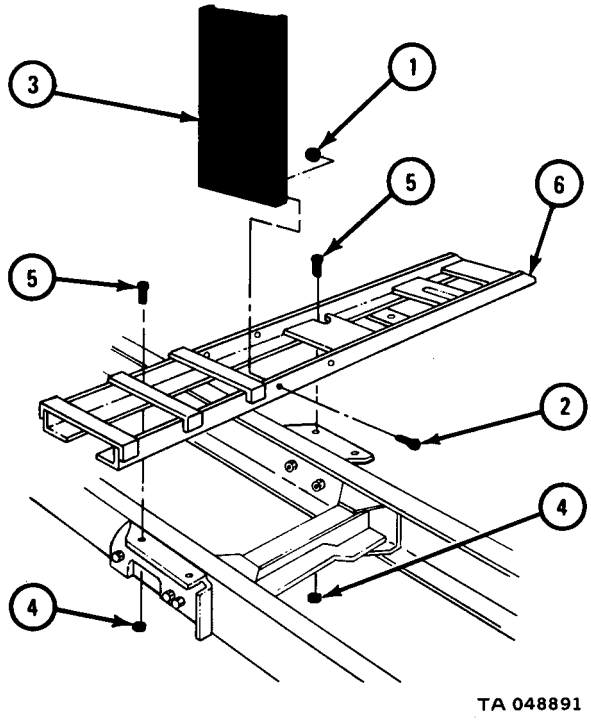
GO TO FRAME 4



FRAME 4

1. Using 5/8-inch wrenches, unscrew and take off two nuts (1).
2. Take out two screws (2) and lift off support bracket (3).
3. Using 13/16-inch wrenches, unscrew and take off four nuts (4).
4. Take out four screws (5) and lift off tire and tool box base (6).

END OF TASK



b. Repair.

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

(1) Using solvent, clean grease and dirt from all parts.

(2) Check that all parts have no cracks, breaks or bending.

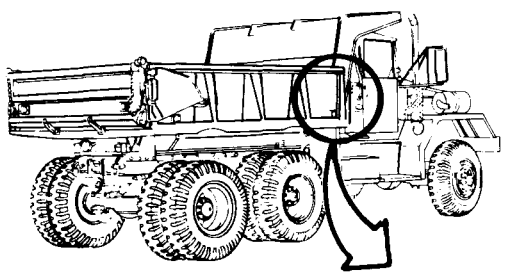
(3) If parts are damaged, get new ones in their place.

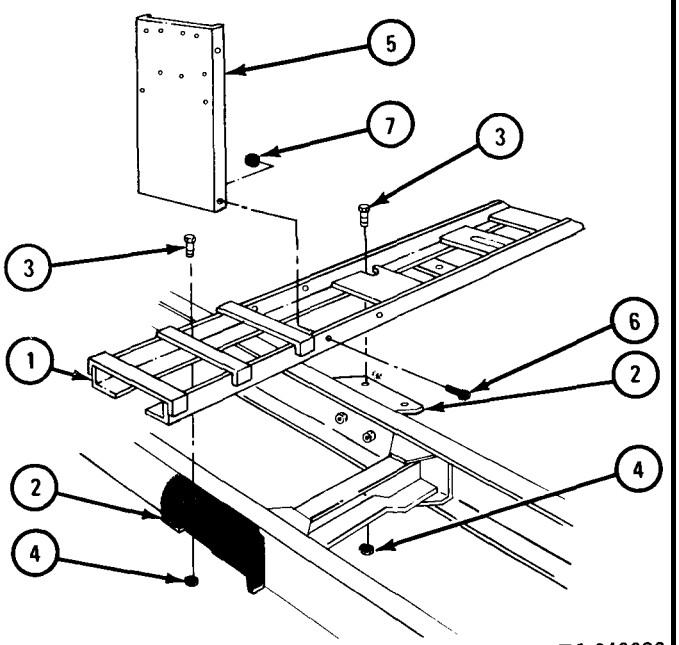
c. Replacement.

FRAME 1

1. Aline holes in tire and tool box base (1) with holes in brackets (2).
2. Push four screws (3) through holes in tire and tool box base (1).
3. Using 13/16-inch wrenches, screw on and tighten four nuts (4).
4. Aline holes in bottom of support bracket (5) with holes in sides of tire and tool box base (1).
5. Push two screws (6) through holes in sides of tire and tool box base (1).
6. Screw on and hand tighten two nuts (7).

GO TO FRAME 2



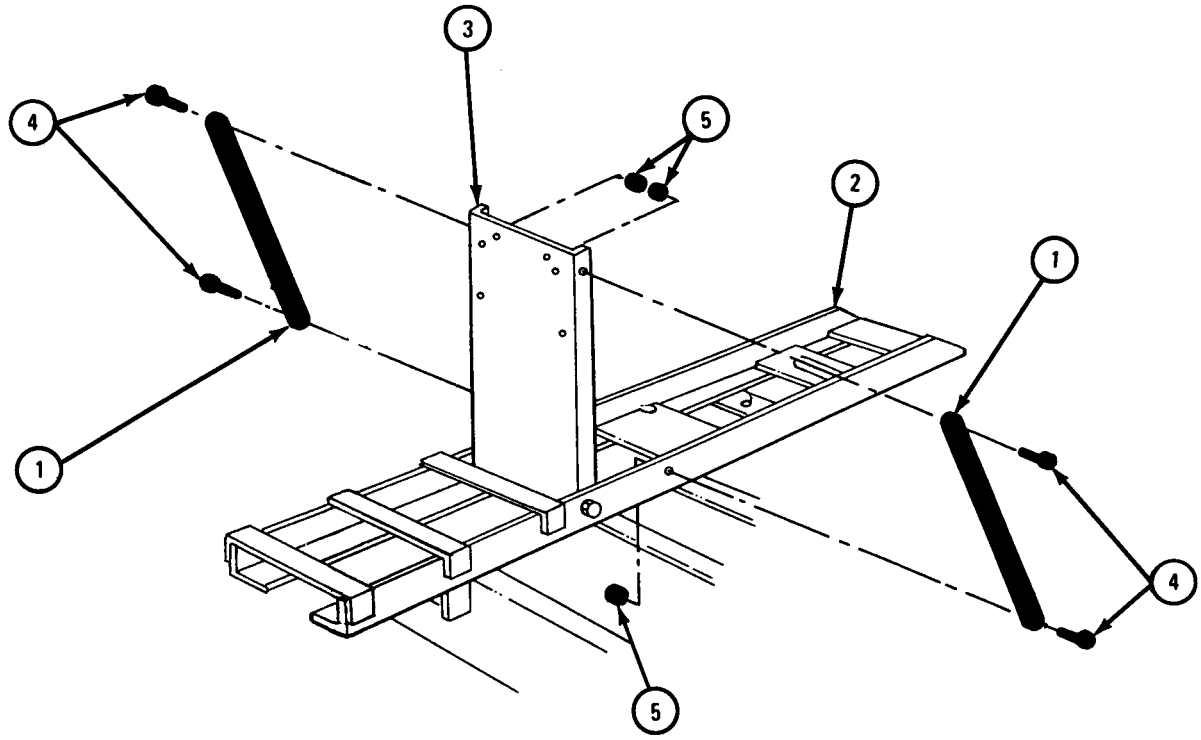


TA 048892

FRAME 2

1. Aline holes in braces (1) with holes in sides of tire and tool box base (2) and support bracket (3).
2. Push four screws (4) through holes in braces (1).
3. Screw on and hand tighten four nuts (5).

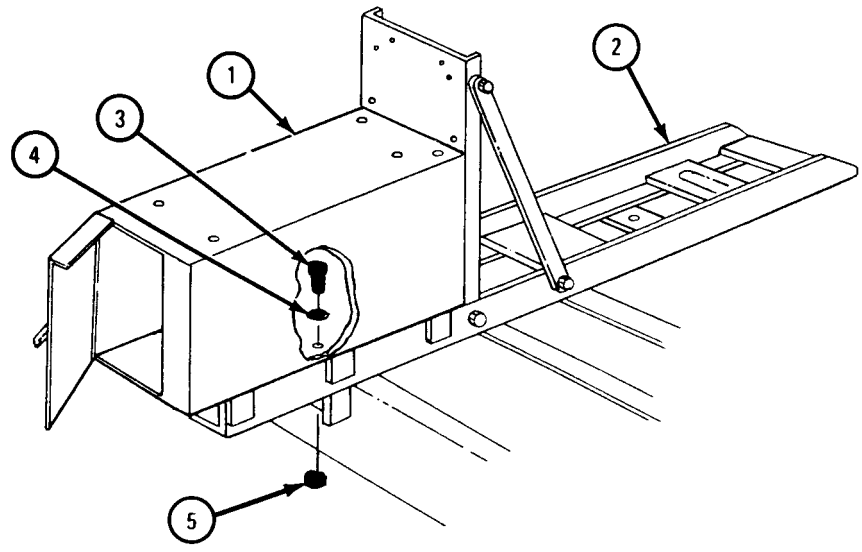
GO TO FRAME 3



FRAME 3

1. Aline holes in bottom of toolbox (1) with holes in tire and toolbox base (2).
2. Push six screws (3) with washers (4) through holes in bottom of tool box (1).
3. Using wrenches, screw on and tighten six nuts (5).

GO TO FRAME 4

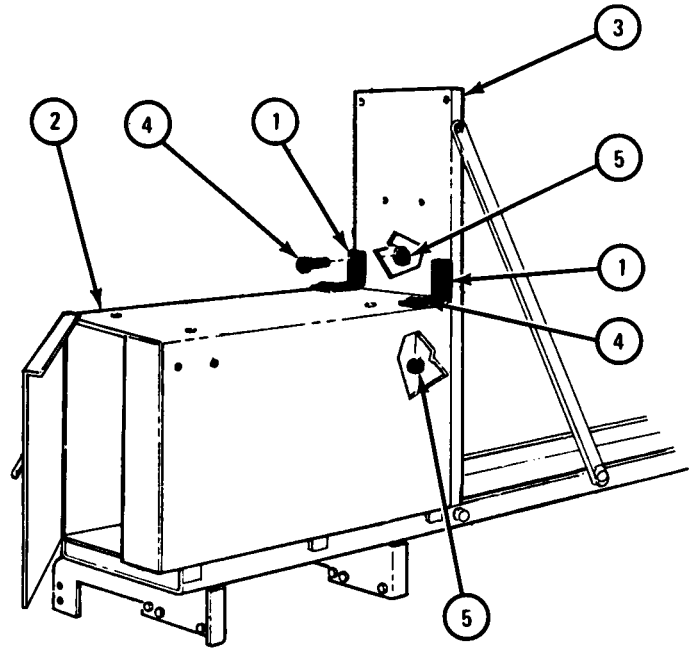


TA 048894

FRAME 4

1. Aline holes in brackets (1) with holes in tool box (2) and support bracket (3).
2. Push four screws (4) through holes in brackets (1).
3. Screw on and hand tighten four nuts (5).

GO TO FRAME 5

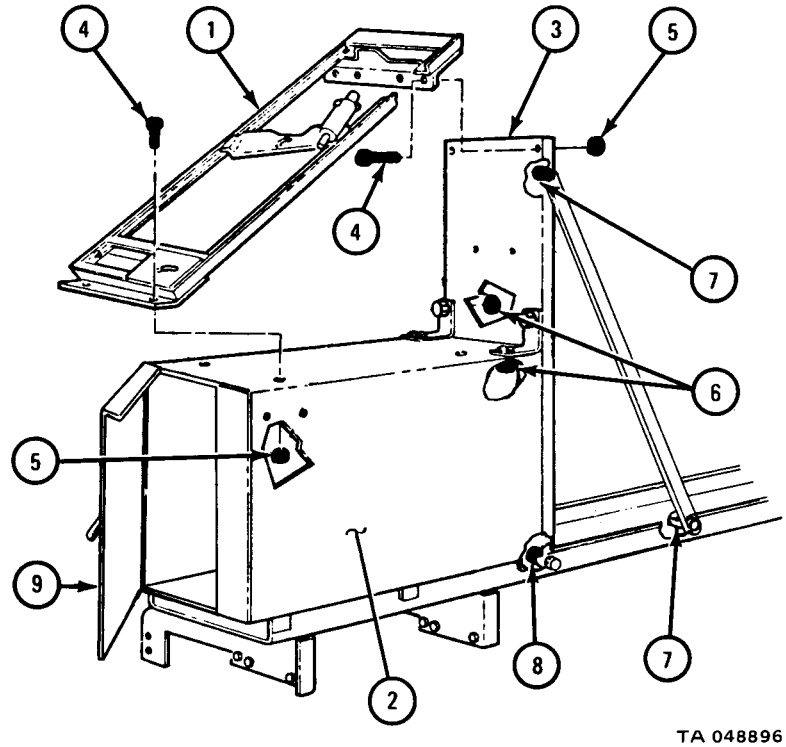


TA 048895

FRAME 5

1. Aline holes in bracket (1) with holes in tool box (2) and support bracket (3).
2. Push four screws (4) through holes in bracket (1), tool box (2), and support bracket (3).
3. Using wrenches, screw on and tighten four nuts (5).
4. Using 5/8-inch wrenches, tighten ten nuts (6, 7, and 8).
5. Close tool box door (9).

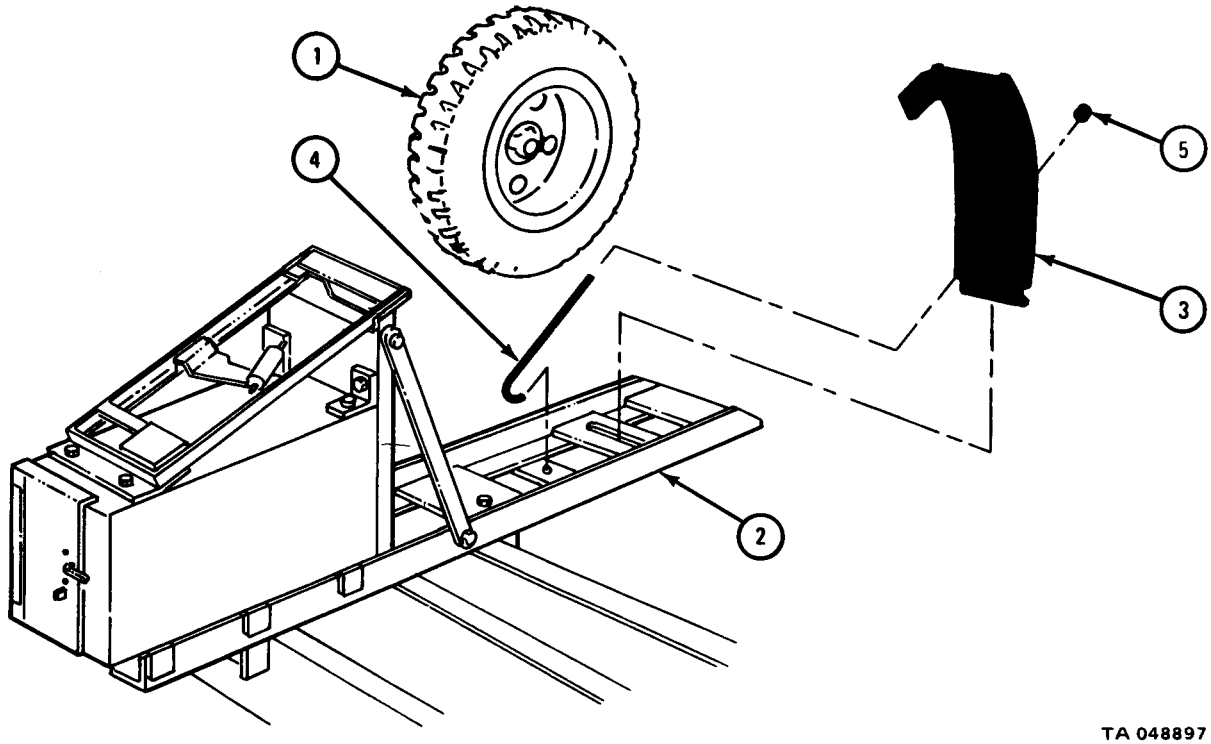
GO TO FRAME 6



FRAME 6

1. Lift spare tire and wheel assembly (1) onto tire and tool box base (2).
2. Hook support clamp (3) onto tire and tool box base (2).
3. Hook one end of J-bolt (4) onto tire and tool box base (2) and push other end through hole in support clamp (3).
4. Using wrench, screw on and tighten nut (5).

END OF TASK



TA 048897

15-9. SPARE WHEEL CARRIER REMOVAL, REPAIR, AND REPLACEMENT (TRUCKS M54A2 WITH WINCH AND M55A2 WITH WINCH).

TOOLS: Wheel stud nut wrench
9/16-inch wrench (2)
3/4-inch wrench (2)

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

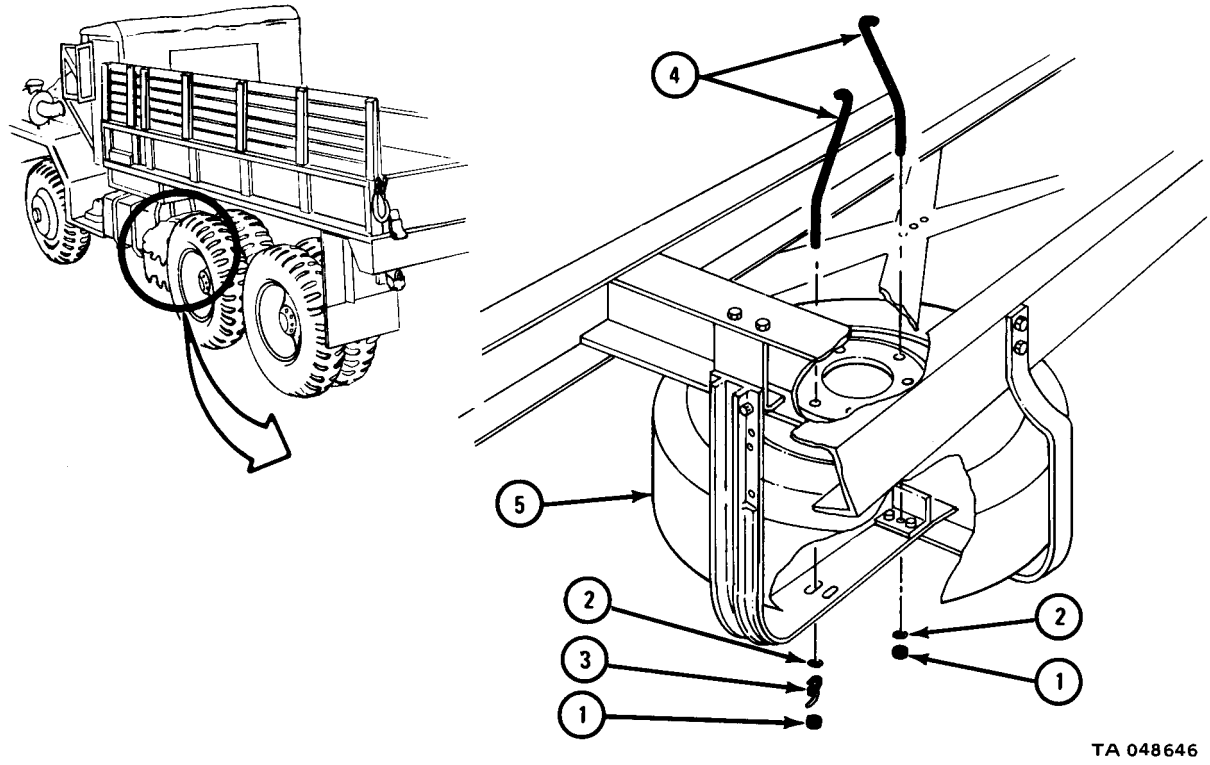
a. Removal.

FRAME 1

1. Using stud nut wrench, unscrew and take off two nuts (1) with two washers (2) and spring (3).
2. Lift out two J-bolts (4).

Soldiers A and B 3. Slide out spare tire and wheel assembly (5).

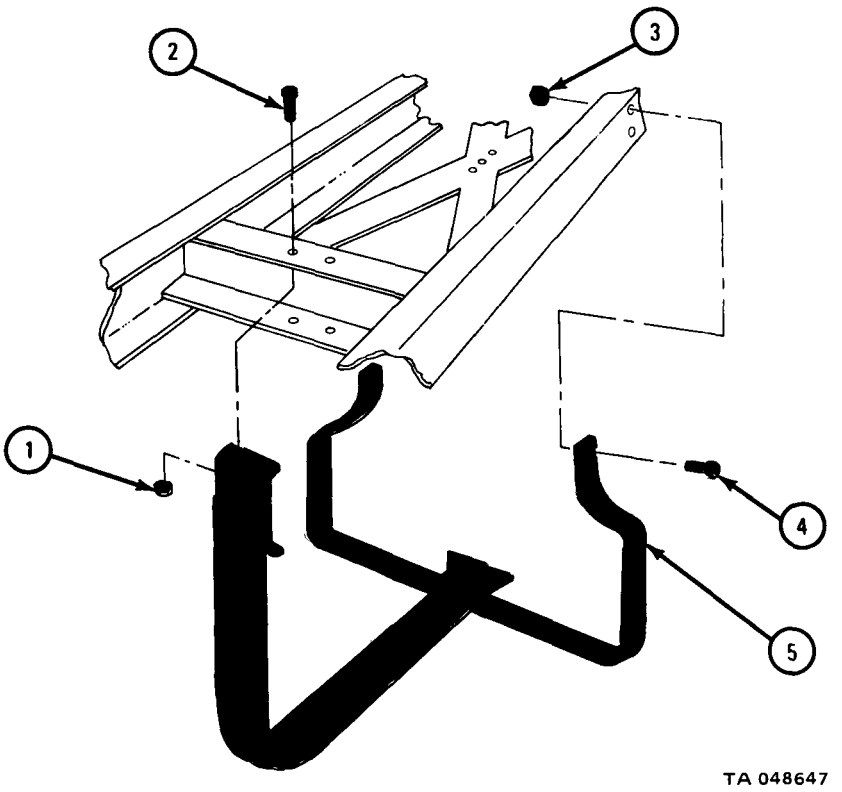
GO TO FRAME 2



FRAME 2

1. Using 3/4-inch wrenches, unscrew and take off four nuts (1).
2. Take out four screws (2).
3. Using 3/4-inch wrenches, unscrew and take off four nuts (3).
4. Take out four screws (4) and drop down carrier (5).

END OF TASK

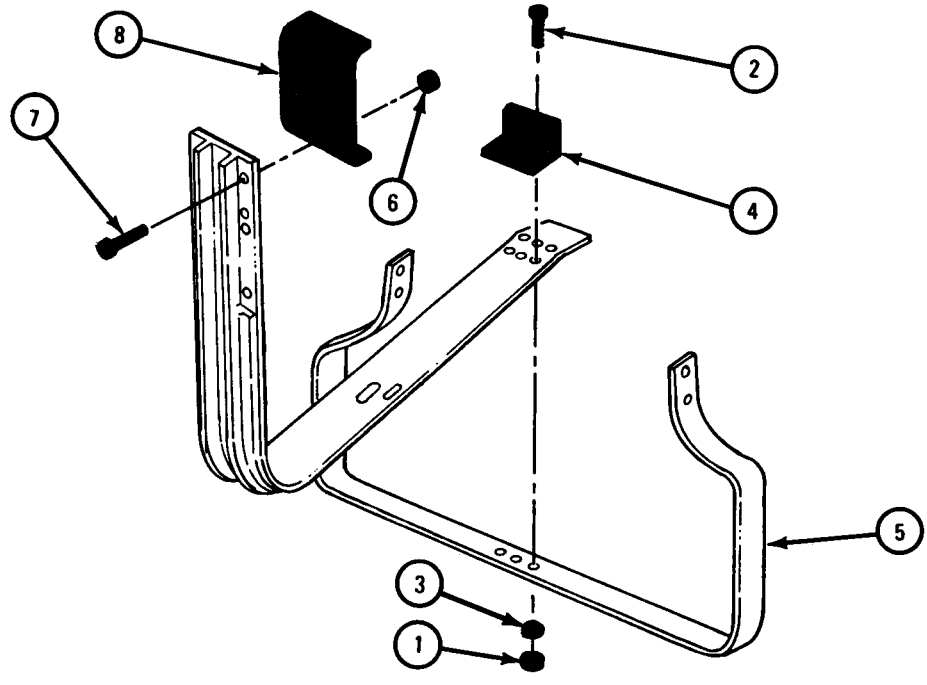


b. Disassembly.

FRAME 1

1. Using 9/16-inch wrenches, unscrew and take off two nuts (1).
2. Take out two screws (2) with washers (3) and take off bracket (4) and carrier plate (5).
3. Using 3/4-inch wrenches, unscrew and take off two nuts (6).
4. Take out two screws (7) and take off bracket (8).

END OF TASK



TA 048648

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

c. Cleaning, Inspection, and Repair.

(1) Using solvent, clean dirt and grease from all parts.

(2) Check that all parts have no cracks, breaks or dents.

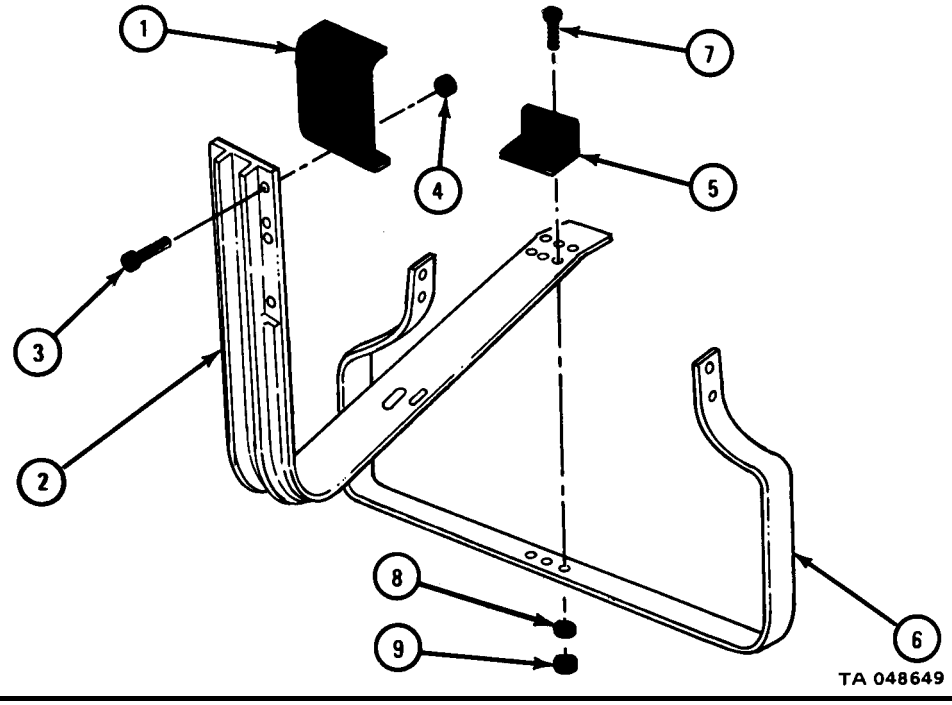
(3) If parts are damaged, get new ones in their place.

d. Assembly.

FRAME 1

1. Aline holes in bracket (1) with holes in plate assembly (2).
2. Push two screws (3) through holes in plate assembly (2).
3. Using 3/4-inch wrenches, screw on and tighten two nuts (4).
4. Aline holes in bracket (5), plate assembly (2), and carrier plate (6).
5. Push two screws (7) through holes in bracket (5). Put on washers (8).
6. Using 9/16-inch wrenches, screw on and tighten two nuts (9).

END OF TASK

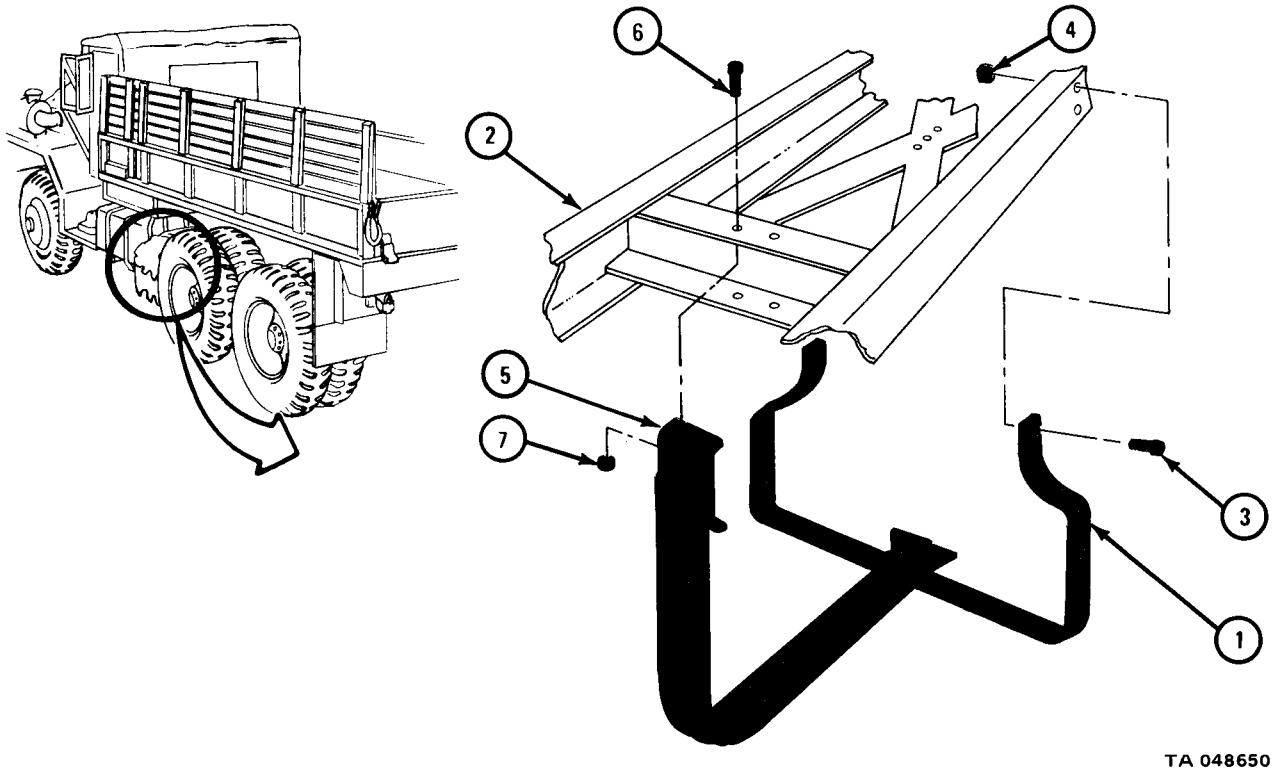


e. Replacement.

FRAME 1

1. Aline holes in carrier plate (1) with holes in frame (2).
2. Push four screws (3) through holes in carrier plate (1).
3. Using 3/4-inch wrenches, screw on and tighten four nuts (4).
4. Aline holes in bracket (5) with holes in frame (2).
5. Push four screws (6) through holes in frame (2).
6. Using 3/4-inch wrenches, screw on and tighten four nuts (7).

GO TO FRAME 2

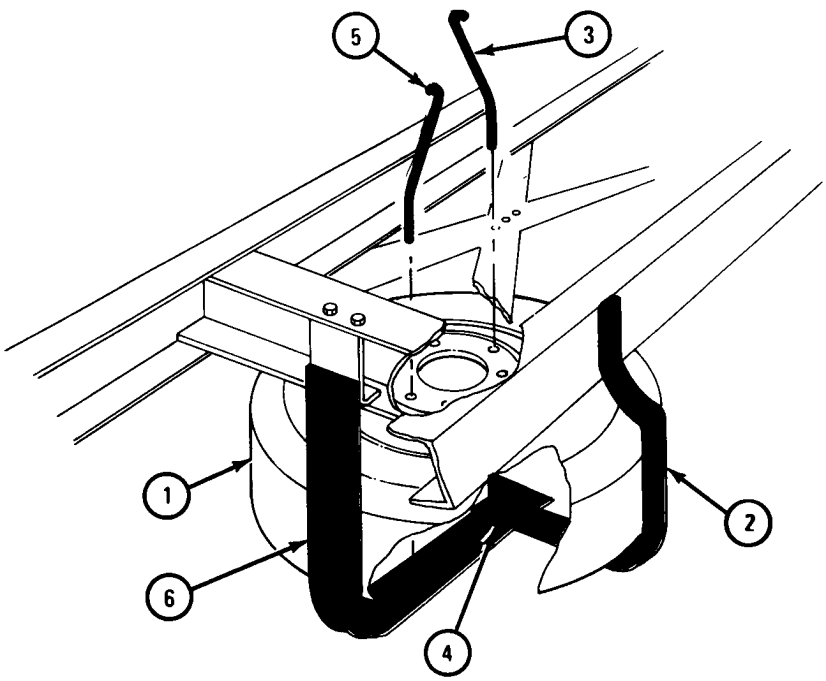


FRAME 2

Soldiers A and B

1. Lift spare tire and wheel assembly (1) and place it on carrier plate (2).
2. Push one J-bolt (3) through hole in bracket (4) and one J-bolt (5) through hole in plate assembly (6). Hook both J-bolts onto spare tire and wheel assembly (1).

GO TO FRAME 3

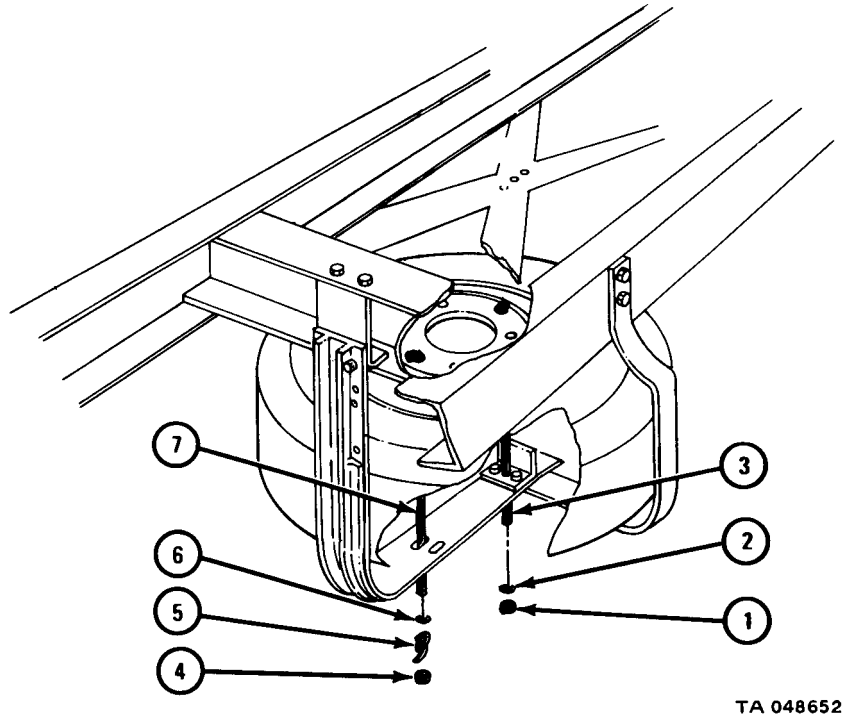


TA 048651

FRAME 3

1. Using wheel stud nut wrench, screw on and tighten nut (1) with washer (2) onto free end of J-bolt (3).
2. Using wheel stud nut wrench, screw on and tighten nut (4) with spring (5) and washer (6) onto free end of J-bolt (7).

END OF TASK



15-10. SPARE WHEEL CARRIER REMOVAL AND REPLACEMENT (TRUCKS M54A2 AND M54A2C WITHOUT WINCH AND TRUCK M54A2C WITH WINCH).

TOOLS: Pliers
Wheel stud nut wrench

SUPPLIES: None

PERSONNEL: One

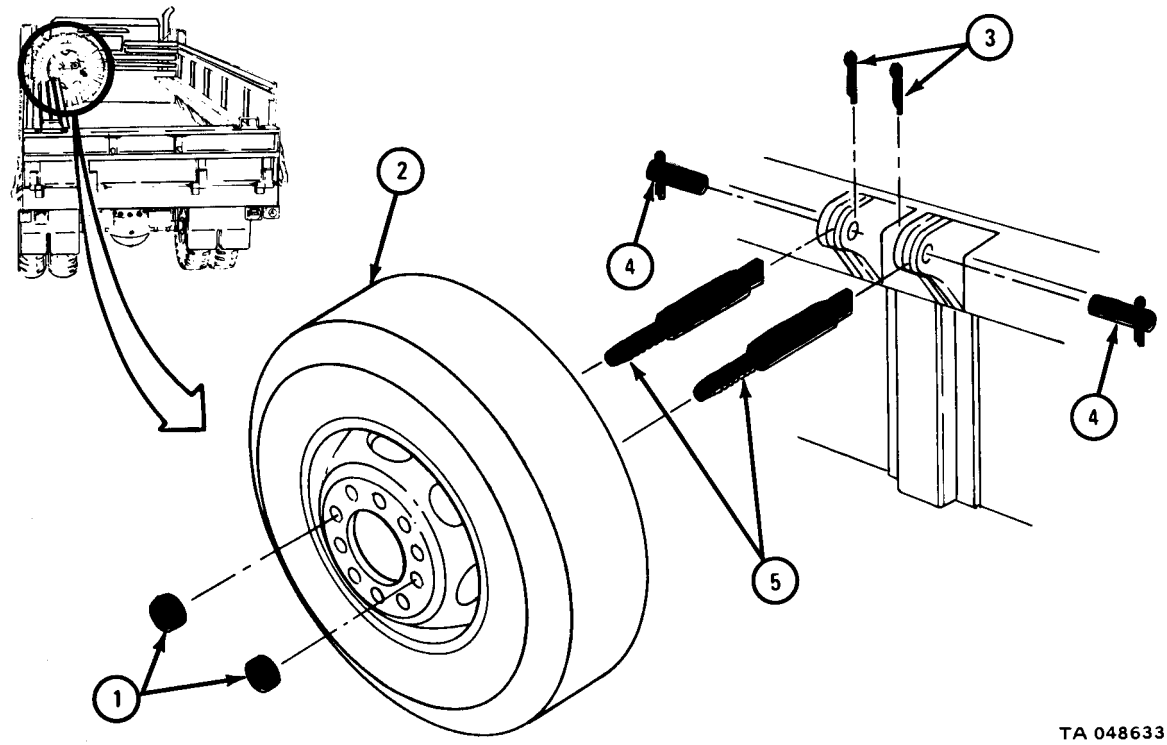
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using wrench, unscrew and take off two nuts (1).
2. Take off spare tire and wheel assembly (2).
3. Using pliers, take out two cotter pins (3) and throw them away.
4. Take out two stud pins (4) and two studs (5).

END OF TASK

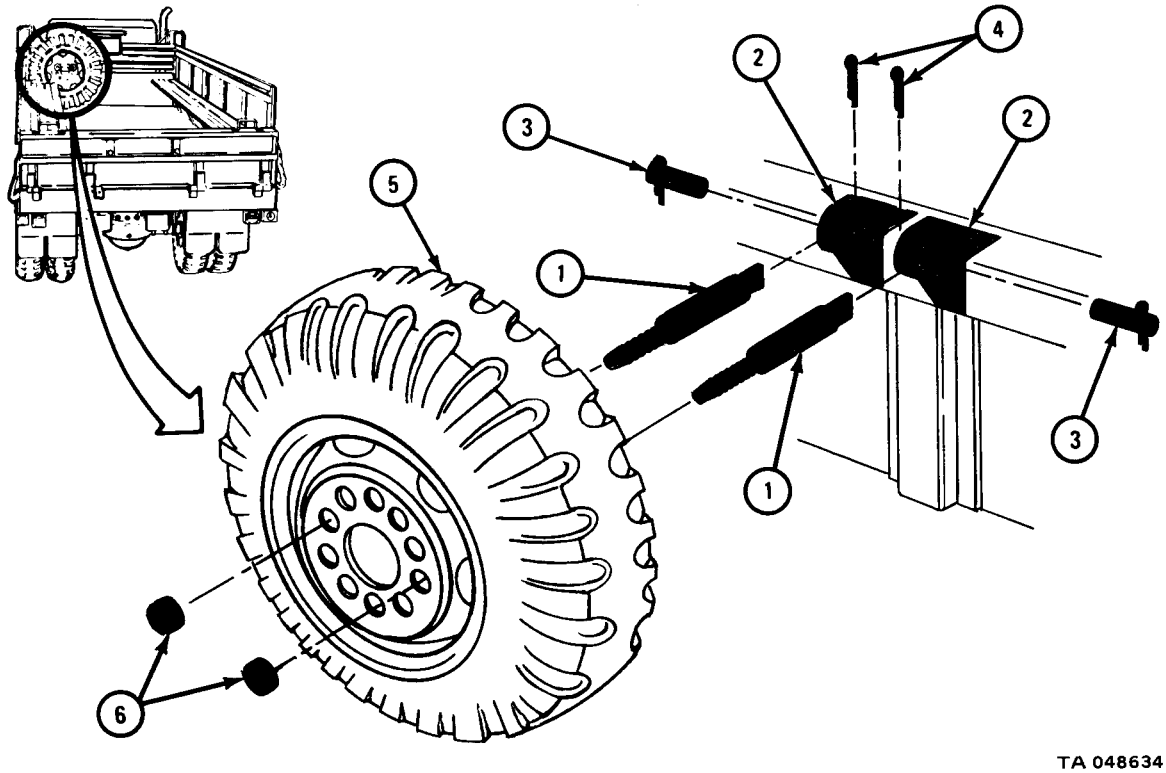


b. Replacement.

FRAME 1

1. Aline holes in studs (1) with holes in mounting bracket (2).
2. Push two stud pins (3) through holes in mounting bracket (2).
3. Using pliers, push two cotter pins (4) through holes in two stud pins (3) and bend open ends of cotter pins.
4. Place ends of studs (1) through holes in spare tire and wheel assembly (5).
5. Using wrench, screw on and tighten two nuts (6).

END OF TASK



15-11. SPARE WHEEL CARRIER REMOVAL, REPAIR, AND REPLACEMENT (TRUCK M52A2 WITHOUT WINCH).

TOOLS: 7/16-inch wrench (2)
3/4-inch wrench (2)
9/16-inch wrench (2)

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Remove spare wheel from spare wheel carrier. Refer to TM 9-2320-211-10.

(2) Disassemble wiring harness receptacle connector. Refer to Part 1, para 7-45.

(3) Remove air cutoff valves and air hose assembly. Refer to Part 1, para 12-32.

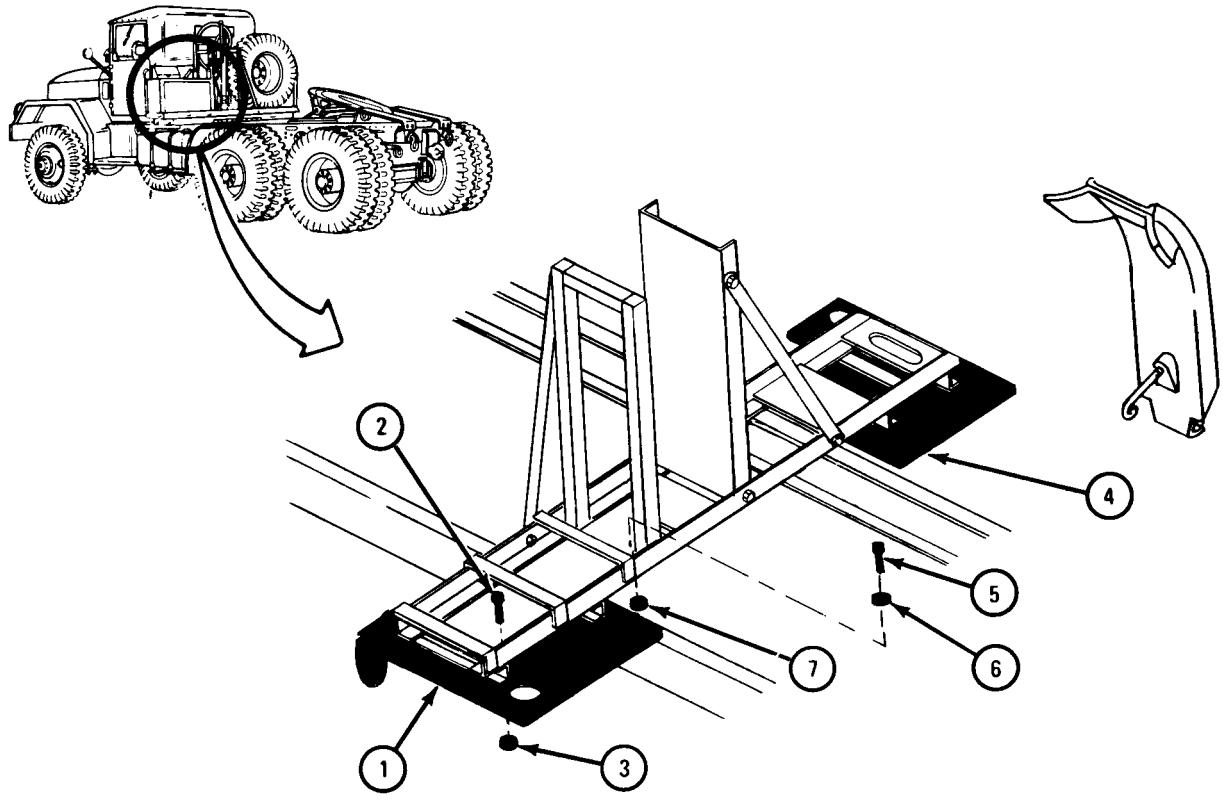
(4) Remove tool box. Refer to para 17-12.

b. Removal.

FRAME 1

Soldier A	1.	Hold left fuel tank protector (1) so it does not fall when soldier B takes out screws (2) and locknuts (3).
Soldier B	2.	Using 9/16-inch wrenches, unscrew and take out four capscrews (2) and locknuts (3).
Soldier A	3.	Take off left fuel tank protector (1).
Soldiers A and B	4.	Do steps 1 through 3 again to take off right fuel tank protector (4).
	5.	Using 3/4-inch wrenches, unscrew and take out four capscrews (5), washers (6) and locknuts (7).

GO TO FRAME 2



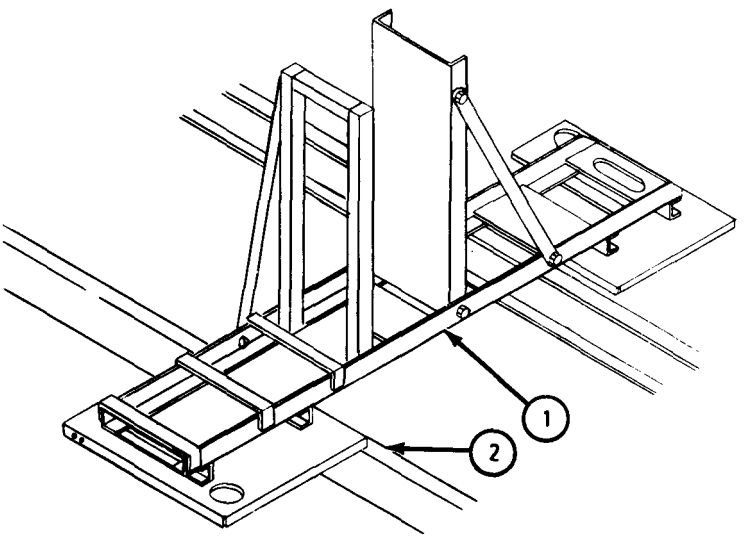
TA 087316

FRAME 2

Soldiers A and B

1. Takeoff spare wheel and tool box carrier base assembly (1) from chassis rails (2).

END OF TASK



TA 087317

c. Cleaning, Inspection, and Repair.

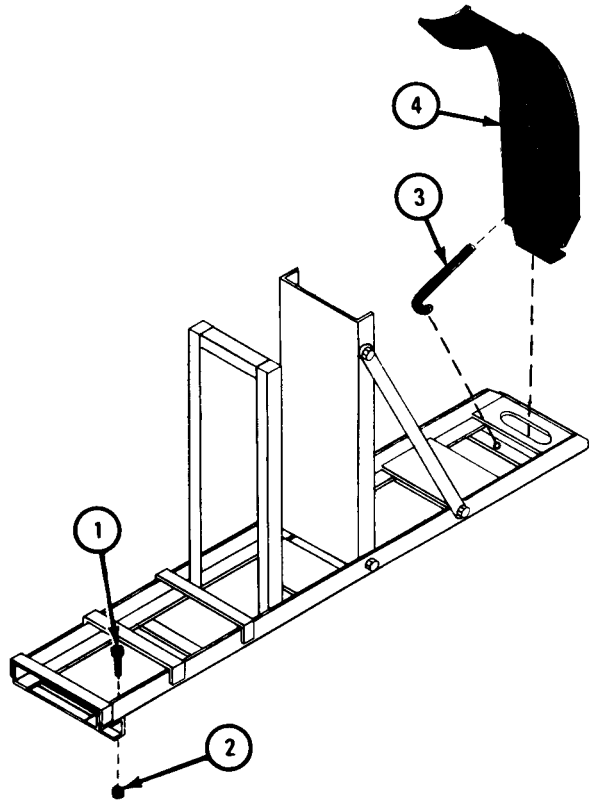
FRAME 1

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

1. Clean all parts with solvent.
2. Check that 12 cap screws (1) and locknuts (2) have no stripped threads.
3. Check that J-bolt (3) has no damaged threads or bends.
4. Check that spare tire clamp (4) has no cracks, bends or dents.
5. Check that all other parts have no cracks, bends or dents. If parts are damaged, tell direct support maintenance.
6. If parts (1 through 4) are damaged, get new ones in their place.

END OF TASK



TA 088812

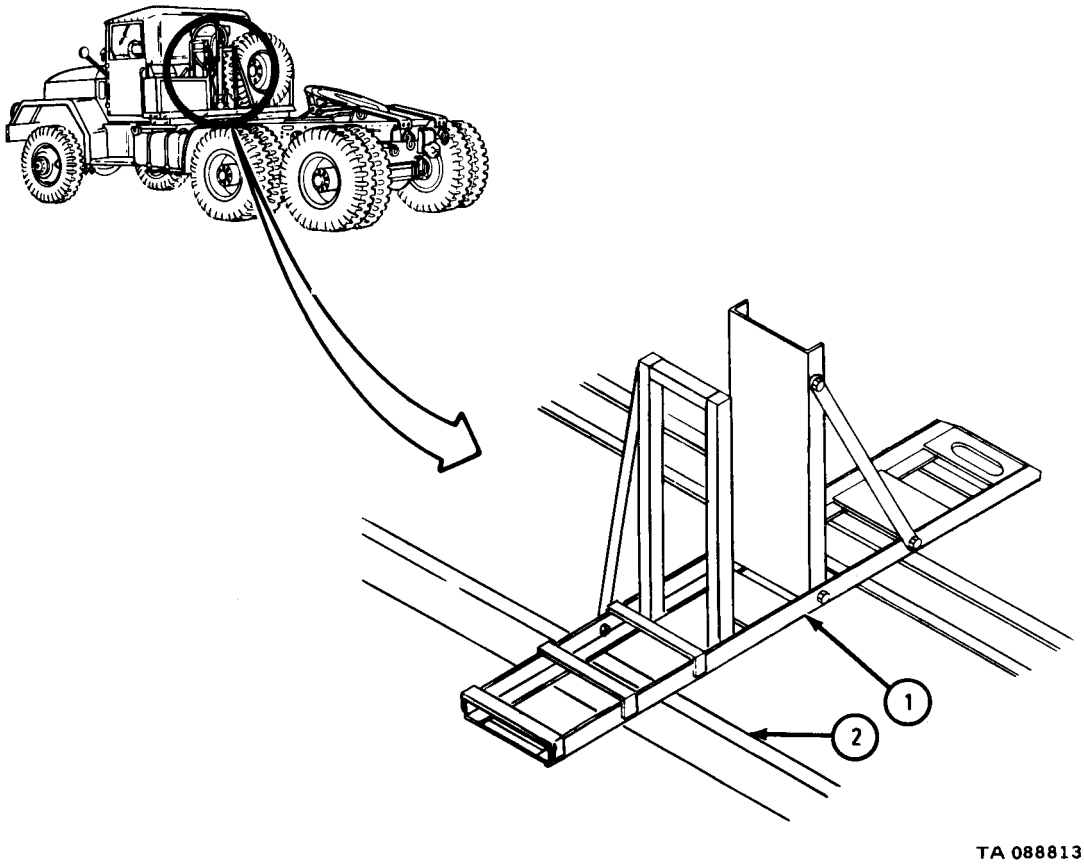
d. Replacement.

FRAME 1

Soldiers A and B

1. Put spare wheel and tool box carrier base assembly (1) on chassis rails (2) and aline screw holes in tool box assembly with holes in chassis rails.

GO TO FRAME 2



FRAME 2

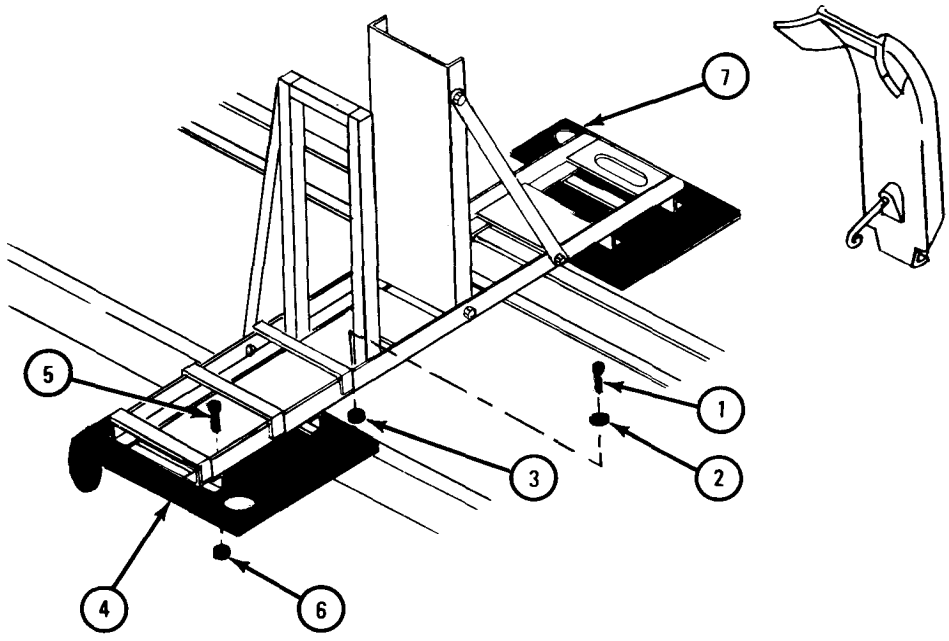
Soldier A	1.	Using 3/4-inch wrenches, screw in and tighten four capscrews (1), washers (2), and locknuts (3).
	2.	Hold left fuel tank protector (4) in place as shown while soldier B puts in screws (5) and locknuts (6).
Soldier B	3.	Using 9/16-inch wrenches, screw in and tighten four capscrews (5) and locknuts (6).
Soldiers A and B	4.	Do steps 1 and 2 again to put on right fuel tank protector (7).

NOTE

Follow-on Maintenance Action Required:

1. Replace air cutoff valves and air hose support assembly. Refer to Part 1, para 12-32.
2. Assemble wiring harness receptacle connector. Refer to Part 1, para 7-45.
3. Replace spare wheel. Refer to TM 9-2320-211-10.
4. Replace tool box. Refer to para 17-12.

END OF TASK



TA 088814

Section V. FIFTH WHEEL ASSEMBLY

15-12. FIFTH WHEEL ASSEMBLY REMOVAL, REPLACEMENT AND ADJUSTMENT.

TOOLS: General mechanic toolkit, NSN 5180-00-209-6225
Hoisting equipment

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

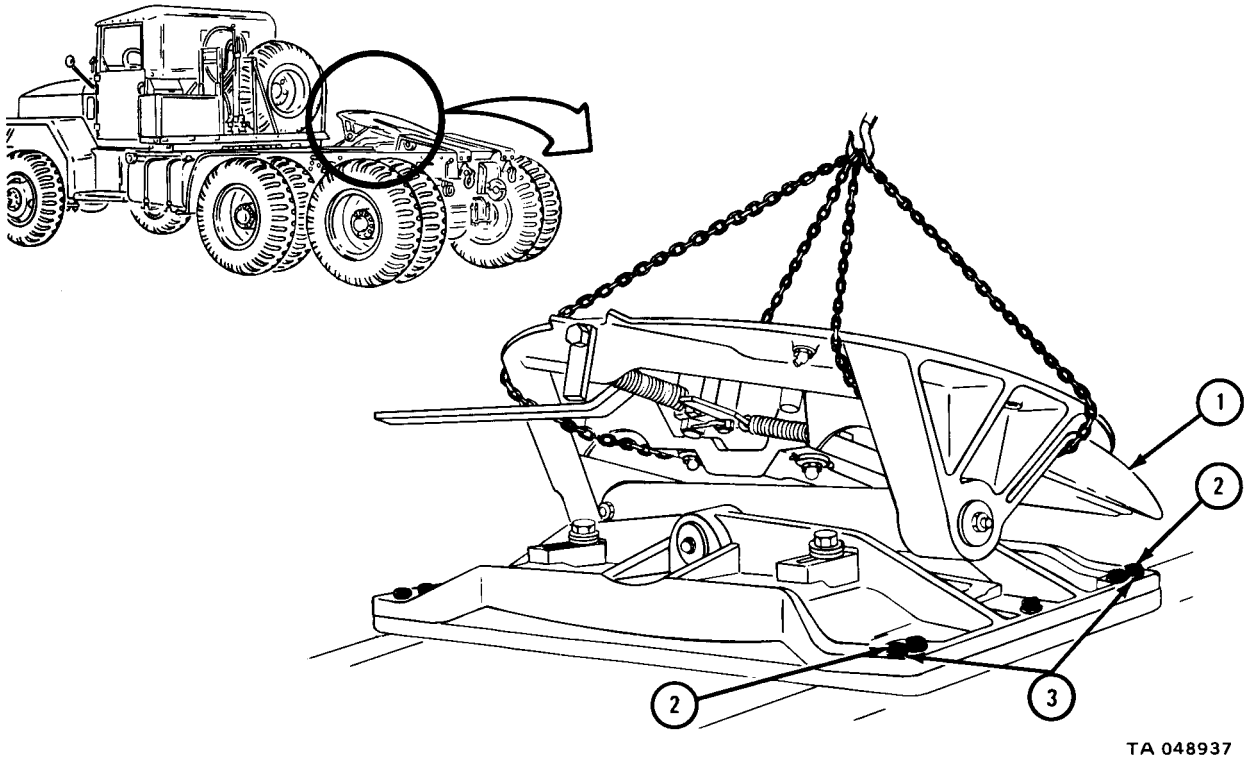
FRAME 1

1. Put hoisting equipment on fifth wheel assembly (1).
2. Using wrench, unscrew and takeoff five screws (2) and lockwashers (3) on left and right sides of fifth wheel assembly (1).

Soldier A 3. Using hoisting equipment, lift fifth wheel assembly (1) off truck.

Soldier B 4. Guide fifth wheel assembly (1) up and away from truck so it does not hit anything.

END OF TASK



b. Replacement.

FRAME 1

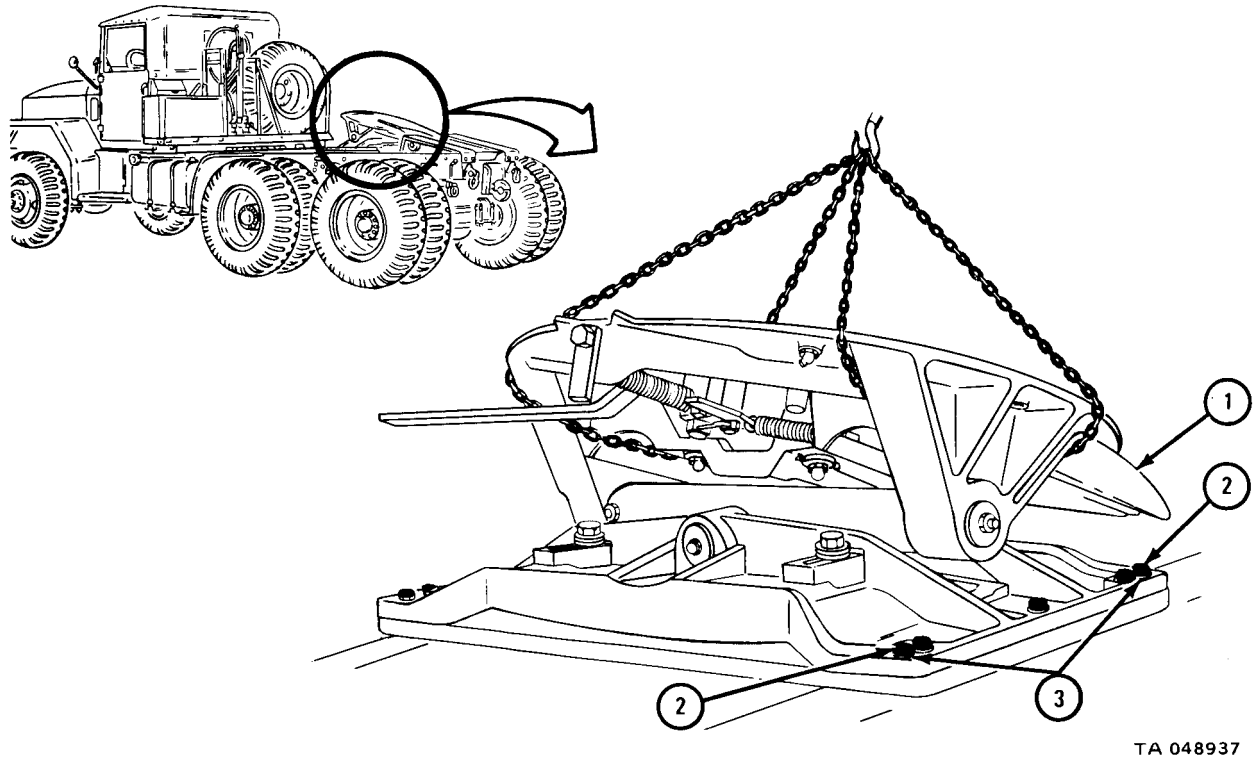
Soldier A 1. Using hoist, lower fifth wheel assembly (1) on truck.

Soldier B 2. Guide fifth wheel assembly (1) while it is being lowered into position shown.

3. Using wrench, screw in and tighten five screws (2) and lock-washers (3) on left and right sides of fifth wheel assembly (1).

4. Adjust fifth wheel assembly. Refer to TM 9-2320-211-10.

END OF TASK



CHAPTER 16

SPRINGS AND SHOCK ABSORBERS GROUP MAINTENANCE

Section 1. SCOPE

16-1. EQUIPMENT ITEMS COVERED . This chapter gives equipment maintenance procedures for springs and shock absorbers for which there are authorized corrective maintenance tasks at the organizational maintenance level.

16-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. SPRINGS

16-3. FRONT AXLE SPRING ASSEMBLY REMOVAL AND REPLACEMENT .

NOTE

This task is the same for the left and right front springs. This task is shown for the left front spring.

TOOLS :
- 1 5/16-inch wrench
- 3/4-inch wrench (2)
- 7/16-inch wrench
- 1 5/16-inch socket wrench
- Hydraulic floor jack
- Motor vehicle trestle
- Torque wrench, 600 pound-feet capacity
- Wood block, 12 x 12 x 24-inches (4)
- Screwdriver bit
- Medium ballpeen hammer
- Brass drift
- Pry bar
- 6-inch pliers

SUPPLIES : None

PERSONNEL : Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, rear wheels chocked.

a. Preliminary Procedures.

(1) Remove shock absorber. Refer to para 16-6.

(2) Remove drag link. Refer to para 14-6.

b. Removal.

FRAME 1

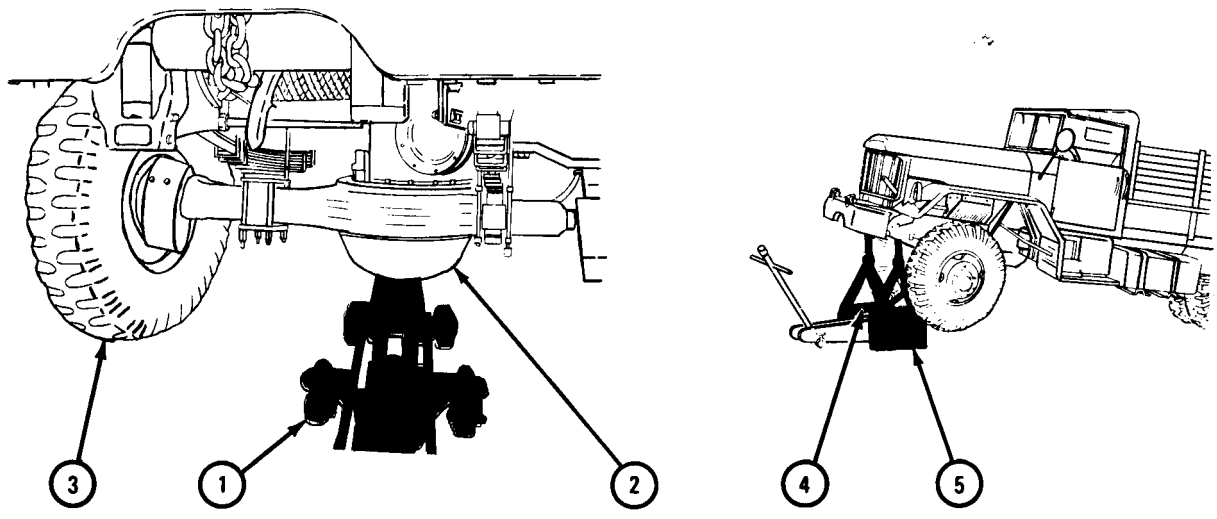
1. Put hydraulic jack (1) under axle housing (2) as shown.

WARNING

Keep hands away from wheels when jacking up truck. Wheels may turn as they clear the ground. Personnel can be injured.

2. Using hydraulic jack (1), jack up truck until front wheels (3) are off ground about 6 inches.
3. Put motor vehicle trestle (4) on top of two wood blocks (5) and set trestle under frame as shown.
4. Do step 3 again on other side of truck.
5. Using hydraulic jack (1), jack truck down onto two trestles (4).

GO TO FRAME 2

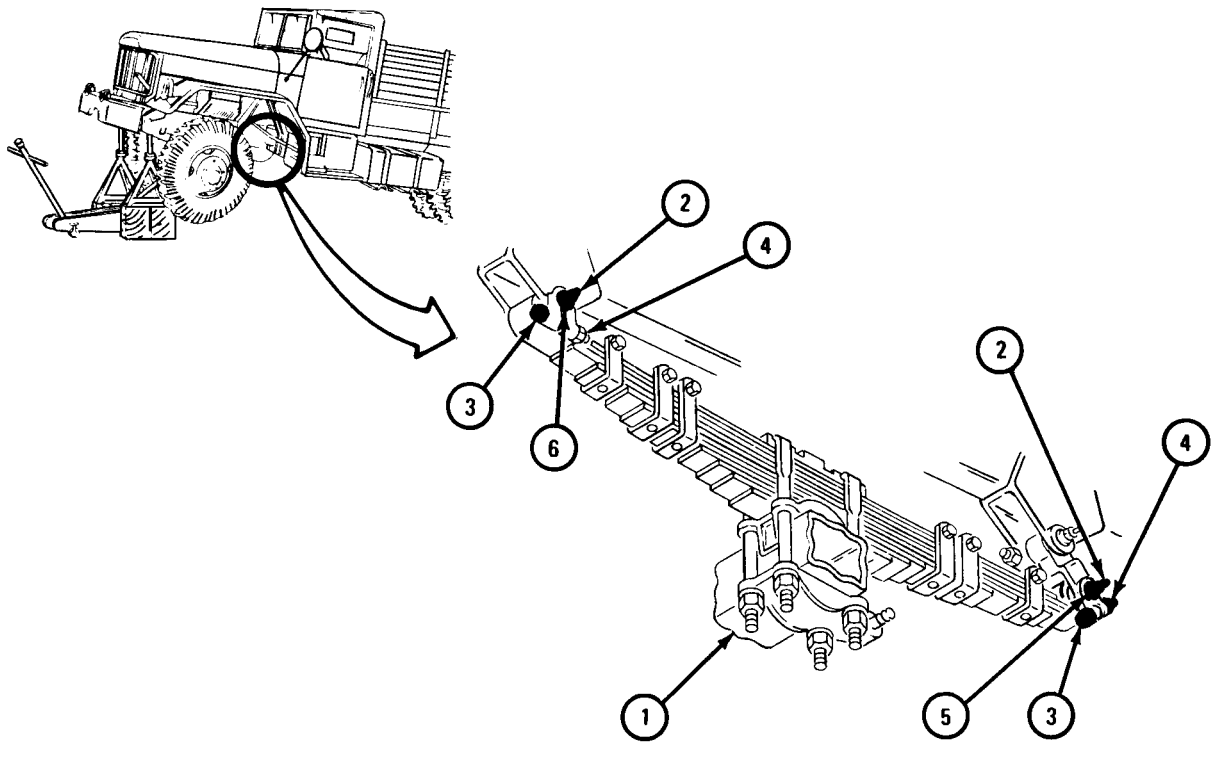


TA 049320

FRAME 2

1. Using hydraulic jack, jack up axle housing (1) just enough so weight of axle housing is on jack.
2. Using 7/16-inch wrench, unscrew and take out two grease fittings (2).
3. Using 3/4-inch wrenches, hold two capscrews (3) and unscrew and take off two nuts (4). Take out two capscrews.
4. Using hammer and brass drift, drive out two pins (5 and 6).

GO TO FRAME 3

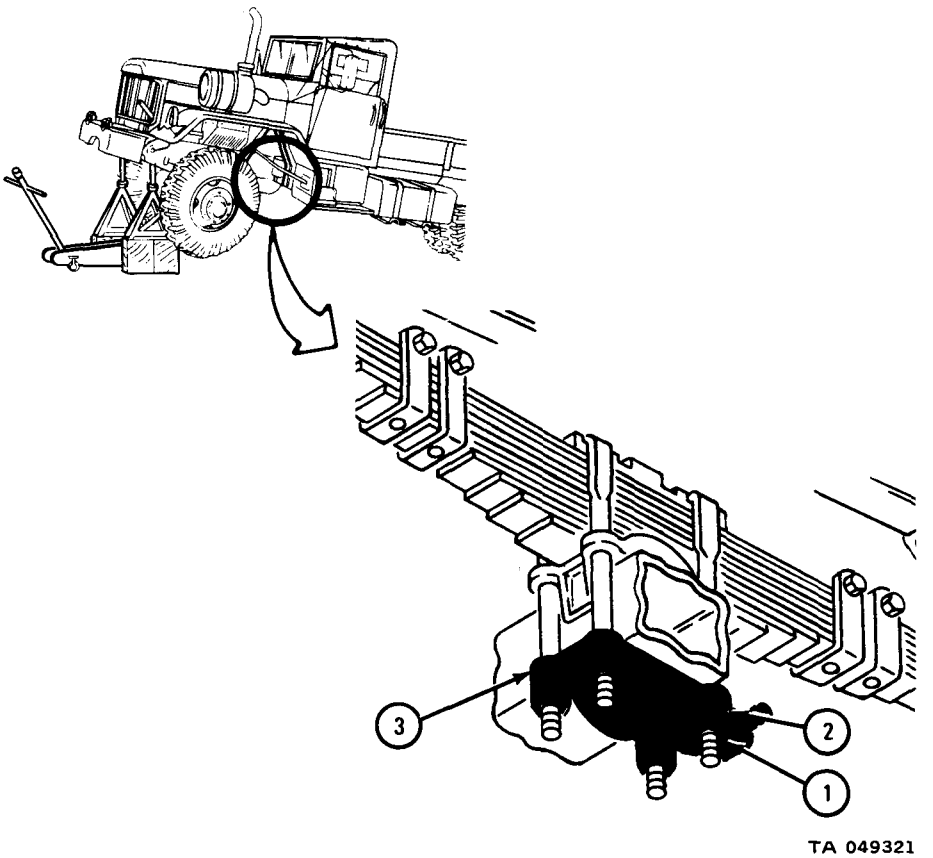


TA 048907

FRAME 3

1. Using 1 5/16-inch wrench, unscrew and take off four nuts (1) and washers (2). Take off clamp plate (3).

GO TO FRAME 4



FRAME 4

1. Using hydraulic jack, slowly lower axle housing (l).

NOTE

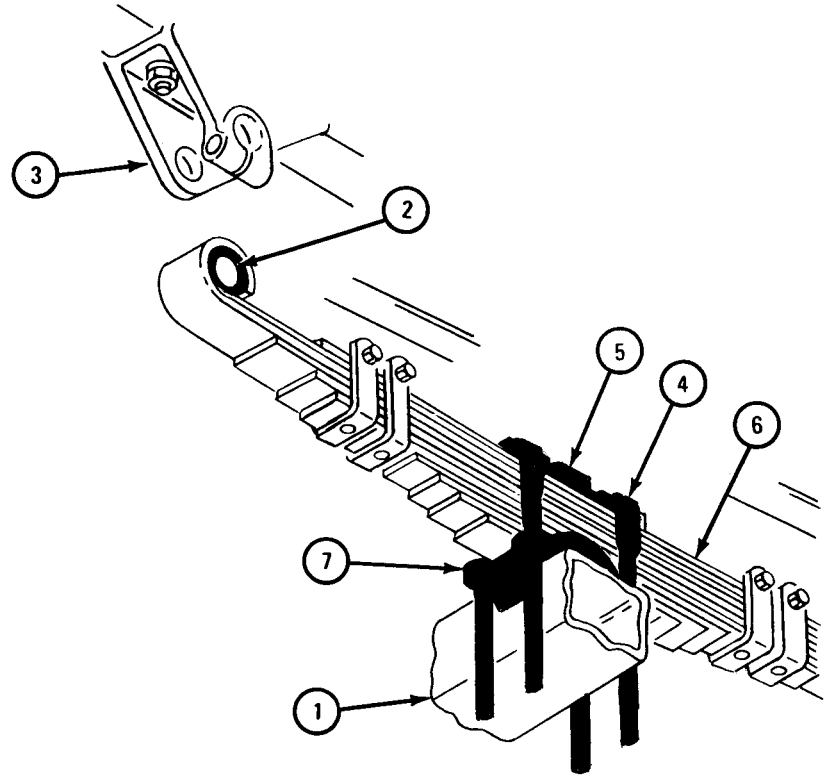
If spring eye (2) is stuck in bracket (3), jack up axle housing (1) and using pry bar, pry out spring eye from bracket. Then lower axle housing.

2. Take off two U-bolts (4) and upper spring seat (5).

Soldiers A and B

3. Lift spring (6) off lower spring seat (7) and take spring out of truck. Take off lower spring seat.

END OF TASK



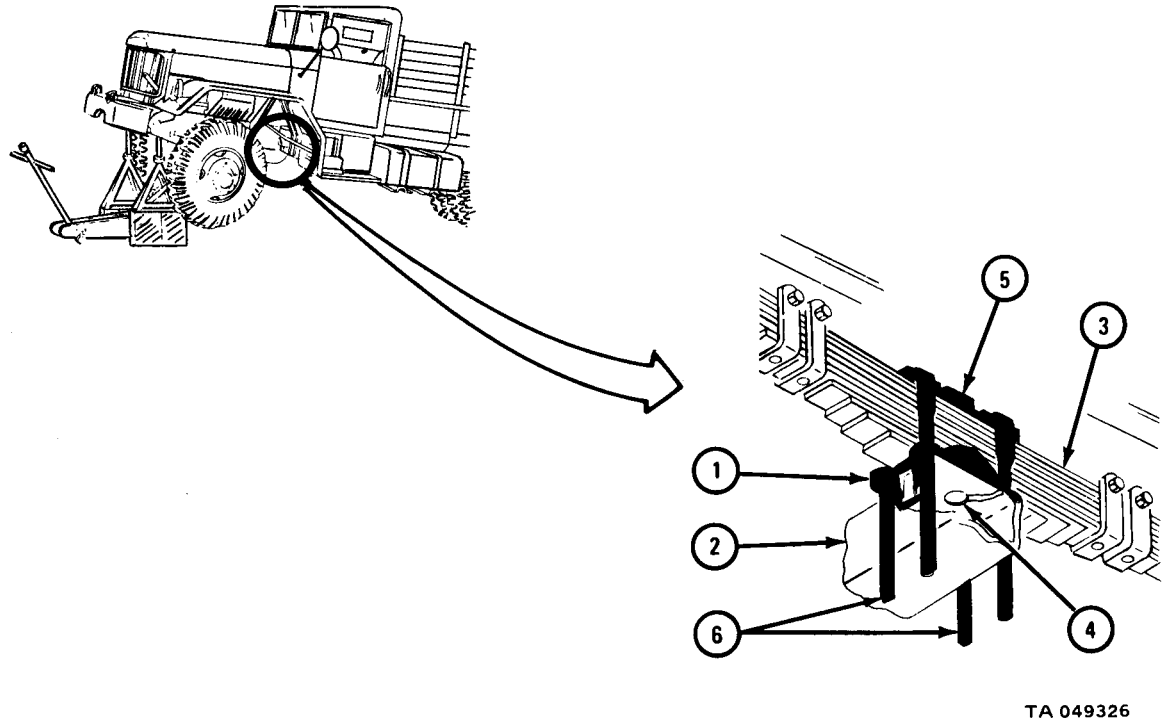
TA 049322

c. Replacement.

FRAME 1

1. Place lower seat (1) on axle housing (2) as shown.
2. Place spring (3) on lower seat (1) so that end of bolt (4) is in center hole of seat.
3. Place upper seat (5) on top of spring (3).
4. Place two U-bolts (6) over upper seat (5) with ends through holes in lower seat (1).

GO TO FRAME 2

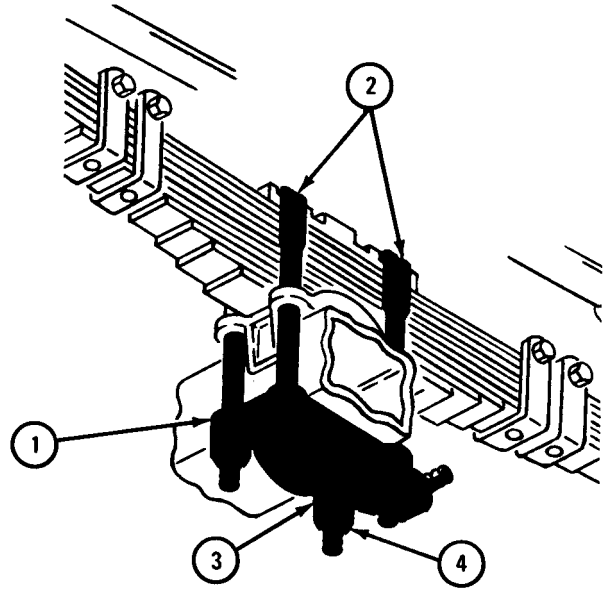


TA 049326

FRAME 2

1. Put clamp plate (1) over two U-bolts (2) as shown.
2. Put four washers (3) on two U-bolts (2) and using 1 5/16-inch wrench, screw on four nuts (4).

GO TO FRAME 3

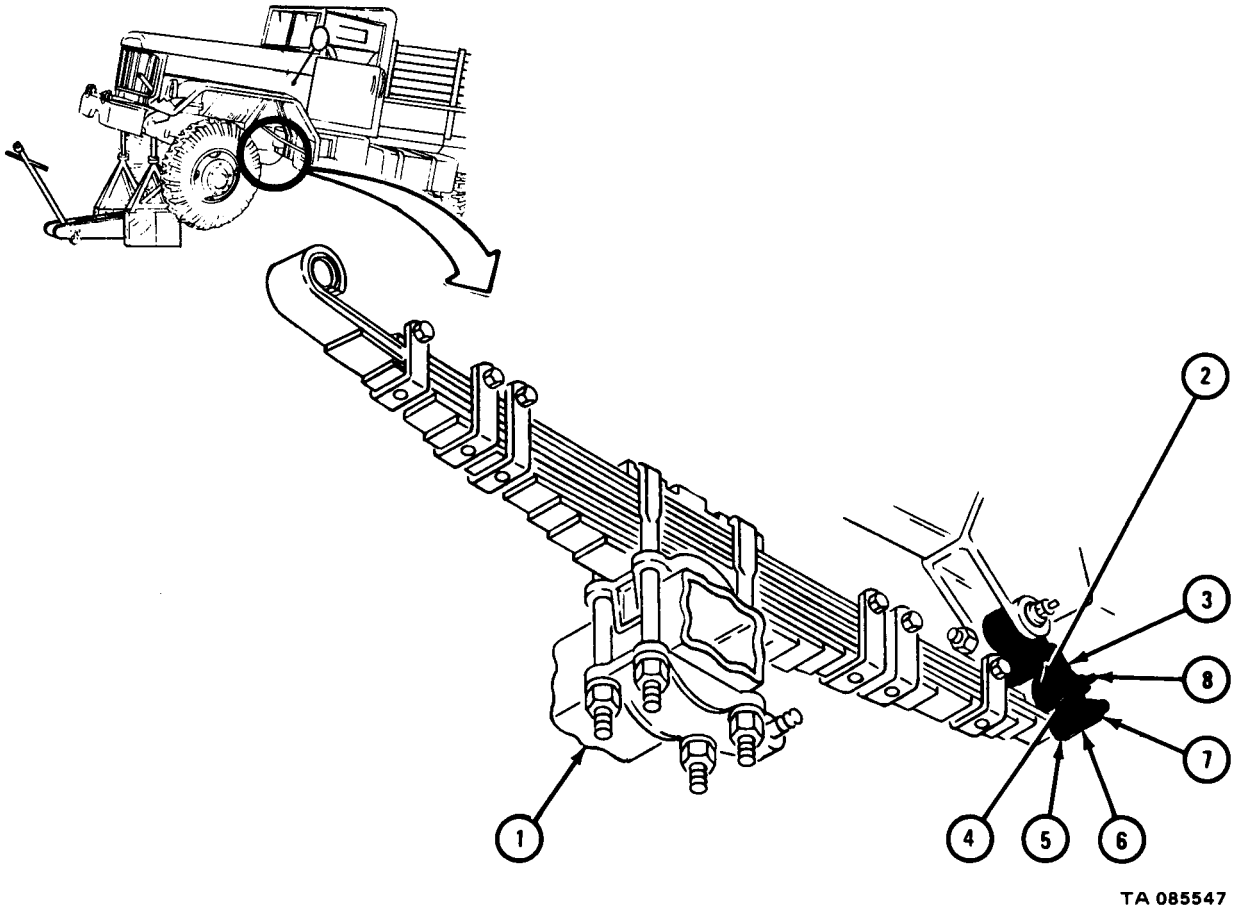


TA 049324

FRAME 3

1. Using hydraulic jack, jack up axle housing (1) until spring eye (2) goes into shackle (3).
2. Using hammer and brass drift, drive in pin (4).
3. Put capscrew (5) through clamp (6).
4. Using 3/4-inch wrenches, hold capscrew (5) and screw on and tighten nut (7).
5. Using 7/16-inch wrench, screw in and tighten grease fitting (8).

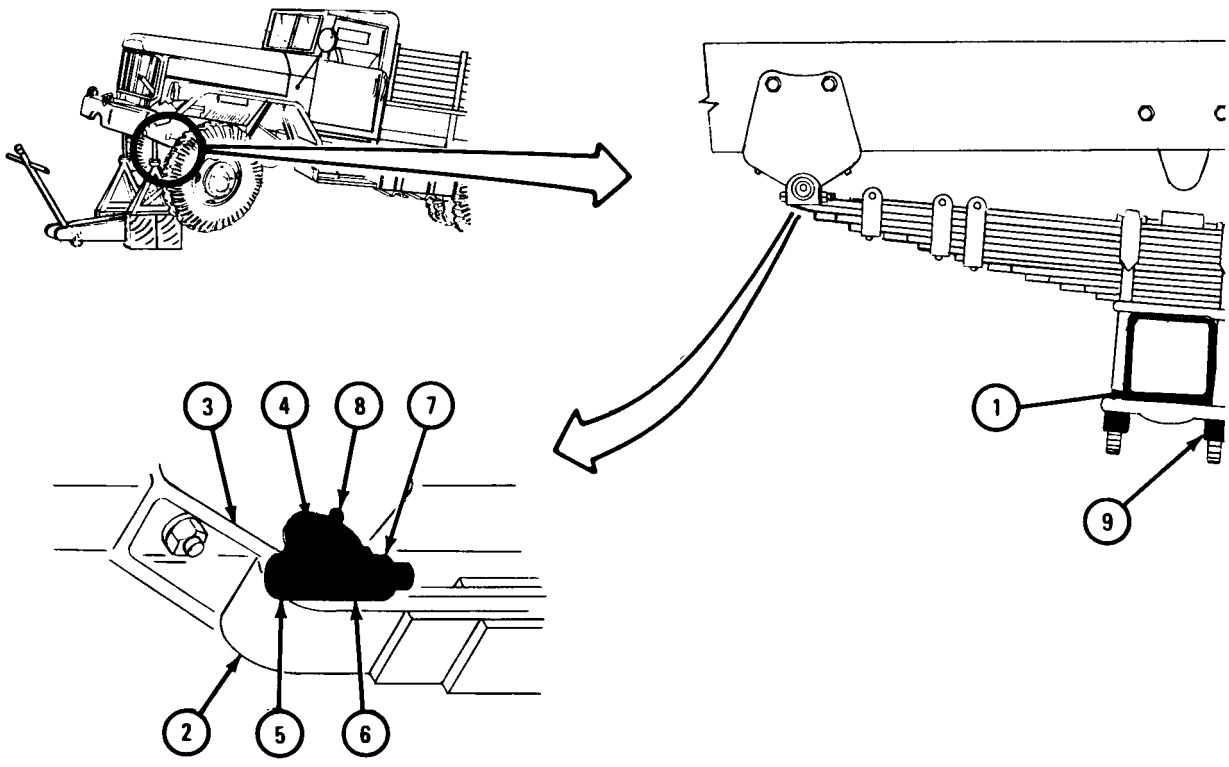
GO TO FRAME 4



FRAME 4

1. Using hydraulic jack, raise or lower axle housing (1) as needed to aline front spring eye (2) with hole in bracket (3).
2. Using hammer and brass drift, drive in pin (4).
3. Put capscrew (5) through clamp (6).
4. Using 3/4-inch wrenches, hold capscrew (5) and screw on and tighten nut (7).
5. Using 7/16-inch wrench, screw in and tighten grease fitting (8).
6. Using torque wrench with 1 5/16-inch socket wrench, tighten four nuts (9) to 350 to 400 pound-feet.

GO TO FRAME 5



TA 085548

FRAME 5

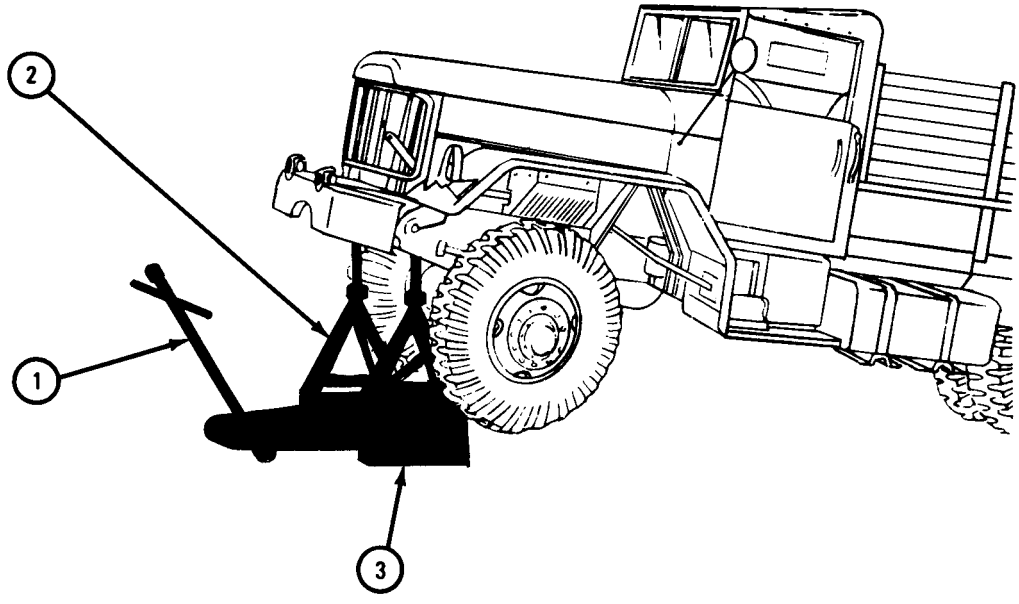
1. Using hydraulic jack (1), jack up truck until truck is off two trestles (2).
2. Takeout two trestles (2) and four wood blocks (3).
3. Using hydraulic jack (1), lower truck onto ground. Take away hydraulic jack.

NOTE

Follow-on Maintenance Action Required:

1. Lubricate shackle pins. Refer to LO 9-2320-211-12.
2. Replace shock absorber. Refer to para 16-6.
3. Replace drag link. Refer to para 14-6.

END OF TASK



TA 085549

16-4. REAR AXLE LEAF SPRING ASSEMBLY REMOVAL AND REPLACEMENT.

NOTE

This task is the same for the left and right rear axle leaf spring assemblies. This task is shown for the left rear axle leaf spring assembly.

TOOLS:
- 1 13/16-inch wrench (2)
- 1 5/16-inch wrench
- Torque wrench, 600 pound-feet capacity
- 1 1/2-inch wrench
- 3/4-inch drive socket set
- Safety jack

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Take off wheels next to spring to be taken off. Refer to TM 9-2320-211-10.

(2) Raise frame to take weight from spring to be taken off and support both rear axles with safety jacks. Refer to Part 1, para 10-3.

b. Removal.

FRAME 1

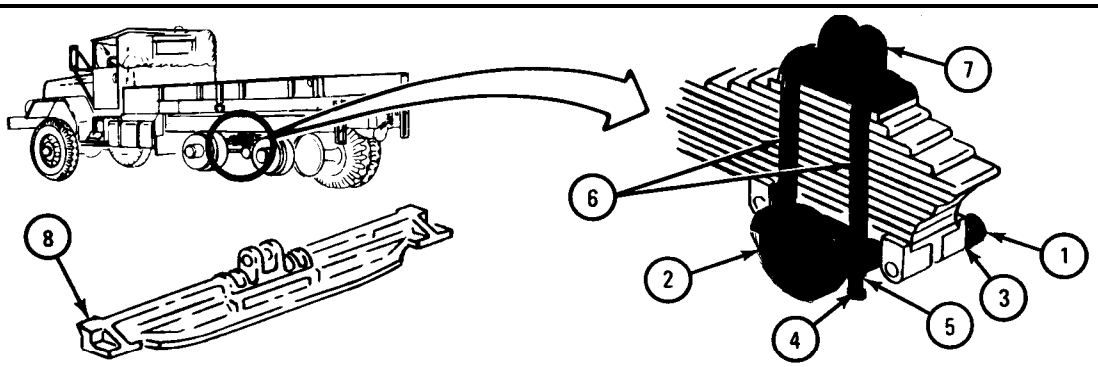
1. Using 1 13/16-inch wrench, unscrew and take off two clamp screws (1) from rear of seat (2). Take washers (3) off screws.
2. Using 1 1/2-inch wrench, unscrew and take off four nuts (4). Take off four washers (5) and two U-bolts (6).

NOTE

On trucks M543A2, saddle (7) is a stabilizer bar (8).

3. Take off saddle (7).

GO TO FRAME 2



MODEL M543A2 ALL MODELS EXCEPT M543A2 TA 048902

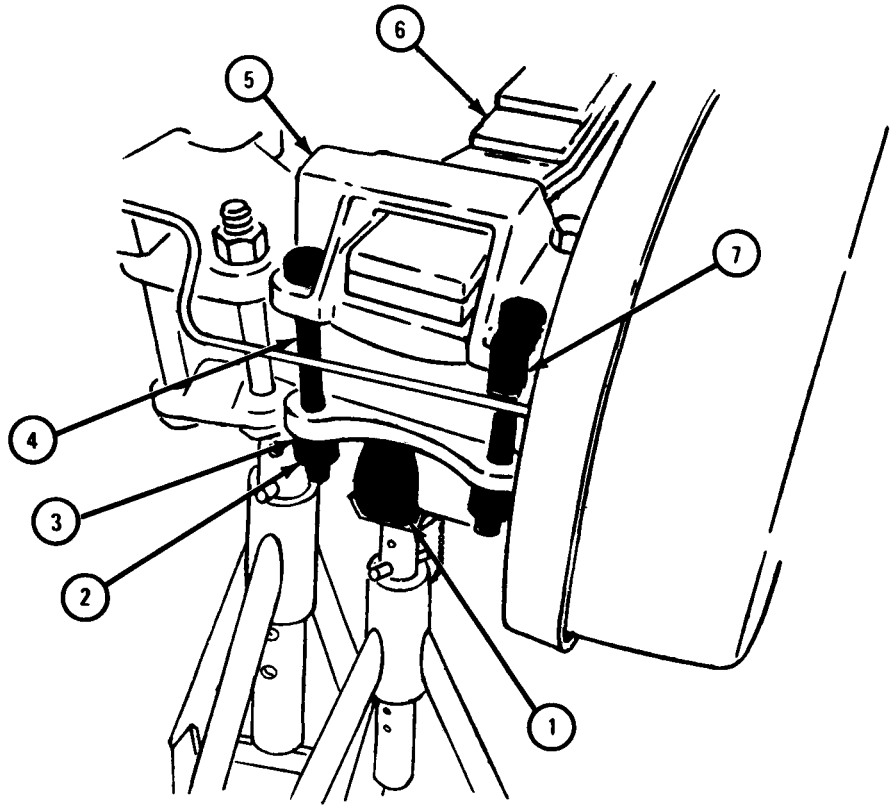
FRAME 2

1. Place jack under torque rod (1).
2. Using 1 5/16-inch wrenches, unscrew and take off four nuts (2).
3. Take out four washers (3) and screws (4).
4. Lift bracket (5) slightly up off locator pin.
5. Slide bracket (5) off spring (6). Be careful not to bend brake line bracket (7).

NOTE

If spring pressure does not let bracket (5) come out, change height of jack under frame.

GO TO FRAME 3



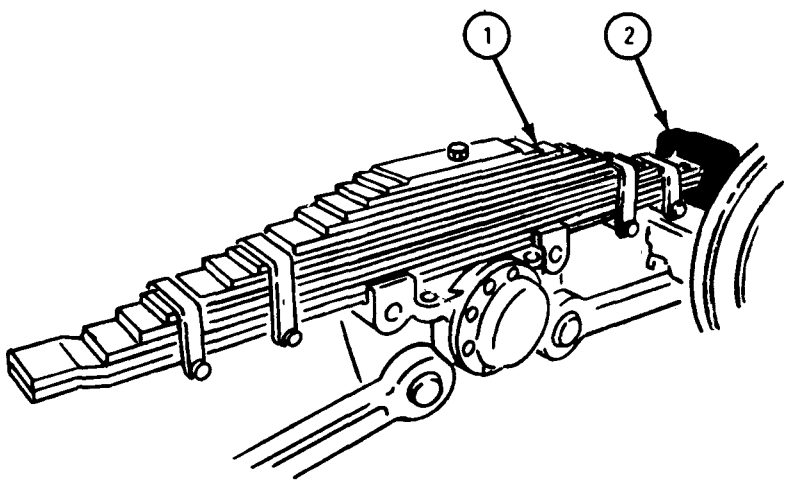
TA 049355

FRAME 3

Soldiers A and B

1. Slide spring (1) out of bracket (2). Lift spring (1) from truck.

END OF TASK



TA 049365

c. Replacement.

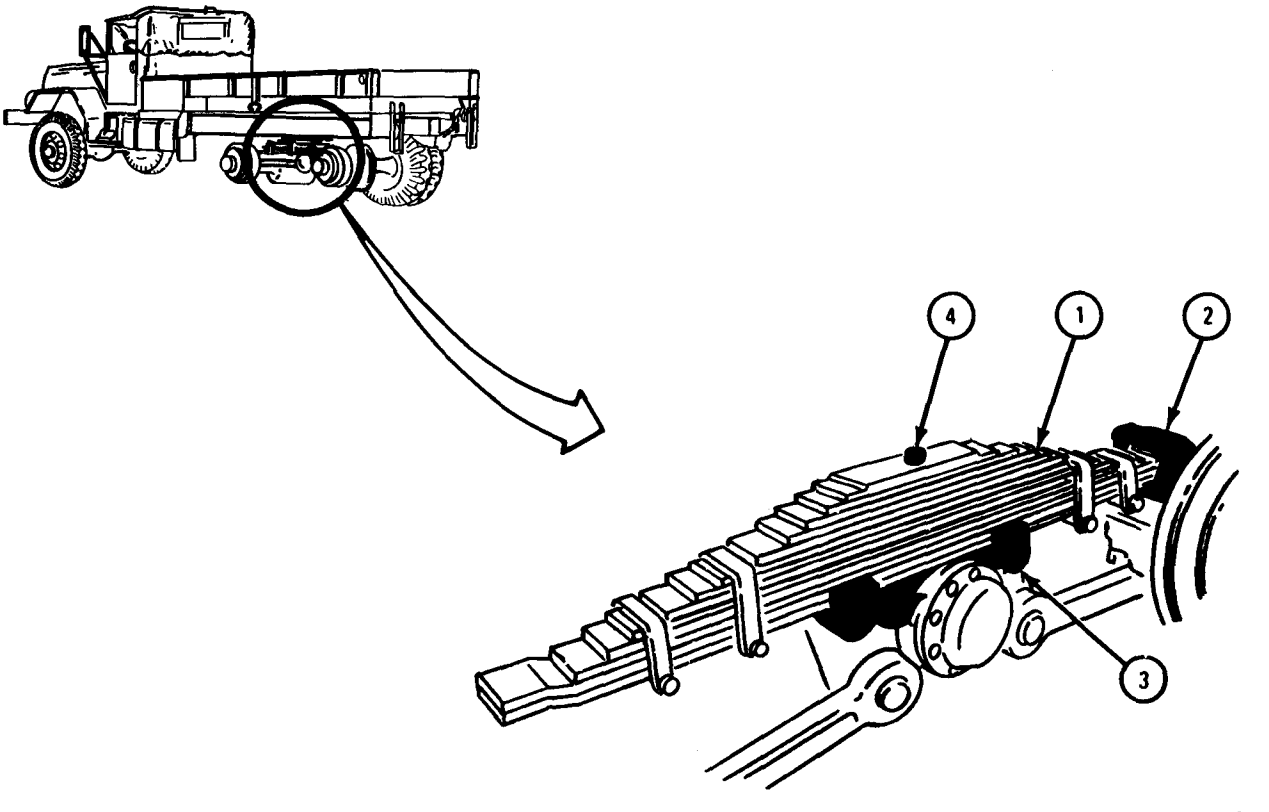
FRAME 1

Soldiers A and B

1. Lift spring (1) and slide it into bracket (2).

2. Place spring (1) onto seat (3) with end of bolt (4) in center hole of seat (3).

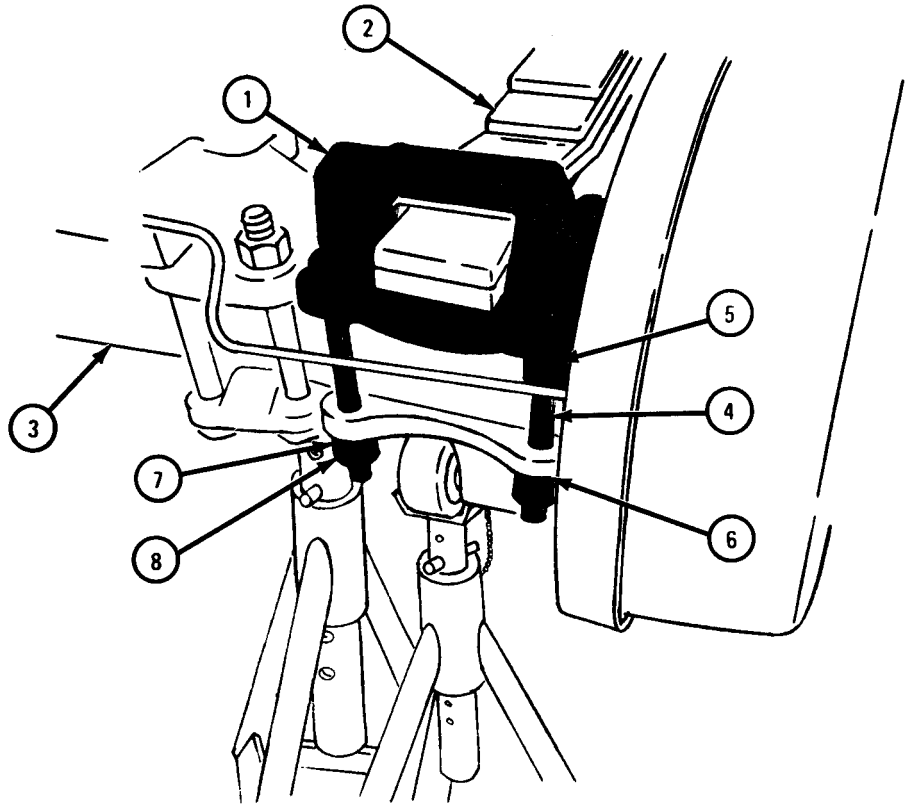
GO TO FRAME 2



FRAME 2

1. Place bracket (1) with wear plate over end of spring (2) and onto locator pin on axle (3).
2. Push four screws (4) through two brake line brackets (5), bracket (1), and torque rod bracket (6). Put washer (7) on each screw.
3. Using 1 5/16-inch wrenches, screw on and tighten four nuts (8).

GO TO FRAME 3



TA 049356

FRAME 3

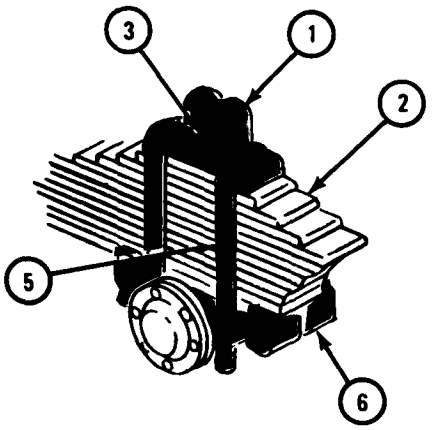
1. Place saddle (1) over spring (2) with center bolt (3) through hole in saddle.

NOTE

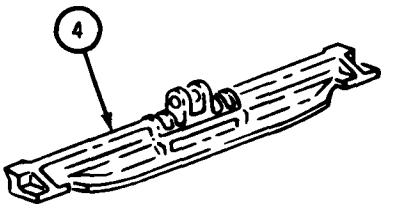
On truck M543A2, saddle (1) is a stabilizer bar (4).

2. Place two U-bolts (5) over saddle (1) and through seat (6).

GO TO FRAME 4



ALL MODELS EXCEPT M543A2



MODEL M543A2

TA 048904

FRAME 4

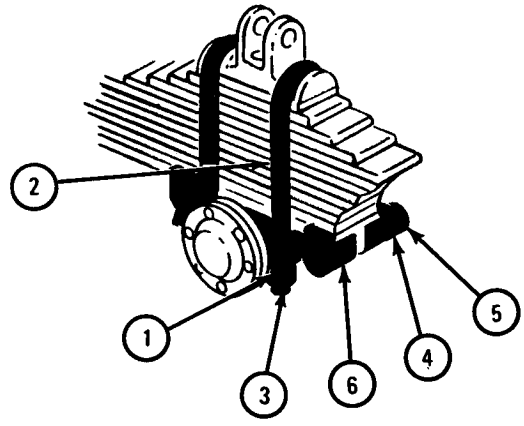
1. Place four washers (1) on two U-bolts (2).
2. Using 1 1/2-inch wrench, screw on four nuts (3).
3. Using torque wrench, tighten nuts (3) to 350 to 450 pound-feet.
4. Place washers (4) on two screws (5).
5. Using 1 13/16-inch wrench, screw in and tighten screws (5) into spring seat (6).

NOTE

Follow-on Maintenance Action Required:

1. Put back rear wheels. Refer to TM 9-2320-211-10.
2. Take out all jacks and blocks. Refer to Part 1, para 10-3.

END OF TASK



TA 049358

16-5. REAR SPRING SEAT REMOVAL, REPLACEMENT, AND ADJUSTMENT.

NOTE

This task is the same for the left and right rear spring seats. This task is shown for the left rear spring seat.

TOOLS:
- Jack
- Portable bearing lubricator, NSN 4930-00-704-1852
- Hand grease gun, NSN 4930-00-253-2478
- 1 7/8-inch wrench
- 1 1/2-inch wrench
- Torque wrench, 600 pound-feet capacity
- Wheel bearing wrench, pn 7076869
- Brass drift punch
- Hammer
- Spring scale, 0 to 50 pounds
- Tire iron
- Wood blocks (2)
- 1/2-inch wrench

SUPPLIES:
- Bearing cap gasket
- Artillery and-automotive grease, type GAA, MIL-G-10924
- Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
- Rags
- Tags

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

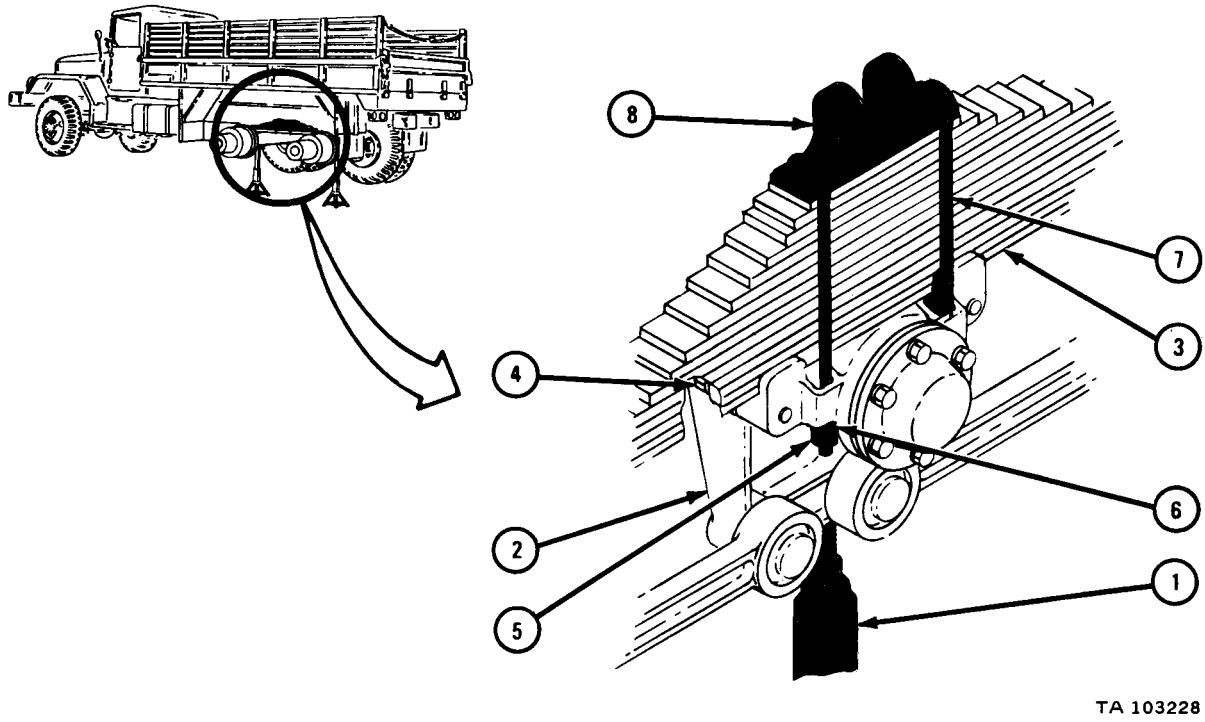
a. Preliminary Procedure. Remove outer and inner rear wheels next to spring seat to be taken off. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Place jack (1) under crosstube bracket (2). Lift it high enough to take tube load off spring (3).
2. Using 1 7/8-inch wrench, unscrew and takeout two screws with washers (4).
3. Using 1 1/2-inch wrench, unscrew and take off four nuts (5). Take off four washers (6), two U-bolts (7), and saddle (8).

GO TO FRAME 2

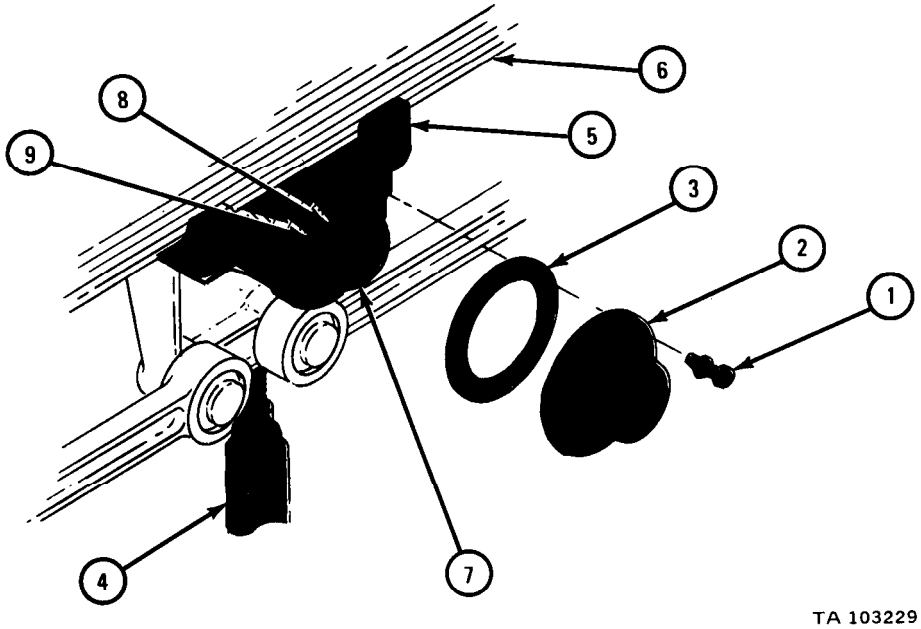


TA 103228

FRAME 2

1. Using 1/2-inch wrench, unscrew and take out six screws with washers (1). Take off bearing cap (2) and gasket (3). Throw gasket away.
2. Lower jack (4) enough for spring seat (5) to clear spring (6).
3. Using wheel bearing wrench, unscrew and take off outer nut (7). Take off washer (8).
4. Using wheel bearing wrench, unscrew and take off inner nut (9).

GO TO FRAME 3



TA 103229

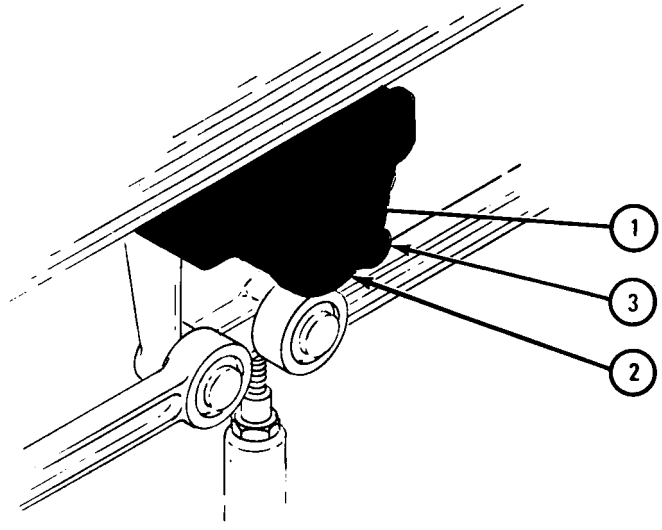
FRAME 3

NOTE

Outer bearing (1) will fall out when spring seat (2) is taken off crosstube (3).

1. Slide spring seat (2) off crosstube (3).
2. Tag outer bearing (1).

Go TO FRAME 4



TA 103230

FRAME 4

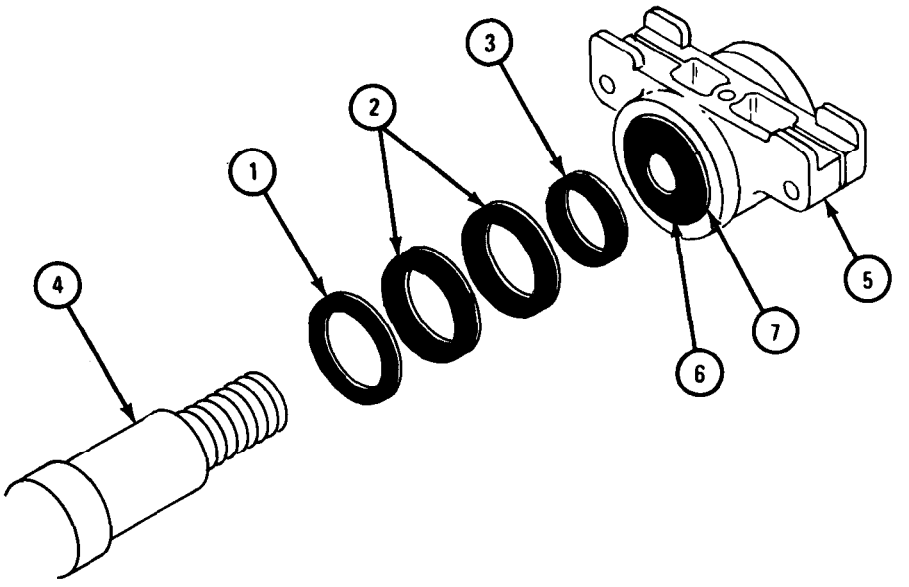
1. Using hammer and tire iron, pry and tap side to side and take washer (1), two dust seals (2) and wiper (3) off crosstube (4).

CAUTION

Put spring seat (5) on wood blocks when taking out bearing (6) and seal (7) so that they are not damaged.

2. Using hammer and drift punch, tap around inside of inner bearing (6) and take out seal (7) and inner bearing. Tag inner bearing.

GO TO FRAME 5



TA 103231

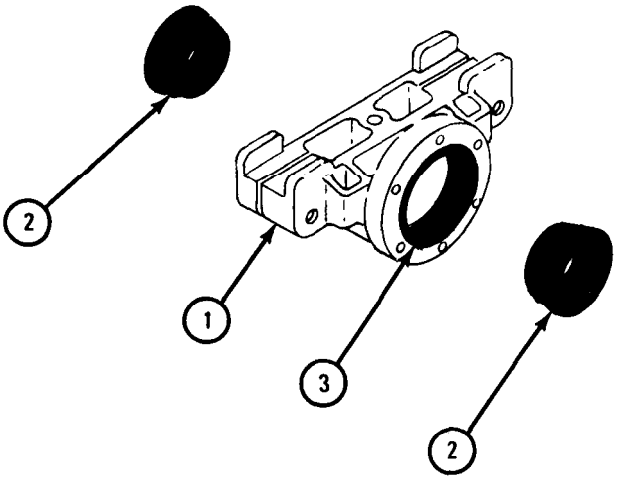
FRAME 5

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

1. Using rag, wipe all grease from spring seat (1), two bearings (2), and two cups (3). Clean with solvent and let dry thoroughly. Do not use compressed air.
2. Check that bearings (2) and cups (3) have no wear or defects.
3. If bearings (2) or cups (3) are damaged, using drift punch and hammer, drive cups out of spring seat (1). Throw away cups and bearings.

END OF TASK



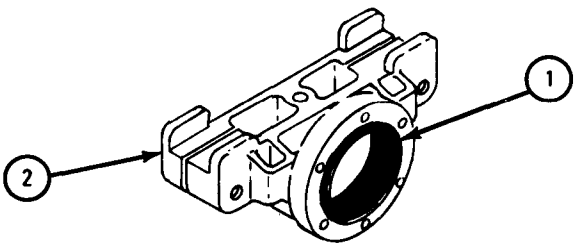
TA 103232

c. Replacement and Adjustment.

FRAME 1

1. If bearing cups (1) have been taken out, place new cup into each end of spring seat (2) with thin edgeout.
2. Using drift punch and hammer, tap two cups (1) into place. Make sure that cups are fully seated.

GO TO FRAME 2

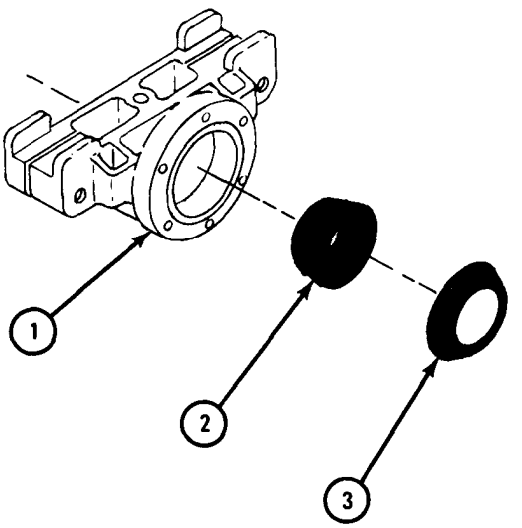


TA 103233

FRAME 2

1. Put thin coating of grease on inside of spring seat (1).
2. Using bearing packer, pack inner bearing (2) with grease. Make sure that grease fills all spaces.
3. Place inner bearing (2) in spring seat (1) with small end in. Take off tag.
4. Using drift punch and hammer, tap seal (3) into spring seat (1) with seal lip into bearing (2).

GO TO FRAME 3

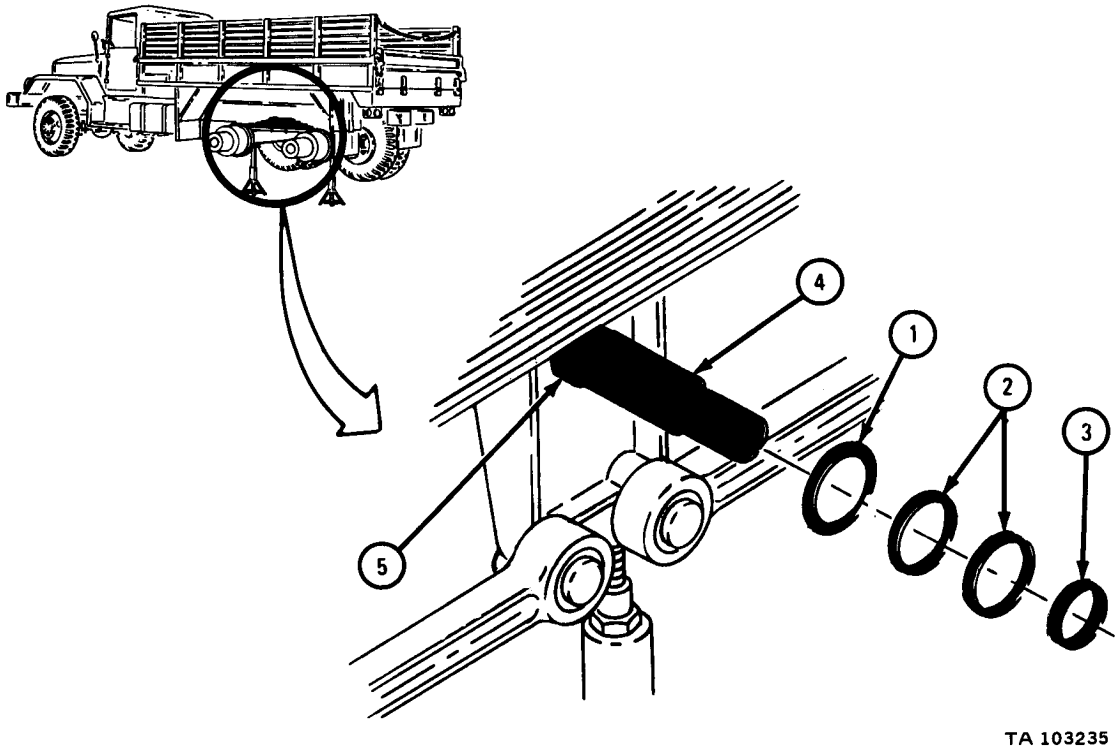


TA 103234

FRAME 3

1. Put washer (1), two seals (2), and wiper (3) on crosstube shaft (4).
2. Using drift punch and hammer, tap wiper (3) onto seat (5).

GO TO FRAME 4

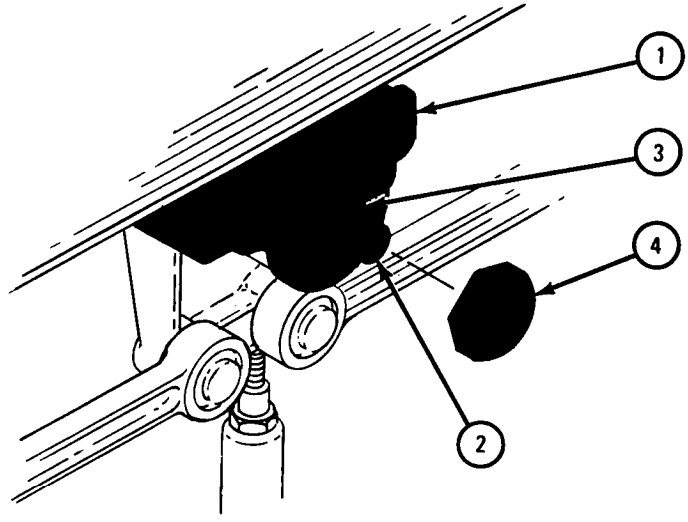


TA 103235

FRAME 4

1. Place spring seat (1) on crosstube (2) with empty end facing out.
2. Using bearing packer, pack outer bearing (3) with grease. Make sure that grease fills all spaces.
3. Place outer bearing (3) in spring seat (1) with small end in. Take off tag.
4. Screw on inner adjusting nut (4) with bump facing out as shown, but do not tighten at this time.

GO TO FRAME 5

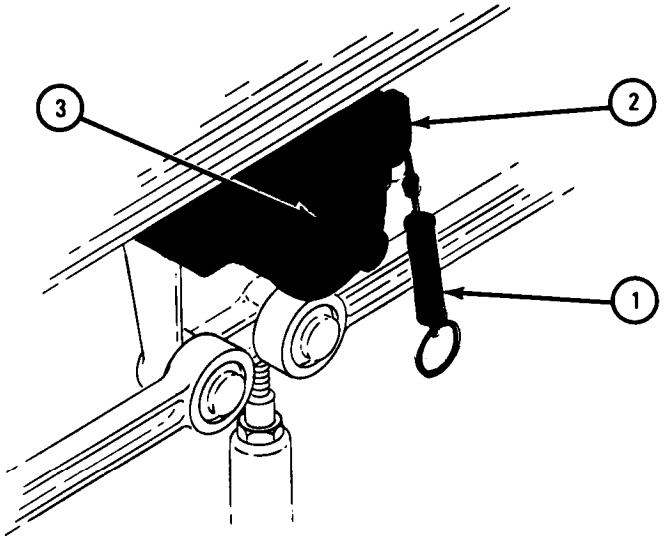


TA 103236

FRAME 5

1. Hook end of scale (1) in hole in spring seat (2) as shown.
2. Using wheel bearing wrench, tighten inner adjusting nut (3).
3. Pull down on scale (1) until spring seat (2) just starts to turn and read scale. Scale must read between 24 and 32 pounds. (This is equal to 12 to 15 pounds preload on bearings.)
4. If reading is more than 32 pounds, loosen inner adjusting nut (3) and do step 3 again.
5. If reading is less than 24 pounds, tighten inner adjusting nut (3) and do step 3 again.
6. Do steps 4 and 5 again until reading on scale (1) is between 24 and 32 pounds.

GO TO FRAME 6

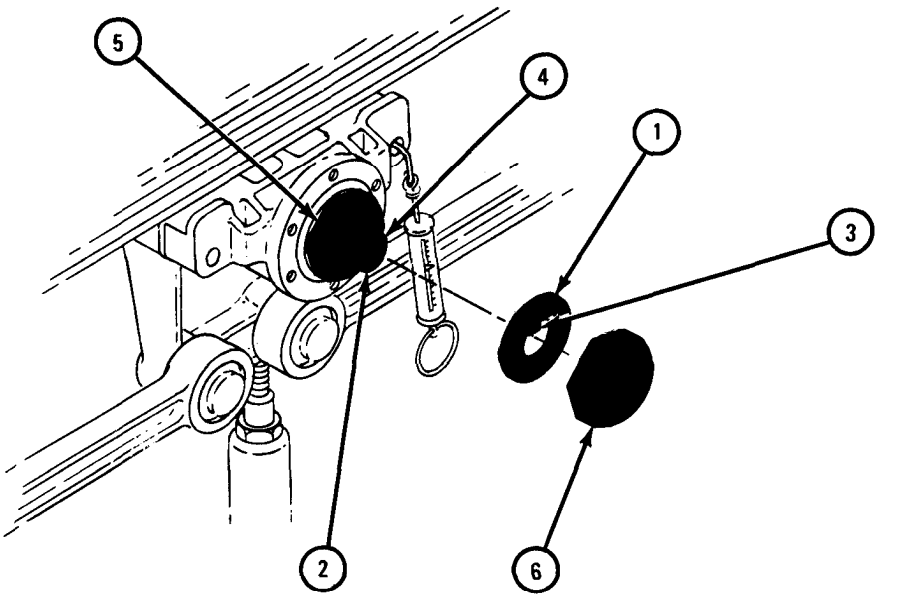


TA 103237

FRAME 6

1. Put washer (1) on crosstube (2) with tab (3) in keyway (4).
2. Bump on nut (5) should aline with a hole on washer (1). If it does not, using wheel bearing wrench, turn nut to right. Line up bump with next hole.
3. Using wheel bearing wrench, screw on and tighten nut (6).
4. Pull down on scale until spring seat just starts to turn and read scale. If reading is not between 24 and 32 pounds, unscrew nut (6), take off washer (1) and do frame 5 again.

GO TO FRAME 7

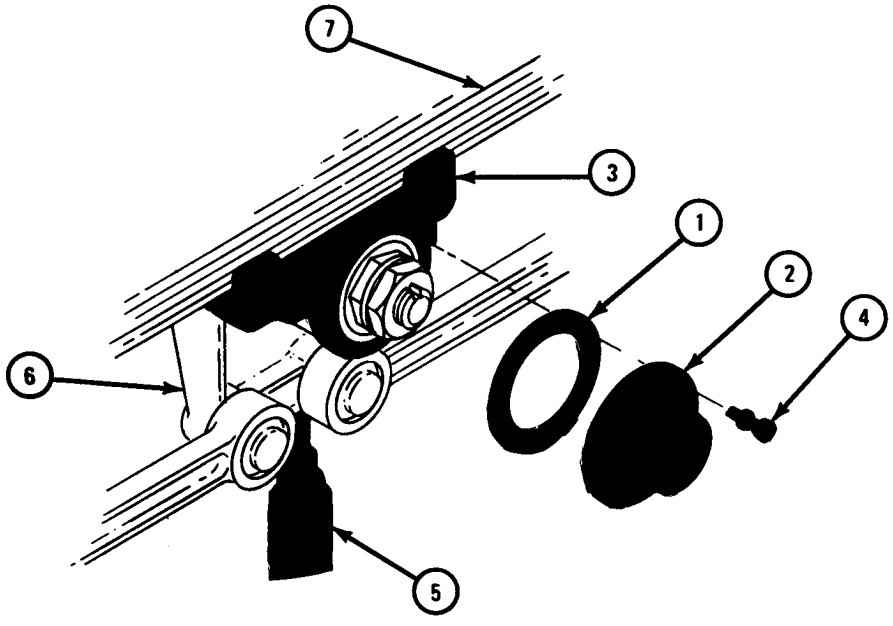


TA 103238

FRAME 7

1. Place gasket (1) and cap (2) on seat (3), alining holes. Using 1/2-inch wrench, screw in and tighten six screws with washers (4).
2. Raise jack (5) under crosstube bracket (6) until spring (7) rests on seat (3).

GO TO FRAME 8



TA 103239

FRAME 8

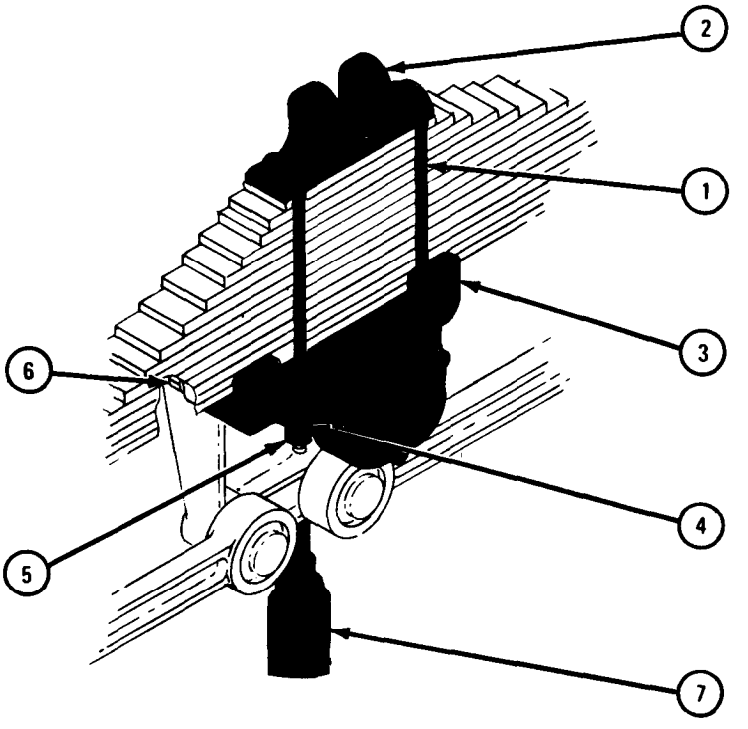
1. Place two U-bolts (1) over saddle (2) and through seat (3).
2. Put four washers (4) on ends of two U-bolts (1) and using 1 1/2-inch wrench, screw on four nuts (5). Using torque wrench, tighten nuts to 300 to 400 pound-feet.
3. Using 1 7/8-inch wrench, screw on and tighten two screws with washers (6) through seat (3).
4. Lower jack (7) and take it out.

NOTE

Follow-on Maintenance Action Required:

Replace inner and outer rear wheels. Refer to TM 9-2320-211-10.

END OF TASK



TA 103240

Section III. SHOCK ABSORBERS

16-6. FRONT AXLE SHOCK ABSORBER REMOVAL AND REPLACEMENT.

NOTE

This task is the same for the right and left front axle shock absorbers. This task is shown for the right front axle shock absorber.

TOOLS: 1 1/8-inch wrench

SUPPLIES: None

PERSONNEL: One

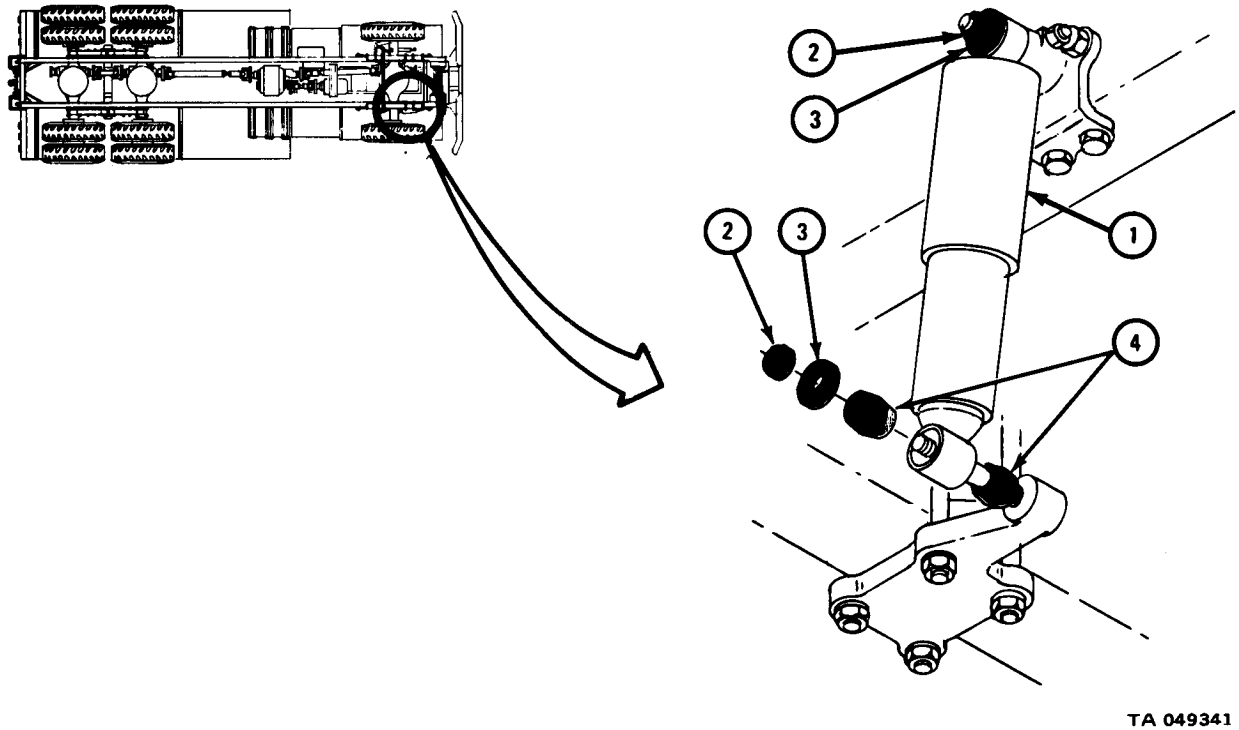
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. At each end of shock absorber (1), using wrench, unscrew and take off nut (2). Take off washer (3).
2. Pull off shock absorber (1) with two rubber bushings (4) at each end.

END OF TASK

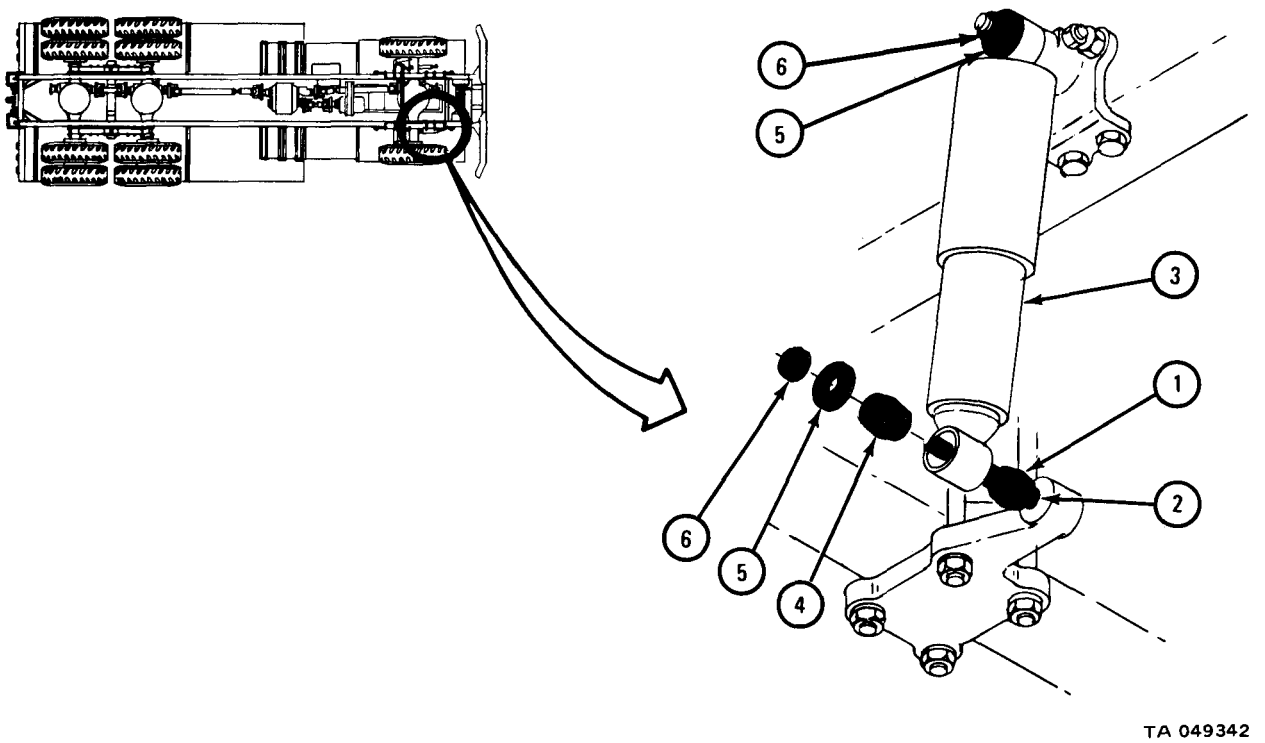


b. Replacement.

FRAME 1

1. Place one rubber bushing (1) with narrow end out on each mounting stud (2).
2. Place shock absorber (3) on two studs (2) with larger end on upper stud as shown.
3. Place one rubber bushing (4) with wide end out on each stud (2).
4. Put washer (5) on each stud (2) and using wrench, screw on and tighten two nuts (6).

END OF TASK



CHAPTER 17

BODY, CAB, HOOD, AND HULL GROUP MAINTENANCE

Section I. SCOPE

17-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for body and cab components, windshield, seats, stowage and tool boxes, and cargo body components for which there are authorized corrective maintenance tasks at the organizational maintenance level.

17-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. BODY AND CAB COMPONENTS

17-3. BRUSH GUARD ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS : 3/4-inch wrench (2)

SUPPLIES : None

PERSONNEL: One

EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

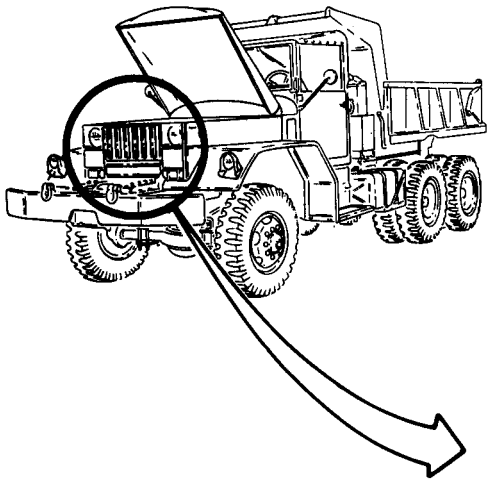
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

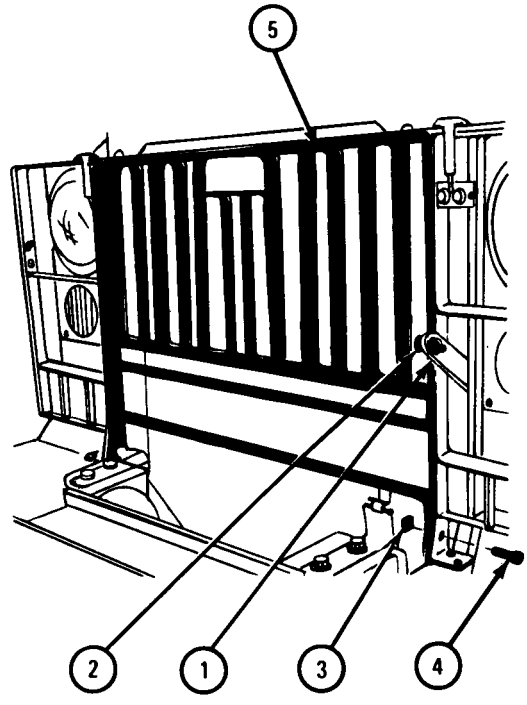
b. Removal.

FRAME 1

1. Using 3/4-inch wrenches, unscrew and loosen two brace nuts (1) and bolts (2).
2. Using 3/4-inch wrenches, unscrew and loosen two mounting nuts (3) and bolts (4).
3. Pull top of brush guard (5) forward and lift if off truck.

END OF TASK





TA 045838

c. Replacement.

FRAME 1

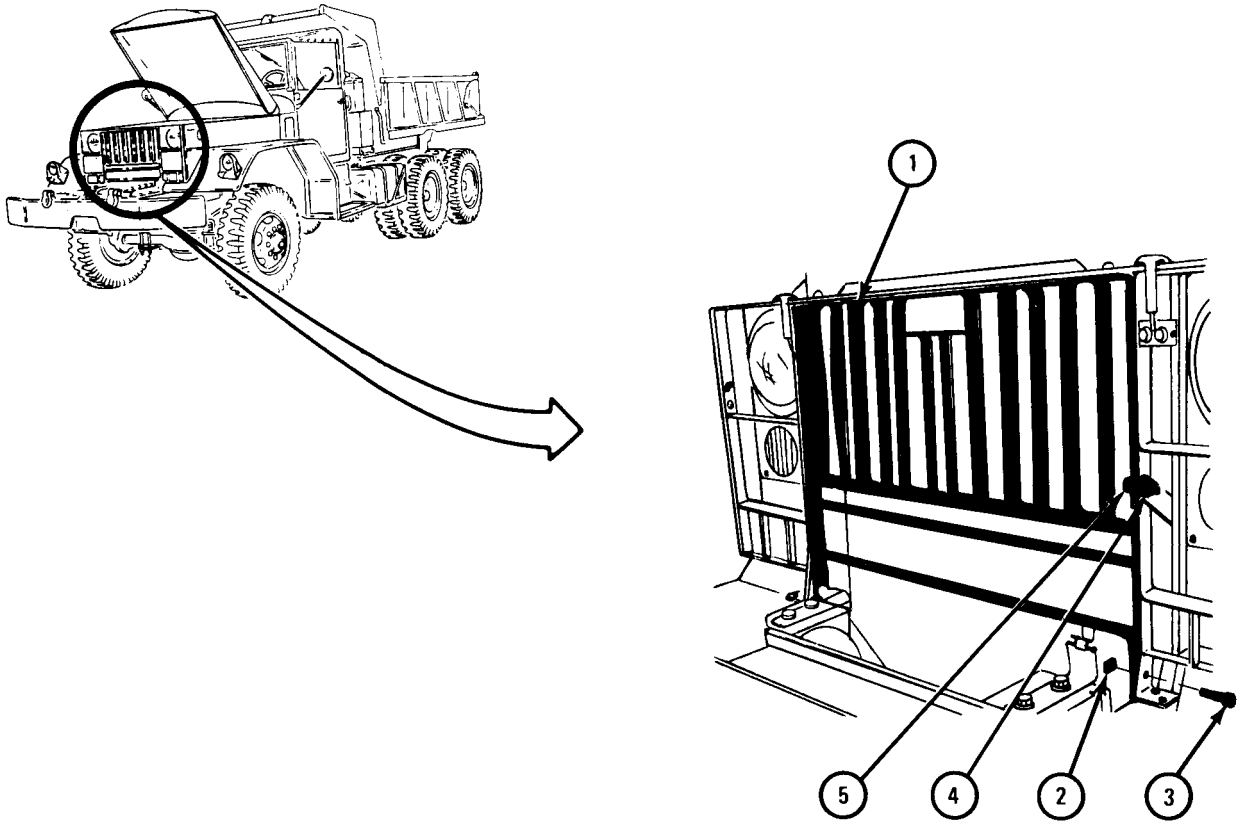
1. Position brush guard (1) on front of truck as shown.
2. Using 3/4-inch wrenches, screw in and tighten two mounting nuts (2) and bolts (3).
3. Using 3/4-inch wrenches, screw in and tighten two brace nuts (4) and bolts (5).

NOTE

Follow-on Maintenance Action Required:

Close hood. Refer to TM 9-2320-211-10.

END OF TASK



17-4. CAB DOOR ASSEMBLY REMOVAL AND REPLACEMENT.

NOTE

This task is the same for the right and left cab door assemblies. This task is shown for the right assembly.

TOOLS: Cross-tip screwdriver (Phillips type)
1/2-inch wrench
Hammer
7/16-inch wrench (2)
1/8-inch pin punch
Pliers

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

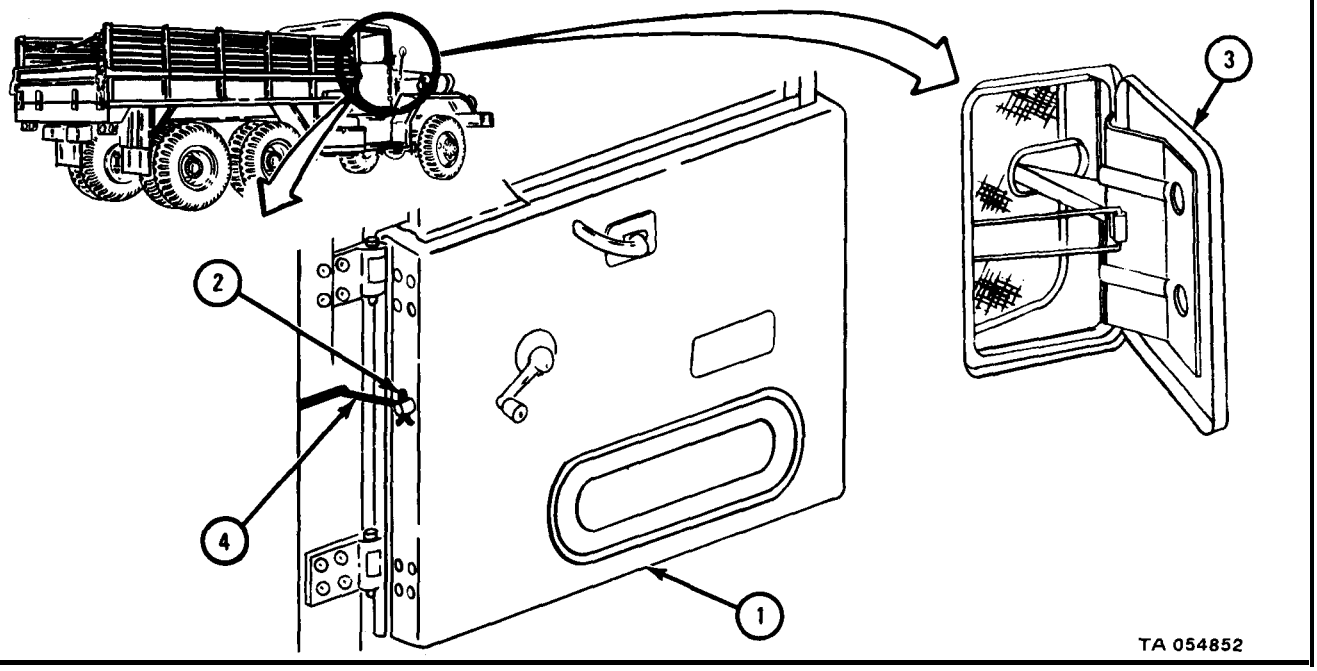
a. Preliminary Procedure. Remove rear view mirror. Refer to para 19-12.

b. Removal.

FRAME 1

1. Open cab door (1).
2. Using pliers, take out cotter pin (2) and throw it away. Reach through vent door (3) and take out door stop (4).
3. Close door (1) to first catch.

GO TO FRAME 2



FRAME 2

Soldier A 1. Using 7/16-inch wrenches, unscrew and take off nut (1) and screw (2). Hold mirror brace assembly (3).

Soldier B 2. Using 1/2-inch and 7/16-inch wrenches, unscrew and take off two nuts (4). Using hammer and punch, drive out screw (5) and then screw (6).

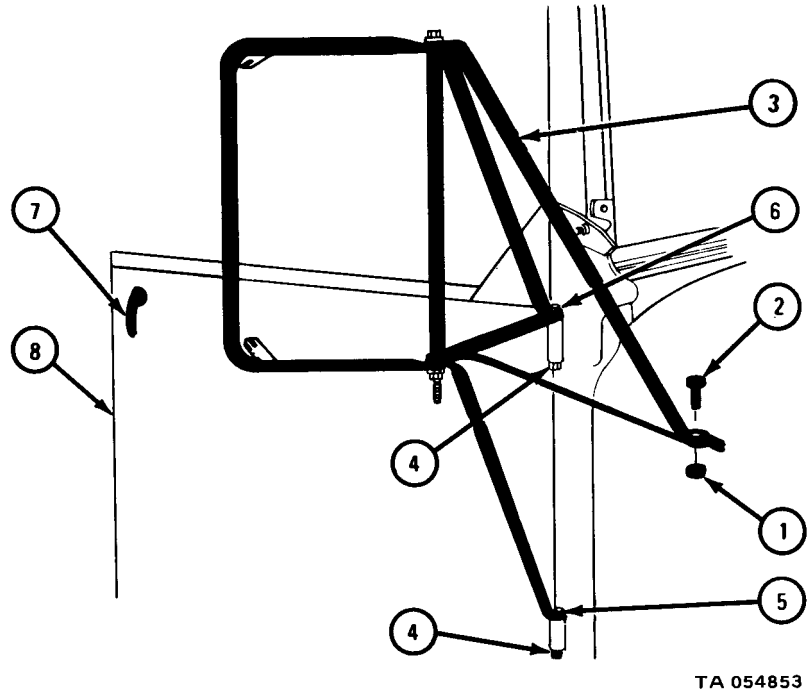
Soldier A 3. Take off mirror brace assembly (3).

WARNING

Unlock cab door assembly (8) carefully. It has been freed and may fall, causing injury to personnel.

Soldier B 4. Turn door handle (7) to unlock door (8). Take off door.

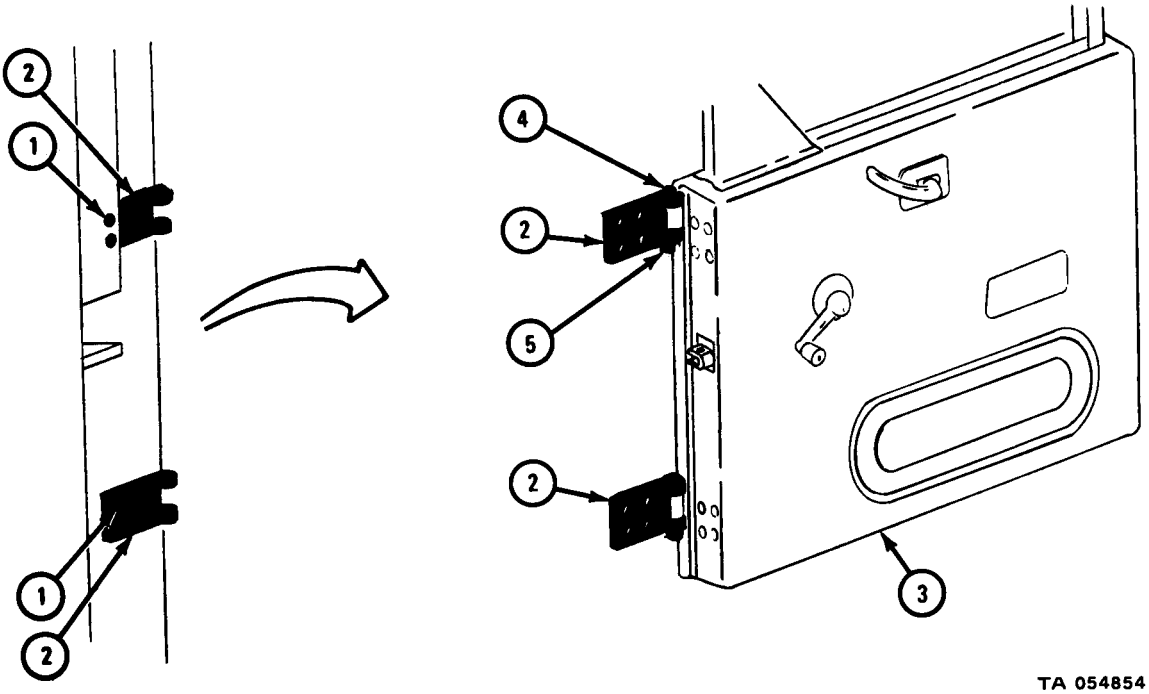
GO TO FRAME 3



FRAME 3

1. Using phillips screwdriver, unscrew and take out eight screws (1). Take off two hinge parts (2).
2. Put two hinge parts (2) in place on door (3), alining holes for two screws (4). Put screws in place. Screw on and finger tighten two nuts (5).

END OF TASK



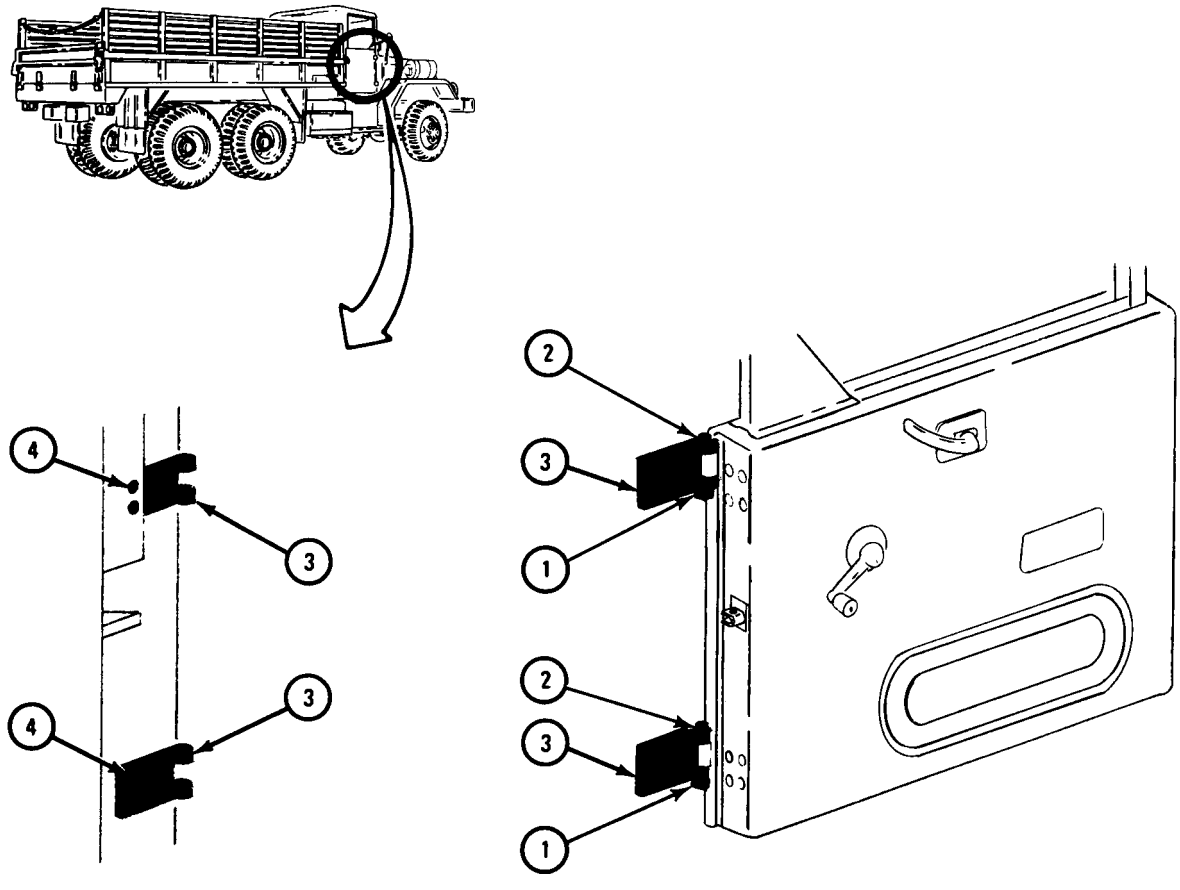
TA 054854

c. Replacement.

FRAME 1

1. Using 1/2-inch and 7/16-inch wrenches, unscrew and take off two nuts (1) and screws (2). Take off two hinge parts (3).
2. Put two hinge parts (3) in place on truck, alining holes for eight screws (4). Using screwdriver, screw in and tighten eight screws.

GO TO FRAME 2



TA 045992

FRAME 2

Soldier A 1. Put door (1) in place on cab. Push door closed to first catch. Hold door in place.

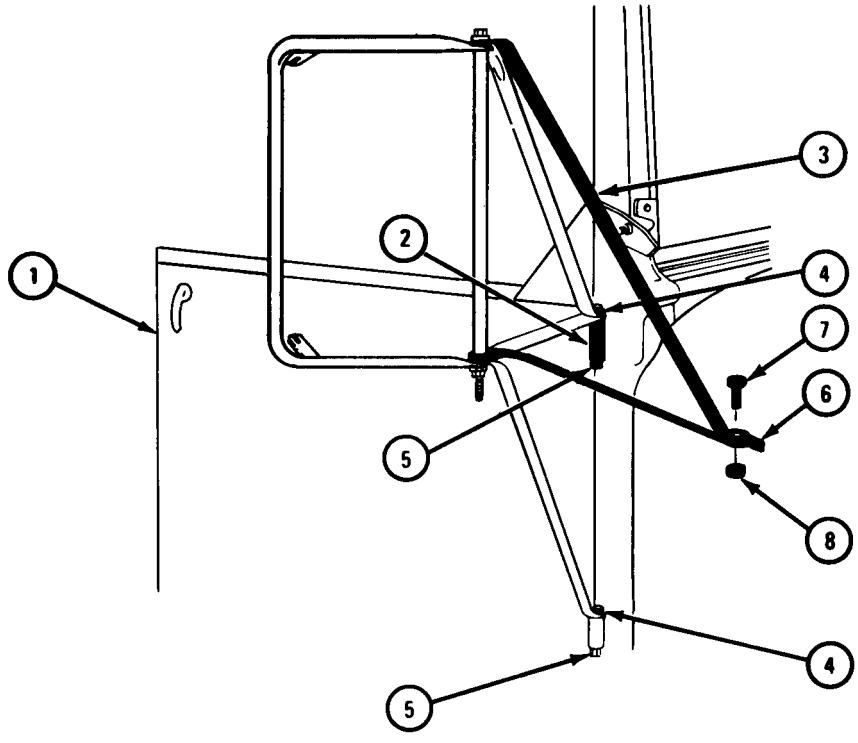
Soldier B 2. Put punch up through top hinge (2) to hold door (1) in place.

Soldier A 3. Put mirror brace assembly (3) in place, alining holes for two screws (4).

Soldier B 4. Put two screws (4) in place. Punch will fall out of top hinge (2). Using 1/2-inch and 7/16-inch wrenches, screw on and tighten two nuts (5).

Soldier A 5. Put mirror brace assembly (3) on bracket (6), alining holes for screw (7). Put screw in place. Using 7/16-inch wrench, screw on and tighten nut (8).

GO TO FRAME 3



TA 045993

FRAME 3

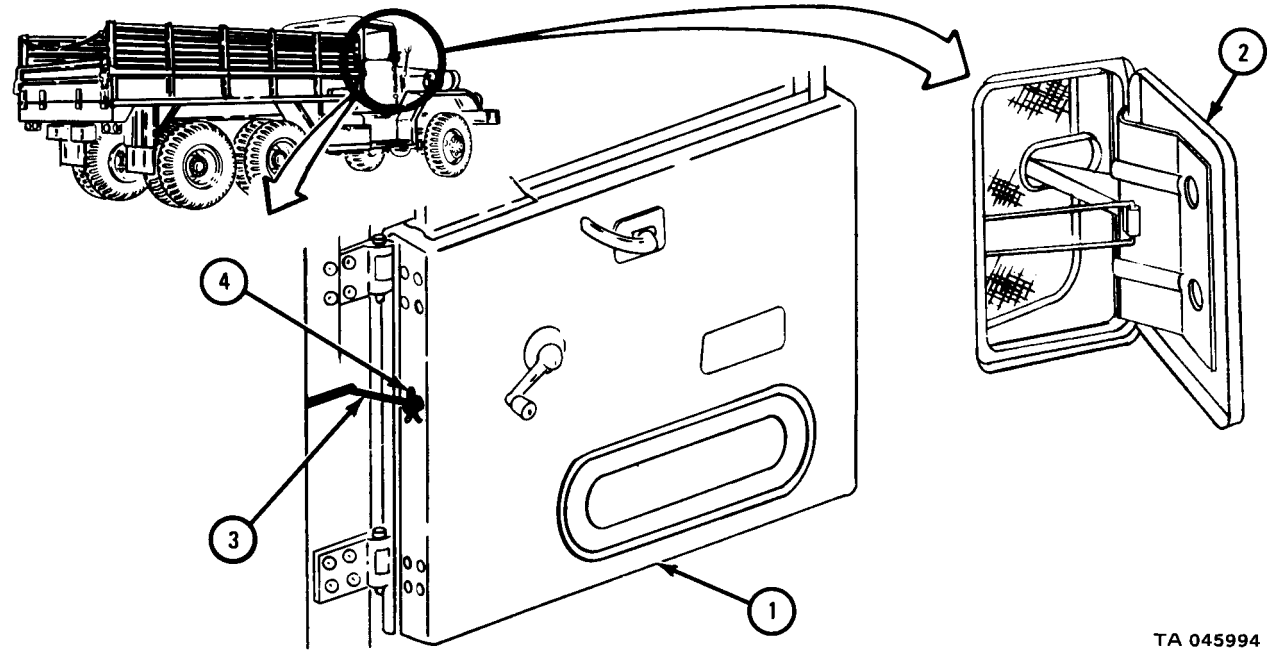
1. Open door (1). Working through vent door (2), put door stop (3) in place, alining holes for cotter pin (4). Put cotter pin in place and using pliers, bend open ends of cotter pin.

NOTE

Follow-on Maintenance Action Required:

Replace rear view mirror. Refer to para 19-12.

END OF TASK



17-5. CAB TUNNEL REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

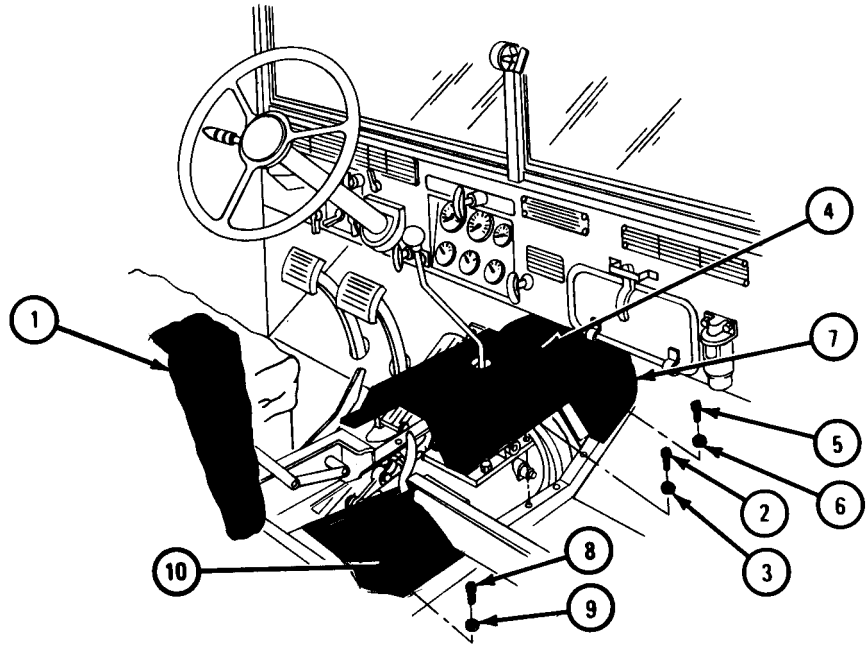
1. Lift up companion seat (1).
2. Using 7/16-inch wrench, unscrew and take out 12 screws (2) with lockwashers (3) on front tunnel (4).

NOTE

If front tunnel has a boot put in, shift knob may have to be taken out to lift tunnel off over shift lever.

3. Lift up and slide off front tunnel (4).
4. Using 7/16-inch wrench, unscrew and take out 11 screws (5) with lockwashers (6) on toe board (7). Take off toe board.
5. Using 7/16-inch wrench, unscrew and take out six screws (8) with lockwashers (9). Lift up and slide off rear tunnel (10).

END OF TASK



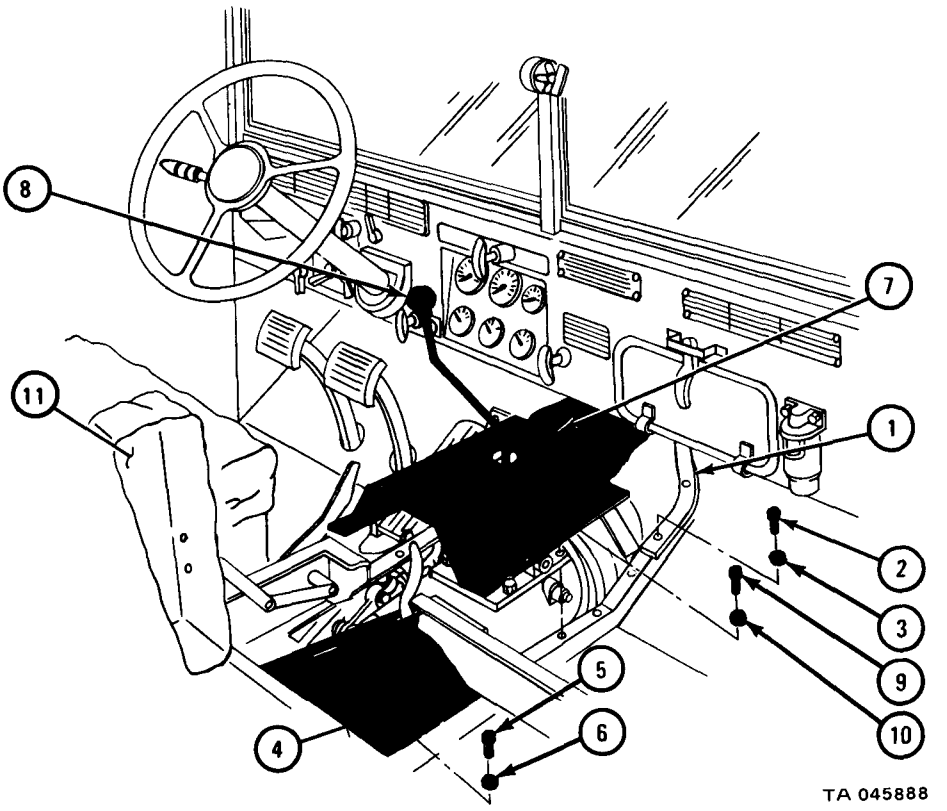
TA 045887

b. Replacement.

FRAME 1

1. Put toe board (1) in place and aline holes. Using 7/16-inch wrench, screw in and tighten 11 screws (2) with lockwashers (3).
2. Slide rear tunnel (4) down into place and aline holes.
3. Using 7/16-inch wrench, screw in and tighten six screws (5) with lockwashers (6).
4. Slide front tunnel (7) down over shift lever (8).
5. Aline holes in front tunnel (7) with holes in cab floor, toe board (1), and rear tunnel (4).
6. Using 7/16-inch wrench, screw in and tighten 12 screws (9) with lockwashers (10).
7. Put down companion seat (11).

END OF TASK



Section III. WINDSHIELD

17-6. CAB WINDSHIELD ASSEMBLY REMOVAL AND REPLACEMENT.

NOTE

This task is the same for the right and left side windshield assemblies. This task is shown for the right side assembly.

TOOLS: 3/8-inch wrench
7/16-inch wrench

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

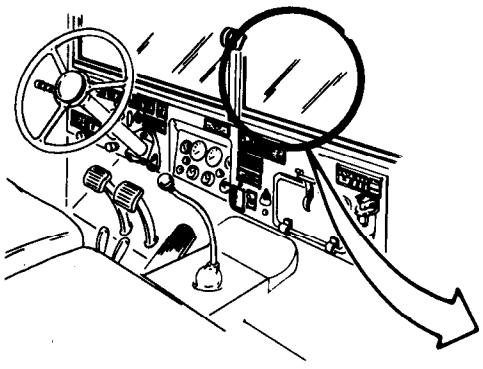
a. Preliminary Procedure. Remove windshield wiper motor. Refer to para 19-8.

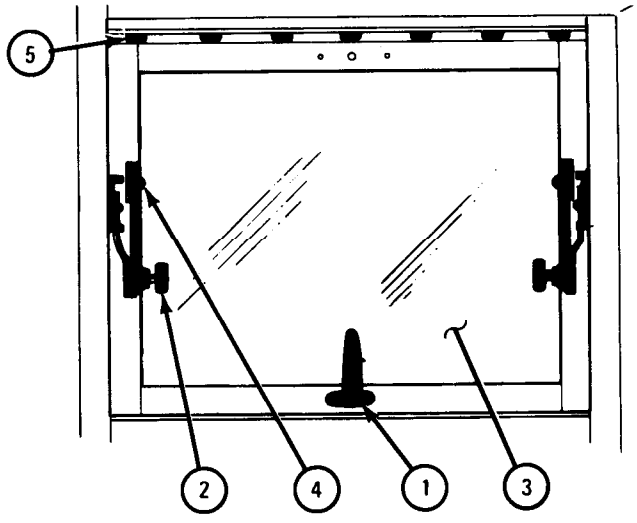
b. Removal.

FRAME 1

1. Lift up windshield lock handle (1).
2. Loosen two windshield adjusting arm thumbscrews (2).
3. Push forward on windshield lock handle (1) and open windshield assembly (3). Tighten two screws (2).
4. Using 7/16-inch wrench, unscrew and take out two screws (4).
5. Using 3/8-inch wrench, unscrew and take out seven screws (5) while holding windshield assembly (3). Take out windshield assembly.

END OF TASK





TA 045840

c. Replacement.

FRAME 1

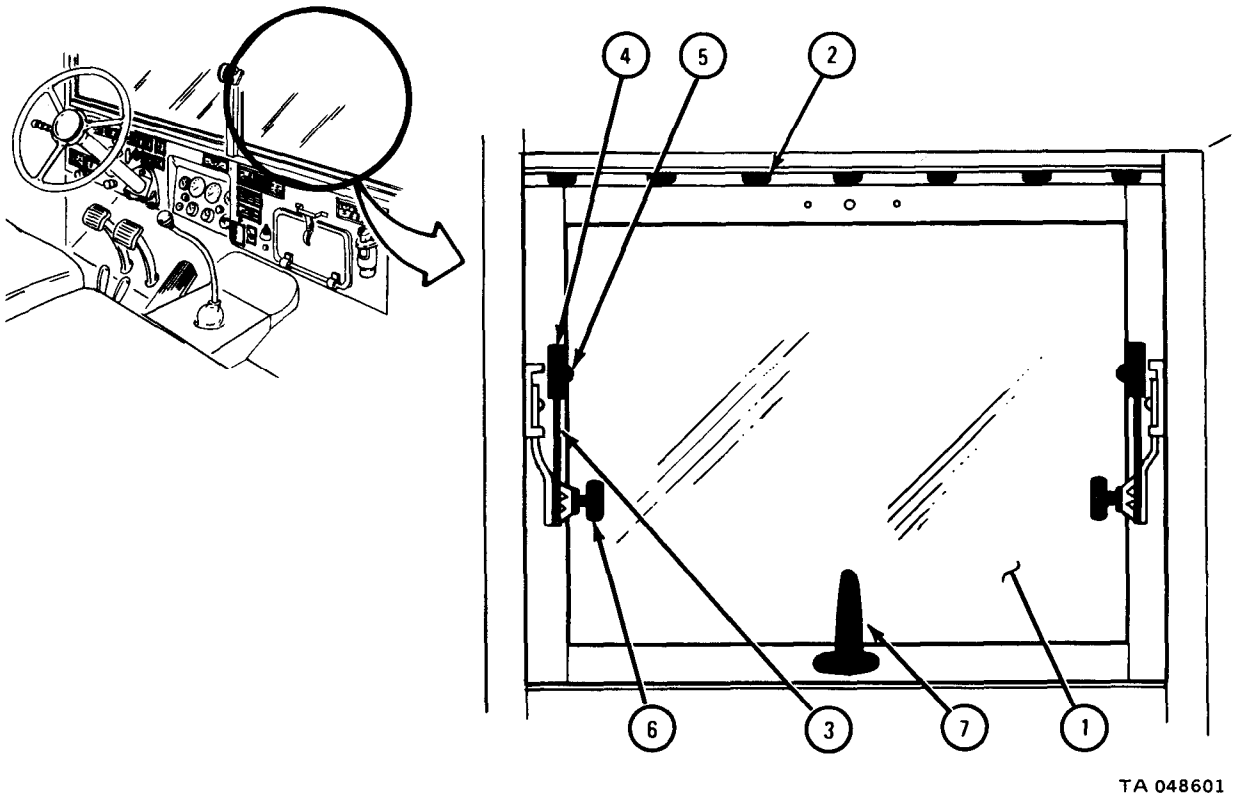
1. Put windshield assembly (1) in place as shown.
2. Using 3/8-inch wrench, screw in and tighten seven screws (2).
3. Aline hole in each of two adjusting arms (3) with hole in each of two tabs (4) on side of windshield assembly (1).
4. Using 7/16-inch wrench, screw in and tighten two screws (5).
5. Loosen two windshield adjusting arm thumbscrews (6) and using windshield lock handle (7), pull windshield closed. Push windshield lock handle down.

NOTE

Follow-on Maintenance Action Required:

Replace windshield wiper motor. Refer to para 19-8.

END OF TASK



Section IV. SEATS

17-7. DRIVER'S SEAT ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 1/2-inch socket
1/2-inch wrench (2)
4-inch extension

SUPPLIES: None

PERSONNEL: One

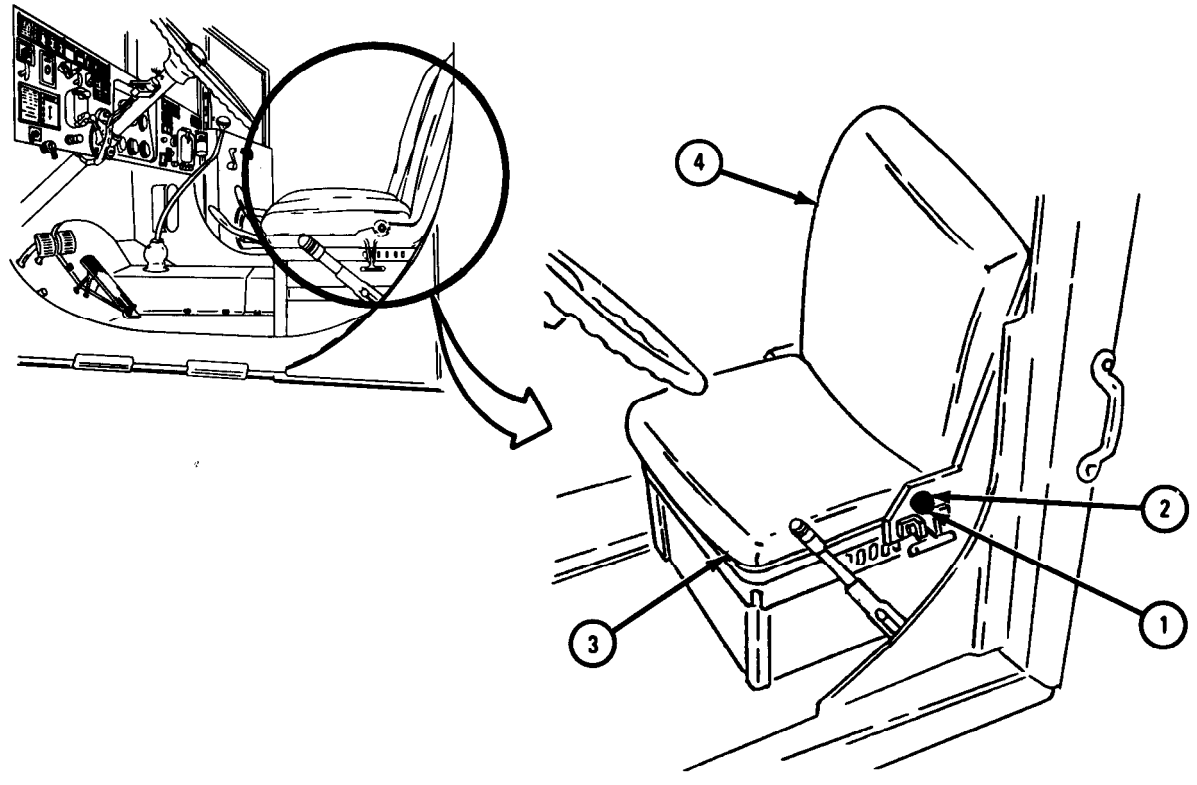
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using 1/2-inch wrenches, unscrew and takeoff screw (1) and nut (2).
2. Do step 1 again on other side of seat cushion (3).
3. Pullout seat cushion (3).
4. Pull off backrest cushion (4).

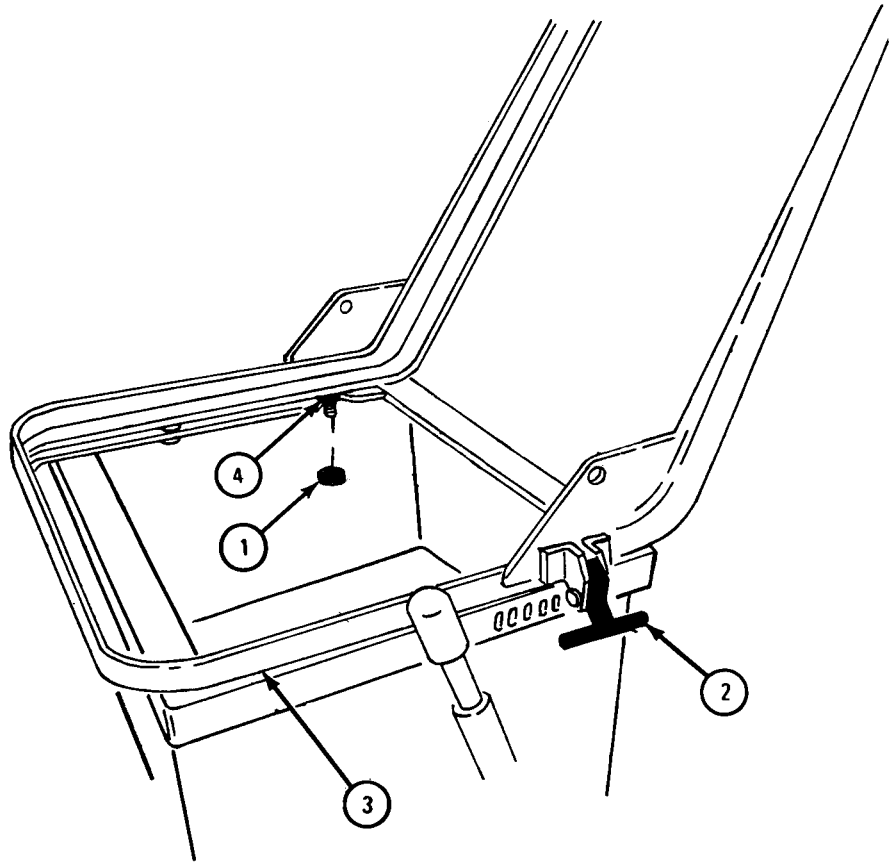
GO TO FRAME 2



FRAME 2

1. Using 1/2-inch socket with 4-inch extension, unscrew and take off four nuts (1).
2. Lift up handle (2) and hold it.
3. While holding handle (2) in up position, pull up and take off seat frame (3).
4. Take off four flat washers (4).

END OF TASK



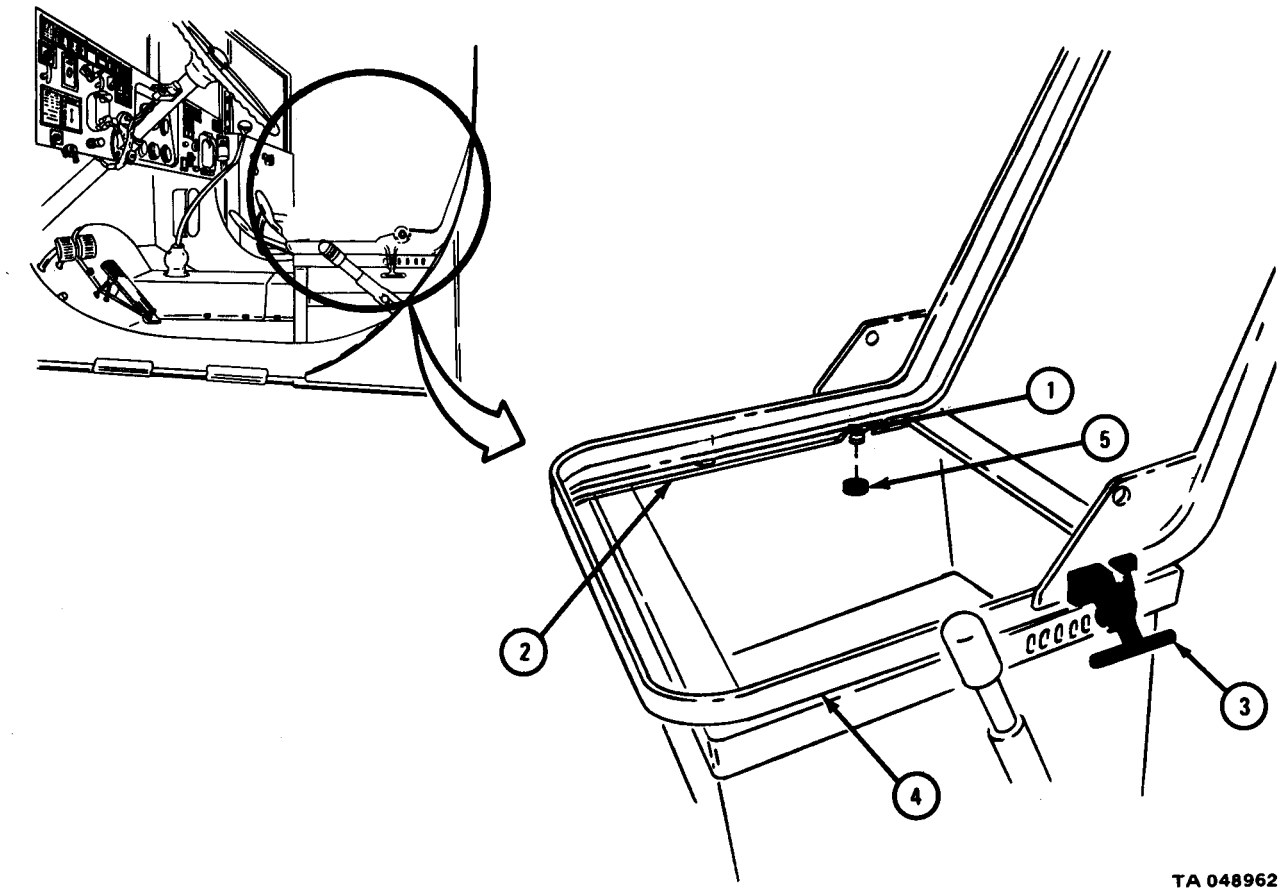
TA 048961

b. Replacement.

FRAME 1

1. Put four flat washers (1) in place on base (2). While holding handle (3) in up position, put seat frame (4) on seat base (2) as shown.
2. Using 1/2-inch socket with 4-inch extension, screw in and tighten four nuts (5).
3. Push handle down as shown.

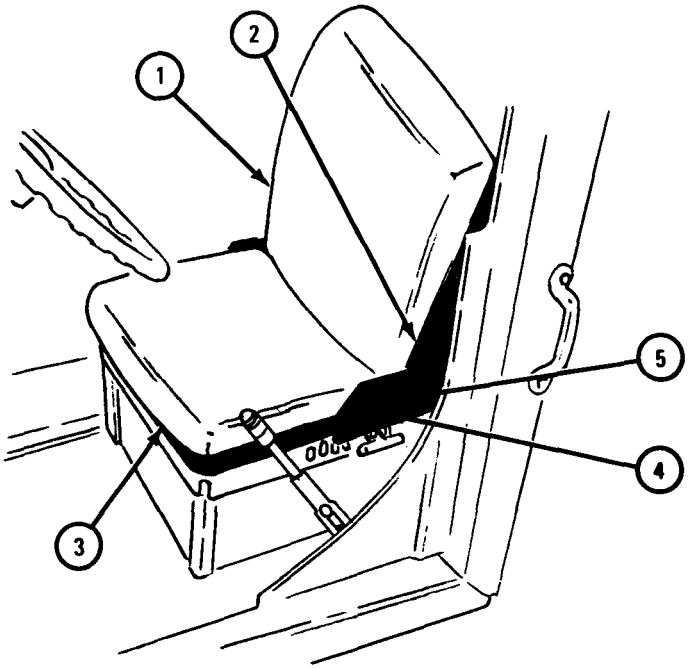
GO TO FRAME 2



FRAME 2

1. Put backrest cushion (1) into frame (2) as shown.
2. Put seat cushion (3) into frame (2) as shown.
3. Using 1/2-inch wrenches, screw in and tighten screw (4) and nut (5) on both sides of frame (2).

END OF TASK



TA 048963

17-8. COMPANION SEAT ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 1/2-inch wrench (2)
9/16-inch wrench

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

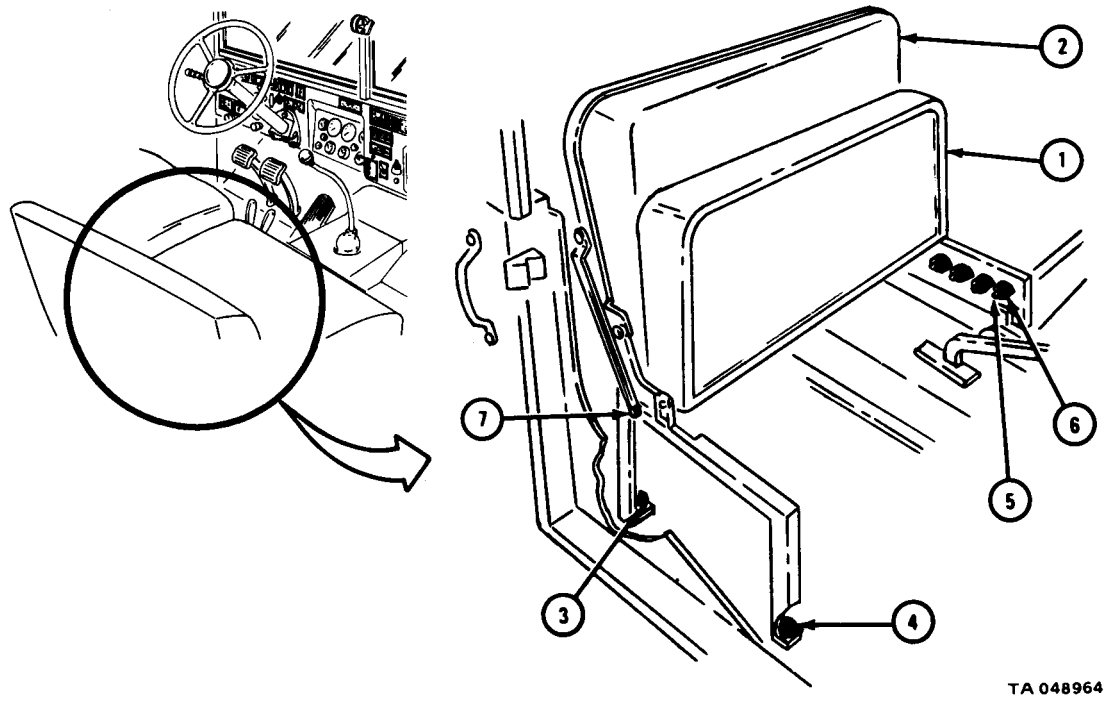
FRAME 1

1. Raise seat cushion (1) to lean against back rest cushion (2) as shown.
2. Using 9/16-inch wrench, unscrew and take out screw (3).
3. Using 9/16-inch wrench, unscrew and take out screw (4).
4. Using 1/2-inch wrenches, unscrew and take off four screws (5) and nuts (6).
5. Move seat cushion (1) down.
6. Using 1/2-inch wrench, loosen screw (7). Push backrest cushion (2) down to lean against seat cushion (1).

Soldiers A and B

7. Lift up companion seat assembly and take it out of cab.

END OF TASK



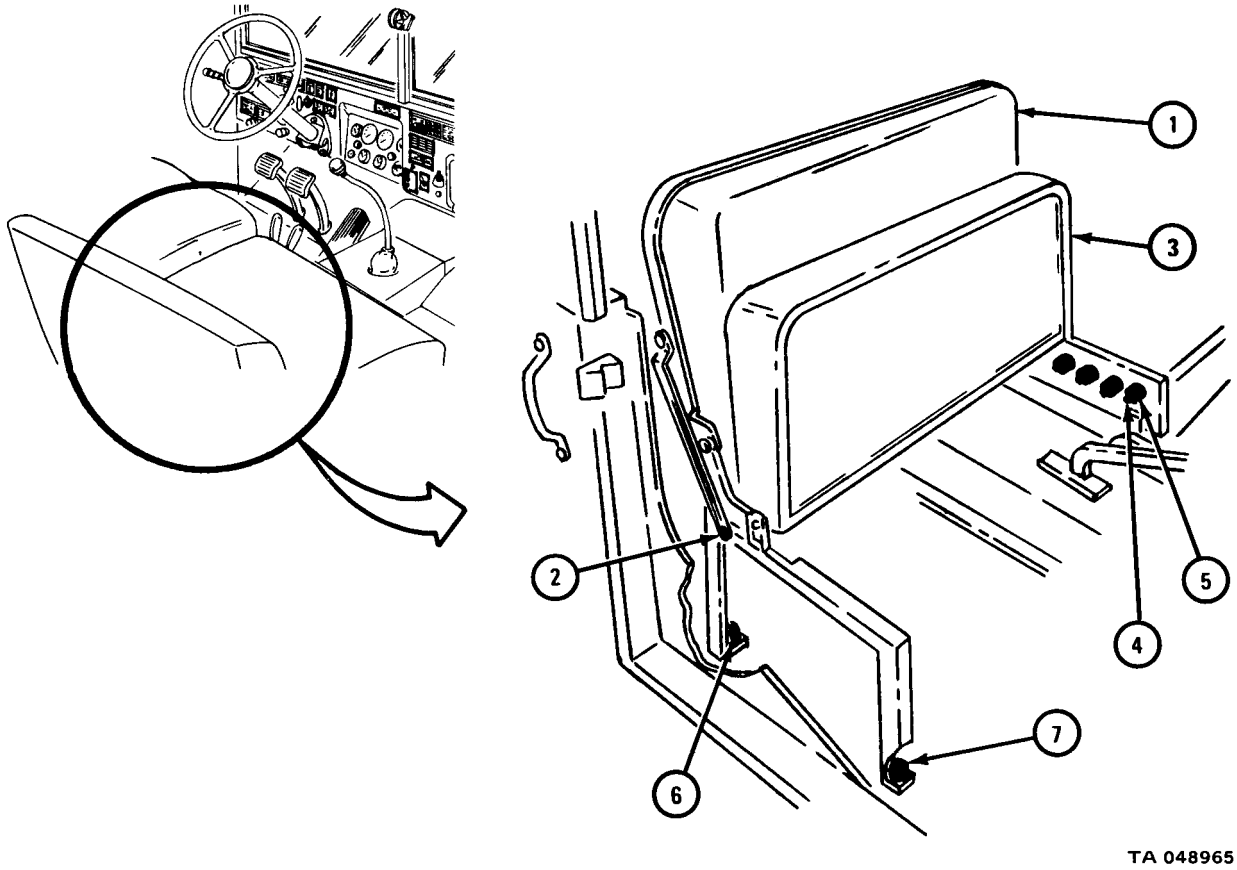
b. Replacement.

FRAME 1

Soldiers A and B

1. Put companion seat assembly into cab.
2. Raise backrest cushion (1) into position as shown.
3. Using 1/2-inch wrench, tighten screw (2).
4. Raise seat cushion (3) to lean against backrest cushion (1) as shown.
5. Using 1/2-inch wrenches, screw in and tighten four screws (4) and nuts (5).
6. Using 9/16-inch wrench, screw in and tighten screw (6).
7. Using 9/16-inch wrench, screw in and tighten screw (7).
8. Pull front of seat cushion (3) forward and down.

END OF TASK



17-9. CRANE OPERATOR'S SEAT REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: 9/16-inch wrench

SUPPLIES: None

PERSONNEL: One

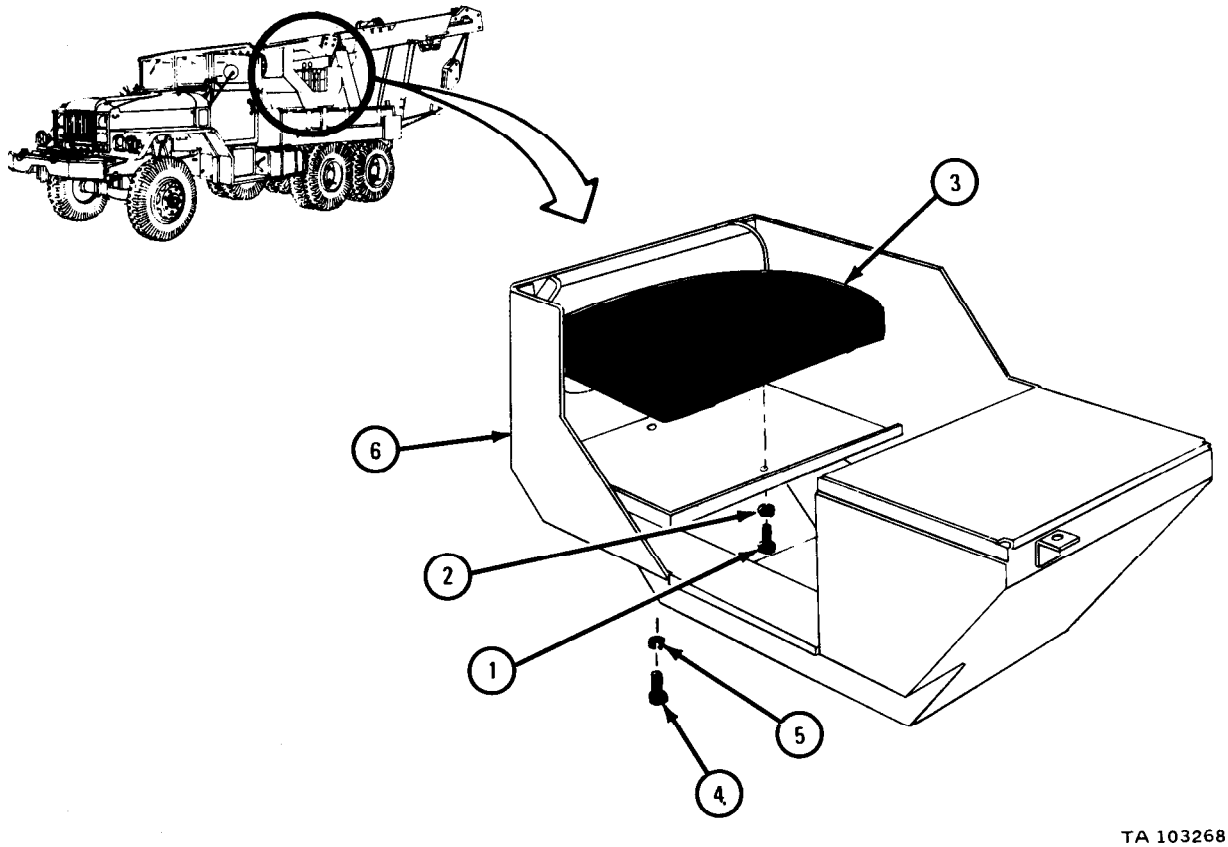
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using 9/16-inch wrench, unscrew and takeout capscrew (1) and lockwasher (2) from under seat (3).
2. Using 9/16-inch wrench, unscrew and take out cap screw (4) and lock washer (5) from under gondola (6).
3. Take out seat (3).

END OF TASK

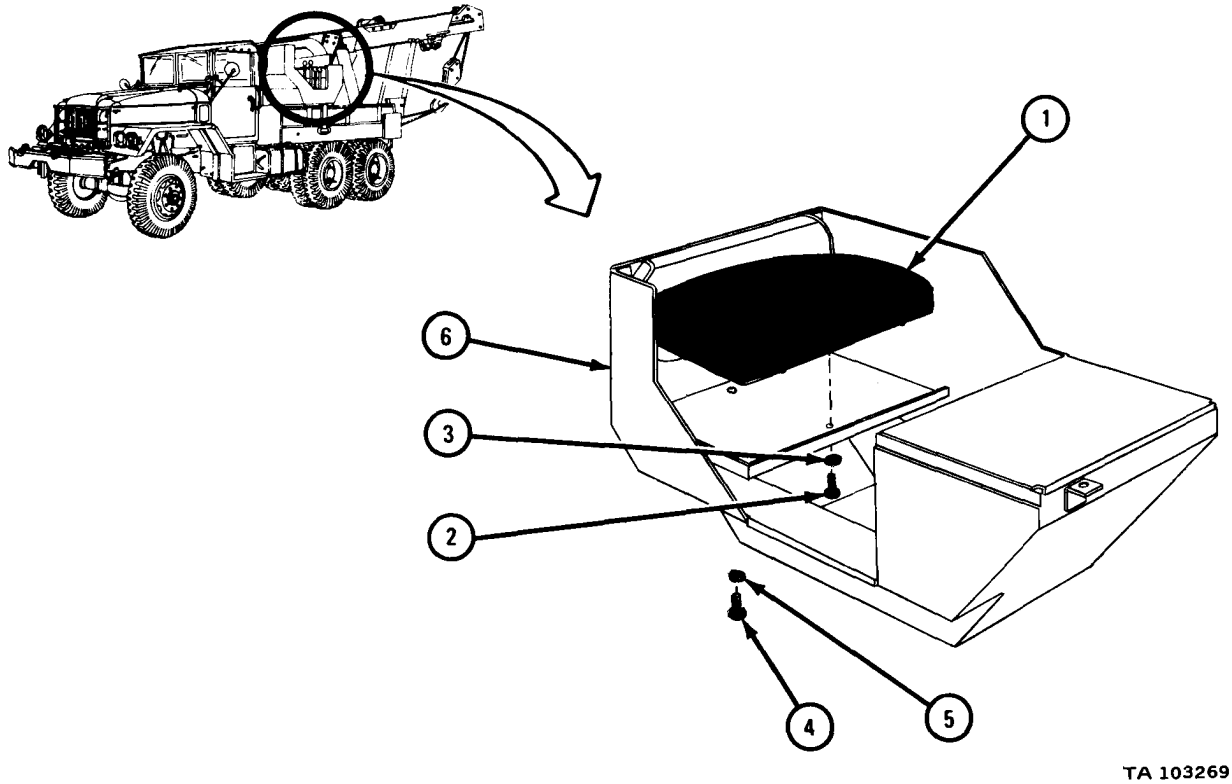


b. Replacement.

FRAME 1

1. Put seat (1) in place and aline two screw holes.
2. Using 9/16-inch wrench, screw in and tighten capscrew (2) and lockwasher (3) under seat (1).
3. Using 9/16-inch wrench, screw in and tighten capscrew (4) and lockwasher (5) under gondola (6).

END OF TASK



17-10. CRANE OPERATOR'S BACK REST REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: 9/16-inch wrench

SUPPLIES: None

PERSONNEL: One

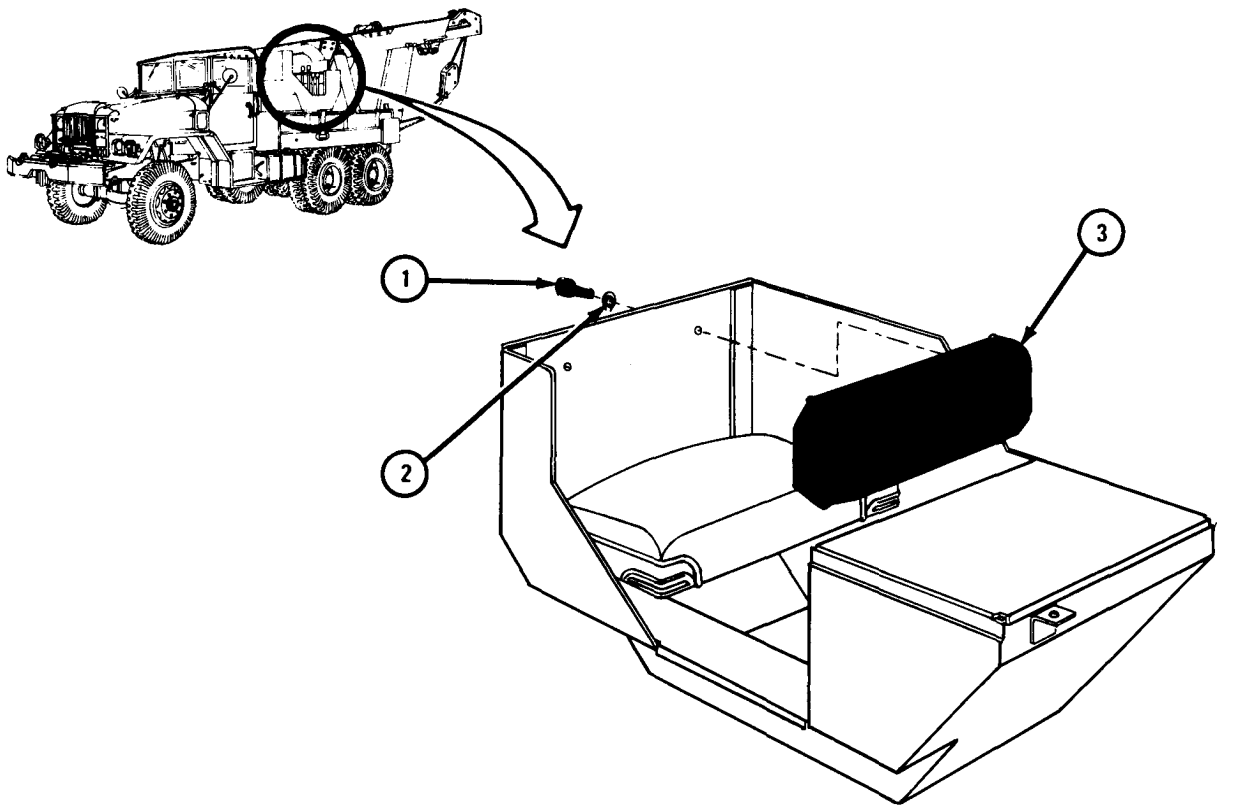
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using 9/16-inch wrench, unscrew and takeout two capscrews (1) and lockwashers (2).
2. Takeout backrest (3).

END OF TASK



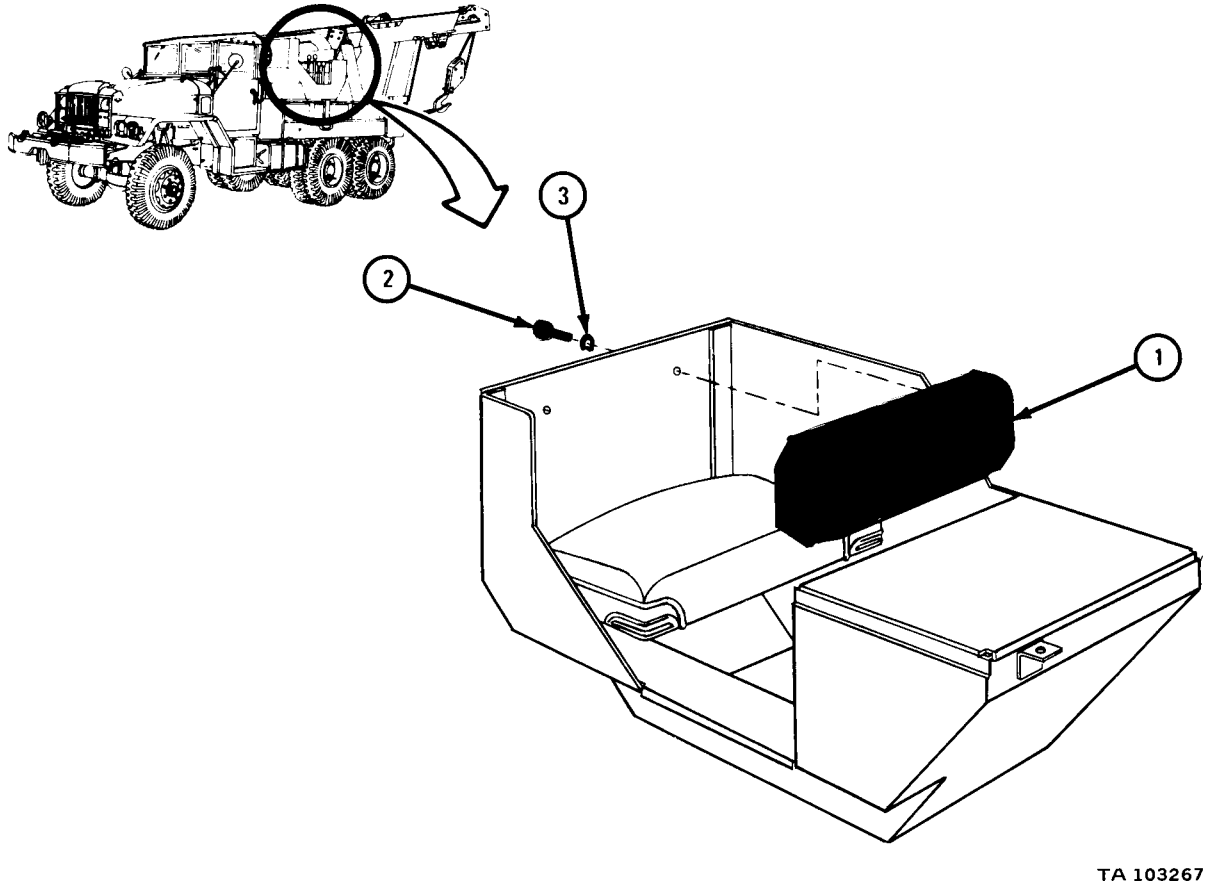
TA 103266

b. Replacement.

FRAME 1

1. Put back rest (1) in place and aline two screw holes.
2. Using 9/16-inch wrench, screw in and tighten two capscrews (2) and lockwashers (3).

END OF TASK



Section V. STOWAGE AND TOOL BOXES

17-11. LEFT TOOLBOX ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)
1/2-inch socket (2)
Ratchet

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

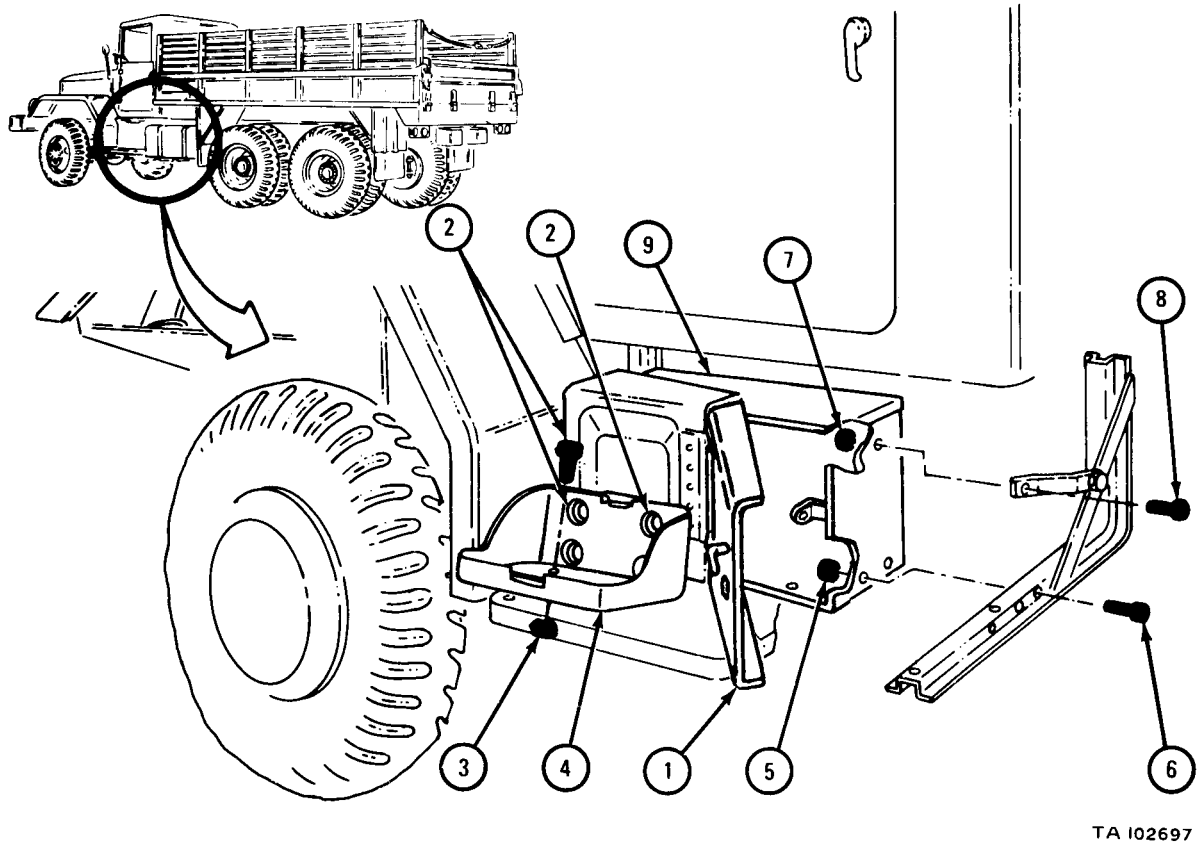
1. Open tool box door (1).
2. Using 7/16-inch wrenches, unscrew and take off eight screws (2) and eight nuts (3). Take off drum bracket (4).
3. Using 7/16-inch wrenches, hold three nuts (5) and unscrew and take out three screws (6). Take out three nuts.
4. Using 1/2-inch wrenches, hold nut (7) and unscrew and take out screw (8). Take off nut.

Soldiers A and B

5. Do steps 2 and 3 again for other side of tool box (9). Soldier B holds nuts (5) while soldier A takes out screws (6).

6. Lift off tool box (9).

END OF TASK



TA 102697

b. Replacement

FRAME 1

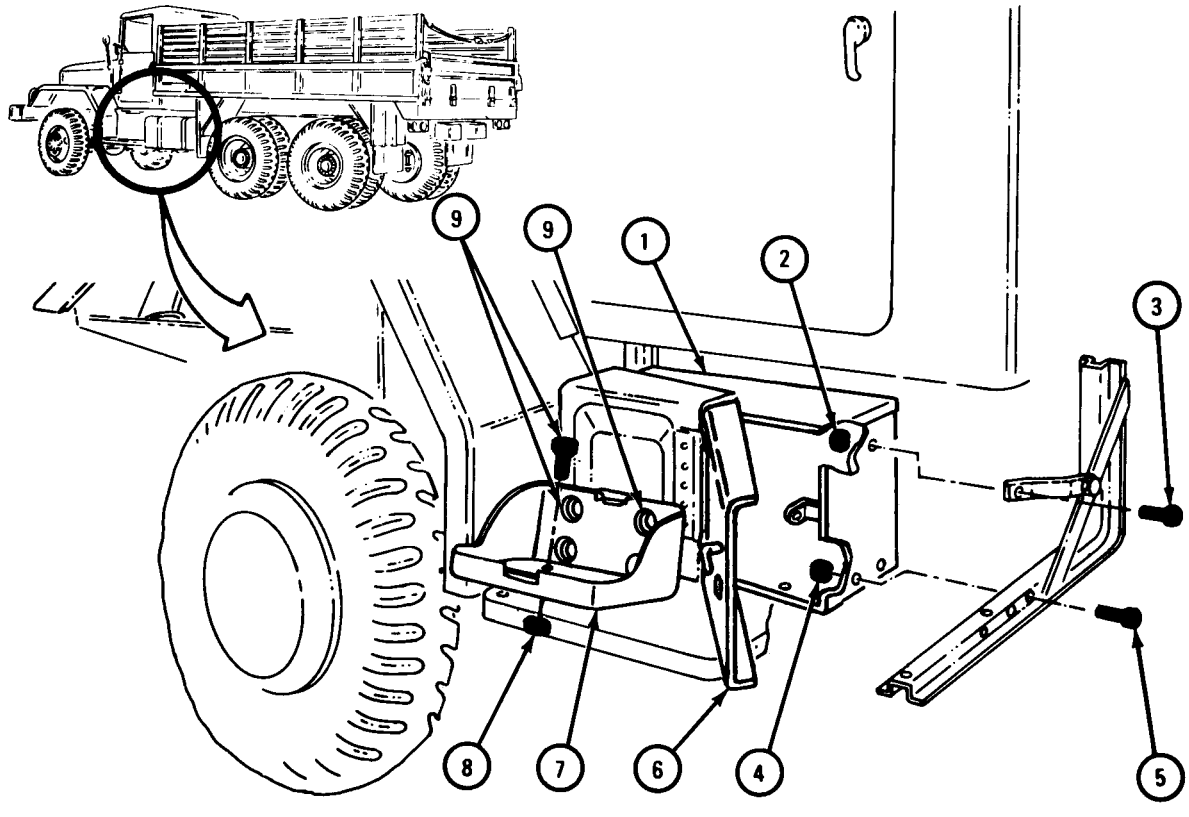
1. Put tool box (1) into place and aline screw holes.
2. Using 1/2-inch wrenches, hold nut (2) and screw in and tighten screw (3).
3. Using 7/16-inch wrenches, hold three nuts (4) and screw in and tighten three screws (5).

Soldiers A and B

4. Do steps 2 and 3 again for other side of tool box (1). Soldier B holds nuts (2) while soldier A screws in and tightens screws (3).

5. Put drum bracket (7) in place. Using 7/16-inch wrenches, hold eight nuts (8) and screw in and tighten eight screws (9).
6. Close tool box door (6).

END OF TASK



TA 102697

17-12. PIONEER STOWAGE TOOLBOX ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M52A2 WITHOUT WINCH AND TRUCK M543A2 WITH WINCH).

TOOLS: 9/16-inch wrench (2)
7/16-inch wrench
9/16-inch socket wrench
7/16-inch socket wrench
Cross-tip screwdriver (Phillips type)

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

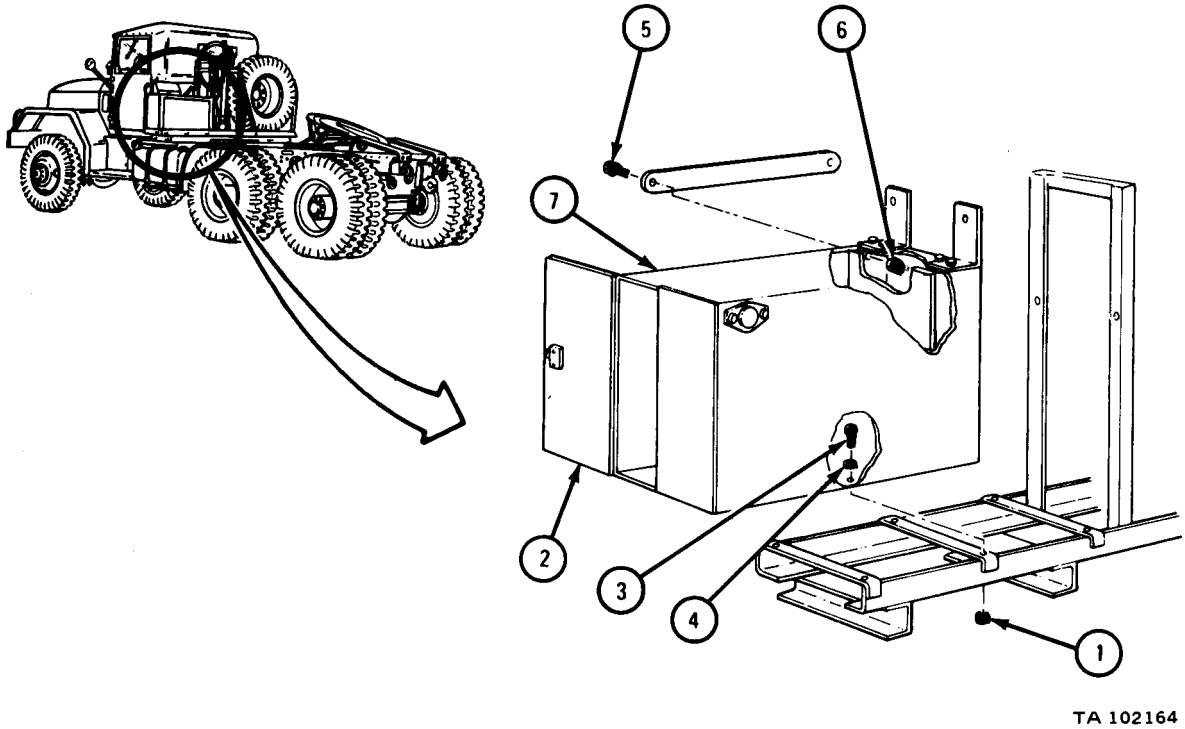
a. Preliminary Procedure. Remove pioneer tools.

b. Removal.

FRAME 1

Soldier A	1.	Using 9/16-inch wrench, hold six self-locking nuts (1).
Soldier B	2.	Open toolbox door (2).
	3.	Working inside toolbox and using 9/16-inch wrench, unscrew and take off six capscrews (3) and six flat washers (4).
	4.	Take off self-locking nuts (1).
	5.	Using 9/16-inch wrenches, unscrew and take off capscrew (5) and self-locking nut (6).
Soldiers A and B	6.	Liftoff toolbox (7).

END OF TASK



TA 102164

c. Replacement.

FRAME 1

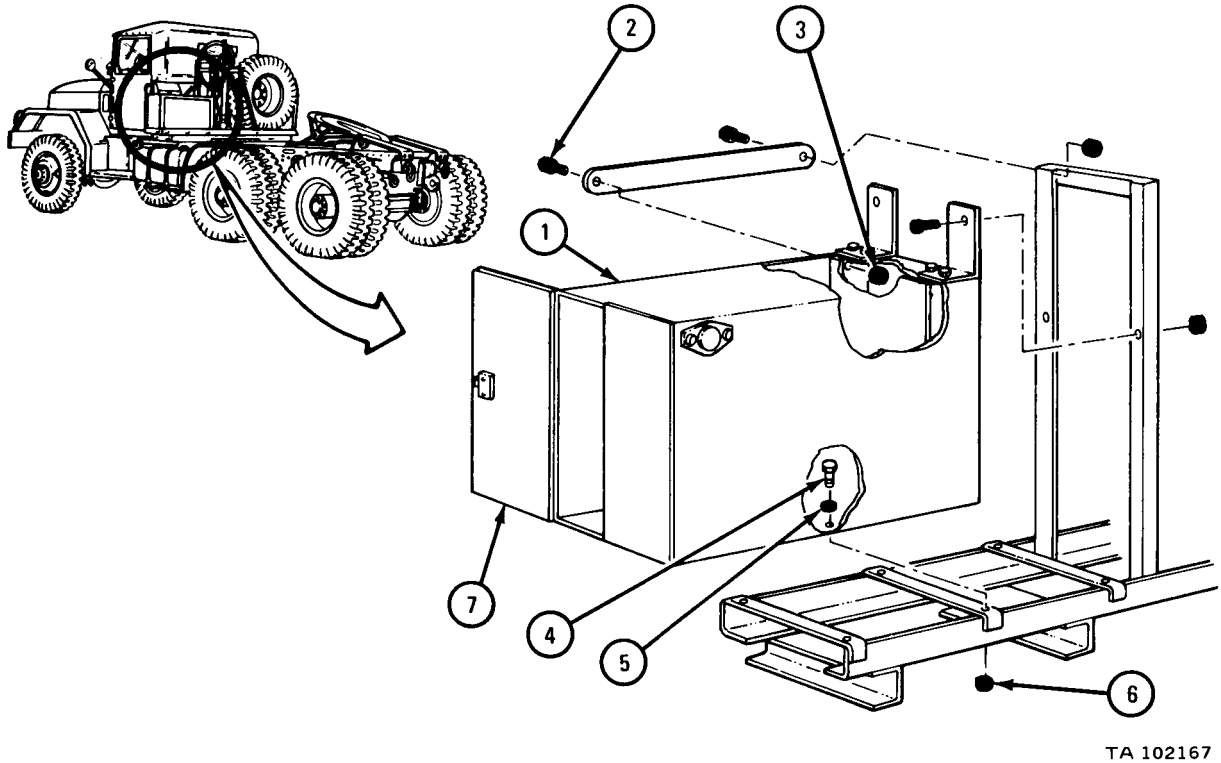
Soldiers A and B	1.	Lift tool box (1) into place, alining holes.
Soldier A	2.	Using 9/16-inch wrenches, screw in and tighten capscrew (2) and self-locking nut (3).
	3.	Working inside tool box, put in six capscrews (4) and six flat washers (5). Using 9/16-inch wrench, hold six capscrews (4).
Soldier B	4.	Using 9/16-inch wrench, screw on and tighten six self-locking nuts (6).
	5.	Close tool box door (7).

NOTE

Follow-on Maintenance Action Required:

Replace pioneer tools in pioneer tool bracket.

END OF TASK



TA 102167

17-13. PIONEER TOOL SET BRACKET ASSEMBLY AND PIONEER TOOL BRACKET REMOVAL, REPAIR, AND REPLACEMENT (TRUCKS M51A2, M52A2, M54A2. M54A2C, and M55A2).

TOOLS: 9/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Remove pioneer tools from bracket.

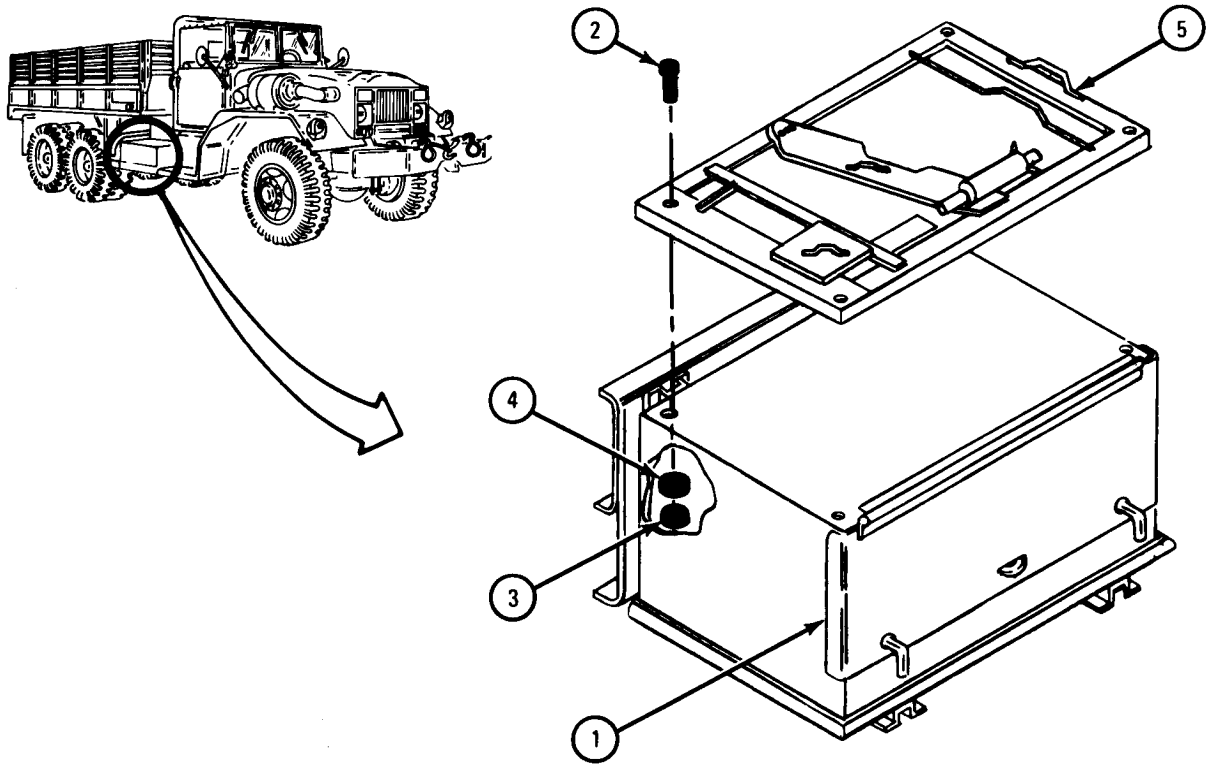
b. Removal.

(1) Cargo trucks (M54A2, M54A2C, and M55A2).

FRAME 1

1. Open toolbox door (1).
2. Using 9/16-inch wrenches, unscrew and take out four screws (2), nuts (3), and washers (4).
3. Takeoff pioneer tool bracket (5).

END OF TASK

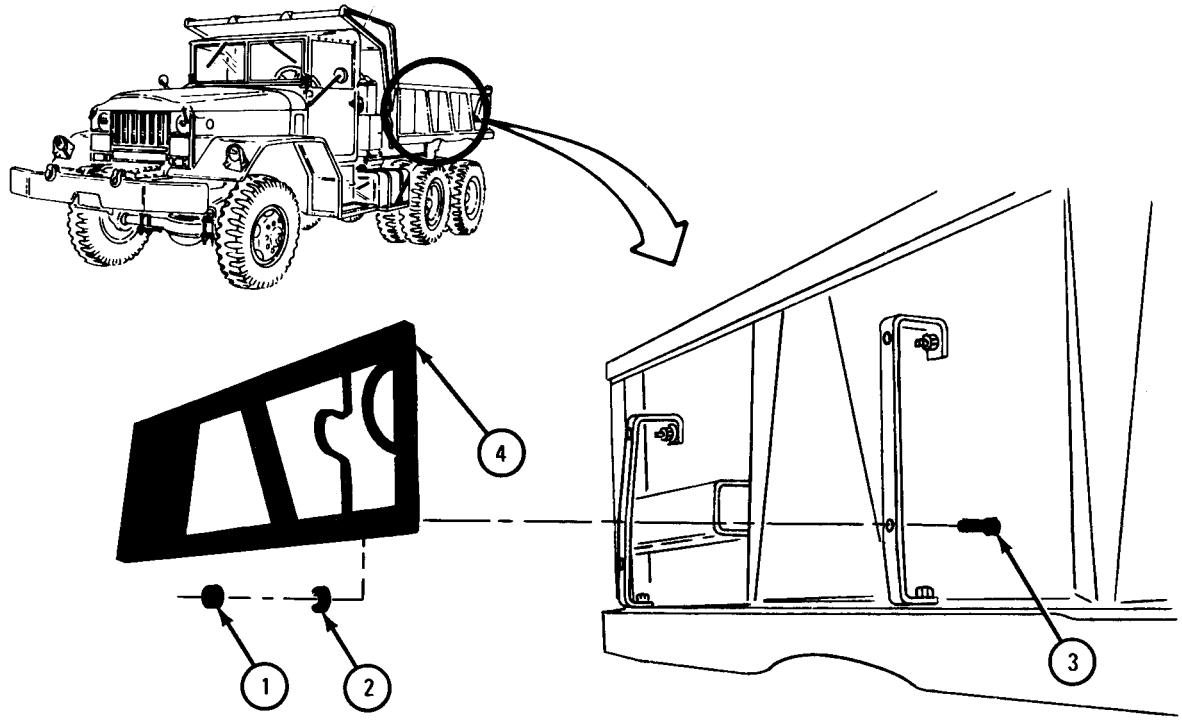


(2) Dump body truck (M51A2).

FRAME 1

1. Using 9/16-inch wrenches, unscrew and take off four nuts (1) and four lockwashers (2). Take out four screws (3).
2. Take off pioneer tool rack (4).

GO TO FRAME 2

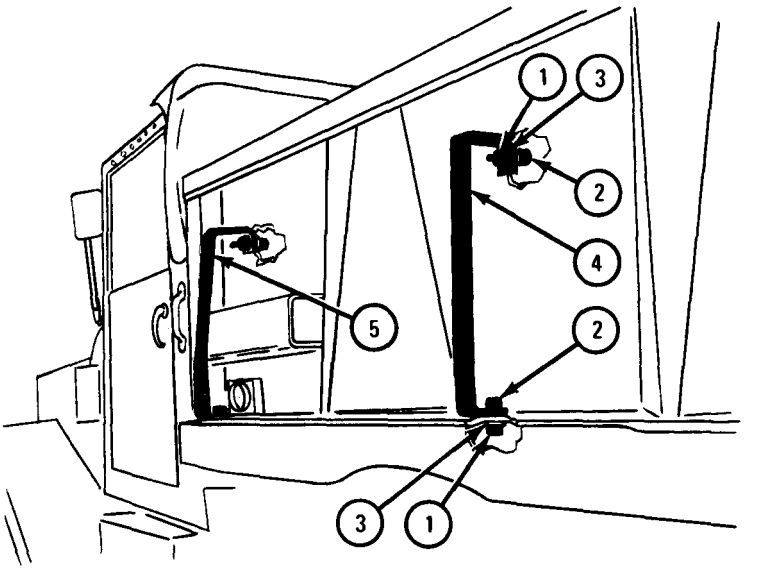


TA 104023

FRAME 2

1. Using 9/16-inch wrenches, unscrew and takeoff two nuts (1). Take out two screws (2) and two lockwashers (3).
2. Take off rear bracket (4).
3. Do steps 1 and 2 again for front bracket (5).

END OF TASK



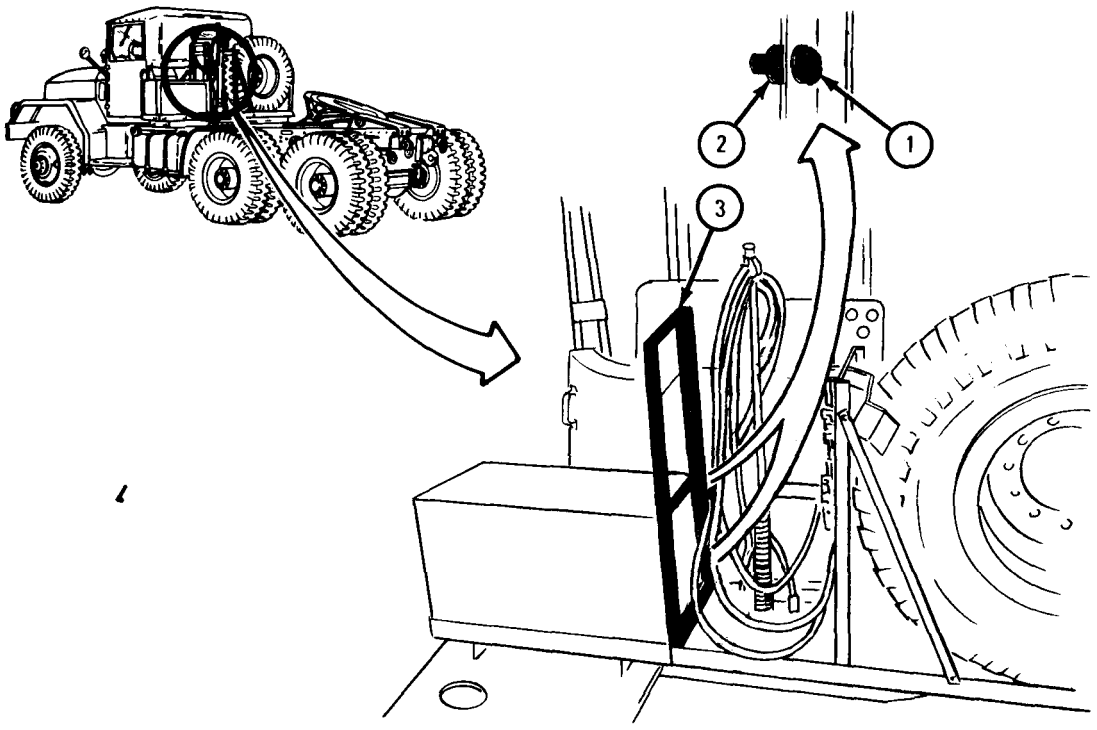
TA 104024

(3) Tractor truck (M52A2).

FRAME 1

1. Using 9/16-inch wrenches, unscrew and take out four screws (1) and locknuts (2).
2. Take off pioneer tool bracket (3).

END OF TASK



TA 102148

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

c. Cleaning. Clean pioneer tool bracket with solvent.

d. Inspection and Repair. Check that pioneer tool bracket has no bends, dents, cracks or welding defects. Repair by welding or straightening. Refer to TM 9-237 and FM 43-2.

e. Replacement.

(1) Cargo trucks (M54A2, M54A2C, and M55A2).

FRAME 1

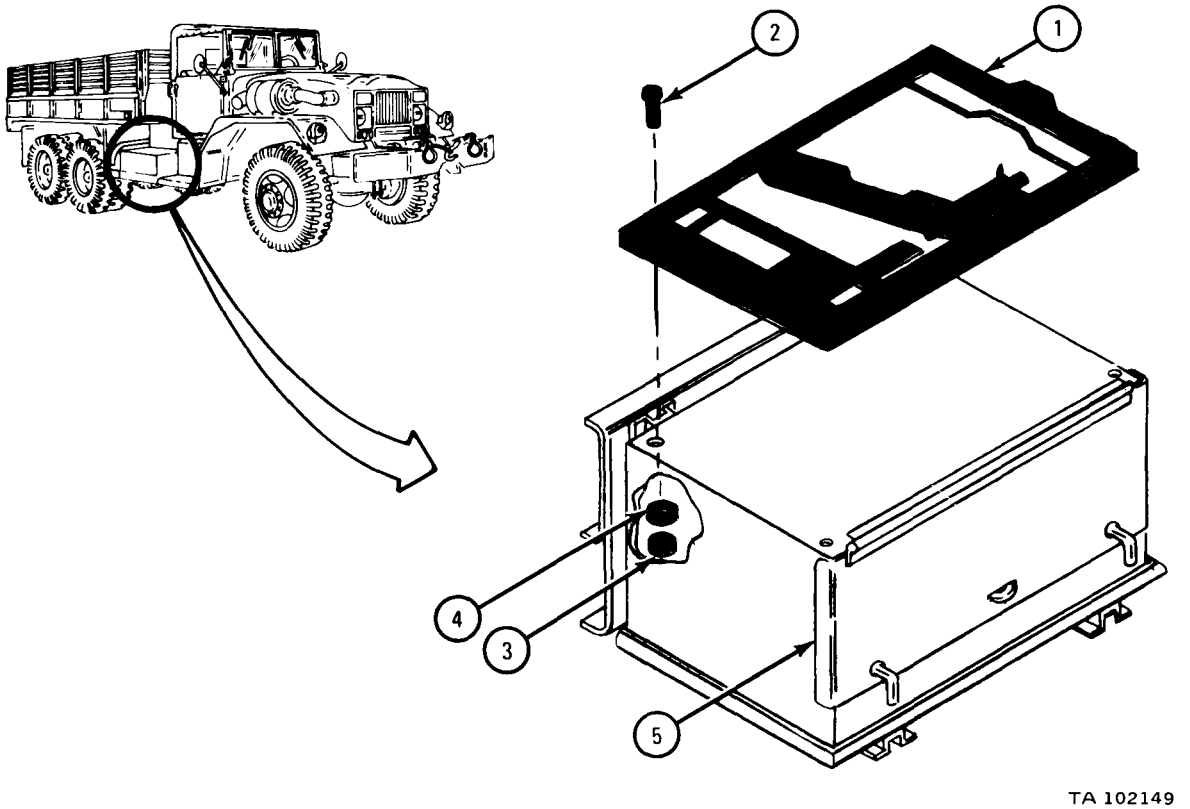
1. Put pioneer tool bracket (1) in place.
2. Using 9/16-inch wrenches, screw in and tighten four screws (2), nuts (3), and washers (4).
3. Close tool box door (5).

NOTE

Follow-on Maintenance Action Required:

Put pioneer tools back in pioneer tool bracket.

END OF TASK

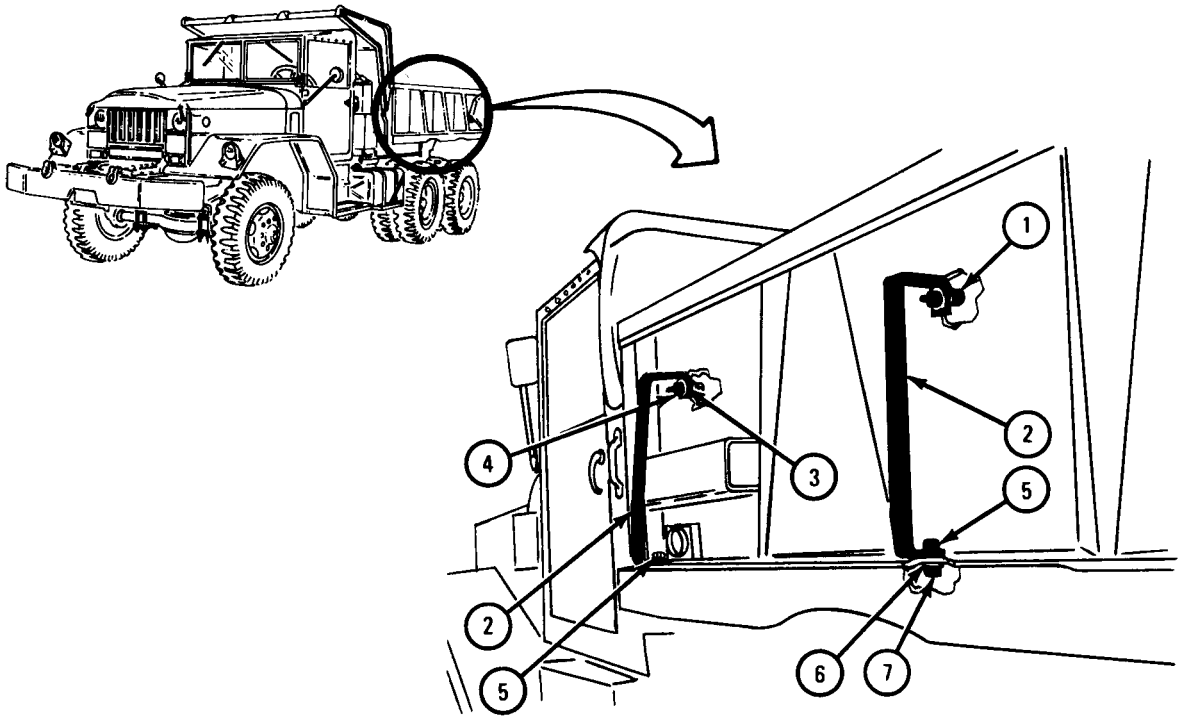


(2) Dump body truck (M51A2).

FRAME 1

1. From inside of dump body, put two screws (1) in place.
2. Put two braces (2) on screws (1).
3. Using 9/16-inch wrenches, screw on and tighten lockwashers (3) and nuts (4).
4. Put two screws (5) through holes in bottom of braces (2).
5. Using 9/16-inch wrenches, screw on and tighten two lockwashers (6) and nuts (7).

GO TO FRAME 2

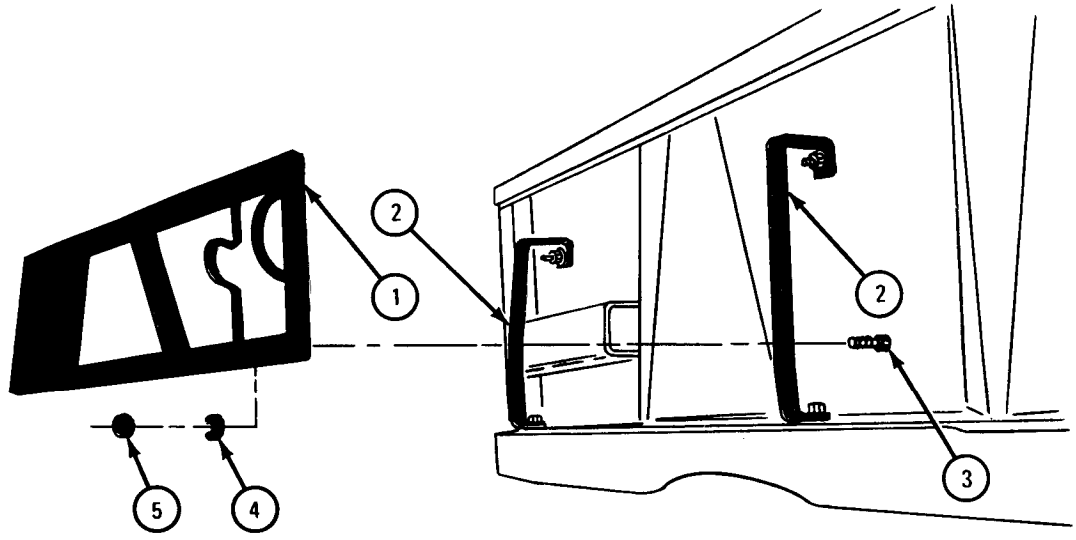


TA 104025

FRAME 2

1. Hold pioneer rack (1) in place against brackets (2).
2. Put four screws (3) through holes in rack (1) and brackets (2).
3. Put four lockwashers (4) on screws (3).
4. Using 9/16-inch wrenches, screw on and tighten four nuts (5).

END OF TASK



TA 104026

(3) Tractor truck (M52A2).

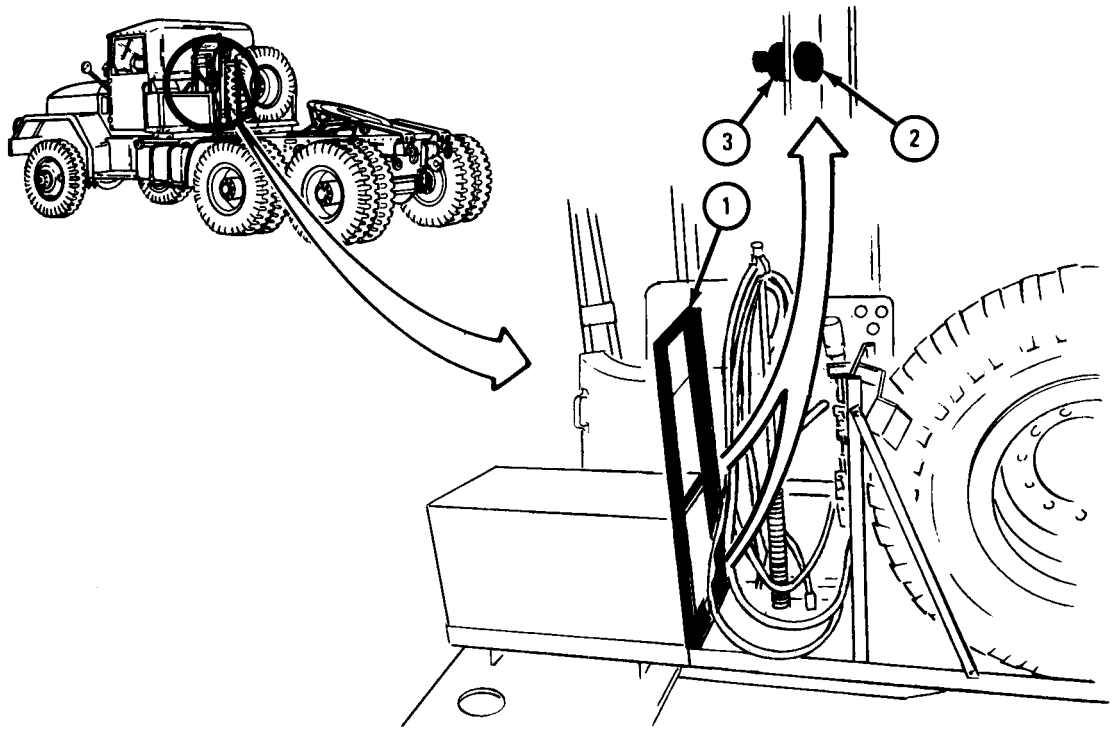
FRAME 1

1. Put pioneer tool bracket (1) in place.
2. Using 9/16-inch wrenches, screw in and tighten four screws (2) and nuts (3).

NOTE

Follow-on Maintenance Action Required:
Put pioneer tools back in pioneer tool bracket.

END OF TASK



TA 102152

Section VI. CARGO BODY COMPONENTS

17-14. TAILGATE CONTROL LINKAGE ADJUSTMENT (TRUCK M51A2).

TOOLS: 15/16-inch combination box and open end wrench

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

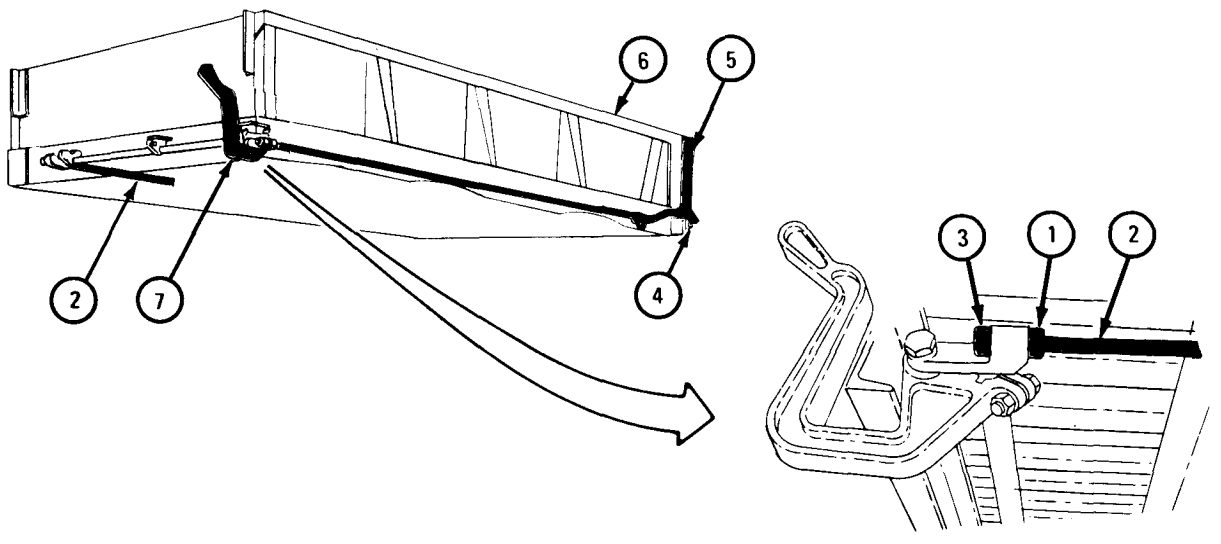
NOTE

To raise and lower dump body, and open and close tailgate, refer to TM 9-2320-211-10.

FRAME 1

1. Using wrench, loosen central rod nuts (1) and two control rods (2), one on each side of body.
2. Using wrench, screw in adjusting nut (3) until latch (4) locks tailgate (5) tightly closed.
3. Using wrench, tighten control rod nut (1).
4. Do steps 2 and 3 for other side of truck.
5. Raise dump body (6) and open tailgate control handle (7) to make sure two latches (4) let go of tailgate (5).
6. Lower dump body (6) and lock control handle (7).

END OF TASK



TA 102197

17-15. TROOP SEAT RACK ASSEMBLY REPAIR.

NOTE

This task is the same for the right and left side troop seat rack assemblies. This task is shown for the right side troop seat rack assembly.

TOOLS: Pliers
Cross-tip screwdriver (Phillips type)
1/2-inch wrench
9/16-inch wrench
Scrubbing brush
Mallet

SUPPLIES: Strong soap
Rags
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Remove rack and seat assembly from truck. Refer to TM 9-2320-211-10.

b. Disassembly of Rack and Seat Assembly.

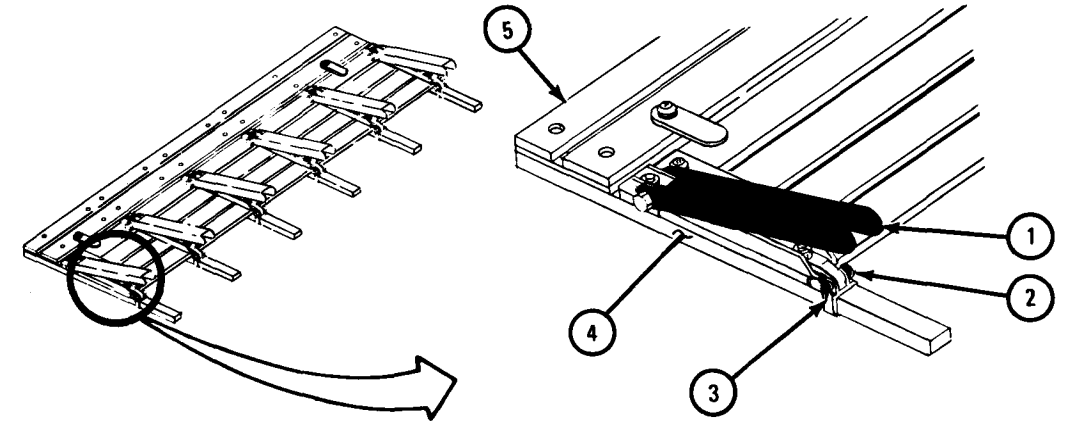
NOTE

This task is shown for six legs on side troop seat rack assembly. This task is the same for side troop seat rack assemblies with five legs.

FRAME 1

1. Lift up and hold legs (1) away from pins (2) in six places.
2. Using pliers, take out and throw away six cotter pins (3).
3. Take out six pins (2).
4. Take seat assembly (4) off rack assembly (5).

END OF TASK



c. Disassembly of Rack Assembly.

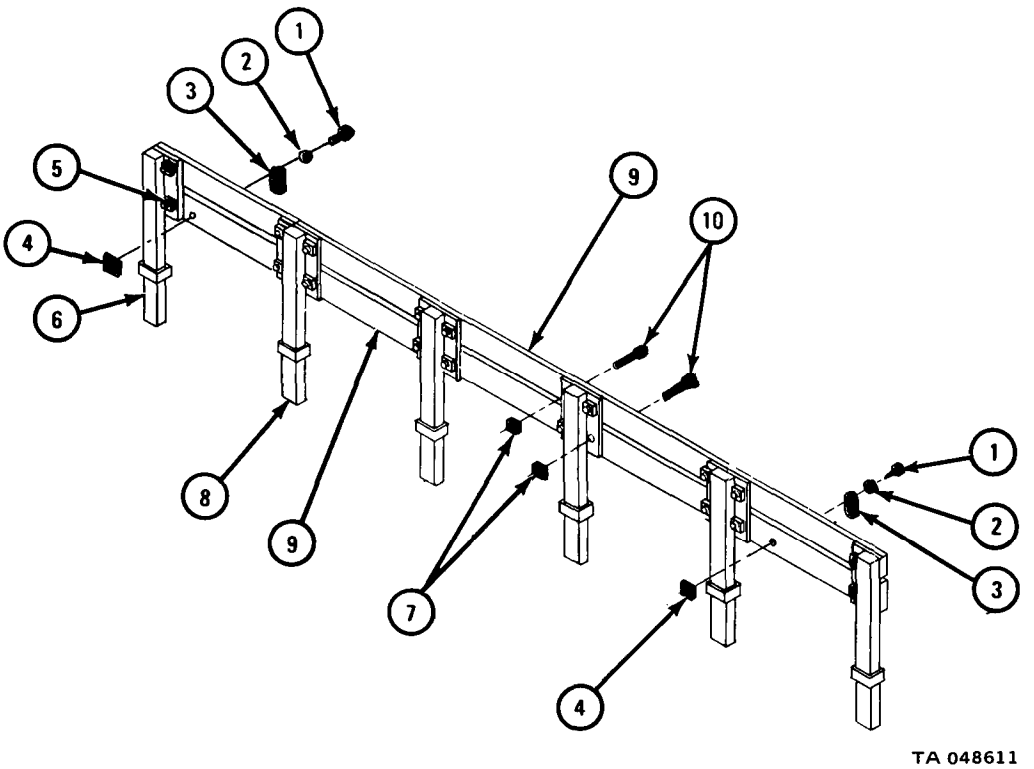
NOTE

If carriage bolts turn when taking off nuts, wood is unserviceable. Split wood away from bolt. Using 1/2-inch open end wrench, hold bolt.

FRAME 1

1. Using screwdriver and 1/2-inch wrench, unscrew and take out two screws (1). Take off two washers (2), clamps (3), and nuts (4) on each end.
2. Using 1/2-inch wrench, unscrew and take off two nuts (5) from each end bow pocket assembly (6).
3. Using 1/2-inch wrench, unscrew and take off four nuts (7) from each of center four bow pocket assemblies (8).
4. Take off boards (9).
5. Using mallet, hammer 20 square neck screws (10) out of boards (9).

END OF TASK

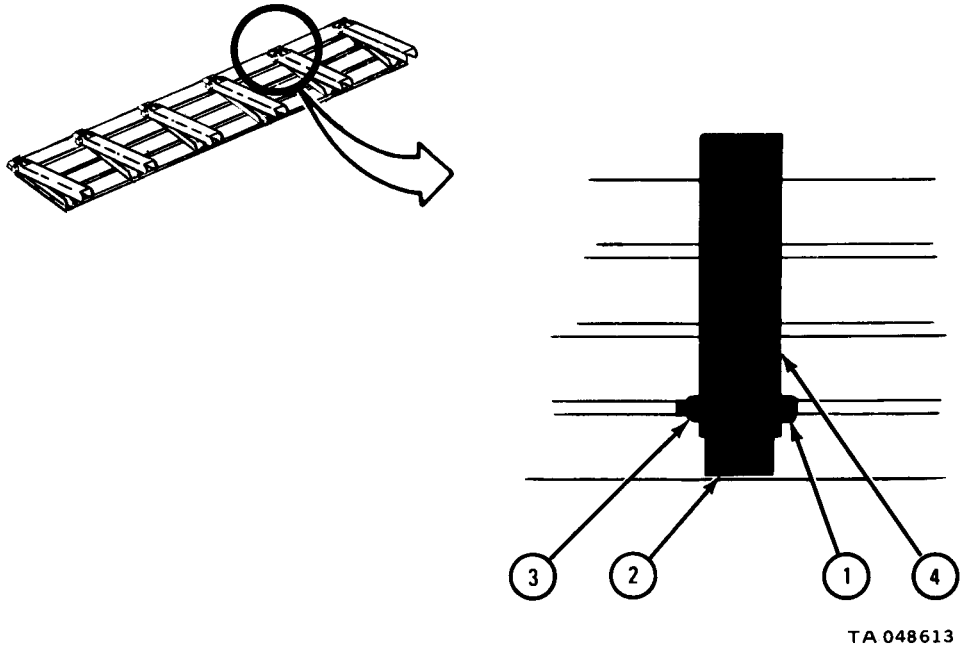


d. Disassembly of Seat Assembly.

FRAME 1

1. Using 9/16-inch wrench, hold screw (1) at each of six channels (2). Using 9/16-inch wrench, unscrew and take off six self-locking nuts (3). Takeout screws and six legs (4).

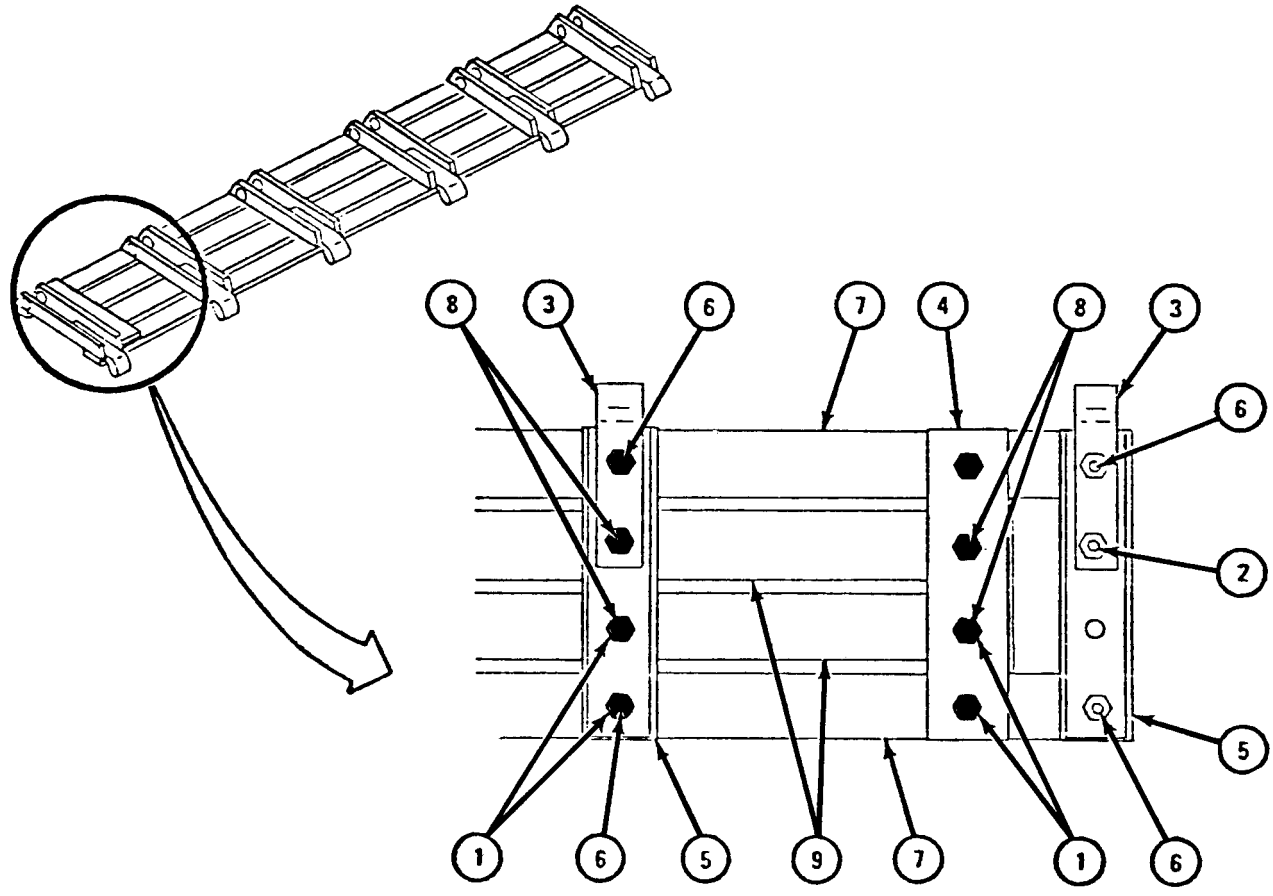
GO TO FRAME 2



FRAME 2

1. Using 1/2-inch wrench, unscrew and take off 27 nuts (1). Take out one screw (2).
2. Take off six hinges (3) and angle iron (4).
3. Take off six channels (5).
4. Using mallet, tap 27 screws (6) out of each side board (7).
5. Using mallet, tap six screws (8) out of each inside board (9).

END OF TASK



TA 048614

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

e. Cleaning.

(1) Using solvent, clean all metal parts.

(2) Dry all metal parts.

(3) Using strong soap and cold water, scrub all wood parts.

(4) Using cold water, rinse all wood parts.

f. Inspection and Repair.

(1) Check all metal parts. Throw away any bent, broken or damaged parts. Get new parts in their place.

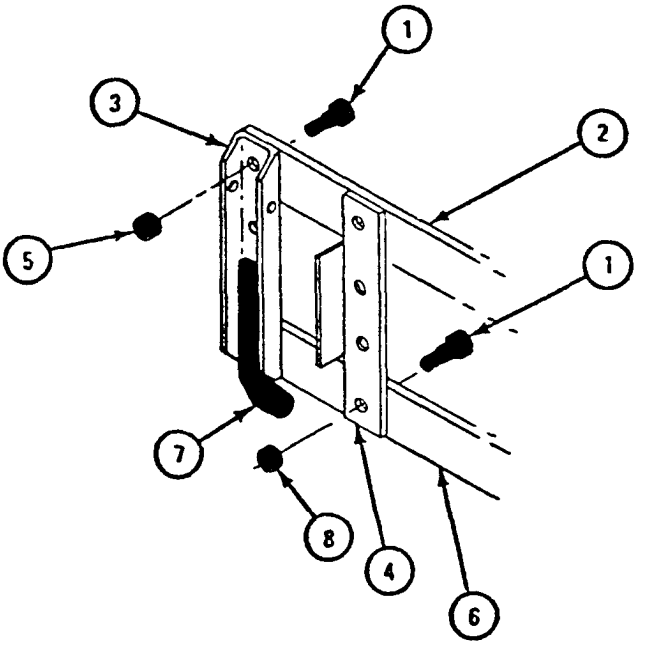
(2) Check all wood parts. Throw away any cracked, splintered or warped parts. Get new parts in their place.

g. Assembly of Seat Assembly.

FRAME 1

1. Put seven square neck screws (1) through holes in board (2) from top side of board as shown. Using mallet, tap screws in so heads are flush with board.
2. Put angle iron (3) on one screw (1) and put six channels (4) on other six screws.
3. Using 1/2-inch wrench, screw on and tighten seven nuts (5).
4. Do step 1 again for board (6).
5. Put board (6) in place so six screws go through bottom holes in channels (4) and one screw goes through bottom hole in angle iron (3).
6. Put six hinges (7) in place as shown. Using 1/2-inch wrench, screw on and tighten seven nuts (8).

GO TO FRAME 2

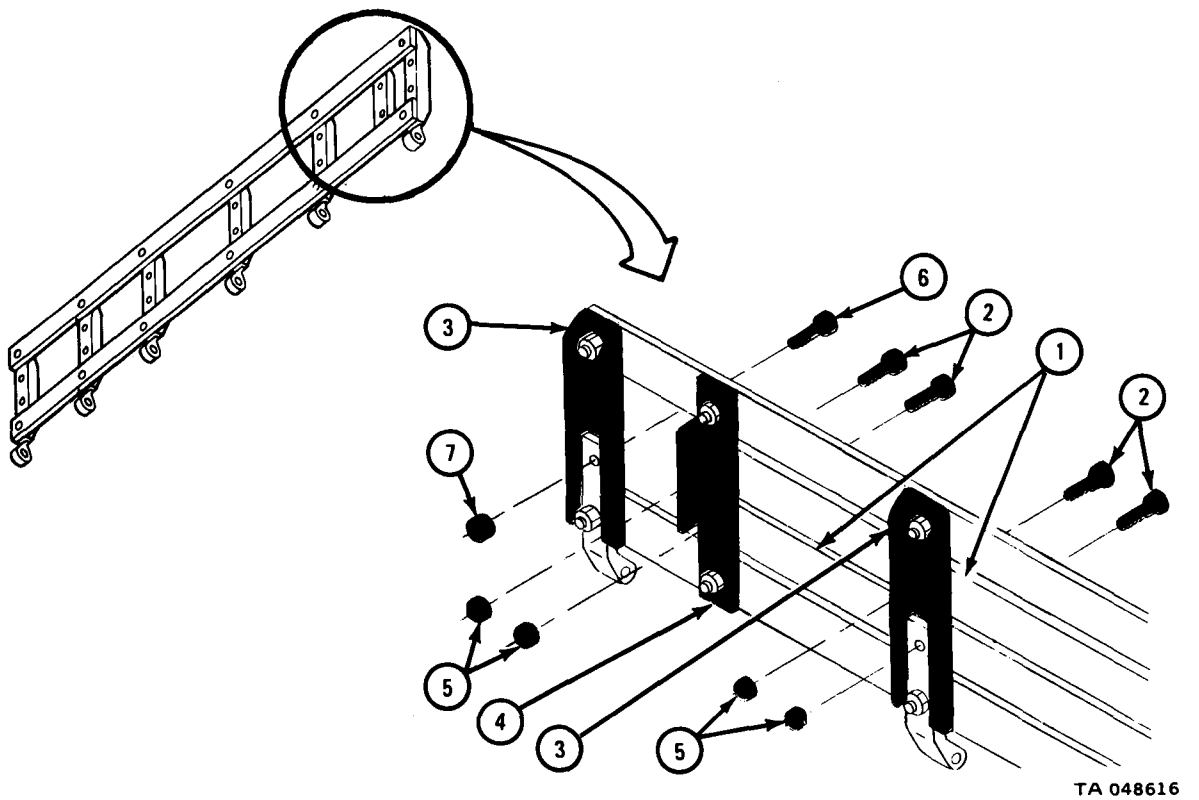


TA 048615

FRAME 2

1. Find top part of inside boards (1). Using mallet, tap 12 square neck screws (2) through holes in each inside board so screw heads are flush with board.
2. Put square neck screws (2) through holes in channels (3) and angle iron (4) as shown. Screw on and finger tighten nuts (5) on square neck screws. If screws do not come through enough to screw on nuts, using mallet, hammer screws in.
3. Push screw (6) through hole in channel (3) as shown.
4. Screw on and finger tighten nut (7). Using 1/2-inch wrench, tighten 27 nuts (5 and 7).

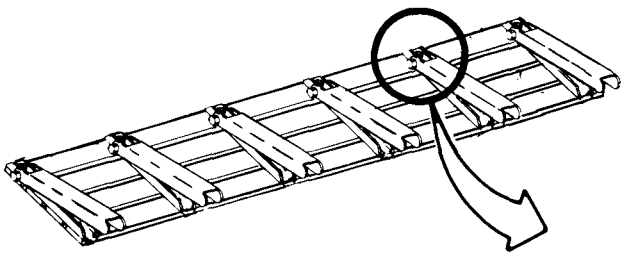
GO TO FRAME 3

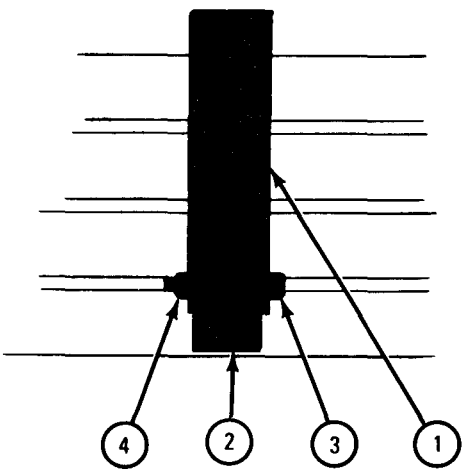


FRAME 3

1. Put legs (1) on six channels (2), lining up screw holes for machine screw (3). Put machine screw through holes in channels and legs and using 9/16-inch wrench, hold it.
2. Using 9/16-inch wrench, screw on six self-locking nuts (4). Make sure they are just snug and do not keep legs (1) from moving easily.

END OF TASK





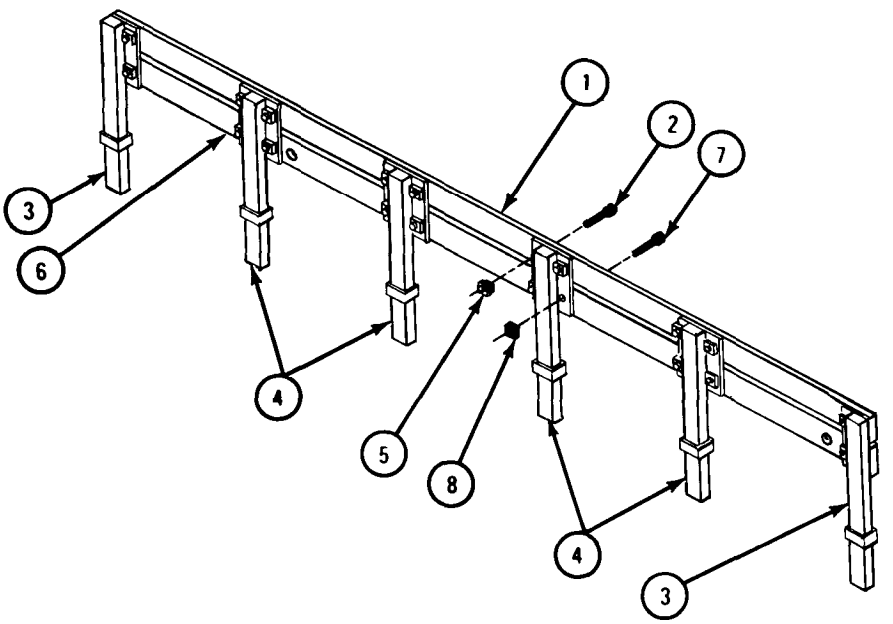
TA 048617

h. Assembly of Rack Assembly.

FRAME 1

1. Find front of board (1). Put ten square neck screws (2) through holes in board so screw heads are on front side.
2. Put square neck screws (2) through end bow pocket assemblies (3) and bow pocket assemblies (4). Using 1/2-inch wrench, screw on and tighten nuts (5) on square neck screws. If screws do not come through enough to screw on nuts, then using mallet, hammer screws in.
3. Find front of board (6). Put ten square neck screws (7) through holes in board so screw heads are on front side.
4. Put square neck screws (7) through end bow pocket assemblies (3) and bow pocket assemblies (4). Using 1/2-inch wrench, screw on and tighten nuts (8) on square neck screws. If screws do not come through enough to screw on nuts, then using mallet, hammer screws in.

GO TO FRAME 2

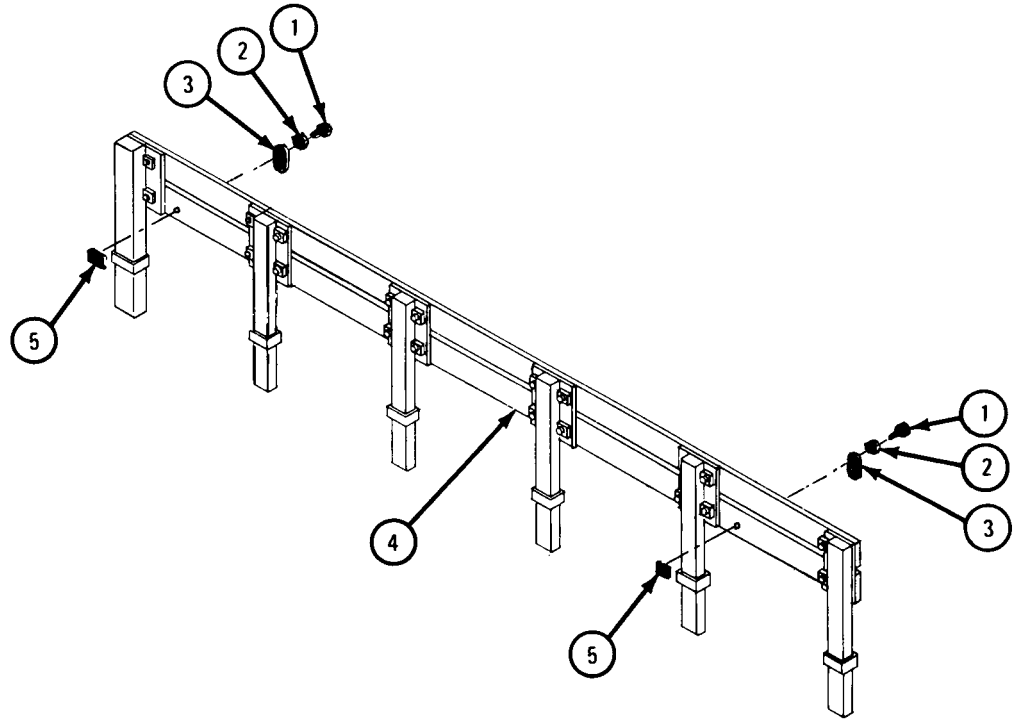


TA 048618

FRAME 2

1. Put screw (1) washer (2) and clamp (3) together as shown. Put screw, washer and clamp through hole in board (4).
2. Using 1/2-inch wrench and screwdriver, screw on and tighten nut (5).
3. Do steps 1 and 2 again on other end of board (4).

END OF TASK



TA 048619

i. Assembly of Rack and Seat Assembly.

FRAME 1

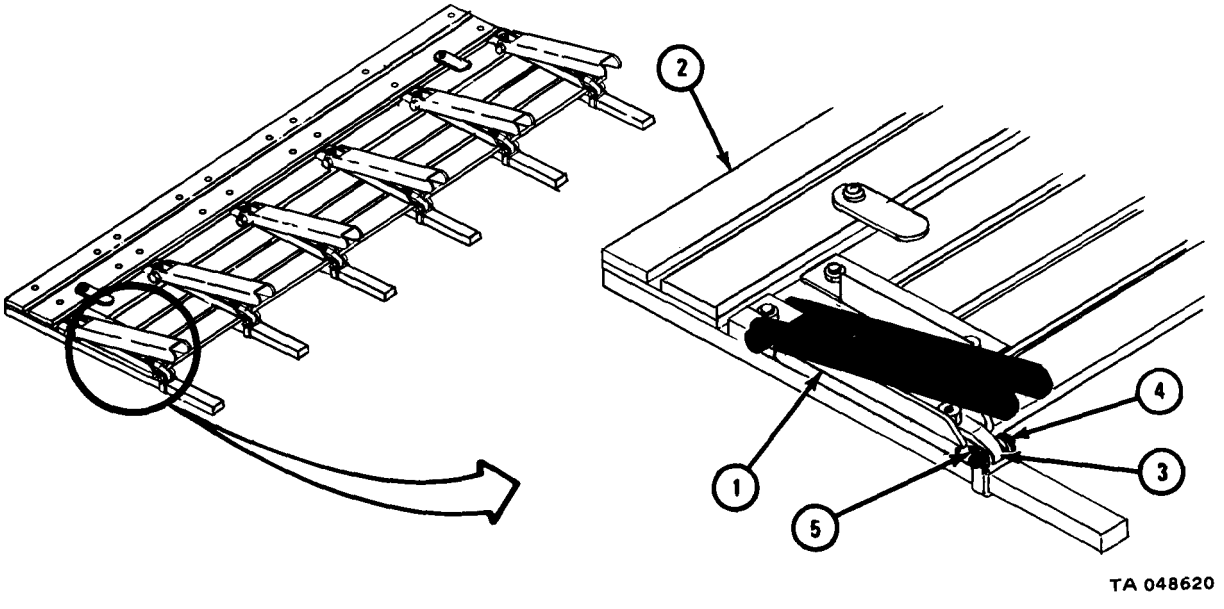
1. Put seat assembly (1) into rack assembly (2) so hinge parts (3) join together.
2. Put clevis pin (4) through hinge parts (3) in six places. Put cotter pin (5) through hole in pin. Using pliers, bend open ends of cotter pin.

NOTE

Follow-on Maintenance Action Required:

Replace rack and seat assembly in truck. Refer to TM 9-2320-211-10.

END OF TASK



CHAPTER 18

WINCH, HOIST, AND CRANE ASSEMBLIES GROUP MAINTENANCE

Section I. SCOPE

18-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for winch, hoist, and crane assemblies for which there are authorized corrective maintenance tasks at the organizational maintenance level.

18-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. WINCH, HOIST, AND CRANE ASSEMBLIES

18-3. FRONT WINCH AND REAR WINCH BRAKE TESTS AND ADJUSTMENTS.

NOTE

This task is the same for the front winch and rear winch on all trucks. This task is shown for the front winch. There is no drag brake adjustment for rear winch.

TOOLS : 9/16-inch wrench
Offset screwdriver
Leather gloves

SUPPLIES : None

PERSONNEL : Three

EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Release drum lock knob. Refer to TM 9-2320-211-10.

b. Drag Brake Test and Adjustment.

(1) Test.

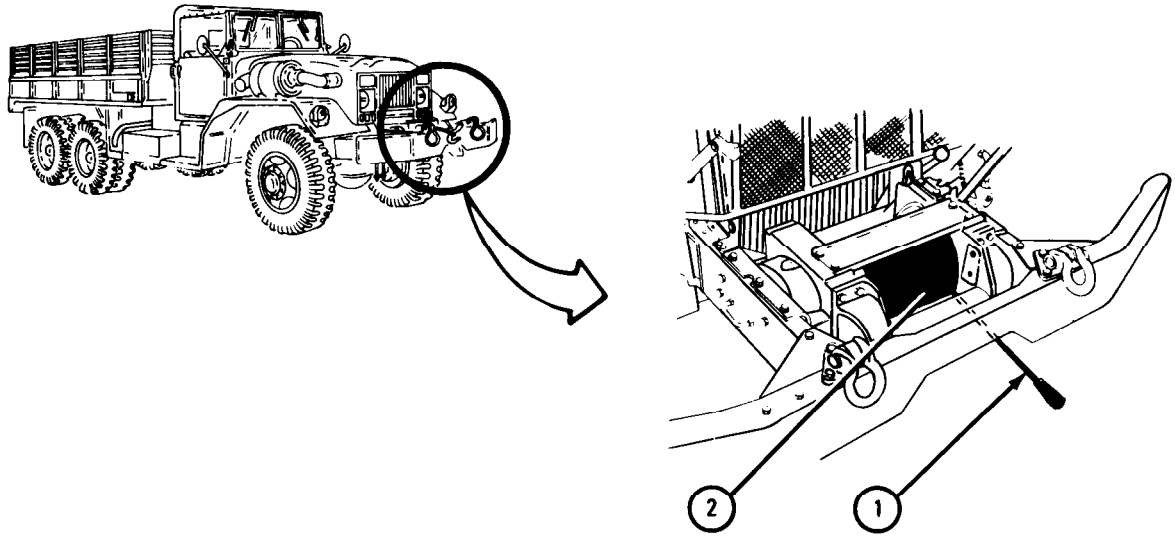
FRAME 1

WARNING

Always wear protective gloves when handling winch cable. Do not let winch cable slip through hands. Rusty or broken wires can cause serious injury.

1. Grab winch cable (1) and pull out about six feet of cable, then let go of cable quickly. If drum (2) keeps turning, do drag brake adjustment, para 18-3 (2). If drum (2) stops turning when cable (1) is let go, adjustment is correct.

END OF TASK



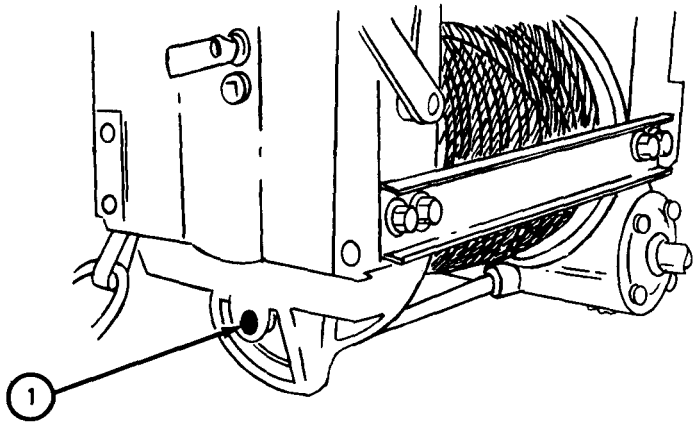
TA 104742

(2) Adjustment.

FRAME 1

1. Using offset screwdriver, screw in adjusting screw (1) 1/2 turn.
2. Do test again. Refer to para 18-3b (1).

END OF TASK



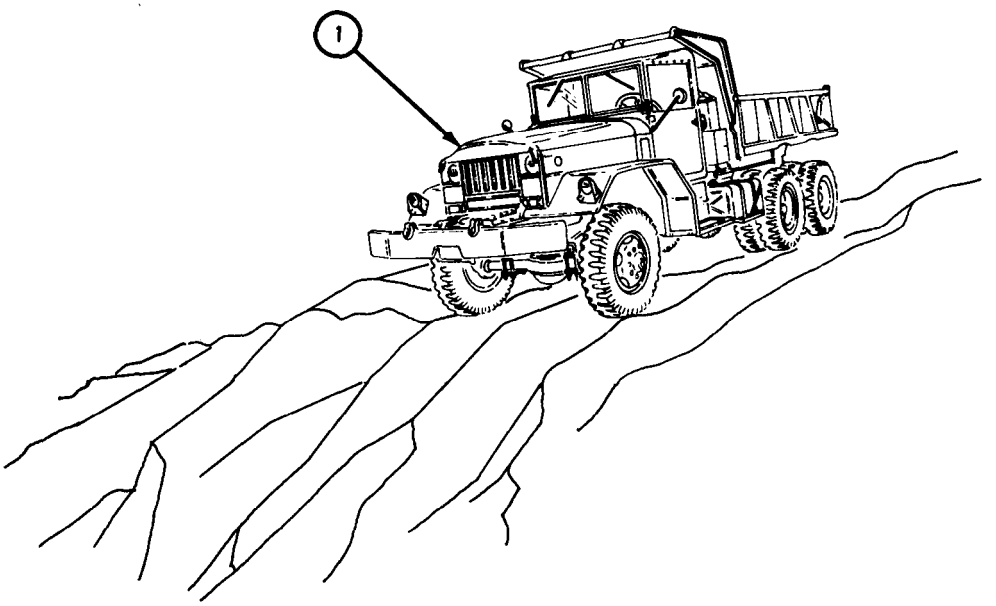
TA 104744

c. Automatic Brake Test and Adjustment.

FRAME 1

Soldier A 1. Park truck (1) with winch to be tested at top of steep grade as shown. Refer to TM 9-2320-211-10. Sit in cab with engine running throughout this task.

GO TO FRAME 2

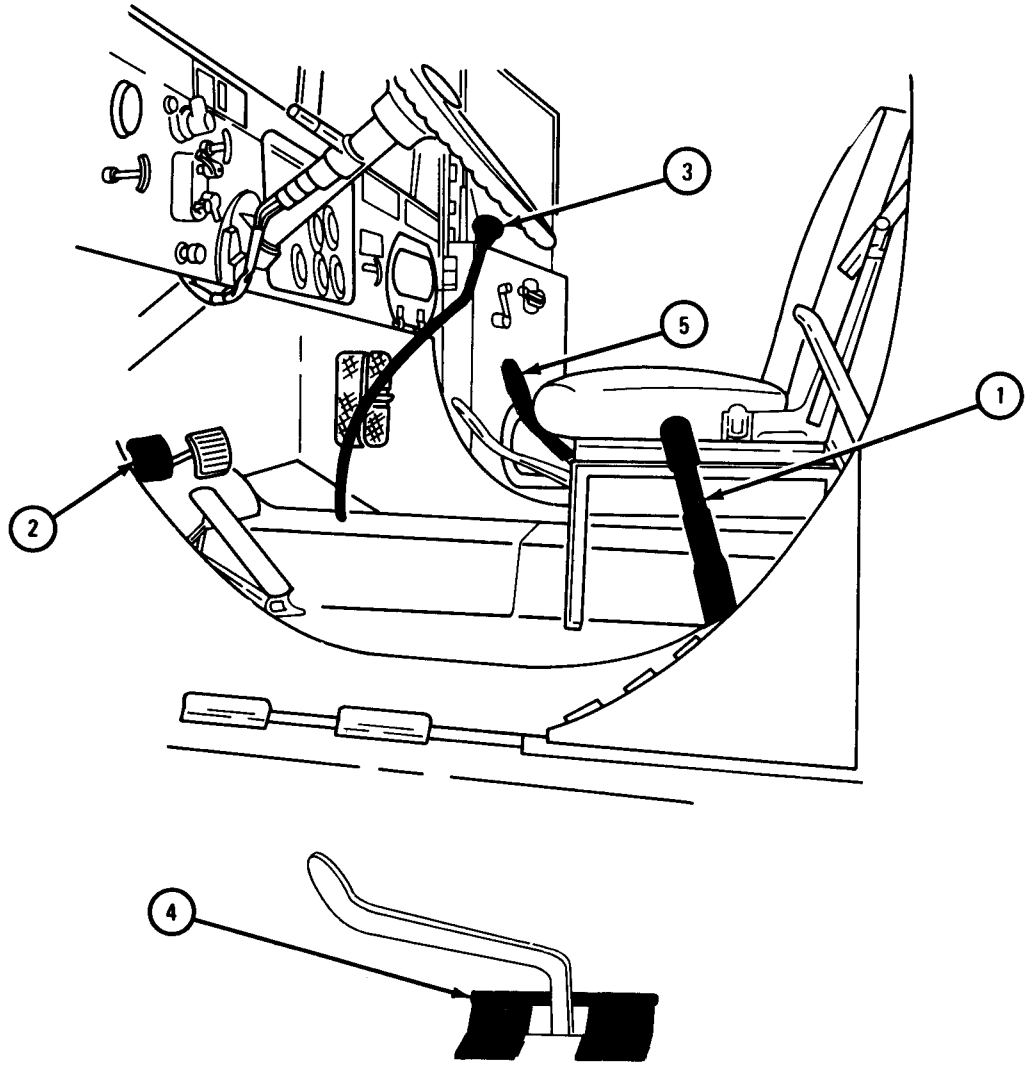


TA 105195

FRAME 2

1. Pull handbrake (1) up to brake on position.
2. Press clutch pedal (2) all the way down.
3. Place FRONT TRANSMISSION gearshift lever (3) in N (neutral) position.
4. Let clutch pedal (2) up.
5. Turn front winch cover lever hinge lock (4) to unlock position.
6. Keep front WINCH CONTROL lever (5) in upper N (neutral) position.

GO TO FRAME 3

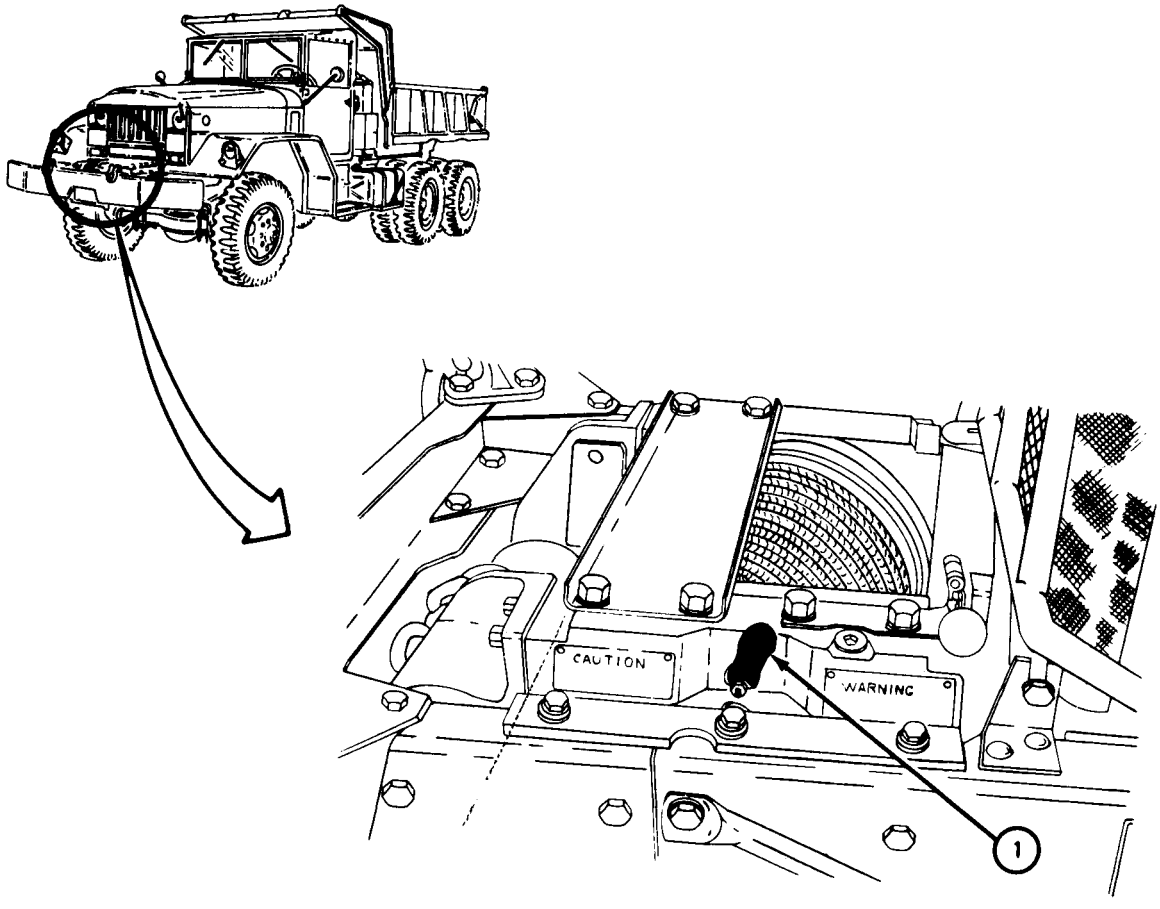


TA 105196

FRAME 3

Soldier B 1. Pull out front drum lock knob (1). Turn it 1/4 turn and let it go into unlocked position.

GO TO FRAME 4



TA 105197

FRAME 4

Soldier C

1. Park second truck (1) at bottom of steep grade in a direct line with winch (2) on first truck (3) as shown. Refer to TM 9-2320-211-10.
2. Sit in cab with engine running during this task.

WARNING

Always wear protective gloves when handling winch cable. Do not let winch cable slip through hands. Rusty or broken wires can cause serious injury.

CAUTION

Do not operate winch with less than four turns of cable on drum. End of cable may pull free of drum.

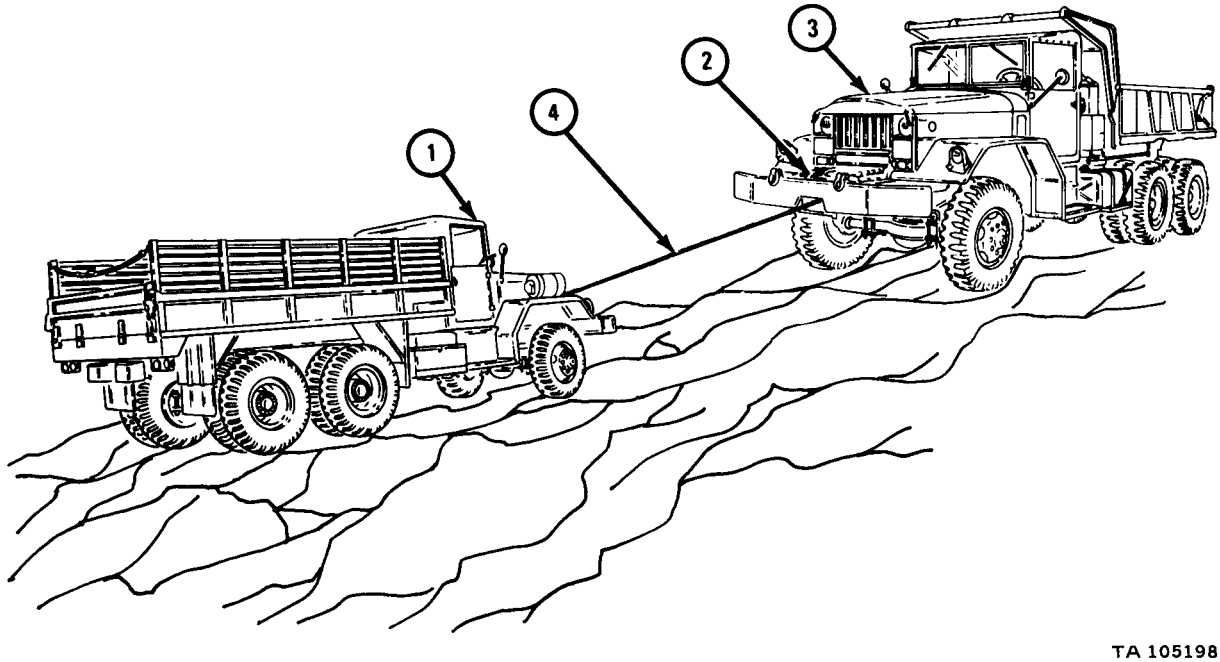
NOTE

Do not kink winch cable.

Soldier B

3. Pull winch cable (4) from winch (2) to reach second truck (1).
4. Hook winch cable (4) on second truck (1).

GO TO FRAME 5

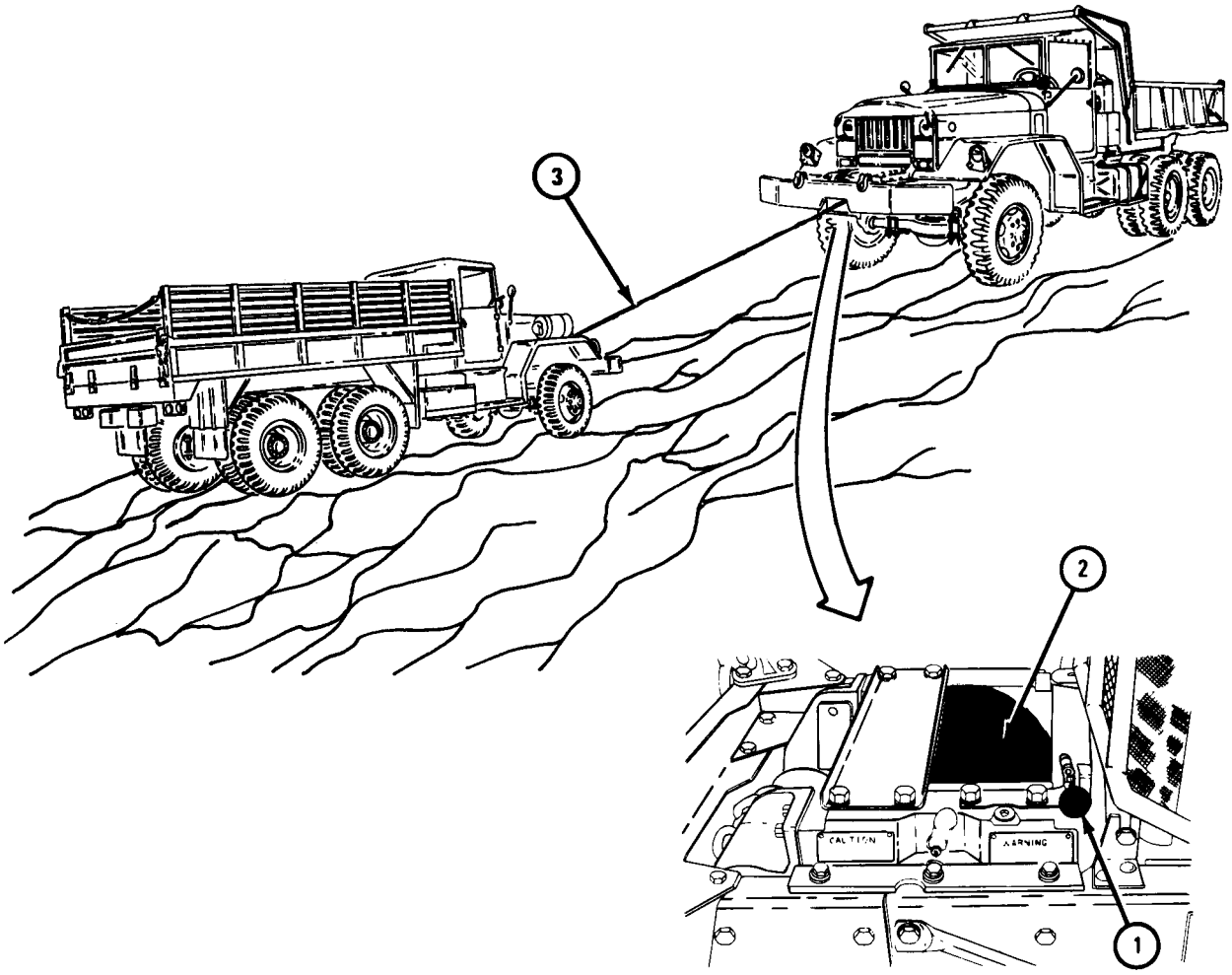


TA 105198

FRAME 5

Soldier B 1. Move front winch drum clutch lever (1) on upper truck as far as it will go from drum (2) (engage position). Stand clear of trucks and cable (3).

GO TO FRAME 6



TA 105199

FRAME 6

Soldier C 1. Sit in cab of lower truck, ready to step on brake pedal (1) to stop truck if it starts to roll down grade. Tell soldier A when ready.

Soldier A 2. Sitting in cab of upper truck with engine running, leave FRONT TRANSMISSION gearshift lever (2) in N (neutral) position.

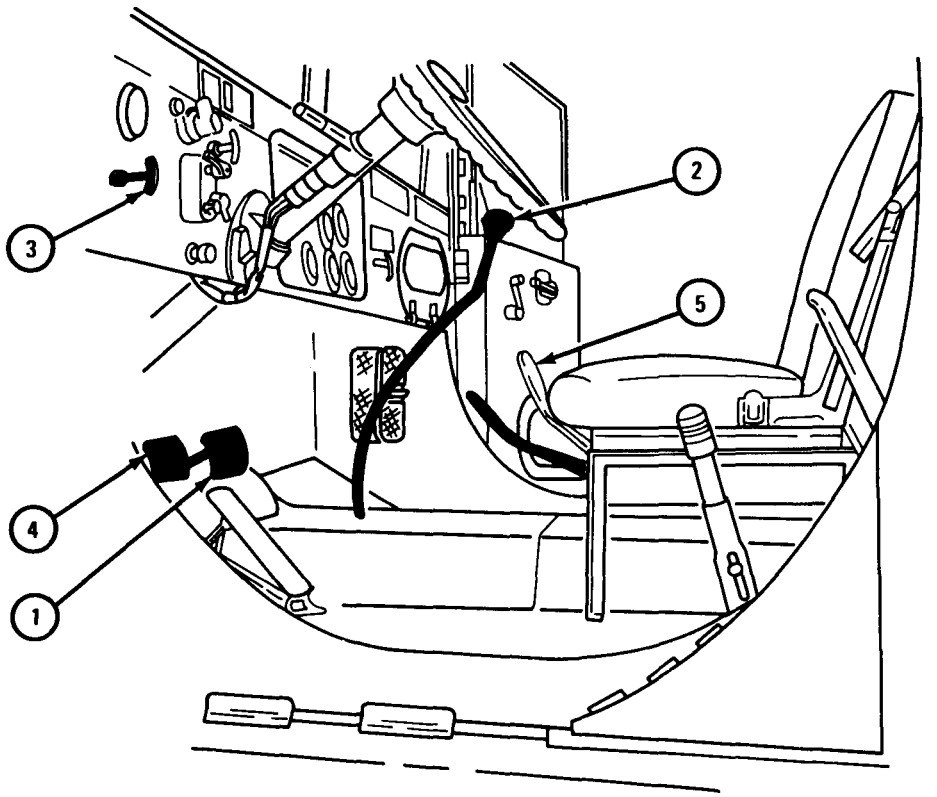
WARNING

Always use hand THROTTLE (3) to control engine speed when operating winch. Avoid sudden changes in speed or high speed. Rough, jerky operation may cause broken shear pins and snapped cables, damage to truck or injury to personnel.

3. Press down on clutch pedal (4).

4. Move front WINCH CONTROL lever (5) to L (low) position.

GO TO FRAME 7



TA 105200

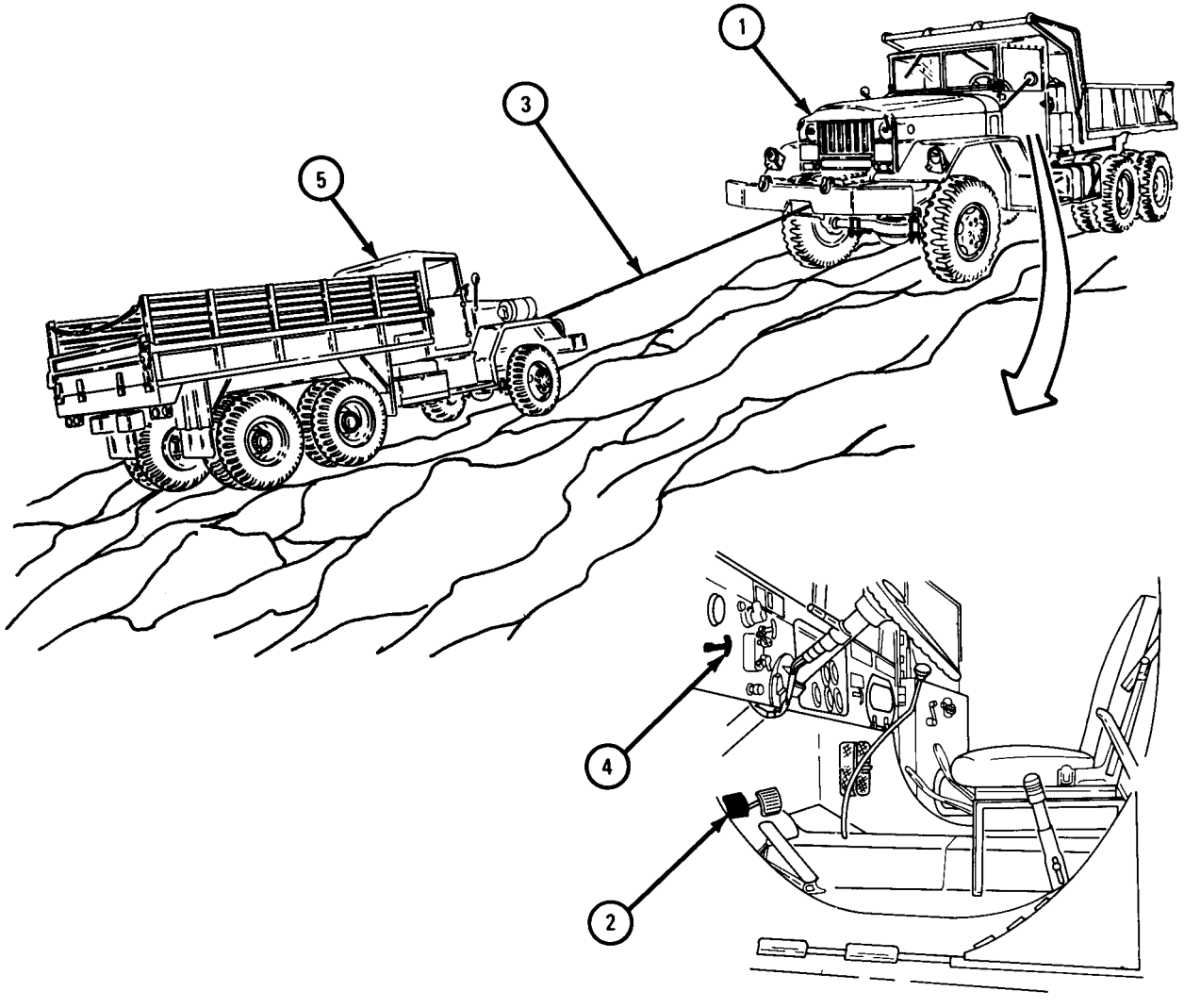
FRAME 7

Soldier A 1. Sitting in cab of upper truck (1), let clutch pedal (2) come up slowly.

2. Wind in winch cable (3) to take up slack.

3. Use hand THROTTLE (4) to control speed and continue smooth operation. Pull lower truck (5) three-quarters of the way up grade.

GO TO FRAME 8



TA 105304

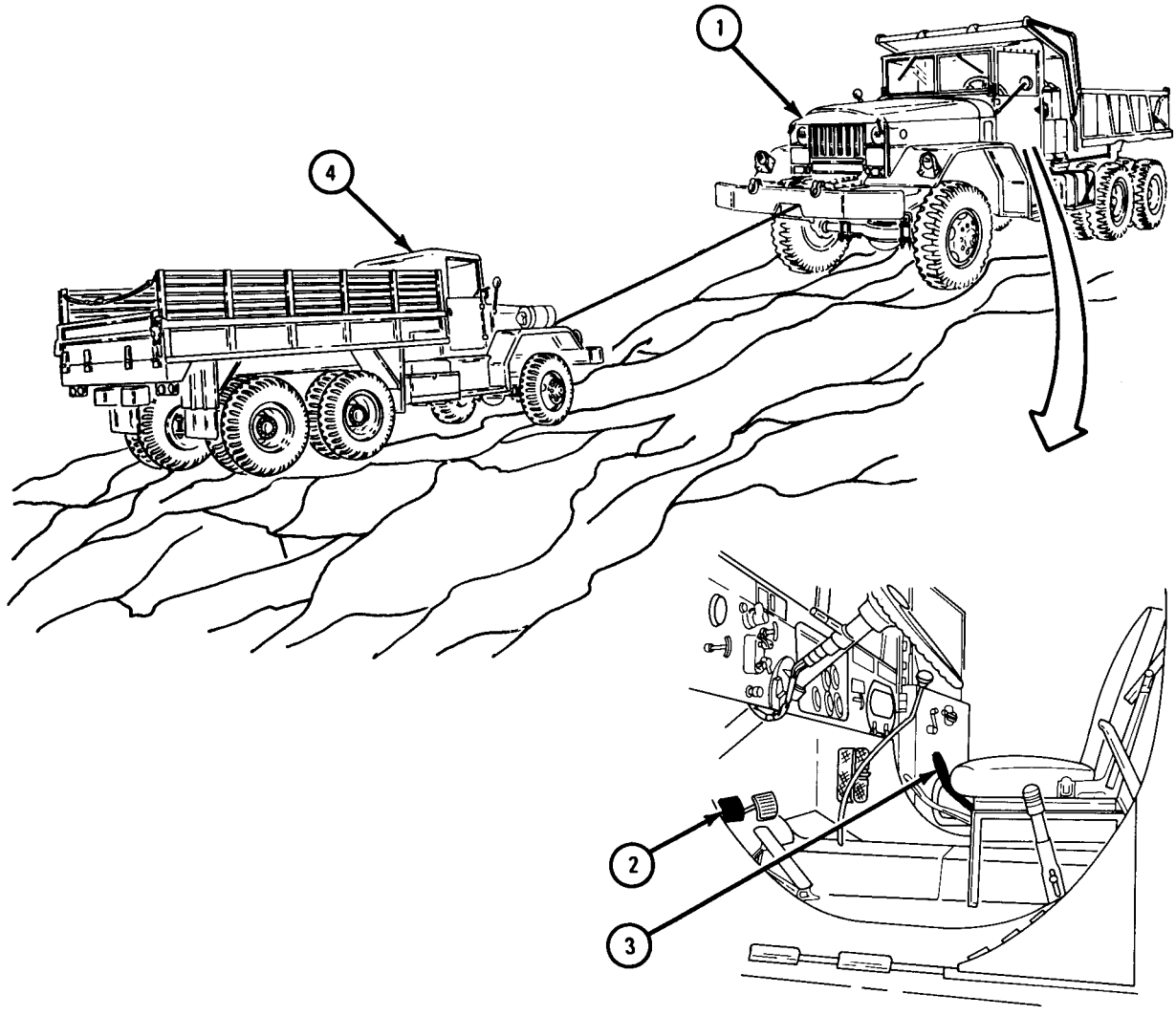
FRAME 8

Soldier A 1. Sitting in cab of upper truck (1), press clutch pedal (2) all the way down.

2. Place front WINCH CONTROL lever (3) in upper N (neutral) position.

3. Let up on clutch pedal (2) slowly.

IF TRUCK (4) ROLLS DOWN GRADE, GO TO FRAME 9.
IF TRUCK (4) DOES NOT ROLL DOWN GRADE, GO TO FRAME 10



TA 105305

FRAME 9

Soldier C 1. Push down brake pedal (1). Pull up handbrake (2) to brake on position and let go of brake pedal. Tell soldier B when ready.

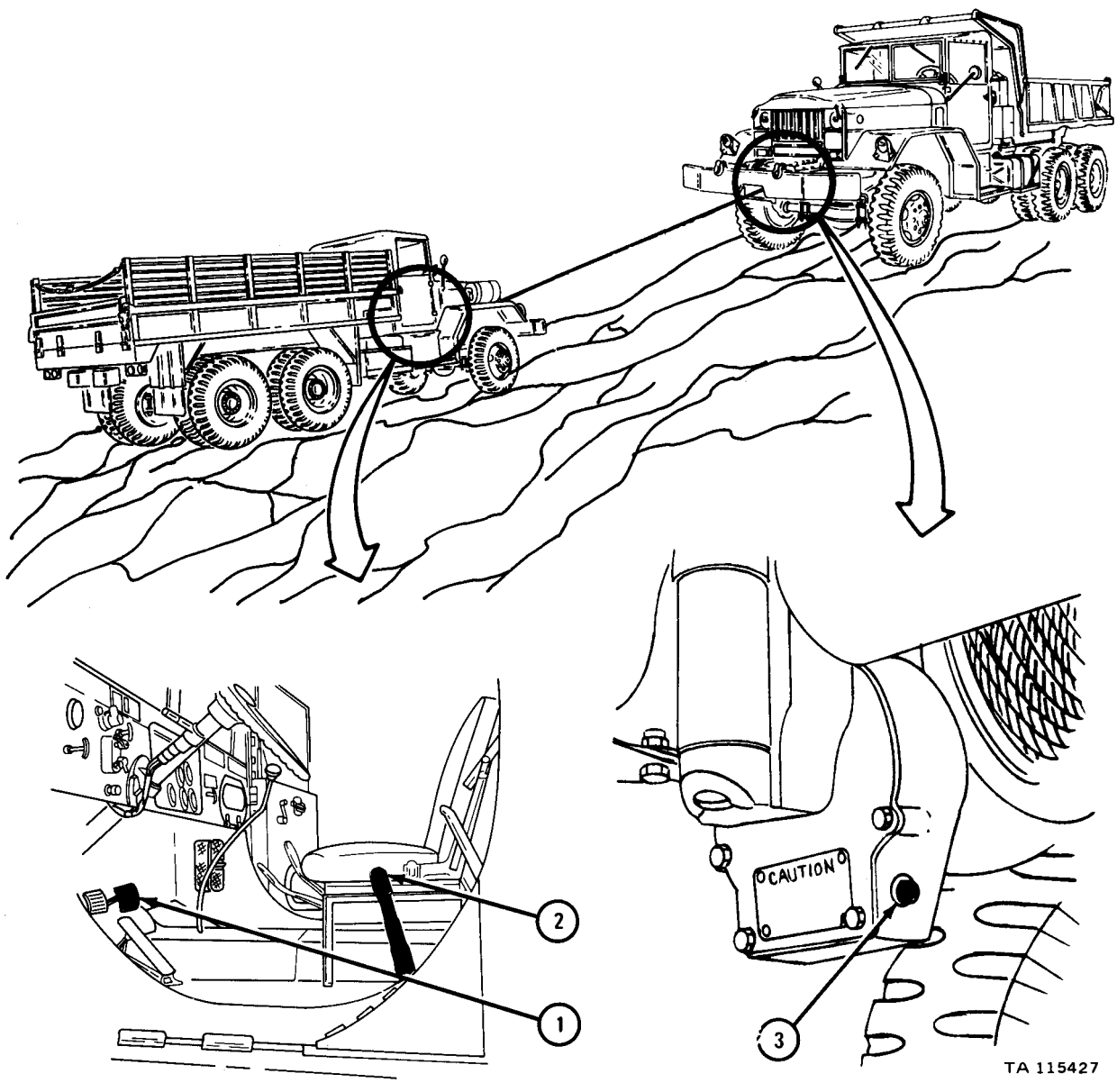
Soldier B 2. Using 9/16-inch wrench, turn screw (3) one-half turn to right.

NOTE

When correctly adjusted, the brake will become warm, but should not be too hot to hold brake cover with hand.

Soldier C 3. Push handbrake (2) down to off position.

IF TRUCK ROLLS DOWN GRADE, DO FRAME 9 AGAIN.
IF TRUCK DOES NOT ROLL DOWN GRADE, GO TO FRAME 10



FRAME 10

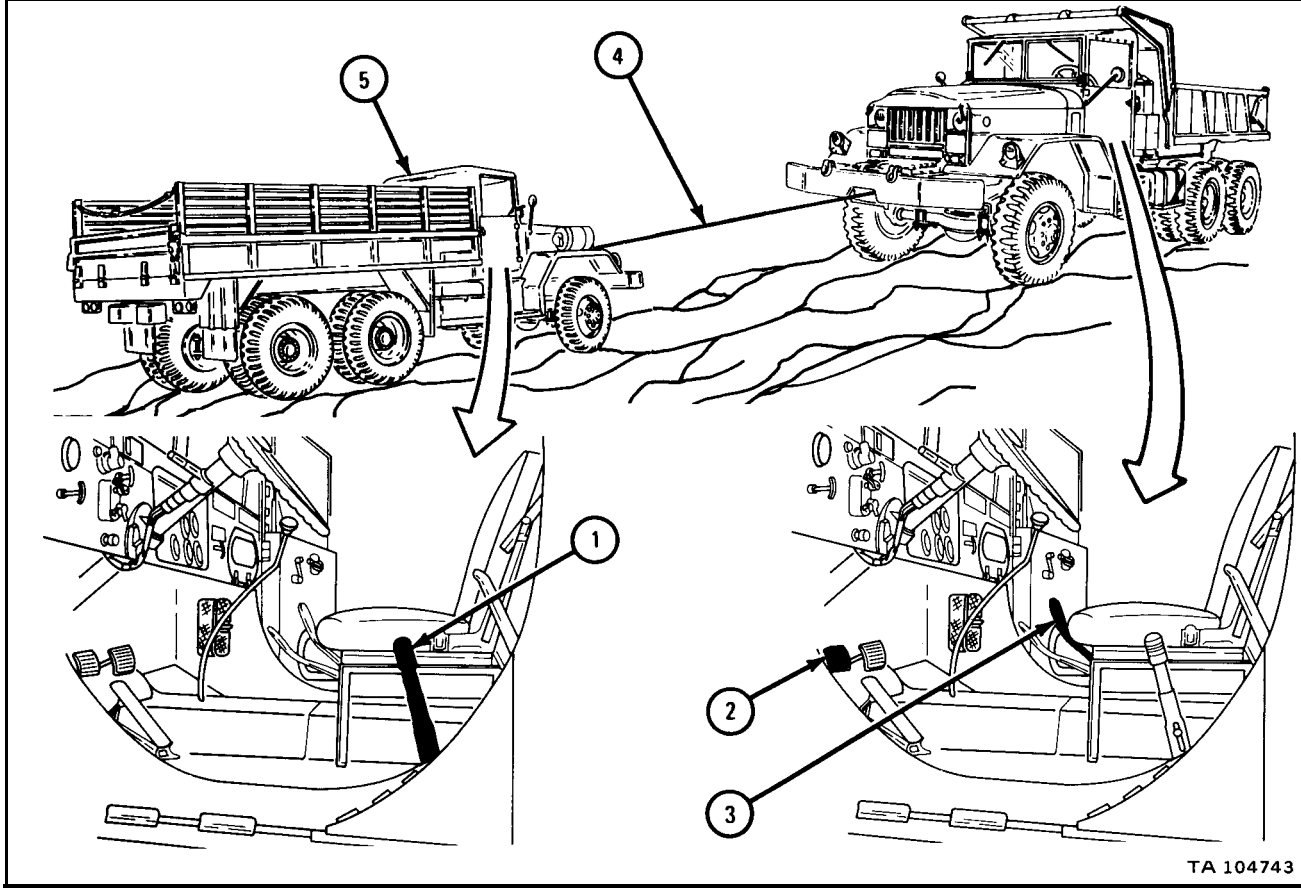
Soldier C	1.	Pull handbrake (1) to brake on position. Tell soldier A when ready.
Soldier A	2.	Press clutch pedal (2) all the way down.
	3.	Place front WINCH CONTROL lever (3) in R (reverse) position.
	4.	Let up clutch pedal (2) slowly until there is enough slack in cable (4) to unhook it from truck (5).
	5.	Press clutch pedal (2) all the way down.
	6.	Place front WINCH CONTROL lever (3) in N (neutral) position.
	7.	Let up clutch pedal (2).
Soldier B	8.	Unhook winch cable (4) from truck (5).
Soldier A	9.	Rewind winch cable (4). Refer to TM 9-2320-211-10.
	10.	Disengage winch drum clutch lever. Refer to TM 9-2320-211-10.

NOTE

Follow-on Maintenance Action Required:

Lock drum lock knob. Refer to TM 9-2320-211-10.

END OF TASK



TA 104743

18-4. FRONT WINCH CABLE REMOVAL AND REPLACEMENT (ALL TRUCKS EXCEPT M543A2).

WARNING

Always wear leather gloves when handling winch cable. Never allow cable to run through hands. Broken or rusty wires can cause painful injuries to personnel.

TOOLS: 3/8-inch sockethead screw key (Allen wrench or equivalent)
Leather gloves

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

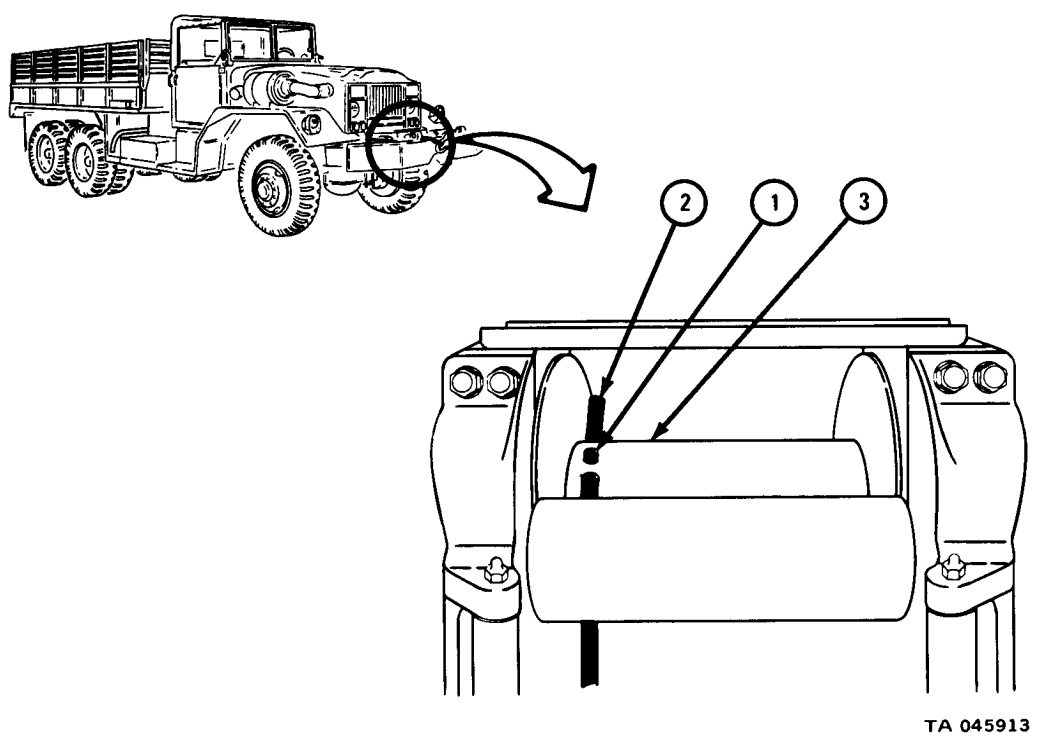
a. Preliminary Procedure. Operate winch and unwind all cable from winch drum. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using allen wrench, unscrew and take out setscrew (1). Pull cable (2) from hole in drum (3).

END OF TASK



c. Replacement.

FRAME 1

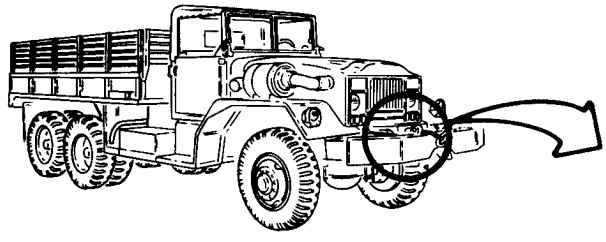
1. Put cable (1) through hole in drum (2). Cable should just come through drum. Using allen wrench, screw in and tighten setscrew (3).

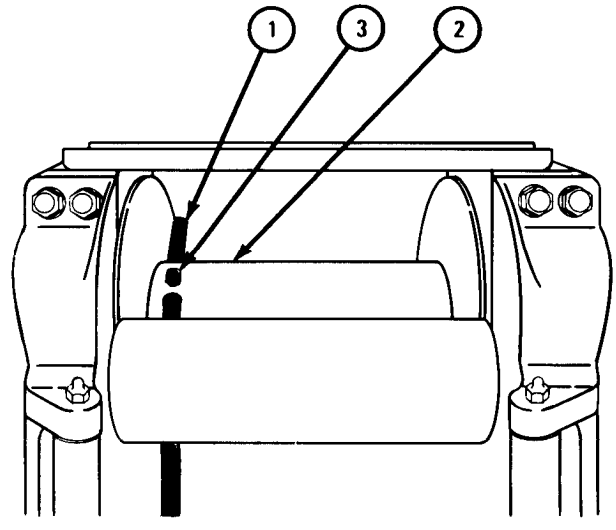
NOTE

Follow-on Maintenance Action Required:

Operate winch and wind cable onto drum. Refer to TM 9-2320-211-10.

END OF TASK





TA 045914

18-5. FRONT AND REAR WINCH CABLE REMOVAL AND REPLACEMENT (TRUCK M543A2).

WARNING

Always wear leather gloves when handling winch cable. Never allow cable to run through hands. Broken or rusty wires can cause painful injuries to personnel.

TOOLS: 3/8-inch sockethead screw key (Allen wrench or equivalent)
Leather gloves

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

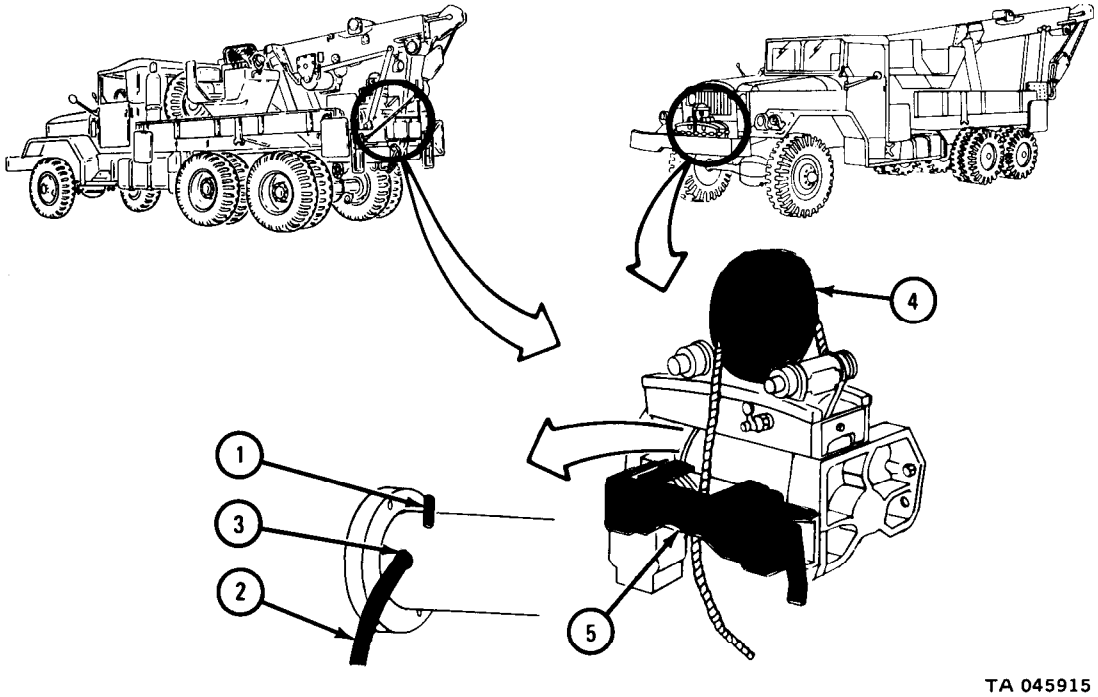
a. Preliminary Procedure. Operate winch and unwind all cable from winch drum. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using allen wrench, unscrew and take out setscrew (1).
2. Pull cable (2) from hole in drum (3).
3. Take cable out of swivel sheave (4) and cable tensioner (5).

END OF TASK



c. Replacement.

FRAME 1

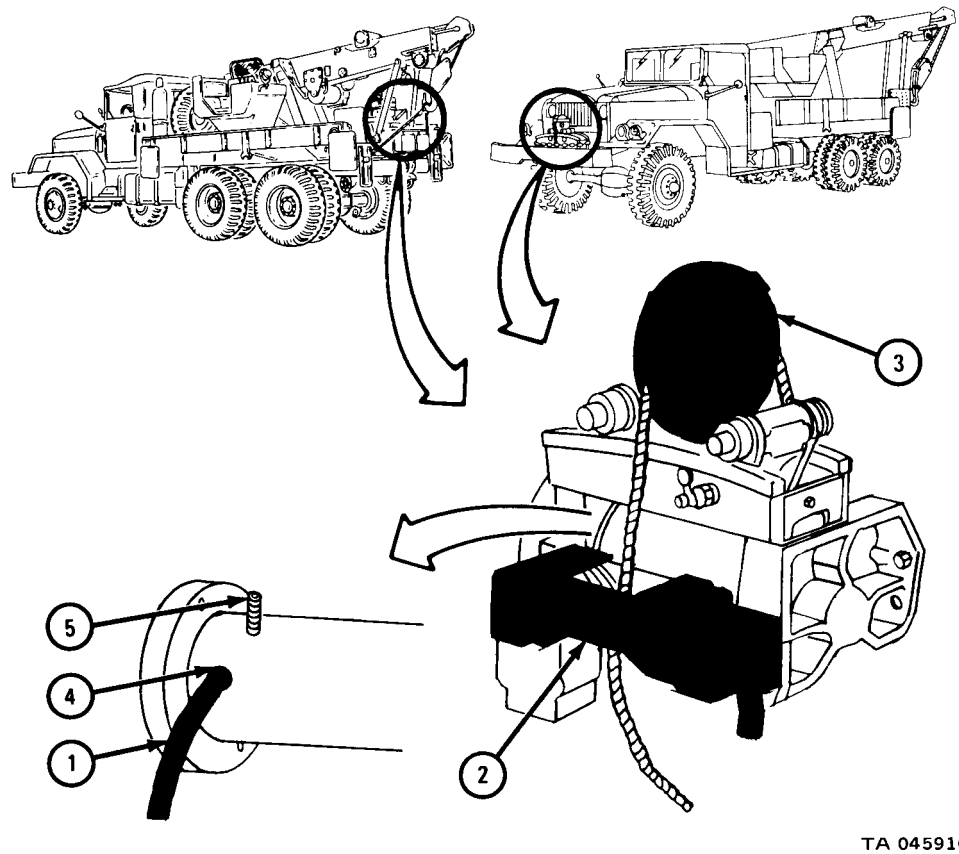
1. Put end of cable (1) through cable tensioner (2), over swivel sheave (3), and into hole in drum (4), until cable comes just through drum.
2. Using allen wrench, screw in and tighten setscrew (5).

NOTE

Follow-on Maintenance Action Required:

Operate drum and wind cable onto drum. Refer to TM 9-2320-211-10.

END OF TASK



TA 045916

18-6. FRONT WINCH TENSION SHEAVE ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: Hoisting equipment; Chain sling; Offset screwdriver; 18-inch hinged handle; Breaker bar; 3/4-inch wrench (2)

SUPPLIES: None

PERSONNEL: None

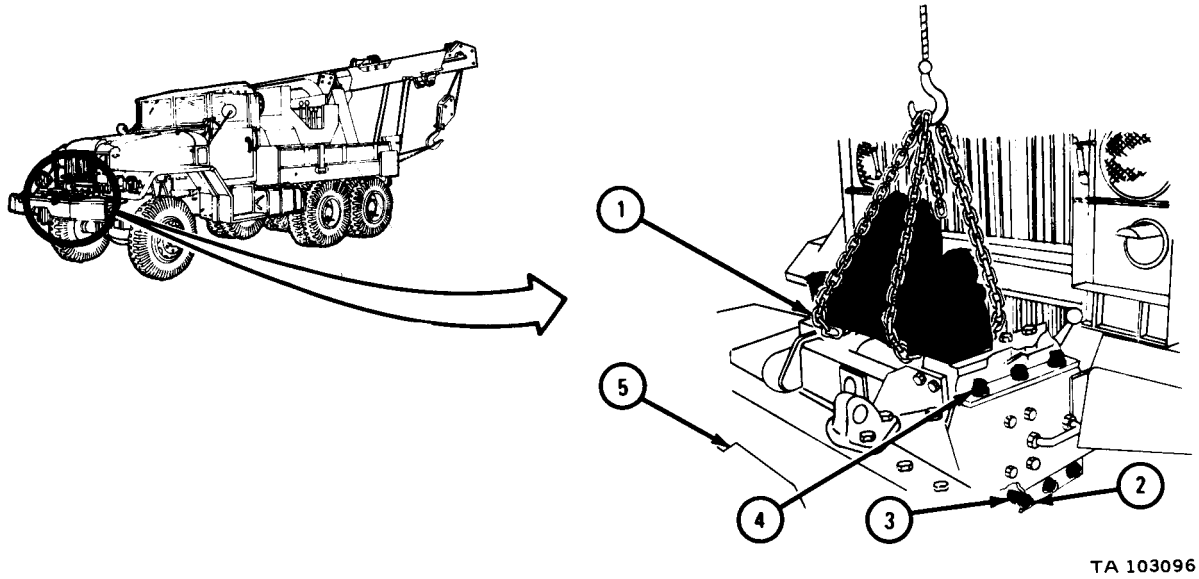
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Put chain sling and hoist onto front winch and roller assembly (1) as shown. Using hoist, take slack out of chain and cable.
2. Take off propeller shaft front universal joint from yoke on winch driveshaft. Refer to Part 1, para 10-11.
3. Using 3/4-inch wrenches, unscrew and take off three screws and lockwashers (2) and three nuts (3) on both sides of front winch and roller assembly (1).
4. Using 3/4-inch wrenches, unscrew and take off three screws, lockwashers, and flat washers (4) on both sides of front winch and roller assembly (1).
5. Using hoist, lift front winch and roller assembly (1) to clear front bumper (5). Take off front winch and roller assembly (1).

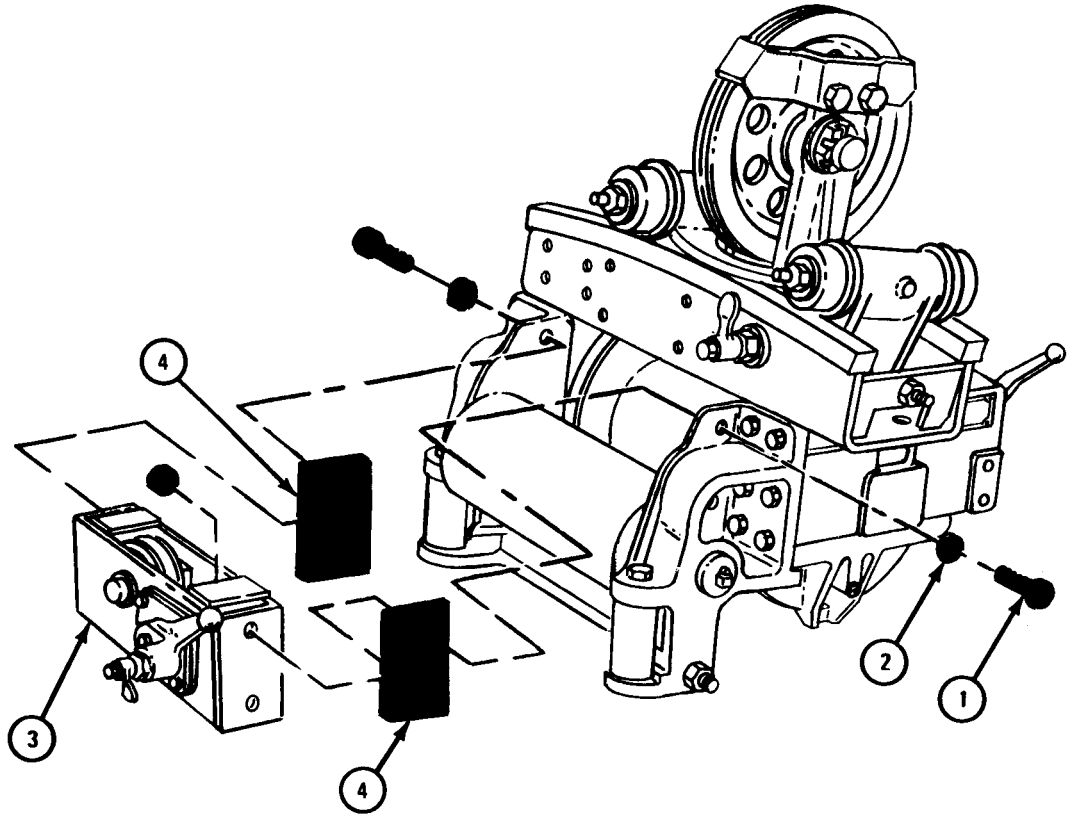
GO TO FRAME 2



FRAME 2

1. Using 3/4-inch wrench, unscrew and take out two capscrews (1) with washers (2).
2. Do step 1 again on other side.
3. Take out tension sheave assembly (3).
4. Take out two shims (4).

END OF TASK



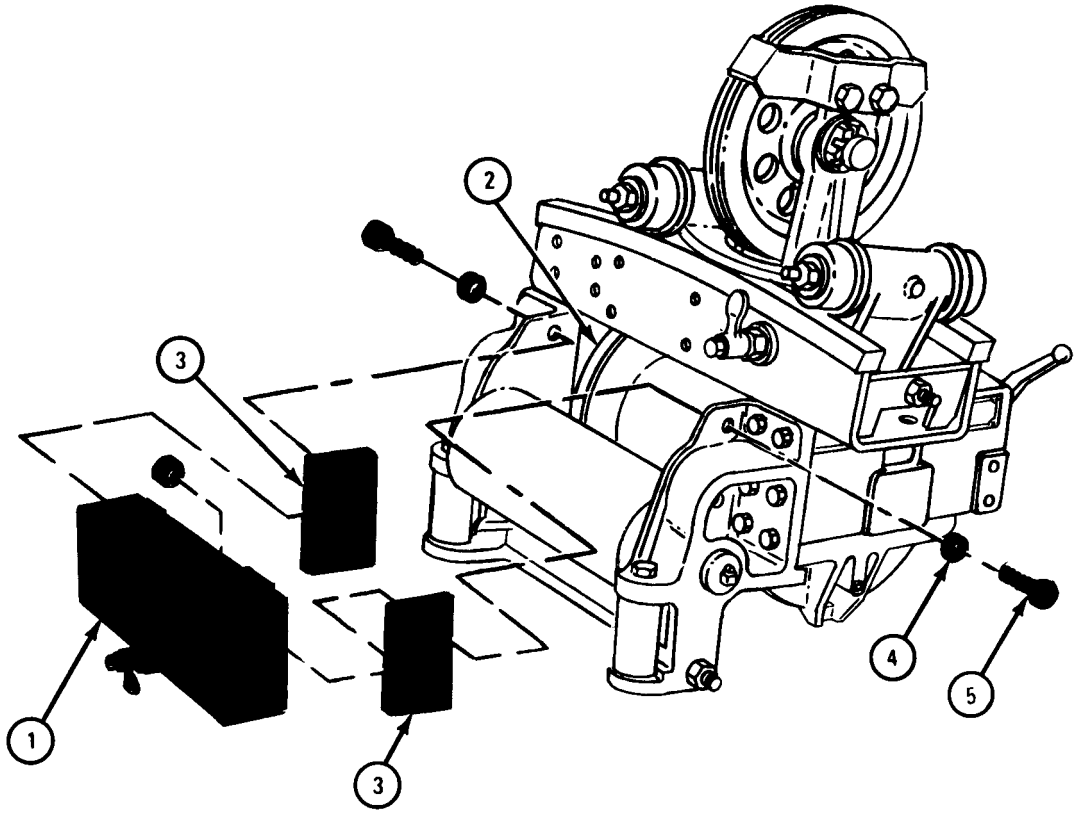
TA 103097

b. Replacement.

FRAME 1

1. Put tension sheave assembly (1) on front of winch assembly (2).
2. Put in two shims (3).
3. Using 3/4-inch wrench, screw in two capscrews (4) with washers (5).
4. Do step 3 again on other side.

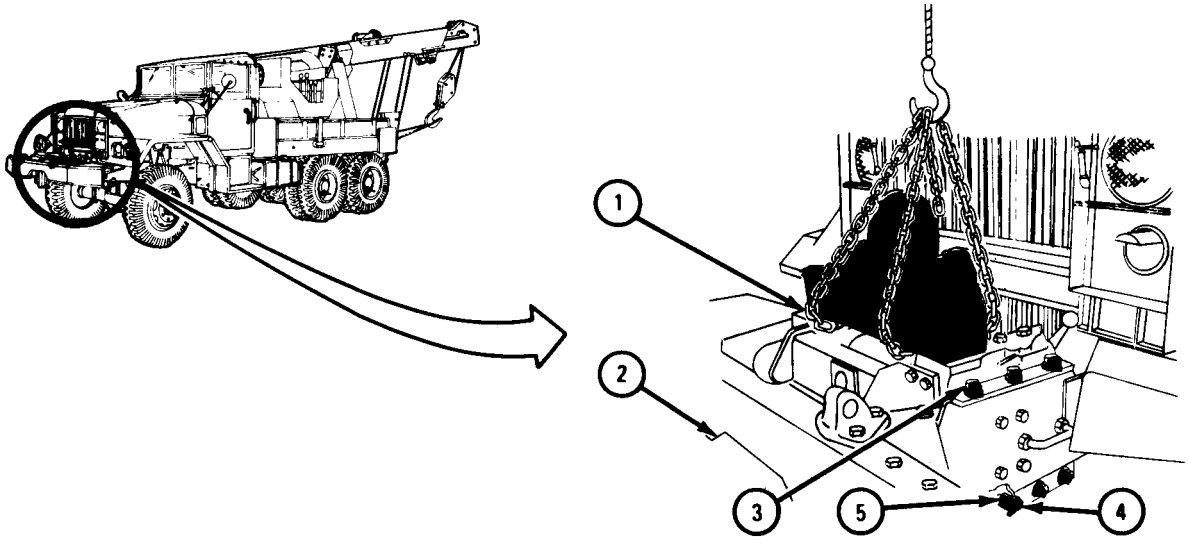
GO TO FRAME 2



FRAME 2

1. Using hoist, lift front winch and roller assembly (1) to clear front bumper (2).
2. Using 3/4-inch wrenches, screw in and tighten three screws, flat washers, and lockwashers (3) on both sides of front winch and roller assembly (1).
3. Using 3/4-inch wrenches, screw in and tighten three screws with flat washers (4) and three locknuts (5) on both sides of front winch and roller assembly (1).
4. Put propeller shaft front universal joint on yoke on winch driveshaft. Refer to Part 1, para 10-11.
5. Take off chain sling and hoist. Move hoist away.

END OF TASK



TA 103099

18-7. FRONT WINCH AND ROLLER ASSEMBLY REMOVAL, REPLACEMENT, TEST, AND ADJUSTMENT.

TOOLS: Hoisting equipment
Chain sling
Offset screwdriver
3/4-inch wrench (2)
18-inch hinged handle breaker bar
3/4-inch socket

SUPPLIES: None

PERSONNEL: Three

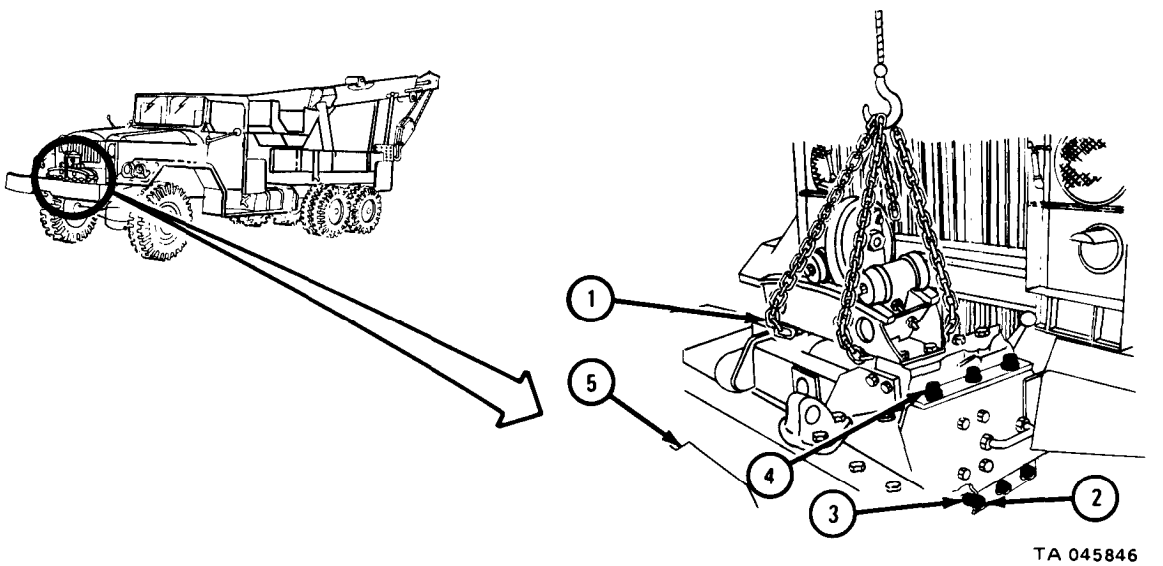
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Put chain sling hoist onto front winch and roller assembly (1) as shown. Using hoist, take slack out of chain and cable.
2. Take off propeller shaft front universal joint from yoke on winch driveshaft. Refer to Part 1, para 10-11.
3. Using 3/4-inch wrenches, unscrew and take off three screws and lockwashers (2) and three nuts (3) on both sides of front winch and roller assembly (1).
4. Using 3/4-inch wrench, unscrew and take off three screws, lockwashers, and flat washers (4) on both sides of front winch and roller assembly (1).
5. Using hoist, lift front winch and roller assembly (1) to clear front bumper (5). Take off front winch and roller assembly.

END OF TASK

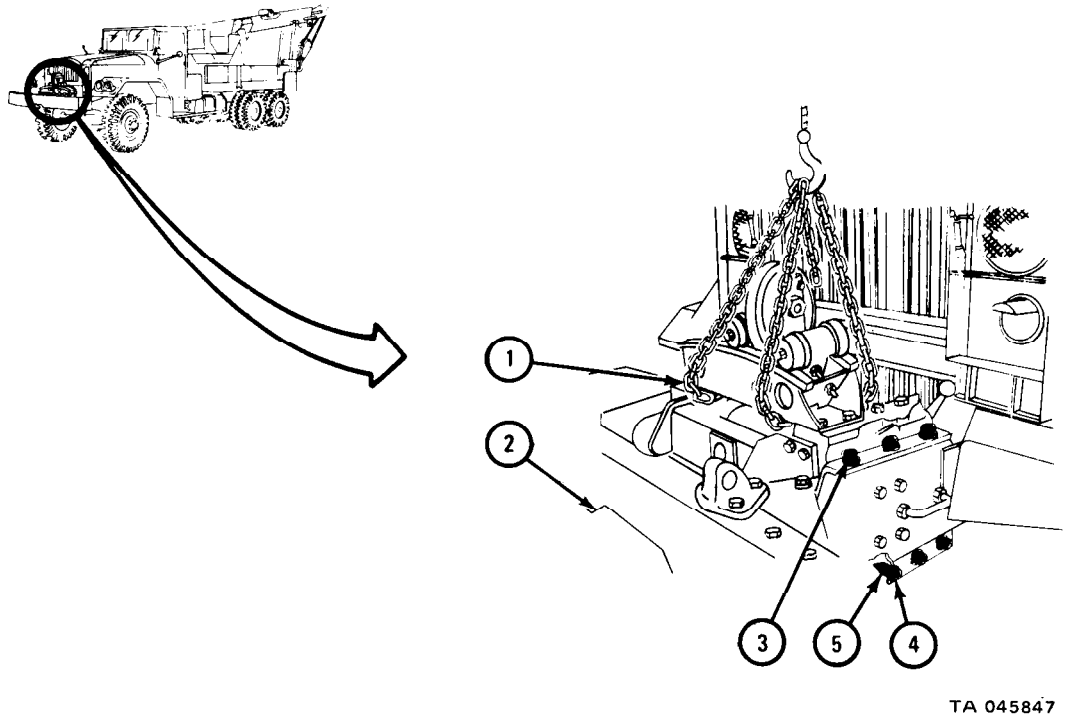


b. Replacement.

FRAME 1

1. Using hoist, lift front winch and roller assembly (1) to clear front bumper (2) and lower it into place as shown, alining screw holes.
2. Using 3/4-inch wrench, screw in and tighten three screws, flat washers, and lockwashers (3) on both sides of front winch and roller assembly (1).
3. Using 3/4-inch wrenches, screw in and tighten three screws with flat washers (4) and three locknuts (5) on both sides of front winch and roller assembly (1).
4. Put propeller shaft front universal joint on yoke on winch drive shaft. Refer to Part 1, para 10-11.
5. Take off chain sling and hoist. Move hoist away.

END OF TASK



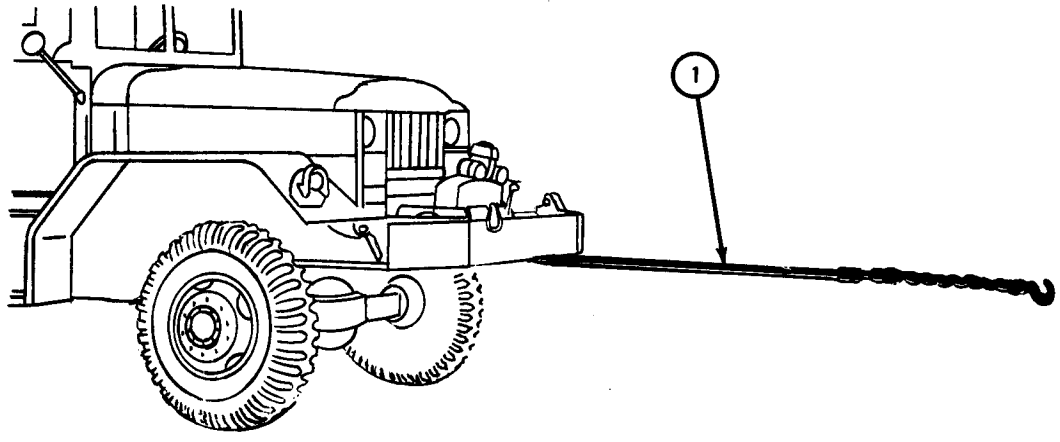
c. Test and Adjustment.

(1) Drag brake.

FRAME 1

1. Set up for unwinding winch cable (1). Refer to TM 9-2320-211-10.
2. Pull winch cable (1) out five feet and quickly stop pulling.
3. Rewind winch cable (1). Refer to TM 9-2320-211-10.

IF WINCH DRUM TURNED AFTER PULLING STOPPED, GO TO FRAME 2.
IF WINCH DRUM STOPPED TURNING WHEN PULLING STOPPED, END OF TASK

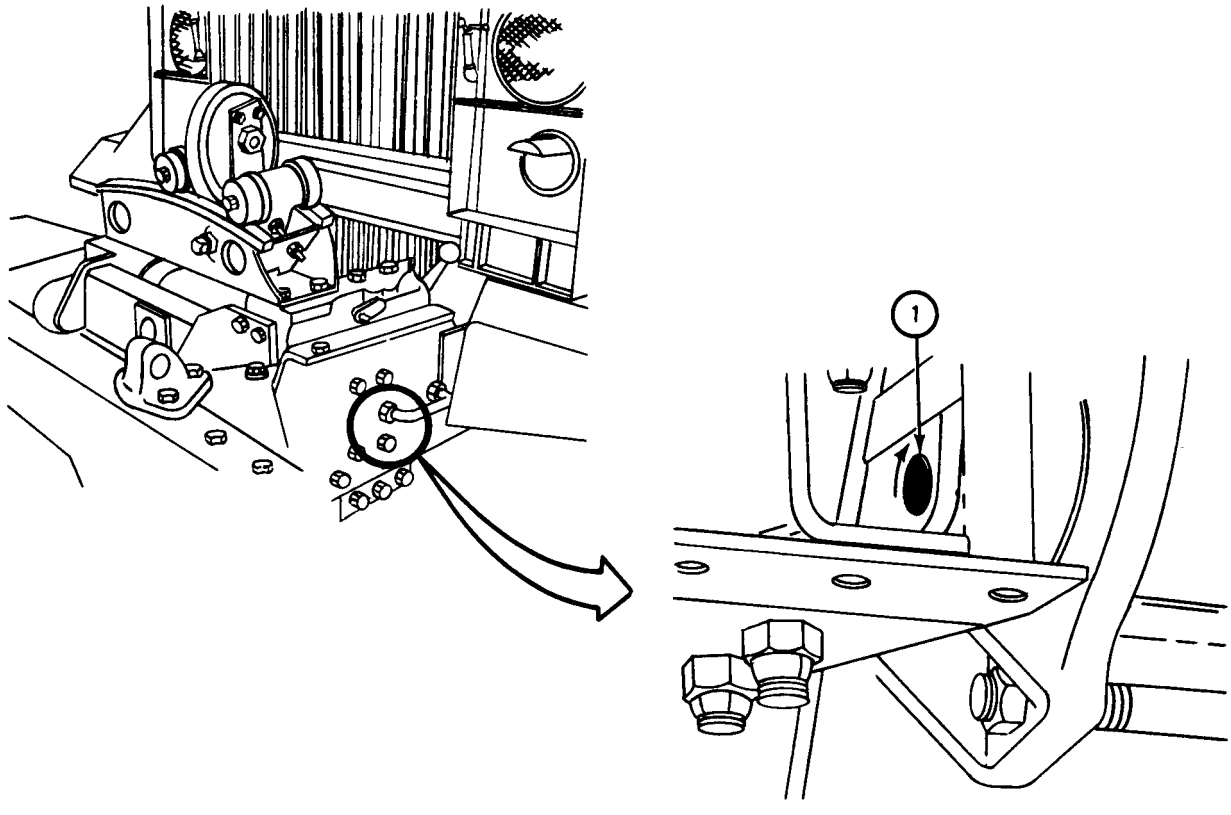


TA 045848

FRAME 2

1. Using offset screwdriver, turn drag brake adjusting screw (1) 1/8 turn in direction of arrow.

GO BACK TO FRAME 1



TA 045849

(2) Automatic brake.

(a) Preliminary procedure. Drive truck with winch to be tested to top of steep grade and park it facing grade. Refer to TM 9-2320-211-10.

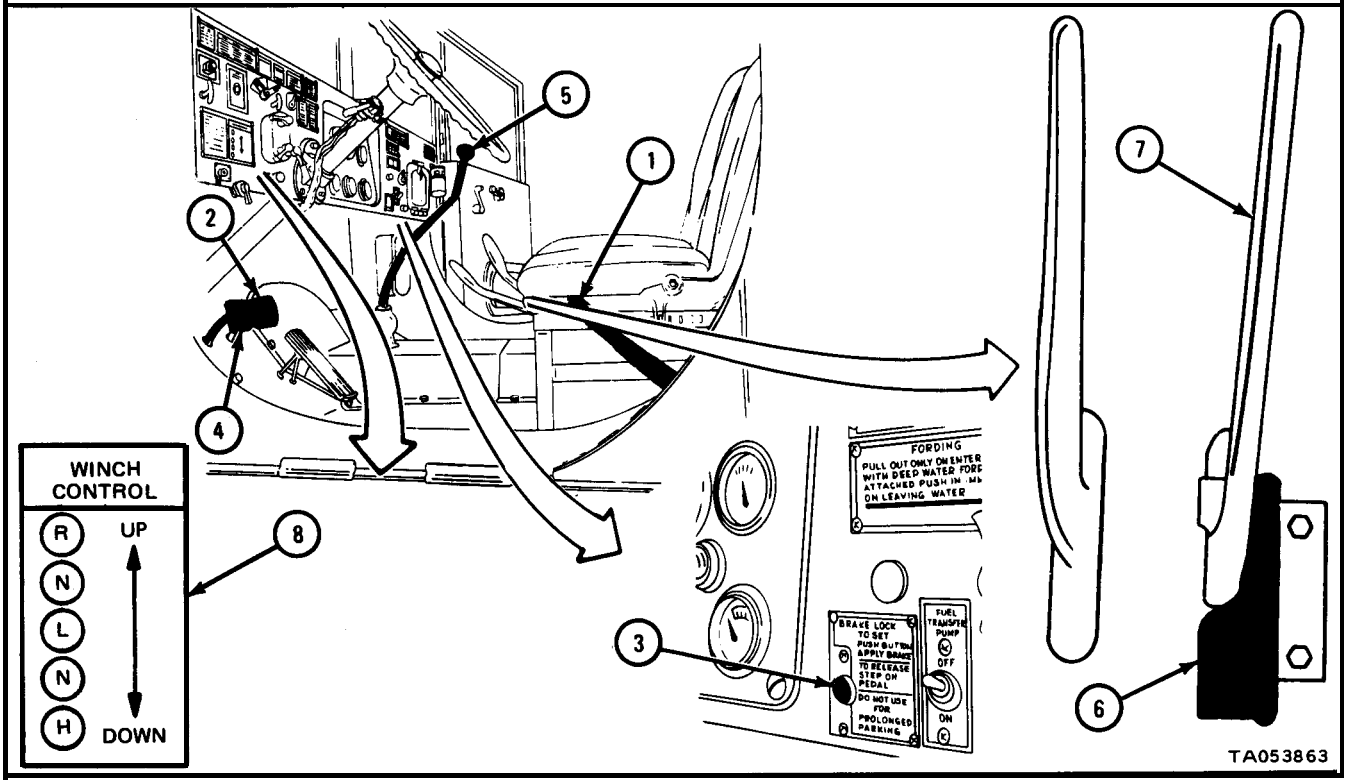
(b) Test and adjustment.

FRAME 1

Soldier A 1. Pull up handbrake (1) to on position.

2. On wreckers, set electric brake:
   (a) Press down on service foot brake (2).
   (b) Press electric BRAKE LOCK button (3).
   (c) Let up on service foot brake (2).
   (d) Let up on electric BRAKE LOCK button (3).
3. Press clutch pedal (4) all the way down.
4. Place TRANSMISSION gearshift lever (5) in N (neutral) position.
5. Let up on clutch pedal (4).
6. Turn front winch control lever hinge lock (6) to unlock position.
7. Keep front WINCH CONTROL lever (7) in upper N position as shown on data plate (8).

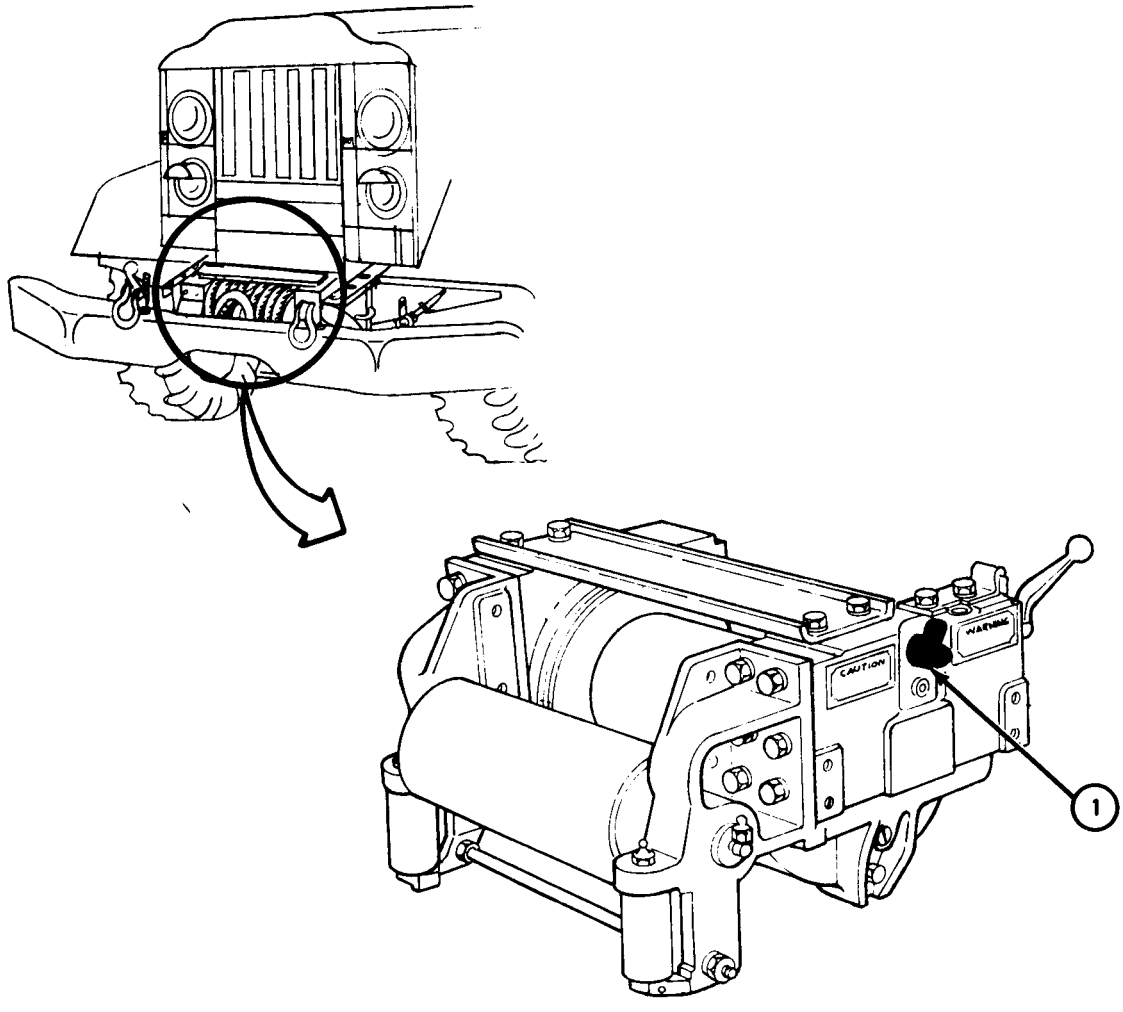
GO TO FRAME 2



FRAME 2

Soldier B 1. Pull front winch drum lock knob (1) out of deep slot, turn it 90°, and let it go into shallow slot (unlock position).

GO TO FRAME 3



FRAME 3

Soldier B 1. On trucks with level wind device:

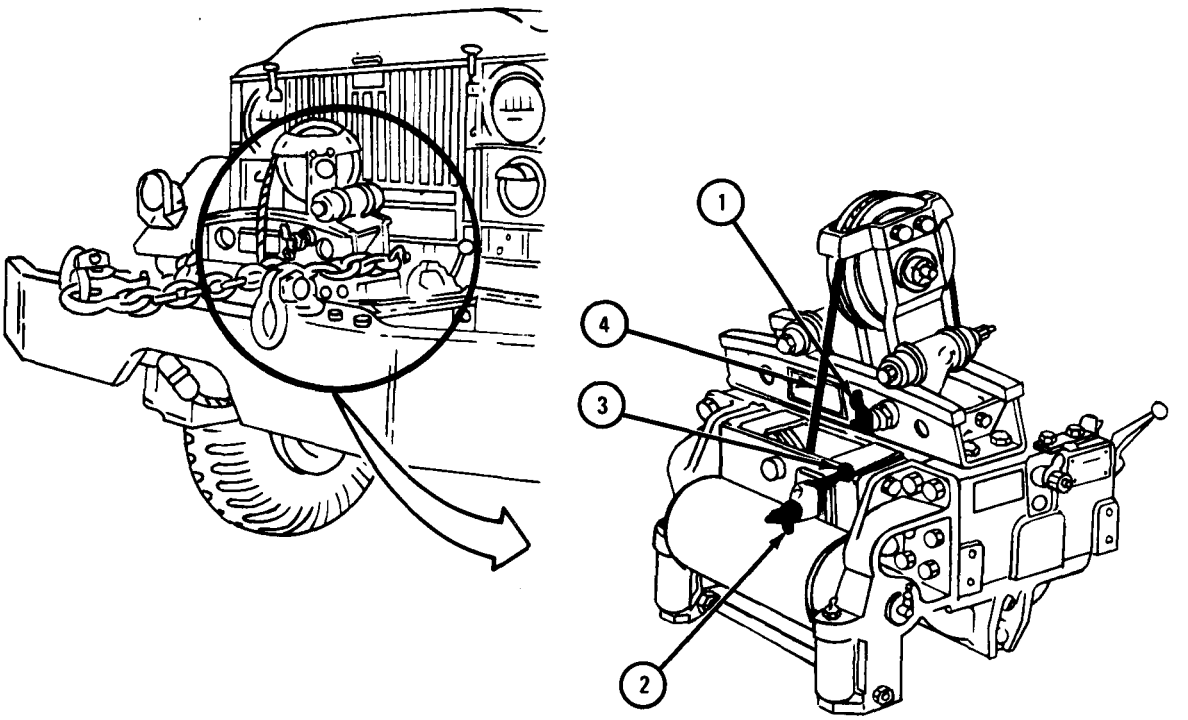
(a) Pull front winch level wind lock knob (1) out of deep slot, turn it 90°, and let it go into shallow slot (unlock position).

(b) Pull out front winch cable tension control lever latch (2), turn it 90°, and let it go into shallow slot (unlock position).

(c) Move front winch cable tension control lever (3) all the way to left side of truck to take tension off cable (4).

(d) Pull out front winch cable tension control lever latch (2), turn it 90°, and let it go into deep slot. Move cable tension control lever (3) until plunger slips into hole, locking lever in off position.

GO TO FRAME 4



TA 053865

FRAME 4

Soldier C 1. Park truck (1) at bottom of steep grade in a direct line with winch (2) as shown. Refer to TM 9-2320-211-10. Standing in cab throughout this test and adjustment task, keep engine running.

WARNING

Always wear protective gloves when handling winch cable. Do not let winch cable slip through hands. Rusty or broken wires can cause serious injury.

CAUTION

Do not operate winch with less than four turns of cable on drum.

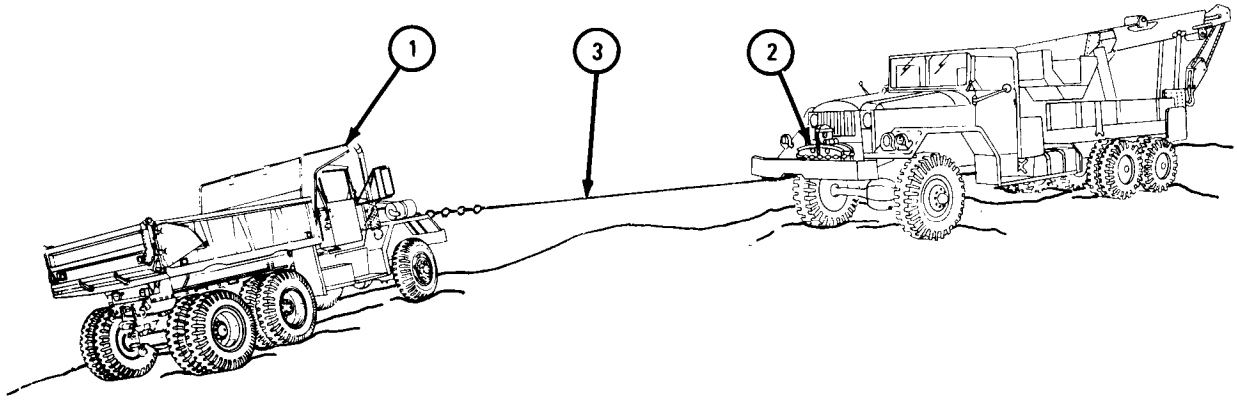
NOTE

Do not kink winch cable.

Soldier B 2. Pull winch cable (3) from winch (2) to reach truck (1).

3. Put winch cable (3) onto truck (1) .

GO TO FRAME 5

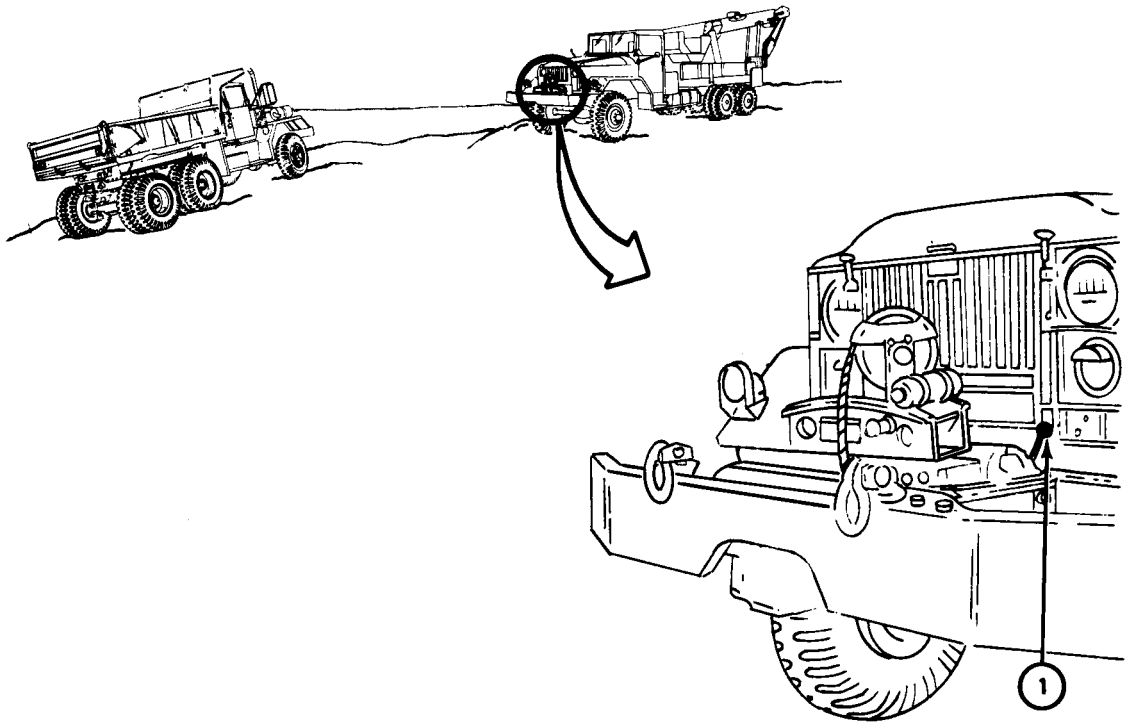


TA 045851

FRAME 5

Soldier B 1. Move front winch drum clutch lever (1) all the way away from drum (engage position). Stand clear of trucks and cable.

GO TO FRAME 6



FRAME 6

Soldier C 1. Stand in cab to step on brake pedal (1) to stop truck if truck starts to roll downgrade. Tell soldier A when ready.

Soldier A 2. With engine running, leave TRANSMISSION gearshift lever (2) in N (neutral) position.

WARNING

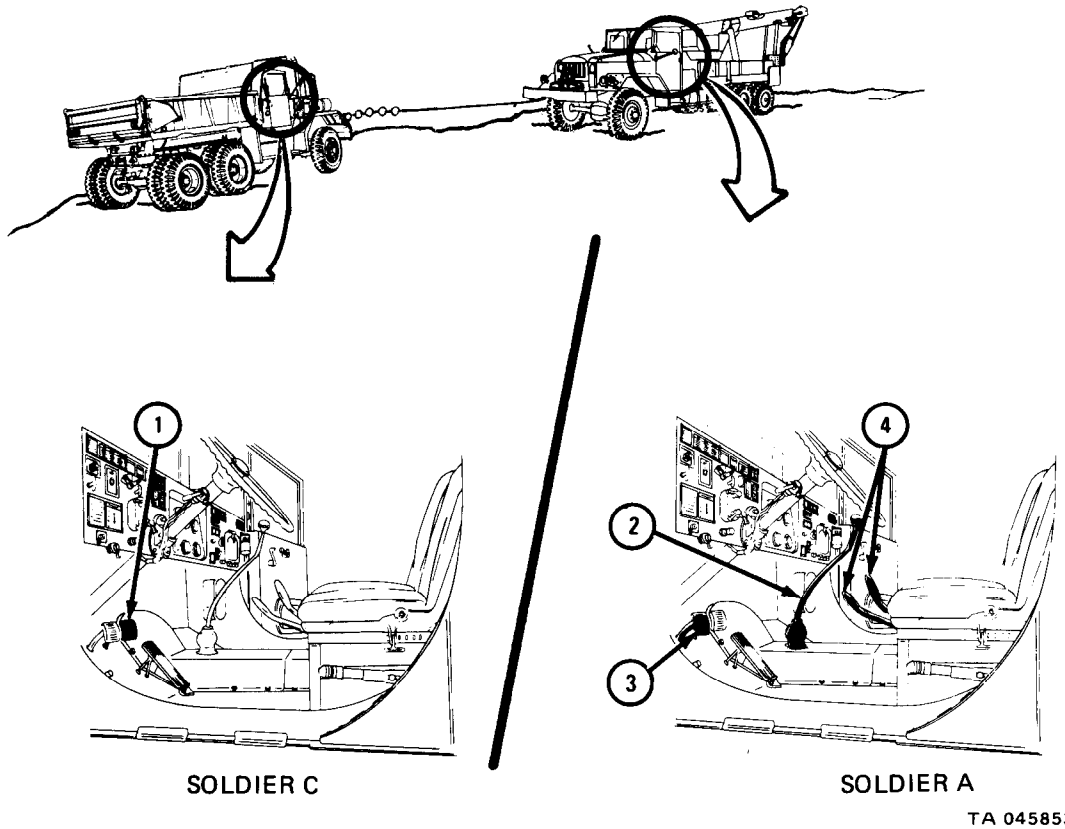
Always use hand THROTTLE to control engine speed when operating winch. Avoid sudden changes in speed or high speed.

Rough, jerky operation may cause broken shear pins and snapped cables, damage to vehicle or injury to personnel.

Soldier A 3. Press down on clutch pedal (3).

4. Move front WINCH CONTROL lever (4) to L (low) position.

GO TO FRAME 7



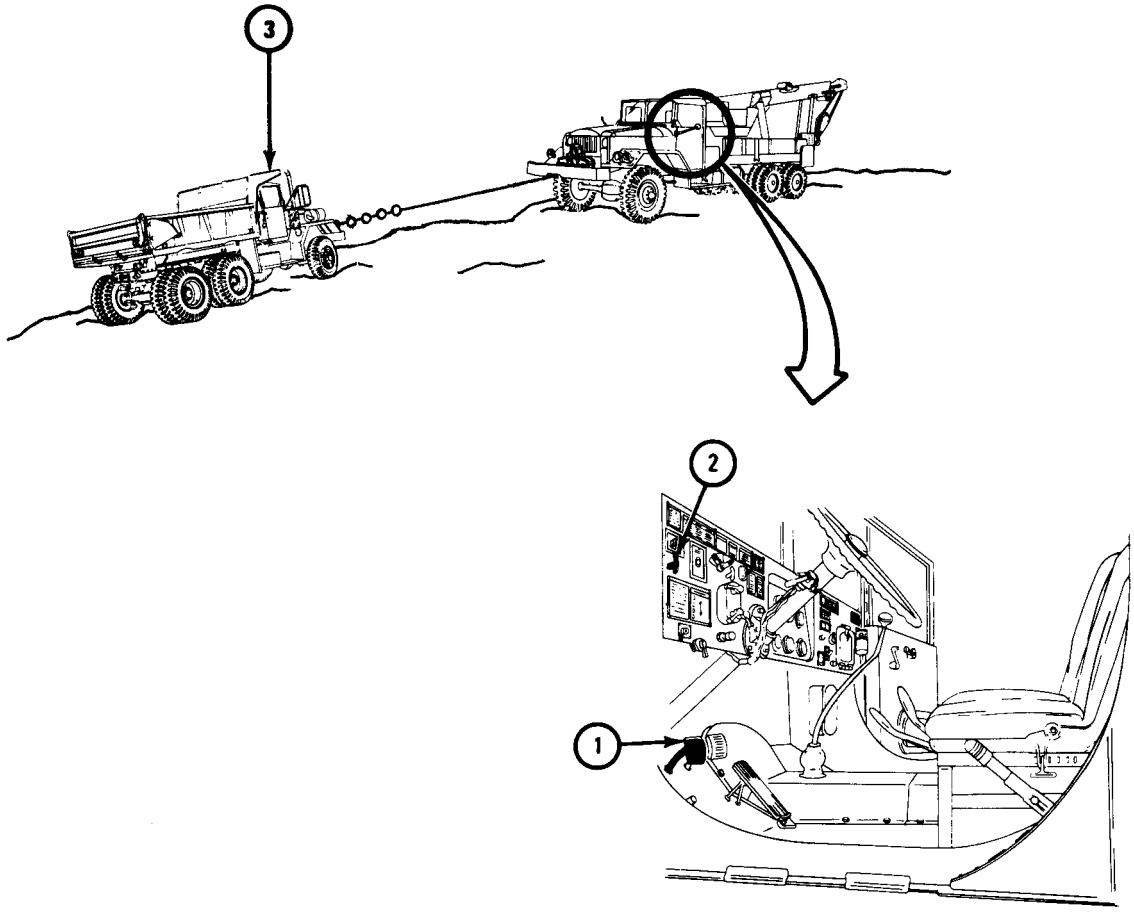
FRAME 7

Soldier A 1. Let clutch pedal (1) come up slowly.

2. Wind in winch cable to take up slack.

3. Use hand THROTTLE (2) to control speed and continue smooth operation. Pull truck (3) three-quarters of the way up the grade.

GO TO FRAME 8



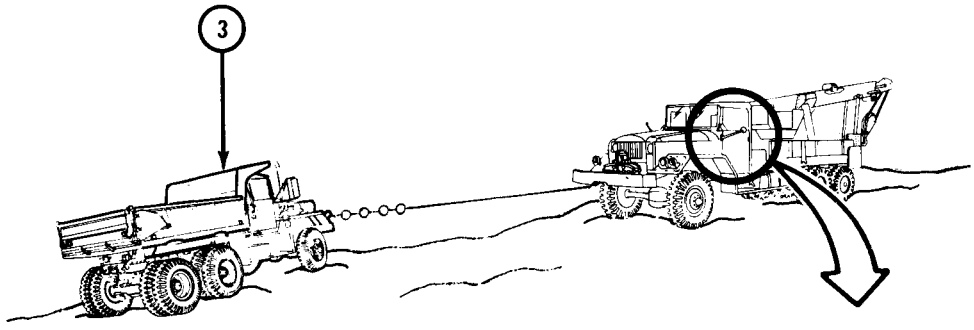
FRAME 8

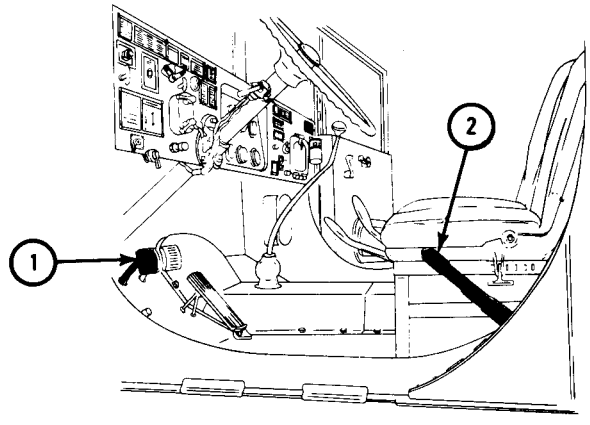
Soldier A 1. Step on and press clutch pedal (1) all the way down.

2. Place front WINCH CONTROL lever (2) in upper N (neutral) position.

3. Slowly let up clutch pedal (1).

IF TRUCK (3) ROLLS DOWN GRADE, GO TO FRAME 9.
IF TRUCK (3) DOES NOT ROLL DOWN GRADE, GO TO FRAME 10





TA 045855

FRAME 9

Soldier C 1. Step on and pushdown brake pedal (1). Pull up handbrake (2) to on position and let goof brake pedal. Tell soldier B when ready.

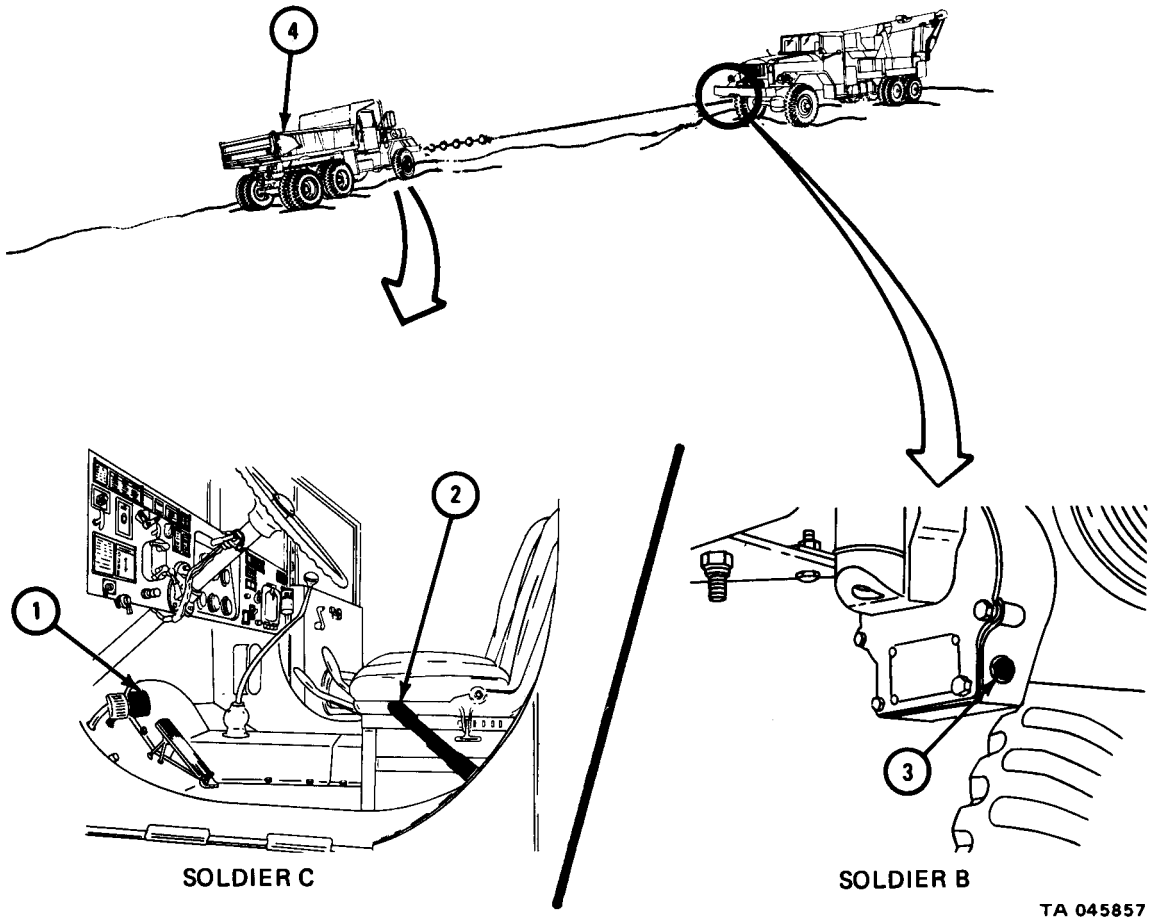
Soldier B 2. Using 3/4-inch wrench, turn screw (3) one-half turn in direction of arrow.

NOTE

When correctly adjusted, the brake will become warm but should not be too hot to allow hand to be held on brake cover.

Soldier C 3. Push handbrake (2) down to off position. If truck (4) rolls down grade, do steps 1 through 3 again.

GO TO FRAME 10



FRAME 10

Soldier C 1. Pull up handbrake (1) to on position. Tell soldier B when ready.

Soldier A 2. Step on and press clutch pedal (2) all the way down.

3. Place front WINCH CONTROL lever (3) in R (reverse) position.

4. Slowly let up clutch pedal (2) until there is enough slack in cable to unhook it from truck (4).

5. Step on and press clutch pedal (2) all the way down.

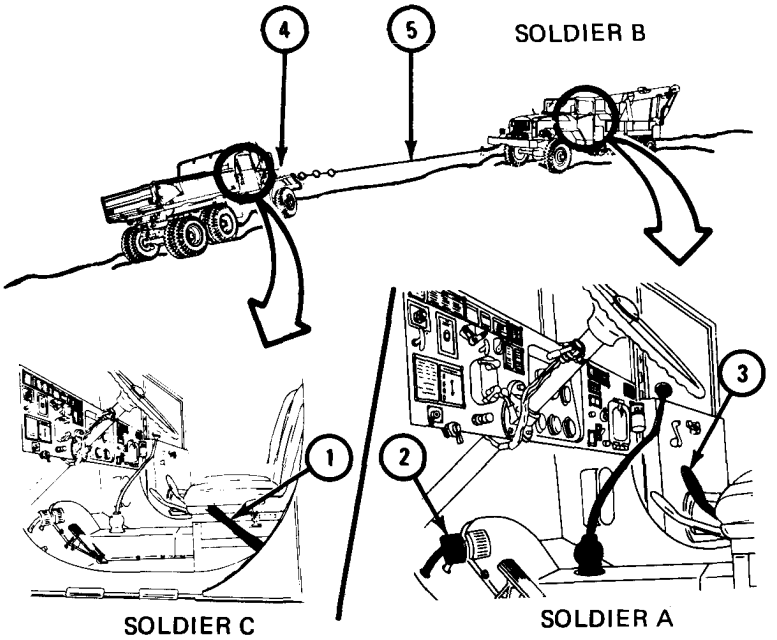
6. Place front WINCH CONTROL lever (3) in N (neutral) position.

7. Let up clutch pedal (2).

Soldier B 8. Unhook winch cable (5) from truck (4).

Soldier A 9. Rewind winch cable (5). Refer to TM 9-2320-211-10.

END OF TASK



18-8. REAR WINCH DRIVE CHAIN REMOVAL, REPLACEMENT AND ADJUSTMENT (TRUCK M543A2).

TOOLS: 3/4-inch box wrench
3/4-inch socket wrench
Pliers
6-inch steel ruler
3/4-inch torque wrench, 150 pound-feet capacity

SUPPLIES: 50-inch long cord
Shims (as needed)

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

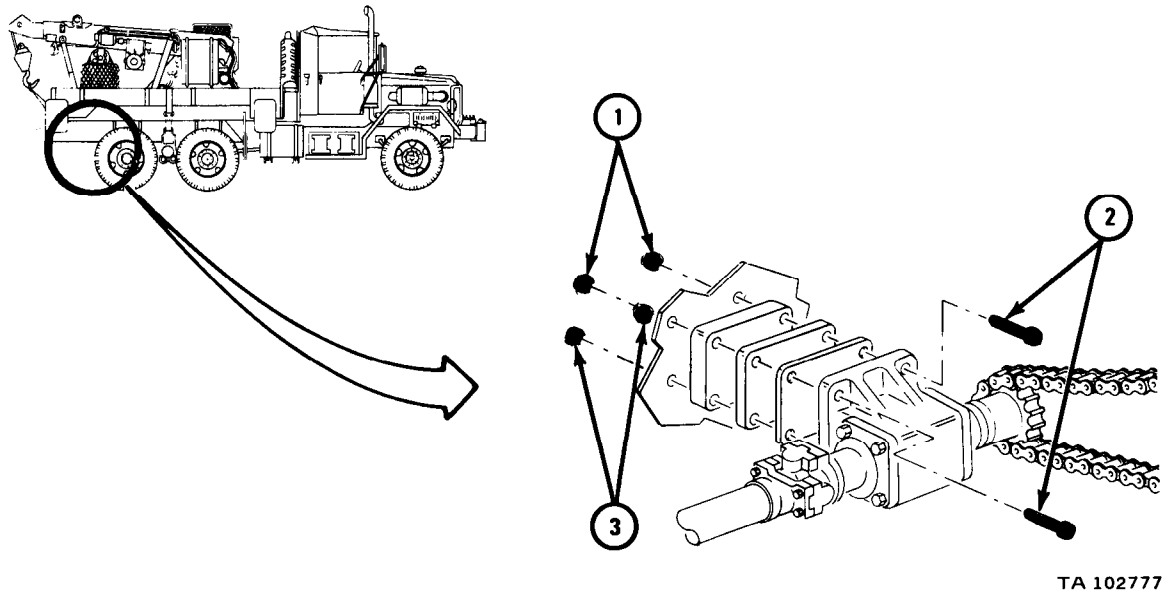
a. Preliminary Procedure. Set rear winch control lever to NEUTRAL position. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 3/4-inch box wrench, hold two nuts (1). Using 3/4-inch socket wrench, unscrew two screws (2) three turns. Do not take off nuts.
2. Using 3/4-inch box wrench, unscrew two nuts (3) three turns. Do not take off nuts.

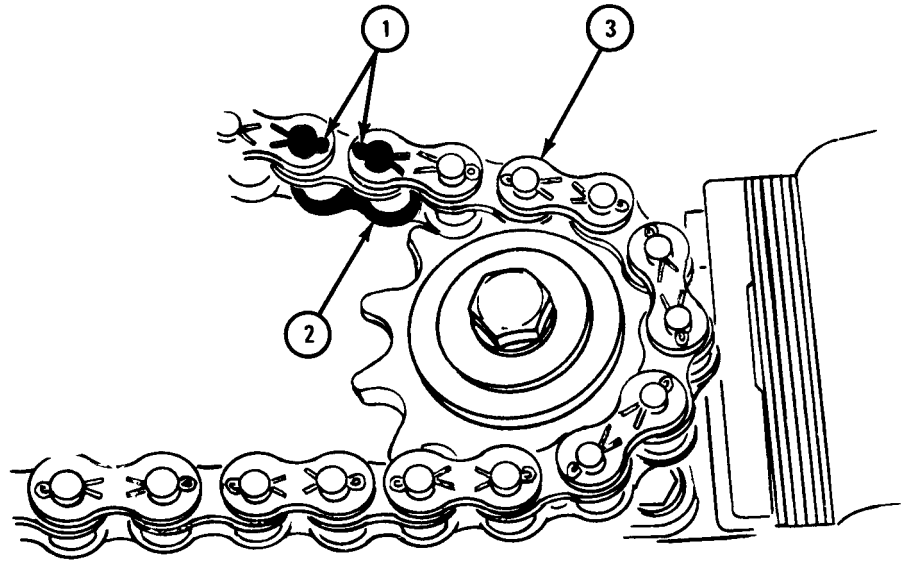
GO TO FRAME 2



FRAME 2

1. Using pliers, take out and throw away two cotter pins (1). Take out link (2). Take off chain (3).

END OF TASK



TA 102778

c. Replacement.

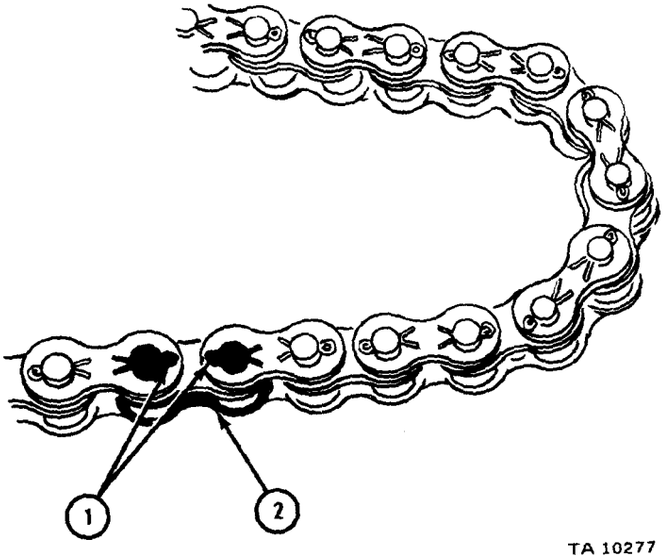
FRAME 1

NOTE

If putting in new chain, do this frame. If putting back chain that was taken off, start with frame 2.

1. Using pliers, take out two cotter pins (1). Take out link (2).

GO TO FRAME 2

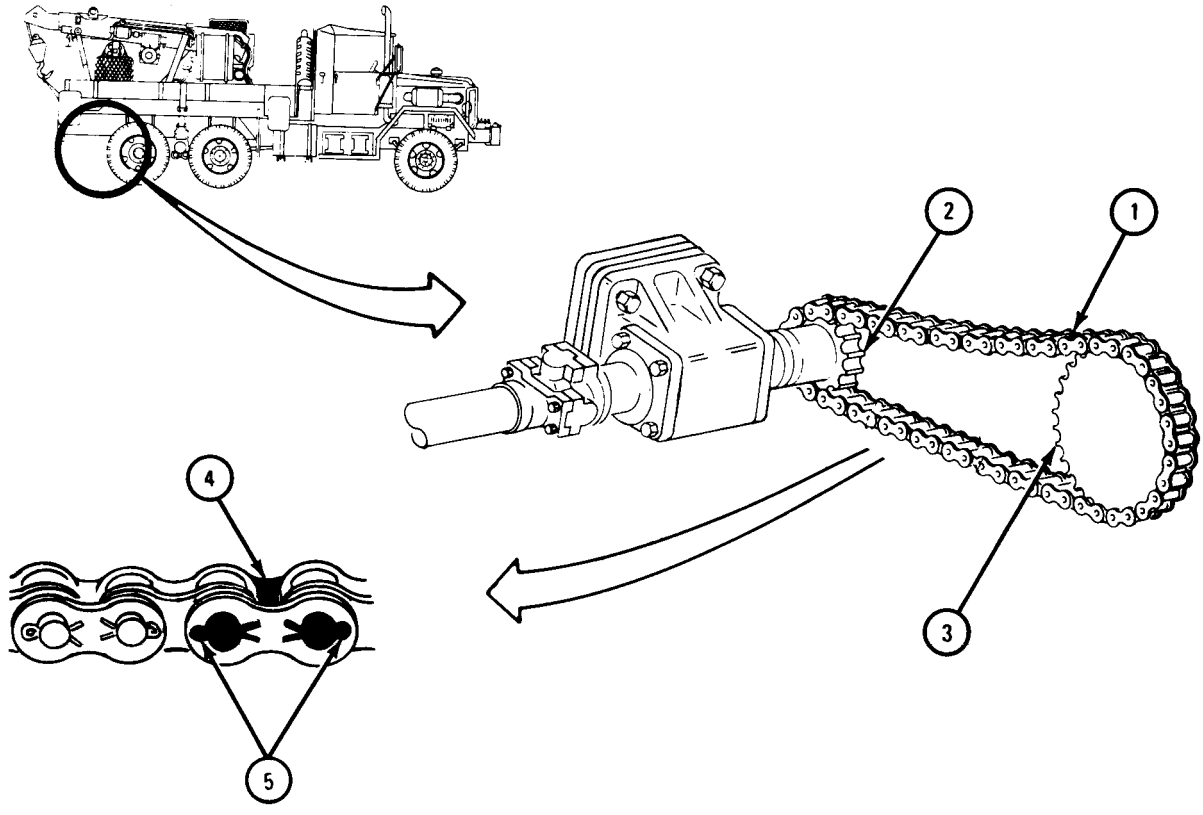


TA 10277

FRAME 2

1. Put chain (1) on drive sprocket (2) and driven sprocket (3).
2. Put link (4) in place. Put two cotter pins (5) through holes in link. Using pliers, bend open ends of cotter pins.

GO TO FRAME 3



TA 102780

FRAME 3

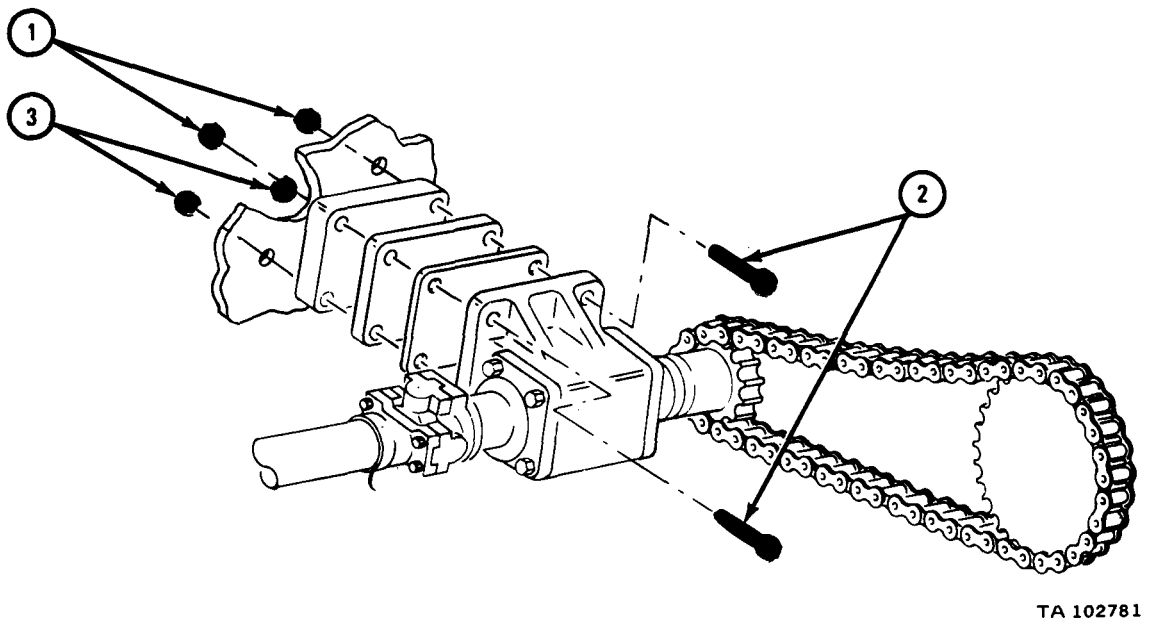
1. Using 3/4-inch box wrench, hold two nuts (1). Using 3/4-inch torque wrench, screw in and tighten two screws (2) to 50 pound-feet.
2. Using 3/4-inch torque wrench, screw on and tighten two nuts (3) to 50 pound-feet.

NOTE

Follow-on Maintenance Action Required:

Adjust chain. Refer to para 18-8c.

END OF TASK



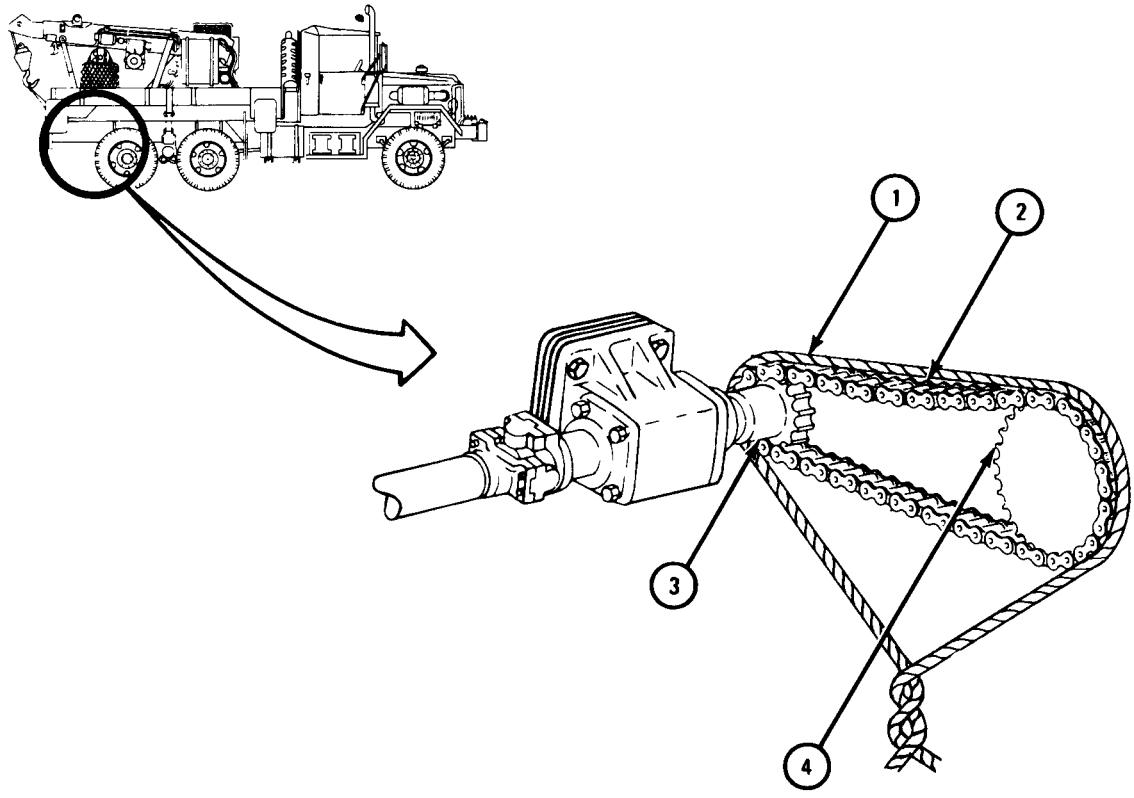
TA 102781

c. Adjustment.

FRAME 1

1. Put cord (1) over chain (2) and around drive sprocket (3) and driven sprocket (4). Hold both ends of cord in same hand and pull to make cord tight.
2. Using 6-inch ruler, measure distance between cord (1) and top of chain (2) at middle of chain. Distance should be 7/16 to 9/16 inch. Take off cord.

IF ADJUSTMENT IS NOT WITHIN GIVEN LIMITS, GO TO FRAME 2.
IF ADJUSTMENT IS WITHIN GIVEN LIMITS, END OF TASK



TA 102782

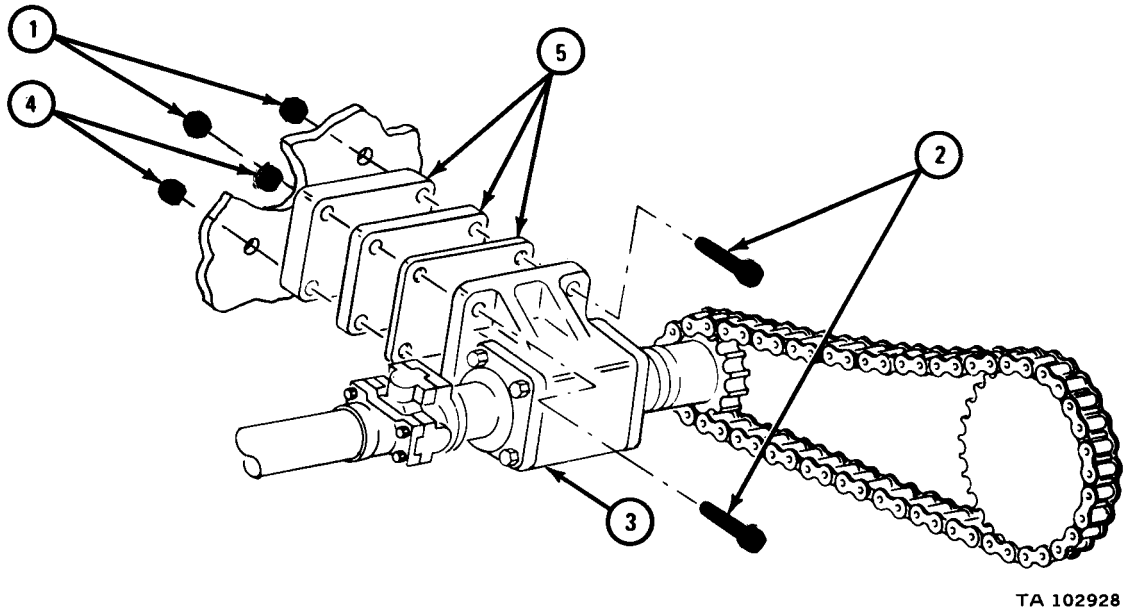
FRAME 2

NOTE

There are three different thicknesses of shims. Use the sizes needed.

1. Using 3/4-inch box wrench, hold two nuts (1). Using 3/4-inch socket wrench, unscrew and take out two screws (2). Take off two nuts.
2. Holding bearing housing (3) and using 3/4-inch socket wrench, unscrew and take off two nuts (4). Move bearing housing with shims (5) away enough to put on or take off shims (5).
3. If chain is too tight, add shims (5). If chain is too loose, take out shims.

GO TO FRAME 3

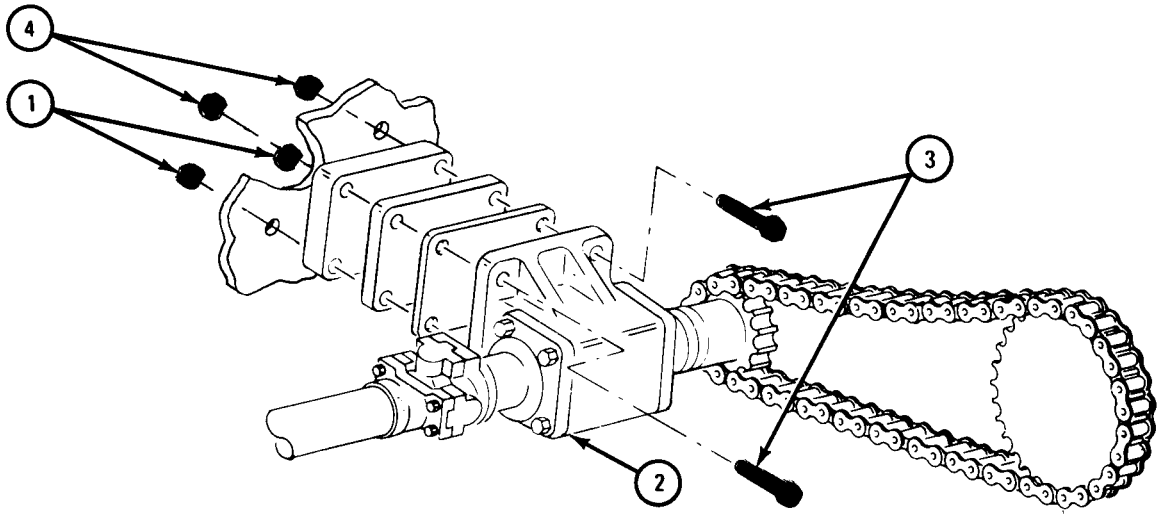


TA 102928

FRAME 3

1. Using 3/4-inch socket wrench, screw on, but do not tighten, two nuts (1). Bearing housing (2) must be free to aline holes for two screws (3).
2. Using 3/4-inch box wrench, hold two nuts (4). Using 3/4-inch torque wrench, tighten two screws (3) to 50 pound-feet.
3. Using 3/4-inch torque wrench, tighten two nuts (1) to 50 pound-feet.

GO TO FRAME 1



TA 102929

18-9. REAR WINCH CABLE TENSIONER ASSEMBLY CHECKOUT AND ADJUSTMENT (TRUCK M543A2).

TOOLS: 3/4-inch wrench
11/16-inch wrench
Pliers

SUPPLIES: 5/8-inch diameter rod
13/16-inch diameter rod

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Remove winch cable from winch. Refer to para 18-5.

(2) Start engine and run it to build up normal operating air pressure in compressed air system. Refer to TM 9-2320-211-10.

b. Checkout.

FRAME 1

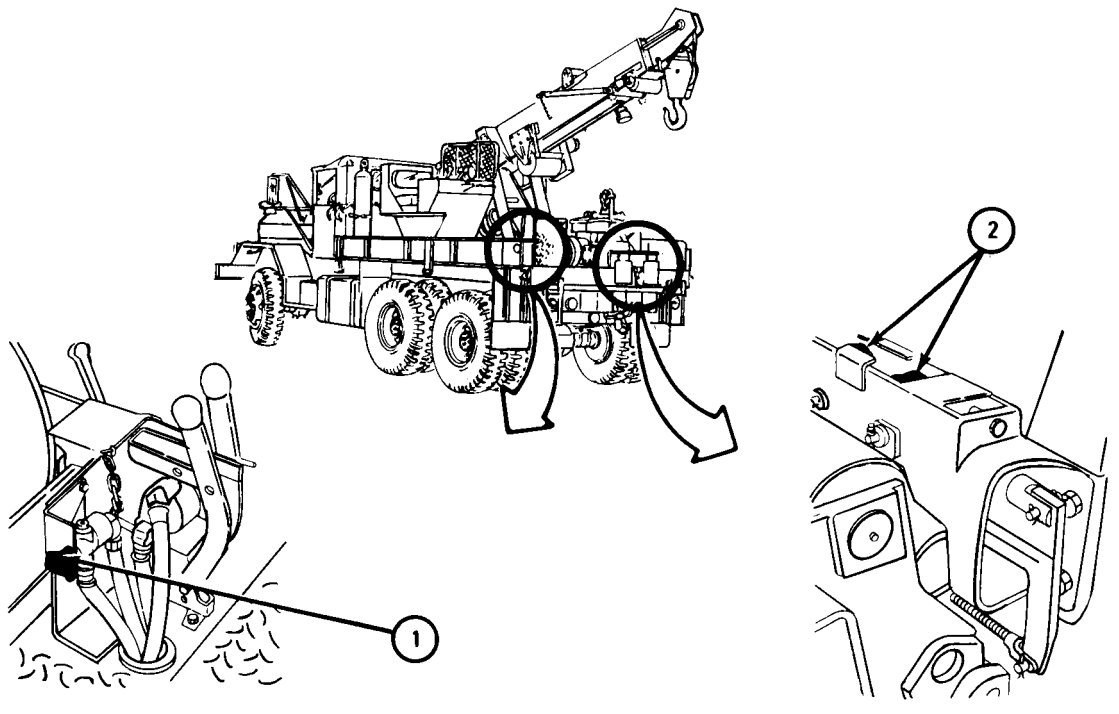
1. Move cable tensioner control valve lever (1) to ON position.
2. Put 5/8-inch diameter rod between two tensioner sheaves (2). Rod should fit snugly. Take out rod.
3. Move cable tensioner control valve lever (1) to OFF position.
4. Put 13/16-inch diameter rod between tensioner sheaves (2). Rod should fit easily. Take out rod.
5. If rods did not fit properly in steps 2 and 4, adjust cable tensioner assembly. Refer to para 18-9c.

NOTE

Follow-on Maintenance Action Required:

1. Stop engine. Refer to TM 9-2320-211-10.
2. Replace winch cable. Refer to para 18-5.

END OF TASK



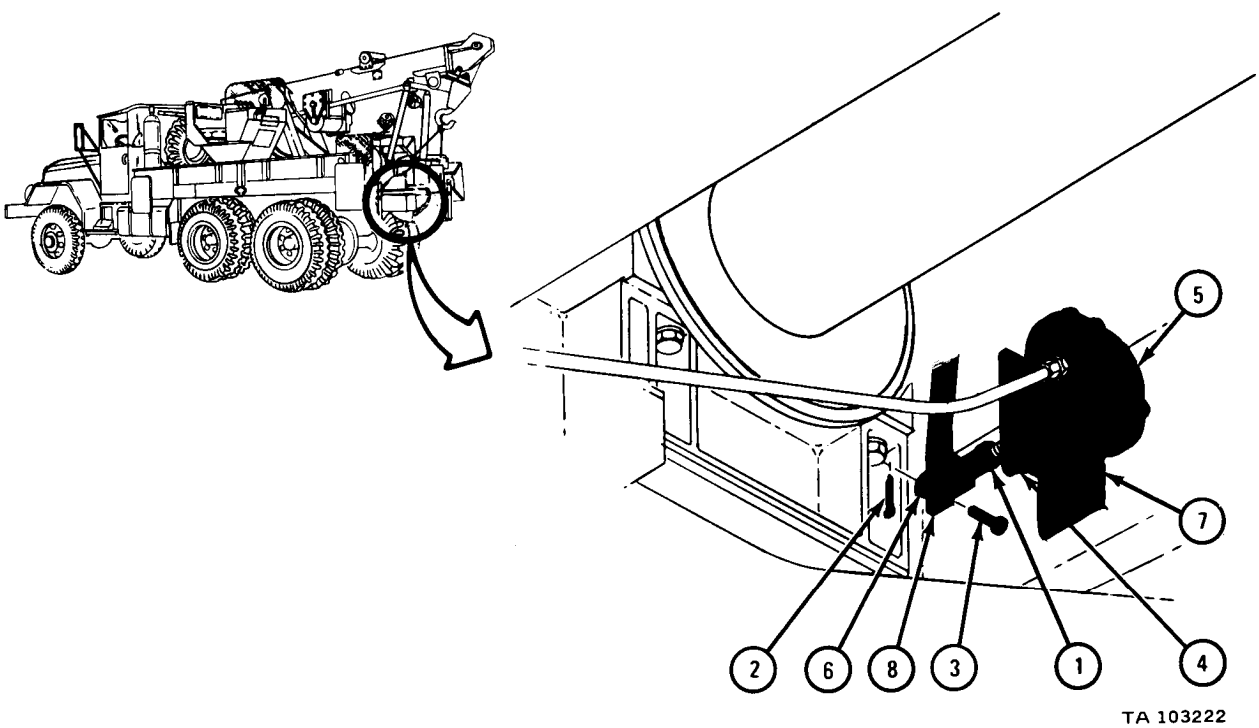
TA 103221

c. Adjustment.

FRAME 1

1. Using 3/4-inch wrench, loosen nut (1).
2. Using pliers, take out and throw away cotter pin (2). Push out clevis pin (3).
3. Using 11/16-inch wrench, unscrew and take off two nuts with washers (4). Pull tensioner brake chamber (5) back to turn yoke (6).
4. If tensioner sheaves are too tight, turn yoke (6) toward nut (1). If tensioner sheaves are too loose, turn yoke away from nut.
5. Put tensioner brake chamber (5) in place on bracket (7). Aline holes in yoke (6) with hole in lever (8). Put in clevis pin (3).
6. Using pliers, put in and bend open ends of new cotter pin (2).
7. Using 11/16-inch wrench, screw on and tighten two nuts with washers (4).
8. Using 3/4-inch wrench, tighten nut (1) against yoke (6).
9. Do checkout procedure again. Refer to para 18-9b.

END OF TASK



18-10. REAR WINCH PROPELLER SHAFT PILLOW BLOCK REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench (2)
5/32-inch sockethead screw key (Allen wrench or equivalent)
2-inch extension

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Remove rear propeller shaft slip yoke. Refer to Part 1, para 10-12.

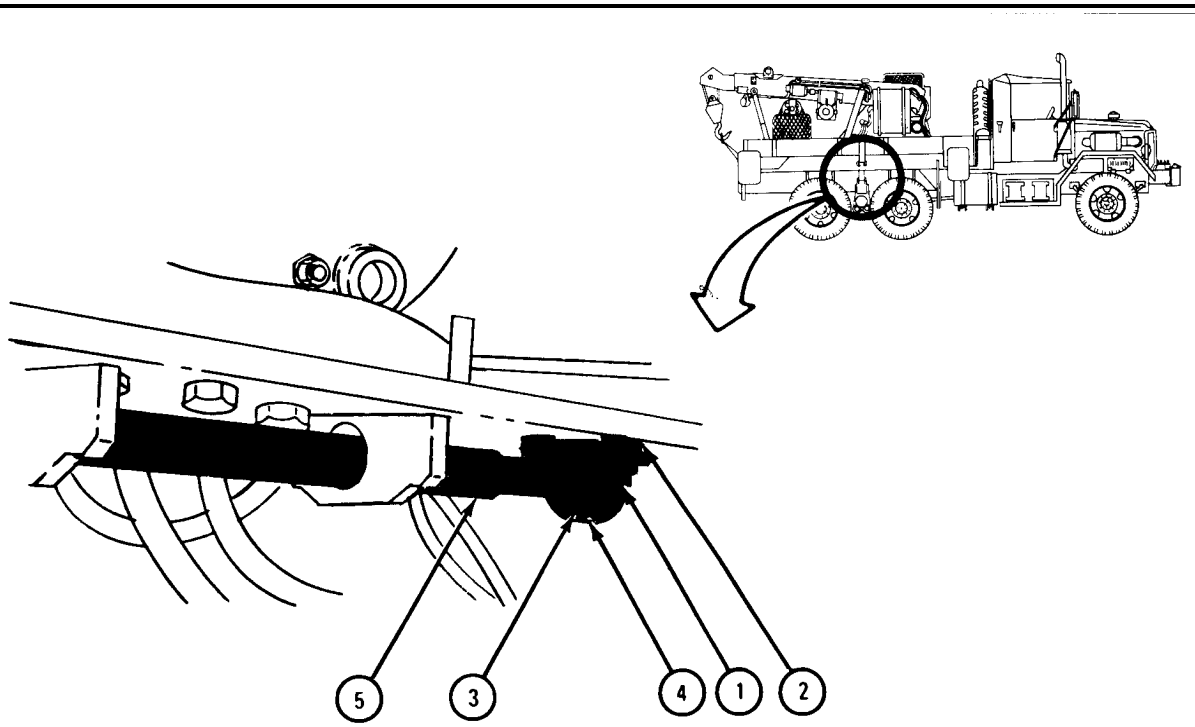
(2) Remove front floor plate. Refer to Part 1, para 10-11.

b. Removal.

FRAME 1

1. Using 3/4-inch wrenches, unscrew and take out capscrew (1).
2. Take out two spacers (2).
3. Using 5/32-inch allen wrench, unscrew setscrew (3).
4. Slide pillow block (4) off propeller shaft (5).

END OF TASK



TA 102486

c. Replacement.

FRAME 1

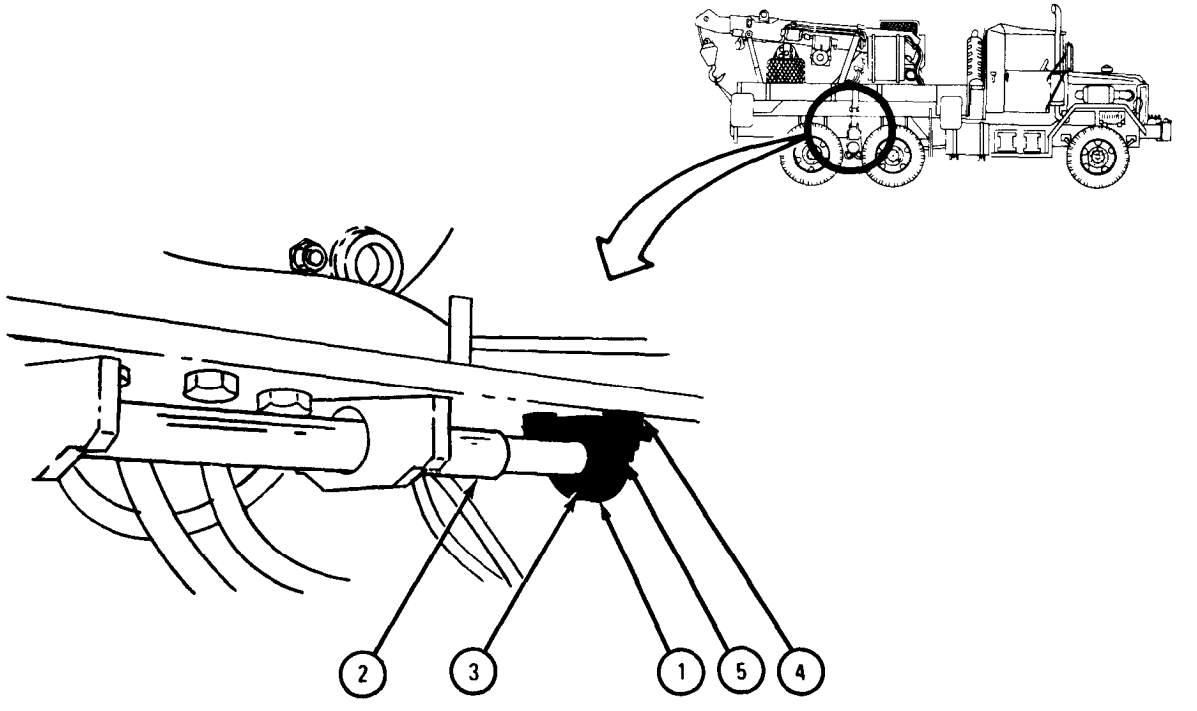
1. Slide pillow block assembly (1) onto propeller shaft (2).
2. Using 5/32-inch allen wrench, screw in setscrew (3).
3. Put in two spacers (4).
4. Using 3/4-inch wrenches, screw in two capscrews (5).

NOTE

Follow-on Maintenance Action Required:

1. Replace rear propeller shaft slip yoke. Refer to Part 1, para 10-12.
2. Replace front floor plate. Refer to Part 1, para 10-11.

END OF TASK



TA 102485

18-11. REAR WINCH TO POWER DIVIDER CONTROLS AND LINKAGE ADJUSTMENT (TRUCK M543A2).

TOOLS: 3/4-inch open end wrench
Pliers

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, wheels chocked.

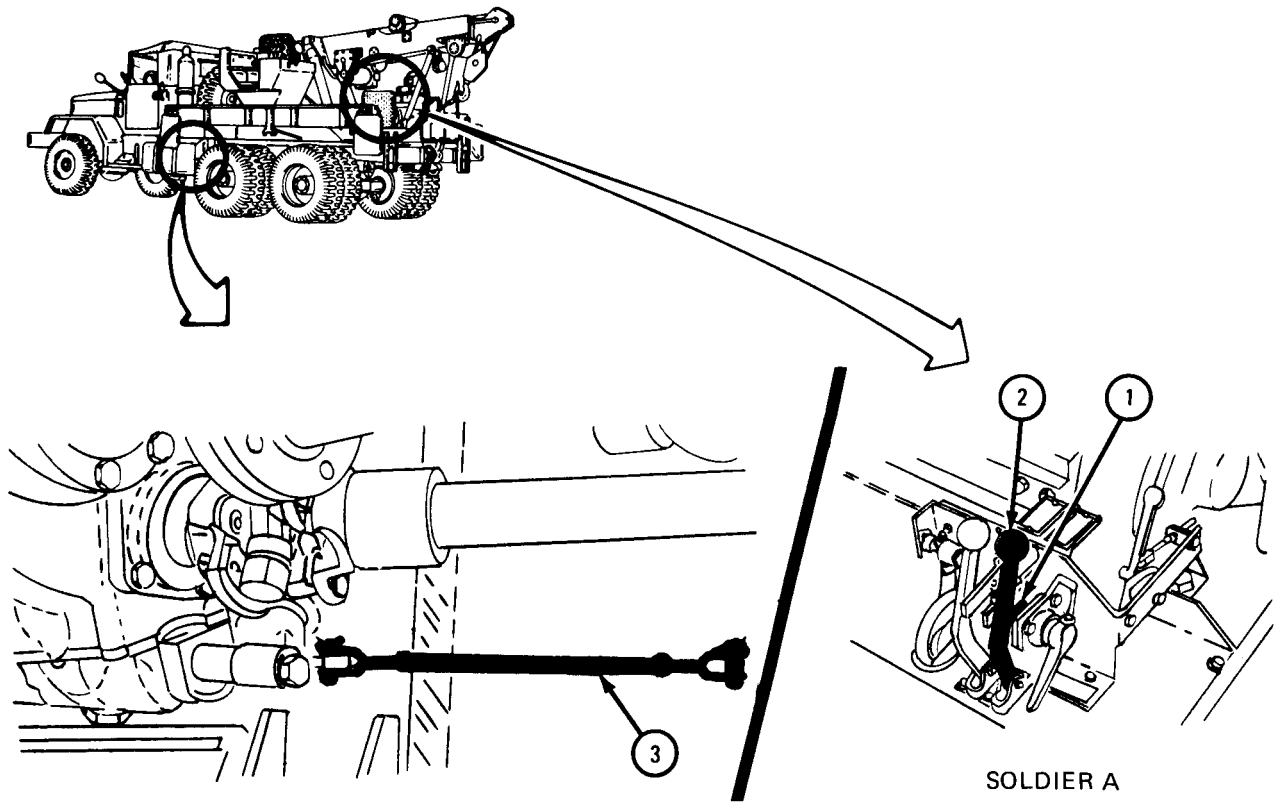
FRAME 1

Soldier A 1. Take out lockpin (1). Move control lever (2) back and forth.

Soldier B 2. Working under truck, find moving control rod (3). Tell soldier A when ready.

Soldier A 3. Put control lever (2) in NEUTRAL position. Put in lockpin (1).

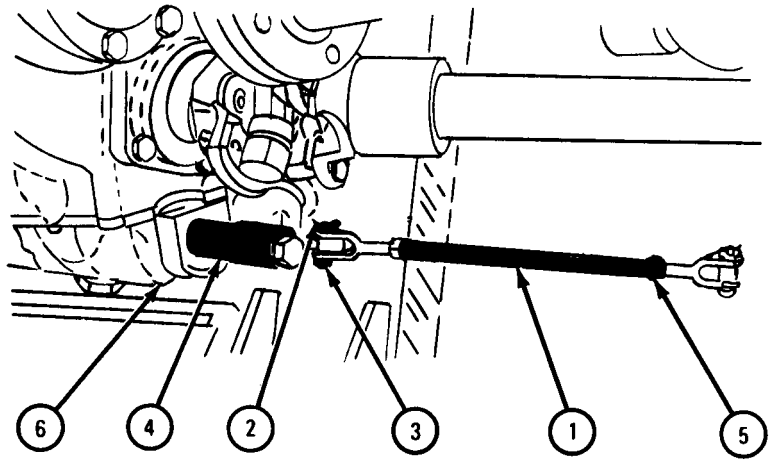
GO TO FRAME 2



FRAME 2

1. Working on control rod (1) and using pliers, take out and throw away cotter pin (2). Take out clevis pin (3).
2. Take control rod (1) off shifter shaft (4). Using wrench, loosen nut (5).
3. Push shifter shaft (4) into power divider (6) as far as it will go.
4. Pull shifter shaft (4) out of power divider (6) until you feel its first stop.

GO TO FRAME 3



TA 103253

FRAME 3

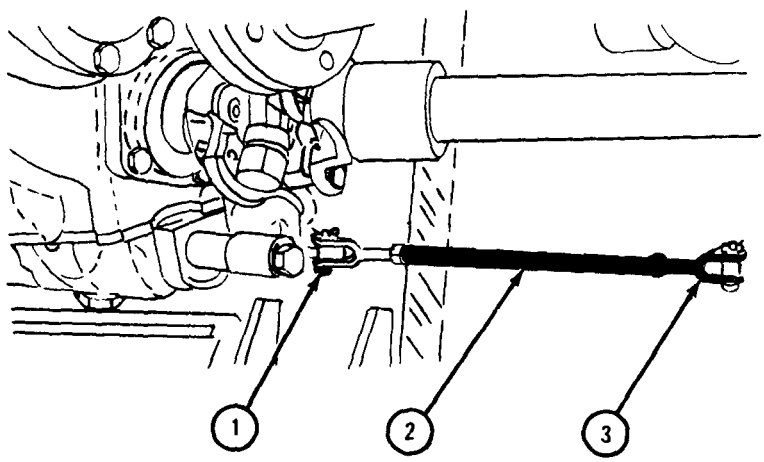
1. Check alinement of holes for clevis pin (1). Screw control rod (2) in or out as needed to aline holes for clevis pin. Note number of turns.

NOTE

There must be three or more threads on control rod (2) screwed into clevis (3).

2. If control rod was unscrewed in step 1, unscrew it four more turns to check it. Screw control rod back in four turns. Aline holes for clevis pin (1).

IF HOLES ARE NOT ALINED, GO TO FRAME 4.
IF HOLES ARE ALINED, GO TO FRAME 5

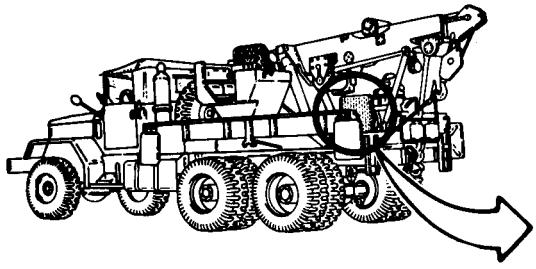


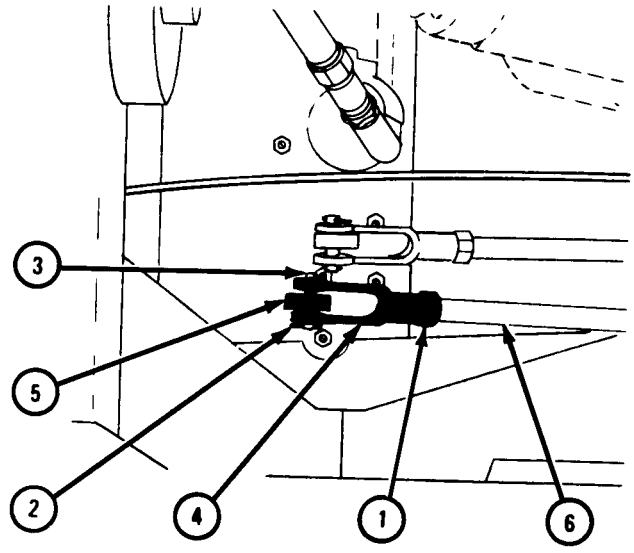
TA 103254

FRAME 4

1. Using wrench, loosen nut (1).
2. Using pliers, take out and throw away cotter pin (2). Take out clevis pin (3). Take clevis (4) off control lever (5).
3. Screw clevis (4) onto control rod (6) the number of turns noted in frame 3.
4. Put clevis (4) onto control lever (5), alining hole for clevis pin (3). Put clevis pin in place. Put new cotter pin (2) through hole in clevis pin and using pliers, bend open ends of cotter pin.
5. Using wrench, tighten nut (1) against clevis (4).

GO TO FRAME 5





TA 103255

FRAME 5

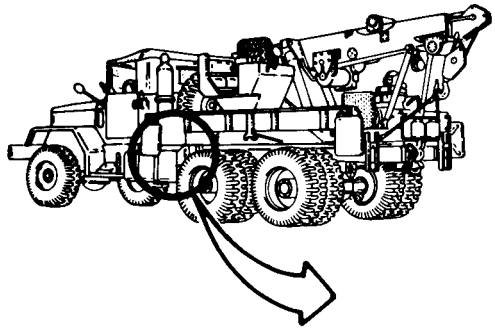
1. Put clevis (1) in place on shifter shaft (2). Put clevis pin (3) through clevis. Put cotter pin (4) through hole in clevis pin and using pliers, bend open ends of cotter pin.
2. Using wrench, tighten nut (5) against clevis (6).

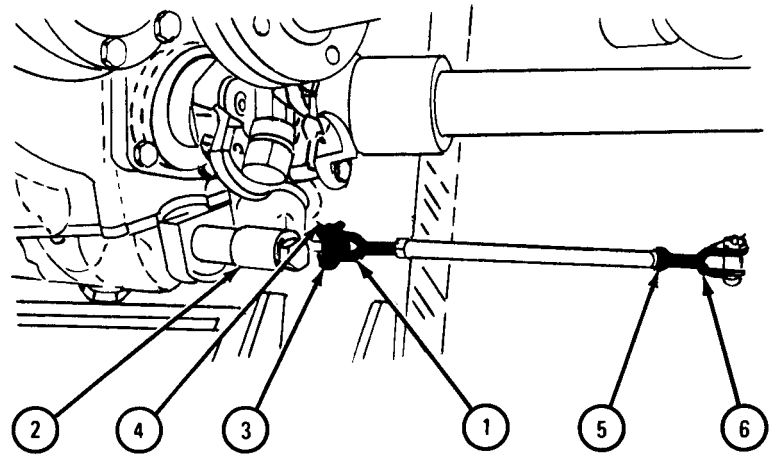
NOTE

Follow-on Maintenance Action Required:

Check rear winch operation. Refer to TM 9-2320-211-10.

END OF TASK





TA 103256

18-12. REAR WINCH ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS:
- 1 1/2-inch socket wrench
- 1 1/2-inch wrench
- 1 5/16-inch wrench (2)
- Hoist, 2 ton capacity
- Pliers
- Torque wrench, 600-pound-feet capacity
- 1 x 11-inch brass tip drift pin punch
- Medium ballpeen hammer
- 9/16-inch wrench
- 7/16-inch wrench
- Mallet

SUPPLIES: Length of wood, 2 x 4 x 36 inches

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Remove drive chain. Refer to para 18-8.

(2) Remove driven sprocket shear pin. Refer to para TM 9-2320-211-10.

(3) Tell direct support to remove driven sprocket.

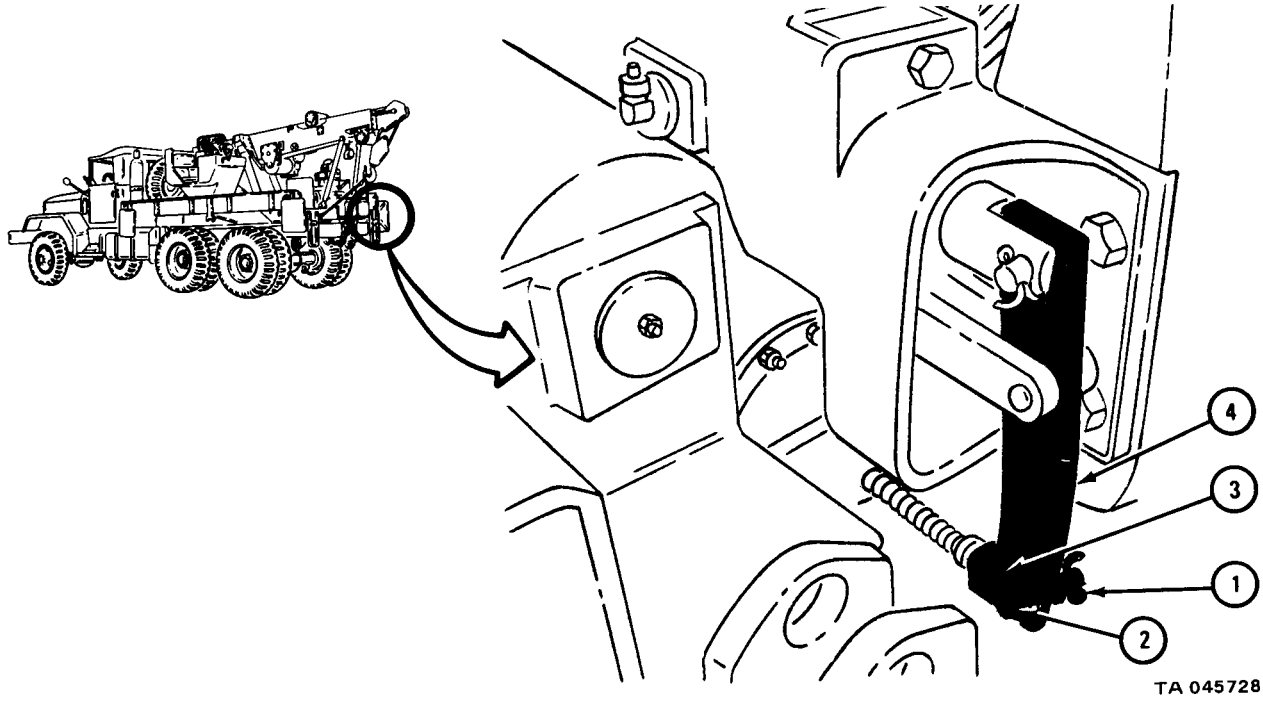
(4) Swing boom to side. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using pliers, take out, and throw away cotter pin (1). Take out yoke pin (2). Move yoke (3) away from adjusting frame lever (4).

GO TO FRAME 2



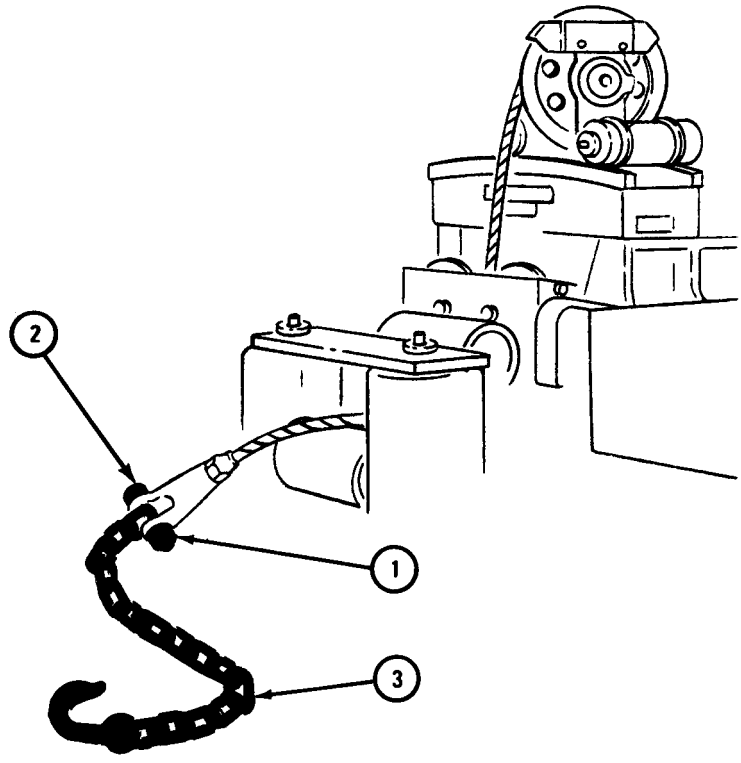
FRAME 2

WARNING

Always wear leather gloves when handling winch cable. Never allow cable to run through hands. Broken or rusty wires can cause serious injury to personnel.

1. Using 1 5/16-inch wrenches, unscrew and take off nut (1). Take out screw (2) and take off chain and hook assembly (3).

GO TO FRAME 3

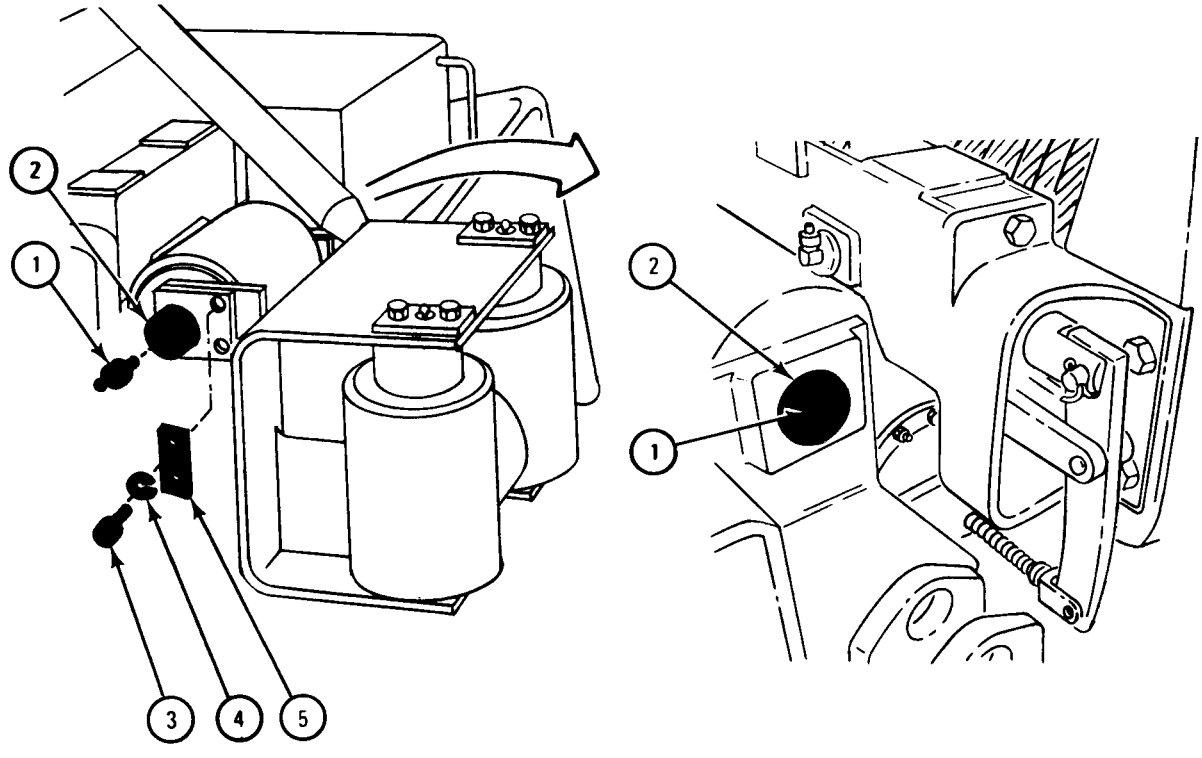


TA 045731

FRAME 3

1. Using 7/16-inch wrench, unscrew and take out grease fitting (1) on each end of shaft (2).
2. Using 9/16-inch wrench, unscrew and take out two screws (3) and lockwashers (4).
3. Take off key (5).

GO TO FRAME 4



TA 084081

FRAME 4

WARNING

Always wear leather gloves when handling winch cable. Never allow cable to run through hands. Rusty or broken wires can cause serious injury to personnel.

Soldier A 1. Using length of wood as lever, pry up roller (1) to keep shaft (2) alined with holes in brackets (3).

Soldier B 2. Using drift pin punch and hammer on right side of roller (1), drive out shaft (2) as far as it will go. Pull shaft the rest of the way out.

Soldier A 3. Using length of wood, pry up roller (1) enough for clevis (4) to pass under roller.

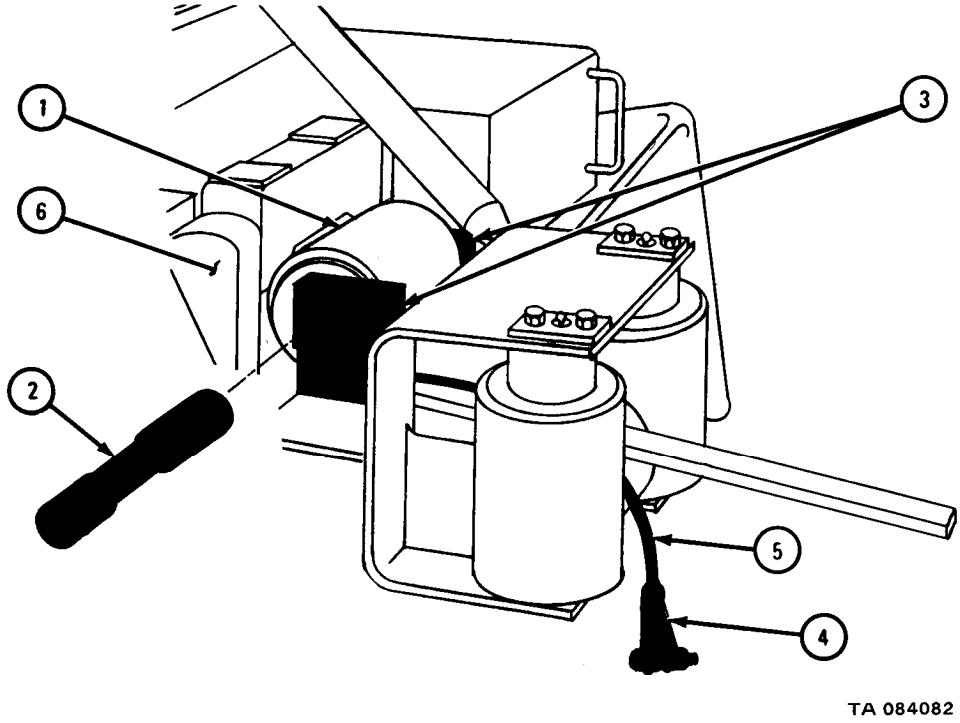
Soldier B 4. Push clevis (4) and end of winch cable (5) under roller (1) into winch housing (6).

Soldier A 5. Using length of wood, lower roller (1) into place and aline shaft (2) with holes in roller and brackets (3).

Soldier B 6. Using mallet, lightly drive shaft (2) into brackets (3) and roller (1).

Soldier A 7. Take out length of wood.

GO TO FRAME 5



TA 084082

FRAME 5

WARNING

Rear winch assembly (1) is heavy. Rig hoist chain on rear winch assembly so that it does not slide. Sliding of rear winch assembly could cause serious injury to personnel and damage to equipment.

1. Put hoist chain on rear winch assembly (1) as shown. Using hoist, take slack out of hoist chain.

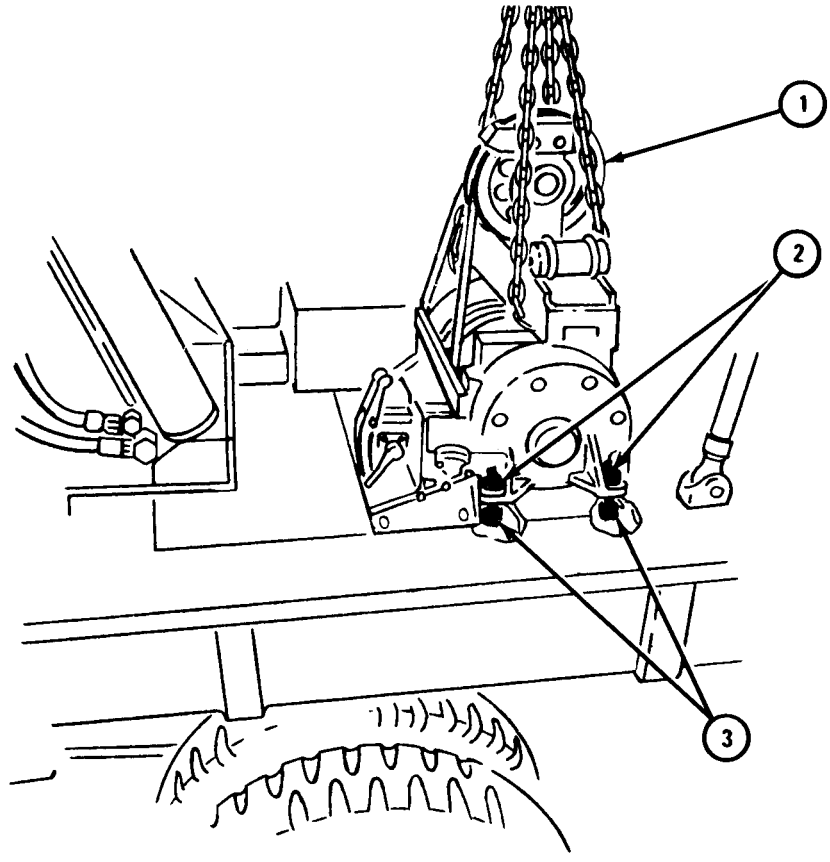
Soldier A 2. Using 1 1/2-inch wrench, hold four nuts with lockwashers (2), two on each side of rear winch assembly (1). Tell soldier B when ready.

Soldier B 3. Working under truck using 1 1/2-inch wrench, unscrew and take out four screws (3).

Soldier A 4. Take off four nuts with lockwashers (2).

5. Using hoist, lift rear winch assembly (1) off truck.

END OF TASK



TA 084083

c. Replacement.

FRAME 1

WARNING

Rear winch assembly (1) is heavy. Rig hoist chain on rear winch assembly so that it does not slide. Sliding of rear winch assembly could cause serious injury to personnel and damage to equipment.

1. Using hoist as shown, lift rear winch assembly (1) into place and aline four mounting screw holes.

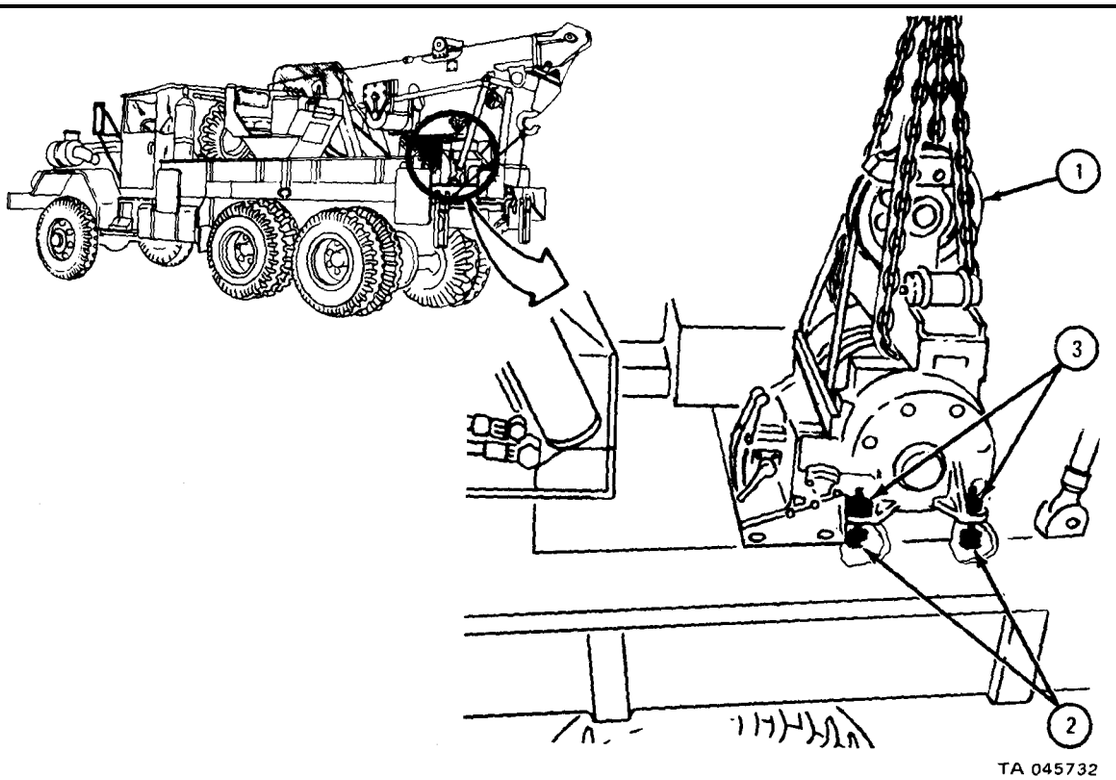
Soldier A 2. Working under truck, put in four screws (2), two on each side of rear winch assembly (1) as shown.

Soldier B 3. Place four nuts and lockwashers (3) on four screws (2). Using 1 1/2-inch wrench, hold four nuts and lockwashers (3). Tell soldier A when ready.

Soldier A 4. Using 1 1/2-inch socket wrench with torque wrench, tighten four screws (2) to 200 to 235 pound-feet.

5. Take hoist chains off rear winch assembly (1). Take away hoist.

GO TO FRAME 2



FRAME 2

WARNING

Always wear leather gloves when handling winch cable. Never allow cable to run through hands. Rusty or broken wires can cause serious injury to personnel.

Soldier A 1. Using length of wood as lever, pry up roller (1) to keep shaft (2) alined with holes in brackets (3).

Soldier B 2. Using drift pin punch and hammer on right side of roller (1), drive out shaft (2) as far as it will go. Pull shaft the rest of the way out.

Soldier A 3. Using length of wood, pry up roller (1) enough for clevis (4) to pass under roller.

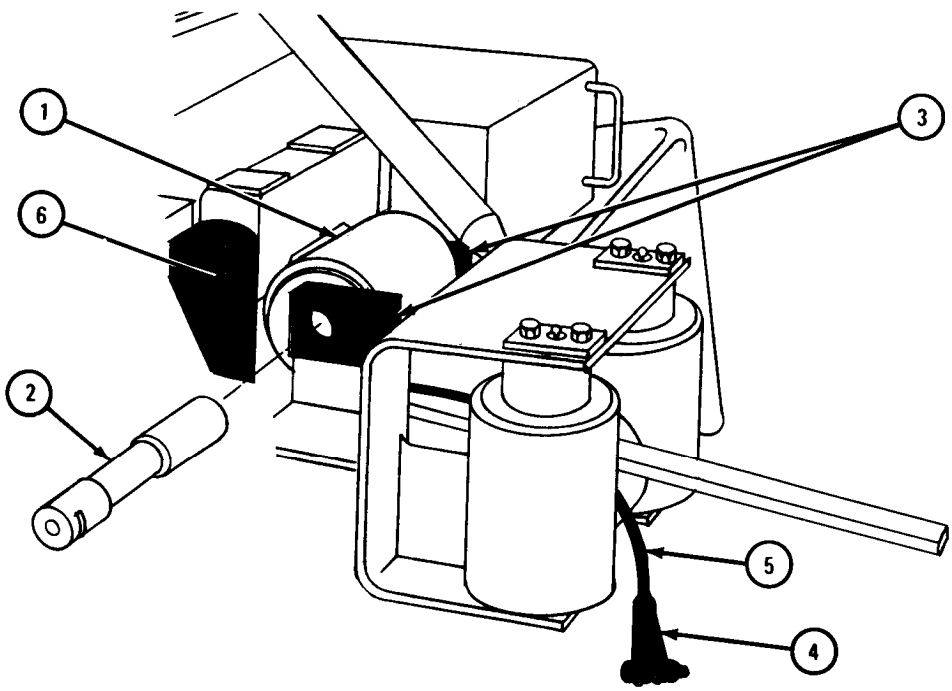
Soldier B 4. Push clevis (4) and end of winch cable (5) out from winch housing (6) and under roller (1) as shown.

Soldier A 5. Using length of wood, lower roller (1) into place and aline shaft (2) with holes in roller and brackets (3).

Soldier B 6. Using mallet, lightly drive shaft (2) into brackets (3) and roller (1).

Soldier A 7. Take out length of wood.

GO TO FRAME 3

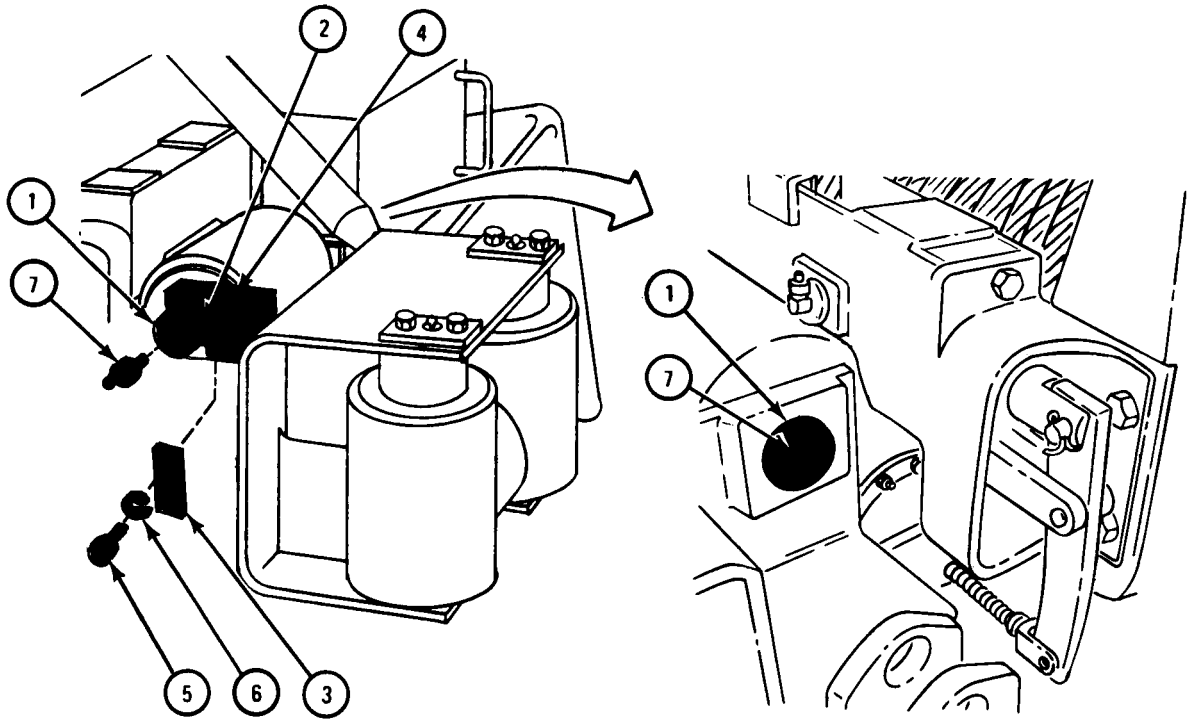


TA 084082

FRAME 3

1. Using pipe wrench, turn shaft (1) so keyway (2) is as shown.
2. Place key (3) in keyway (2), alining holes in key with holes in bracket (4).
3. Using 9/16-inch wrench, screw in and tighten two screws (5) and lock-washers (6).
4. Using 7/16-inch wrench, screw in and tighten two grease fittings (7).

GO TO FRAME 4



TA 084084

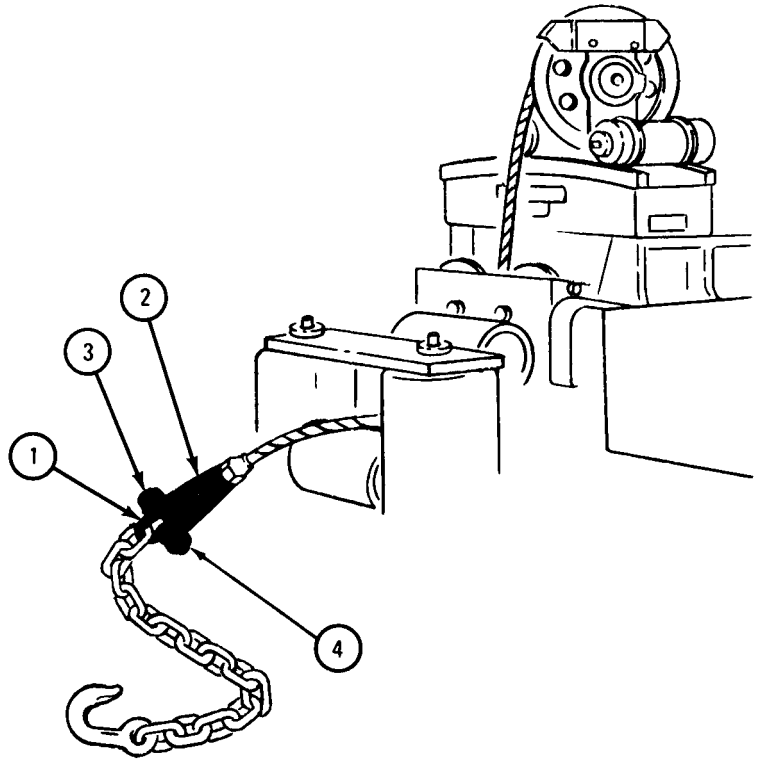
FRAME 4

WARNING

Always wear leather gloves when handling winch cable. Never allow cable to run through hands. Rusty or broken wires can cause serious injury to personnel.

1. Put chain link (1) into clevis (2) and put screw (3) in place.
2. Using 1 5/16-inch wrenches, screw on and tighten nut (4).

GO TO FRAME 5



TA 045733

FRAME 5

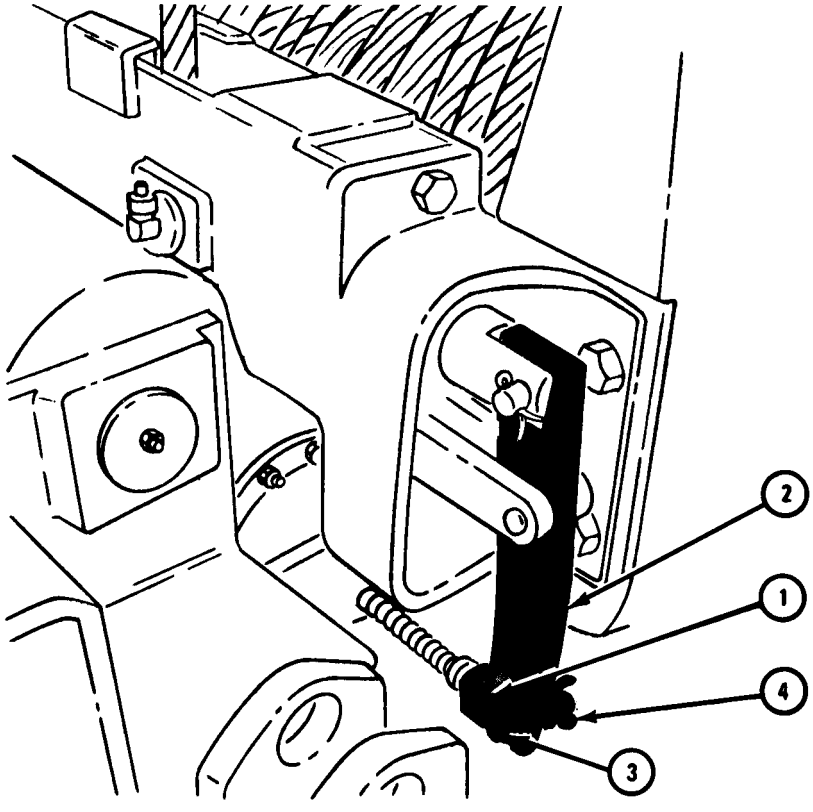
1. Put yoke (1) in place on adjusting frame lever (2) and aline holes.
2. Put in yoke pin (3).
3. Using pliers, put in and bend open ends of cotter pin (4).

NOTE

Follow-on Maintenance Action Required:

1. Replace drive chain. Refer to para 18-8.
2. Tell direct support to replace driven sprocket.
3. Replace driven sprocket shear pin. Refer to TM 9-2320-211-10.
4. Swing boom to travel position. Refer to TM 9-2320-211-10.

END OF TASK



TA 084085

18-13. DUMP TRUCK BODY HOIST PUMP ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 3/8-inch wrench
3/4-inch wrench

SUPPLIES: Hydraulic pump gasket

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, dump body in raised position, safety braces locked, engine off, handbrake set.

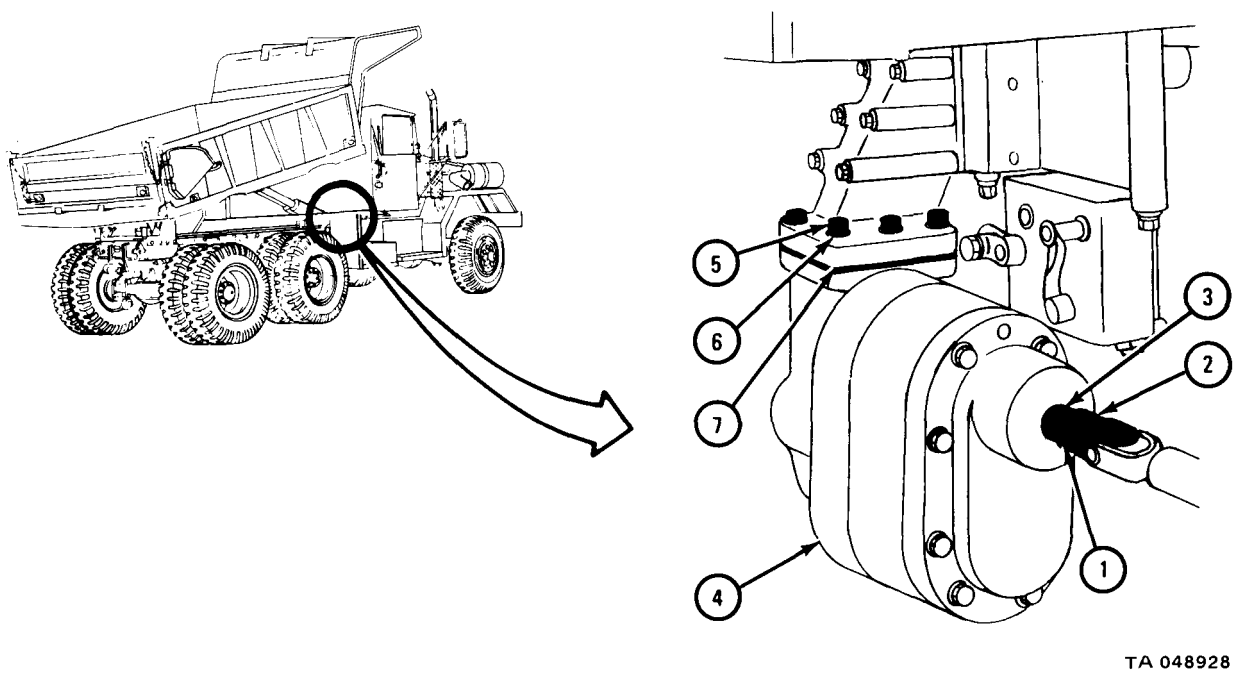
a. Preliminary Procedure. Drain hydraulic reservoir. Refer to LO 9-2320-211-12.

b. Removal.

FRAME 1

Soldier A	1.	Using 3/8-inch wrench, unscrew and take out universal joint yoke screw (1).
	2.	Slide universal joint yoke (2) off pump shaft (3).
Soldier B	3.	Hold hydraulic pump (4).
Soldier A	4.	Using 3/4-inch wrench, unscrew and take off six screws (5) and lockwashers (6).
Soldier B	5.	Take out hydraulic pump (4) with gasket (7). Throw gasket away.

END OF TASK



c. Replacement.

FRAME 1

Soldier A 1. Put pump gasket (1) in place as shown and hold hydraulic pump (2) in place.

Soldier B 2. Using 3/4-inch wrench, screw in and tighten six screws (3) and lockwashers (4).

3. Put universal joint yoke (5) on pump shaft (6) as shown.

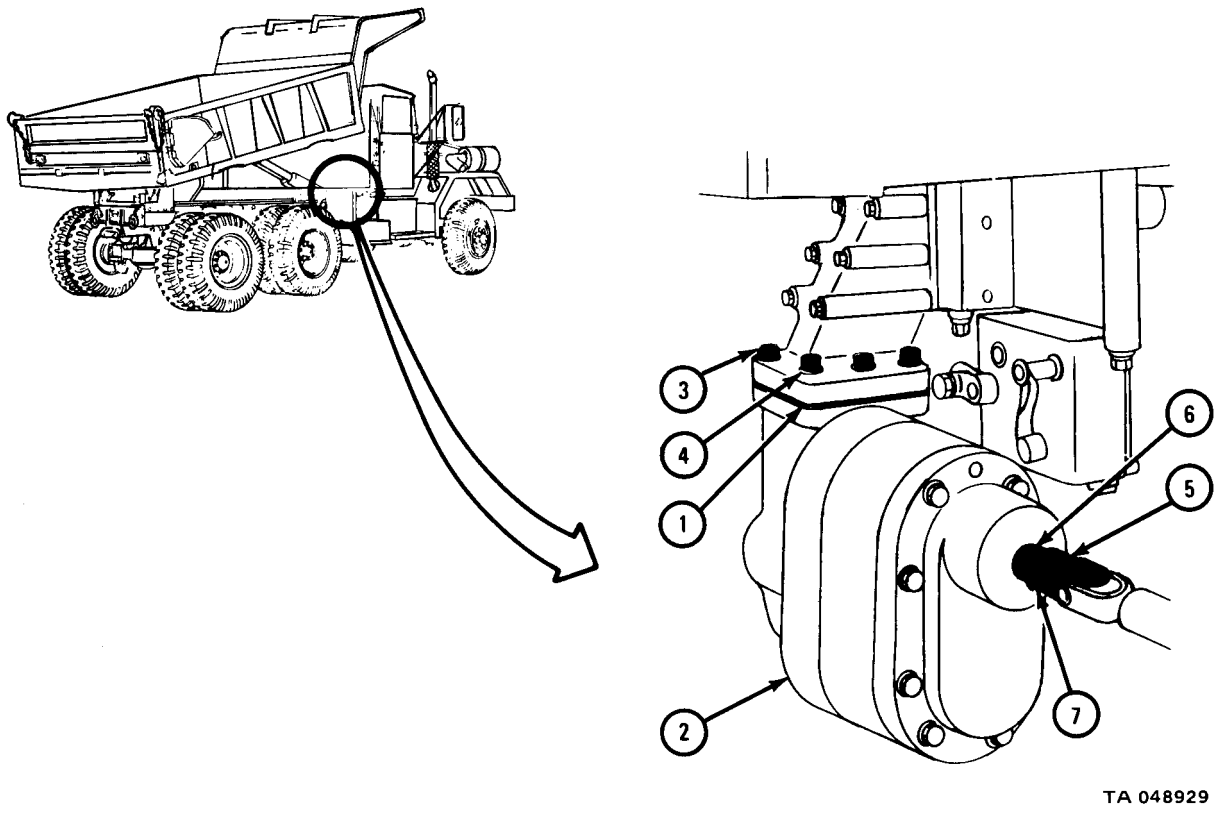
4. Using 3/8-inch wrench, screw in and tighten universal joint yoke screw (7).

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



18-14. CONTROL VALVE ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M51A2).

TOOLS: 9/16-inch wrench (2)
1 1/4-inch open end wrench
1 3/8-inch open end wrench

SUPPLIES: Control valve assembly gasket (2)
Control valve adapter gasket
Caps
Tags

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

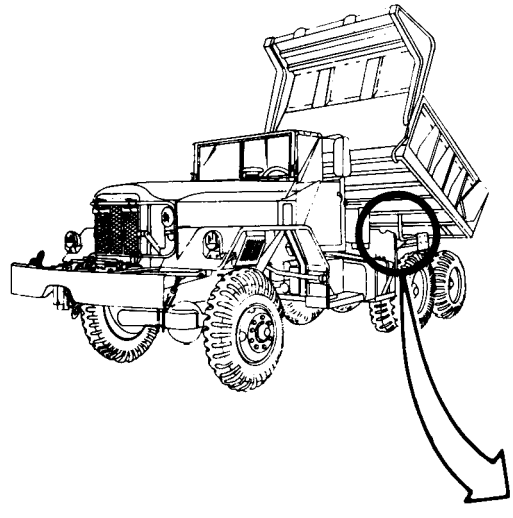
WARNING

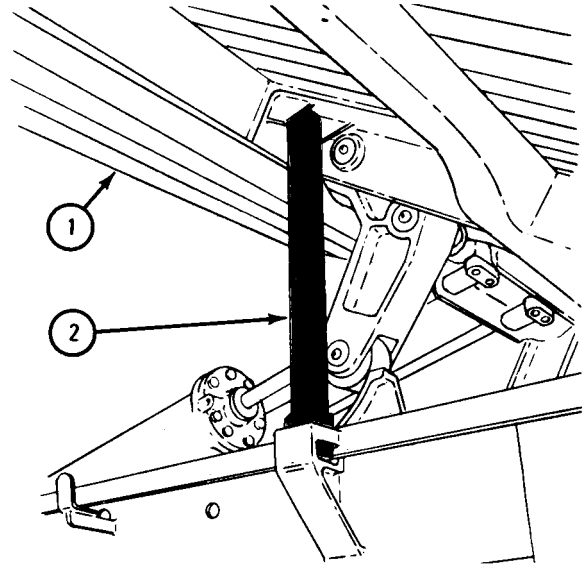
Never work under a raised dump body unless safety hoist braces are in position. Dump body could drop down, causing death or injury to personnel working under it.

FRAME 1

1. Start engine and raise dump body (1). Refer to TM 9-2320-211-10.
2. Swing two hoist braces (2), one on each side, into upright position under dump body (1).
3. Lower dump body (1) onto hoist braces (2) and stop engine. Refer to TM 9-2320-211-10.
4. Remove hydraulic pump. Refer to para 18-13.

GO TO FRAME 2



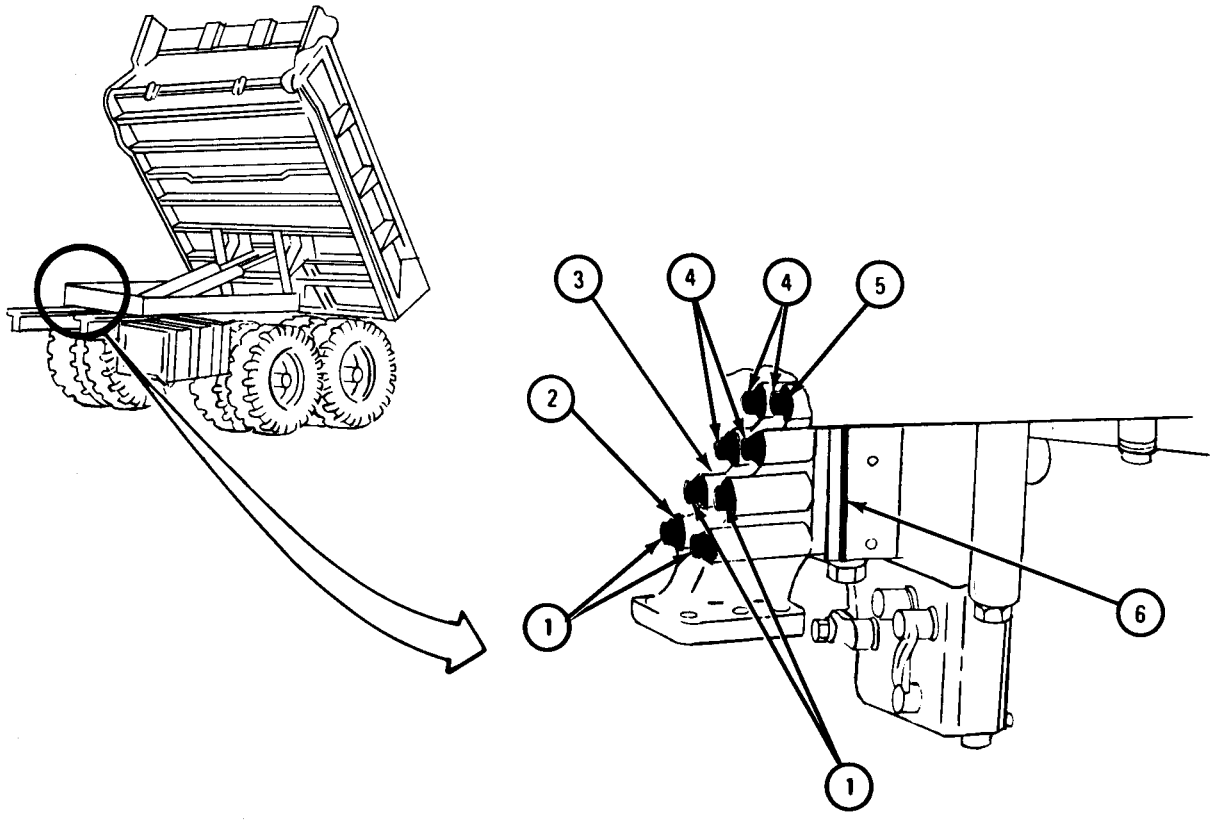


TA 045902

FRAME 2

Soldier A	1.	Working under truck using 9/16-inch wrench, unscrew and take out four screws (1) with lockwashers (2).
	2.	Hold control valve adapter (3) while soldier B takes out four screws (4).
Soldier B	3.	Working on top, using 9/16-inch wrench, unscrew and take out four screws (4) with lockwashers (5).
Soldier A	4.	Take out control valve adapter (3).
	5.	Take off and throw away gasket (6).

GO TO FRAME 3

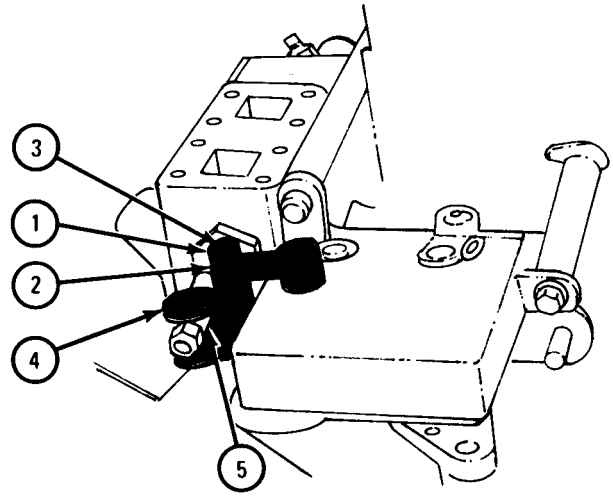


TA 048916

FRAME 3

1. Using 9/16-inch wrenches, unscrew and take off nut (1) and lockwasher (2).
2. Working under truck, pull out screw (3) and take right control valve lever (4) off trunnion (5).

GO TO FRAME 4



TA 048917

FRAME 4

CAUTION

Cap all open hoses and fittings to keep dirt out of hydraulic system.

NOTE

Tag all hoses and fittings before taking them off so they are put back in the same place.

Soldier A 1. Using 1 3/8-inch wrench, hold four hose nuts (1). Using 1 1/4-inch wrench, unscrew four fittings (2) and take off four hoses (3).

2. Hold control valve assembly (4) while soldier B takes out seven screws (5).

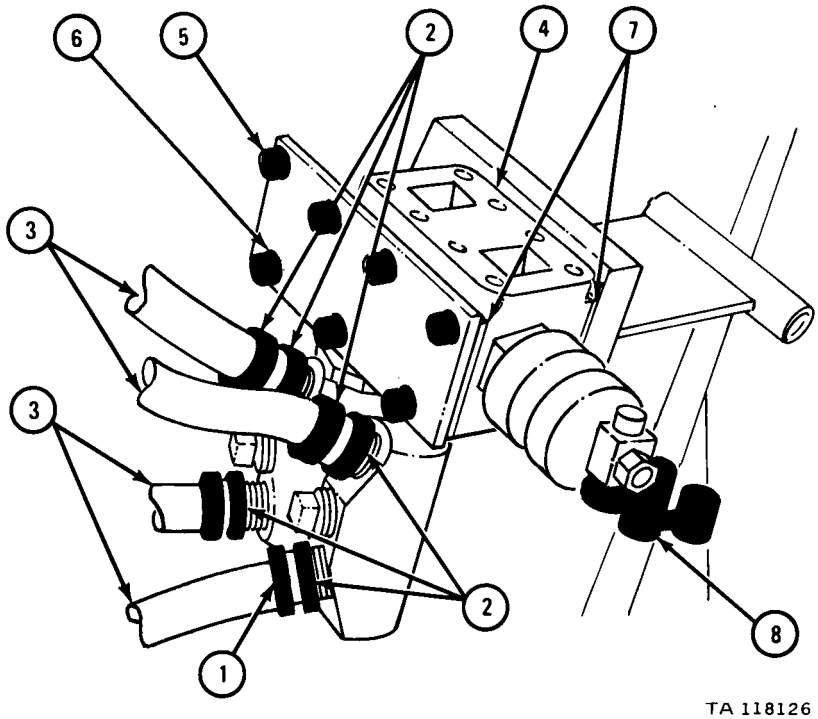
Soldier B 3. Using 9/16-inch wrench, unscrew and take out seven screws (5) with lockwashers (6).

Soldier A 4. Slide out control valve assembly (4) to right.

5. Take off and throw away two gaskets (7).

6. Take off control valve lever (8).

END OF TASK



TA 118126

b. Replacement.

WARNING

Never work under a raised dump body unless safety hoist braces are in position. Dump body could drop down, causing death or injury to personnel working under it.

FRAME 1

Soldier A 1. Put gasket (1) on each side of control valve assembly (2).

2. Hold control valve assembly (2) in place, alining holes in control valve assembly with holes in mounting bracket (3).

Soldier B 3. Push seven screws (4) with lockwashers (5) through holes in control valve assembly (2).

4. Put left control valve lever (6) on trunnion (7).

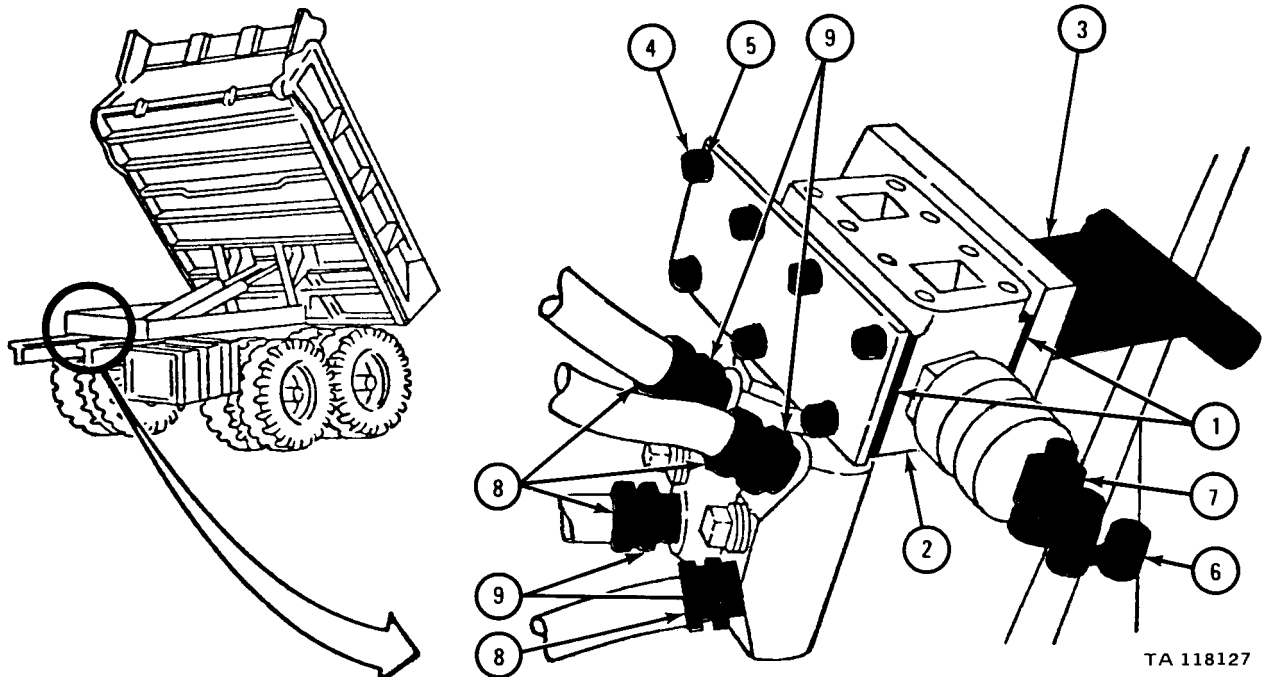
5. Using 9/16-inch wrench, screw in and tighten seven screws (4).

NOTE

Take caps off hoses and fittings before putting them together.

Soldier A 6. Using 1 3/8-inch wrench hold four hose nuts (8). Using 1 1/4-inch wrench, screw on and tighten four hose fittings (9) as tagged. Take off tags.

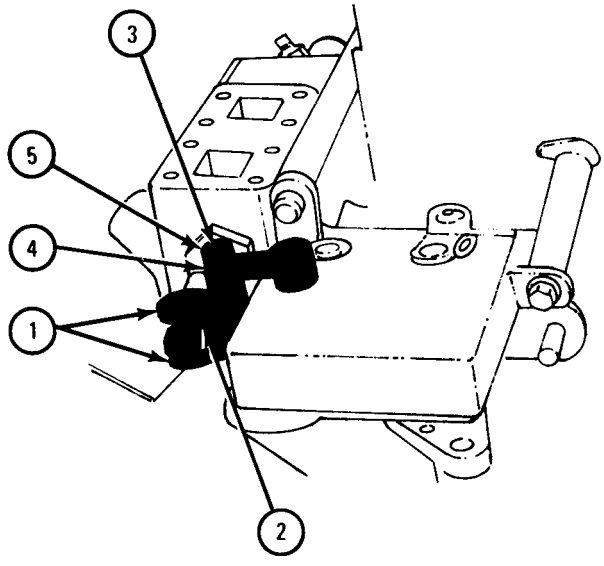
GO TO FRAME 2



FRAME 2

1. Working under truck, place right control valve lever (1) around trunnion (2).
2. Push screw (3) through control valve levers (1) and put lockwasher (4) on screw.
3. Using 9/16-inch wrenches, screw on and tighten nut (5).

GO TO FRAME 3



TA 048920

FRAME 3

Soldier A
1. Working under truck, place gasket (1) on control valve adapter (2).
2. Hold control valve adapter (2) in place and aline holes in adapter with holes in control valve assembly (3).

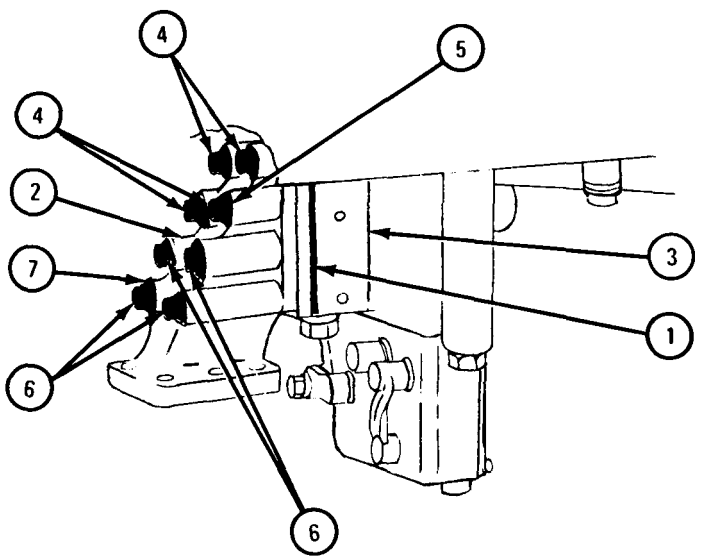
NOTE

Screws (4) are different lengths. Be sure to put screws in proper place.

Soldier B
3. Working on top, push four screws (4) with lockwashers (5) through holes in control valve adapter (2).
4. Using 9/16-inch wrench, screw in and tighten four screws (4).

Soldier A
5. Push four screws (6) with lockwashers (7) through holes in control valve adapter (2).
6. Using 9/16-inch wrench, screw in and tighten four screws (6).

GO TO FRAME 4



TA 048921

FRAME 4

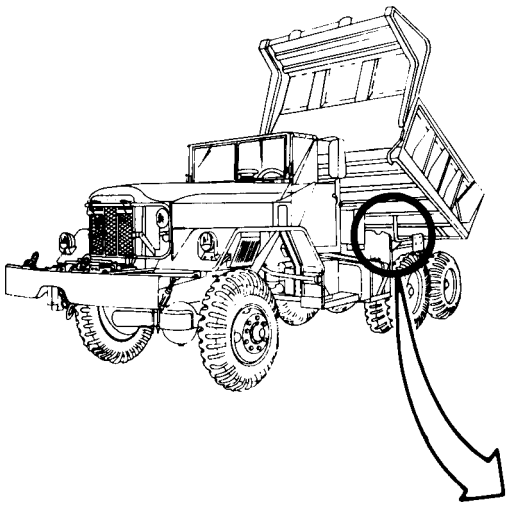
1. Replace hydraulic pump. Refer to para 18-13.
2. Start engine and raise dump body (1) far enough to free two hoist braces (2). Refer to TM 9-2320-211-10.
3. Swing two hoist braces (2), one on each side, down to stowed position.
4. Lower dump body (1) and stop engine. Refer to TM 9-2320-211-10.

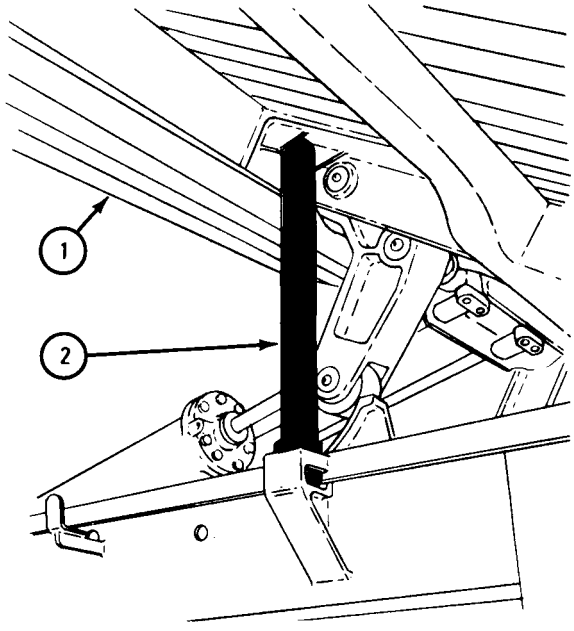
NOTE

Follow-on Maintenance Action Required:

Check hydraulic system for leakage.

END OF TASK





TA 045902

18-15. DUMP BODY HYDRAULIC LINES REMOVAL AND REPLACEMENT (TRUCK M51A2).

TOOLS: 1 5/16-inch wrench
1 3/8-inch wrench

SUPPLIES: Tags

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Drain hydraulic system. Refer to LO 9-2320-211-12.

b. Removal.

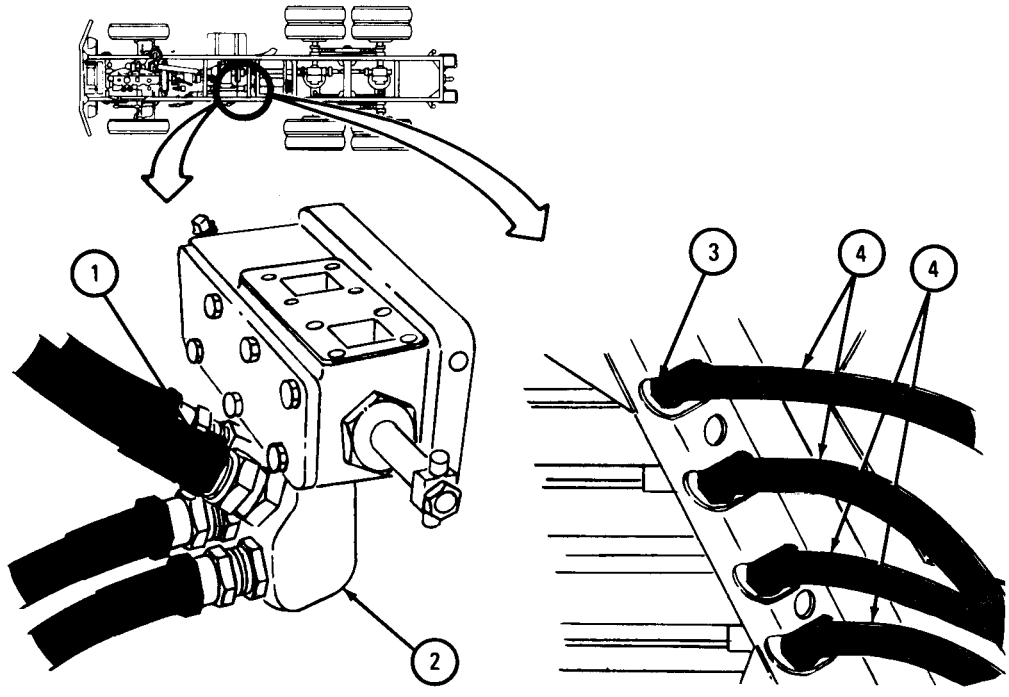
FRAME 1

NOTE

Tag lines before taking them off so that they will be put back in the same place.

1. Using 1 5/16-inch wrench, unscrew and take out four lines (1) at manifold (2).
2. Using 1 3/8-inch wrench, unscrew four nuts (3). Take out four hydraulic lines (4).

END OF TASK



TA 102207

c. Replacement.

FRAME 1

CAUTION

Do not overtighten line fittings. Overtightened fittings will break and leak.

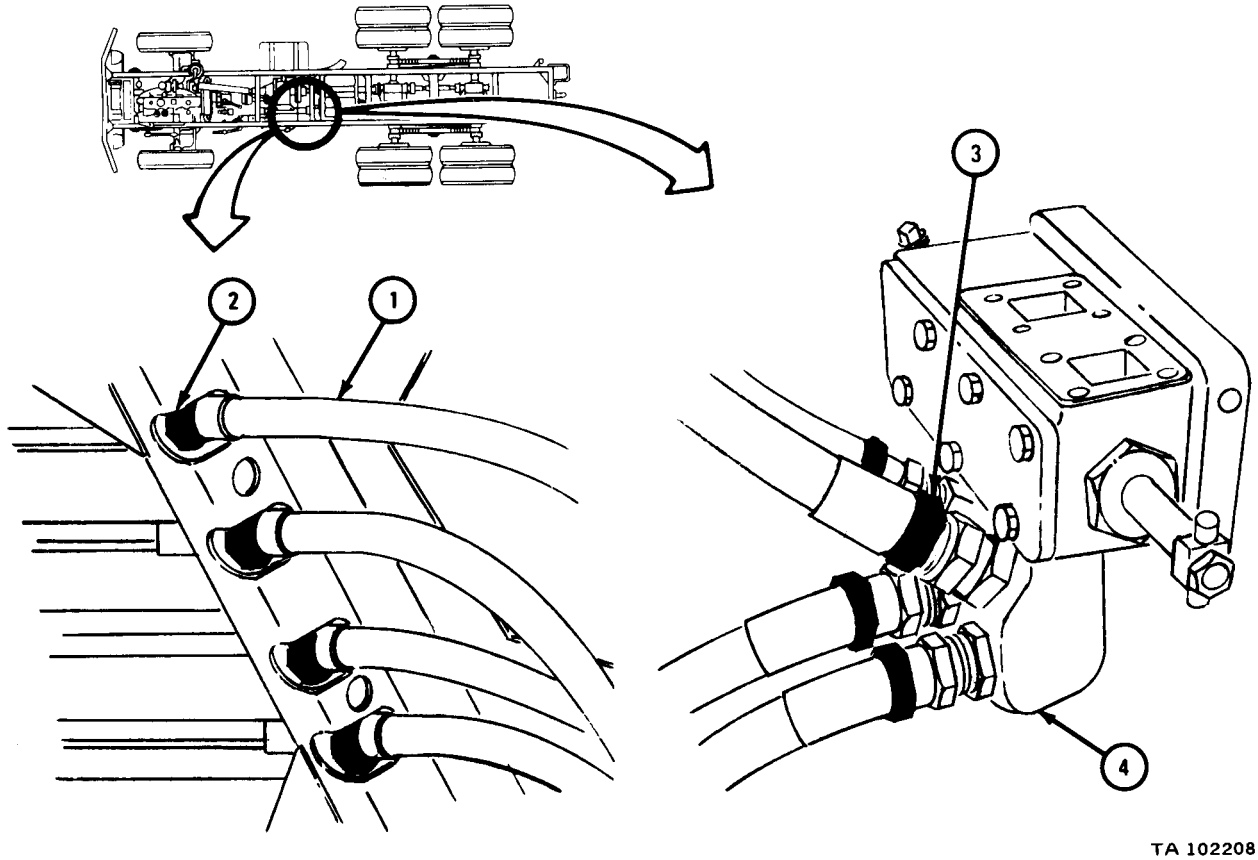
1. Using 1 3/8-inch wrench, screw four lines (1) into four fittings (2) as tagged. Take off tags.
2. Using 1 5/16-inch wrench, screw four lines (3) into manifolds (4) as tagged. Take off tags.

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic system. Refer to LO 9-2320-211-12.

END OF TASK



18-16. DUMP BODY HOIST BRACE LOCKING AND UNLOCKING (TRUCK M51A2).

TOOLS: None

SUPPLIES: None

PERSONNEL: One

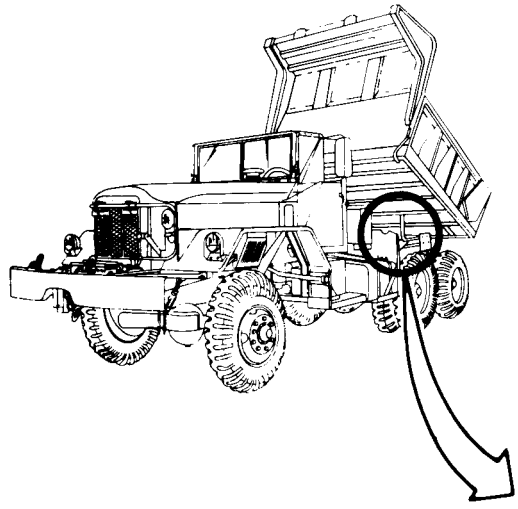
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

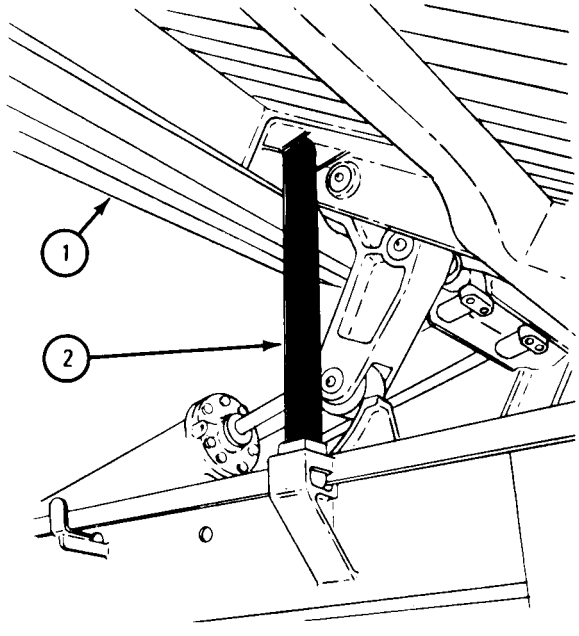
a. Locking.

FRAME 1

1. Start engine and raise dump body (1). Refer to TM 9-2320-211-10.
2. Swing two hoist braces (2), one on each side, into upright position under dump body (1).
3. Lower dump body (1) onto hoist braces (2), and stop engine. Refer to TM 9-2320-211-10.

END OF TASK





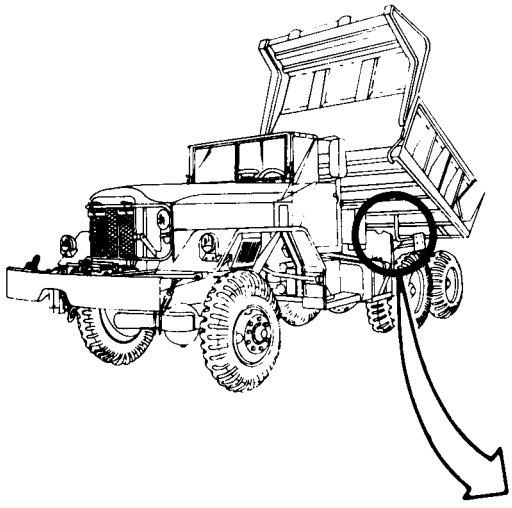
TA 045902

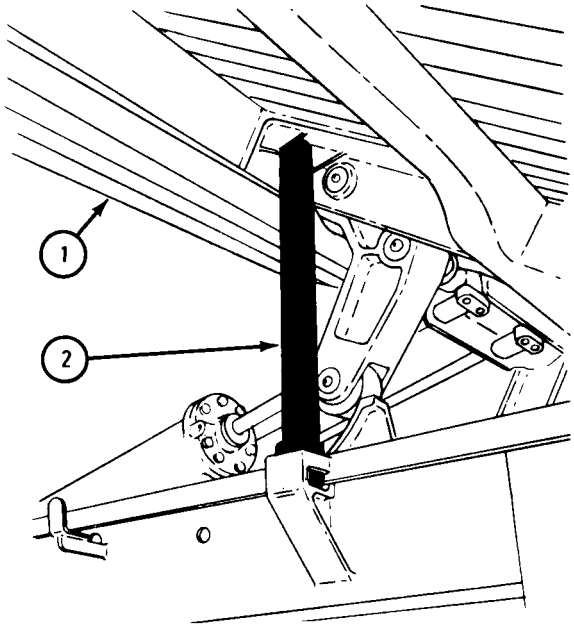
b. Unlocking.

FRAME 1

1. Start engine and raise dump body (1) enough to free two hoist braces (2). Refer to TM 9-2320-211-10.
2. Swing two hoist braces (2), one on each side, down to stowed position.
3. Lower dump body (1) and stop engine. Refer to TM 9-2320-211-10.

END OF TASK





TA 045902

18-17. HOIST CONTROL LINKAGE CHECK AND ADJUSTMENT (TRUCK M51A2).

TOOLS: 6-inch pliers
Hammer
3/4-inch wrench
3/8-inch punch

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Check.

(1) Start engine and raise and lower dump body. Refer to TM 9-2320-211-10.

(2) If dump body works correctly, stop engine. Refer to TM 9-2320-211-10.

(3) If dump body does not work correctly, stop engine. Refer to TM 9-2320-211-10. Do adjustment. Refer to para 18-17b.

b. Adjustment.

(1) Clevis adjustment.

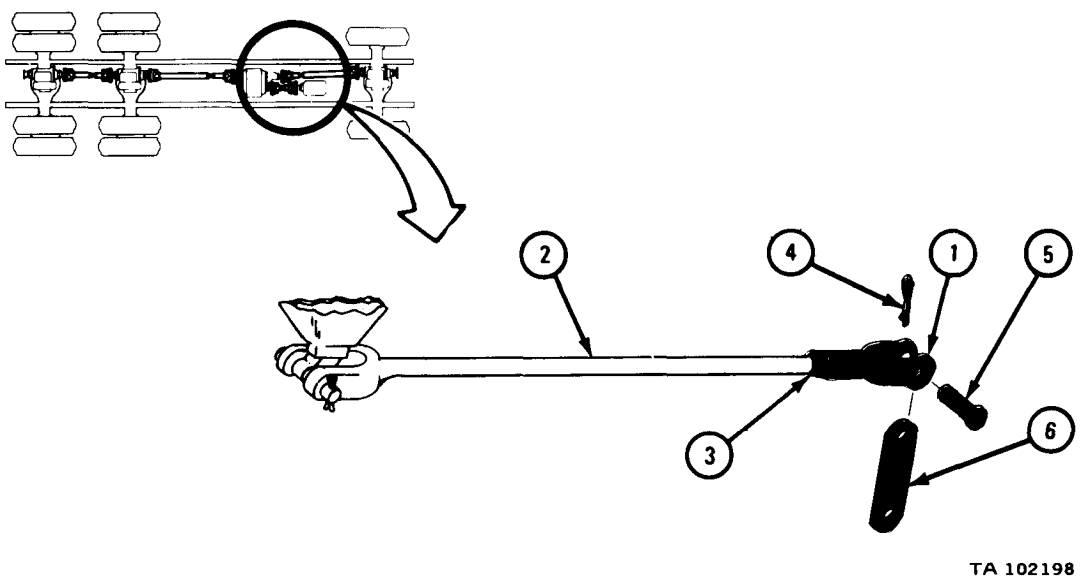
FRAME 1

NOTE

Turn clevis (1) to the right to shorten control rod assembly (2). Turn clevis to the left to lengthen control rod assembly.

1. Using pliers and 3/4-inch wrench, hold clevis (1) and turn nut (3) to right to loosen it.
2. Using pliers, take out cotter pin (4) and pull out clevis pin (5). Throw away cotter pin.
3. Turn clevis (1) to right or left to adjust length of control rod assembly (2).
4. Aline holes in clevis (1) with hole in lever (6) and put in clevis pin (5).
5. Using 3/4-inch wrench, turn nut (3) to left to tighten it.
6. Using pliers, put in new cotter pin (4) and bend open ends of cotter pin.

END OF TASK



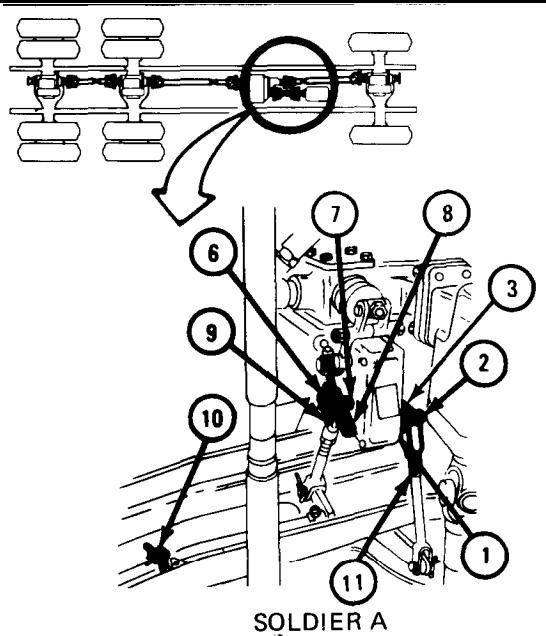
TA 102198

(2) Hand lever rod and transfer motion rod adjustment.

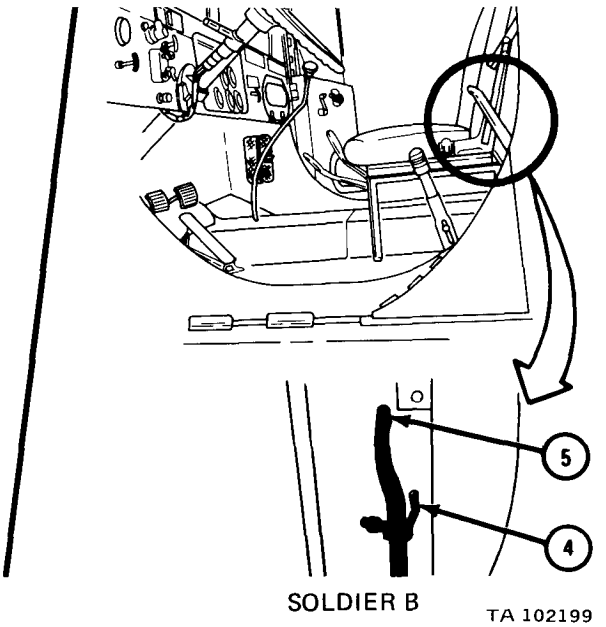
FRAME 1

Soldier A	1.	Using pliers, take out cotter pin (1) and clevis pin (2) on power takeoff relay lever (3). Throw away cotter pin. Tell soldier B when ready.
Soldier B	2.	Unlock dump control hand lever lock (4) and put dump control hand lever (5) in RAISE position.
Soldier A	3.	Using pliers, take out cotter pin (6) and clevis pin (7). Throw away cotter pin. Push relay lever (8) towards back of truck as far as it can go.
	4.	Check that clevis pin holes in clevis (9) aline with clevis pin hole in relay lever (8). If holes are alined, do step 6.
	5.	If holes are not alined, do clevis adjustment for clevises (9) and (10). Refer to para 18-17b (1). Then do step 7.
	6.	Put clevis pin (7) through clevis (9) and relay lever (8). Using pliers, put in cotter pin (6) and bend open ends of cotter pin. Tell soldier B when ready.
	7.	Put clevis pin (2) through clevis (11) and power takeoff relay lever (3). Put in new cotter pin (1) and bend open ends of cotter pin.
Soldier B	8.	Put dump control hand lever (5) in LOWER position.
Soldier A	9.	Check that relay lever (8) moves toward front of truck without binding.

END OF TASK



SOLDIER A



SOLDIER B

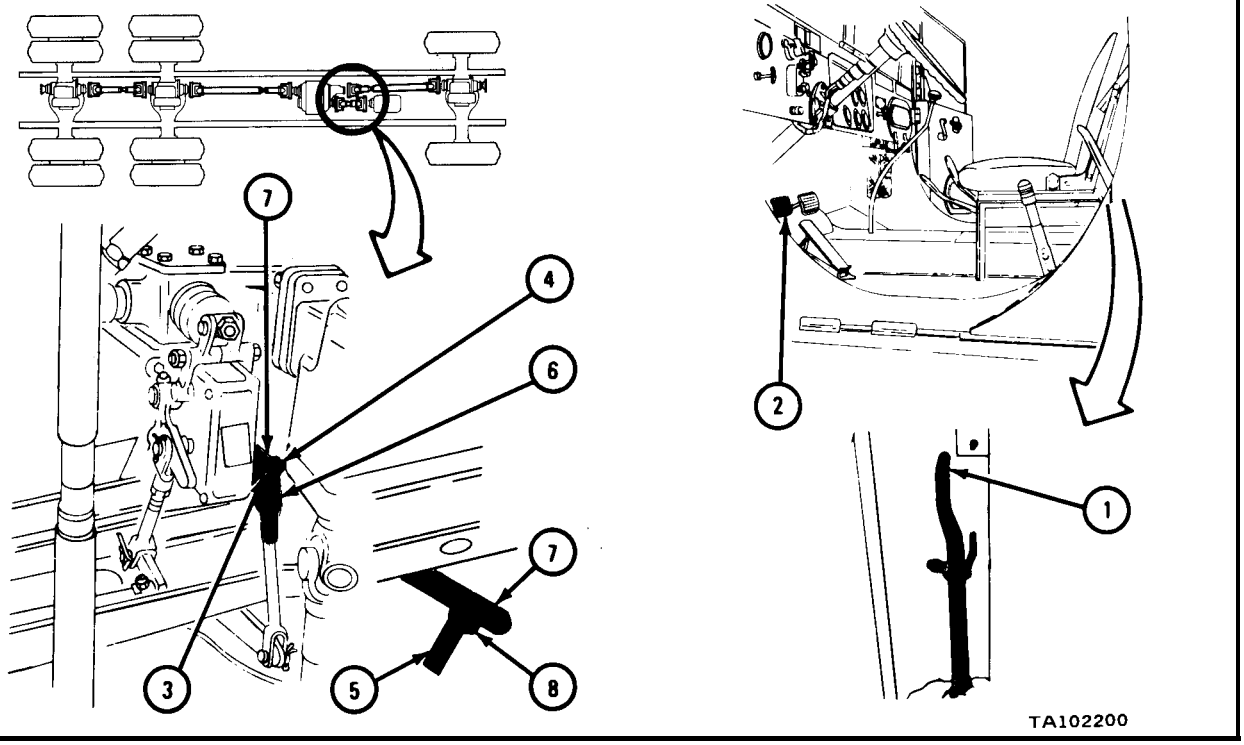
TA 102199

(3) Power takeoff dump control rod and power takeoff connecting rod shaft adjustment.

FRAME 1

Soldier B	1.	Put dump control hand lever (1) in RAISE position and step down on clutch pedal (2).
Soldier A	2.	Using pliers, take out cotter pin (3) and pull out clevis pin (4).
	3.	Pull power takeoff dump control rod (5) towards back of truck as far as it will go.
	4.	Check that clevis pin holes in clevis (6) aline with hole in power takeoff relay lever (7). If holes are alined, do step 6.
	5.	If holes are not alined, do clevis adjustment for clevises (6 and 8). Refer to para 18-17b. Then do step 6.
	6.	Put clevis pin (4) through clevis (6) and power takeoff relay lever (7). Put in cotter pin (3) and bend open ends of cotter pin.
Soldier B	7.	Put dump control hand lever (1) in LOWER position and let go of clutch pedal.
Soldier A	8.	Check that all levers and rods move freely.
	9.	Do adjustment check again. Refer to para 18-17a.

END OF TASK



18-18. HYDRAULIC HOSES REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS:
- 1 3/8-inch wrench
- 1 1/2-inch wrench (2)
- 1 7/8-inch wrench
- 1 11/16-inch wrench (2)
- 1 3/4-inch wrench
- 9/16-inch wrench
- 1/2-inch wrench
- 2-inch wrench
- 2 1/8-inch wrench
- 2 5/8-inch wrench
- 2 7/8-inch wrench
- 1 9/16-inch wrench (2)
- Pipe wrench
- 24-inch adjustable wrench (2)

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

CAUTION

When putting in hoses and tubes, do not overtighten nuts. Damage to hoses, tubes or adapters will cause oil leaks.

a. Preliminary Procedure. Drain hydraulic reservoir. Refer to LO 9-2320-211-12.

b. Lift Cylinder-to-Boom Support Crossover Tube Hoses.

(1) Removal.

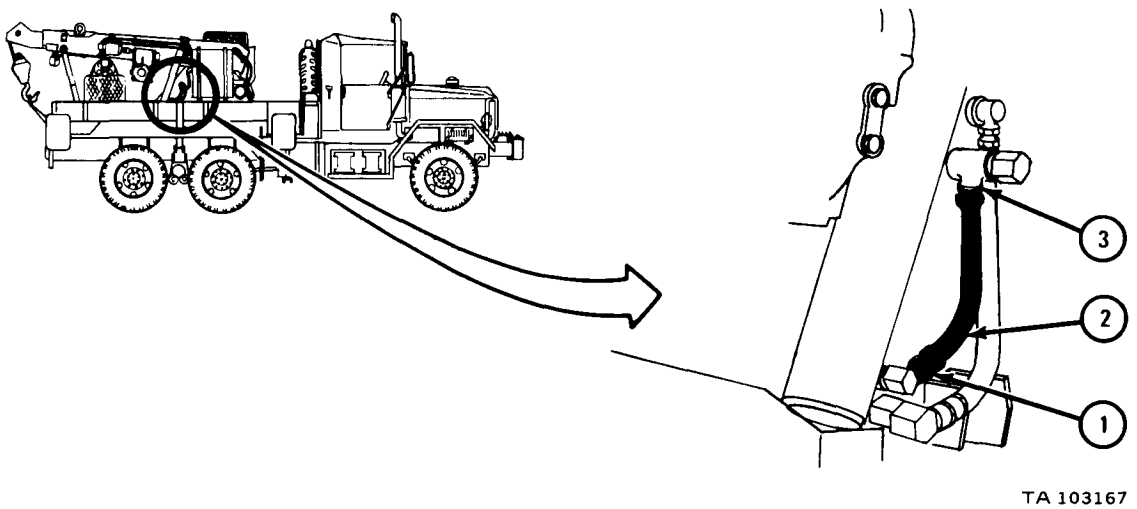
NOTE

This task is for the right side hose. The task for the left side hose is the same.

FRAME 1

1. Using 1 1/2-inch wrenches, unscrew union coupling nut (1) from hose (2) and take out end of hose.
2. Using 1 11/16-inch wrenches, unscrew other end of hose (2) from bushing (3) and take off hose.

END OF TASK



TA 103167

(2) Replacement.

FRAME 1

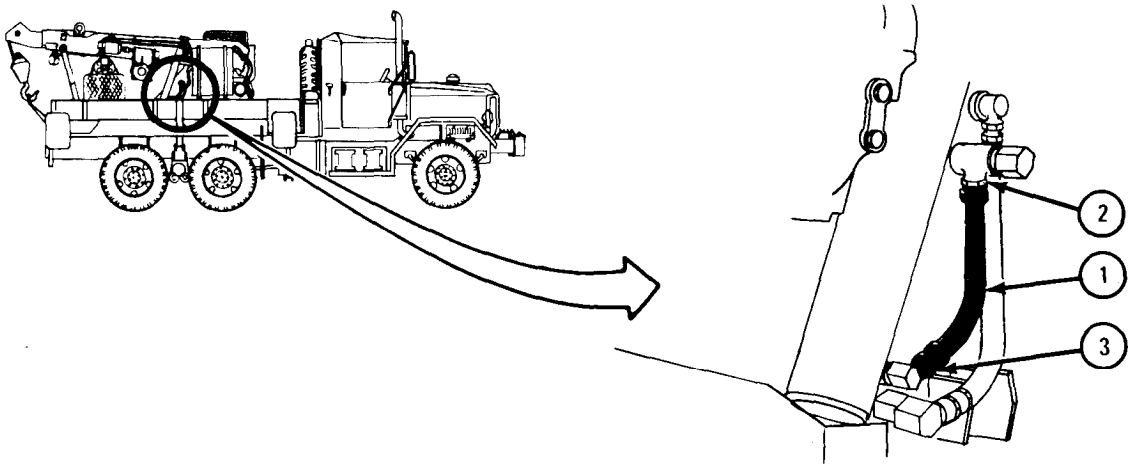
1. Using 1 11/16-inch wrenches, screw in and tighten hose (1) into tee bushing (2).
2. Using 1 1/2-inch wrenches, screw on and tighten coupling nut (3) to other end of hose (1).

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



TA 103168

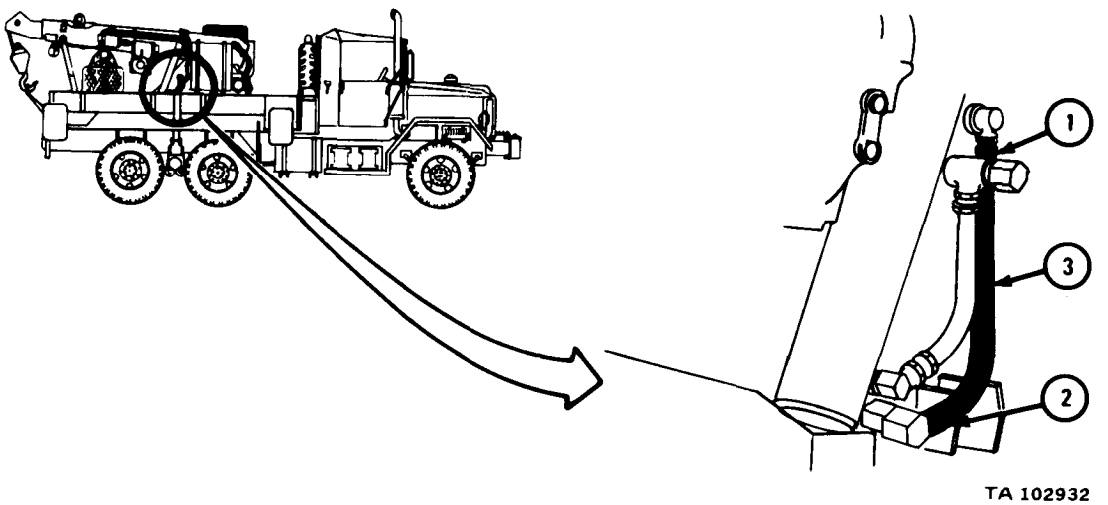
c. Boom Support Crossover-to-Snubber Valve Hose.

(1) Removal.

FRAME 1

1. Using 1 1/2-inch wrench, unscrew coupling nut (1).
2. Using 1 11/16-inch wrench, unscrew fitting (2) with hose (3). Take off hose.

END OF TASK



(2) Replacement.

FRAME 1

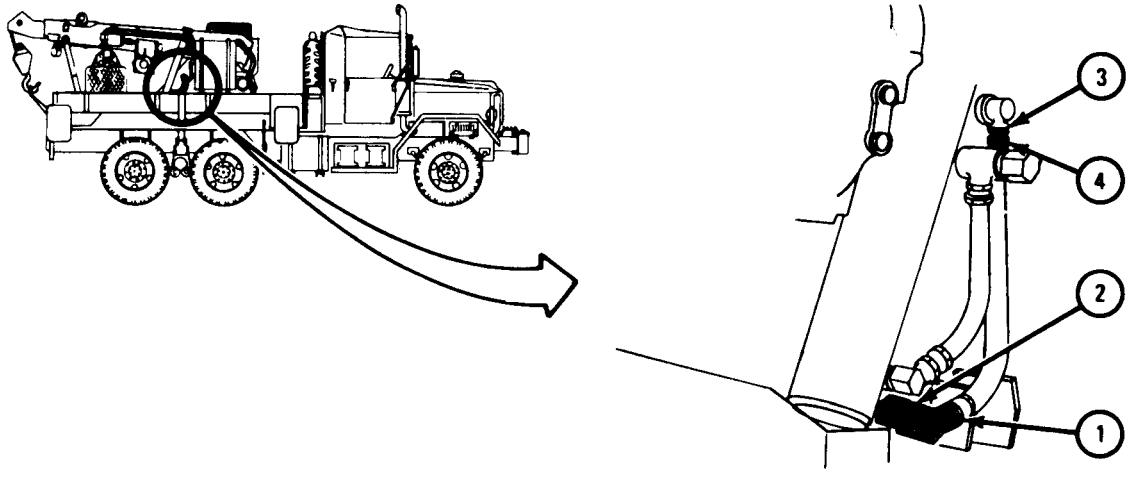
1. Using 1 11/16-inch wrench, screw in and tighten hose fitting (1) to snubber valve assembly (2).
2. Using 1 1/2-inch and 1 11/16-inch wrenches, screw on and tighten coupling nut (3) to hose fitting (4).

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



TA 102933

d. Valve Bank-to-Swing Motor Hoses.

(1) Removal.

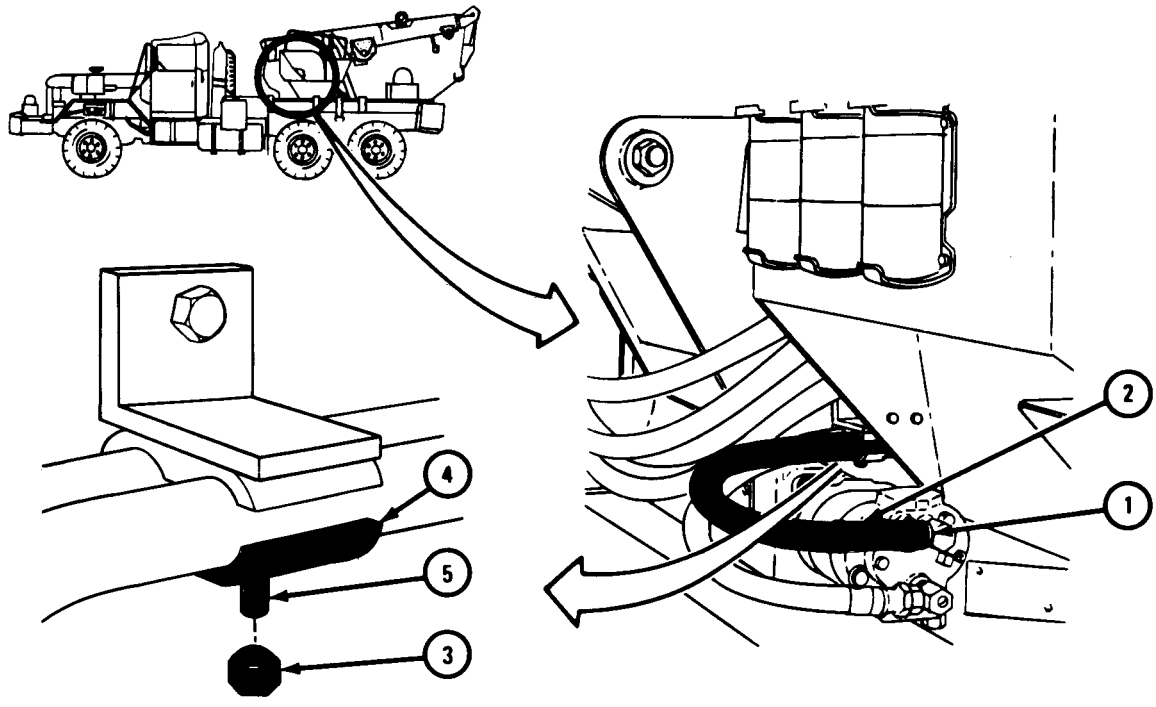
NOTE

This task is the same for both hoses.

FRAME 1

1. Using 1 1/2-inch and 1 9/16-inch wrenches, unscrew coupling nut (1) and take out hose (2).
2. Using 9/16-inch wrench, unscrew and take off nut (3). Take clamp (4) off stud (5).

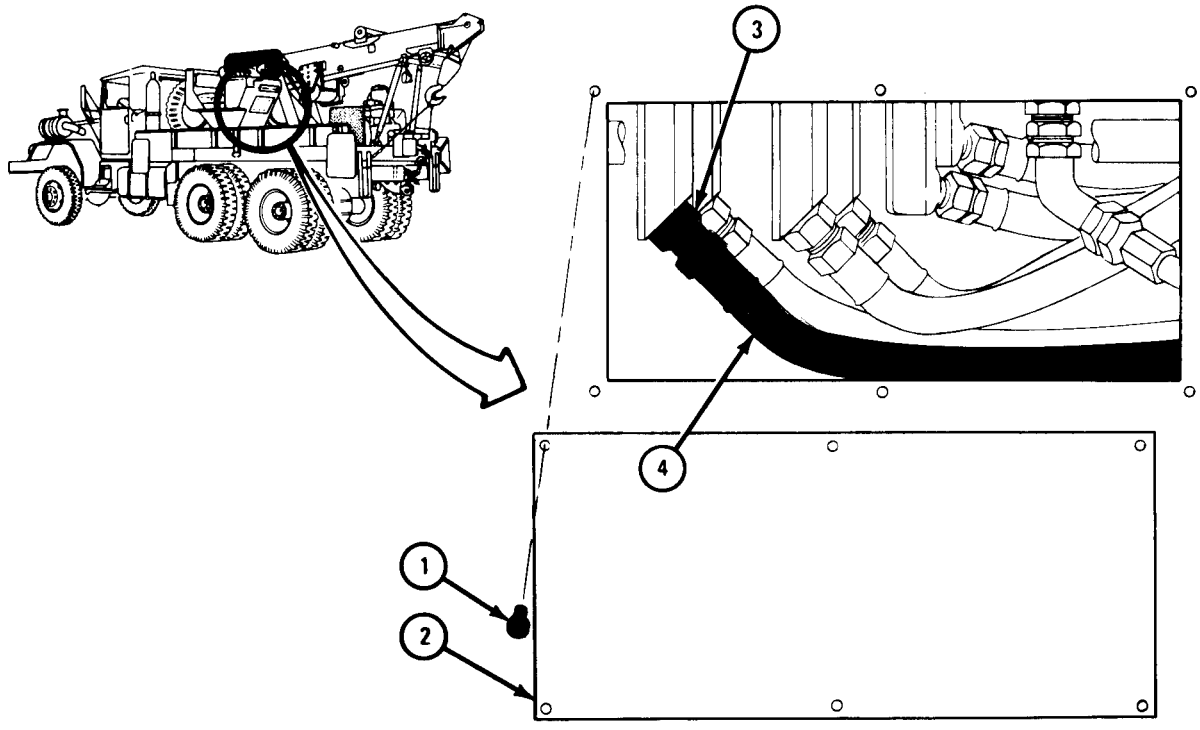
GO TO FRAME 2



FRAME 2

1. Using 1/2-inch wrench, unscrew and take out six screws (1). Take off gondola cover plate (2).
2. Using 1 1/2-inch and 1 11/16-inch wrenches, unscrew coupling nut (3) and take off hose (4).

GO TO FRAME 3

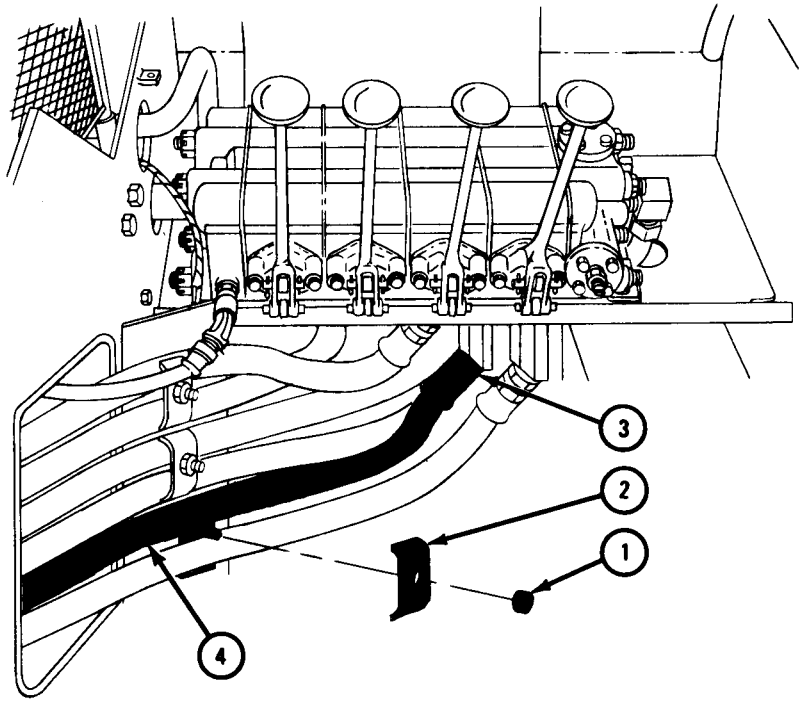


TA 102935

FRAME 3

1. Using 9/16-inch wrench, unscrew and take off nut (1). Take off clamp (2).
2. Using 1 1/2-inch wrenches, unscrew fitting (3).
3. Take out valve bank-to-swing motor hose (4).

END OF TASK



TA 102936

(2) Replacement.

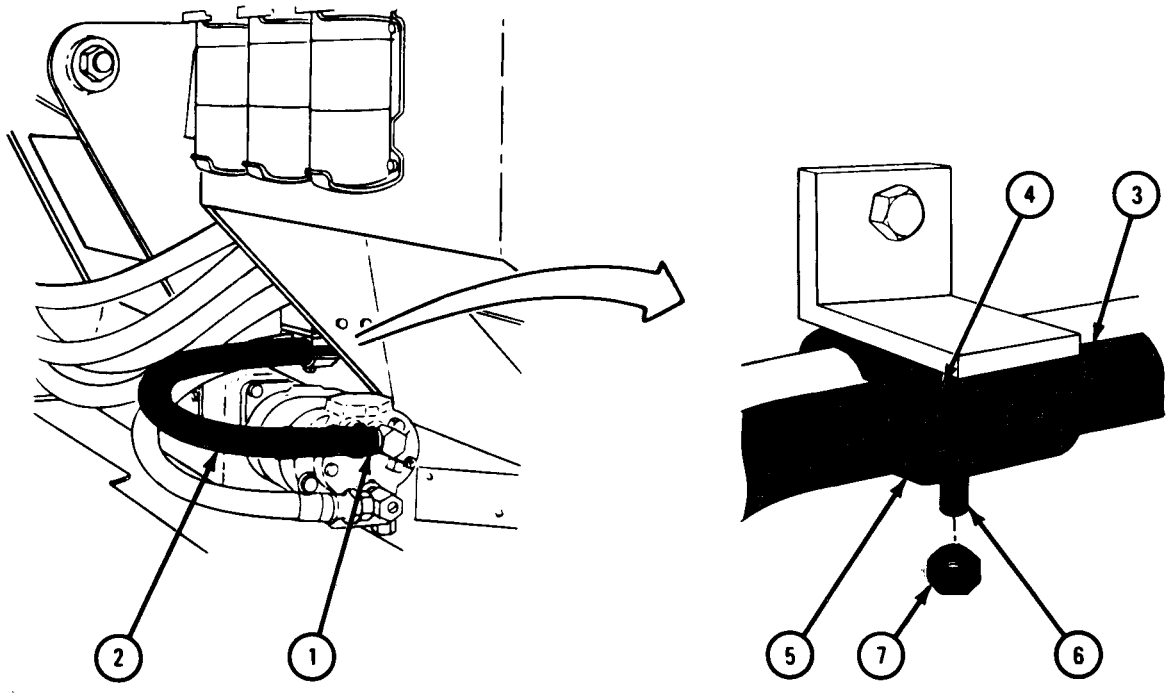
NOTE

This task is the same for both hoses.

FRAME 1

1. Using 1 1/2-inch wrenches, screw on and tighten coupling nut (1) to hose (2).
2. Place hose (3) up against block (4) and put clamp (5) over stud (6).
3. Using 9/16-inch wrench, screw on but do not tighten nut (7).

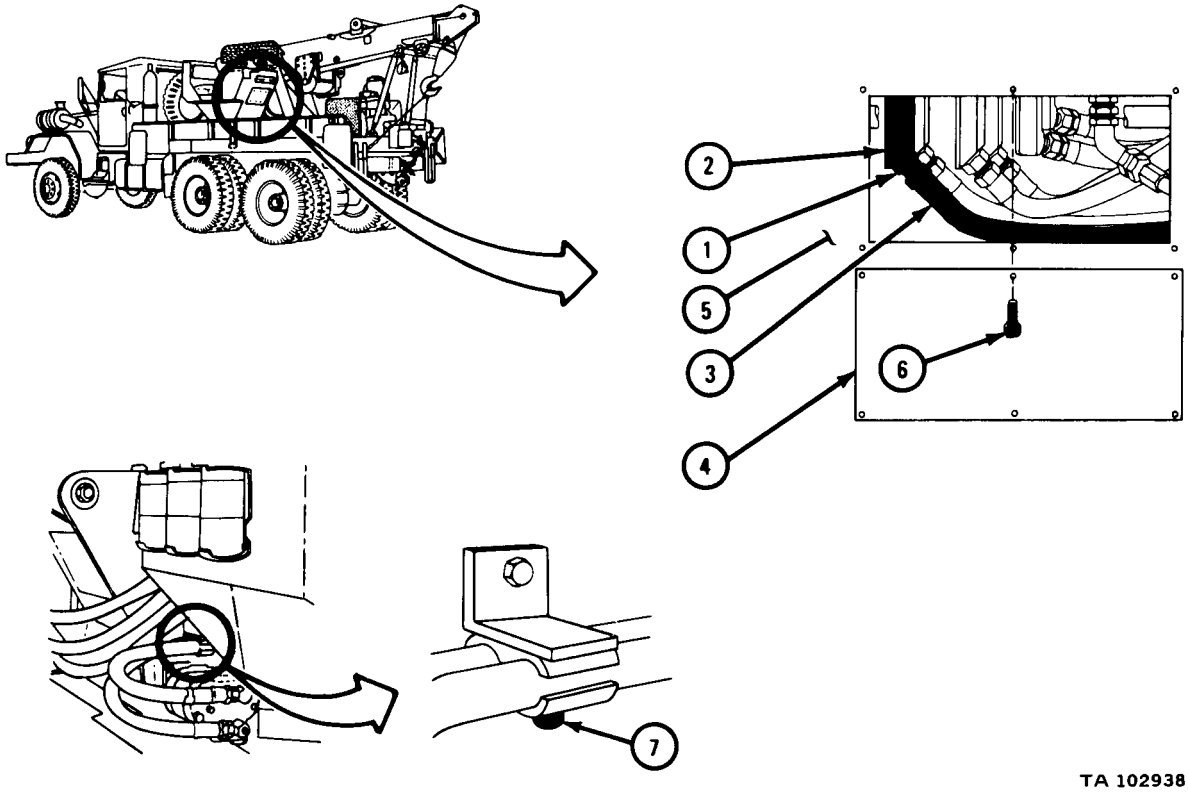
GO TO FRAME 2



FRAME 2

1. Using 1 1/2-inch wrenches, screw on and tighten coupling nut (1) at elbow (2) to hose (3).
2. Line up holes in cover plate (4) with holes in gondola (5).
3. Using 1/2-inch wrench, screw in and tighten six screws (6).
4. Using 9/16-inch wrench, tighten nut (7).

GO TO FRAME 3



TA 102938

FRAME 3

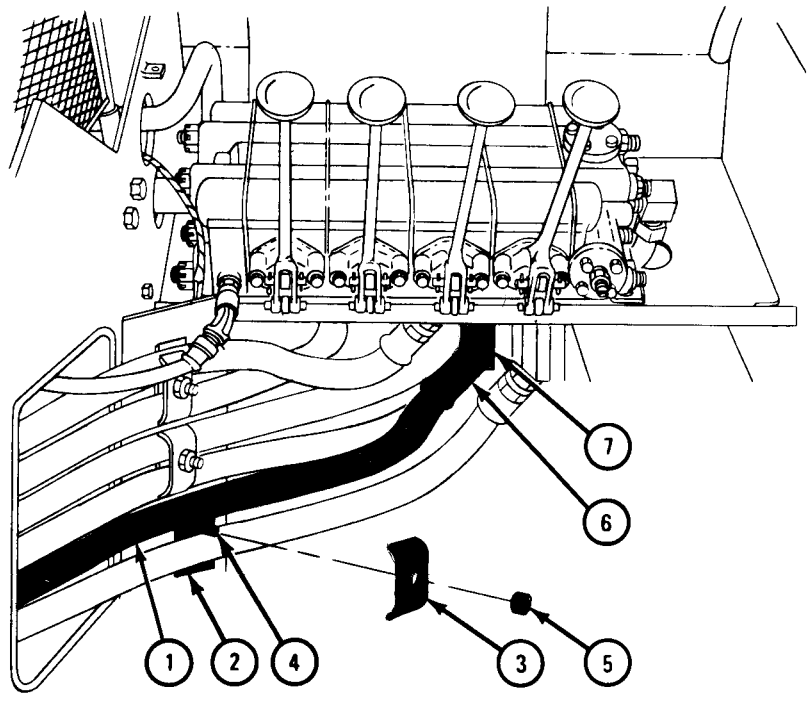
1. Place hose (1) up against block (2).
2. Put clamp (3) on stud (4).
3. Using 9/16-inch wrench, screw on and tighten nut (5).
4. Using 1 1/2-inch wrenches, screw on and tighten coupling nut (6) at elbow (7).

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



TA 102939

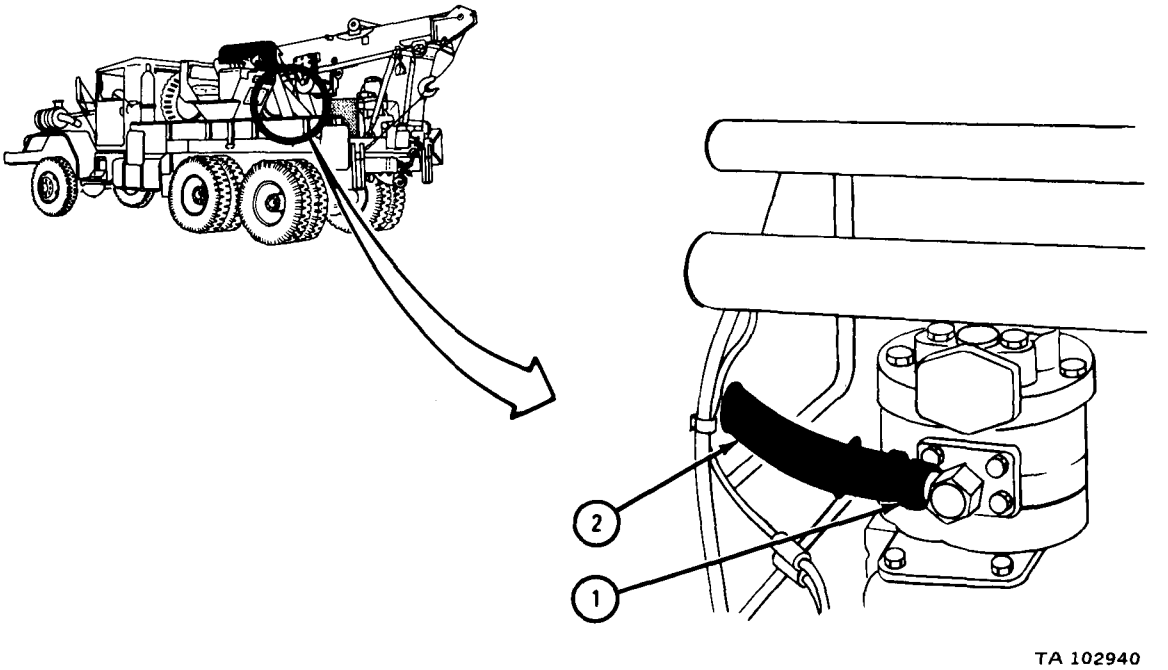
e. Pump-to-Valve Bank Hose and Tube.

(1) Removal.

FRAME 1

1. Using 1 1/2-inch wrench, unscrew coupling nut (1) and take off hose (2).

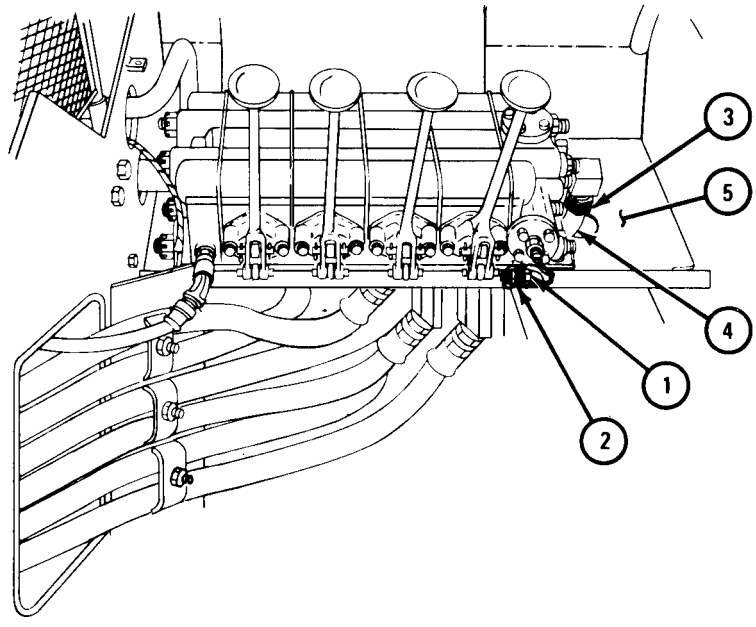
GO TO FRAME 2



FRAME 2

1. Take off valve bank cover. Refer to para 18-22.
2. Using 1 1/2-inch and 1 11/16-inch wrenches, unscrew coupling nut (1) from hose (2). Takeoff hose.
3. Using 1 1/2-inch wrench, unscrew coupling nut (3) and take off tube (4).
4. Push tube (4) down through hole in gondola panel (5). Take out tube (4) and hose (2).

END OF TASK



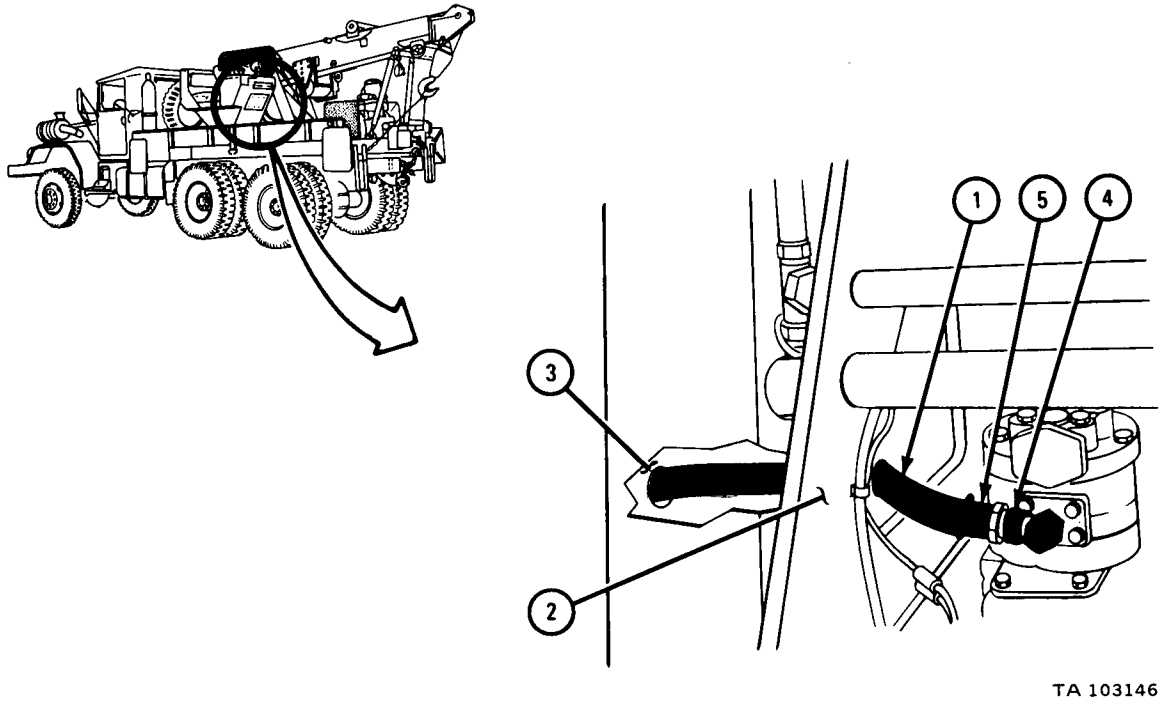
TA 102941

(2) Replacement.

FRAME 1

1. Slide end of hose (1) through cutout in left side of support assembly (2) and bottom hole in side of gondola (3).
2. Using 1 1/2-inch wrench, screw in and tighten coupling nut (4) on hose assembly (5).

GO TO FRAME 2



FRAME 2

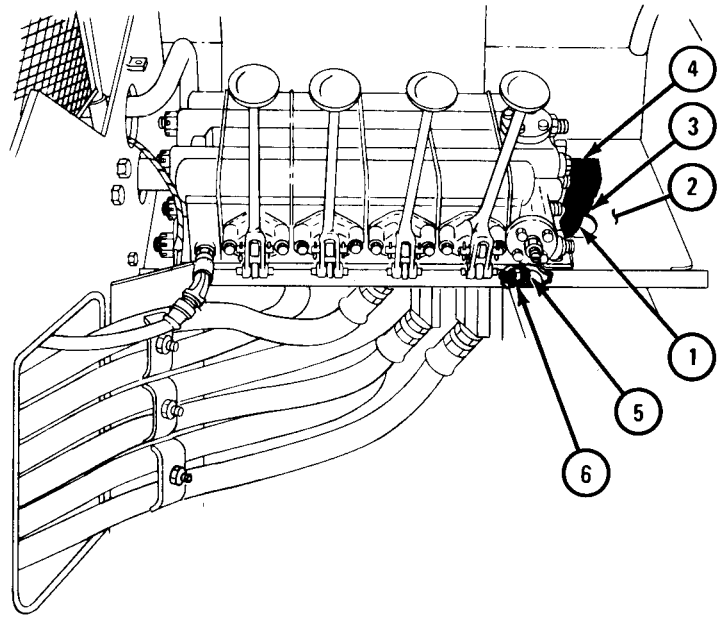
1. Put tube (1) through hole in gondola panel (2).
2. Using 1 1/2-inch wrench, screw on and tighten coupling nut (3) on connector (4).
3. Using 1 1/2-inch wrench, screw in and tighten coupling nut (5) on pump-to-valve bank hose (6) into other end of tube (1).
4. Using 1 1/2-inch wrench, tighten coupling nuts (3 and 5).
5. Replace valve bank cover. Refer to para 18-22.

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



TA 103147

f. Valve Bank-to-Hoist Motor Tubes.

(1) Removal.

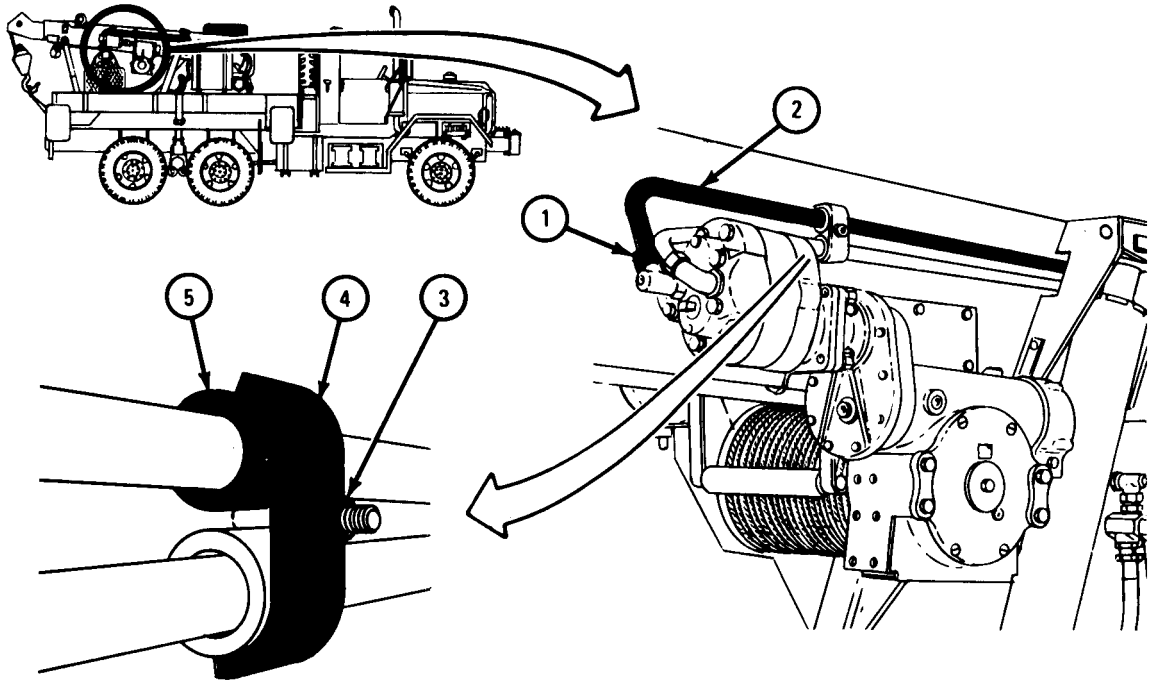
NOTE

This task is the same for both tubes.

FRAME 1

1. Using 1 1/2-inch wrench, unscrew and slide back coupling nut (1) on tube (2).
2. Using 9/16-inch wrench, unscrew and take off locknut (3).
3. Holding tube (2), take off clamp (4) and clamp pad (5).

GO TO FRAME 2

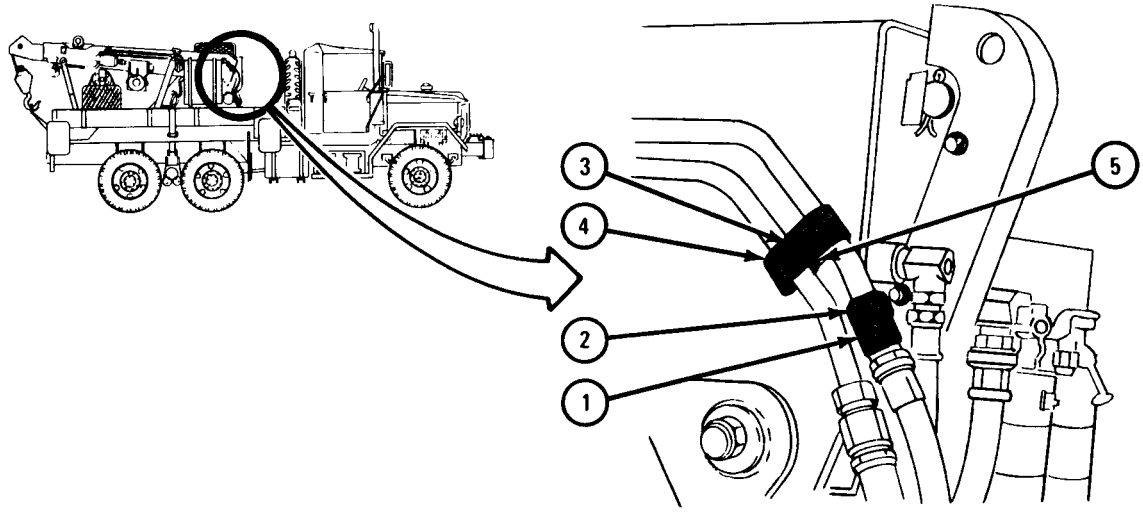


TA 103148

FRAME 2

1. Using 1 11/16-inch and 1 1/2-inch wrenches, hold fitting (1) and unscrew and slide back coupling nut (2).
2. Using 9/16-inch wrench, unscrew and take off locknut (3), clamp (4), and clamp pad (5).

GO TO FRAME 3

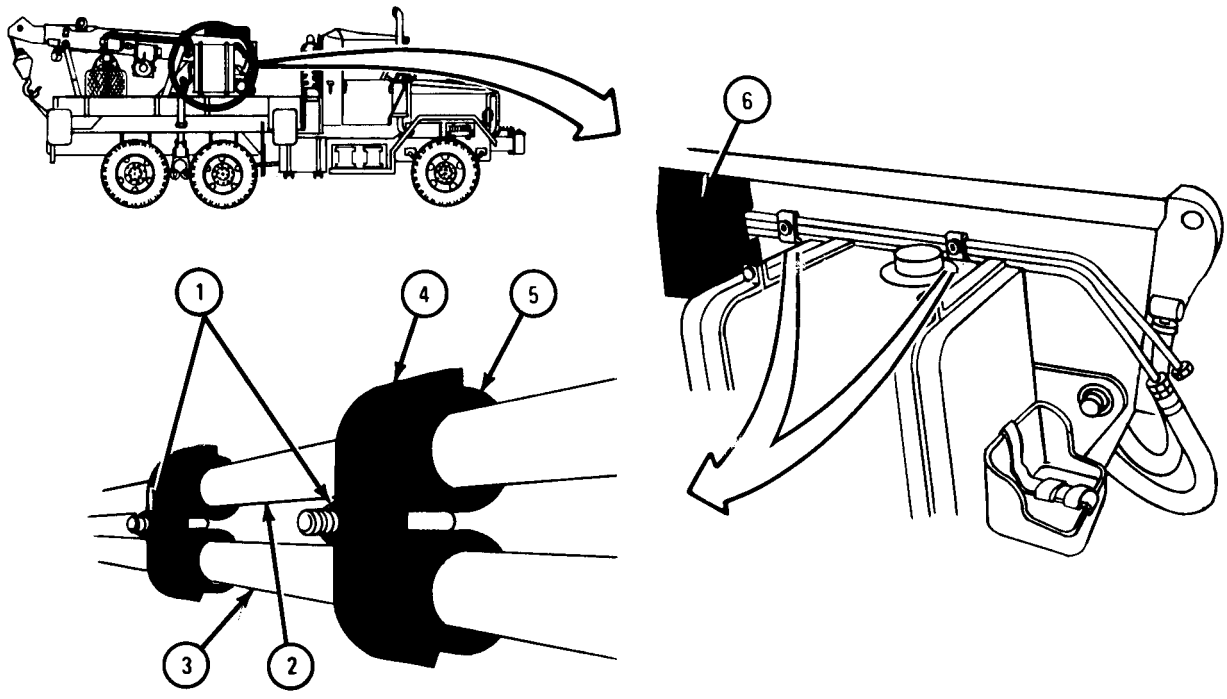


TA 103149

FRAME 3

1. Using 9/16-inch wrench, unscrew two locknuts (1).
2. Holding tubes (2 and 3), take off two locknuts (1) and two clamps (4). Take off pads (5).
3. Slide tube (2) to the left and out from behind lift cylinder bracket (6).

END OF TASK



TA 103150

(2) Replacement.

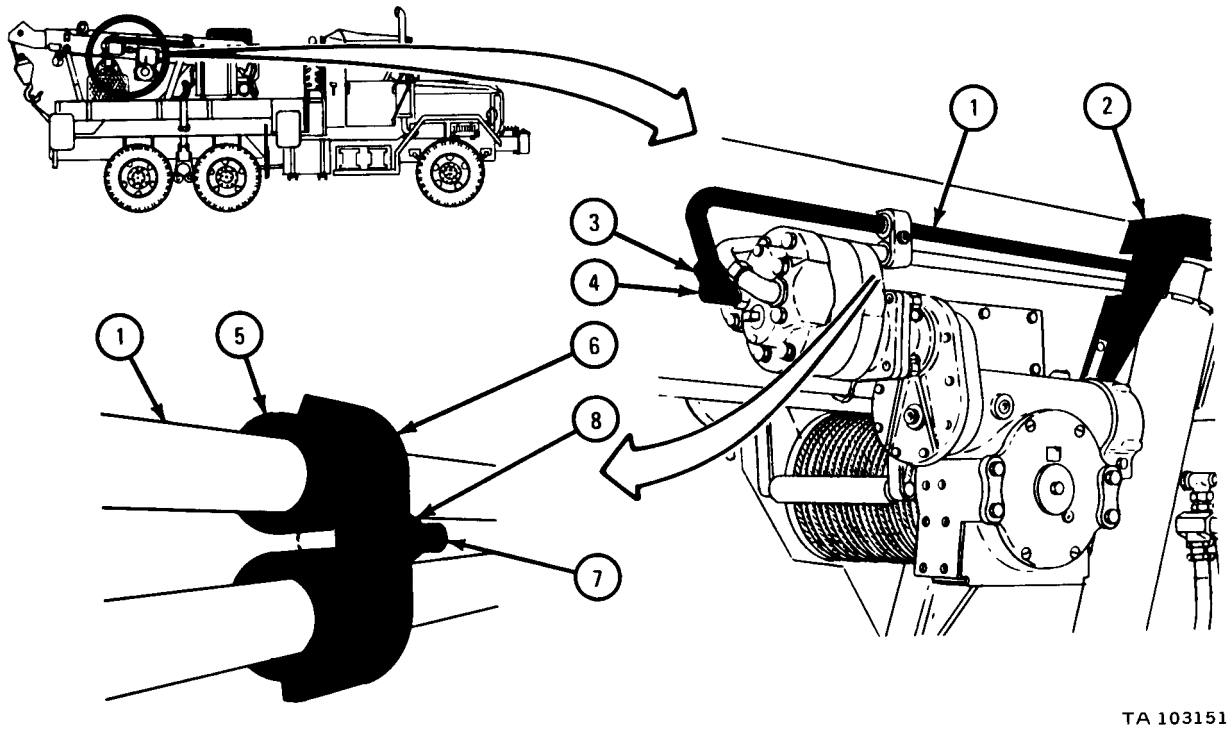
NOTE

This task is the same for both tubes.

FRAME 1

1. Slide tube (1) to the right and through lift cylinder bracket (2).
2. Using 1 1/2-inch wrench, screw in and tighten coupling nut (3) into hoist motor elbow (4).
3. Put clamp pad (5) over tube (1).
4. Put clamp (6) on stud (7).
5. Using 9/16-inch wrench, screw on and tighten locknut (8).

GO TO FRAME 2

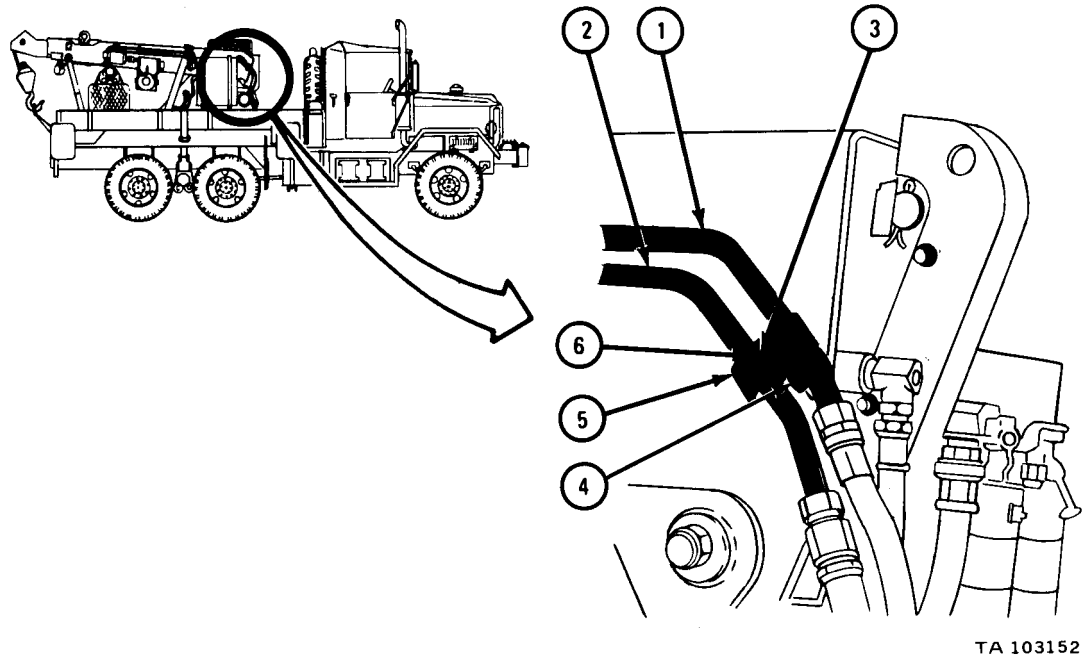


TA 103151

FRAME 2

1. Push and hold tubes (1 and 2) on each side of stud (3).
2. Put pad (4) over tube (1).
3. Put clamp (5) on stud (3).
4. Using 9/16-inch wrench, screw on locknut (6).

GO TO FRAME 3



TA 103152

FRAME 3

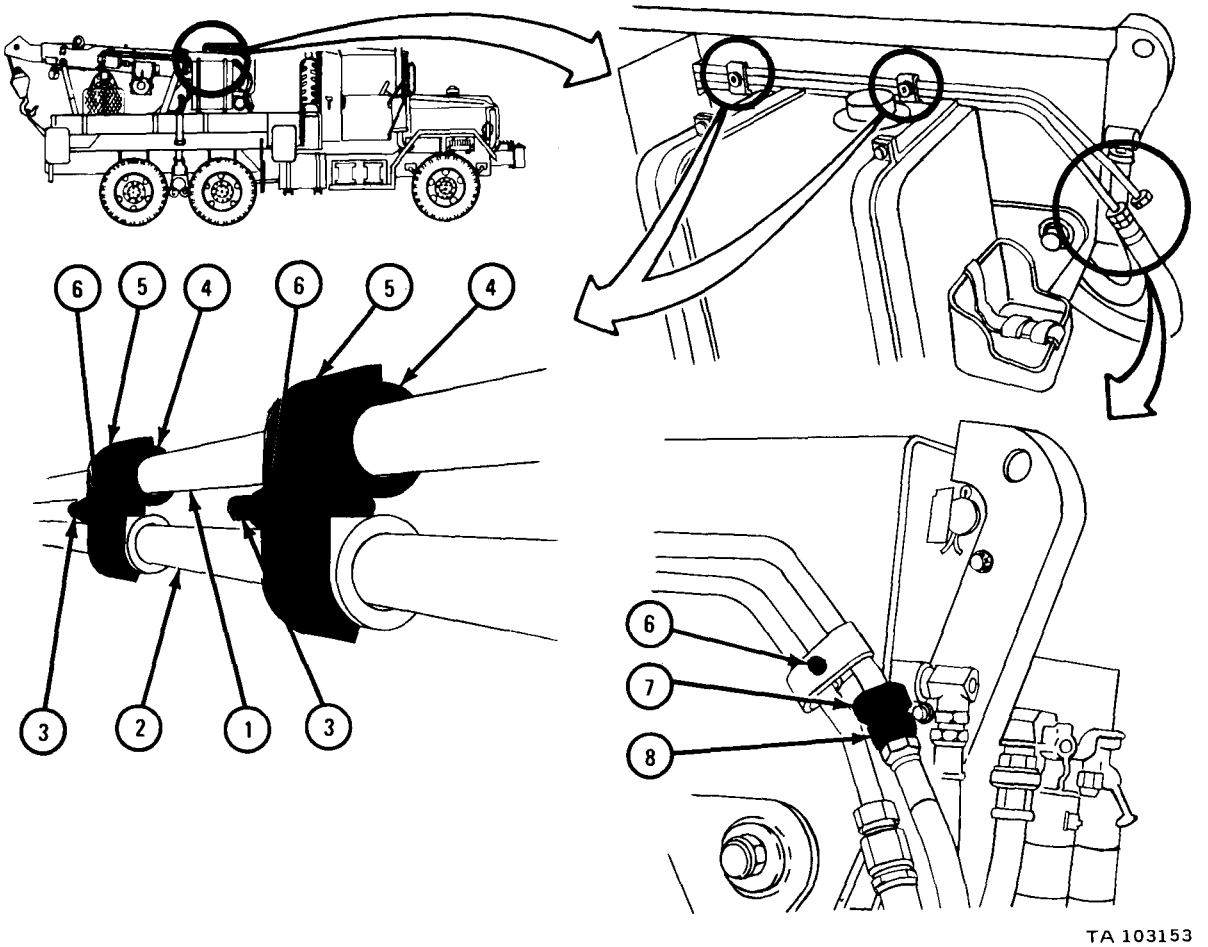
1. Push and hold tubes (1 and 2) on each side of studs (3).
2. Push on two pads (4).
3. Put two clamps (5) on studs (3).
4. Using 9/16-inch wrench, screw on and tighten nuts (6).
5. Screw coupling nut (7) into nut (8). Using 1 11/16-inch wrench, hold nut (8) and using 1 1/2-inch wrench, tighten coupling nut (7).

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



g. Valve Bank-to-Hoist Motor Hoses.

(1) Removal.

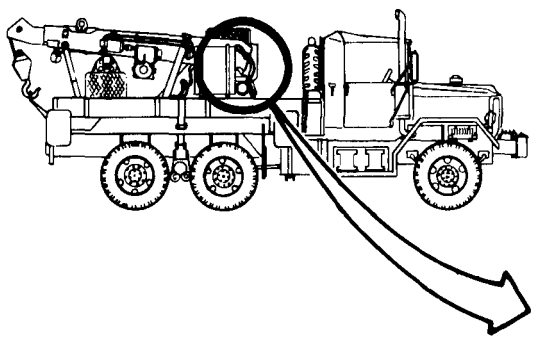
NOTE

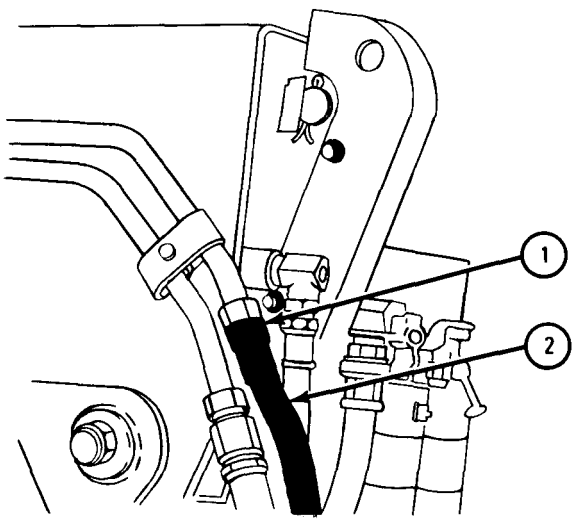
This task is the same for both hoses.

FRAME 1

1. Using 1 1/2-inch and 1 11/16-inch wrenches, unscrew coupling nut (1).
2. Holding hose (2), pull back coupling nut (1).

GO TO FRAME 2



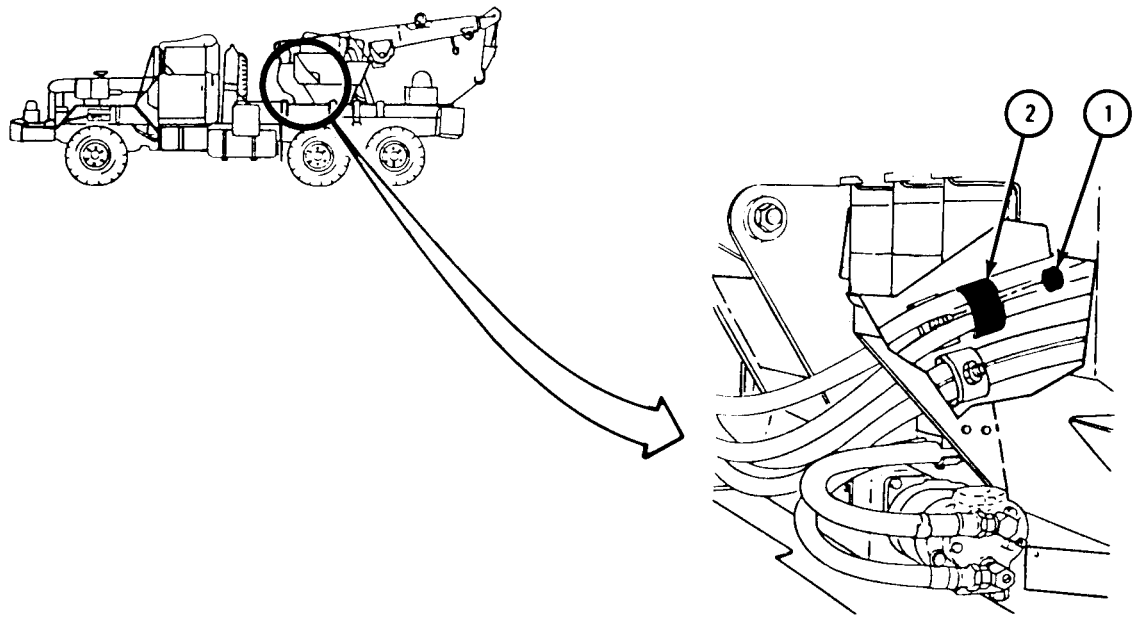


TA 103154

FRAME 2

1. Using 9/16-inch wrench, unscrew and take off locknut (1). Take off clamp (2).

GO TO FRAME 3

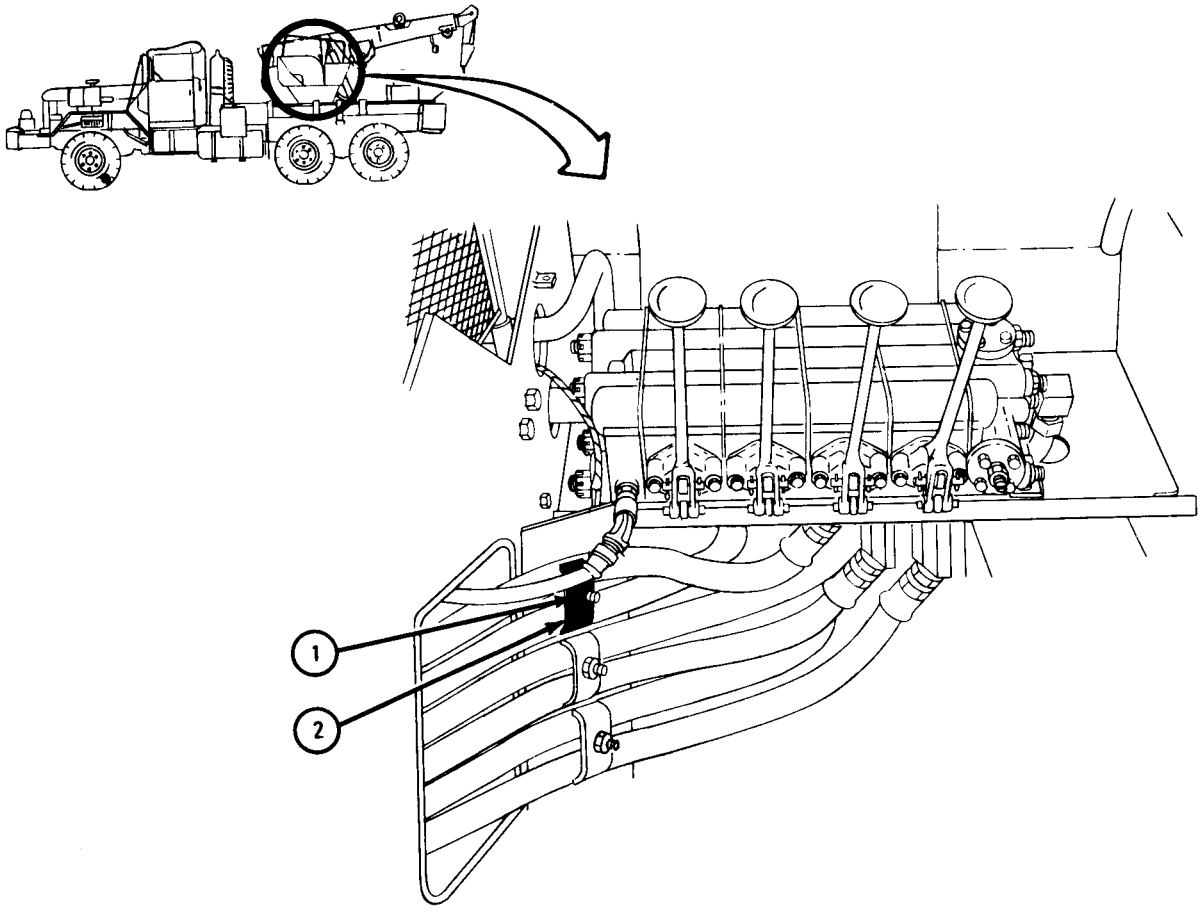


TA 103155

FRAME 3

1. Using 9/16-inch wrench, unscrew and take off nut (1) and clamp (2).

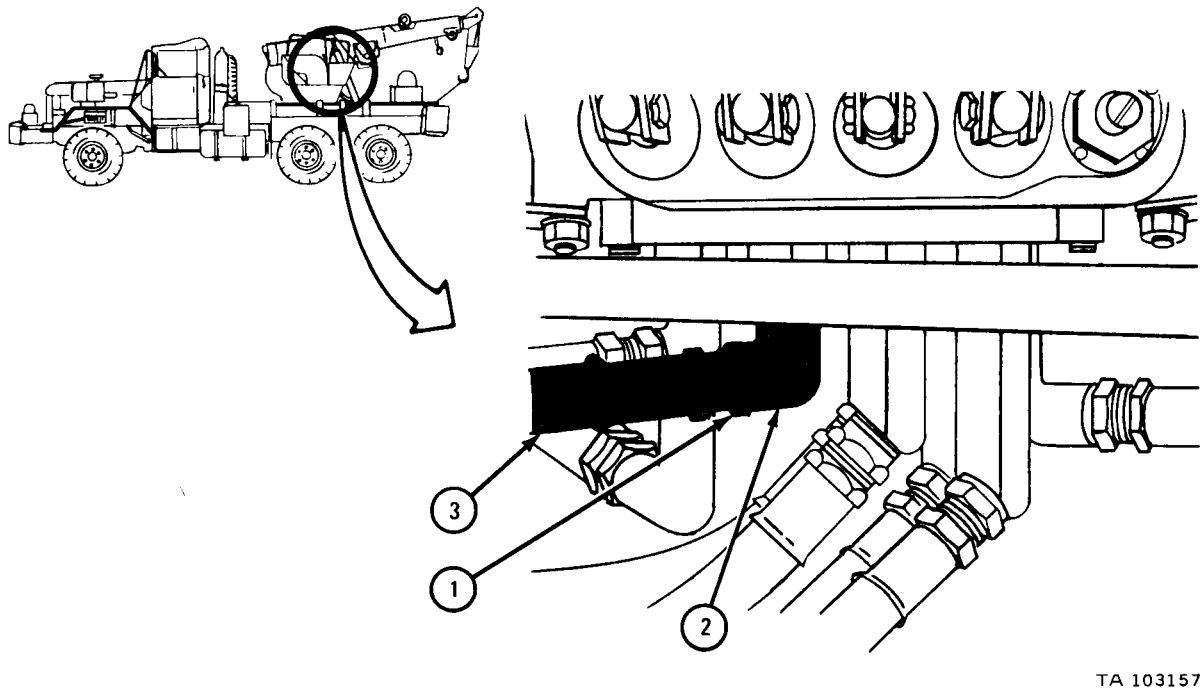
GO TO FRAME 4



FRAME 4

1. Using 1 1/2-inch wrench, unscrew coupling nut (1) at elbow (2).
2. Take out hose (3).

END OF TASK



TA 103157

(2) Replacement.

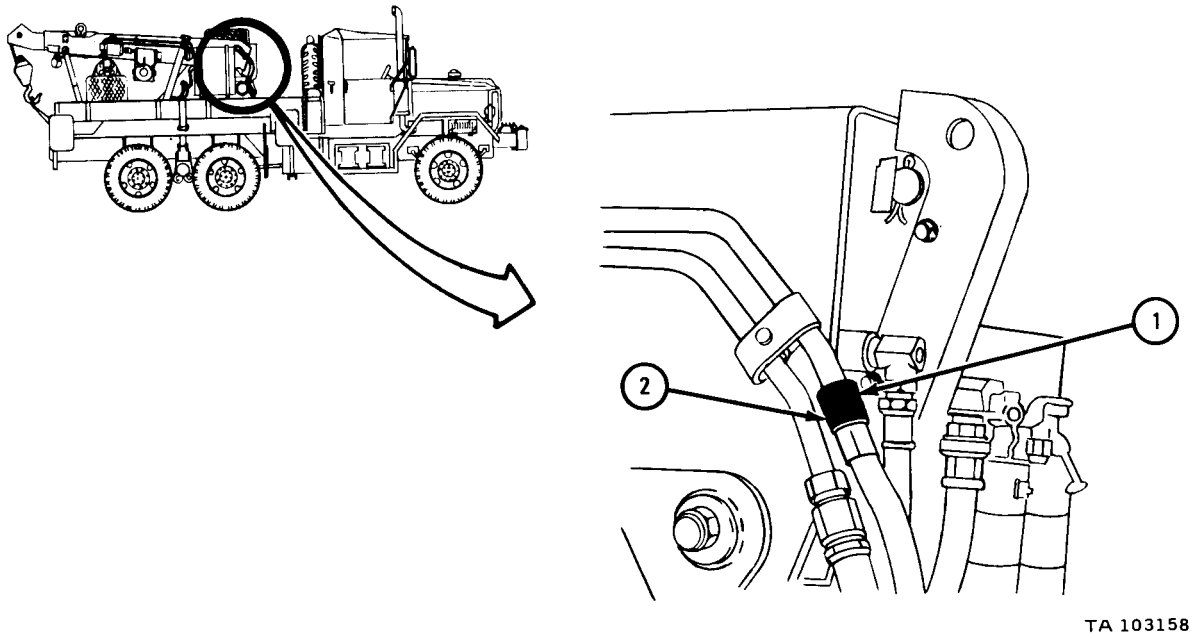
NOTE

This task is the same for both hoses.

FRAME 1

1. Using 1 1/2-inch and 1 11/16-inch wrenches, screw in and tighten coupling nut (1) to fitting (2).

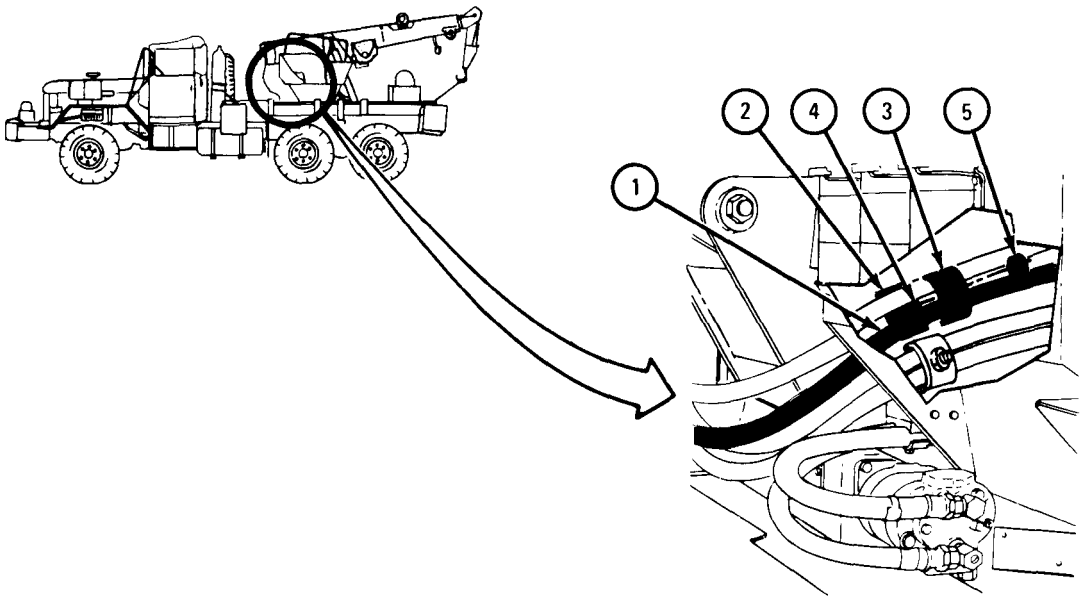
GO TO FRAME 2



FRAME 2

1. Place hose (1) up against block (2).
2. Put clamp (3) on stud (4).
3. Screw on but do not tighten nut (5).

GO TO FRAME 3

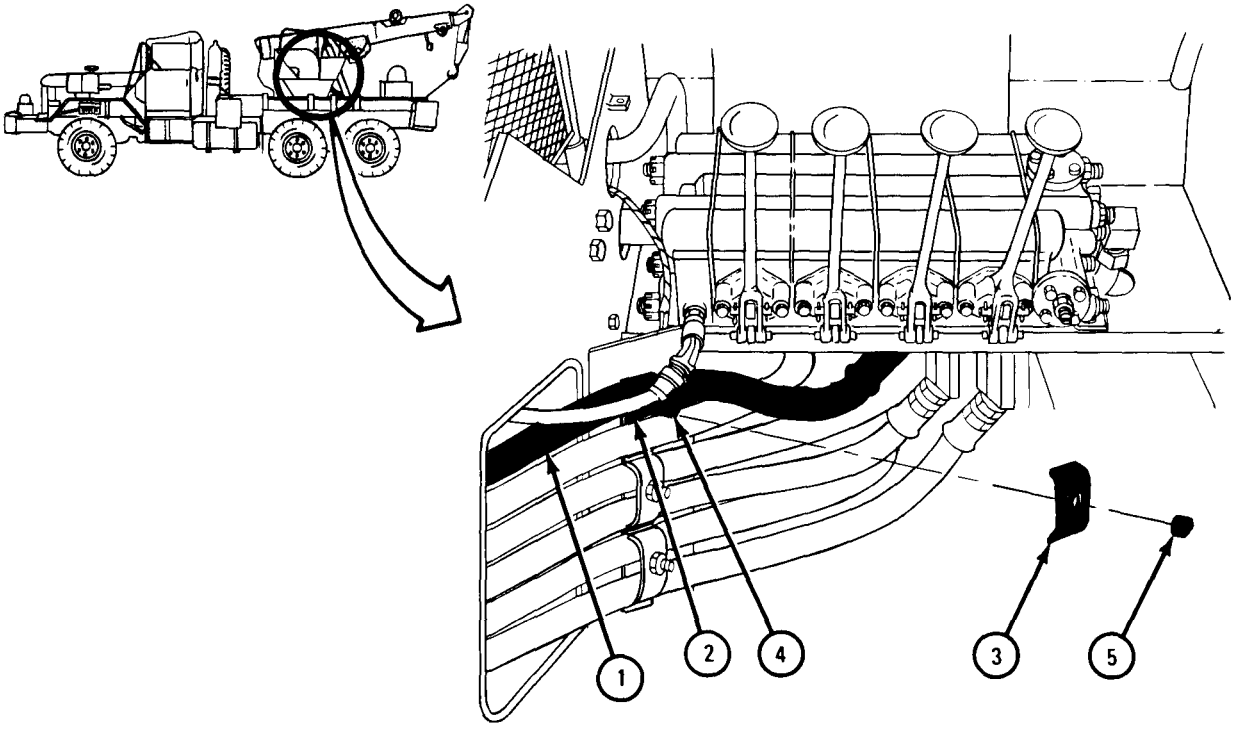


TA 103159

FRAME 3

1. Place hose (1) against block (2).
2. Put clamp (3) on stud (4).
3. Screw on but do not tighten nut (5).

GO TO FRAME 4



TA 103160

FRAME 4

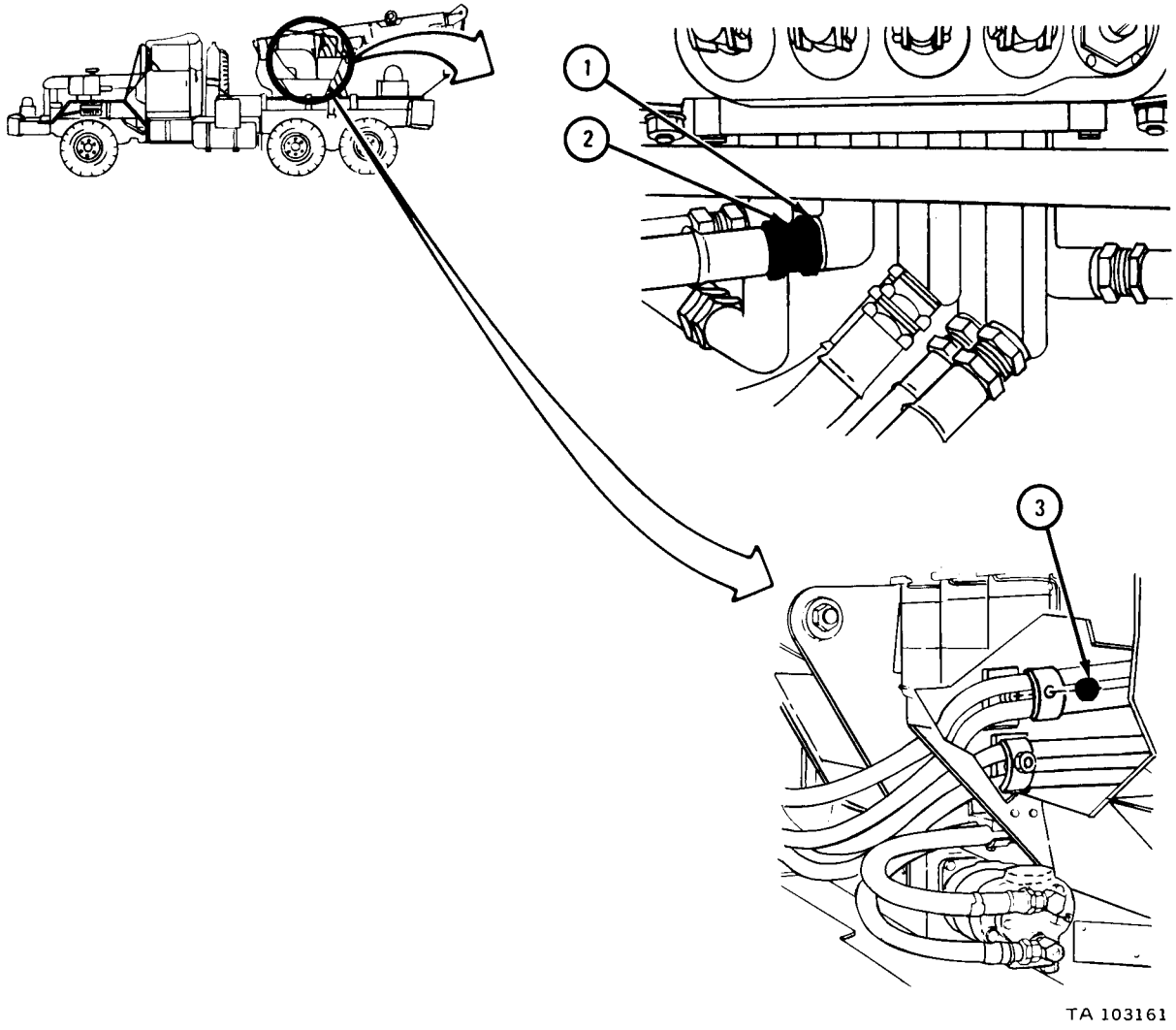
1. Using 1 1/2-inch wrench, screw on and tighten coupling nut (1) to fitting (2).
2. Using 9/16-inch wrench, screw on and tighten nut (3).

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



h. Valve Bank-to-Extension Cylinder Hoses.

(1) Removal.

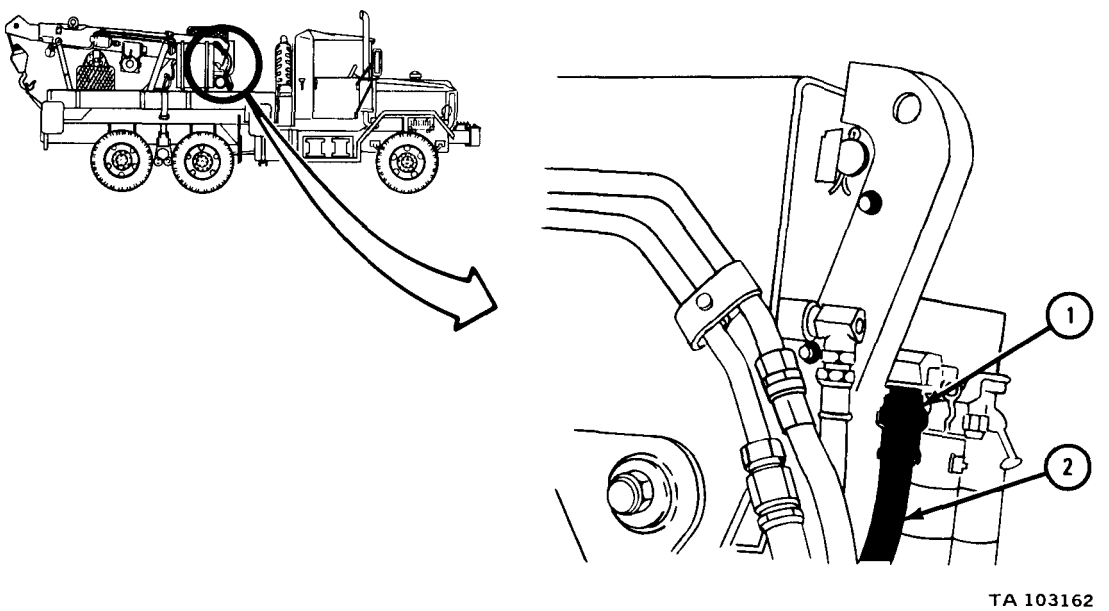
NOTE

This task is the same for both hoses.

FRAME 1

1. Using 1 1/2-inch and 1 11/16-inch wrenches, loosen coupling nut (1).
2. Hold hose (2) and unscrew coupling nut (1).

GO TO FRAME 2

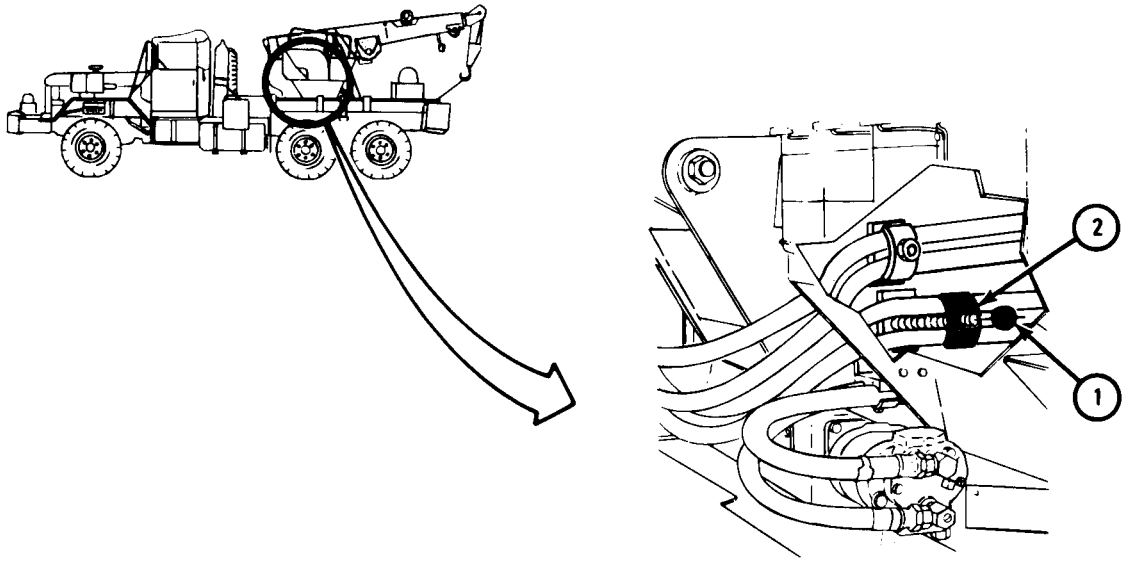


TA 103162

FRAME 2

1. Using 9/16-inch wrench, unscrew and take off locknut (1) and clamp (2).

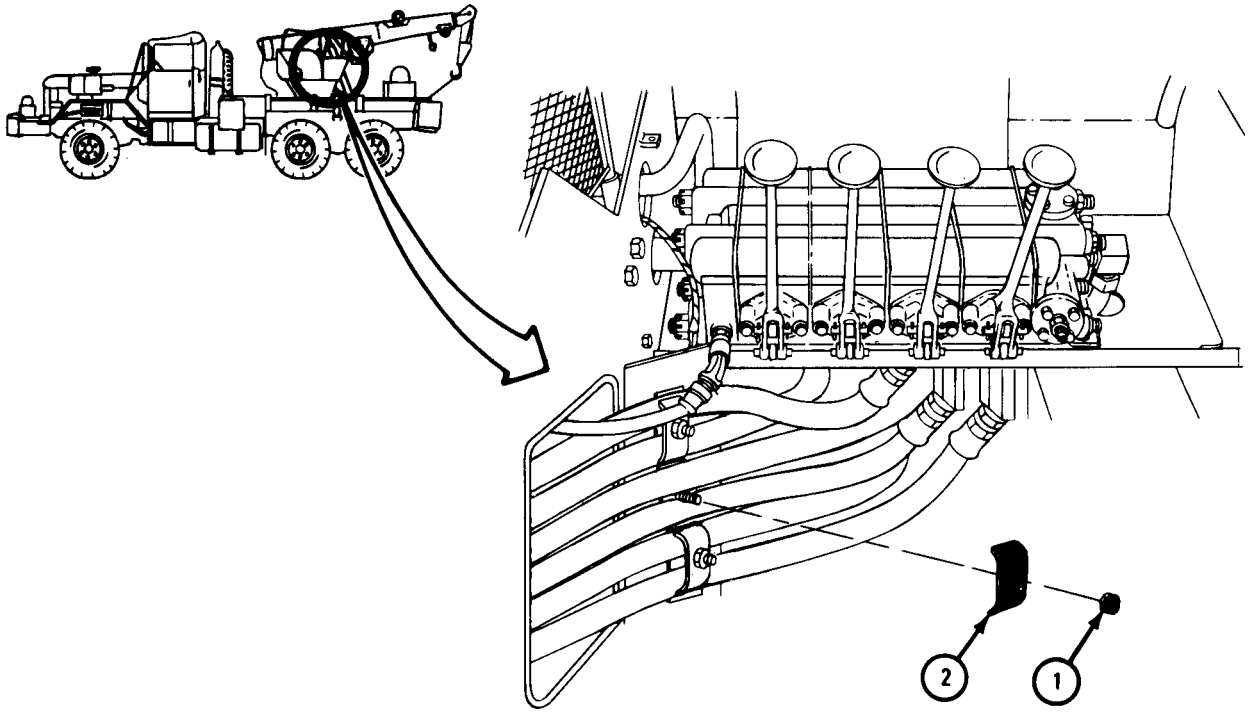
GO TO FRAME 3



FRAME 3

1. Using 9/16-inch wrench, unscrew and take off nut (1) and clamp (2).

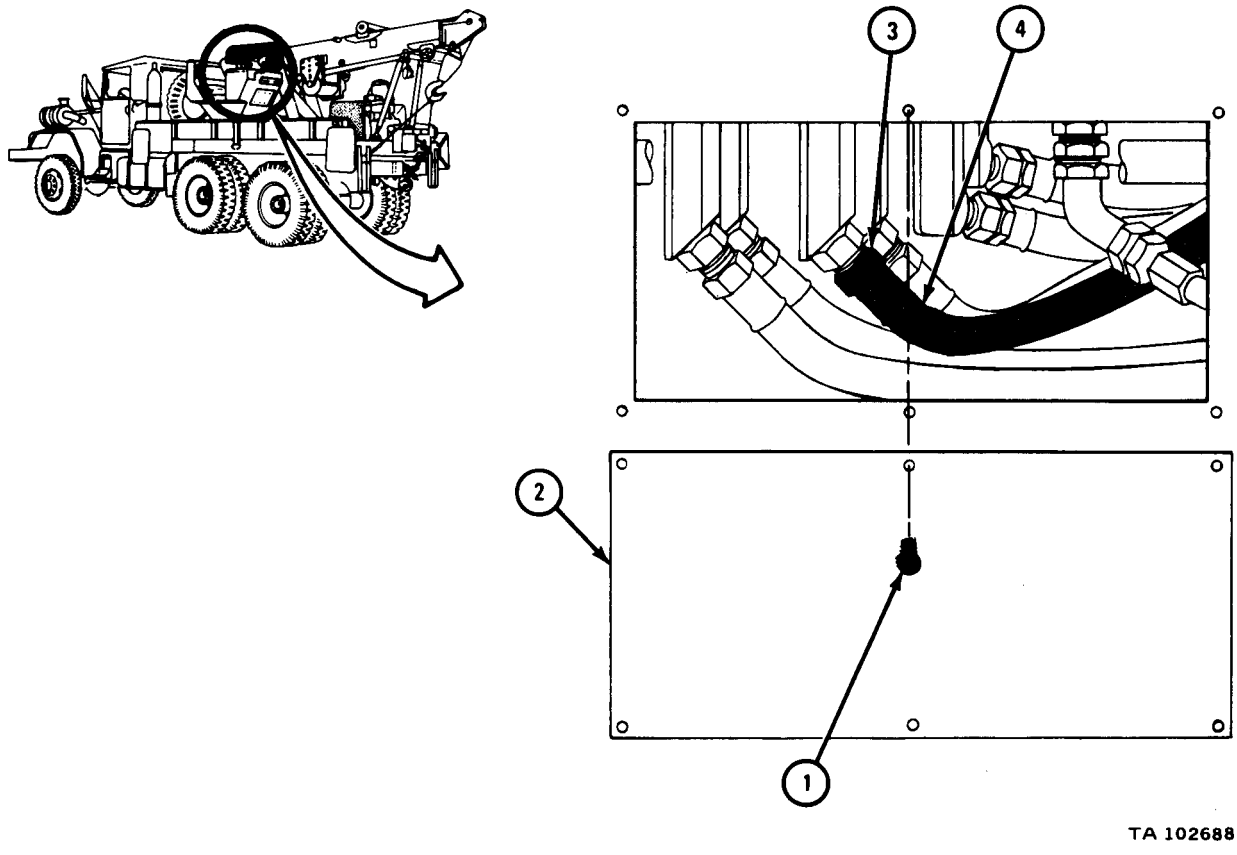
GO TO FRAME 4



FRAME 4

1. Using 1/2-inch wrench, unscrew and take out six screws (1). Take off gondola cover plate (2).
2. Using 1 1/2-inch wrench, unscrew coupling nut (3) and take off hose (4). Take hose out of truck.

END OF TASK



(2) Replacement.

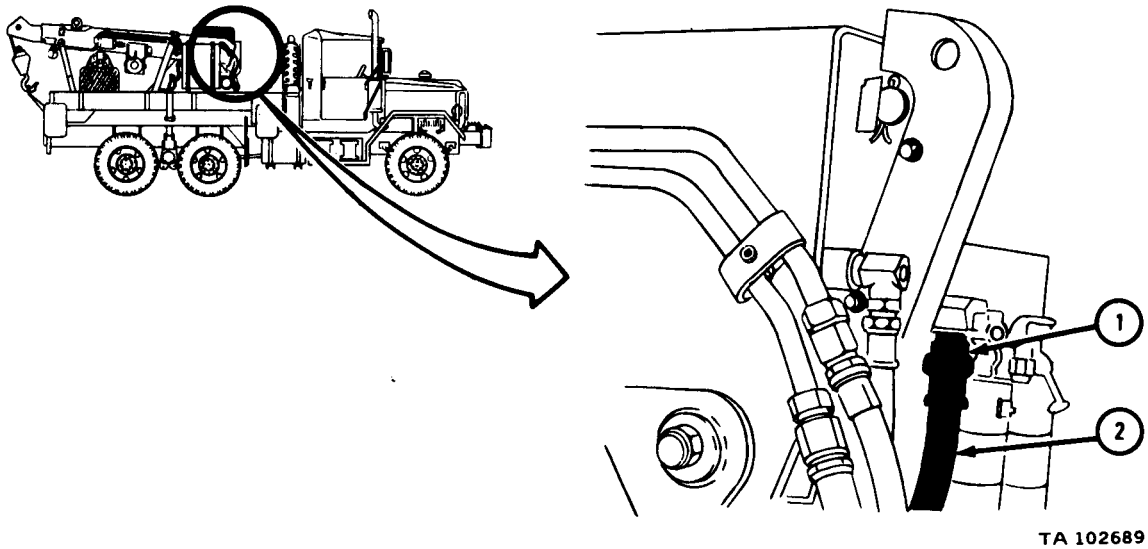
NOTE

This task is the same for both hoses.

FRAME 1

1. Using 1 1/2-inch wrench, screw on and tighten coupling nut (1) to hose (2).

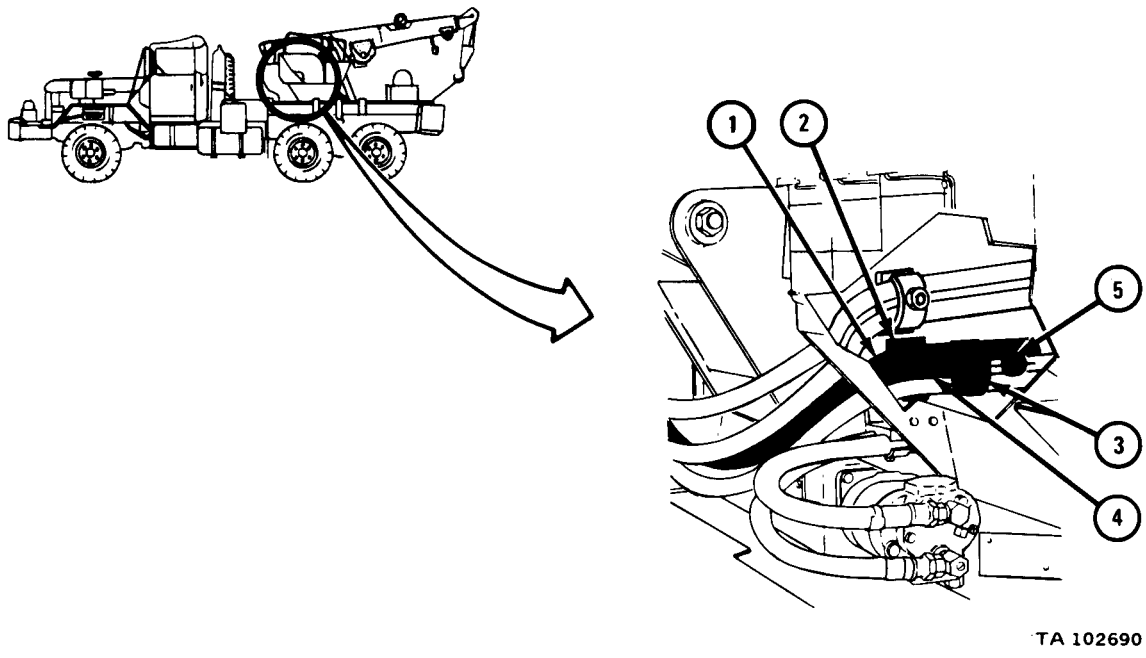
GO TO FRAME 2



FRAME 2

1. Place hose (1) on block (2).
2. Put clamp (3) on stud (4).
3. Screw on but do not tighten nut (5).

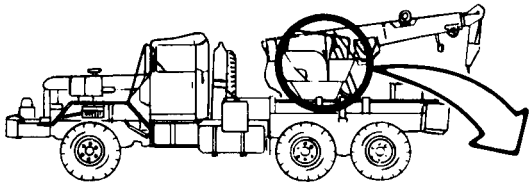
GO TO FRAME 3

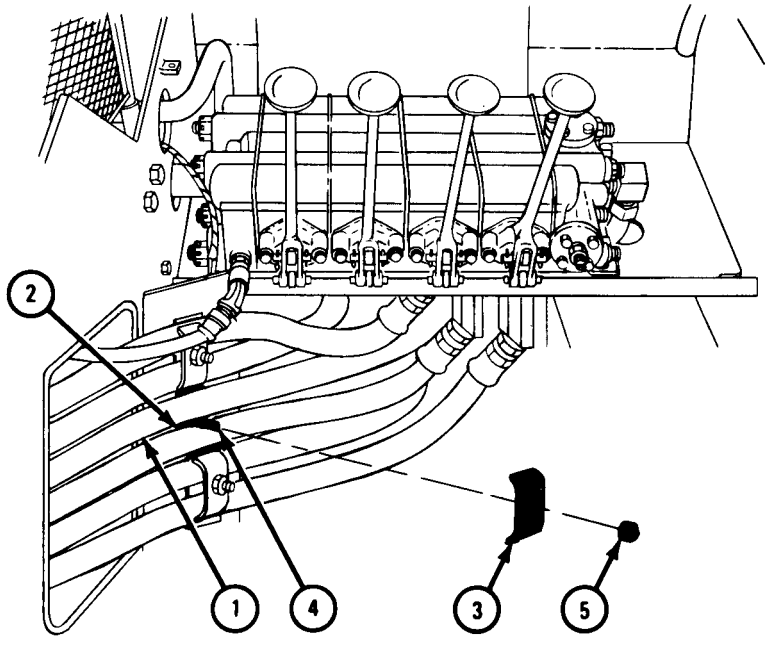


FRAME 3

1. Place hose (1) on block (2).
2. Slide clamp (3) over stud (4).
3. Screw on but do not tighten nut (5).

GO TO FRAME 4





TA 102691

FRAME 4

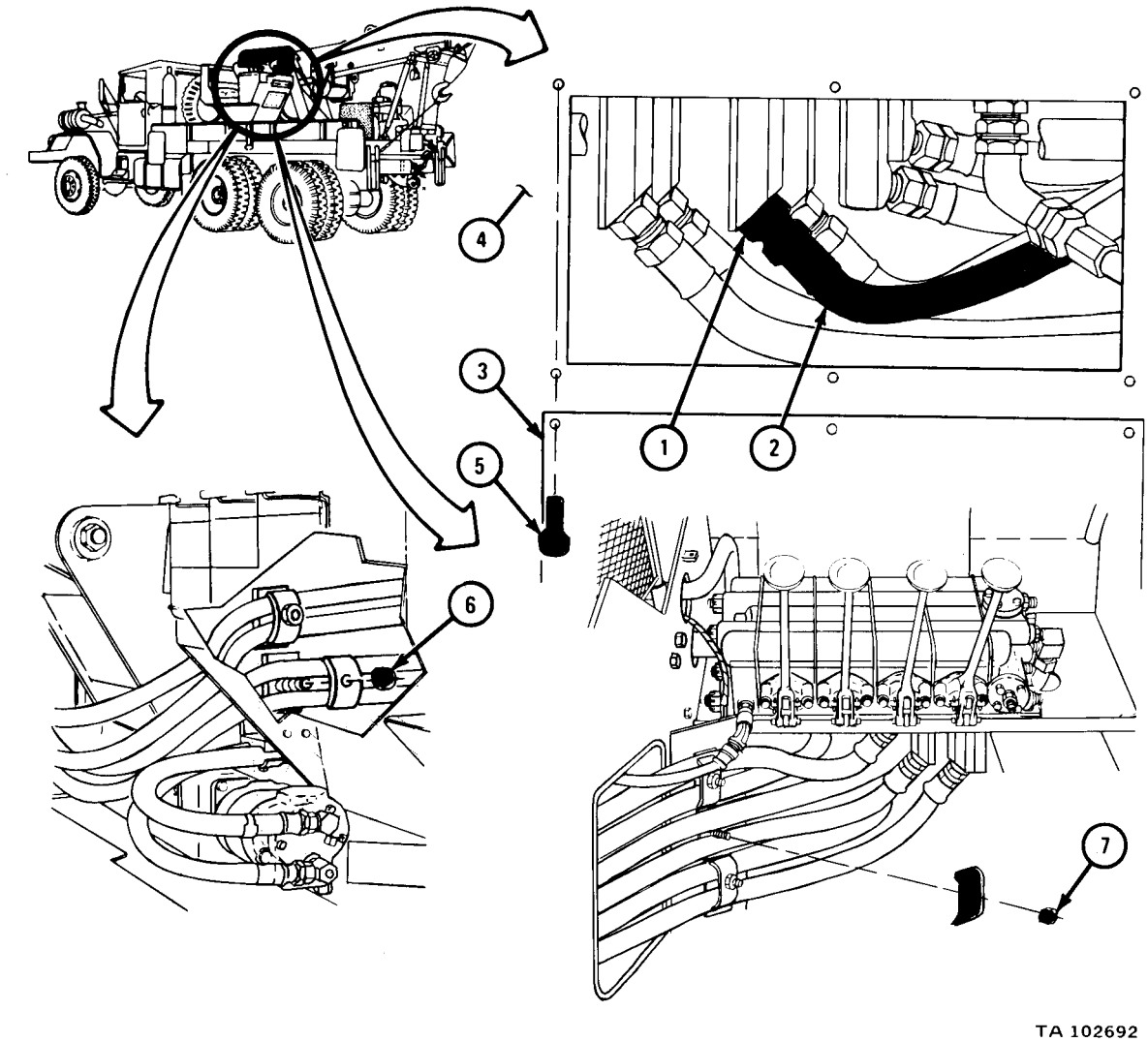
1. Using 1 1/2-inch wrench, screw on and tighten coupling nut (1) on hose (2).
2. Aline holes in gondola cover plate (3) with holes in gondola (4).
3. Using 1/2-inch wrench, screw in and tighten six screws (5).
4. Using 9/16-inch wrench, tighten nuts (6 and 7).

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



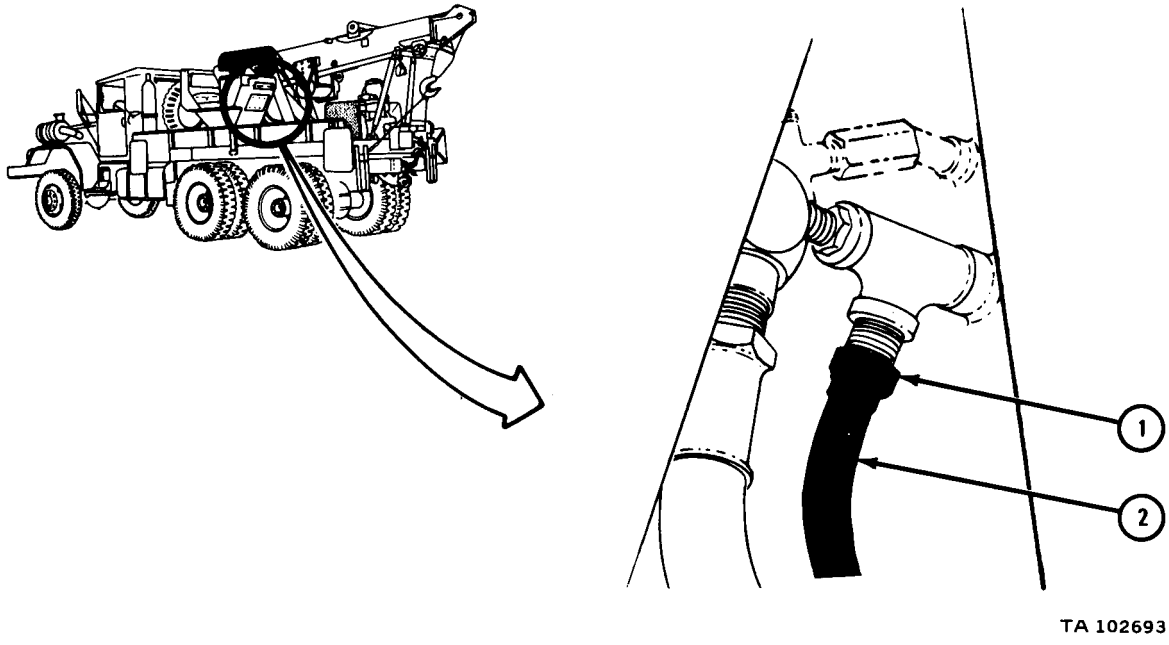
i. Boom Support Crossover Tube-to-Valve Bank Tube.

(1) Removal.

FRAME 1

1. Using 2-inch wrench, unscrew and slide back coupling nut (1) on tube (2).

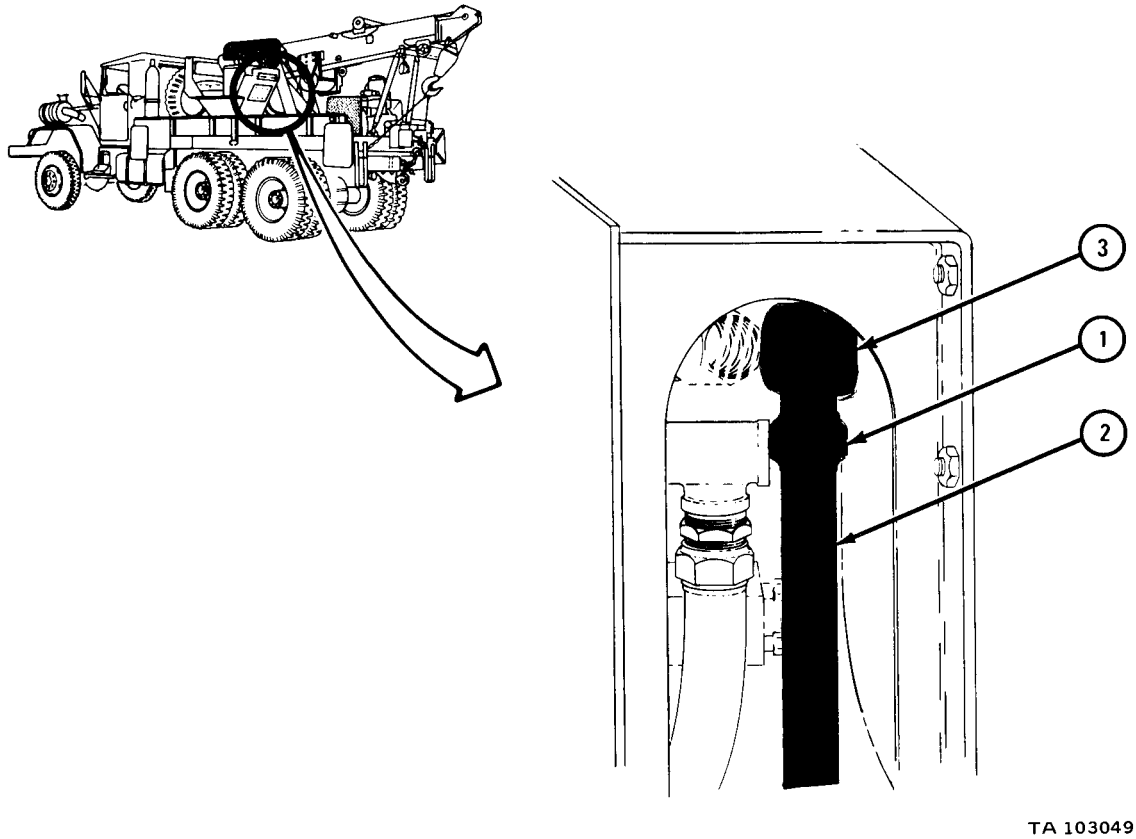
GO TO FRAME 2



FRAME 2

1. Take off gondola guard. Refer to para 18-33.
2. Using 2-inch wrench, unscrew and slide back coupling nut (1) on tube (2). Take out boom support crossover tube (3) to valve bank tube (2).

END OF TASK

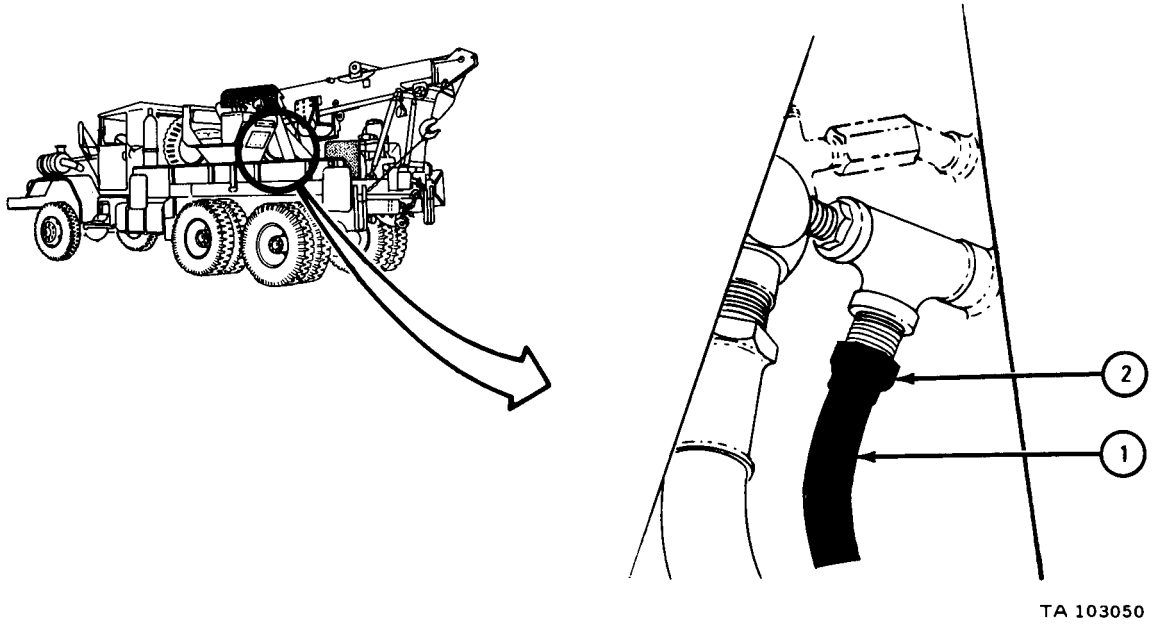


(2) Replacement.

FRAME 1

1. Put tube (1) in place. Using 2-inch wrench, screw in and tighten coupling nut (2).

GO TO FRAME 2



FRAME 2

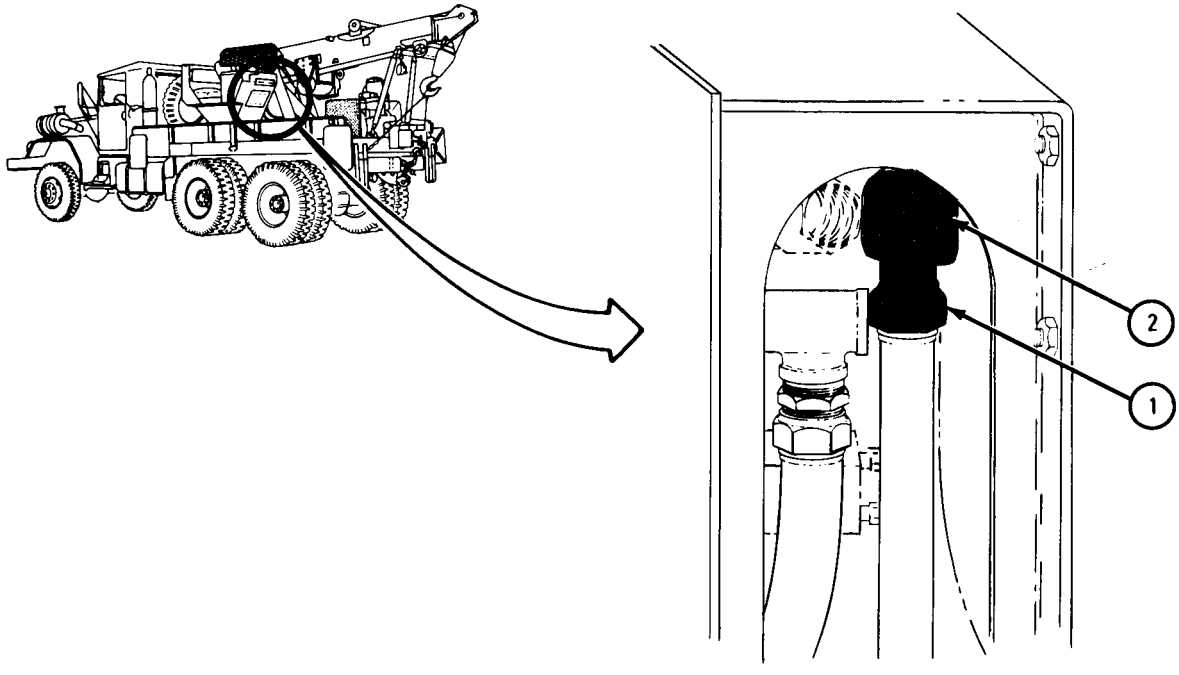
1. Using 2-inch wrench, screw on and tighten coupling nut (1) on elbow (2).
2. Replace gondola guard. Refer to para 18-33.

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



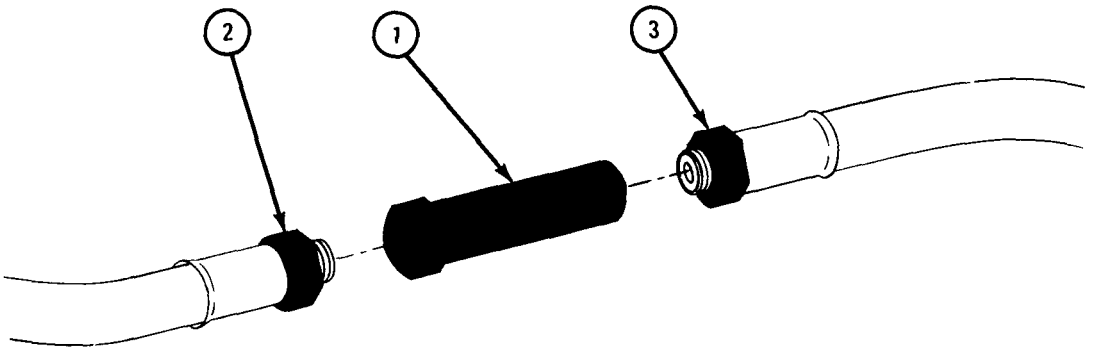
j. Flow Regulator.

(1) Removal.

FRAME 1

1. Take out valve bank-to-extension cylinder hose. Refer to para 18-18h.
2. Using 1 3/4-inch wrench, hold regulator (1) and using 1 11/16-inch wrench, unscrew hose with nut (2) from regulator.
3. Using 1 11/16-inch wrench, hold nut on hose with nut (3) and using 1 3/4-inch wrench, unscrew regulator (1).

END OF TASK



TA 103052

(2) Replacement.

FRAME 1

CAUTION

Arrow marked-on flow regulator (3) must face toward extension cylinder end of hose.

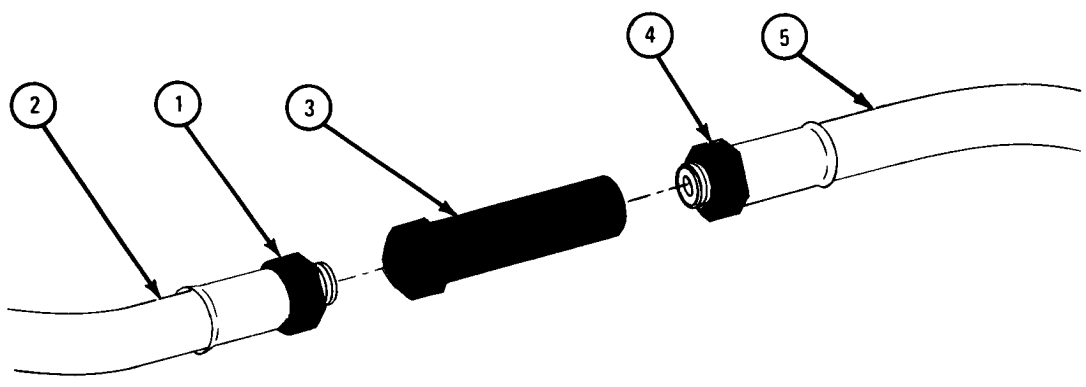
1. Using 1 11/16-inch and 1 3/4-inch wrenches, screw in and tighten nut (1) on hose (2) into flow regulator (3).
2. Using 1 11/16-inch and 1 3/4-inch wrenches, screw in and tighten nut (4) on hose (5) into flow regulator (3).
3. Put in valve bank-to-extension cylinder hose. Refer to para 18-18h.

NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK



TA 103053

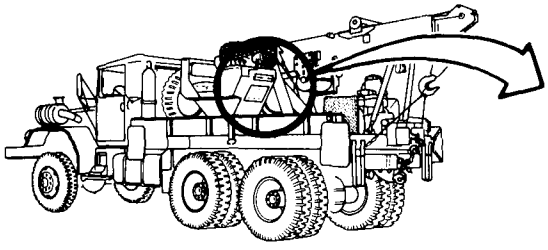
k. Crossover Tube Tee Fitting.

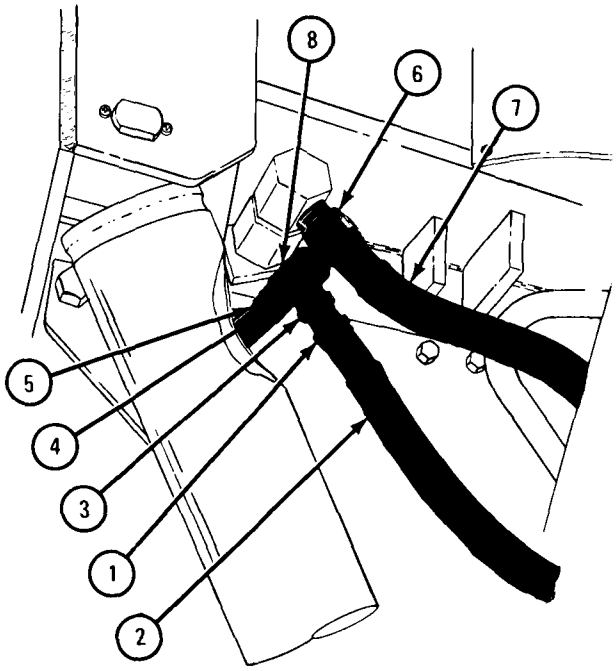
(1) Removal.

FRAME 1

1. Remove gondola guard. Refer to para 18-33.
2. Using 2-inch wrench, unscrew and slide back coupling nut (1) on tube (2).
3. Using 1 11/16-inch wrench, unscrew and take out adapter nut (3).
4. Using 1 11/16-inch wrench, hold fitting (4) and using 1 1/2-inch wrench, unscrew coupling nut (5).
5. Using 1 11/16-inch wrench, unscrew fitting (6) and take out hose (7).
6. Using pipe wrench, unscrew and take out crossover tube tee fitting (8).

END OF TASK





TA 103054

(2) Replacement.

FRAME 1

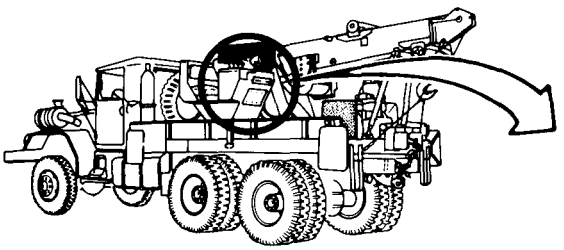
1. Using pipe wrench, screw in and tighten crossover tube tee fitting (1) into crossover tube (2).
2. Using 1 11/16-inch wrench, screw in and tighten adapter nut (3) in tee fitting (1).
3. Using 2-inch wrench, screw in and tighten coupling nut (4) on tube (5) onto adapter nut (3).
4. Using 1 11/16-inch wrench, screw in and tighten fitting (6) on hose (7) into elbow (8).
5. Replace gondola guard. Refer to para 18-33.

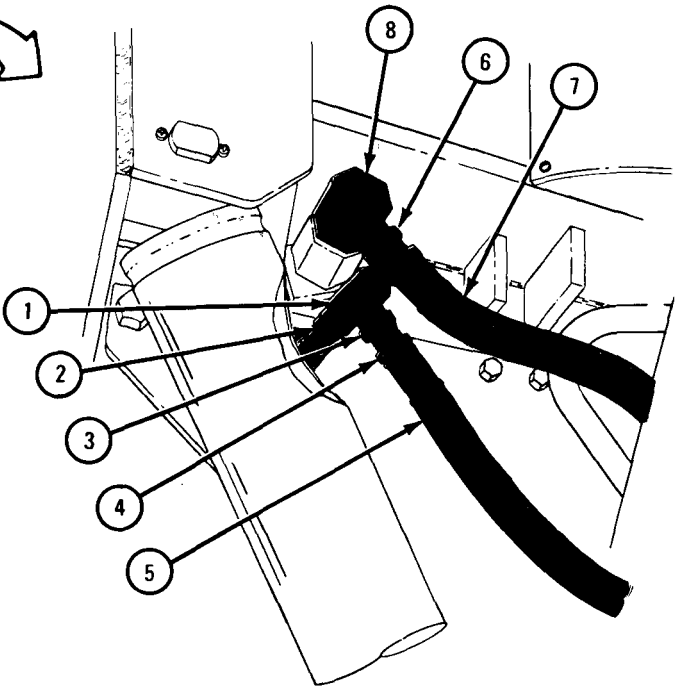
NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK





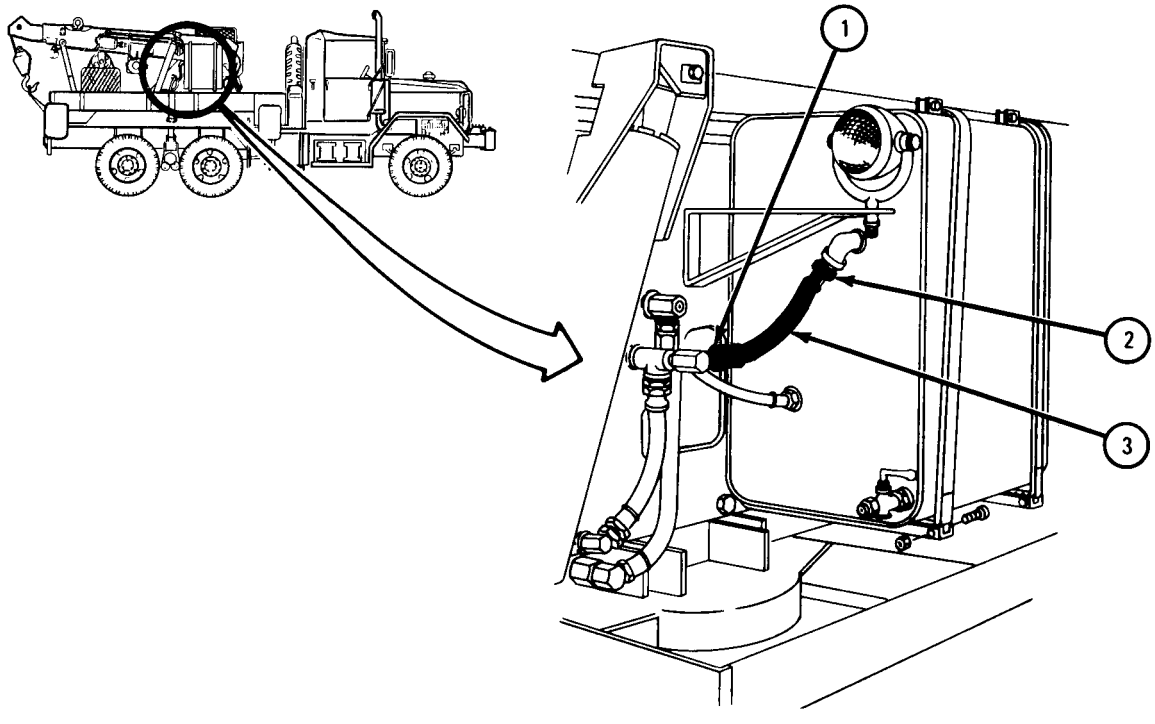
TA 103043

1. Boom Support Crossover-to-Reservoir Hose.
   (1) Removal.

FRAME 1

1. Using 1 7/8-inch wrench, unscrew coupling nut (1).
2. Using 2 1/8-inch wrench, unscrew fitting (2) and take out hose (3).

END OF TASK



TA 103165

(2) Replacement.

FRAME 1

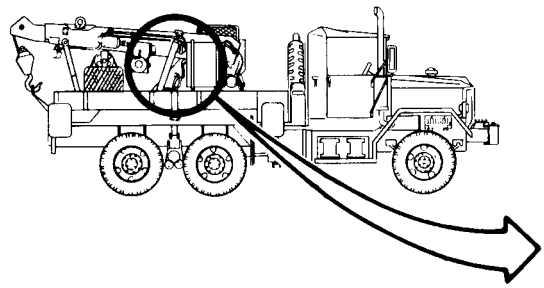
1. Using 2 1/8-inch wrench, screw in and tighten fitting (1) on hose (2) into elbow (3).
2. Using 1 7/8-inch wrench, screw in and tighten coupling nut (4) to hose (2).

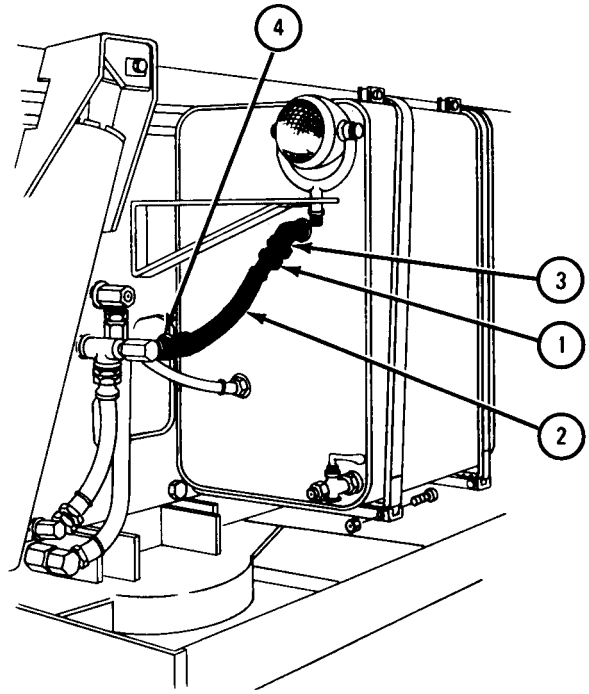
NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK





TA 103166

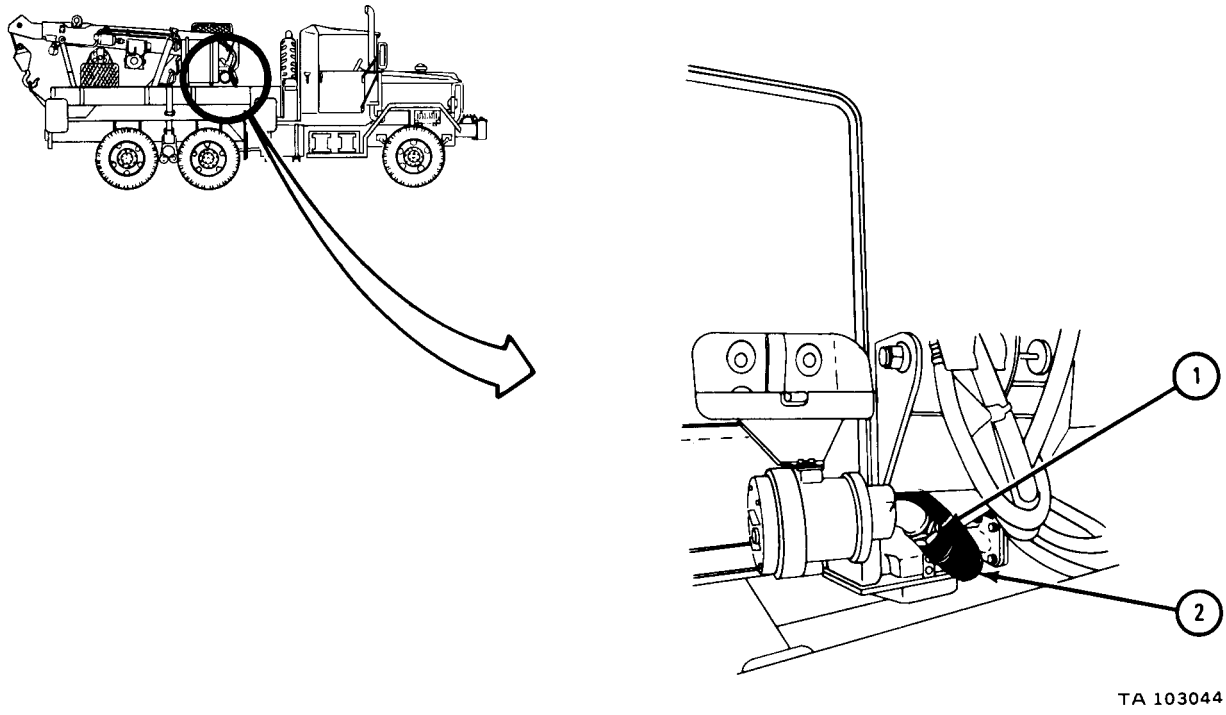
m. Oil Filter-to-Pump Hose.

(1) Removal.

FRAME 1

1. Using 24-inch adjustable wrenches, unscrew coupling nut (1) from hose (2).

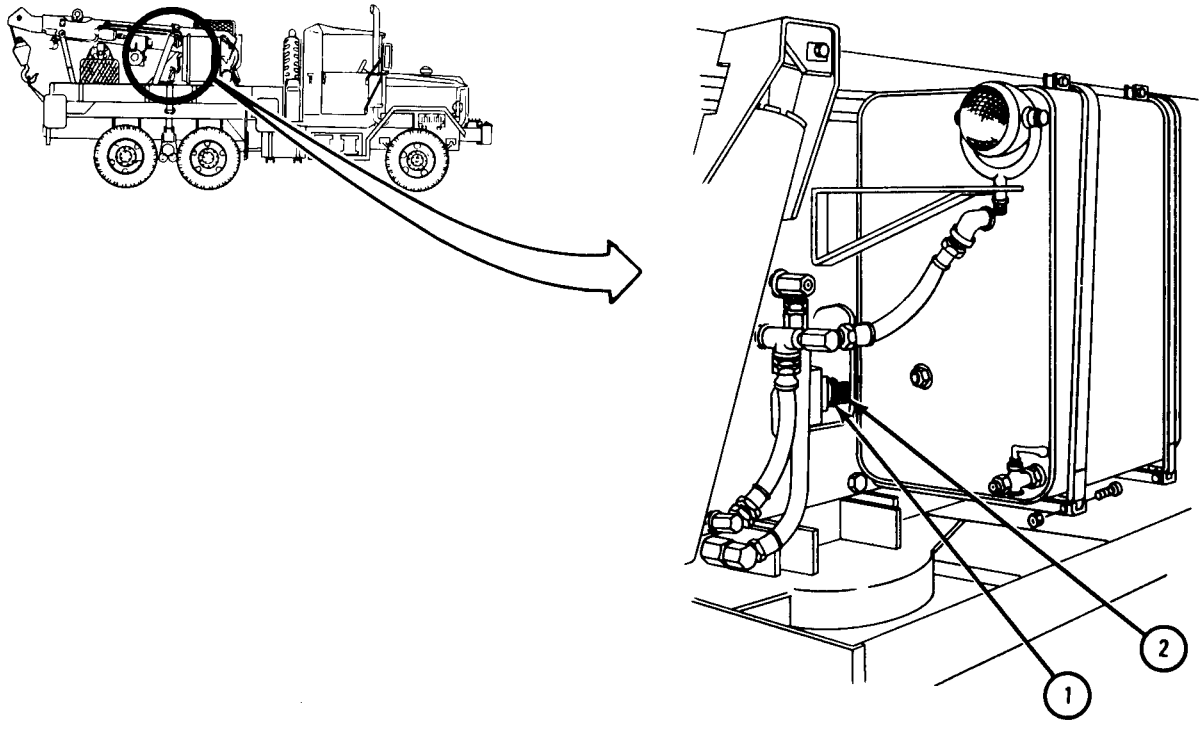
GO TO FRAME 2



FRAME 2

1. Using 24-inch adjustable wrenches, unscrew coupling nut (1) and take out oil filter-to-pump hose (2).

END OF TASK



(2) Replacement.

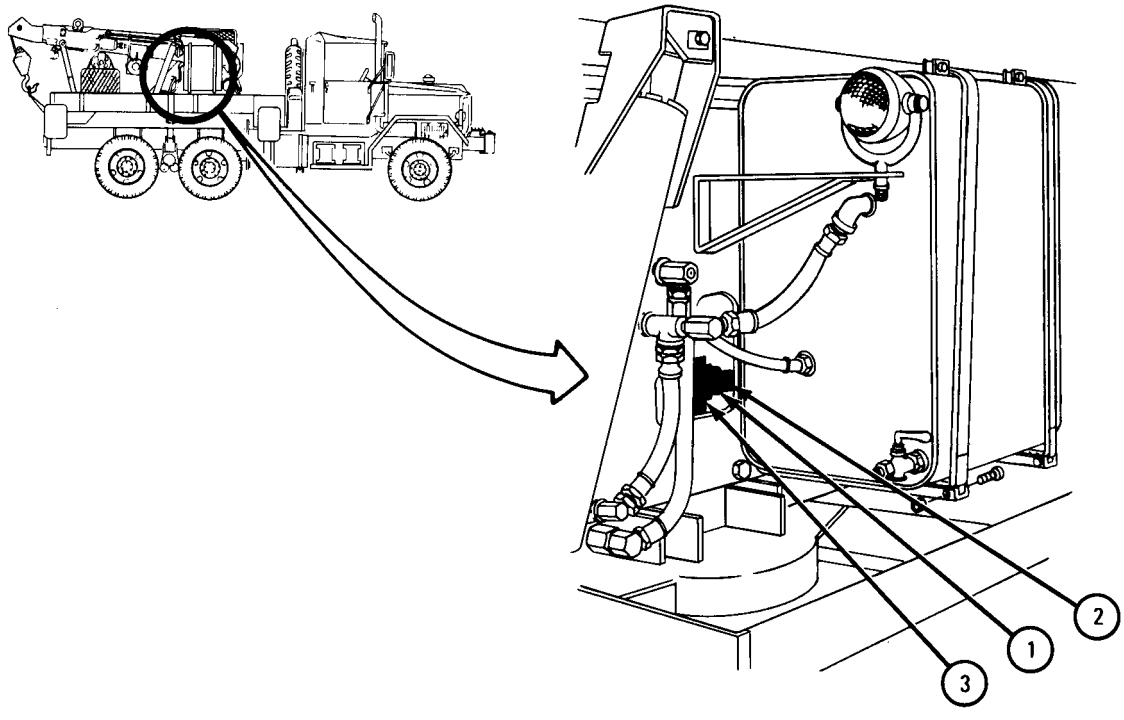
NOTE

The end of hose with one nut goes to oil hydraulic pump.

FRAME 1

1. Using 24-inch adjustable wrench, screw in and tighten nut (1) on hose (2) at oil hydraulic pump (3).

GO TO FRAME 2



FRAME 2

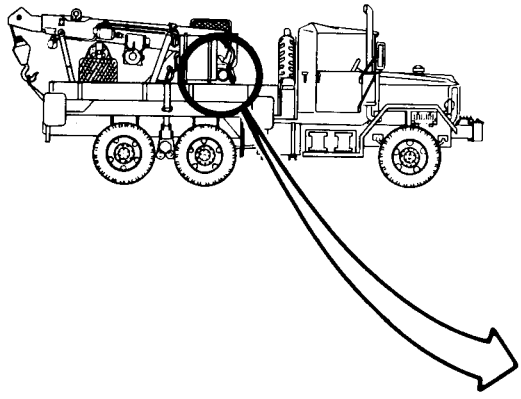
1. Using 24-inch adjustable wrenches, screw on and tighten nut (1) to hose (2) at oil filter elbow (3).

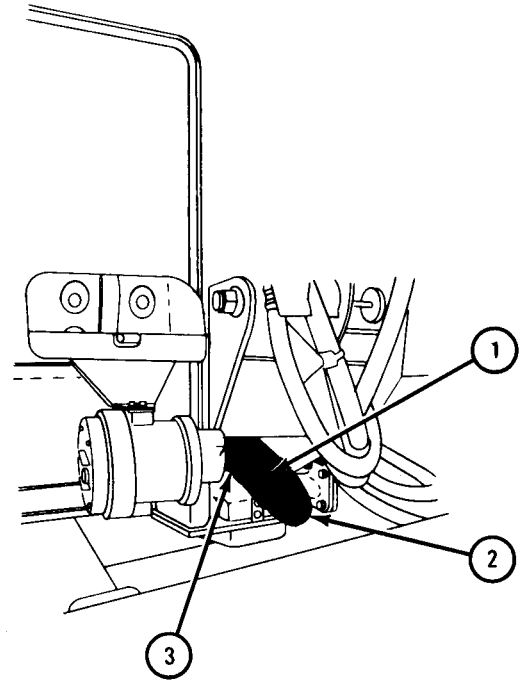
NOTE

Follow-on Maintenance Action Required:

Fill hydraulic reservoir. Refer to LO 9-2320-211-12.

END OF TASK





TA 103055

18-19. LIFT CYLINDER PACKING ASSEMBLY ADJUSTMENT (TRUCK M543A2).

NOTE

This task is the same for the two lift cylinders.

TOOLS: Spanner wrench, pn 11602326

SUPPLIES: None

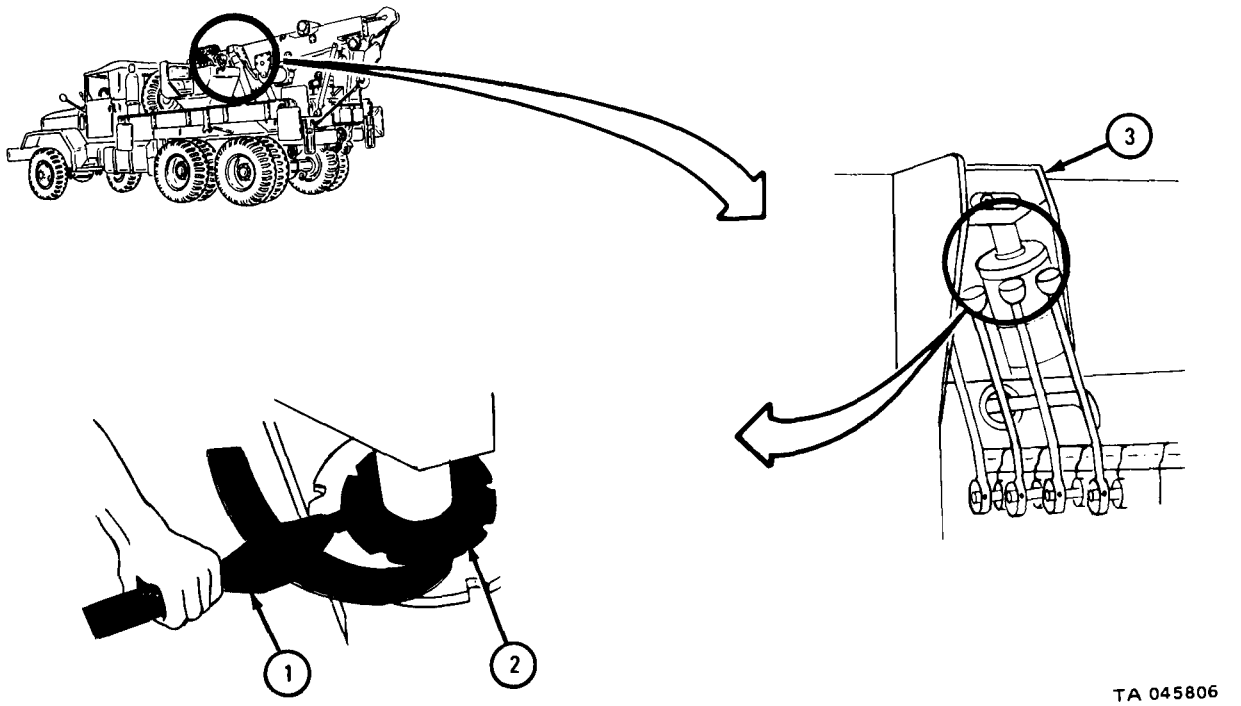
PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

FRAME 1

1. Using spanner wrench (1), tighten packing nut (2) just a little by turning it to right.
2. Raise and lower boom (3). Refer to TM 9-2320-211-10. Check for oil leaks.
3. If oil is still leaking, tighten nut (2) a little more and raise and lower boom (3) again. Check for oil leak.
4. If nut (2) becomes tight and oil leak does not stop, tell direct support maintenance.

END OF TASK



18-20. HYDRAULIC SYSTEM PRESSURE TEST AND ADJUSTMENT (TRUCK M54342).

TOOLS: Flat-tip screwdriver
1/2-inch wrench
3/8-inch socket head screw key (Allen wrench or equivalent)
Hydraulic pressure test gage

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, wheels chocked.

a. Preliminary Procedures.

(1) Lower hoist cable to ground. Refer to TM 9-2320-211-10.

(2) Fully extend boom. Refer to TM 9-2320-211-10.

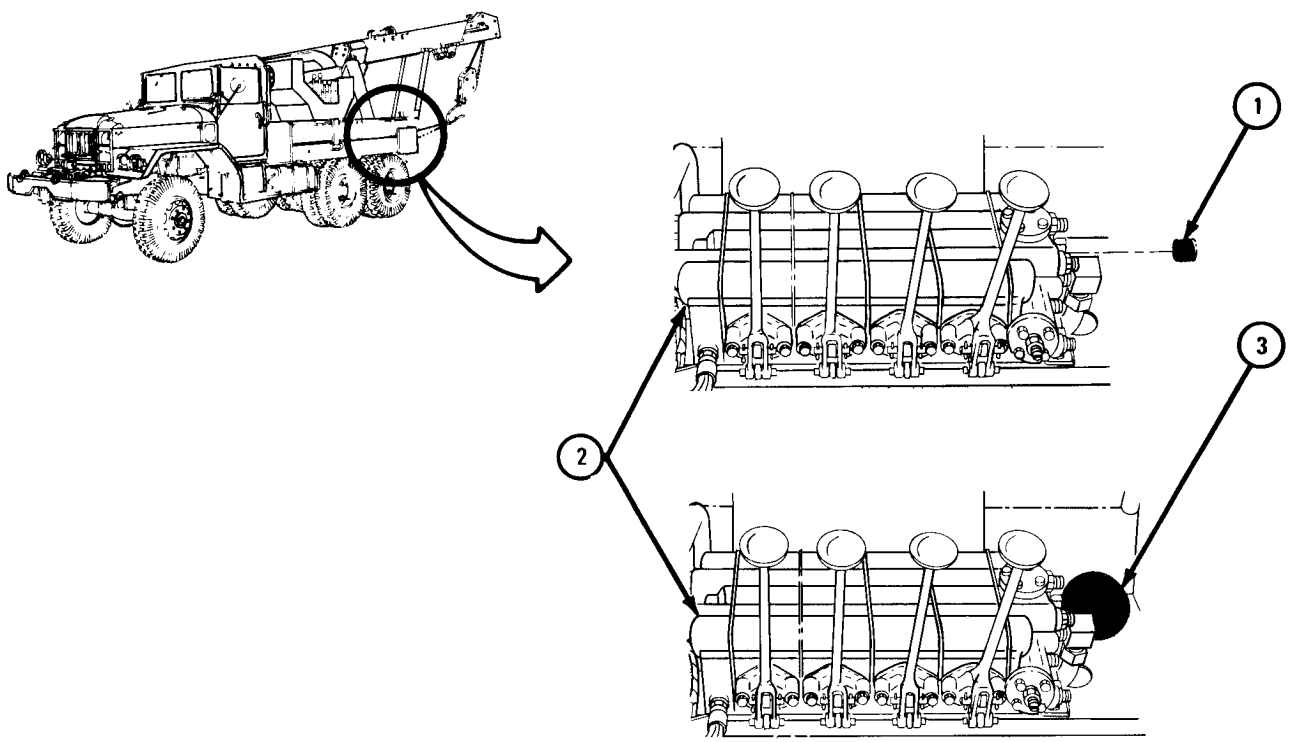
b. Test and Adjustment.

FRAME 1

Soldier A 1. Using 3/8-inch allen wrench, unscrew plug (1) from valve body (2). Take out plug.

2. Screw in hydraulic pressure test gage (3).

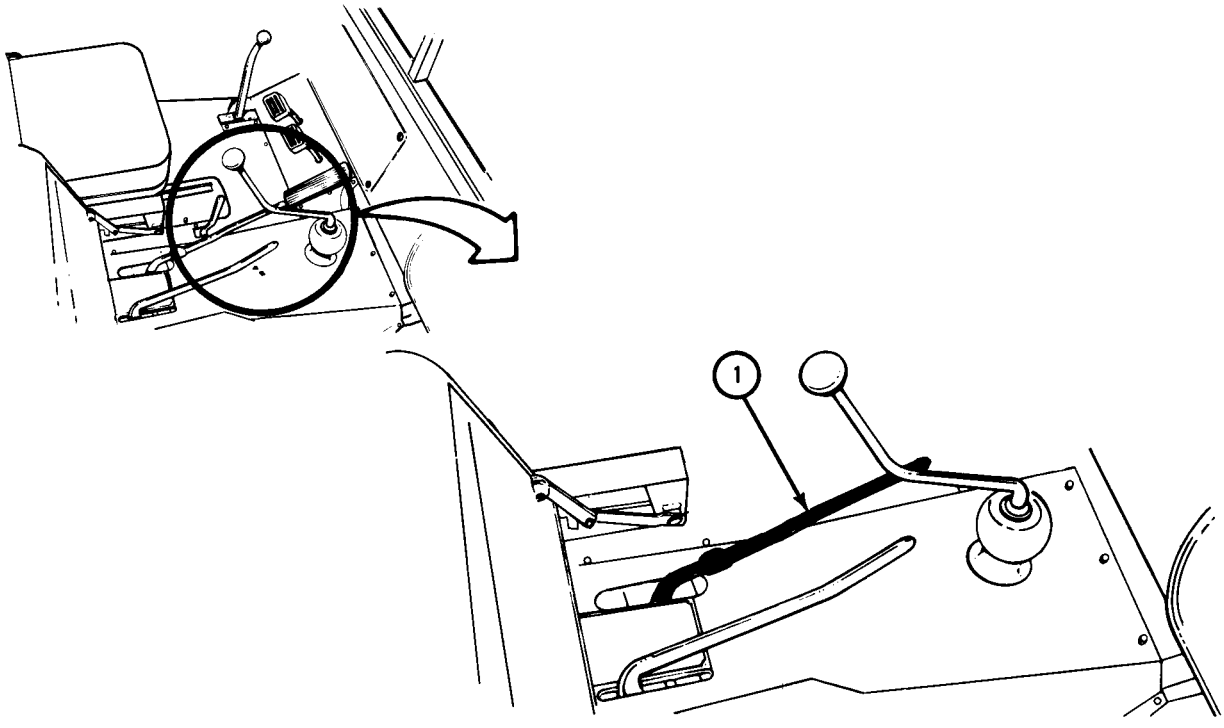
GO TO FRAME 2



FRAME 2

Soldier B 1. Start engine. Refer to TM 9-2320-211-10.
2. Put on power divider (1). Tell soldier A when ready.

GO TO FRAME 3



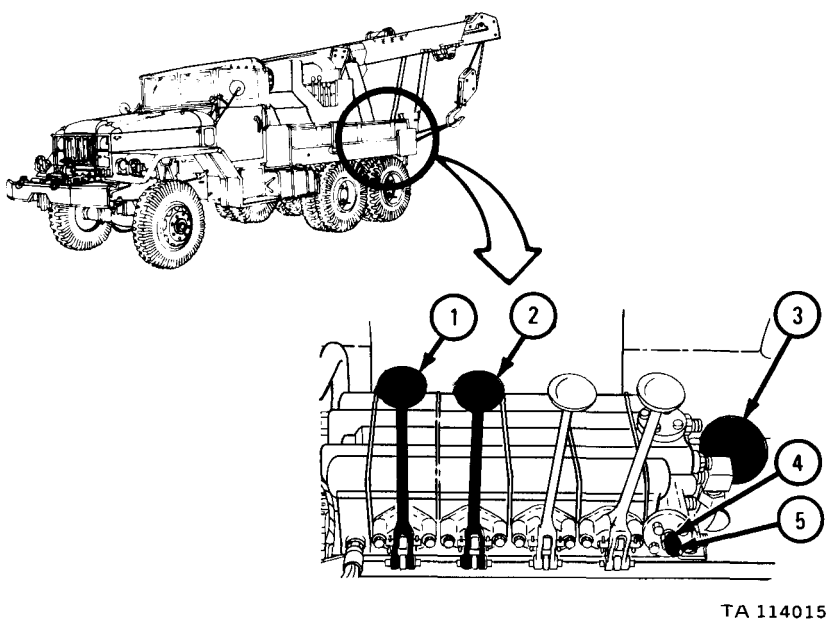
FRAME 3

Soldier A 1. Push in handles (1 and 2) and hold them. Check that gage (3) reads 1,350. If gage reads 1,350, let handles (1 and 2) go and go to frame 4.

2. Using 1/2-inch wrench, unscrew locknut (4).

3. Using flat-tip screwdriver, turn screw (5) until gage (3) reads 1,350. Tighten locknut (4). Let handles (1 and 2) go.

GO TO FRAME 4

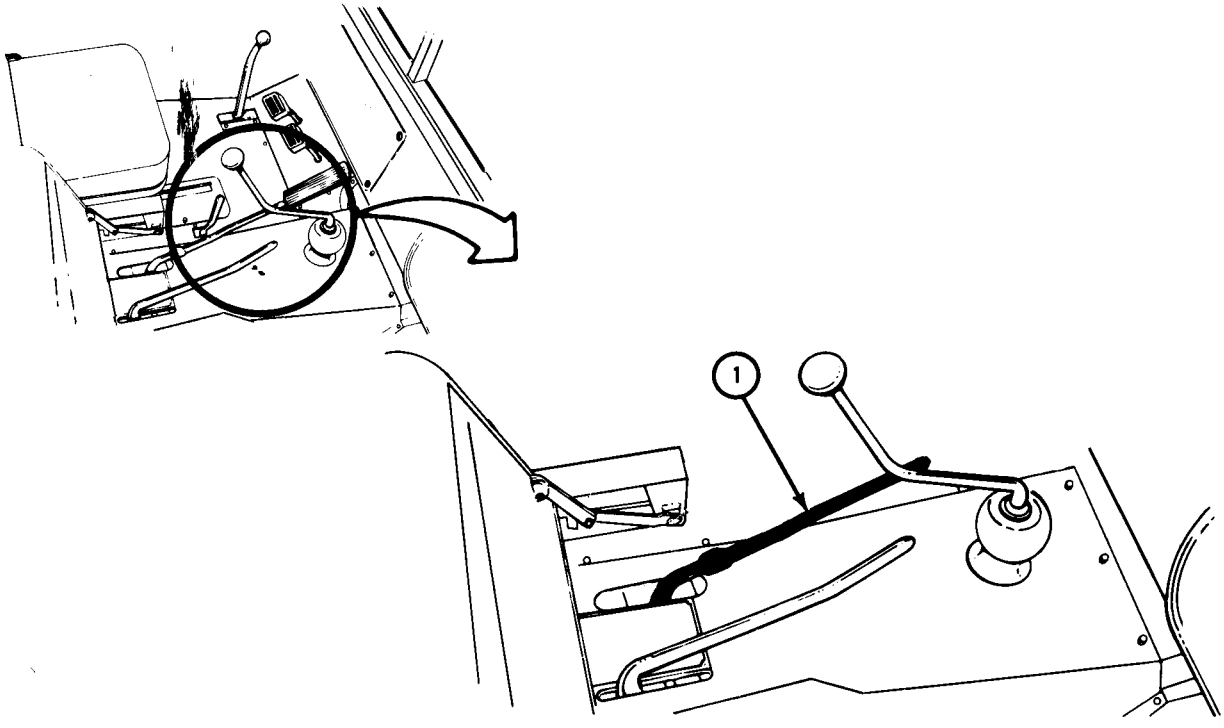


TA 114015

FRAME 4

Soldier B. 1. Shut off engine. Refer to TM 9-2320-211-10.
2. Let down power divider handle (1).

GO TO FRAME 5



TA 114014

FRAME 5

Soldier A 1. Take out hydraulic pressure test gage (1) from valve body (2).

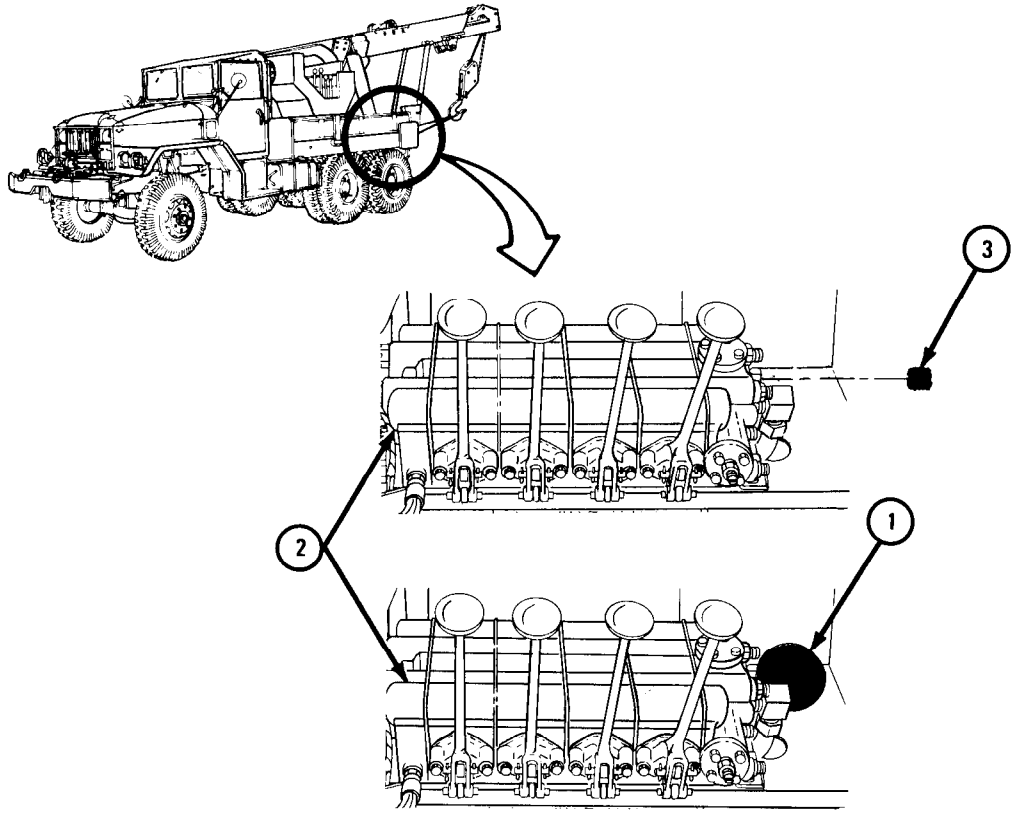
2. Using 3/8-inch allen wrench, screw in plug (3).

NOTE

Follow-on Maintenance Action Required:

1. Retract boom. Refer to TM 9-2320-211-10.
2. Rewind hoist cable. Refer to TM 9-2320-211-10.

END OF TASK



TA 114016

18-21. VALVE BANK RELIEF VALVE TEST AND ADJUSTMENT (TRUCK M543A2).

TOOLS: 7/16-inch wrench
7/8-inch wrench
1 5/16-inch wrench
Flat-tip screwdriver
Pressure checking kit, pn 3005456

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

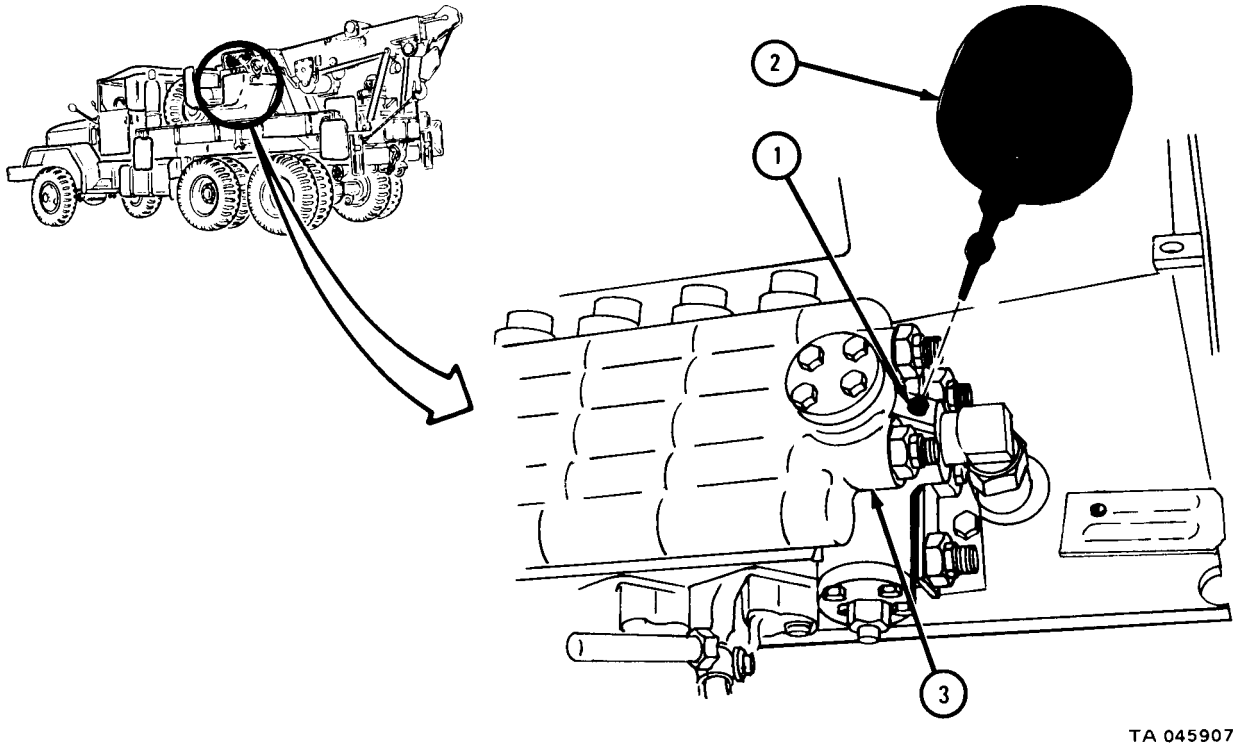
a. Preliminary Procedure. Remove valve bank cover. Refer to para 18-22.

b. Test and Adjustment.

FRAME 1

1. Using 7/16-inch wrench, unscrew and take out pipe plug (1).
2. Using 7/16-inch wrench, screw in and tighten pressure gage (2) into valve bank (3).

GO TO FRAME 2



FRAME 2

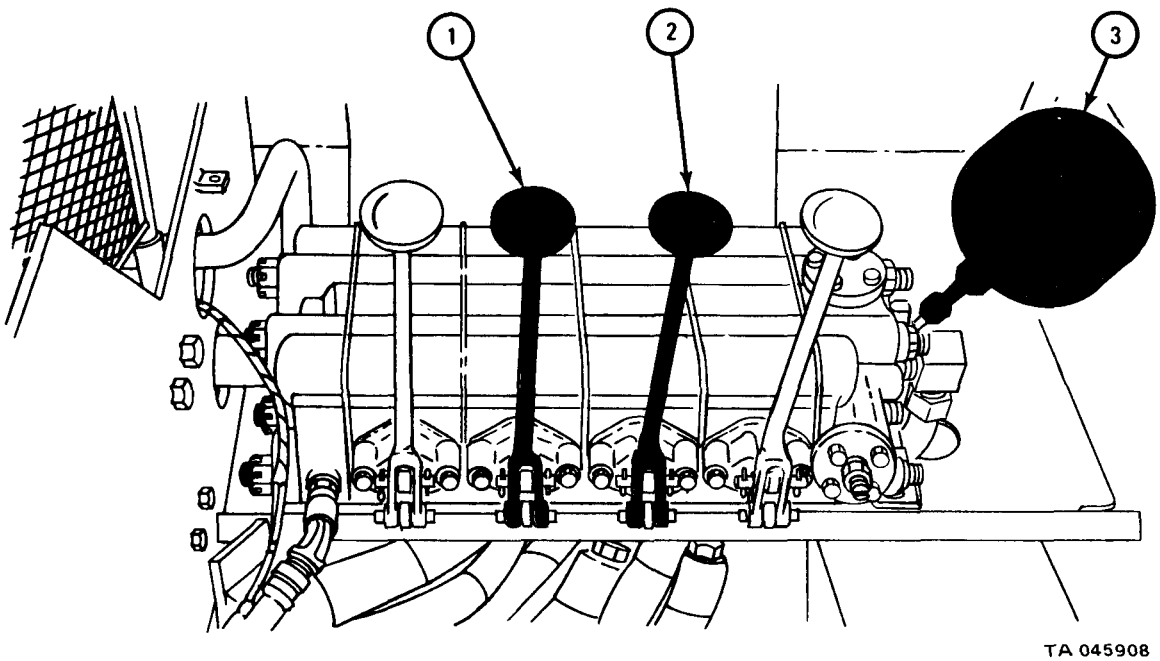
1. Start engine and prepare crane for lifting load. Refer to TM 9-2320-211-10.
2. Put HOIST lever (1) in DOWN position until hook touches ground.

NOTE

Boom must be all the way out when reading is taken.

3. Hold CROWD lever (2) in EXTEND position and read pressure on gage (3). Gage should read 1210 to 1215 psi.
4. Let go of CROWD lever (2).

IF GAGE DID NOT READ 1210 TO 1215 PSI, GO TO FRAME 3.
IF GAGE READ 1210 TO 1215 PSI, GO TO FRAME 4



FRAME 3

1. Using 1 5/16-inch wrench, loosen locknut (1).
2. Hold CROWD lever (2) in EXTEND position and using screwdriver, turn adjusting screw (3) either way until pressure on gage (4) reads 1210 to 1215 psi. Let go of CROWD lever.

NOTE

Do not let adjusting screw (3) turn once gage (4) reads 1210 to 1215 psi.

3. Using screwdriver and 15/16-inch wrench, hold adjusting screw (3) and tighten locknut (1).

GO TO FRAME 4

FRAME 4

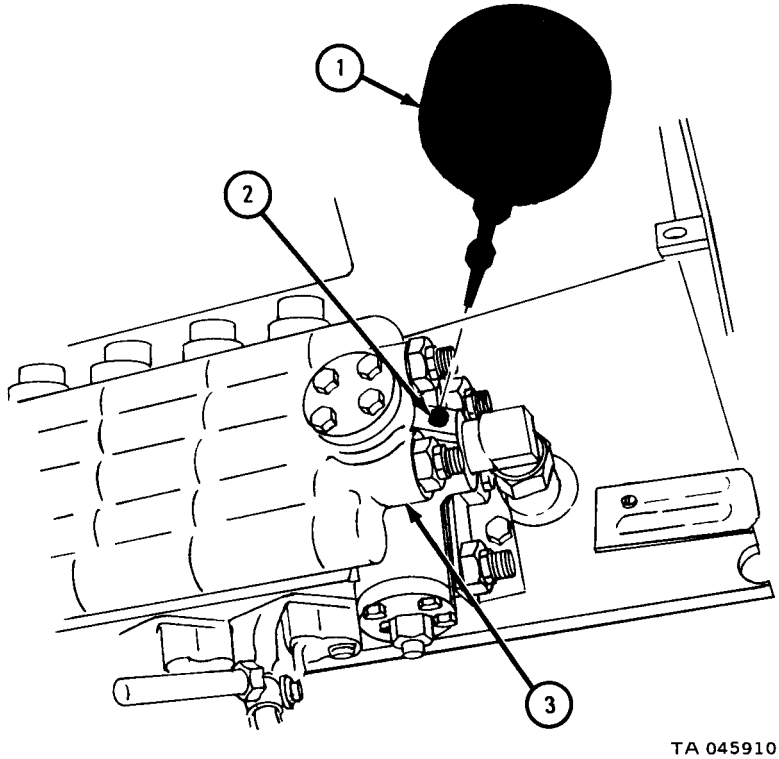
1. Raise hook and retract boom. Refer to TM 9-2320-211-10.
2. Stop engine and prepare crane for travel. Refer to TM 9-2320-211-10.
3. Using 7/16-inch wrench, unscrew and take out pressure gage (1).
4. Using 7/16-inch wrench, screw in and tighten pipe plug (2) into valve bank (3).

NOTE

Follow-on Maintenance Action Required:

Replace valve bank cover. Refer to para 18-22.

END OF TASK



TA 045910

18-22. CONTROL VALVE BANK COVER REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

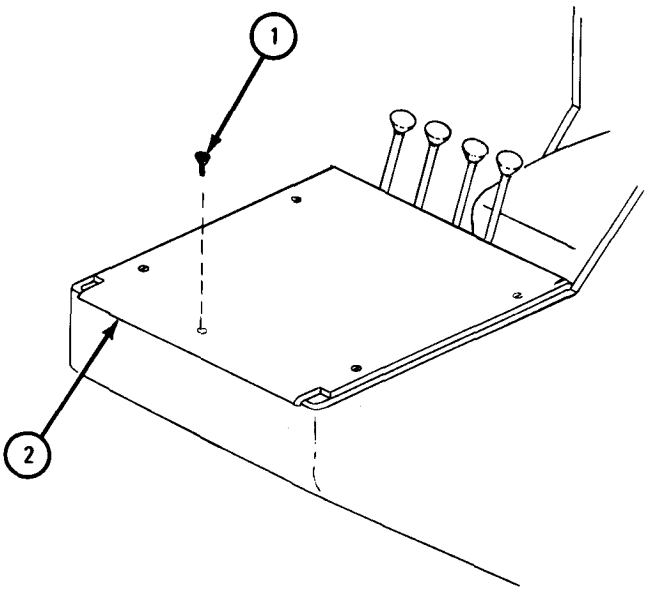
a. Preliminary Procedure. Disconnect battery ground cable. Refer to Part 1, para 7-44.

b. Removal.

FRAME 1

1. Using screwdriver, unscrew and take out five screws (1).
2. Take off control valve bank cover (2).

END OF TASK



TA 103183

c. Replacement.

FRAME 1

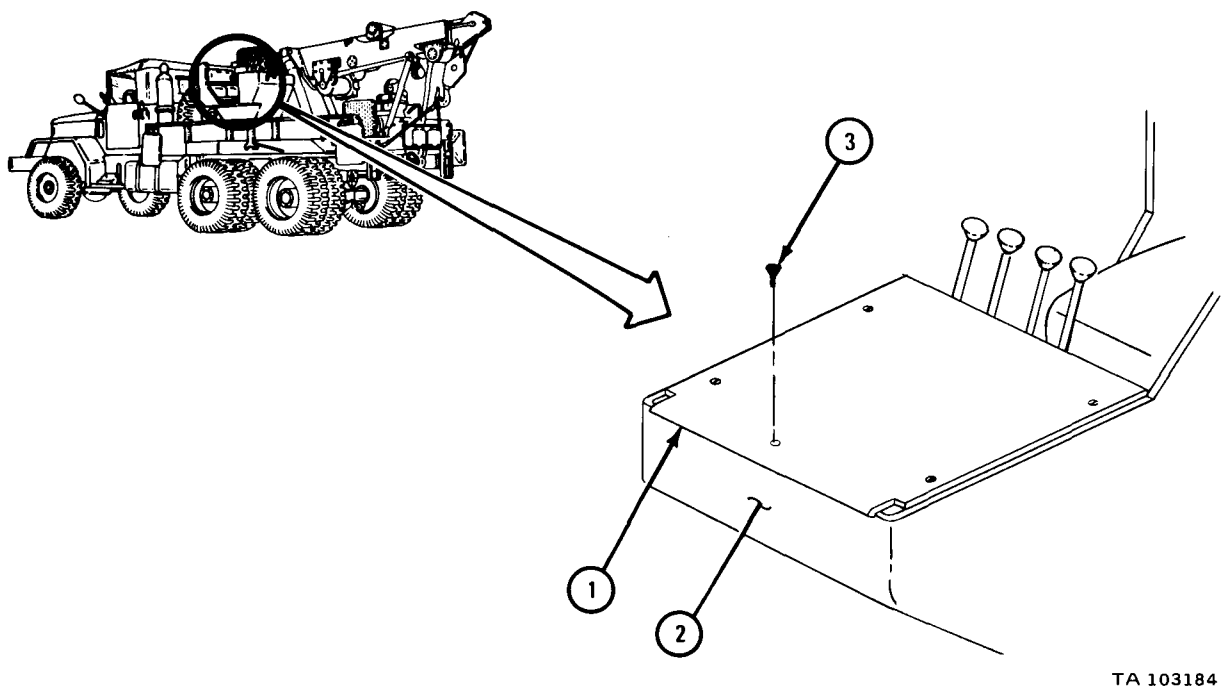
1. Put control valve bank cover (1) on console (2) and aline screw holes.
2. Start five screws (3) in cover (1), and using screwdriver, screw in and tighten screws.

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to Part 1, para 7-44.

END OF TASK



18-23. CONTROL VALVE BANK ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: 1 1/2-inch wrench
2-inch wrench
3/4-inch wrench
7/8-inch wrench
Flat-tip screwdriver
Five-gallon container

SUPPLIES: Clean rags

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Disconnect battery ground cable. Refer to Part 1, para 7-44.

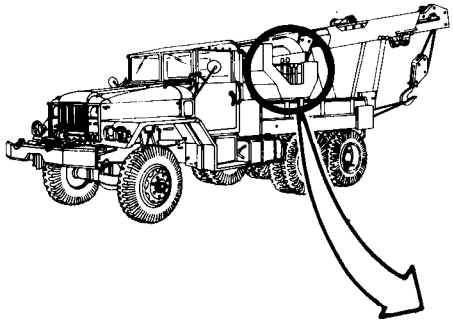
(2) Drain hydraulic reservoir. Refer to LO 9-2320-211-12.

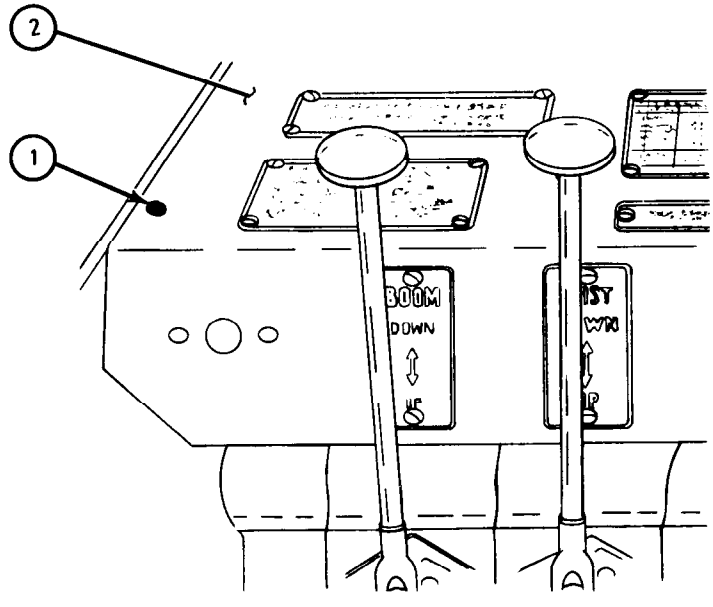
b. Removal.

FRAME 1

1. Using screwdriver, unscrew and take out five screws (1).
2. Take off control valve bank cover assembly (2).

GO TO FRAME 2





TA 103185

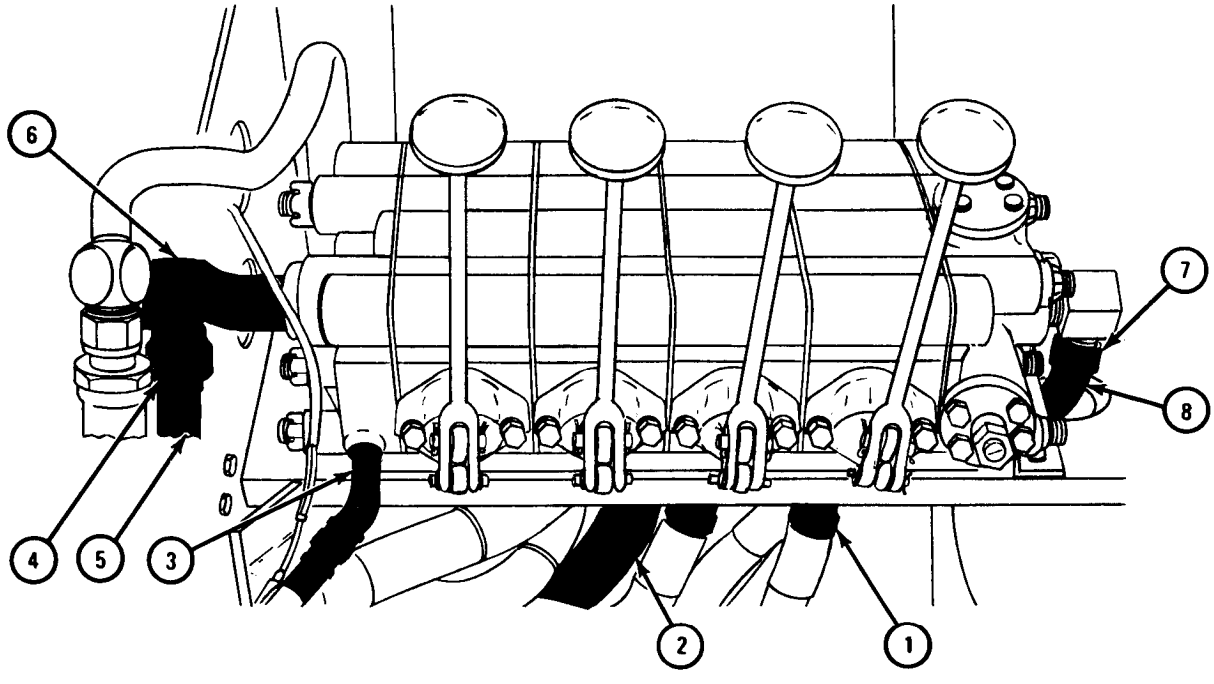
FRAME 2

NOTE

Be sure to tag valve bank hoses before taking them off so that they will be put back in same place. Place container under hoses to catch hydraulic fluid drainage.

1. Using 1 1/2-inch wrench, unscrew and take off seven hose fittings (1). Let hoses (2) hang.
2. Using 7/8-inch wrench, unscrew and take off hose (3). Let hose hang.
3. Using 2-inch wrench, unscrew nut (4). Slide nut back on tube (5).
4. Using 2-inch wrench, unscrew and take off adapter (6).
5. Using 1 1/2-inch wrench, unscrew fitting (7). Slide fitting back on tube (8).
6. Cap all open hoses (2 and 3), tubes (5 and 8), and fittings (1 and 7).
7. Using clean rags, wipe up all hydraulic fluid that may have leaked from hoses (2 and 3).

GO TO FRAME 3

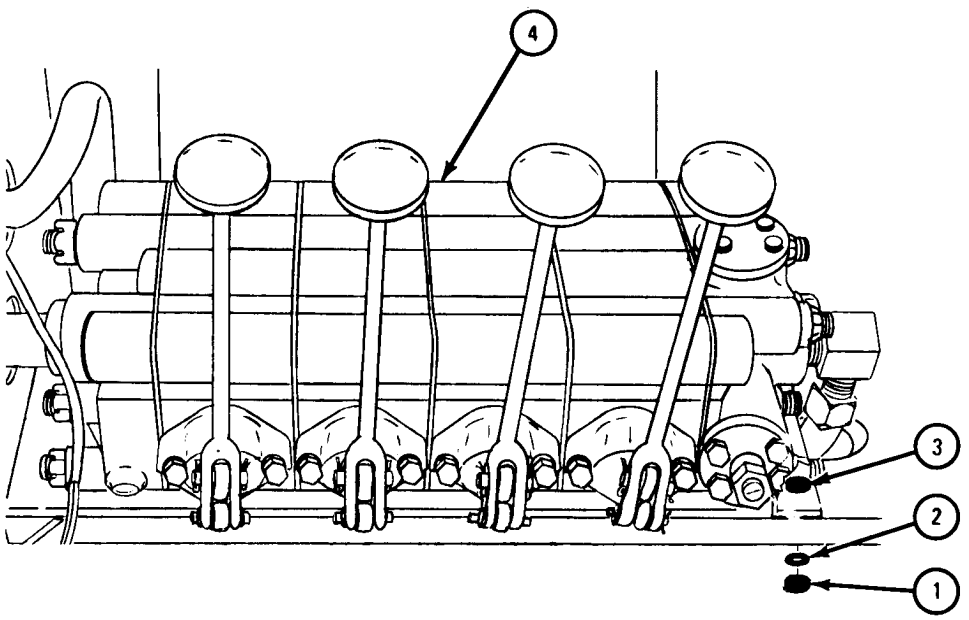


TA 103186

FRAME 3

1. Using 3/4-inch wrench, unscrew and take out four nuts (1) with washers (2).
2. Take out four capscrews (3).
3. Take out control valve bank assembly (4).

END OF TASK



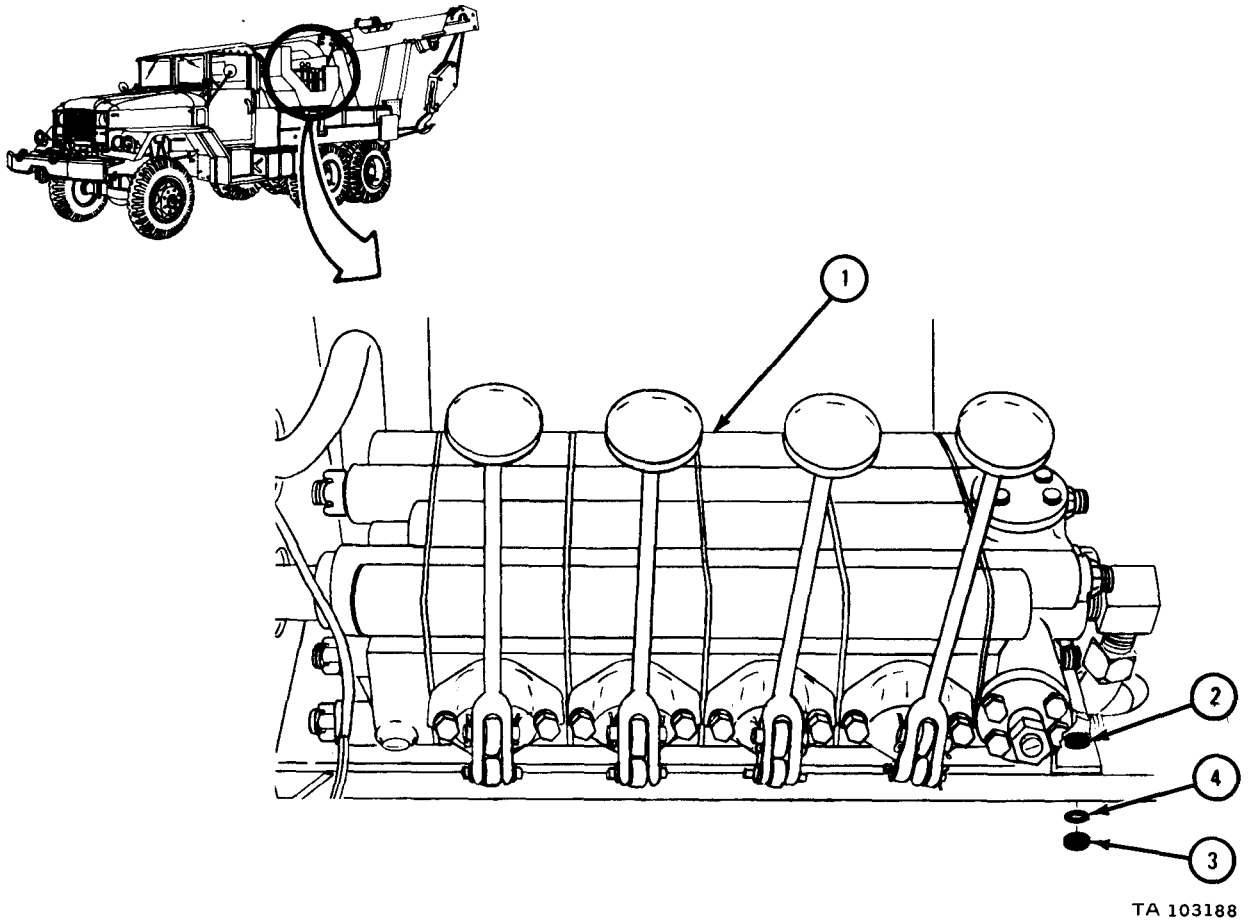
TA 103187

c. Replacement.

FRAME 1

1. Put control valve bank (1) on truck as shown.
2. Put in four capscrews (2).
3. Using 3/4-inch wrench, screw on and tighten four nuts (3) with washers (4).

GO TO FRAME 2



TA 103188

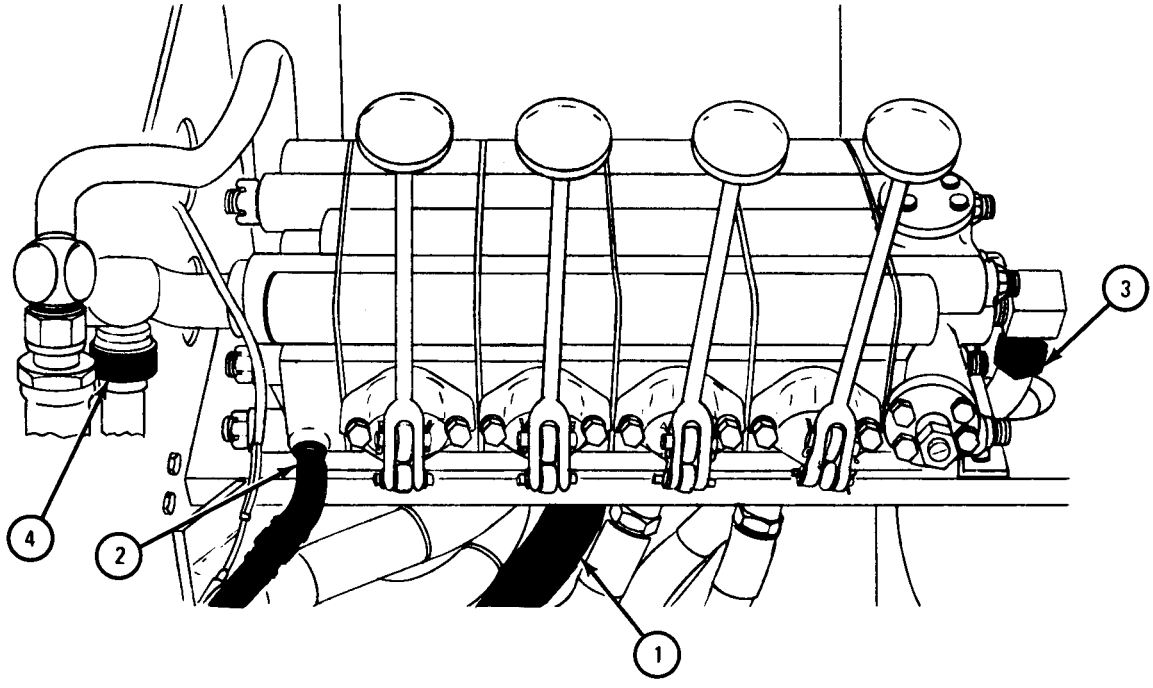
FRAME 2

NOTE

Put hoses back as tagged. Wrong connections will cause malfunctions of hydrualic system. Uncap all hoses and fittings.

1. Using 1 1/2-inch wrench, screw on seven hoses (1) as tagged. Take off tags.
2. Using 7/8-inch wrench, screw on hose (2) as tagged. Take off tag.
3. Using 1 1/2-inch wrench, screw on fitting (3).
4. Using 2-inch wrench, screw on fitting (4).

GO TO FRAME 3



TA 103189

FRAME 3

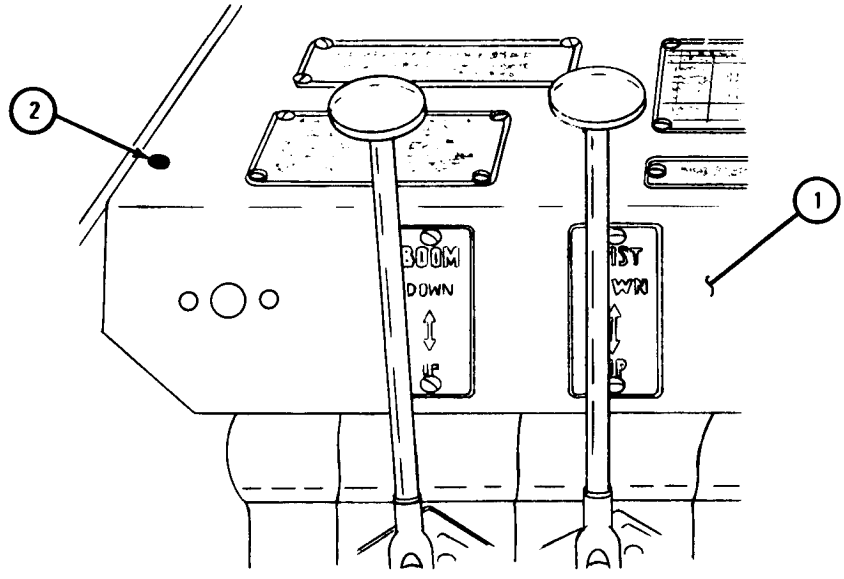
1. Put on control valve bank assembly cover assembly (1) as shown.
2. Using flat-tip screwdriver, screw in and tighten five screws (2).
3. Throw away rags in proper container.
4. Take out container and put hydraulic fluid into approved disposal area.

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to Part 1, para 7-44.
2. Service hydraulic hoist system. Refer to LO 9-2320-211-12.

END OF TASK



TA 103190

18-24. HYDRAULIC OIL FILTER ELEMENT REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: Ratchet handle, 3/8-inch drive
1/2-inch socket wrench, 3/8-inch drive
Flat-tip screwdriver
Five-gallon container

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Compressed air source, 30 psi max

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Drain hydraulic oil tank. Refer to LO 9-2320-211-12.

b. Removal.

WARNING

Do not work on hot hydraulic system. Hot hydraulic oil can burn personnel.

FRAME 1

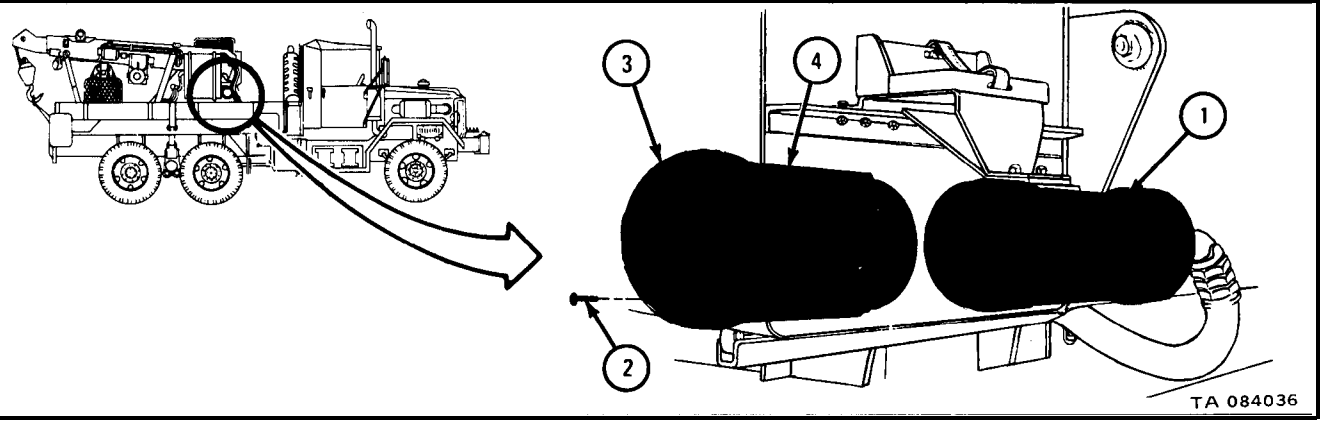
1. Put container under hydraulic oil filter housing (1).
2. Using 1/2-inch socket wrench, unscrew and take out four capscrews (2).

NOTE

Cover (3) and filter element (4) must be taken out of filter housing (1) quickly so that built-in shutoff valve will stop reservoir from draining. One to three gallons of hydraulic fluid will drain when taking out filter element.

3. Without stopping, quickly pull cover (3) with filter element (4) out of housing (1). Let hydraulic oil drain from filter element into container.

END OF TASK

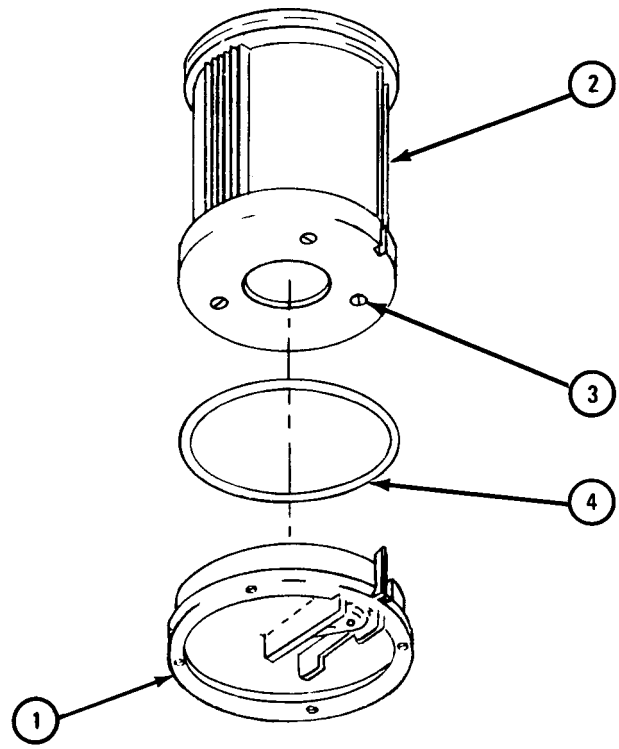


c. Disassembly.

FRAME 1

1. Put rear cover (1) and filter element assembly (2) on workbench with rear cover down.
2. Take filter element assembly (2) out of rear cover (1). Turn filter element assembly over so heads of three screws (3) face up.
3. Take preformed packing (4) off rear cover (1).

GO TO FRAME 2

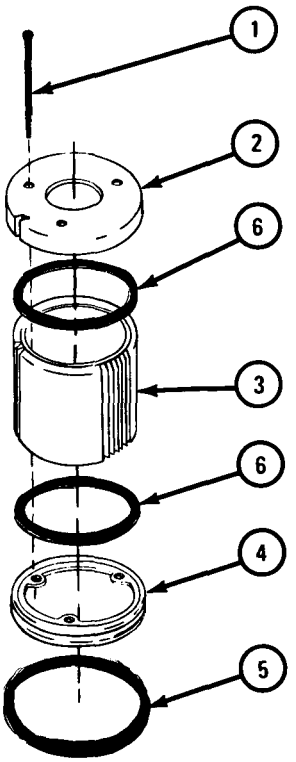


TA 050302

FRAME 2

1. Using screwdriver, unscrew and take out three screws (1).
2. Take off rear cap (2) and lift out filter element (3) from front cap (4).
3. Unhook and take off seal ring (5) from front cap (4).
4. Take out two cork gaskets (6), one from cap (2) and one from cap (4).

END OF TASK



TA 050303

d. Cleaning, Inspection and Repair.

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

Eye shields must be worn when using compressed air. Eye injury can occur if eye shields are not used.

(1) Wash all parts in solvent.

(2) Using compressed air, blow out filter element from inside, to be sure filter element is clean.

(3) Check that all metal parts are not worn or damaged.

(4) Check that filter element has no tears or holes.

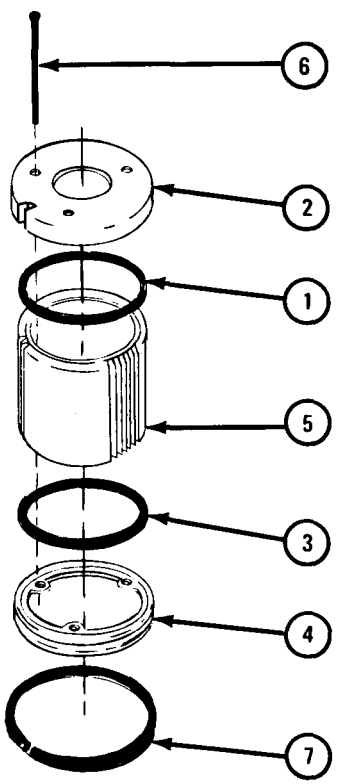
(5) Throw away all damaged parts and get new ones in their place.

e. Assembly.

FRAME 1

1. Put cork gasket (1) into rear cap (2).
2. Put cork gasket (3) into front cap (4).
3. Put filter element (5) on front cap (4). Put rear cap (2) over filter element.
4. Using screwdriver, screw in and tighten three screws (6).
5. Put seal ring (7) on front cap (4) and hook ends together.

GO TO FRAME 2

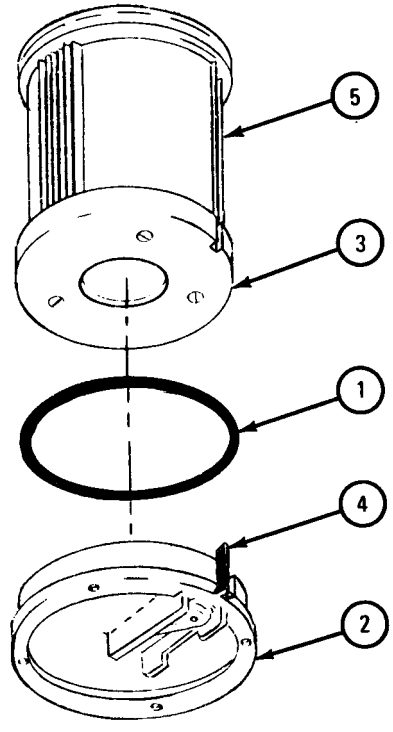


TA 050305

FRAME 2

1. Put preformed packing (1) on rear cover (2).
2. Aline slot in rear cap (3) with shaft (4) in rear cover (2). Put filter element assembly (5) in rear cover.

END OF TASK



TA 050306

f. Replacement.

FRAME 1

NOTE

Make sure five-gallon container is under hydraulic oil filter housing (1). Cover (2) and filter element (3) must be put into filter housing quickly. One to three gallons of hydraulic fluid will drain out when filter element is put in place.

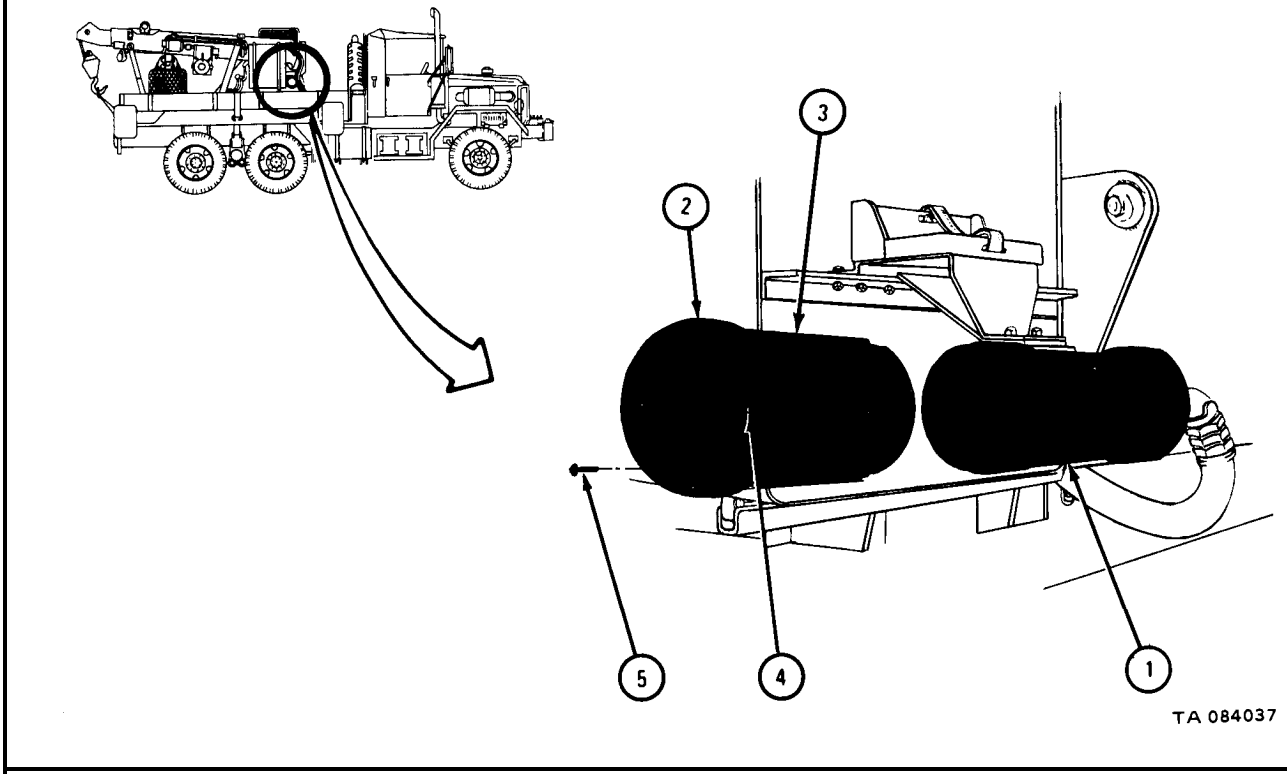
1. Put filter element (3) with cover (2) partway into filter housing (1).
2. Turn cover (2) so indicator (4) is toward rear of truck. Aline screw holes in cover with screw holes in filter housing (1).
3. Quickly push filter element (3) all the way into filter housing (1).
4. Using 1/2-inch socket wrench, screw in and tighten four capscrews (5).
5. Empty five-gallon container in approved disposal area.

NOTE

Follow-on Maintenance Action Required:

Refill hydraulic oil reservoir. Refer to LO 9-2320-211-12.

END OF TASK



18-25. HYDRAULIC OIL TANK ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: 24-inch adjustable wrench
1/2-inch socket wrench
1/2-inch open end wrench
9/16-inch socket wrench
9/16-inch open end wrench
7/8-inch open end wrench
A-frame 1-gallon container

SUPPLIES: Anti-seize tape, MIL-T-27730A
1/2-inch rope, 10 feet (2)

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Drain hydraulic oil tank. Refer to LO 9-2320-211-12.

b. Removal.

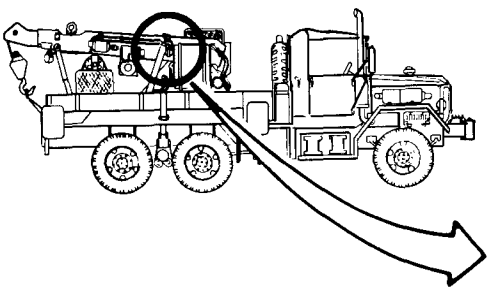
FRAME 1

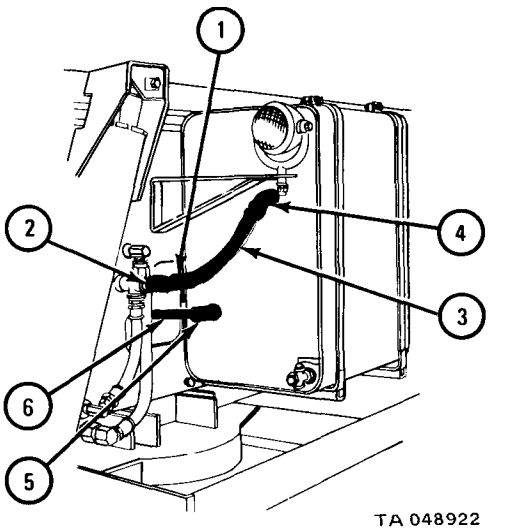
NOTE

Use container to catch oil that may be in hoses when hoses are taken off.

1. Using adjustable wrenches, unscrew nut (1) on union (2). Pull hose (3) away from union (2).
2. Using adjustable wrench, unscrew fitting on hose (3) from elbow (4). Take off hose.
3. Using 7/8-inch wrench, unscrew nut (5) and take off hose (6).

GO TO FRAME 2

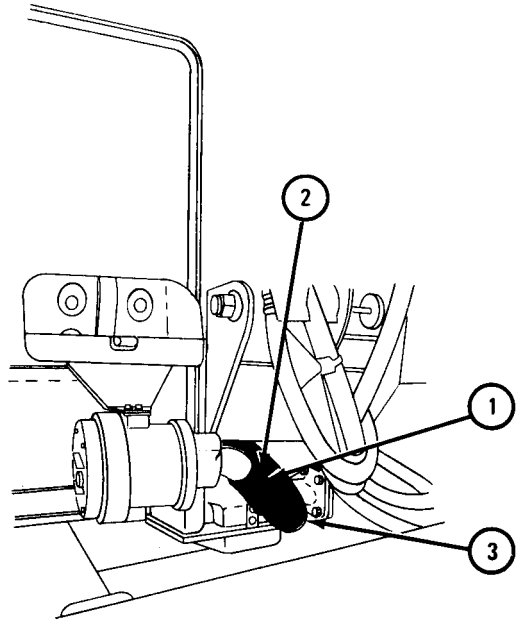




FRAME 2

1. Using adjustable wrenches, hold hose fitting (1) and unscrew slip nut (2).
2. Take off hose (3).

GO TO FRAME 3

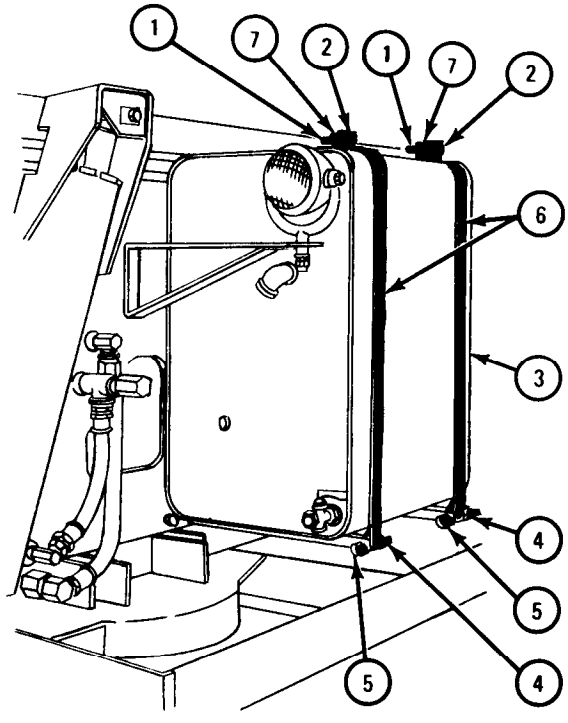


TA 052384

FRAME 3

1. Using 9/16-inch socket wrench and 9/16-inch open end wrench, unscrew and take off two nuts (1) and take out two screws (2), one from each side of oil tank assembly (3).
2. Using 1/2-inch socket wrench and 1/2-inch open end wrench, unscrew and take off two nuts (4). Take out two screws (5) and take off two lower straps (6).
3. Lift up and push back two upper straps (7).

GO TO FRAME 4

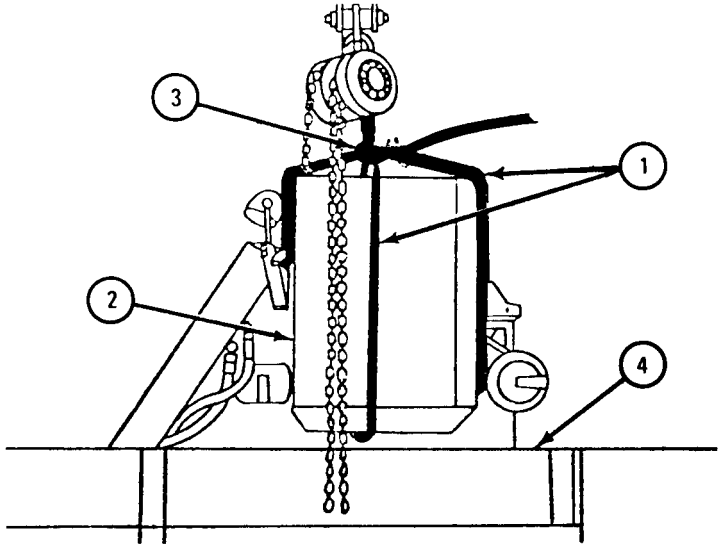


TA 052385

FRAME 4

Soldier A	1.	Using two pieces of 1/2-inch rope, tie two slings (1) around oil tank assembly (2) as shown.
	2.	Hook up chain hoist (3) to ropes (1).
	3.	Using chain hoist (3), raise oil tank assembly (2) up off wrecker body (4).
Soldier B	4.	Guide oil tank assembly (2) to the ground as soldier A lowers it.
Soldier A	5.	Using chain hoist (3), move oil tank assembly (2) off truck onto ground.

END OF TASK



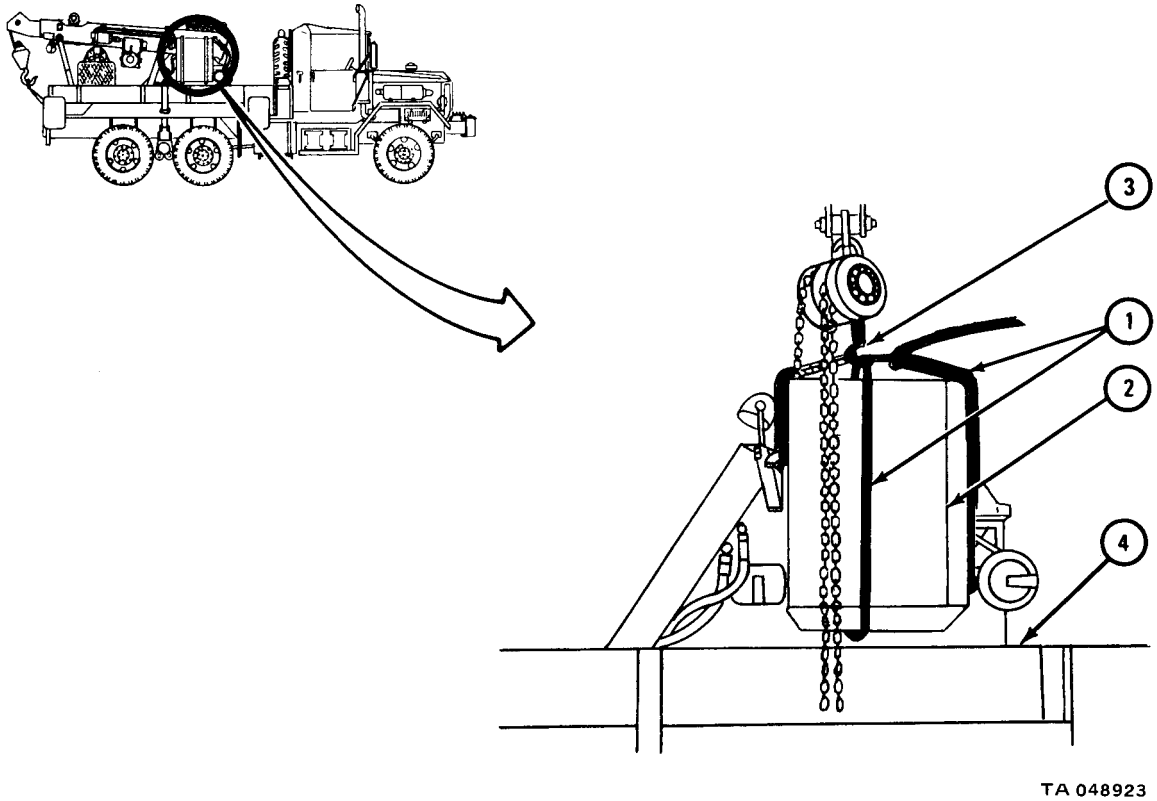
TA 052386

c. Replacement.

FRAME 1

	1.	Tie two pieces of 1/2-inch rope (1) around oil tank assembly (2).
	2.	Hook up chain hoist (3) to ropes (1).
Soldier A	3.	Using chain hoist (3), raise oil tank assembly (2) from ground.
Soldier B	4.	Guide oil tank assembly (2) from ground as soldier A hoists it.
Soldier A	5.	Using chain hoist (3), raise oil tank assembly (2) up onto wrecker body (4).
Soldier B	6.	Guide oil tank assembly (2) into place on wrecker body (4). Take off hoist (3) and ropes (1).

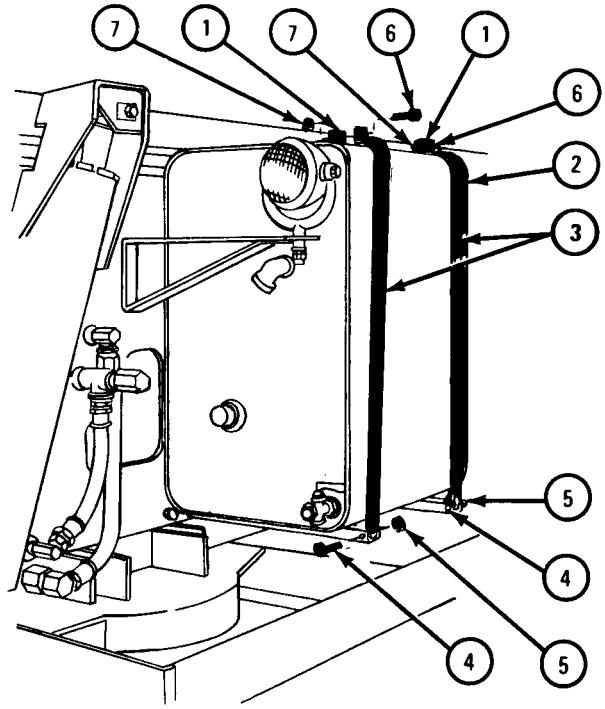
GO TO FRAME 2



FRAME 2

1. Put two upper straps (1) in place on top of oil tank assembly (2).
2. Put two lower straps (3) in place on oil tank assembly (2) and put two screws (4) through bottom ends of lower straps.
3. Using 1/2-inch socket wrench and 1/2-inch open end wrench, screw on and tighten two nuts (5).
4. Put two screws (6) through upper straps (1) and lower straps (3). Using 9/16-inch socket wrench and 9/16-inch open end wrench, screw on and tighten two nuts (7).

GO TO FRAME 3



TA 052398

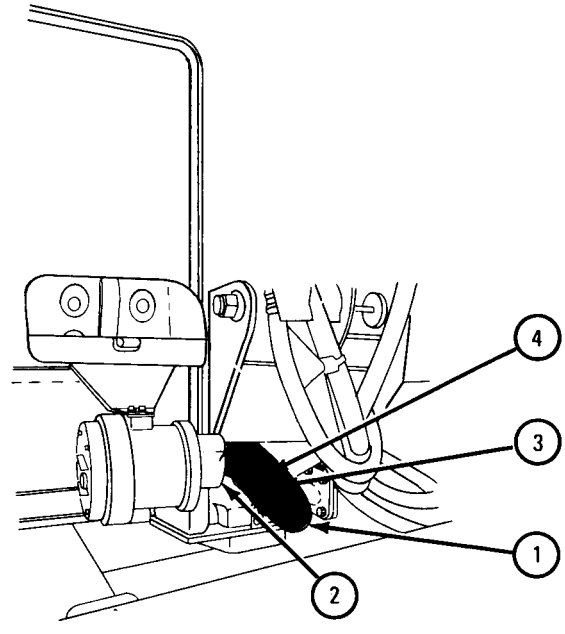
FRAME 3

NOTE

Put anti-seize tape on male end of each hose assembly connector before joining hose assembly to fitting.

1. Put inlet hose assembly (1) in place on oil filter assembly (2).
2. Using adjustable wrenches, hold hose fitting (3) and tighten slipnut (4).

GO TO FRAME 4



FRAME 4

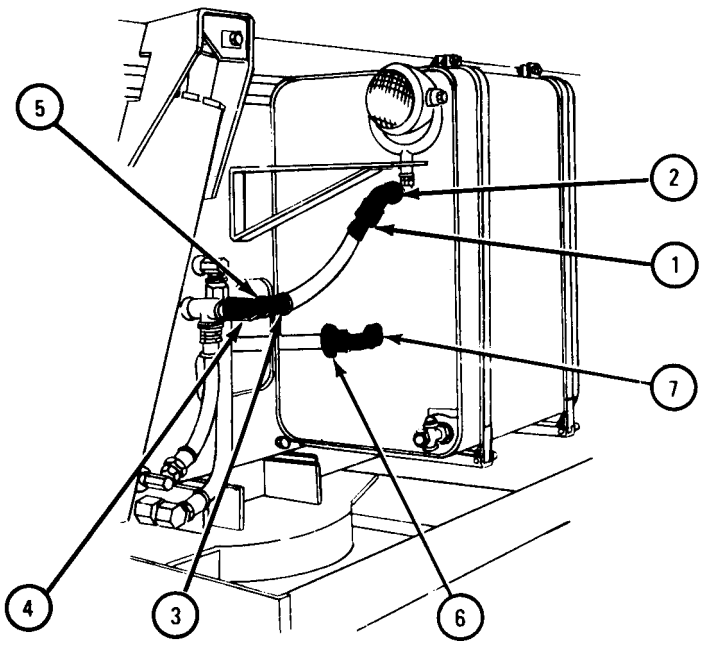
1. Put hose assembly fitting (1) on elbow (2). Using adjustable wrench, tighten fitting (1).
2. Put hose assembly fitting (3) on union assembly (4). Using adjustable wrenches, tighten slipnut (5) on union assembly.
3. Using 7/8-inch wrench, put hose assembly nut (6) in elbow (7) and tighten it.

NOTE

Follow-on Maintenance Action Required:

Refill hydraulic oil tank. Refer to LO 9-2320-211-12.

END OF TASK



TA 052400

18-26. SLIPRING CONTACT BRUSHES REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: Pliers

SUPPLIES: None

PERSONNEL: One

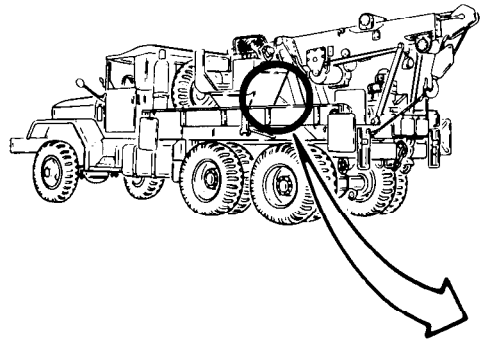
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

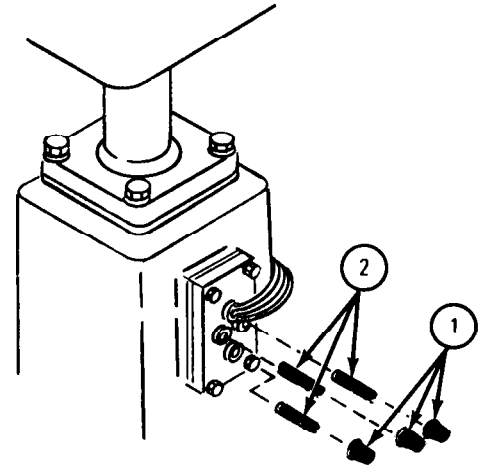
a. Removal.

FRAME 1

1. Using pliers, unscrew and takeoff three cap plugs (1).
2. Take out three contact brushes (2).

END OF TASK





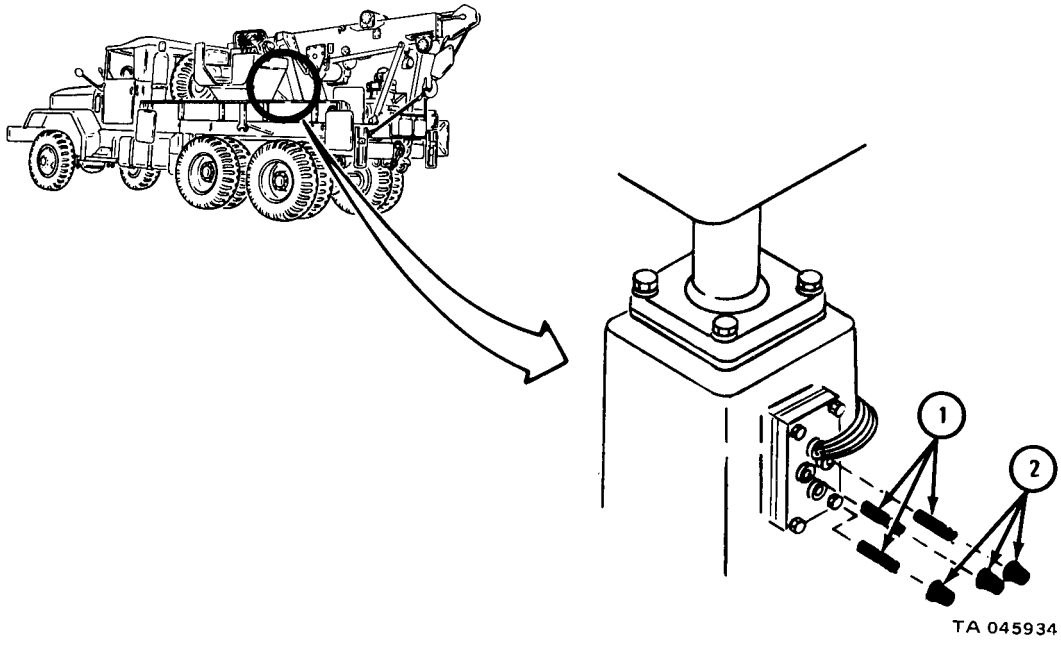
TA 045933

b. Replacement.

FRAME 1

1. Put in three contact brushes (1).
2. Using pliers, screw in and tighten three cap plugs (2).

END OF TASK



18-27. HOIST AUTOMATIC BRAKE BANK REMOVAL, REPLACEMENT, AND ADJUSTMENT (TRUCK M543A2).

TOOLS: 1/2-inch open end wrench
9/16-inch open end wrench
6-inch ruler

SUPPLIES: Brake case cover gasket
Brake bank adjusting screw preformed packing

PERSONNEL: One

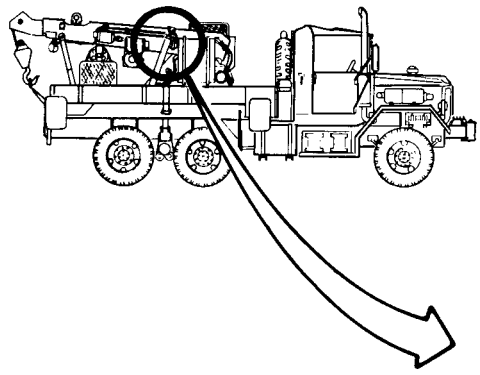
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

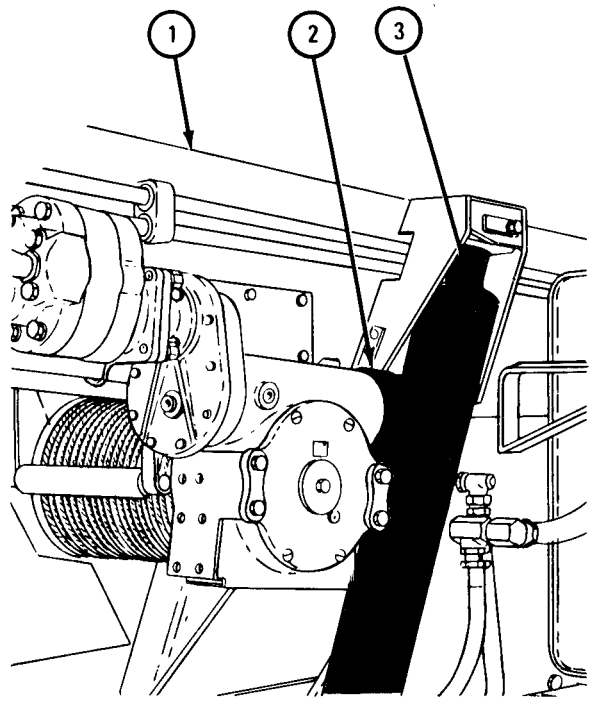
a. Removal.

FRAME 1

1. Raise boom (1) until hoist winch gearbox (2) is just above top of boom elevating cylinder (3). Put boom supports in place. Refer to TM 9-2320-211-10.

GO TO FRAME 2



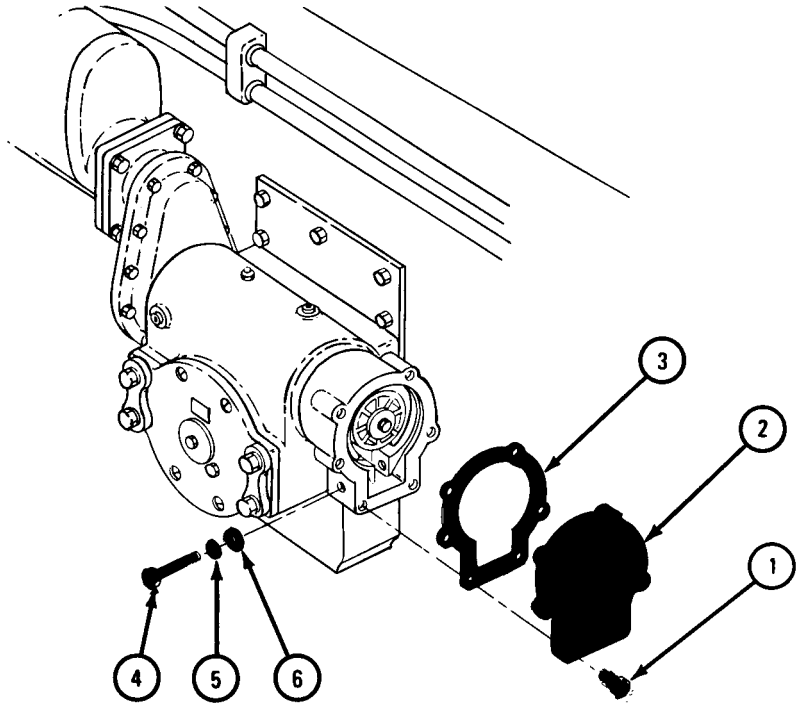


TA 048655

FRAME 2

1. Using 1/2-inch wrench, unscrew and take out six locking screws (1).
2. Take off brake case end cover (2) and gasket (3). Throw away gasket.
3. Using 9/16-inch wrench, unscrew and take out screw (4), flat washer (5), and preformed packing (6). Throw away preformed packing.

GO TO FRAME 3

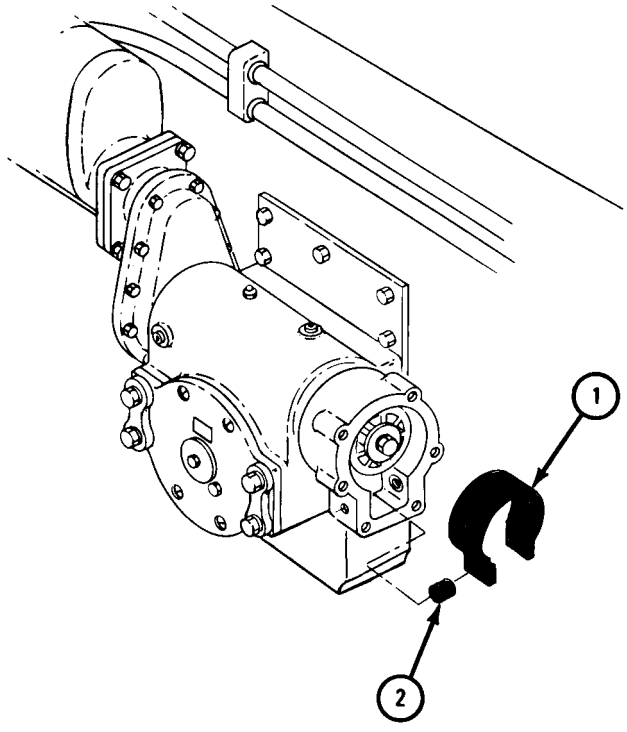


TA 048656

FRAME 3

1. Take out brake band assembly (1) and spring (2).

END OF TASK



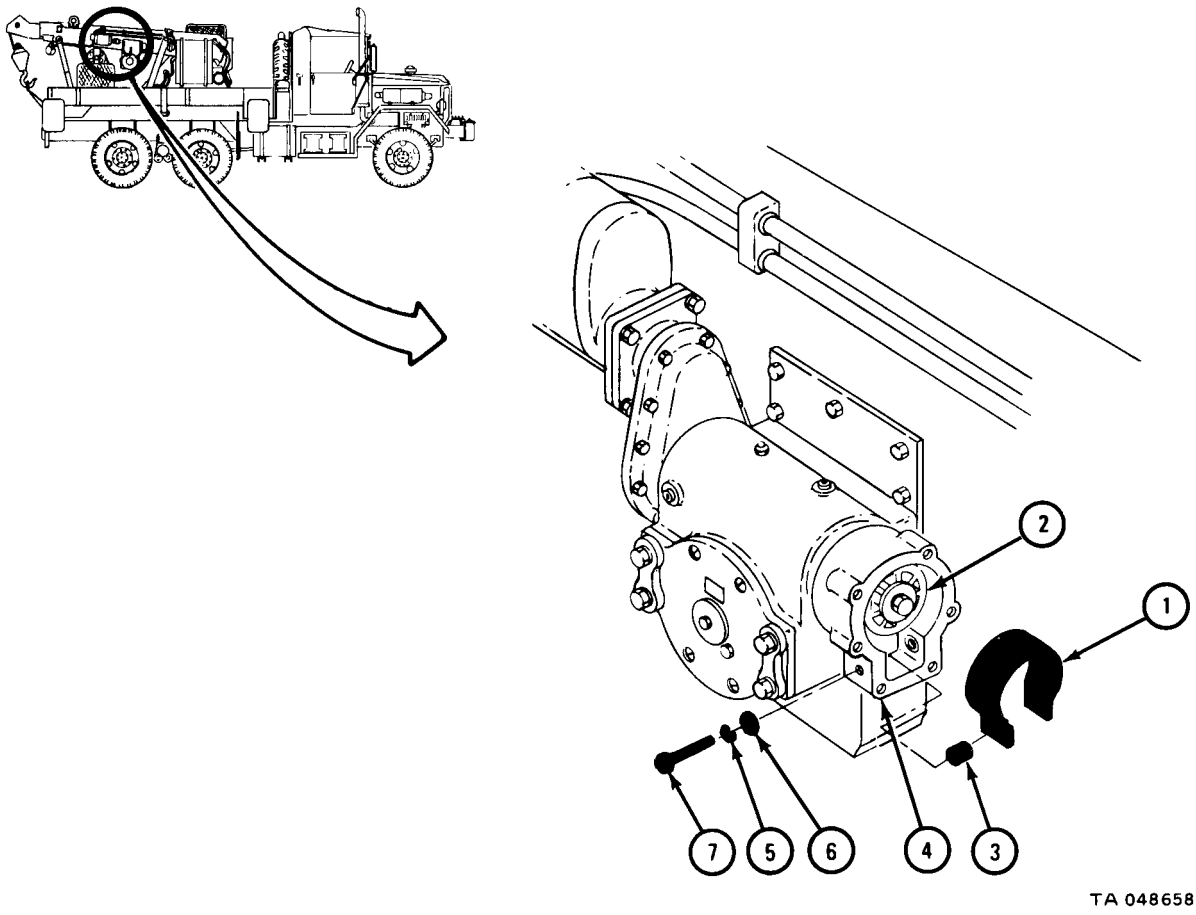
TA 048657

b. Replacement and Adjustment.

FRAME 1

1. Put brake band assembly (1) on brake drum disk (2).
2. Put spring (3) between screw holes in brake band assembly (1) and brake housing case (4).
3. Put flat washer (5) and preformed packing (6) on screw (7), and put screw through brake housing case (4), spring (3), and brake band assembly (1).
4. Draw up brake band assembly (1) partway by turning in screw (7).

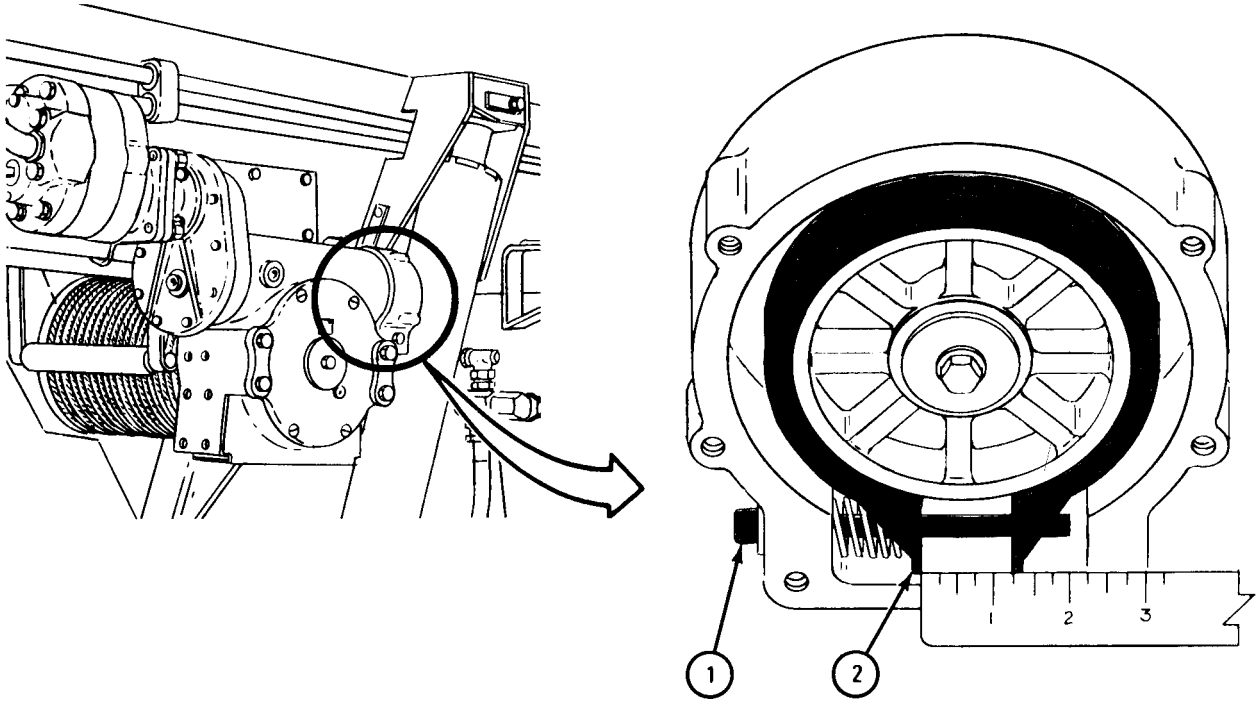
GO TO FRAME 2



FRAME 2

1. Using 9/16-inch wrench and ruler, turn in screw (1) until gap in brake band assembly (2) is between 1 3/16 inches and 1 1/4 inches as shown.

GO TO FRAME 3



TA 052169

FRAME 3

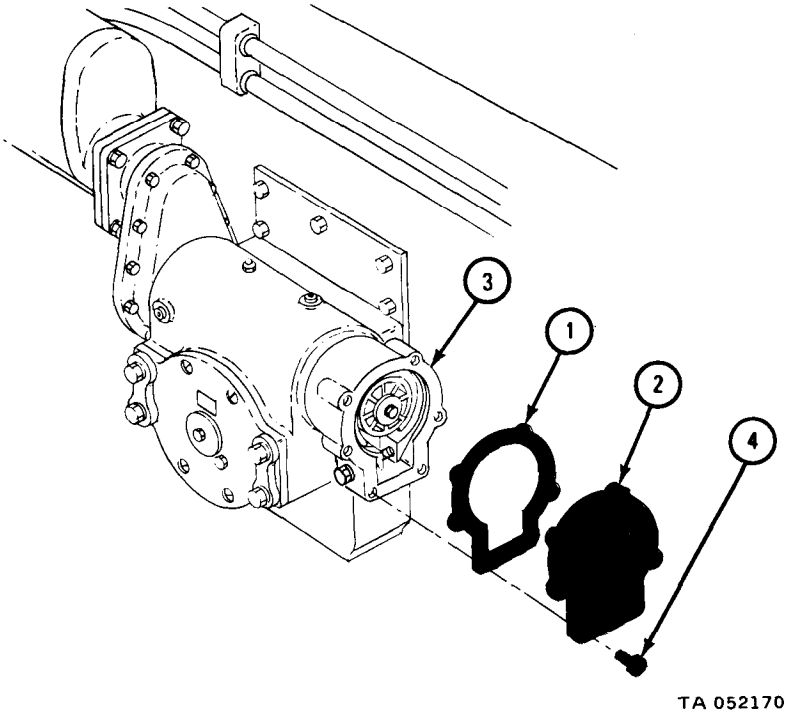
1. Put gasket (1) and brake case end cover (2) on brake housing case (3), dining holes.
2. Using 1/2-inch wrench, screw in and tighten six locking screws (4).

NOTE

Follow-on Maintenance Action Required:

Take out boom supports and lower and secure boom. Refer to TM 9-2320-211-10.

END OF TASK



TA 052170

18-28. ROTOCHAMBER ADJUSTMENT (TRUCK M543A2).

TOOLS: 9/16-inch wrench (2)
6-inch ruler

SUPPLIES: None

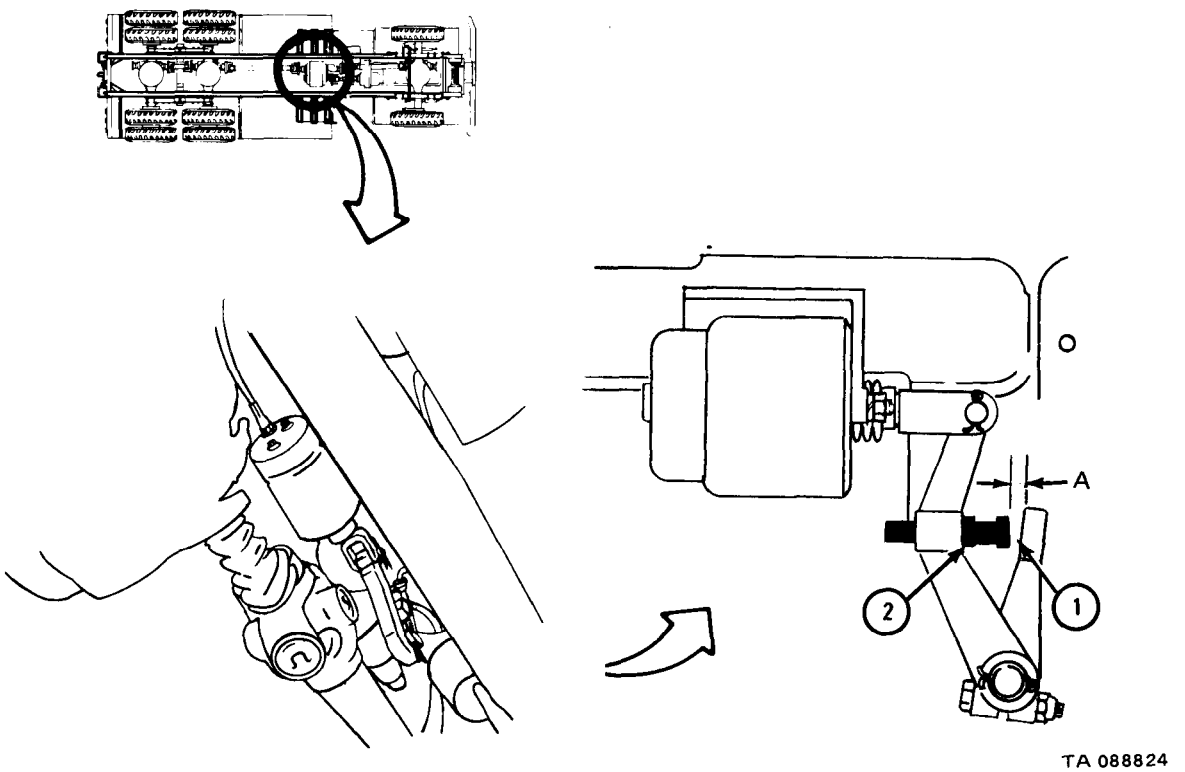
PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

FRAME 1

1. Using wrenches, hold capscrew (1) and loosen locknut (2).
2. Using wrench and ruler, turn capscrew (1) left or right until there is 3/32 to 1/4 inch clearance at point A as shown.
3. Using wrenches, hold capscrew (1) and tighten locknut (2).

END OF TASK



18-29. HOIST WINCH CABLE REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: 1/4-inch sockethead screw key (Allen wrench or equivalent)
9/16-inch wrench
Leather gloves (2 pair)

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

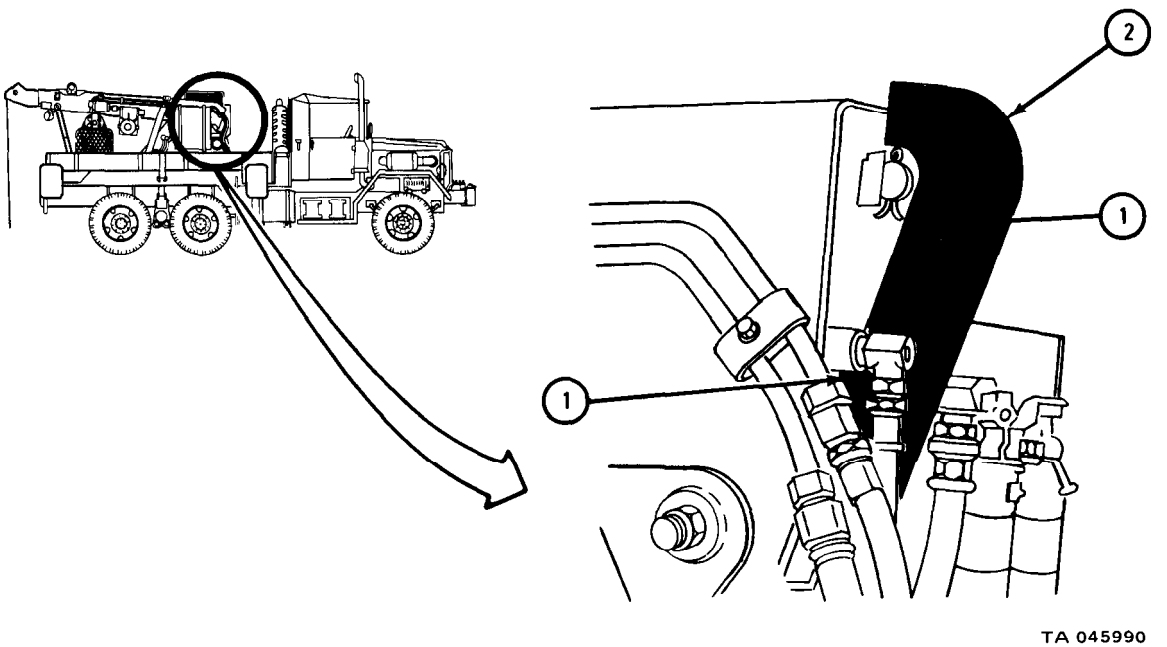
a. Preliminary Procedure. Remove snatch block. Refer to para 18-32.

b. Removal.

FRAME 1

1. Using wrench, unscrew and take out two capscrews with washers (1) on each side of cable guard (2).
2. Take off cable guard (2).

GO TO FRAME 2



TA 045990

FRAME 2

Soldier A

1. Start engine. Put transmission in fifth gear position, then put transfer in neutral position, and power divider lever in DOWN position. Put hydraulic pump control lever in ENGAGE position. Refer to TM 9-2320-211-10.
2. Push hoist control lever (1) forward to DOWN position and hold it.

WARNING

Always wear leather gloves when handling winch cable. Never let cable run through hands. Rusty or broken wires can cause injury.

CAUTION

Keep tension on cable whenever winch drum is turning. Failure to do so will cause cable to snarl.

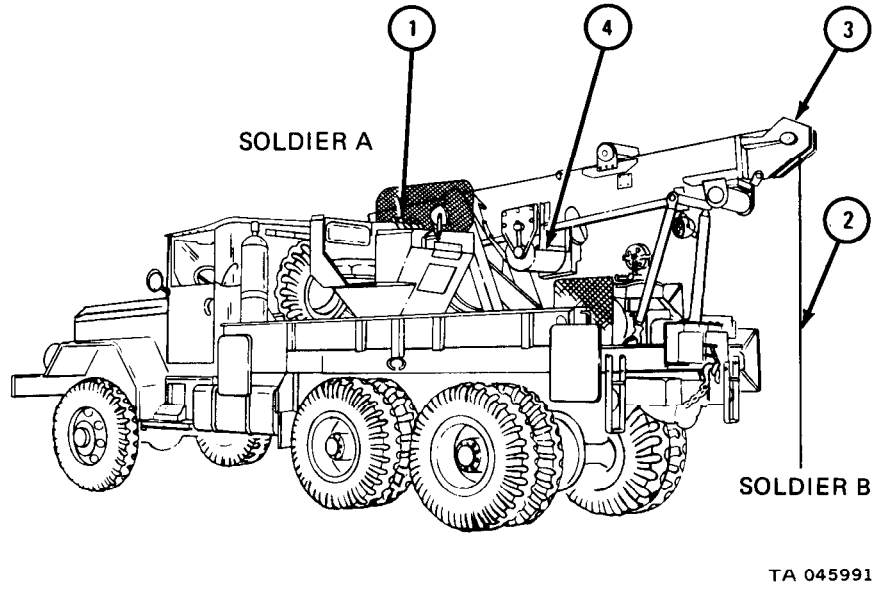
Soldier B

3. Pull cable (2) hand over hand from boom (3).
4. Watch cable drum (4). Tell soldier A to stop hoist when cable (2) is completely unwound off winch drum.

Soldier A

5. Let go of hoist control lever (1) to stop winch drum (4) from turning.

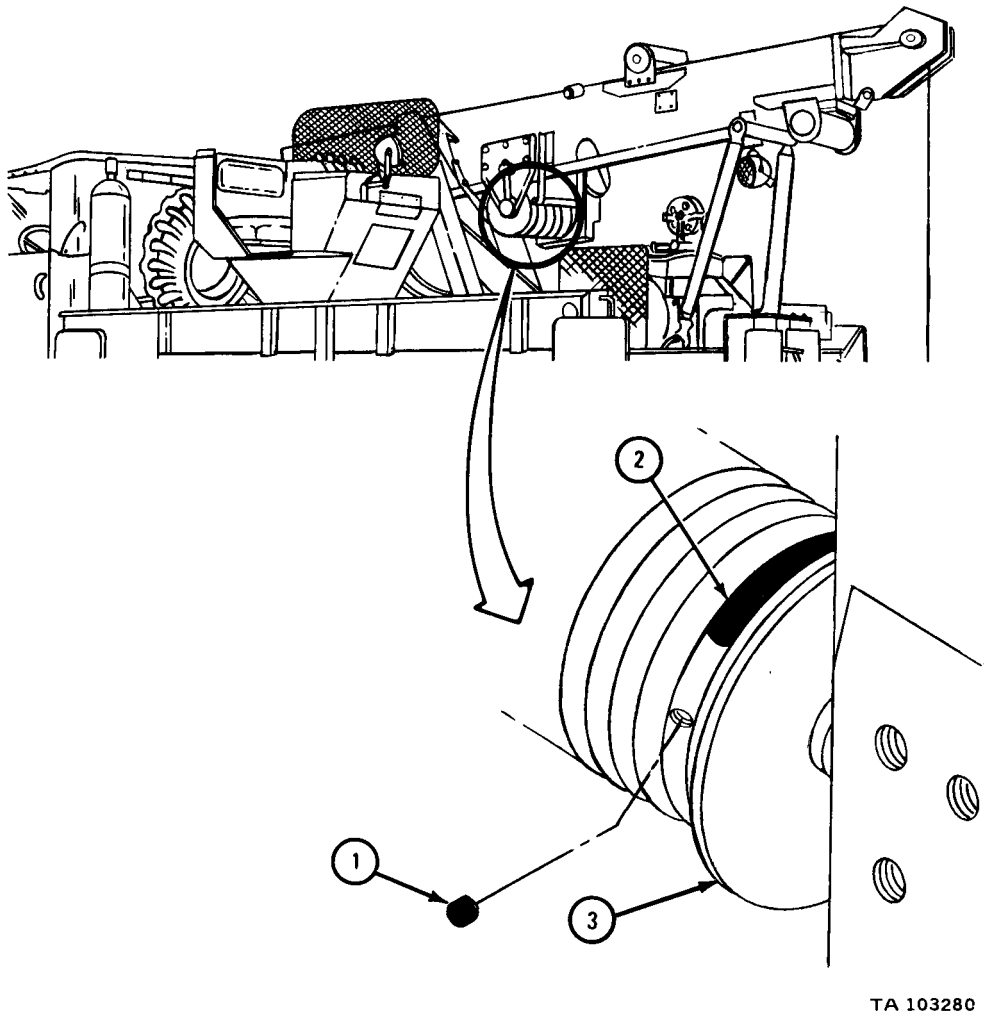
GO TO FRAME 3



FRAME 3

1. Using allen wrench, unscrew and take out setscrew (1).
2. Pull cable (2) out of winch drum (3) and off truck.
3. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



c. Replacement.

FRAME 1

WARNING

Always wear leather gloves when handling winch cable. Never let cable run through hands. Rusty or broken wires can cause injury.

Soldier A 1. Feed cable (1) to soldier B as he needs it. Do not let go of cable until soldier B tells you.

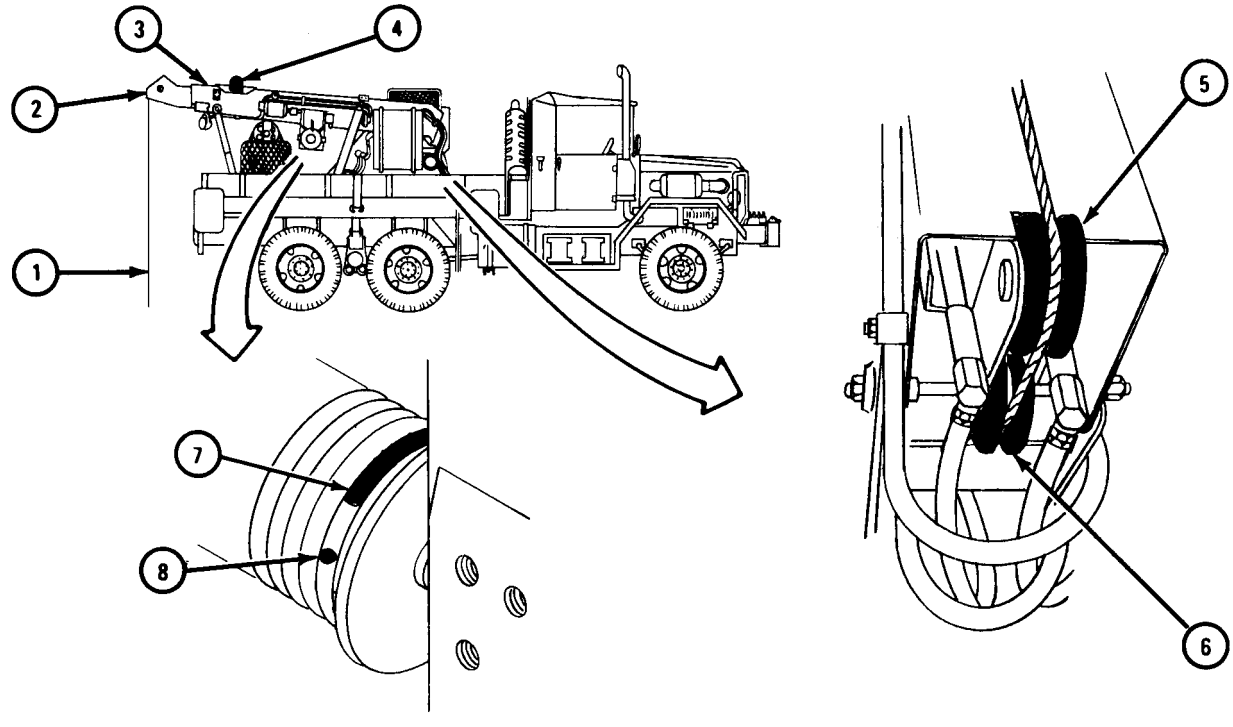
Soldier B 2. Thread cable (1) over pulley (2), along top of boom (3), under boom roller (4), over pulley (5), and around pulley (6).

3. Pull cable (1) under boom (3), over top, and through hole in winch drum (7).

4. Using allen wrench, screw in and tighten setscrew (8) against cable (1).

5. Tell soldier A to let go of cable (1).

GO TO FRAME 2



TA 084027

FRAME 2

Soldier A 1. Start engine. Put transmission in fifth gear position, then put transfer in neutral position, and power divider lever in DOWN position. Put hydraulic pump control lever in ENGAGE position. Refer to TM 9-2320-211-10.

WARNING

Always wear leather gloves when handling winch cable. Never let cable run through hands. Rusty or broken wires can cause injury.

CAUTION

Keep tension on cable whenever winch drum is turning. Failure to do so will cause cable to snarl.

Soldier B 2. Hold cable (1) so that there is no slack. Watch winch drum (2) to see that cable is winding tightly and evenly.

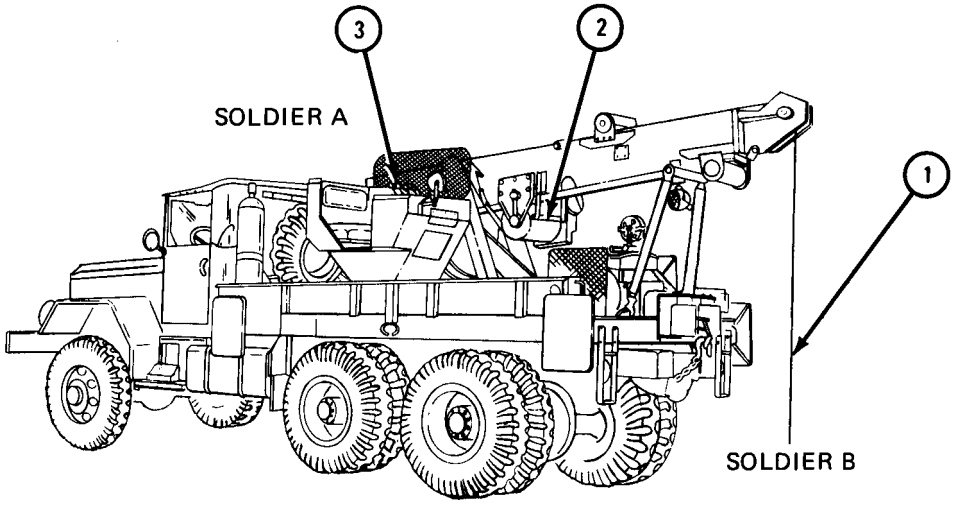
Soldier A 3. Pull hoist control lever (3) to UP position and hold it.

Soldier B 4. Tell soldier A to stop winch drum (2) when you are 15 feet from end of cable (1).

Soldier A 5. Let go of hoist control lever (3) to stop winch drum (2) from turning.

6. Stop engine. Refer to TM 9-2320-211-10.

GO TO FRAME 3



FRAME 3

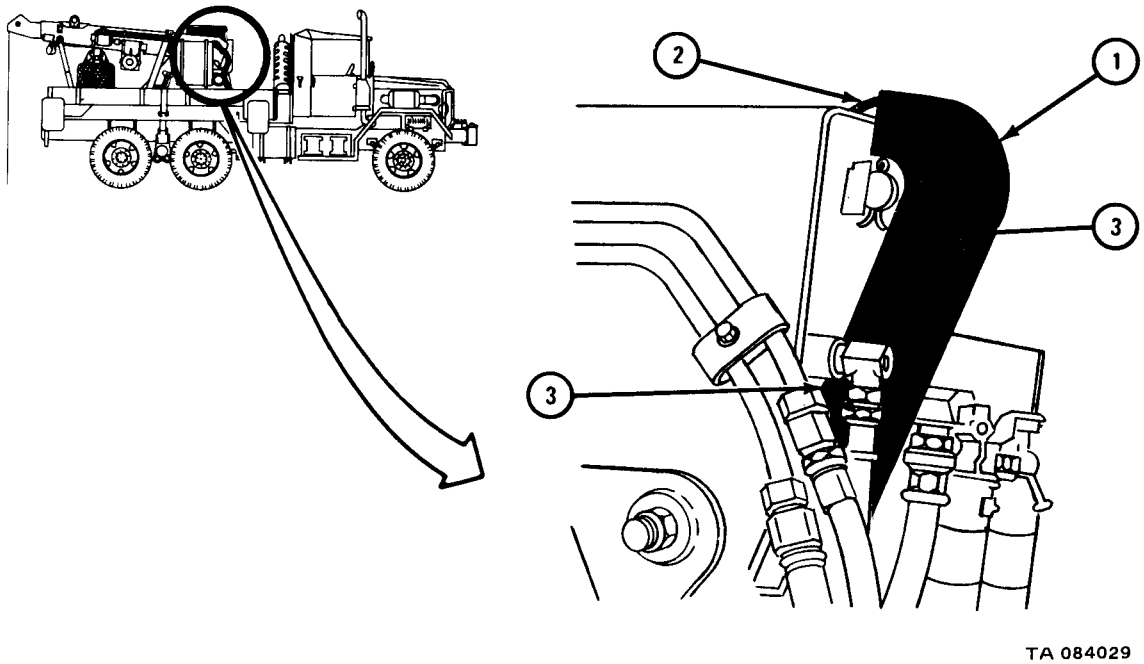
1. Put cable guard (1) over rear pulley assembly (2).
2. Using wrench, screw in and tighten two capscrews with washers (3) on each side of cable guard (1).

NOTE

Follow-on Maintenance Action Required:

Replace snatch block. Refer to para 18-32.

END OF TASK



TA 084029

18-30. CRANE BOOM AND SHIPPER CABLE ROLLERS REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: 15/16-inch open end wrench

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Start engine. Refer to TM 9-2320-211-10.

(2) Move boom to the 12 FOOT mark. Raise or lower boom as needed to make it level. Refer to TM 9-2320-211-10.

(3) Stop engine. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

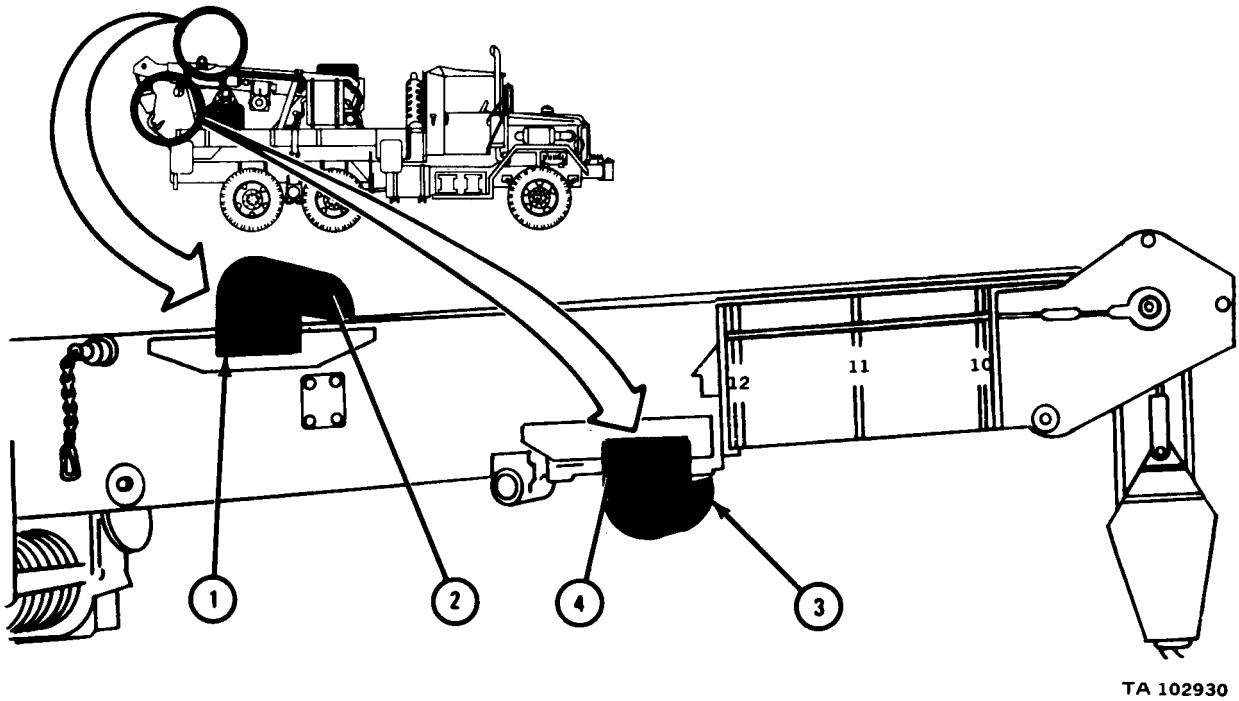
1. Using 15/16-inch wrench, unscrew and take out three capscrews with lockwashers (1).
2. Do step 1 again on other side of boom.
3. Take off upper boom roller assembly (2).

WARNING

Hold lower boom roller assembly (3) when taking out capscrews (4). Boom roller assembly is heavy. Dropping it could result in injury to personnel and damage to equipment.

4. Using 15/16-inch wrench, unscrew and take out three capscrews with lockwashers (4).
5. Do step 4 again on other side of boom.
6. Take off boom roller assembly (3).

END OF TASK



TA 102930

c. Replacement.

FRAME 1

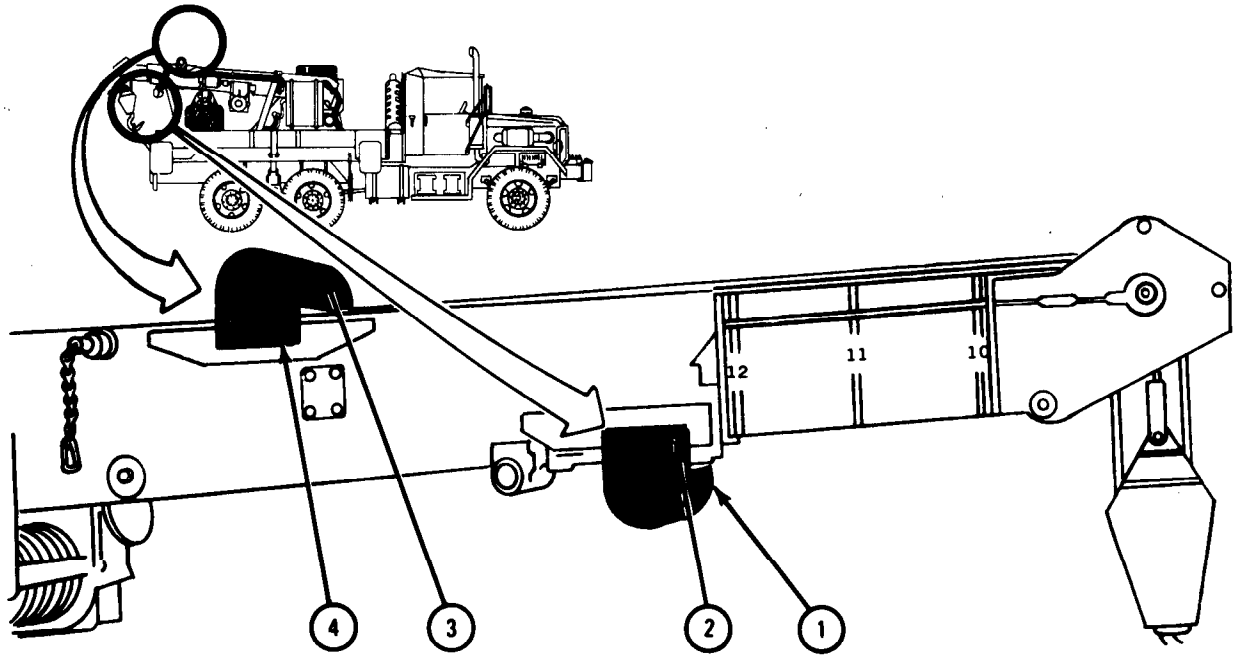
1. Put lower boom roller (1) in place as shown and hold it in place.
2. Using 15/16-inch wrench, screw in and hand tighten three capscrews with lockwashers (2).
3. Do step 2 again on other side of boom and using 15/16-inch wrench, tighten three capscrews with lockwashers (2) on both sides of boom.
4. Put boom roller (3) in place on top of boom.
5. Using 15/16-inch wrench, screw in and hand tighten three capscrews with lockwashers (4).
6. Do step 5 again on other side of boom and using 15/16-inch wrench, tighten three capscrews with lockwashers (4) on both sides of boom.

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Retract inner boom into outer boom assembly. Refer to TM 9-2320-211-10.
3. Attach chain to hold crane block assembly in safe position on truck. Refer to TM 9-2320-211-10.
4. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 102931

18-31. CRANE INNER BOOM ROLLER ASSEMBLY ADJUSTMENT (TRUCK M543A2).

TOOLS: 3/4-inch open end wrench
Spanner wrench
Hammer
Drift punch
Prybar

SUPPLIES: Shims

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Start engine. Refer to TM 9-2320-211-10.

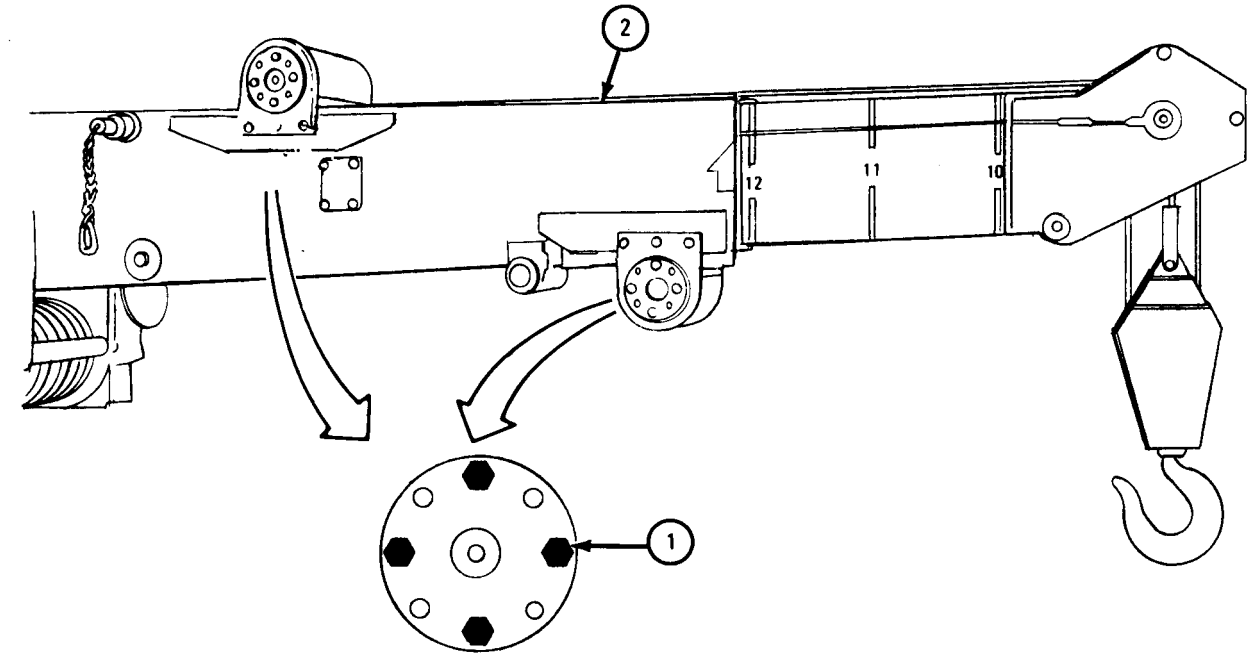
(2) Operate boom to the 12 FOOT mark. Raise or lower boom, as needed, until it is about level. Refer to TM 9-2320-211-10.

b. Vertical Adjustment.

FRAME 1

1. Using 3/4-inch wrench, unscrew and take out four screws with lockwashers (1) from each roller assembly.
2. Go to other side of boom (2) and do step 1 again for eight screws with lockwashers on other side.

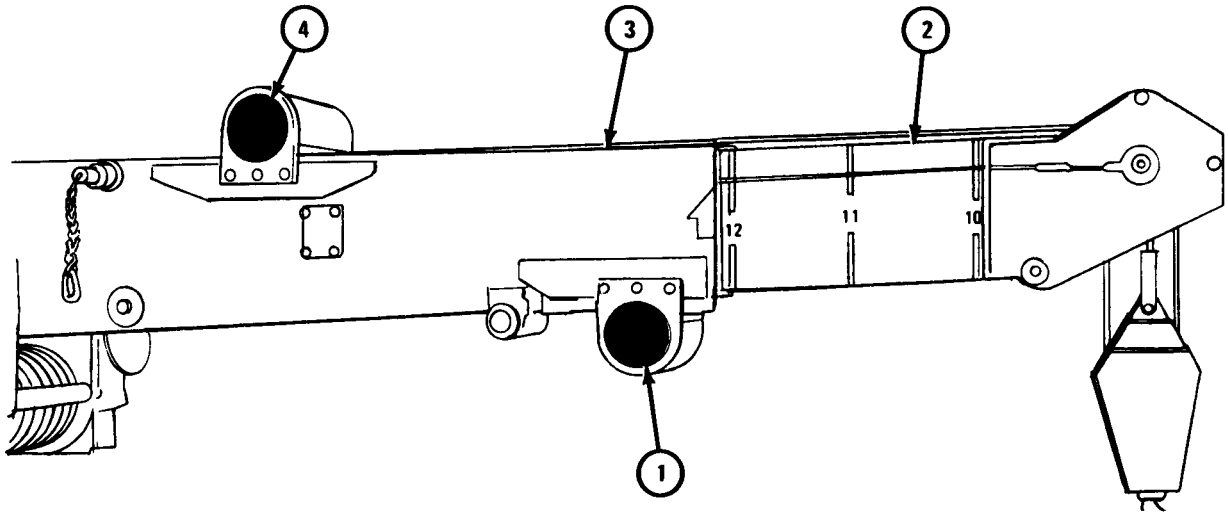
GO TO FRAME 2



FRAME 2

1. Using spanner wrench, turn mounting cap (1) to the left or to the right, as needed, until inner boom (2) is parallel with outer boom (3). If mounting cap (1) binds before inner and outer booms are parallel, go to step 2. If they are parallel, go to frame 3.
2. Using spanner wrench, turn mounting cap (4) to the left until it binds. Counting turns, turn mounting cap to the right until it binds. Set cap midway between binding places.
3. Using spanner wrench, turn mounting cap (1) to the left or to the right, as needed, until top of inner boom (2) is parallel with outer boom (3).

GO TO FRAME 3

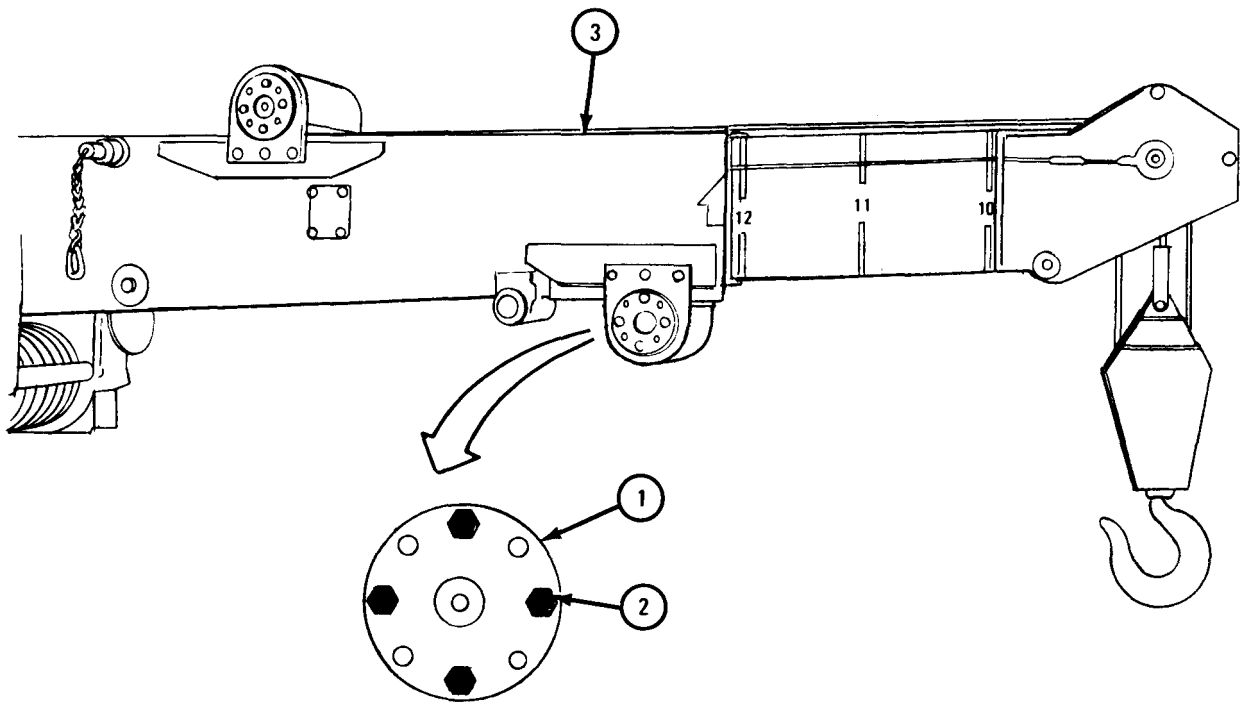


TA 050276

FRAME 3

1. Using spanner wrench, turn mounting cap (1) to aline nearest holes for screws with lockwashers (2).
2. Using 3/4-inch wrench, screw in and tighten four screws with lockwashers (2). Go to other side of boom (3). Screw in and tighten four screws with lockwashers on other side of boom.

GO TO FRAME 4

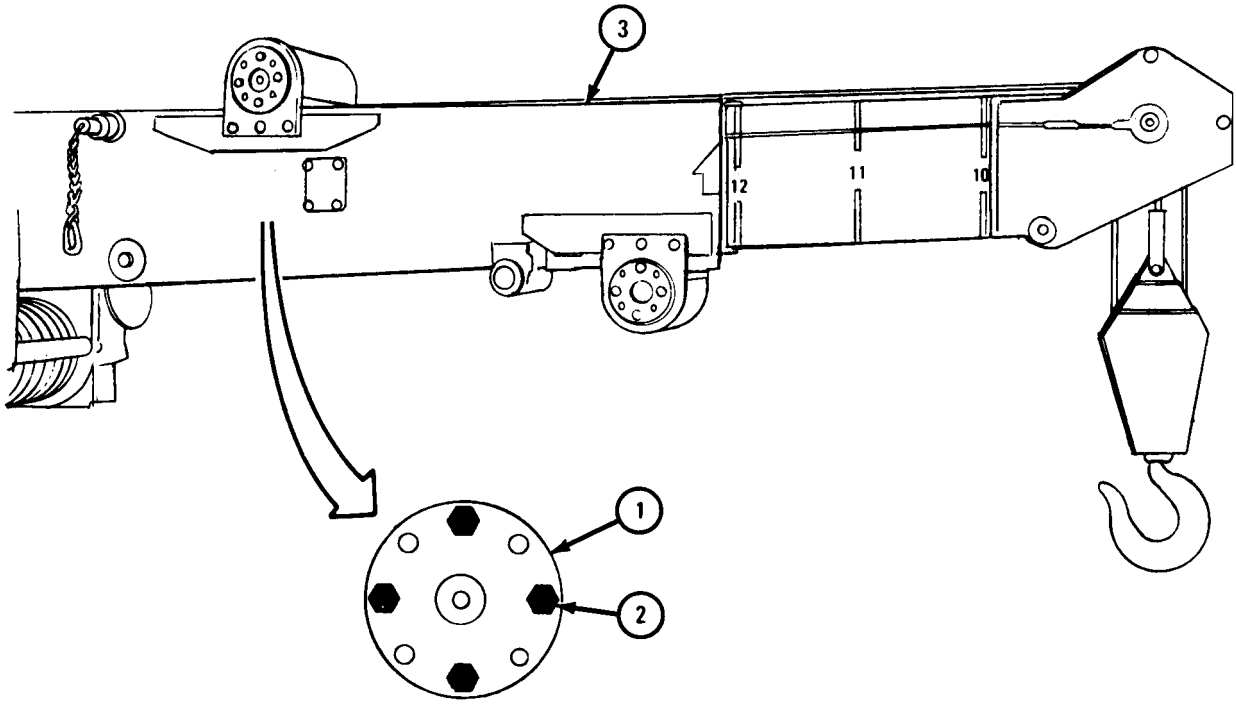


TA 050277

FRAME 4

1. Using spanner wrench, turn mounting cap (1) to the right until it binds. Turn mounting cap to the left until it stops binding and holes for screws with lockwashers (2) are alined.
2. Using 3/4-inch wrench, screw in and tighten four screws with lockwashers (2). Go to other side of boom (3). Screw in and tighten four screws with lockwashers.

GO TO FRAME 5

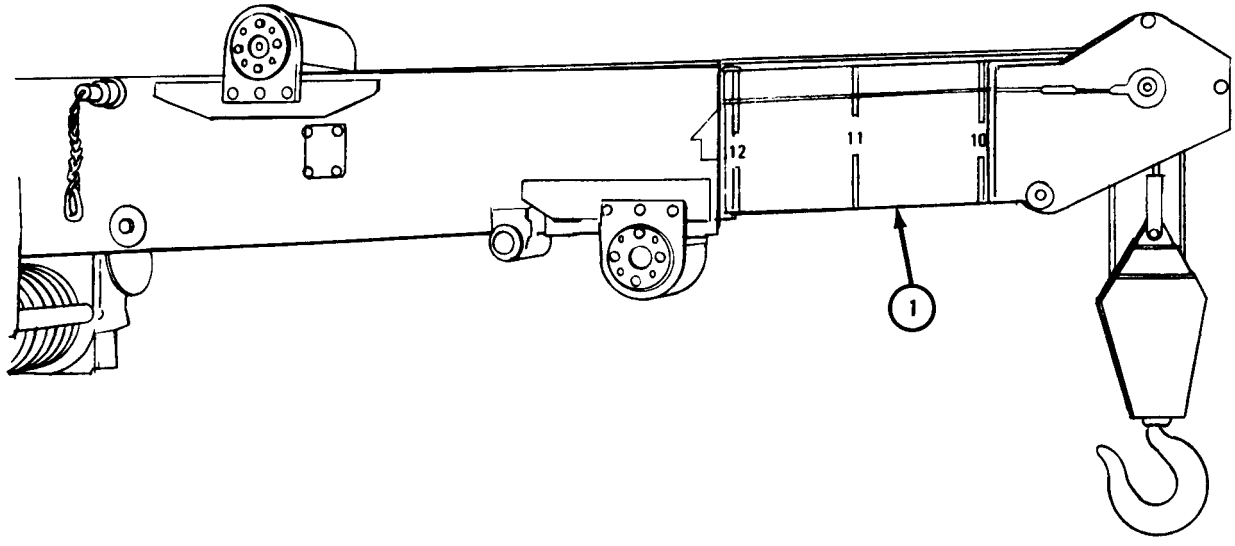


TA 050278

FRAME 5

1. Operate inner boom (1) all the way out and then all the way in. Refer to TM 9-2320-211-10. Watch inner boom for sticking or jamming.

IF INNER BOOM STICKS OR JAMS, GO TO FRAME 6.
IF INNER BOOM DOES NOT STICK OR JAM, END OF TASK

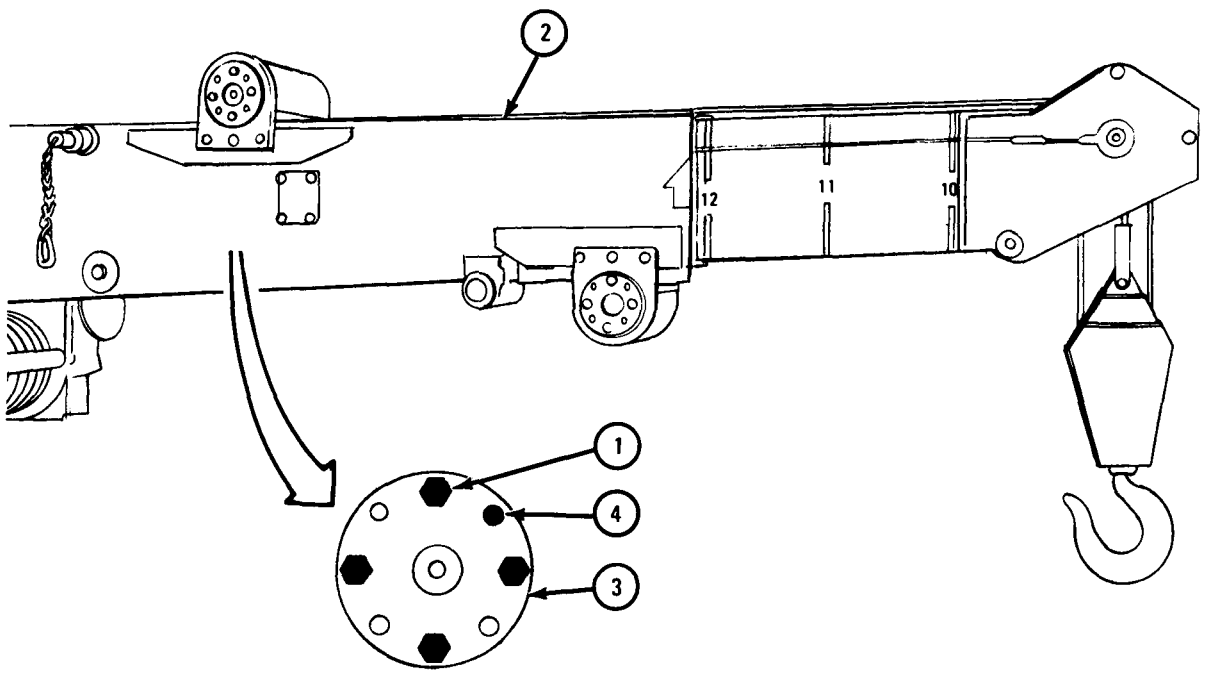


TA 050279

FRAME 6

1. Using 3/4-inch wrench, unscrew and take out four screws with lockwashers (1).
2. Go to other side of boom (2). Unscrew and take out four screws with lockwashers (1).
3. Using spanner wrench, turn mounting cap (3) to the left until hole (4) is alined for screw with lockwasher (1).
4. Using 3/4-inch wrench, screw in and tighten four screws with lockwashers (1).
5. Go to other side of boom (2). Screw in and tighten four screws with lockwashers (1).

GO BACK TO FRAME 5



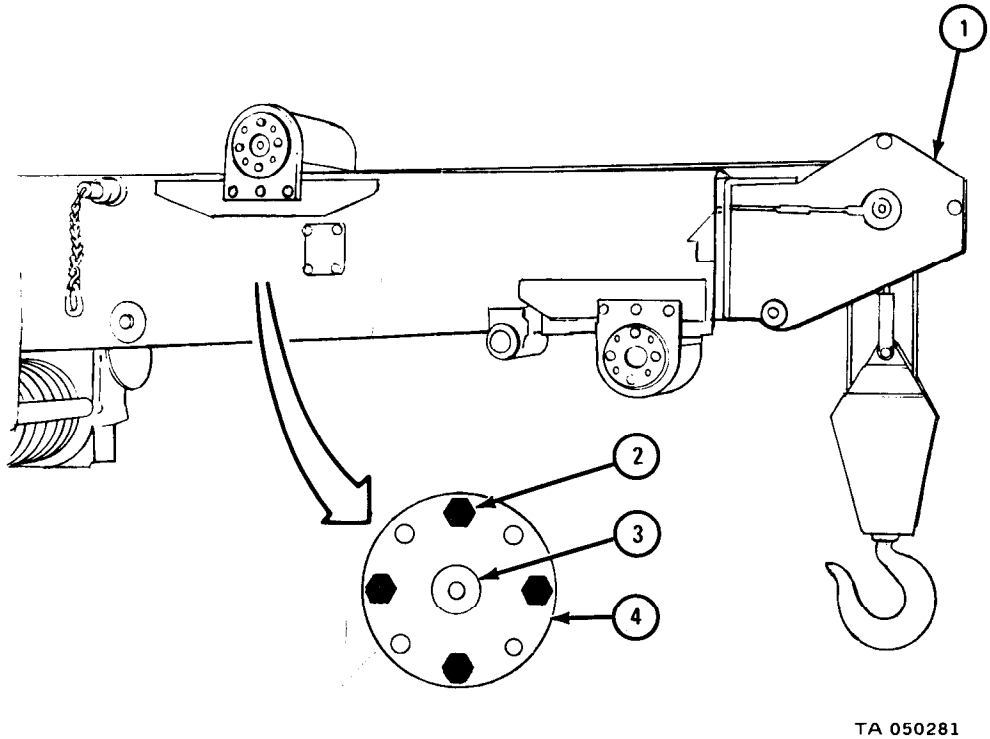
TA 050280

c. Lateral Adjustment.

FRAME 1

1. Operate inner boom (1) all the way out and then all the way in, checking inner boom side play for tightness or looseness. Refer to TM 9-2320-211-10.
2. Using 3/4-inch wrench, unscrew and take out four screws with lockwashers (2).
3. Go to other side of boom. Using hammer and punch, drive shaft (3) to loosen mounting cap (4).

GO TO FRAME 2

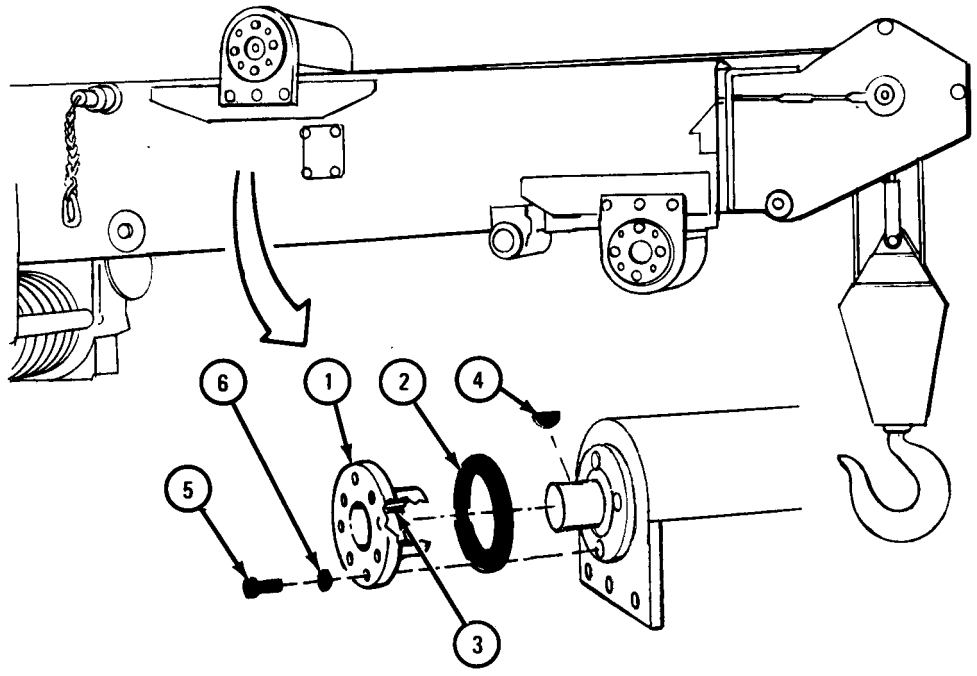


TA 050281

FRAME 2

1. Using prybar, takeoff mounting cap (1) and shims (2).
2. If boom is too loose, take out one shim (2). If boom is too tight, add one shim.
3. Put mounting cap (1) with shims (2) in place, alining keyway (3) with key (4). Tap with hammer and brass drift.
4. Using 3/4-inch wrench, screw in and tighten four screws (5) with lock-washers (6).

GO TO FRAME 3

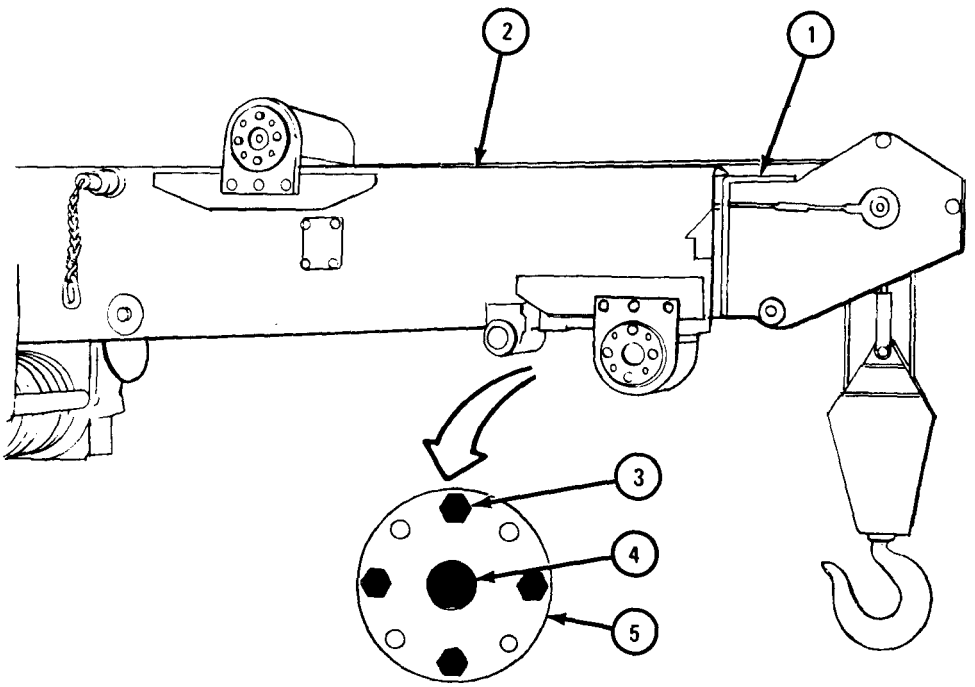


TA 050282

FRAME 3

1. Using hoist, support inner boom(1)so wieght of inner boom is off outer boom (2).
2. Using 3/4-inch wrench, unscrew and take out four screws with lockwashers (3).
3. Go to other side of boom. Using hammer and punch, drive shaft (4) to loosen mounting cap (5).

GO TO FRAME 4

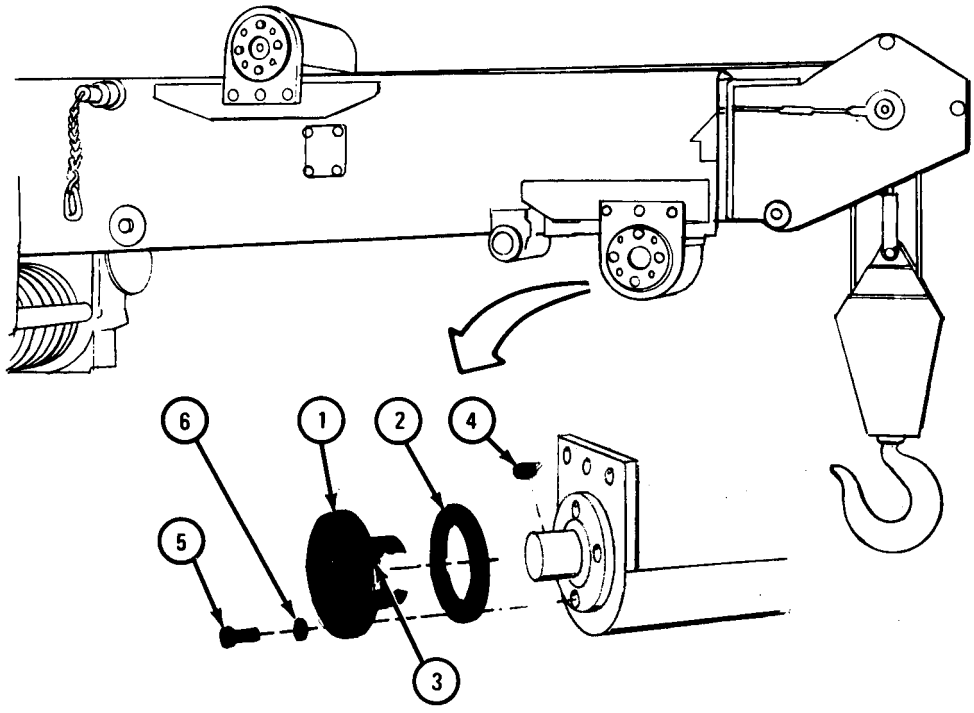


TA 050283

FRAME 4

1. Using prybar, take off mounting cap (1) and shims (2).
2. If boom is too loose, take out one shim (2). If boom is too tight, add one more shim.
3. Put mounting cap (1) with shims (2) in place, alining keyway (3) with key (4). Tap with hammer and brass drift.
4. Using 3/4-inch wrench, screw in and tighten four screws (5) with lock-washers (6).

GO TO FRAME 5



TA 050284

FRAME 5

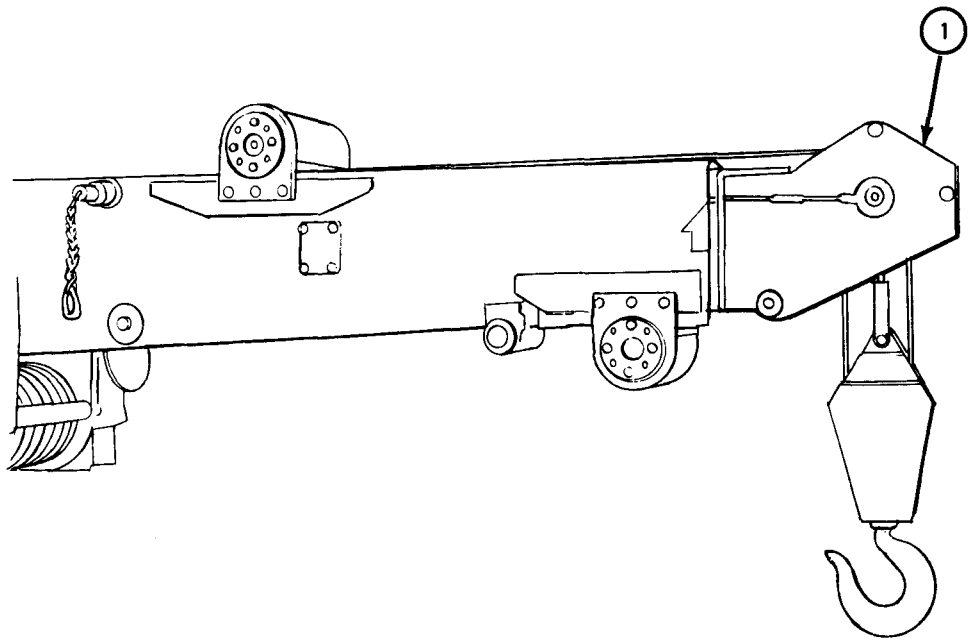
1. Take hoist off inner boom (1).
2. Work inner boom (1) all the way out and then all the way in, checking inner boom side play for tightness or looseness. If side play is tight or loose, go to step 2 of frame 1.

NOTE

Follow-on Maintenance Action Required:

1. Secure boom for travel. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 050285

18-32. CRANE SNATCH BLOCK REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: Drift pin punch
5-pound hammer
1-inch wrench
1 1/16-inch wrench
1 1/4-inch wrench
1 1/2-inch wrench
Leather gloves

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

WARNING

Always wear leather gloves when handling winch cable. Never let cable run through hands. Broken or rusty wires could cause serious injury to personnel.

CAUTION

Keep tension on cable whenever winch drum is turning. Failure to do this will cause cable to snarl.

a. Preliminary Procedures.

(1) Extend and lower boom. Refer to TM 9-2320-211-10.

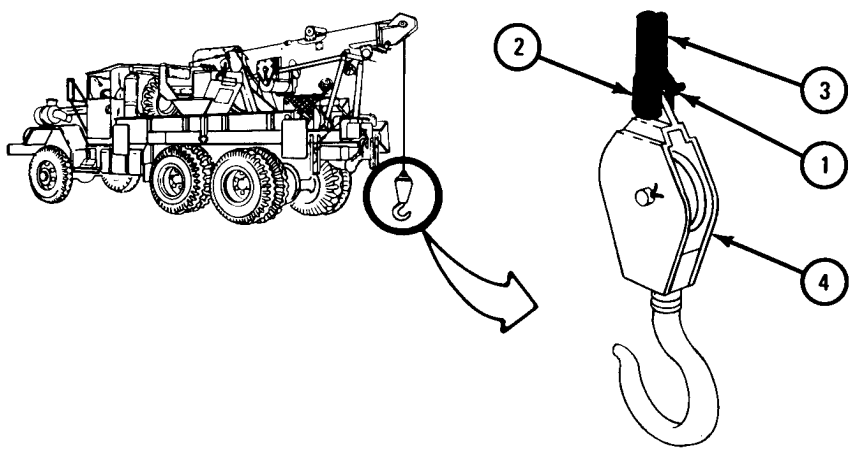
(2) Lower cable until crane snatch block rests on ground. Refer to TM 9-2320-211-10.

b. Removal of One-Part Line.

FRAME 1

1. Using 1-inch and 1 1/4-inch wrenches, unscrew and take off nut (1).
2. Take out screw (2) and clevis (3) from snatch block (4).

END OF TASK



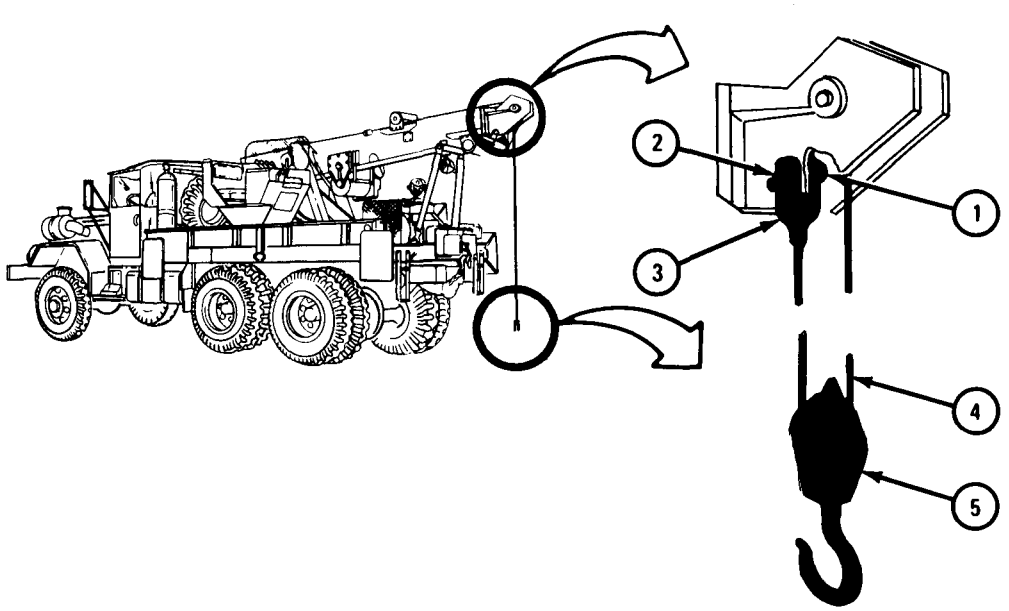
TA 103175

c. Removal of Two-Part Line.

FRAME 1

1. Using 1-inch and 1 1/4-inch wrenches, hold screw (1) and unscrew and take off nut (2).
2. Take out screw (1) and clevis (3).
3. Pull cable (4) out of snatch block (5).

END OF TASK



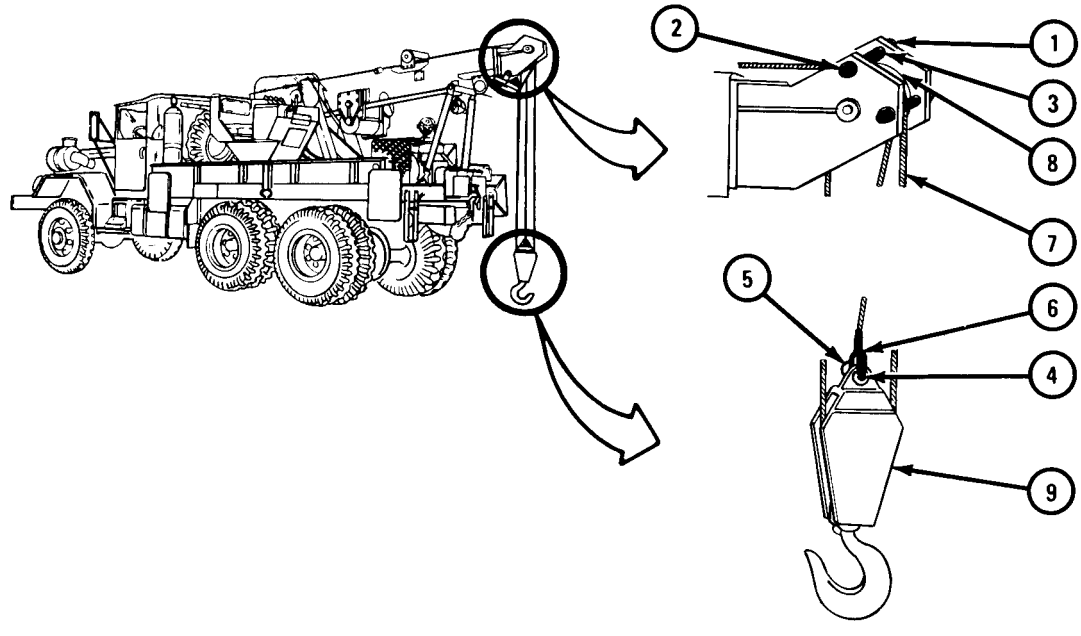
TA 103169

d. Removal of Three-Part Line.

FRAME 1

1. Using 1 1/8-inch wrench, hold two screws (1).
2. Using 1 1/16-inch wrench, unscrew and take off two nuts (2). Take out two screws (1) and two spacers (3).
3. Using l-inch and 1 1/4-inch wrenches, hold screw (4) and unscrew and take off nut (5). Take out screw (4) and take off clevis (6).
4. Pull cable (7) off boom pulley (8) and out of snatch block (9).

END OF TASK



TA 103170

e. Replacement of One-Part Line.

FRAME 1

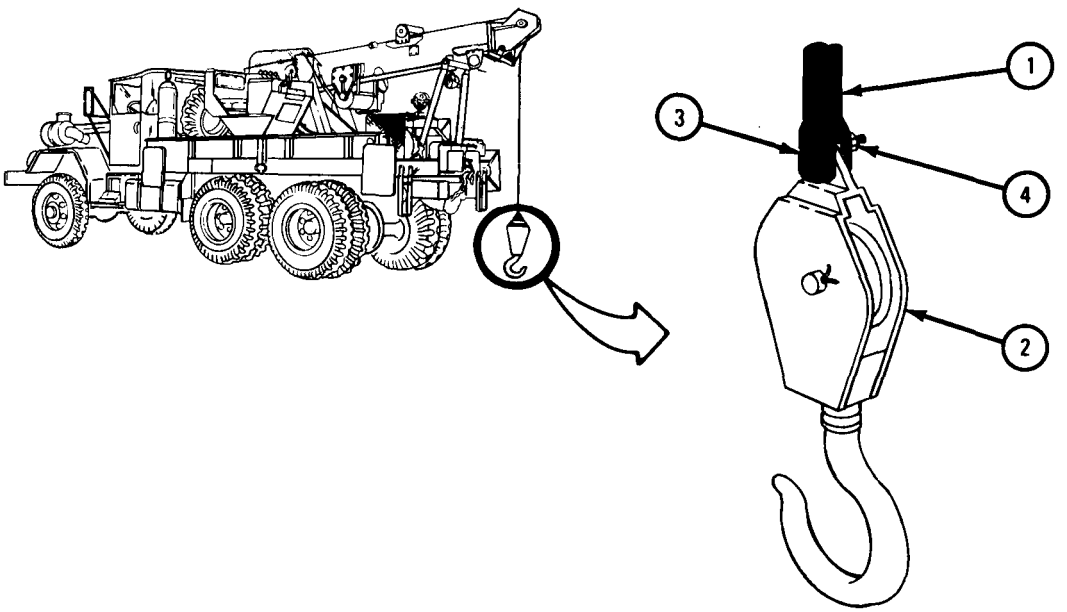
1. Place clevis (1) over snatch block (2), alining holes.
2. Put in screw (3) and using 1-inch wrench, hold it.
3. Using 1 1/4-inch wrench , screw on and tighten nut (4).

NOTE

Follow-on Maintenance Action Required:

1. Wind winch cable on cable drum. Refer to TM 9-2320-211-10.
2. Prepare crane for travel. Refer to TM 9-2320-211-10.

END OF TASK



TA 103171

f. Replacement of Two-Part Line.

FRAME 1

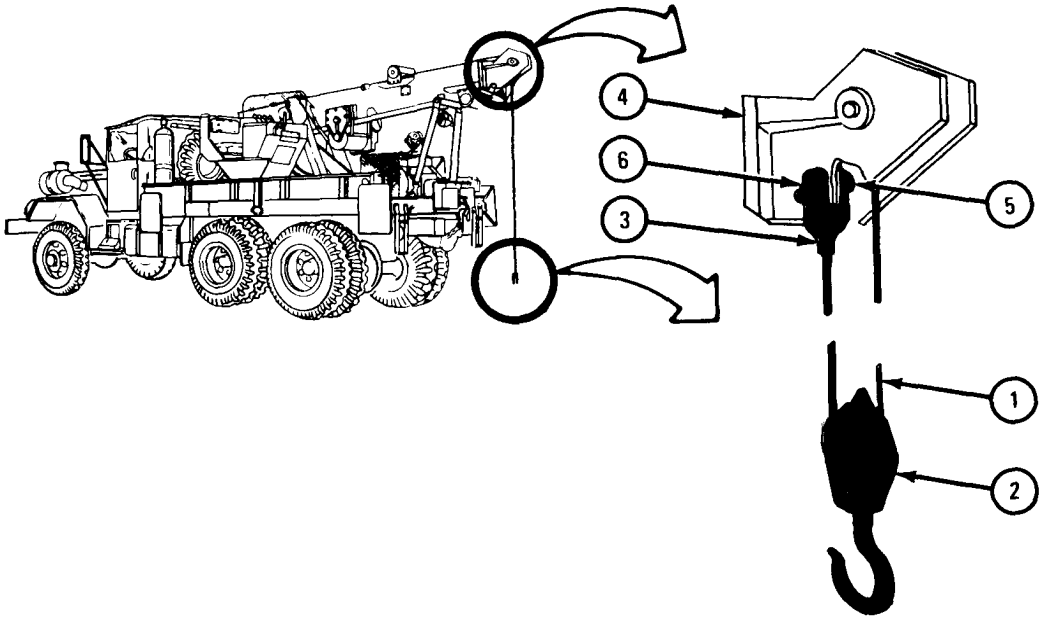
1. Put clevis end of cable (1) through snatch block (2).
2. Put clevis (3) on boom (4), alining holes.
3. Put screw (5) through boom (4) and clevis (3) and using 1-inch wrench, hold screw.
4. Using 1 1/4-inch wrench, screw on and tighten nut (6).

NOTE

Follow-on Maintenance Action Required:

1. Wind winch cable on cable drum. Refer to TM 9-2320-211-10.
2. Prepare crane for travel. Refer to TM 9-2320-211-10.

END OF TASK



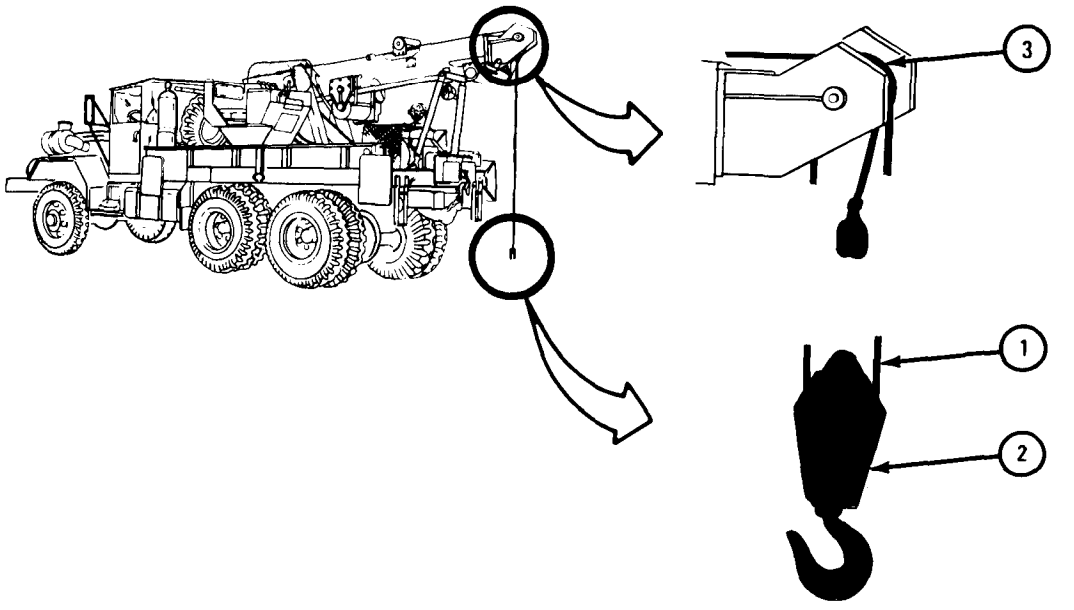
TA 103172

g. Replacement of Three-Part Line.

FRAME 1

1. Put clevis end of cable (1) through snatch block (2) and up over boom pulley (3) as shown.

GO TO FRAME 2



TA 103173

FRAME 2

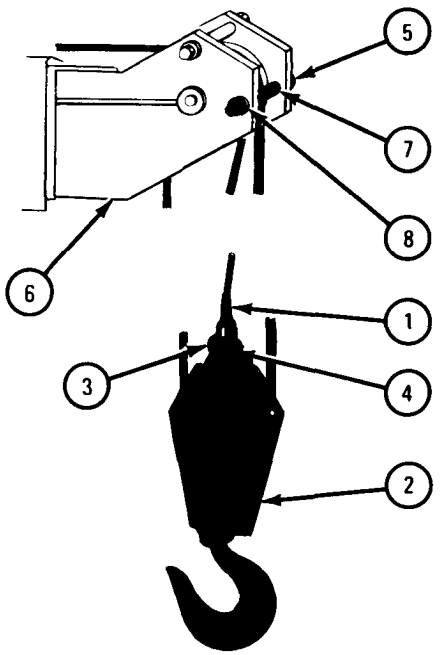
1. Place clevis (1) over snatch block (2), alining holes.
2. Put screw (3) through clevis (1) and snatch block (2) and using 1-inch wrench, hold it.
3. Using 1 1/4-inch wrench, screw on and tighten nut (4).
4. Put two screws (5) through boom (6) and two spacers (7) and using 1 1/8-inch wrench, hold them.
5. Using 1 1/8-inch wrench, screw on and tighten two nuts (8).

NOTE

Follow-on Maintenance Action Required:

1. Wind winch cable on cable drum. Refer to TM 9-2320-211-10.
2. Prepare crane for travel. Refer to TM 9-2320-211-10.

END OF TASK



TA 103174

18-33. OPERATOR GUARD REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: None

SUPPLIES: None

PERSONNEL: One

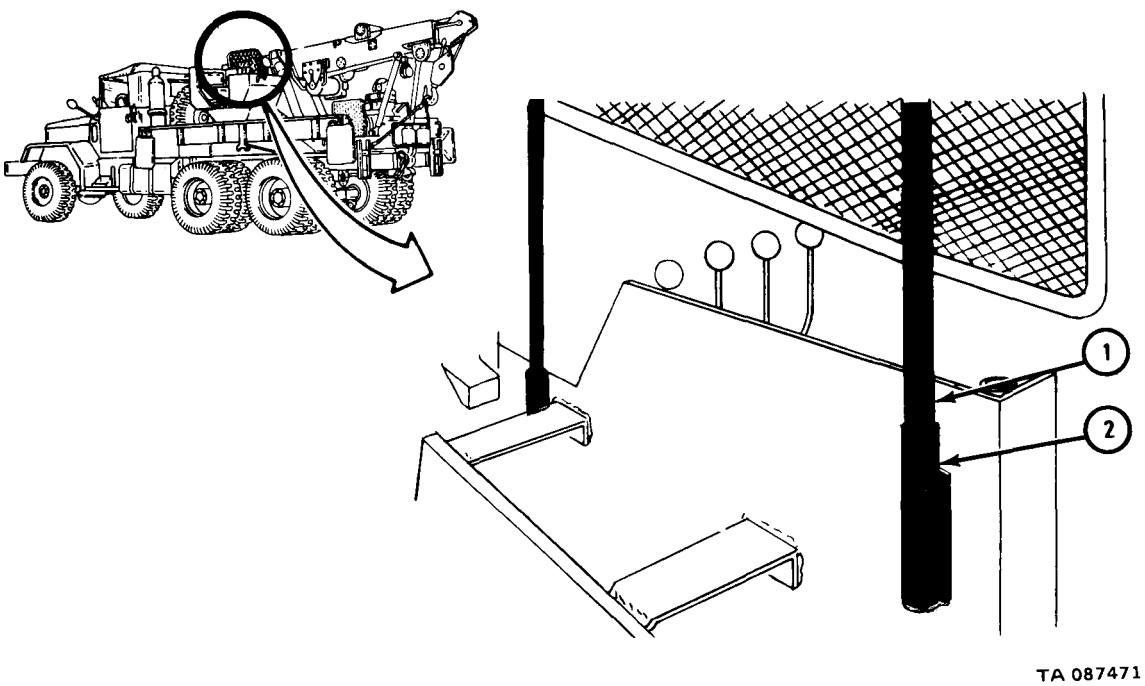
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Lift guard (1) up and out of two gondola brackets (2).

END OF TASK

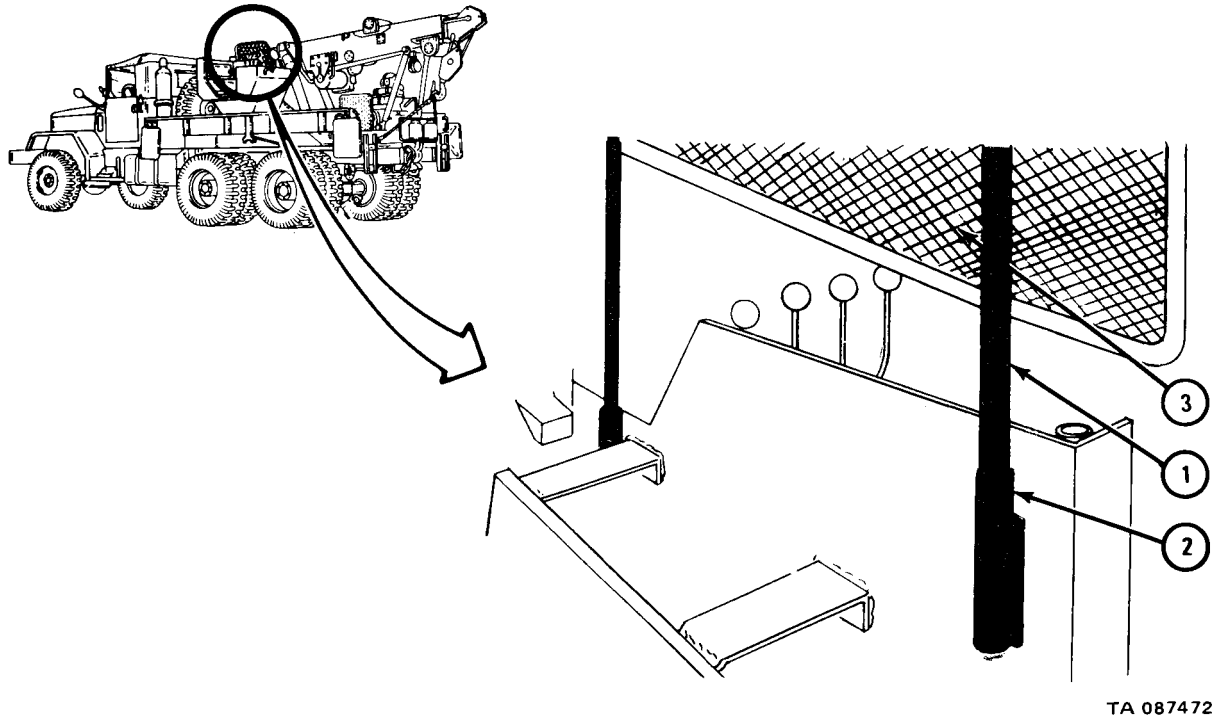


b. Replacement.

FRAME 1

1. Place two guard supports (1) into gondola brackets (2) and push down evenly until guard (3) is seated.

END OF TASK



CHAPTER 19

BODY ACCESSORY ITEMS GROUP MAINTENANCE

Section I. SCOPE

19-1. EQUIPMENT ITEMS COVERED . This chapter gives equipment maintenance procedures for canvas items and related parts, accessory ii ems, and data plates for which there are authorized corrective maintenance tasks at the organizational maintenance level.

19-2. EQUIPMENT ITEMS NOT COVERED . All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. CANVAS ITEMS AND RELATED PARTS

19-3. END CURTAINS REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES : None

PERSONNEL: One

EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

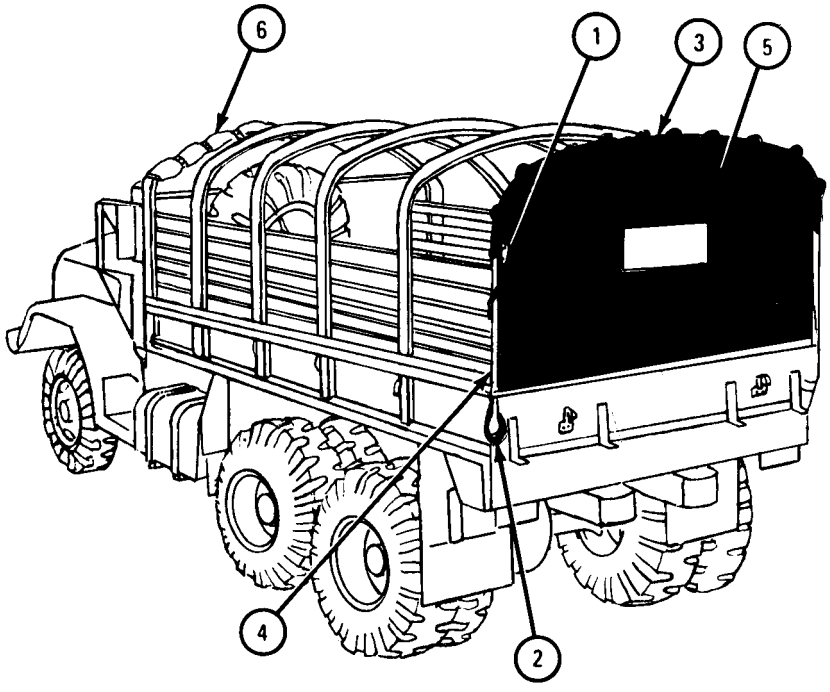
a. Preliminary Procedure. Remove cargo body top cover. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Untie lashing rope (1) from two lashing hooks (2).
2. Take rope out of eyelets (3) and unwind it from bow (4).
3. Take off and stow back end curtain (5).
4. Do steps 1 through 3 again for front end curtain (6).

END OF TASK



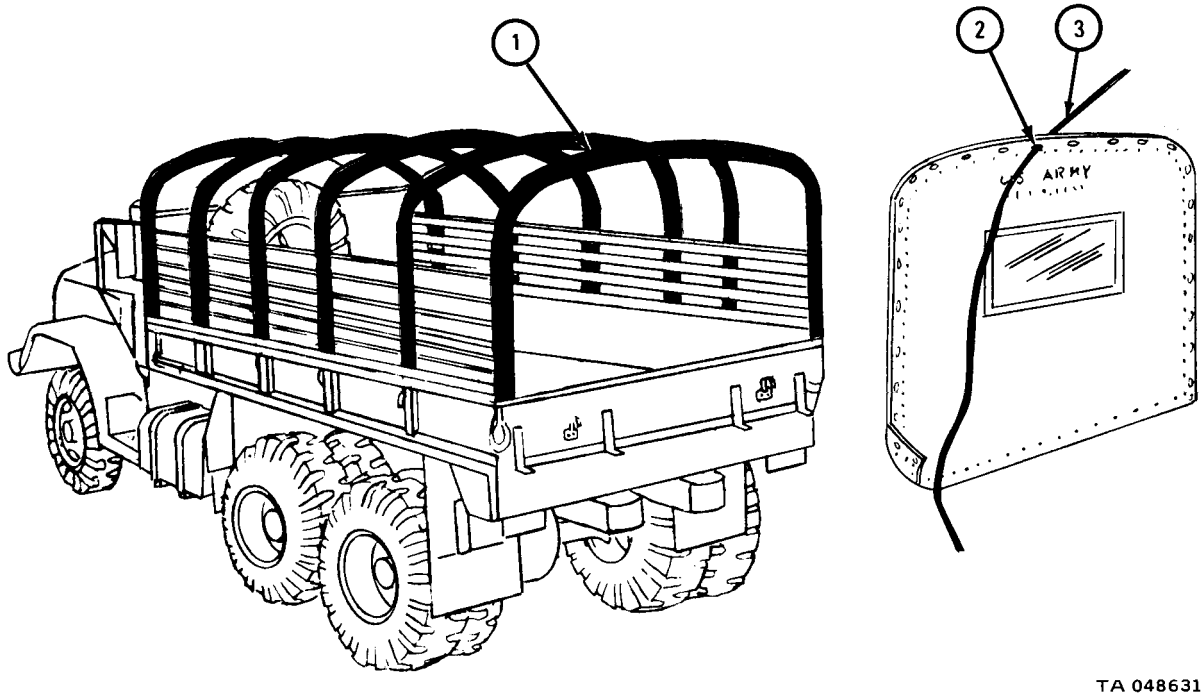
TA 048630

c. Replacement.

FRAME 1

1. If bow assemblies (1) have been taken off, replace them. Refer to TM 9-2320-211-10.
2. Line up top center eyelet (2) with top center of bow (1).
3. Push half of lashing rope (3) through center eyelet.

GO TO FRAME 2



TA 048631

FRAME 2

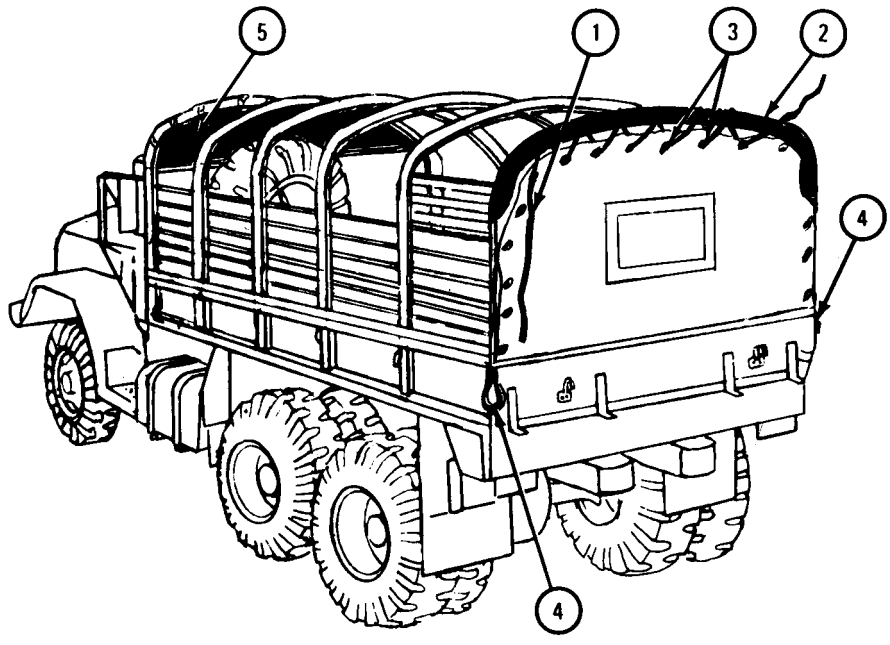
1. Wind lashing rope (1) to the left and right around bow (2) and through all eyelets (3).
2. Tie ends of lashing rope (1) to lashing hooks (4).
3. Do steps 1 and 2 again for front end curtain (5).

NOTE

Follow-on Maintenance Action Required:

Replace cargo body top cover. Refer to TM 9-2320-211-10.

END OF TASK



TA 048632

19-4. LONG CARGO BODY TOP COVER REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES: 8-foot step ladder (2)

PERSONNEL: Two

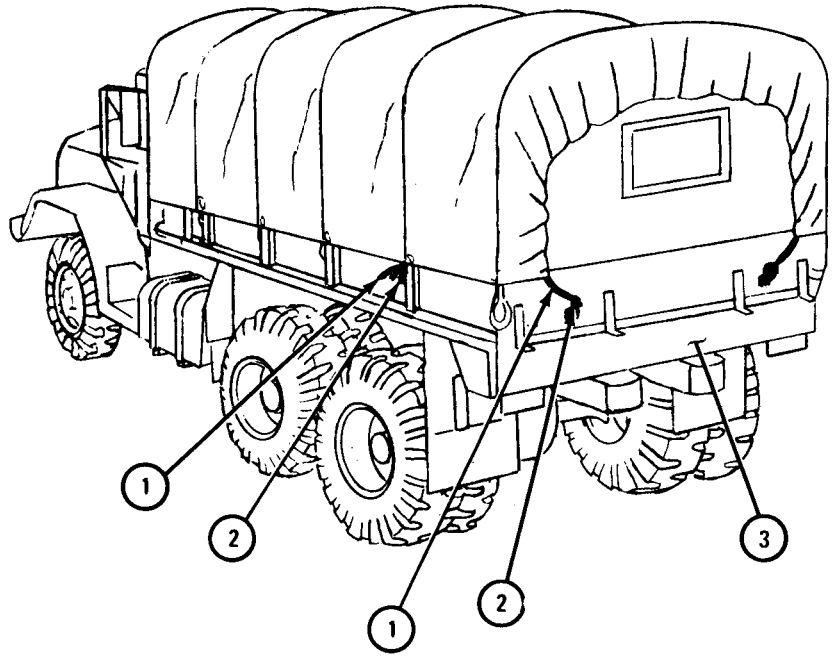
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Untie lashing ropes (1) from lashing hooks (2) on four sides of truck body (3).

GO TO FRAME 2



TA 048635

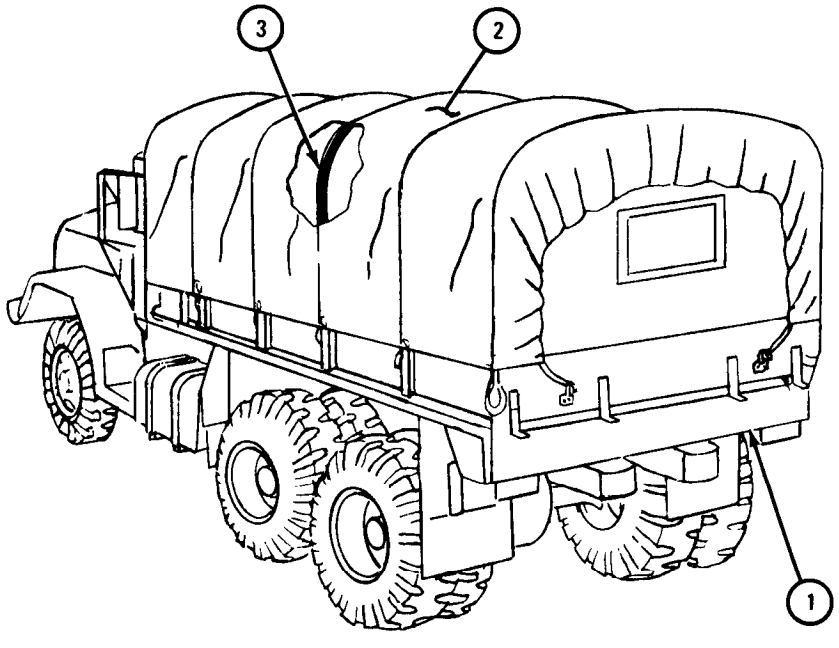
FRAME 2

CAUTION

Do not fold or stow cover when cover is wet.

Soldier A	1.	Stand on step ladder at front of truck body (1).
Soldier B	2.	Stand on step ladder at rear of truck body (1).
Soldiers A and B	3.	Fold up one side of cover (2), making each fold about two feet wide. Stop folding when top center of bows (3) is reached.
	4.	Fold up other side of cover (2), making each fold about two feet wide. Take off folded cover.
	5.	Stow cover (2).

END OF TASK



TA 048636

b. Replacement.

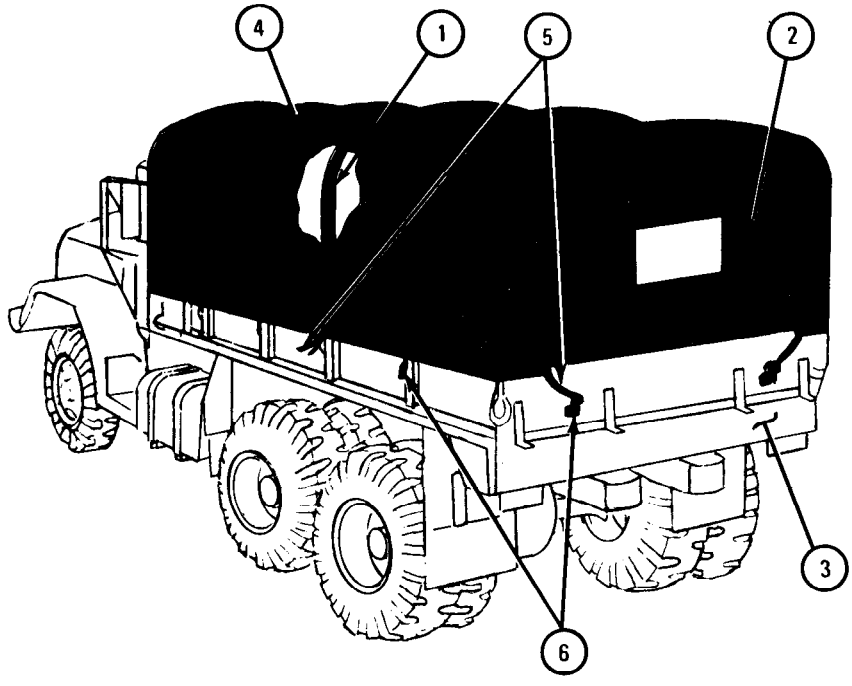
FRAME 1

NOTE

If bow assemblies (1) have been taken off, replace them. Refer to TM 9-2320-211-10. If end curtains (2) have been taken off, replace them. Refer to para 19-3.

Soldier A	1.	Put step ladder at front of truck body (3).
Soldier B	2.	Put step ladder at rear of truck body (3).
Soldiers A and B	3.	Working on step ladders, lay folded top cover (4) across top center of bow assemblies (1). Folds must face up.
Soldiers A and B	4.	Unfold top cover (4) down left and right sides of truck.
Soldier A and B	5.	Tie lashing ropes (5) to lashing hooks (6) on four sides of truck body (3).

END OF TASK



TA 048637

19-5. BOW ASSEMBLY REPAIR.

TOOLS: Cross-tip screwdriver (Phillips type)

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

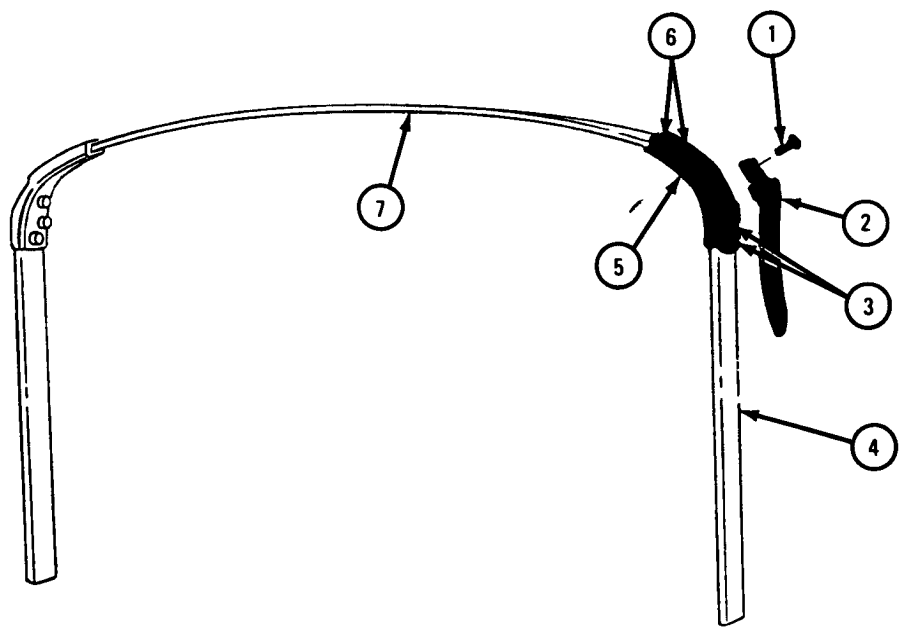
a. Preliminary Procedure. Remove bow assembly from truck. Refer to TM 9-2320-211-10.

b. Disassembly.

FRAME 1

1. Using screwdriver, unscrew and take out screw (1). Take off strap (2).
2. Using screwdriver, unscrew and take out two screws (3). Pull bow stake (4) out of bow corner (5).
3. Using screwdriver, unscrew and take out two screws (6). Pull bow corner (5) off of bow top (7).
4. Do steps 1 through 3 again on other side of bow assembly.

END OF TASK



c. Inspection and Repair.

(1) Check all metal parts. Throw away any bent, broken or damaged parts. Get new parts in their place.

(2) Check all wooden parts. Throw away any cracked, splintered or warped parts. Get new parts in their place.

d. Assembly.

FRAME 1

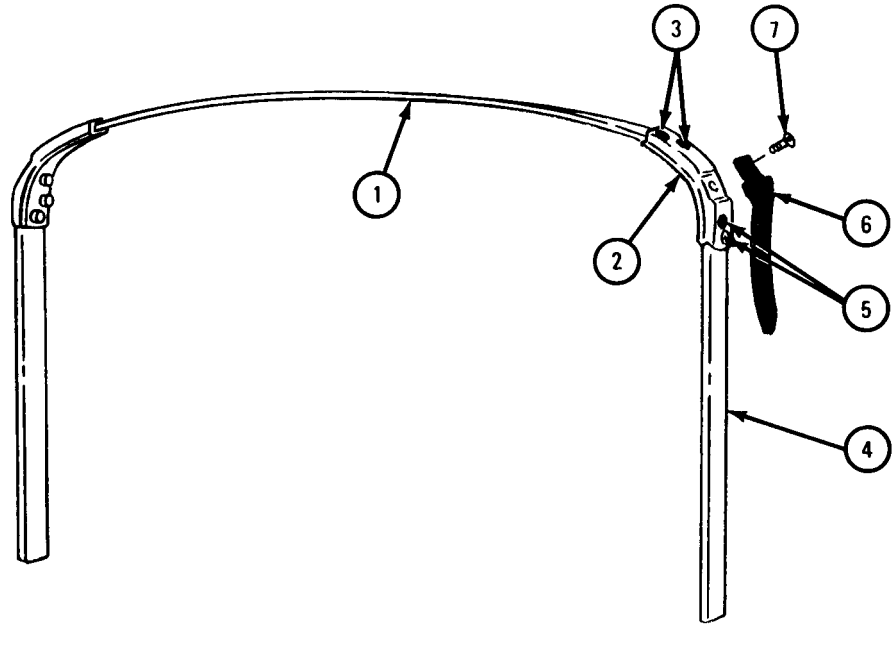
1. Push bow top (1) into bow corner (2) and aline holes. Using screwdriver, screw in and tighten two screws (3).
2. Push bow stake (4) into bow corner (2) and aline holes. Using screwdriver, screw in and tighten two screws (5).
3. Put strap (6) against bow corner (2) as shown, aline holes, and hold it in place. Using screwdriver, screw in and tighten screw (7).
4. Do steps 1 through 3 again on other side of bow top (1).

NOTE

Follow-on Maintenance Action Required:

Put bow assembly on truck. Refer to TM 9-2320-211-10.

END OF TASK



TA 048988

19-6. CAB COVER REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES: None

PERSONNEL: One

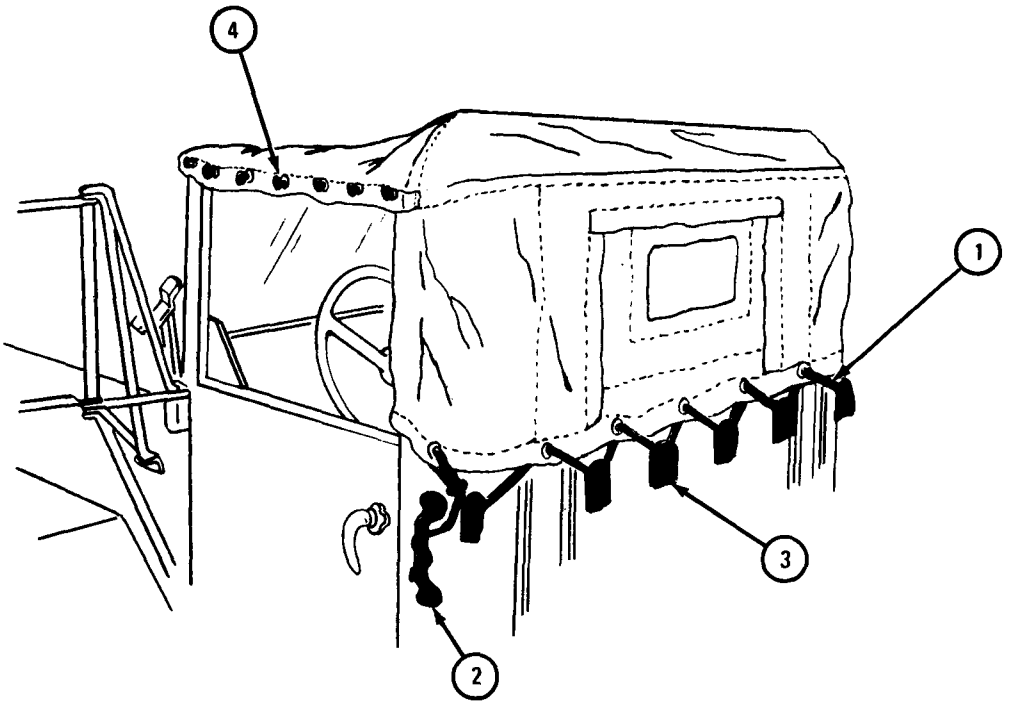
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Untie lashing rope (1) from two side handles (2) and hooks (3).
2. Turn 12 button fastener studs (4) to up-and-down position.

GO TO FRAME 2

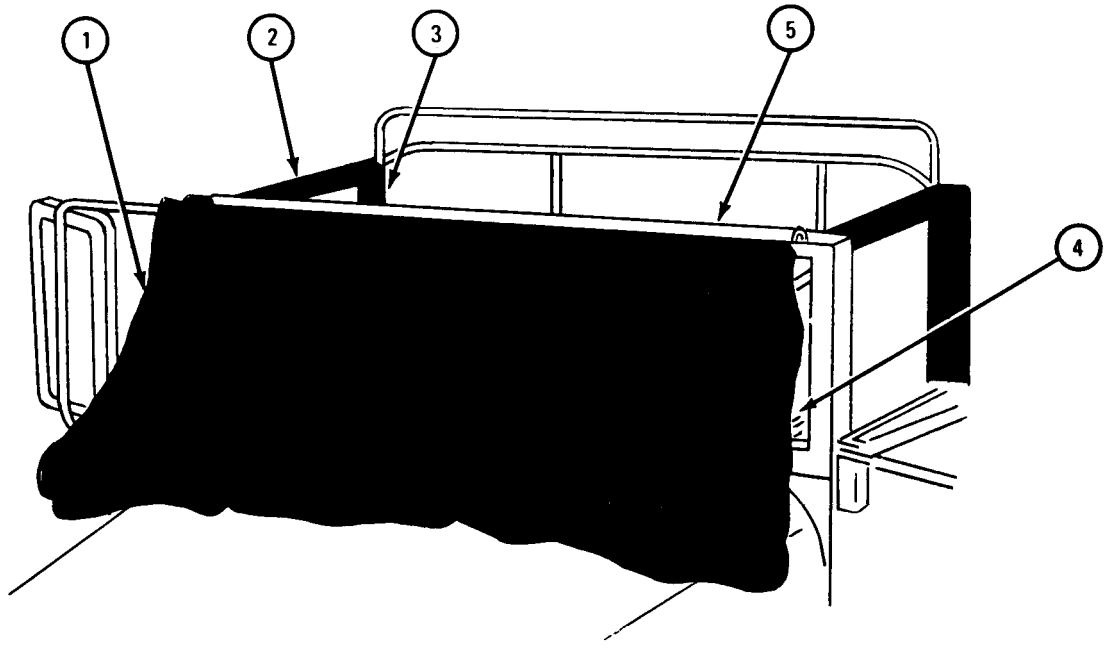


TA 048621

FRAME 2

1. Lift cover (1) off two side roof rails (2) and slide it up and out of channel in two pillar posts (3).
2. Fold cover (1) over windshield (4) and slide cover to the left out of windshield channel (5).

GO TO FRAME 3

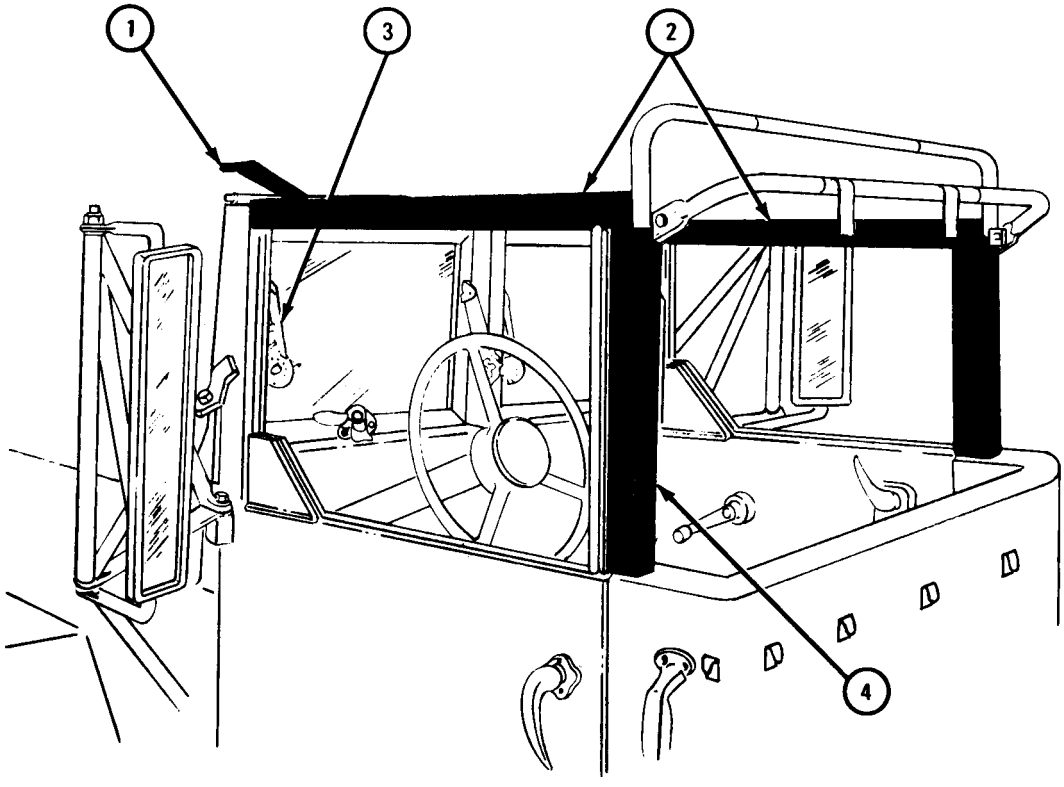


TA 048622

FRAME 3

1. Pull up two cabtop catches (1) to unhook two side roof rails (2) from windshield assembly (3).
2. Fold two side roof rails (2) in and down toward two pillar posts (4).

GO TO FRAME 4

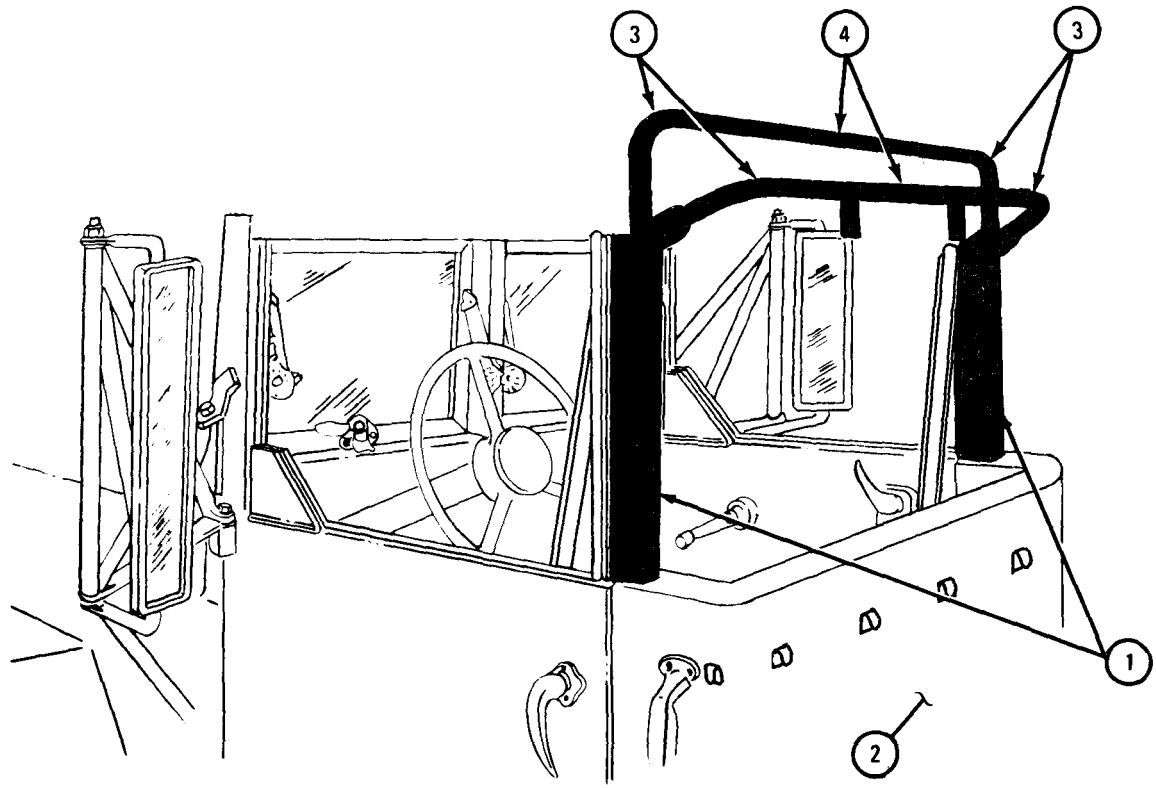


TA 048623

FRAME 4

1. Lift up and take out two pillar posts (1) from cab frame (2).
2. Slide crossbar bows (3) out of crossbars (4).
3. Strap crossbars (4) and pillar posts (1) together with straps on rear crossbar.
4. Stow cab cover, crossbars (4), and pillar posts (1) behind cab seats.

END OF TASK



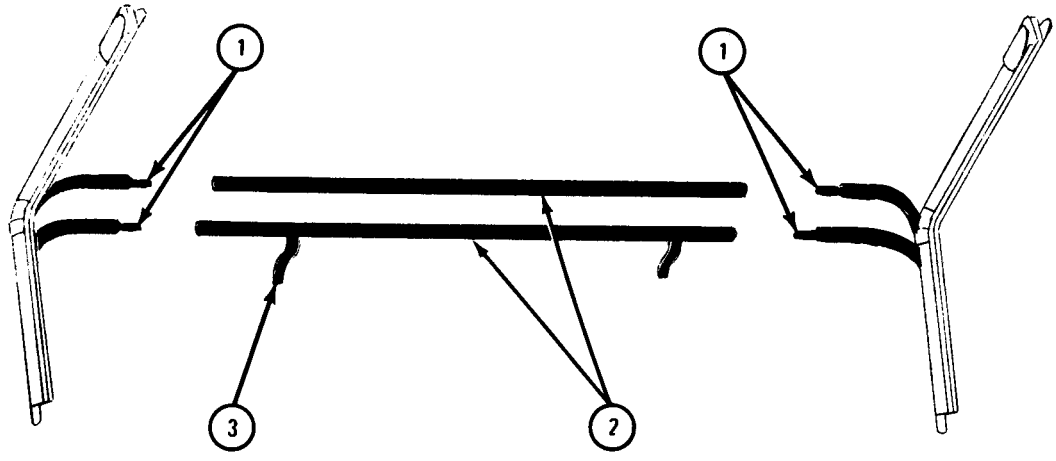
TA 048624

b. Replacement.

FRAME 1

1. Take crossbars, pillar post, and cab cover out from behind cab seats.
2. Slide left and right crossbar bows (1) into crossbars (2). Crossbar with straps (3) slides onto lower bows as shown.

GO TO FRAME 2

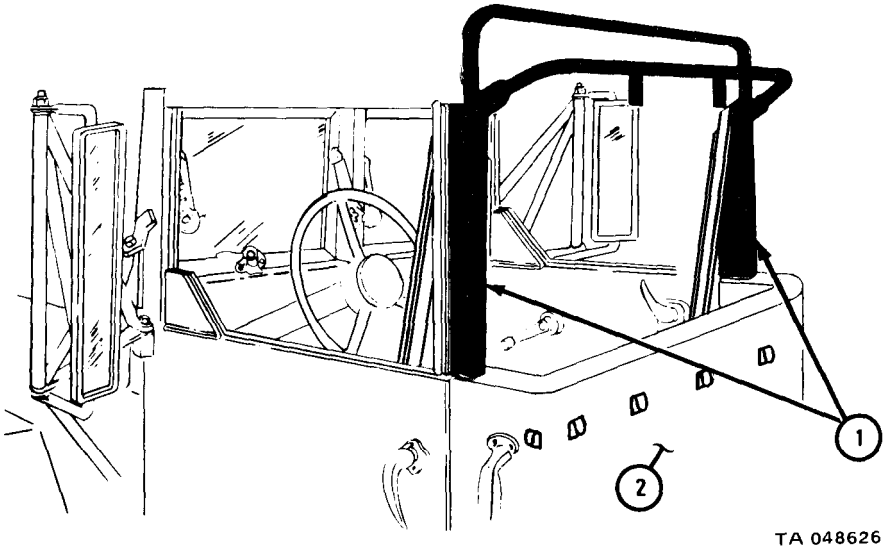


TA 048625

FRAME 2

1. Put pillar posts (1) into cab frame (2).

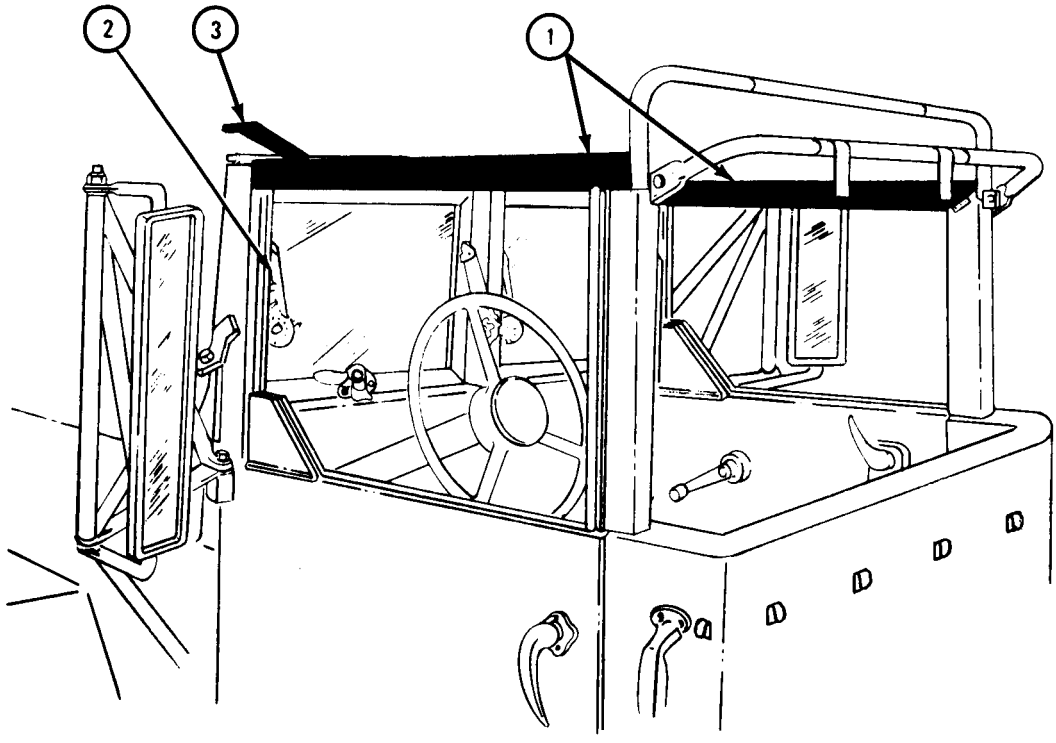
GO TO FRAME 3



FRAME 3

1. Pull up two side roof rails (1) to meet windshield assembly (3).
2. Push down two catches (3) and lock side roof rails (1) to windshield assembly (2).

GO TO FRAME 4

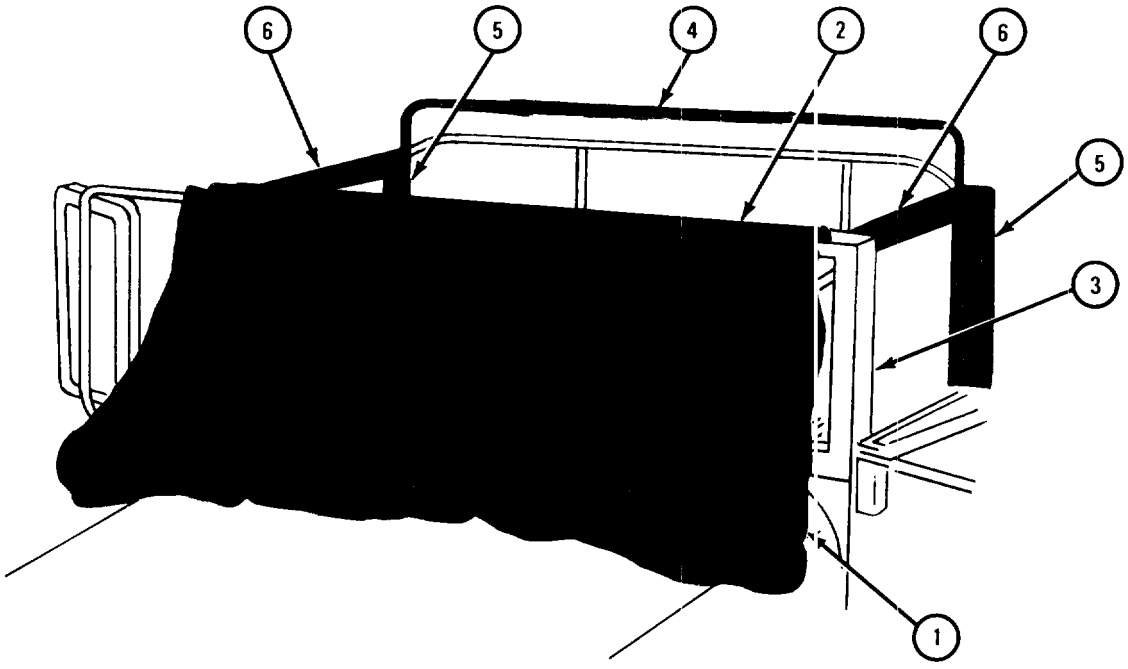


TA 048627

FRAME 4

1. Slide cover (1) into windshield channel (2).
2. Pull cover (1) over windshield (3) to meet crossbar (4).
3. Place cover (1) into channels in pillar posts (5) and onto side rails (6).

GO TO FRAME 5

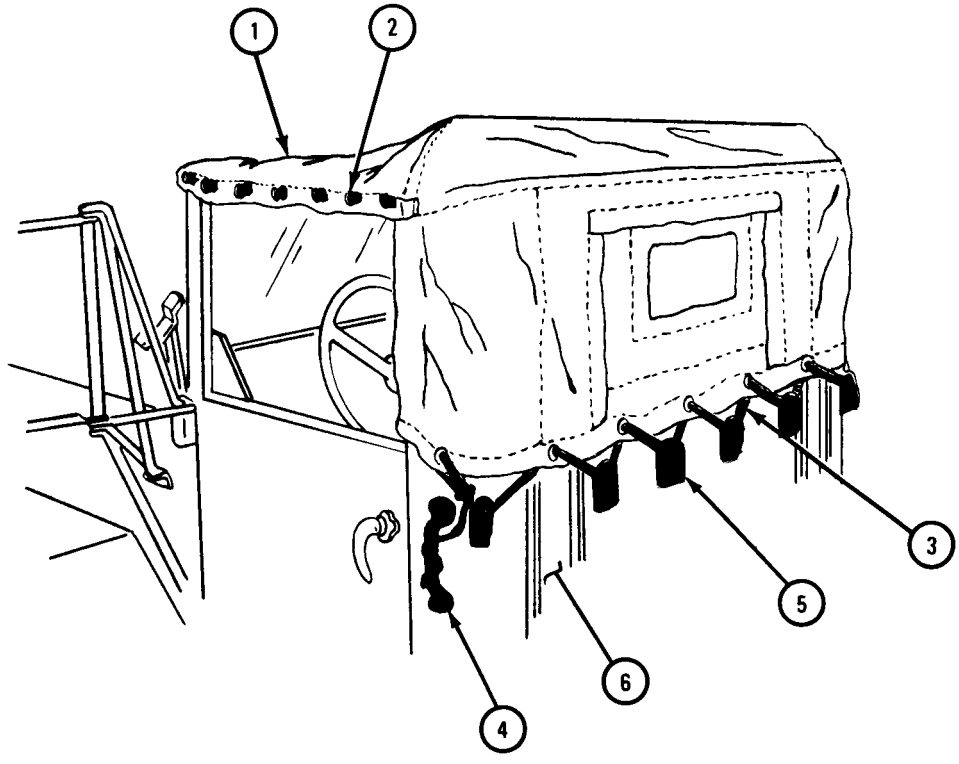


TA 048628

FRAME 5

1. Put cover (1) onto 12 fastener studs (2).
2. Turn 12 fastener studs (2) to side-to-side position.
3. Tie lashing rope (3) to side handles (4) and to hooks (5) at rear of cab (6).

END OF TASK



TA 048629

19-7. LASHING HOOK REMOVAL AND REPLACEMENT.

TOOLS: 1/2-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

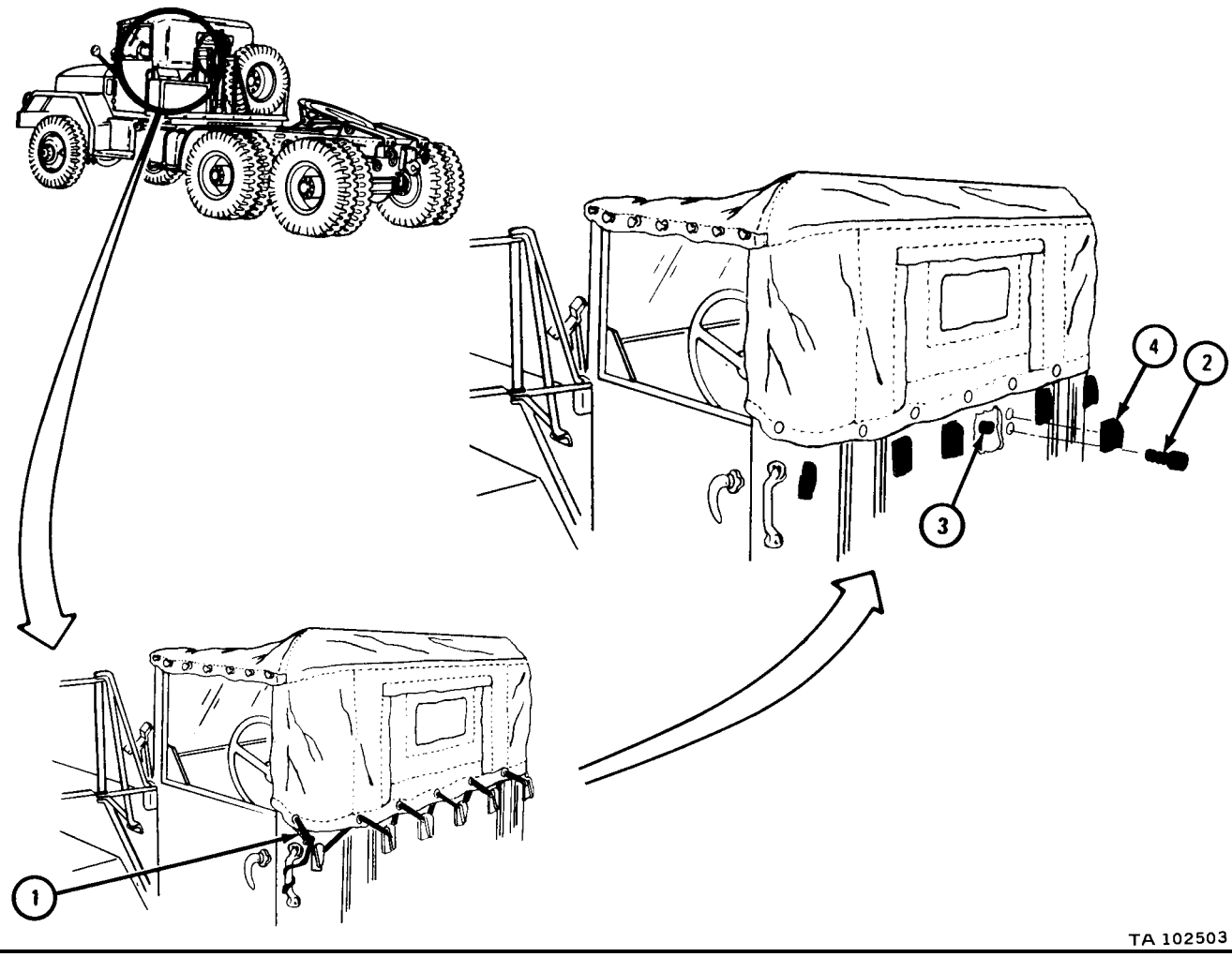
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Untie and take off rope (1).
2. Using 1/2-inch wrenches, unscrew and take out 12 screws (2) and 12 nuts (3).
3. Take off 6 lashing hooks (4).

END OF TASK

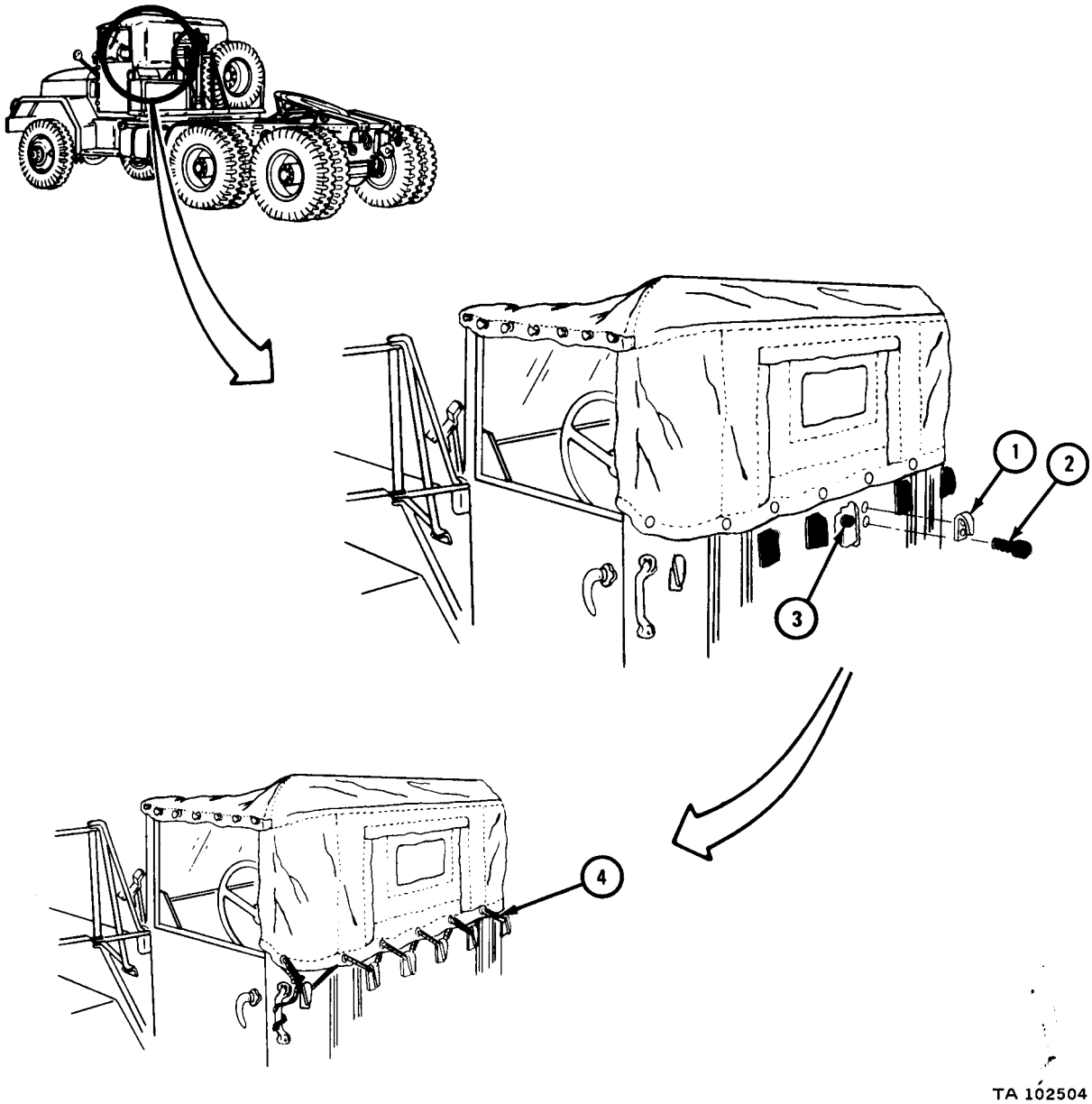


b. Replacement.

FRAME 1

1. Put 6 lashing hooks (1) in place on cab.
2. Put in 12 screws (2). Using 1/2-inch wrenches, screw on and tighten 12 nuts (3).
3. Put back and tie lashing rope (4) as shown.

END OF TASK



Section III. ACCESSORY ITEMS

19-8. WINDSHIELD WIPER MOTOR REMOVAL AND REPLACEMENT .

NOTE

This task is the same for both windshield wiper motors.
This task is shown for the right windshield wiper motor.

TOOLS: Cross-tip screwdriver (Phillips type)
Pliers
3/8-inch open end wrench
Nose clamp pliers

SUPPLIES: None

PERSONNEL: One

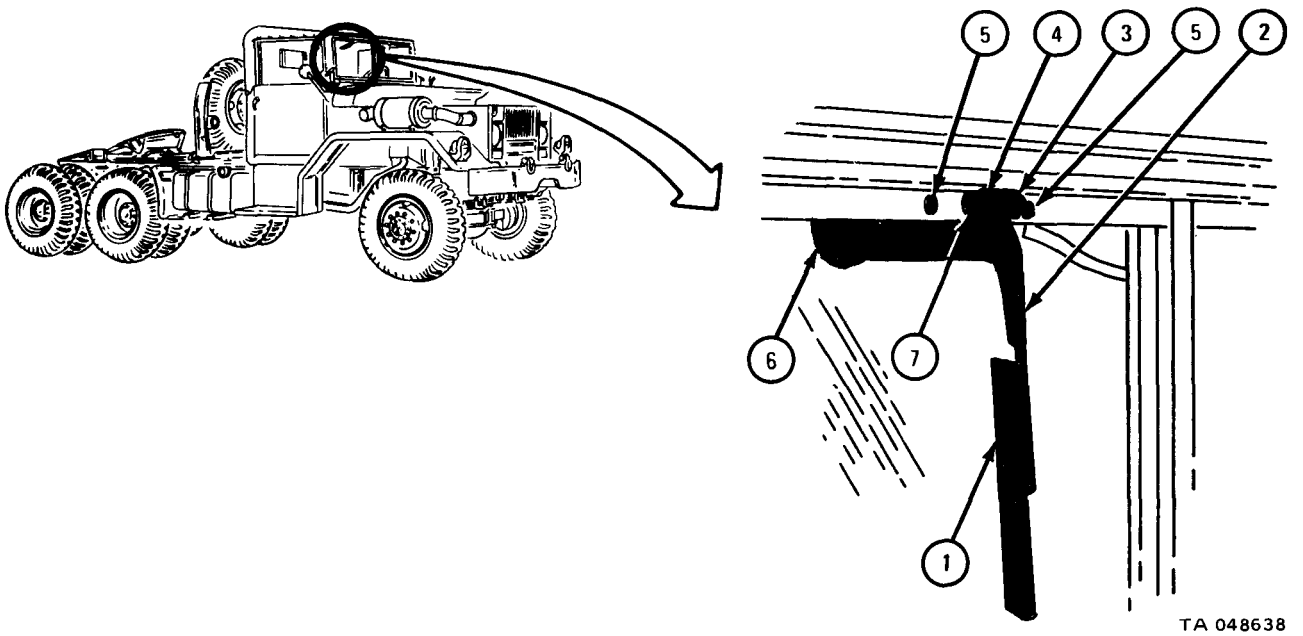
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Unclip wiper blade (1) from wiper arm (2) and take off blade.
2. Using 3/8-inch wrench, unscrew capnut (3) and take off arm (2).
3. Using pliers, slide off washer (4).
4. Using screwdriver, unscrew two screws (5), letting wiper motor (6) hang on shaft (7).

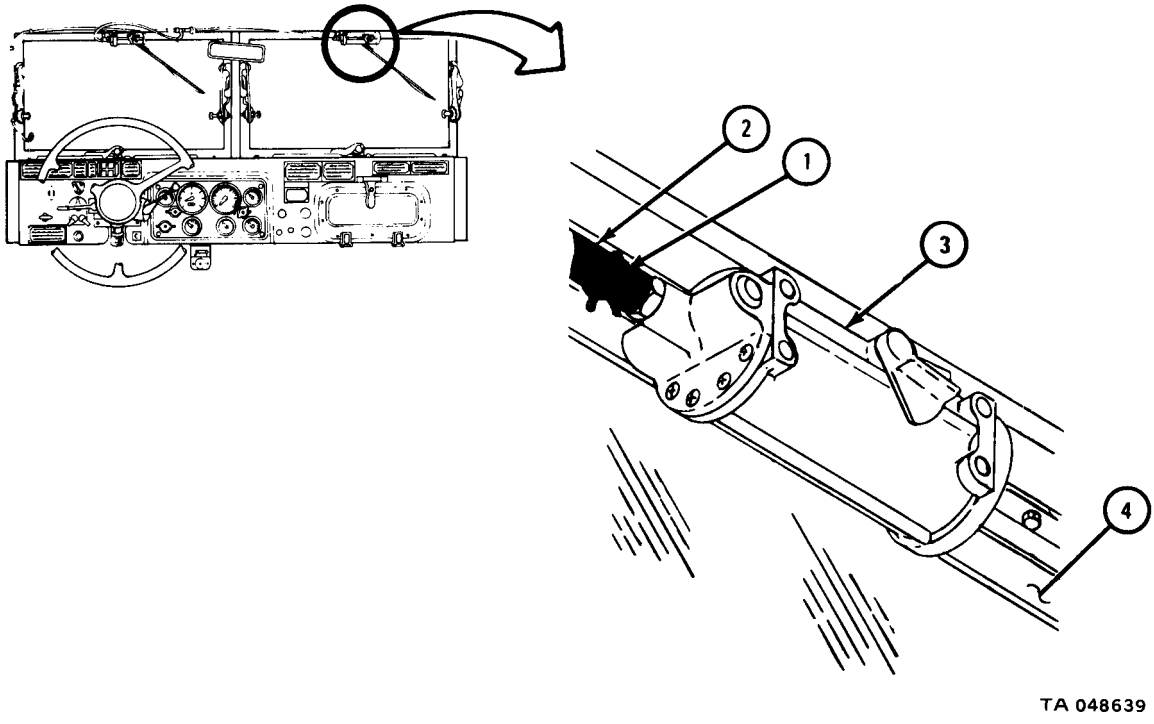
GO TO FRAME 2



FRAME 2

1. Using nose clamp pliers, spread clamp (1) and slide clamp back on hose (2).
2. Pull hose (2) off wiper motor (3) and lift wiper motor clear of windshield frame (4).

END OF TASK

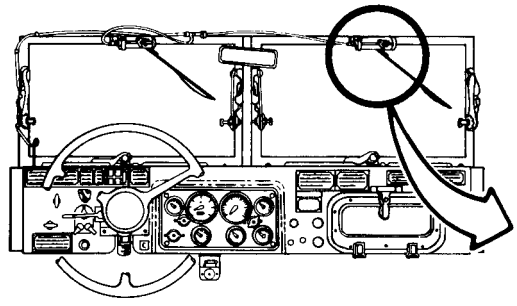


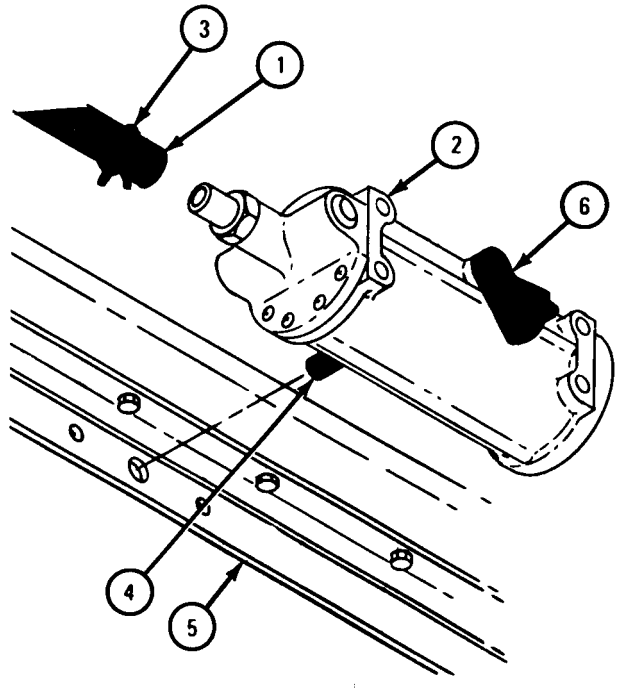
b. Replacement.

FRAME 1

1. Put end of hose (1) on wiper motor (2). Using hose clamp pliers, spread clamp (3) and slide clamp down hose to wiper motor.
2. Put wiper motor shaft (4) through hole in windshield frame (5) as shown and aline two mounting holes.
3. Turn manual control lever (6) to full right position.

GO TO FRAME 2





TA 047305

FRAME 2

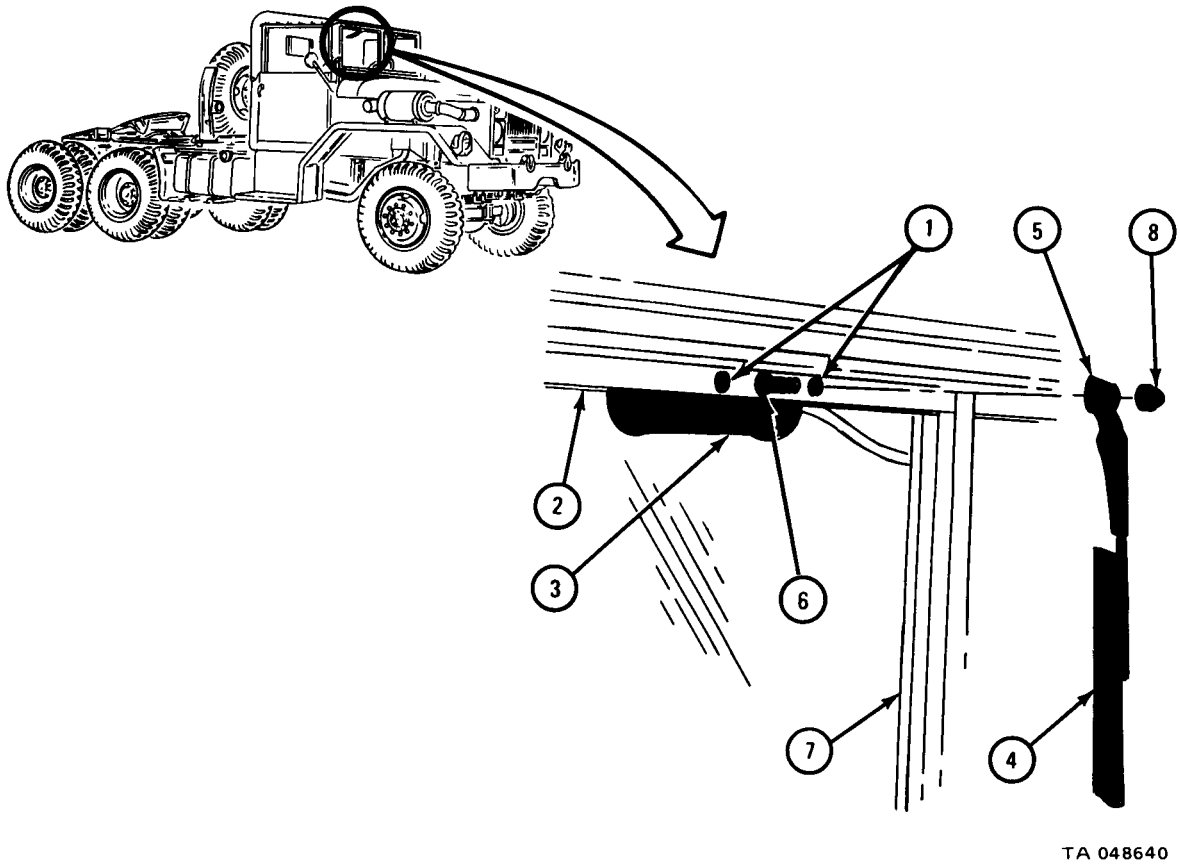
1. Using screwdriver, screw in and tighten two screws (1) through windshield frame (2) into wiper motor (3).
2. Clip wiper blade (4) to wiper arm (5).
3. Using pliers, slide washer (6) onto serrated shaft of wiper motor (3).
4. Put wiper arm (5) on serrated shaft of wiper motor (3). Set arm so that blade clears windshield center post (7).
5. Using 3/8-inch wrench, screw on and tighten capnut (8).

NOTE

Follow-on Maintenance Action Required:

Start engine and check operation of wiper motor. Refer to TM 9-2320-211-10.

END OF TASK



19-9. WINDSHIELD WIPER BLADE REMOVAL AND REPLACEMENT.

NOTE

This task is the same for both wiper blades.

TOOLS: None

SUPPLIES: None

PERSONNEL: One

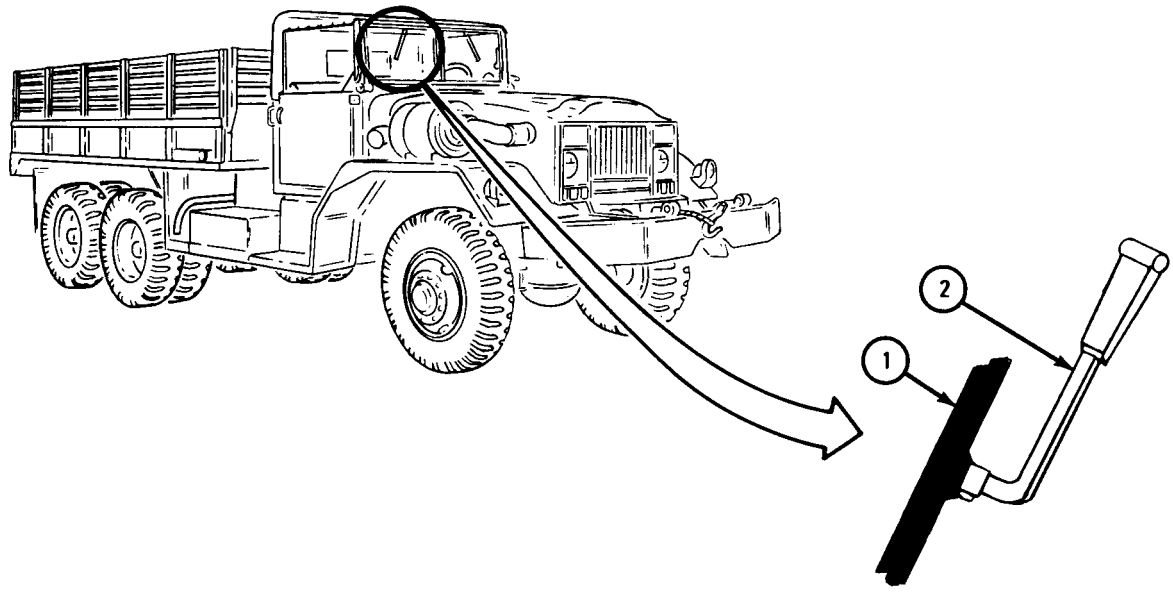
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Unhook and take off wiper blade (1) from wiper arm (2).

END OF TASK

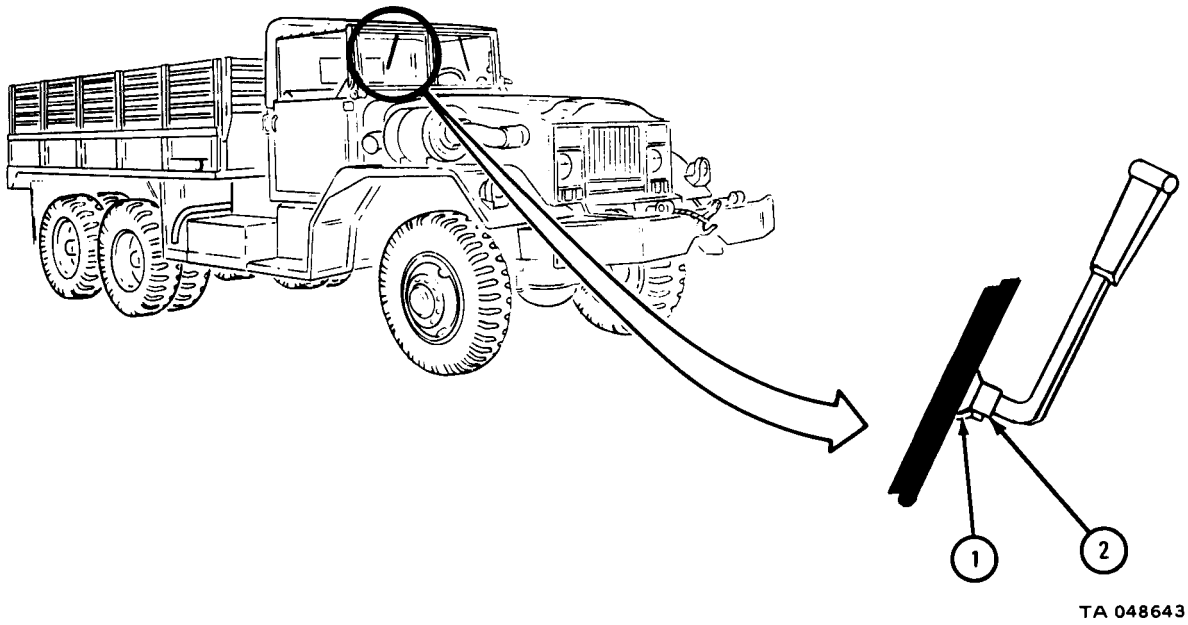


b. Replacement.

FRAME 1

1. Hook wiper blade hook (1) into wiper arm receptacle (2).

END OF TASK



19-10. WINDSHIELD WIPER ARMS REMOVAL AND REPLACEMENT.

NOTE

This task is the same for both wiper arms.

TOOLS: 3/8-inch open end wrench

SUPPLIES: None

PERSONNEL: One

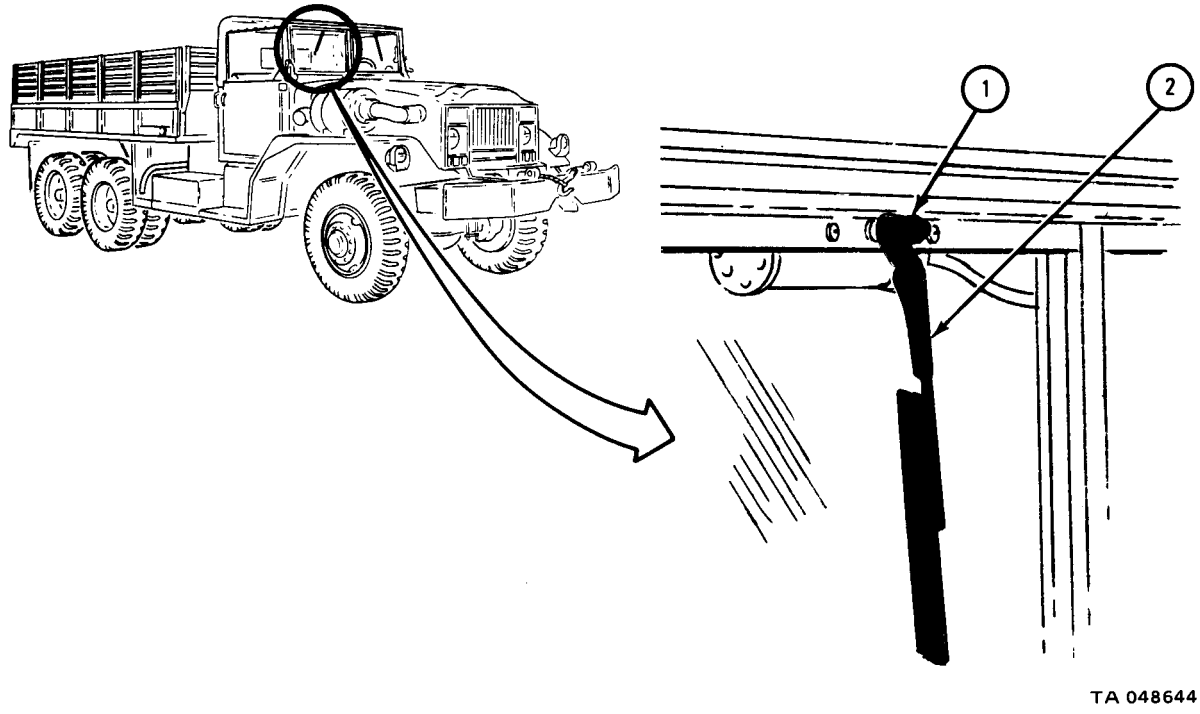
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using wrench, unscrew and take off capnut (1).
2. Slide off wiper arm (2).

END OF TASK

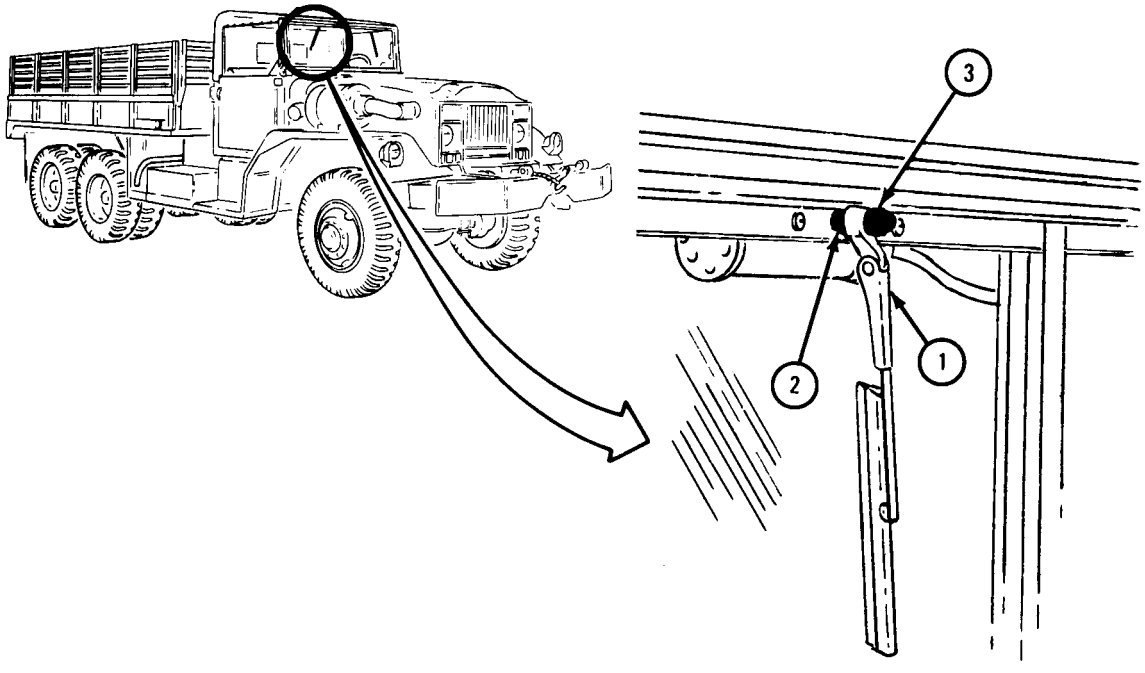


b. Replacement.

FRAME 1

1. Push wiper arm (1) onto motor shaft (2).
2. Using wrench, screw on and tighten capnut (3).

END OF TASK



19-11. WINDSHIELD WASHER KIT REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)
9/16-inch wrench (2)
6-foot tape measure
Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

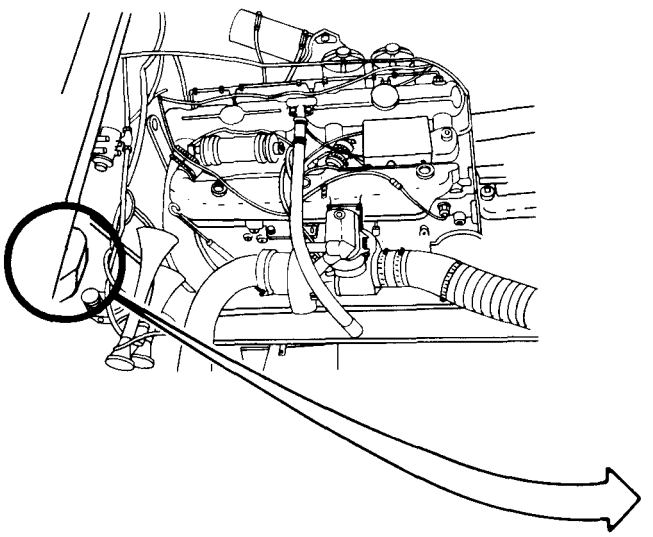
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

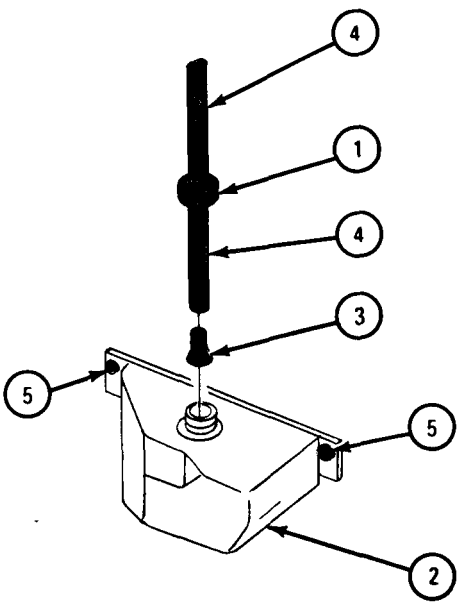
b. Removal.

FRAME 1

1. Take cap (1) off reservoir (2).
2. Take strainer (3) off hose (4) and pull hose off cap (1).
3. Using screwdriver, unscrew and take off two screws (5). Take off reservoir (2).

GO TO FRAME 2



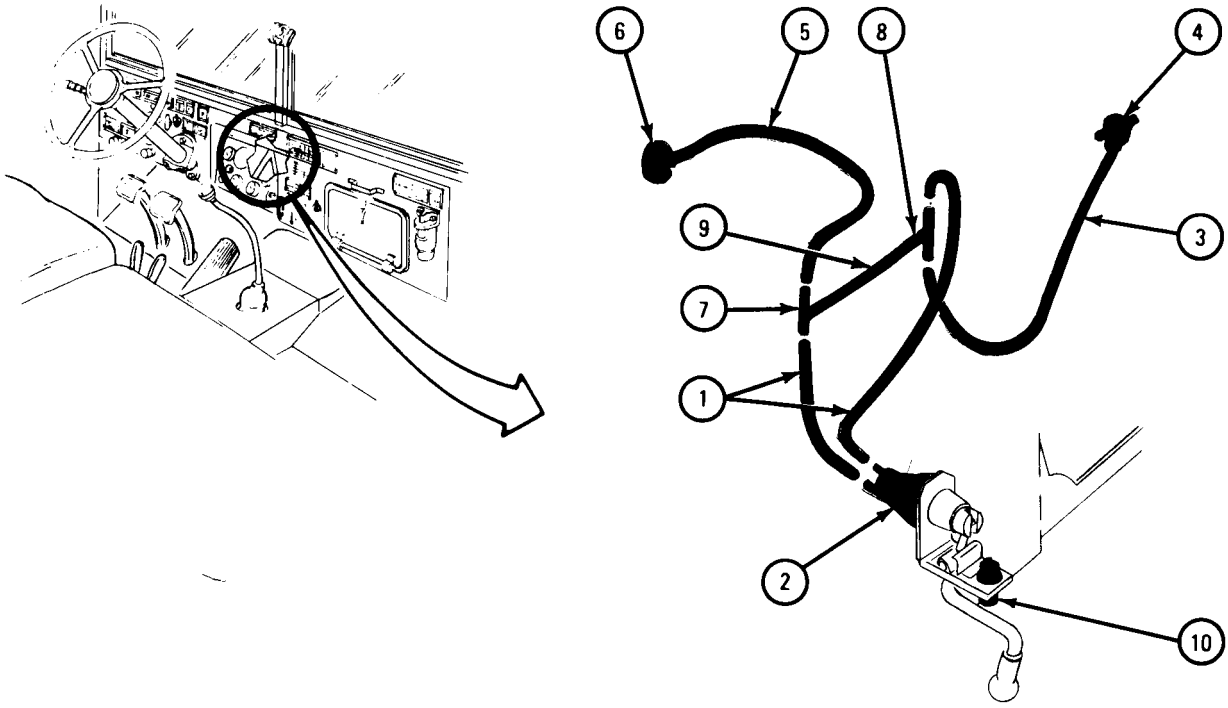


TA 103871

FRAME 2

1. Working behind instrument panel, pull two hoses (1) off pump (2) and pull hose (3) off washer jet (4).
2. Pull hose (5) through grommet (6) and take hoses (1, 3, and 5) off tee fitting (7) and valve (8).
3. Pull 3-inch hose (9) off tee fitting (7) and valve (8).
4. Using 7/16-inch wrenches, unscrew and take off capscrew, two washers, and nut (10). Take off pump (2).

GO TO FRAME 3



FRAME 3

Soldier A 1. Using 9/16-inch wrench, hold jet washer (1). Tell soldier B when ready.

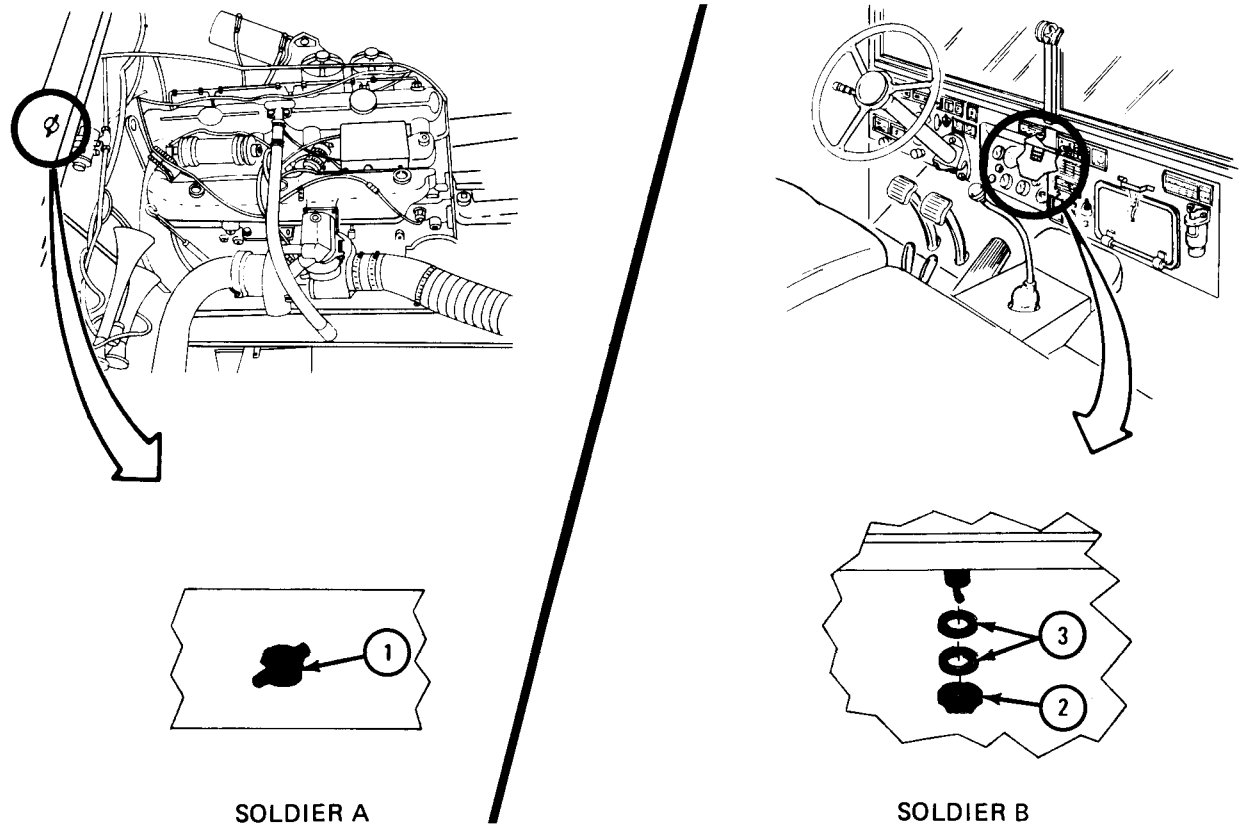
Soldier B 2. Using 7/16-inch wrench, unscrew and take off nut (2) and two rubber washers (3).

NOTE

Note the way jet washer is facing so it will be put back the same way.

Soldier A 3. Take jet washer (1) off truck.

END OF TASK



c. Repair. Check that all parts are not clogged, cracked or broken. If parts are damaged, get new ones.

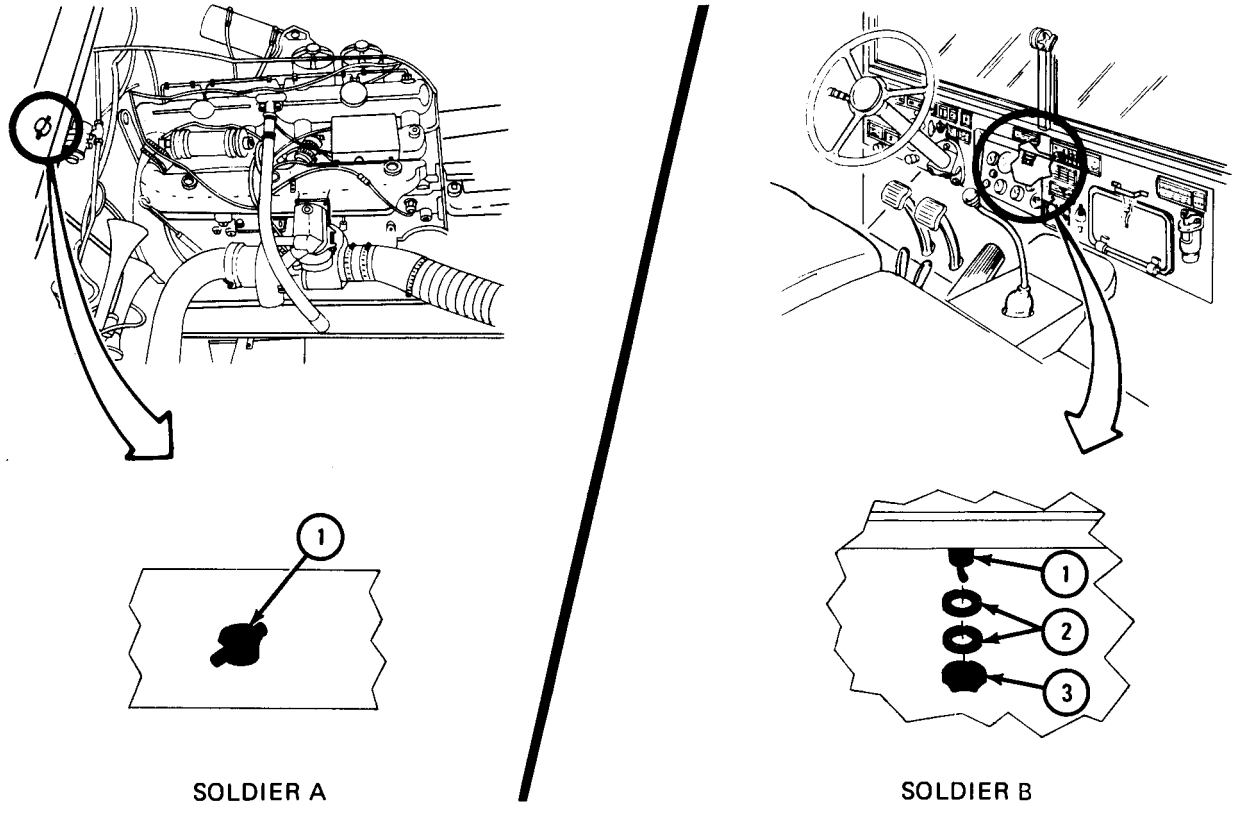
d. Replacement.

FRAME 1

Soldier A 1. Put jet washer (1) on cowl of truck as shown. Using 9/16-inch wrench, hold jet washer and face it as noted in removal. Tell soldier B when ready.

Soldier B 2. Put two rubber washers (2) and nut (3) on jet washer (1). Using 7/16-inch wrench, tighten nut (3).

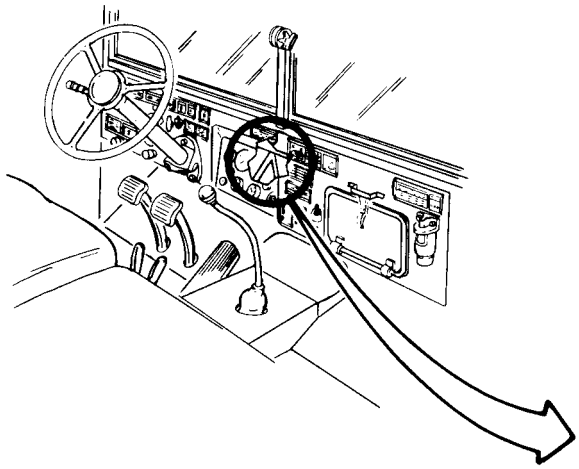
GO TO FRAME 2

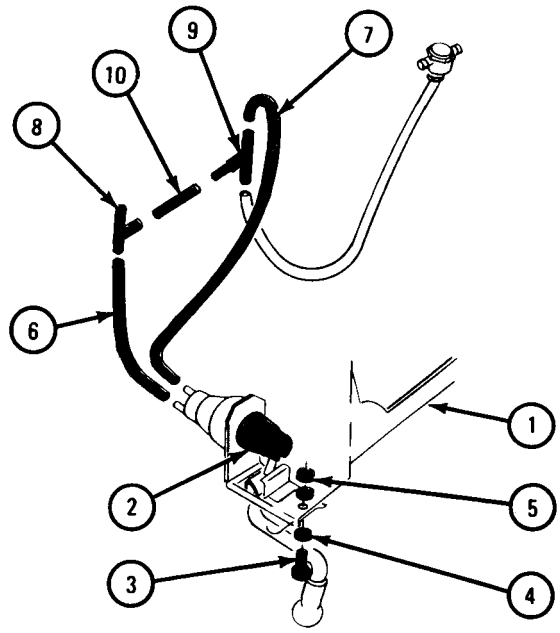


FRAME 2

1. Working behind instrument panel (1), put pump (2) in place under instrument panel. Using 7/16-inch wrenches, screw in and tighten capscrew (3), two washers (4), and nut (5).
2. Put 7-inch hose (6) and 9-inch hose (7) on pump (2).
3. Put tee fitting (8) on hose (6) and valve (9) on hose (7) as shown.
4. Put 3-inch hose (10) between tee fitting (8) and valve (9).

GO TO FRAME 3



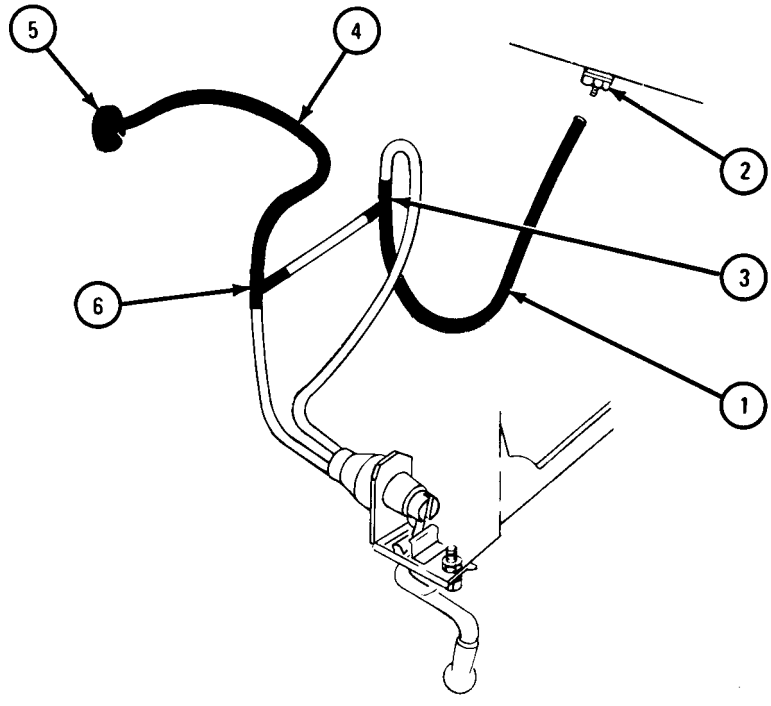


TA 103875

FRAME 3

1. Put one end of 11-inch hose (1) on jet washer (2) and other end of hose on valve (3).
2. Put 39-inch hose (4) through grommet (5) and put end of hose on tee fitting (6).

GO TO FRAME 4



TA 103876

FRAME 4

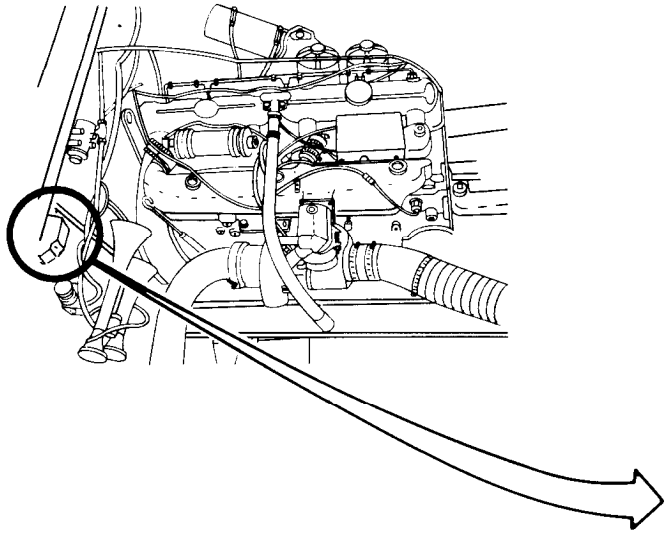
1. Using screwdriver, screw in and tighten two screws (1) in reservoir (2).
2. Put long (39-inch) hose (3) through cap (4) and put strainer (5) into hose (3).
3. Screw cap (4) into reservoir (2).

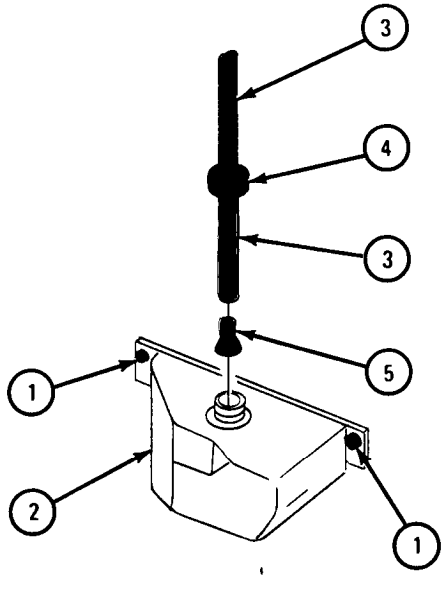
NOTE

Follow-on Maintenance Action Required:

Close hood. Refer to TM 9-2320-211-10.

END OF TASK





TA 103877

19-12. REAR VIEW MIRROR REMOVAL AND REPLACEMENT .

NOTE

The right rear view mirror mounting bracket has the open slot at the top, and the left rear view mirror mounting bracket has the open slot on the bottom. This task is shown for the left rear view mirror.

TOOLS: 9/16-inch wrench

SUPPLIES: None

PERSONNEL: One

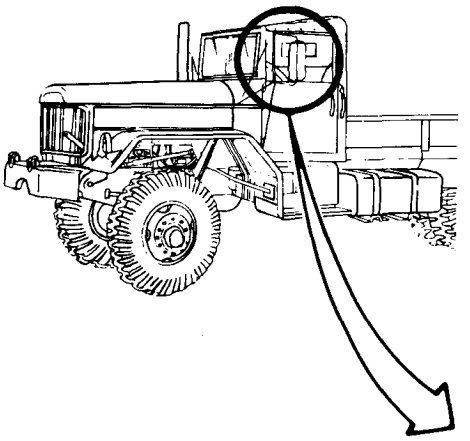
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

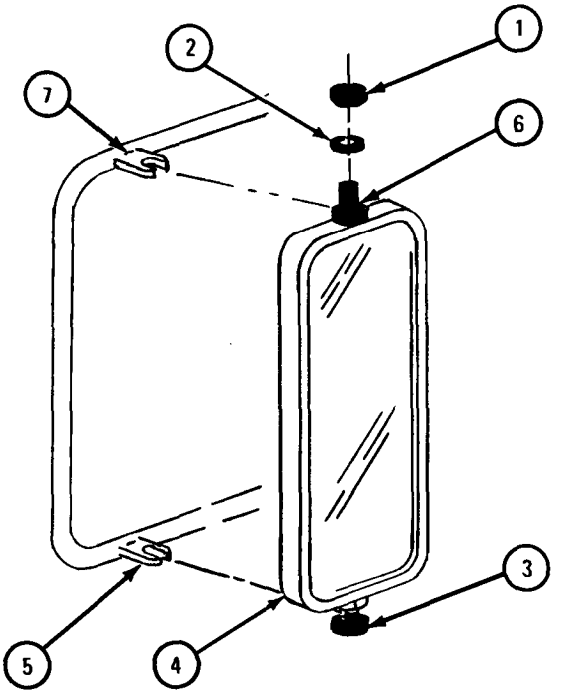
a. Removal.

FRAME 1

1. Using wrench, unscrew and take off nut (1) and flat washer (2).
2. Using wrench, loosen nut (3).
3. Slide rear view mirror (4) out of bracket (5).
4. Pull stud (6) out of hole in bracket (7).

END OF TASK





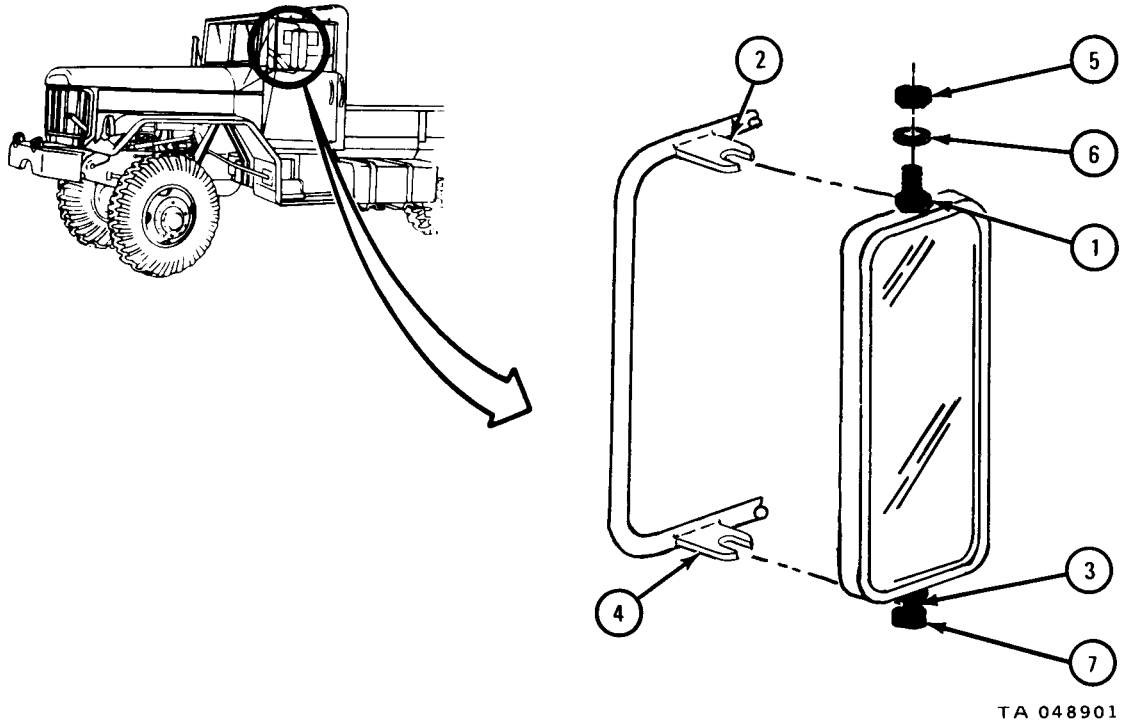
TA 048900

b. Replacement.

FRAME 1

1. Put upper stud (1) through hole in mounting bracket (2). Slide lower stud (3) into bottom bracket (4).
2. Using wrench, screw on and tighten nut (5) with washer (6).
3. Using wrench, tighten nut (7).

END OF TASK



19-13. REAR VIEW MIRROR ARM ASSEMBLY REMOVAL AND REPLACEMENT.

NOTE

This task is the same for both left and right mirror arm assemblies. This task is shown for the left mirror arm assembly.

TOOLS: 7/16-inch wrench (2)
1/2-inch wrench
Flat punch
Hammer

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

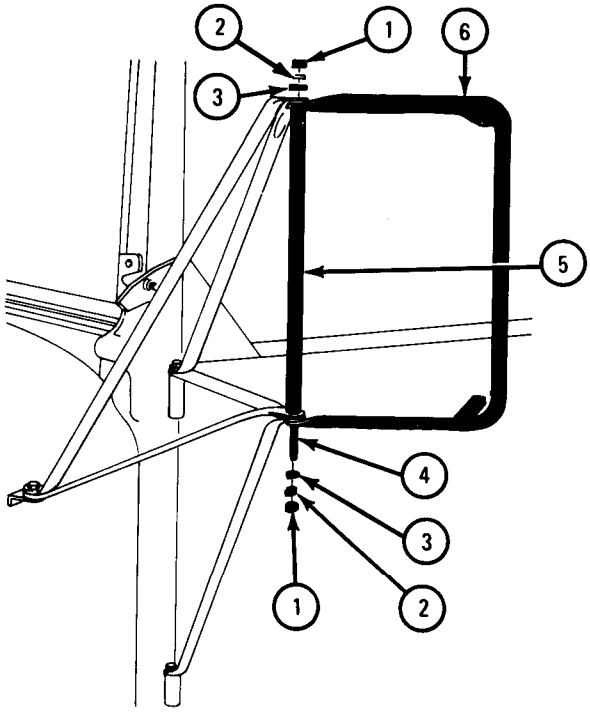
a. Preliminary Procedure. Remove mirror assembly. Refer to para 19-12.

b. Removal.

FRAME 1

1. Using 7/16-inch wrenches, unscrew and take off two nuts (1). Take off two lockwashers (2) and flat washers (3).
2. Lift out rod (4) and take off brace assembly (5) and mirror rod brace (6).

GO TO FRAME 2

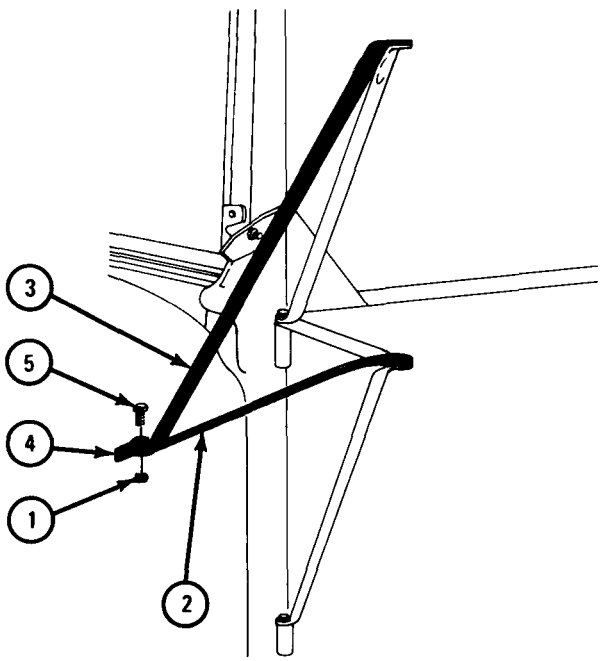


TA 049688

FRAME 2

1. Using 7/16-inch wrenches, unscrew and take off nut (1) holding braces (2 and 3) to cowl bracket (4).
2. Take off screw (5) and braces (2 and 3).

GO TO FRAME 3

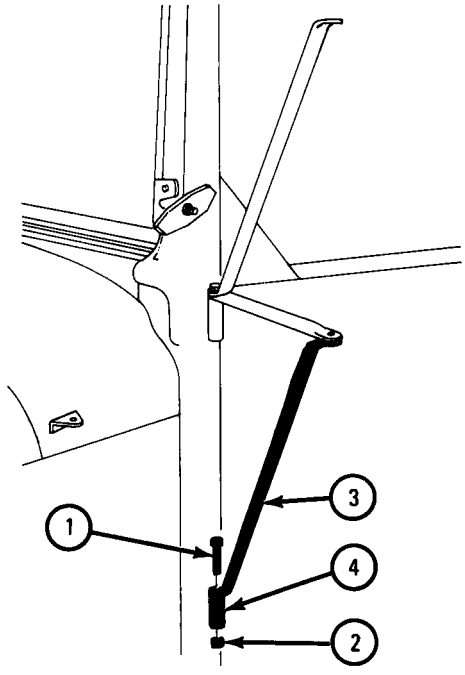


TA 049682

FRAME 3

1. Using 1/2-inch wrench, hold head of pivot screw (1).
2. Using 7/16-inch wrenches, unscrew and take off nut (2) holding brace (3) to hinge (4).
3. Using flat punch and hammer, tap out pivot screw (1) and take off brace (3).
4. Put pivot screw (1) back in place.

GO TO FRAME 4

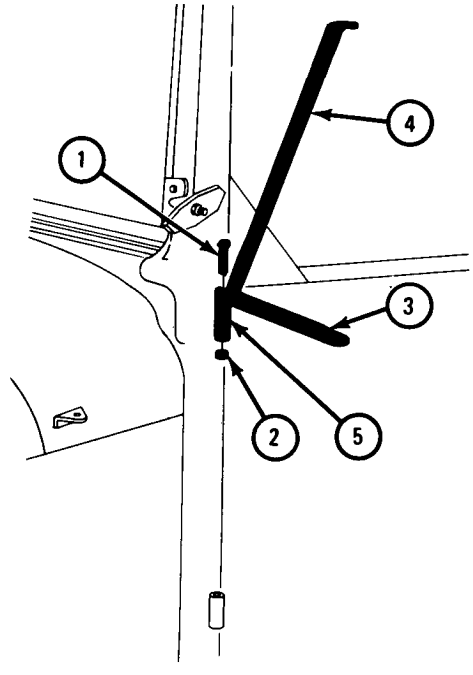


TA 049683

FRAME 4

1. Using 1/2-inch wrench, hold head of pivot screw (1).
2. Using 7/16-inch wrenches, unscrew and take off nut (2) holding braces (3 and 4) to hinge (5).
3. Using hammer and flat punch, take out pivot screw (1) and take off braces (3 and 4).
4. Put pivot screw (1) back in place.

END OF TASK



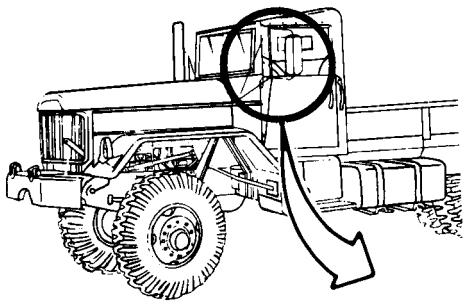
TA 049684

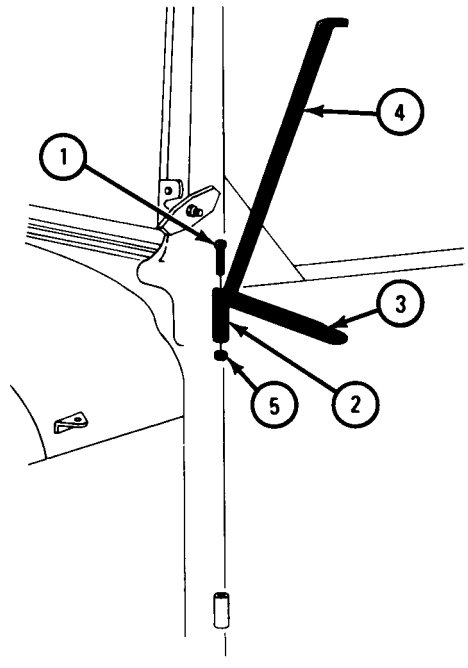
c. Replacement.

FRAME 1

1. Take pivot screw (1) out of hinge (2).
2. Place braces (3 and 4) on hinge (2) as shown.
3. Put pivot screw (1) through holes in braces (3 and 4) and in hinge (2).
4. Using 1/2-inch wrench, hold head of pivot screw (1).
5. Using 7/16-inch wrench, screw on and tighten nut (5).

GO TO FRAME 2



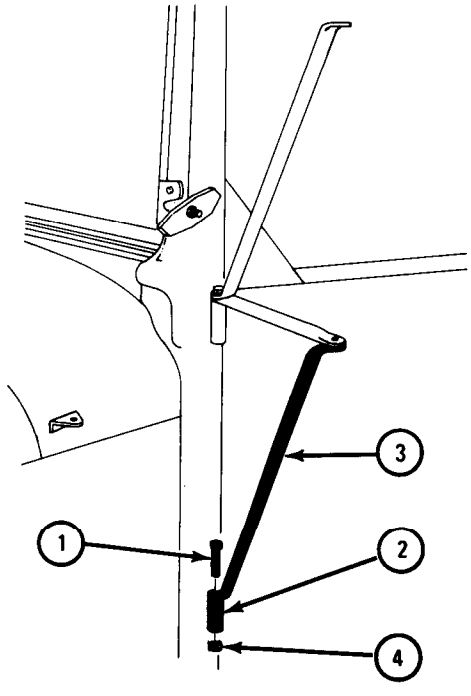


TA 048899

FRAME 2

1. Take pivot screw (1) out of hinge (2).
2. Place brace (3) on hinge (2) as shown.
3. Put pivot screw (1) through hole in brace (3) and in hinge (2) .
4. Using 1/2-inch wrench, hold head of pivot screw (1).
5. Using 7/16-inch wrench, screw on and tighten nut (4).

GO TO FRAME 3

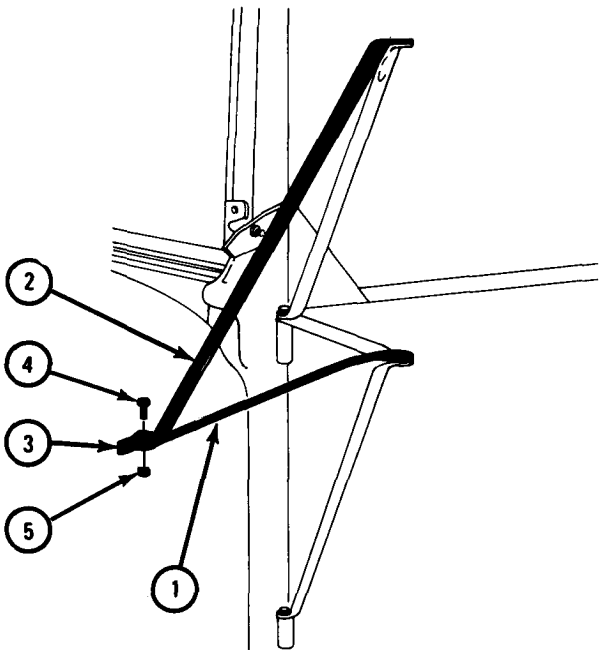


TA 049686

FRAME 3

1. Place braces (1 and 2) on cowl bracket (3) as shown.
2. Put screw (4) through holes in braces (1 and 2) and in cowl bracket (3).
3. Using 7/16-inch wrenches, screw on and tighten nut (5).

GO TO FRAME 4



TA 049687

FRAME 4

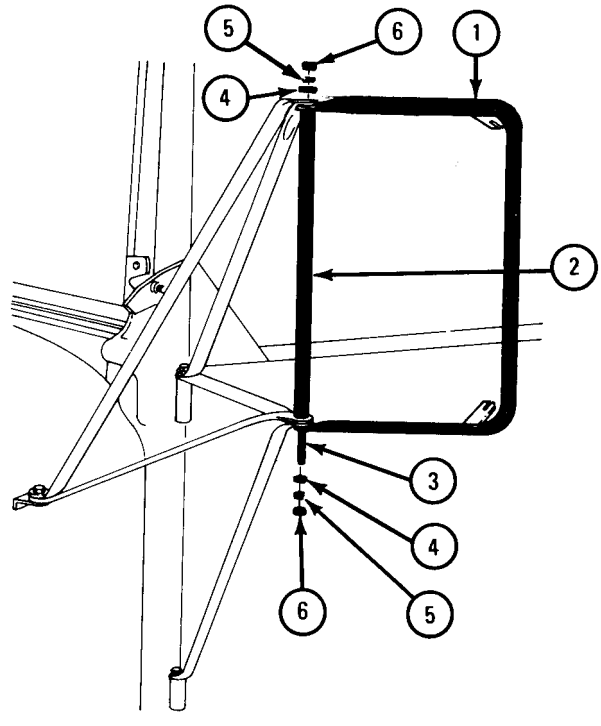
1. Put brace assembly (1) and mirror rod brace (2) in place as shown.
2. Put rod (3) through mirror rod brace (2). Put flat washer (4), lockwasher (5), and nut (6) on each end of rod (3). Using 7/16-inch wrenches, tighten nuts.

NOTE

Follow-on Maintenance Action Required:

Replace mirror assembly. Refer to para 19-12.

END OF TASK



TA 049688

Section IV. DATA PLATES

19-14. VEHICLE DATA PLATES REMOVAL AND REPLACEMENT.

NOTE

Data plates are mounted with screws, rivets, or adhesive. This task shows one of each type.

TOOLS: For screw mounted plates:

Cross-tip screwdriver (Phillips type)

For drive screw and solid rivet mounted plates:

1/2-inch cold cut chisel
8-ounce ballpeen hammer
4-inch center punch (for drive screws)
Drill, electric (for drive screws)
1/4-inch drill bit (for drive screws)
1/8-inch punch (for rivets)
Blind hand riveter (for rivets)

For adhesive mounted plates:

Flat-tip screwdriver

SUPPLIES: Rivets
Drive screws
Solvent, dry cleaning, type II (SD-2), Fed. Spec PD-680 (for adhesive--held plates)

PERSONNEL: One

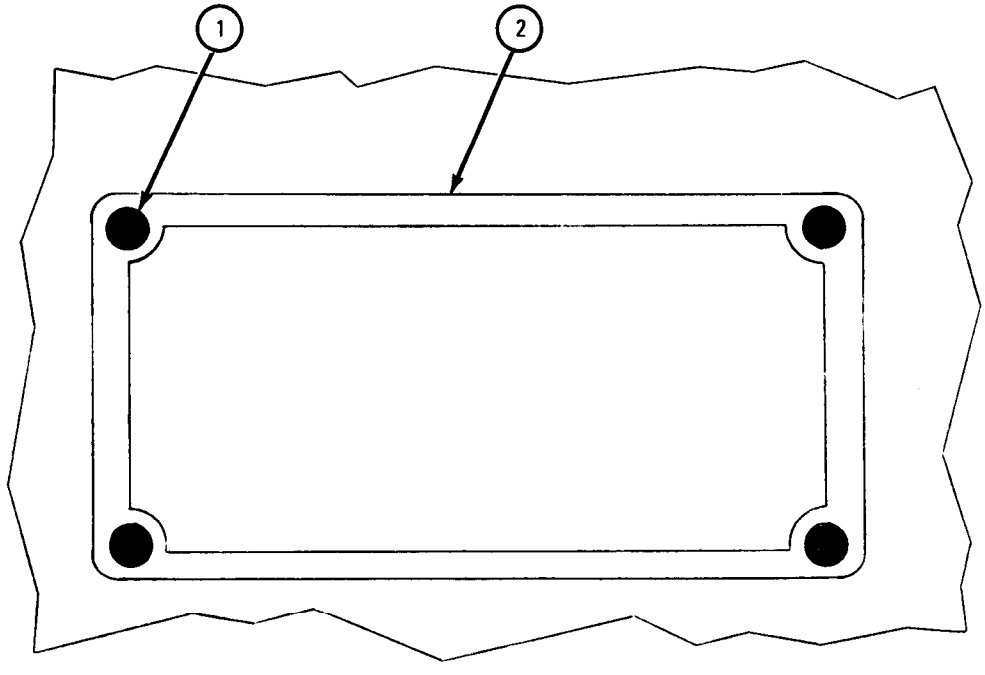
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal (Screw-on Type).

FRAME 1

1. Using phillips screwdriver, unscrew and take out four screws (1).
2. Take off data plate (2).

END OF TASK



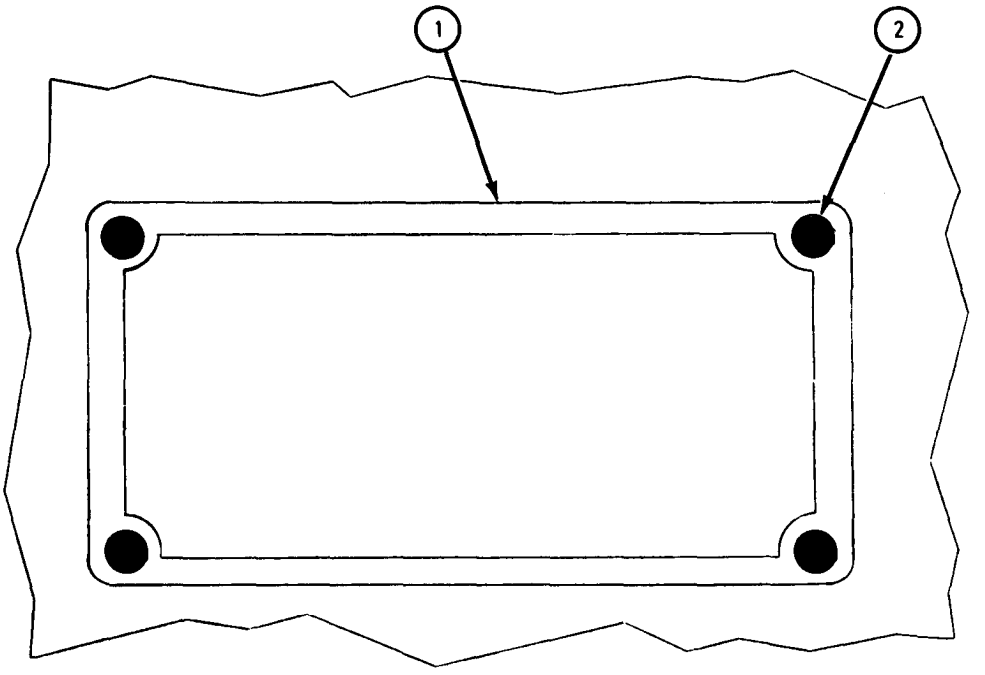
TA 048908

b. Replacement (Screw-on Type).

FRAME 1

1. Aline holes in data plate (1) with holes in surface where plate is to be attached.
2. Using phillips screwdriver, screw in and tighten four screws (2).

END OF TASK



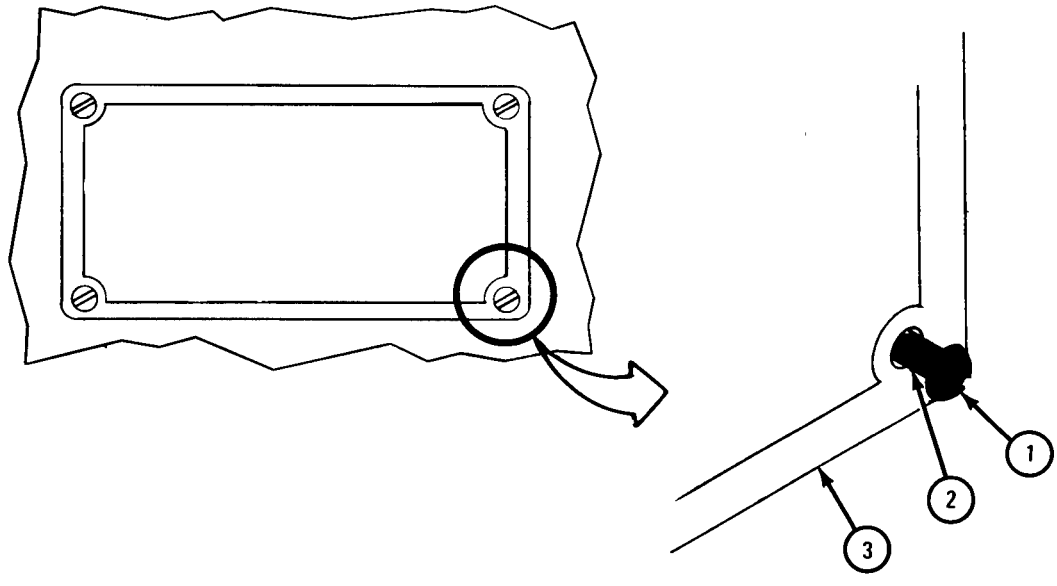
TA 048909

c. Removal (Drive Screw Type).

FRAME 1

1. Using 1/2-inch cold cut chisel and eight-ounce ballpeen hammer, cut off four drive screw heads (1).
2. Using four-inch center punch, make starter hole in four screw studs (2).
3. Using 1/4-inch drill, drill out four drive screw studs (2). Take off data plate (3).

END OF TASK



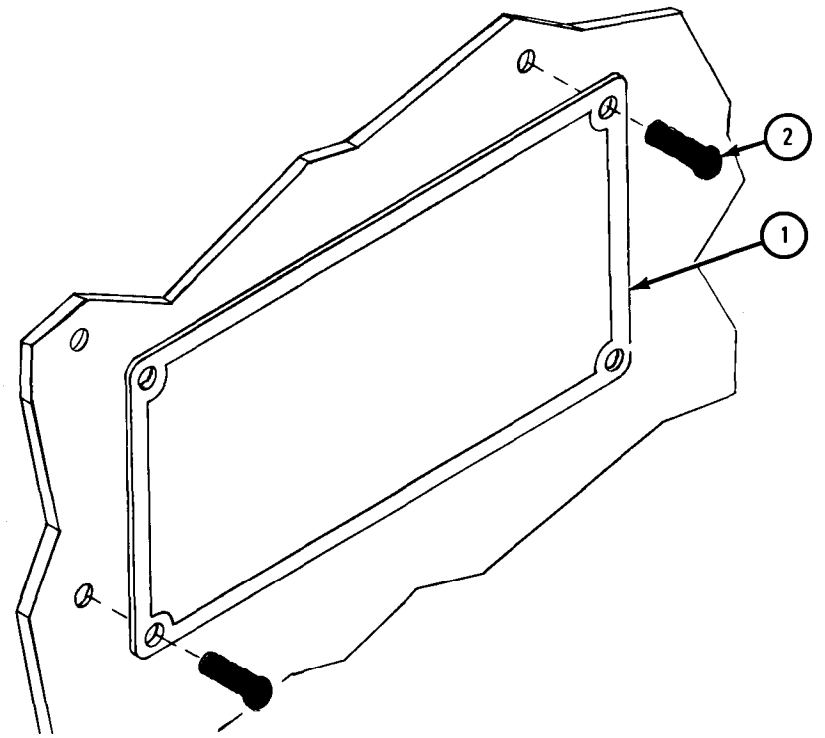
TA 048910

d. Replacement (Drive Screw Type).

FRAME 1

1. Aline four holes in data plate (1) with holes in surface where plate is to be attached.
2. Place four drive screws (2) in data plate holes.
3. Using eight-ounce ballpeen hammer, drive in four screws (2).

END OF TASK



TA 048911

e. Removal (Solid Rivets Type).

FRAME 1

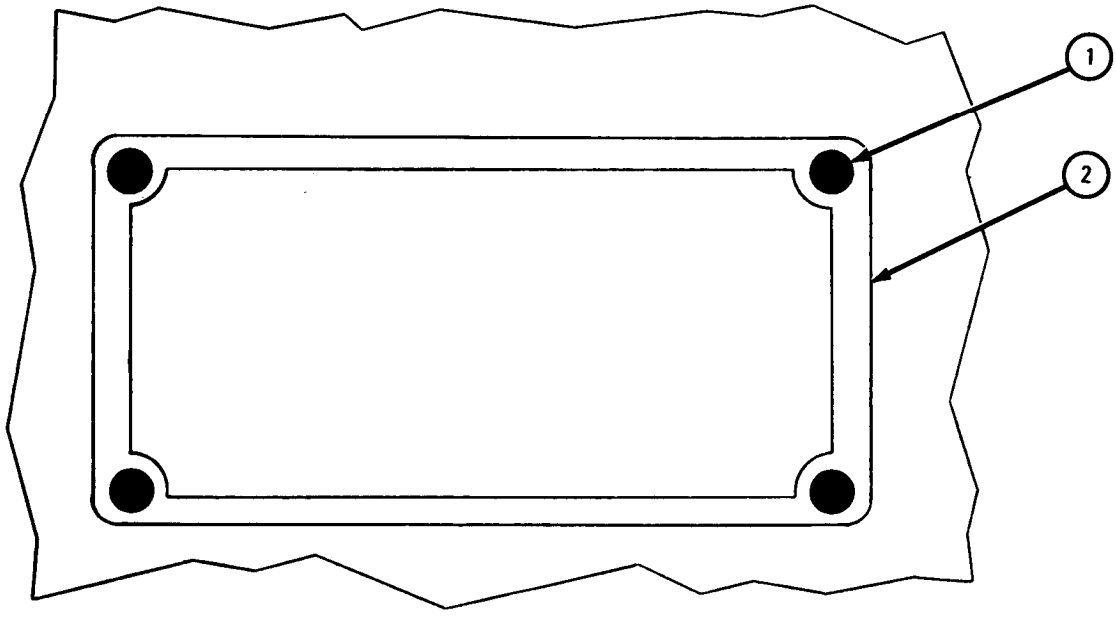
1. Using eight-ounce ballpeen hammer and 1/2-inch cold cut chisel, cut off ends of four rivets (1).

CAUTION

Make sure rivet end is taken out and thrown away. Loose rivet ends could cause damage to equipment.

2. Using ballpeen hammer and 1/8-inch punch, drive out rivets (1). Take off data plate (2).

END OF TASK



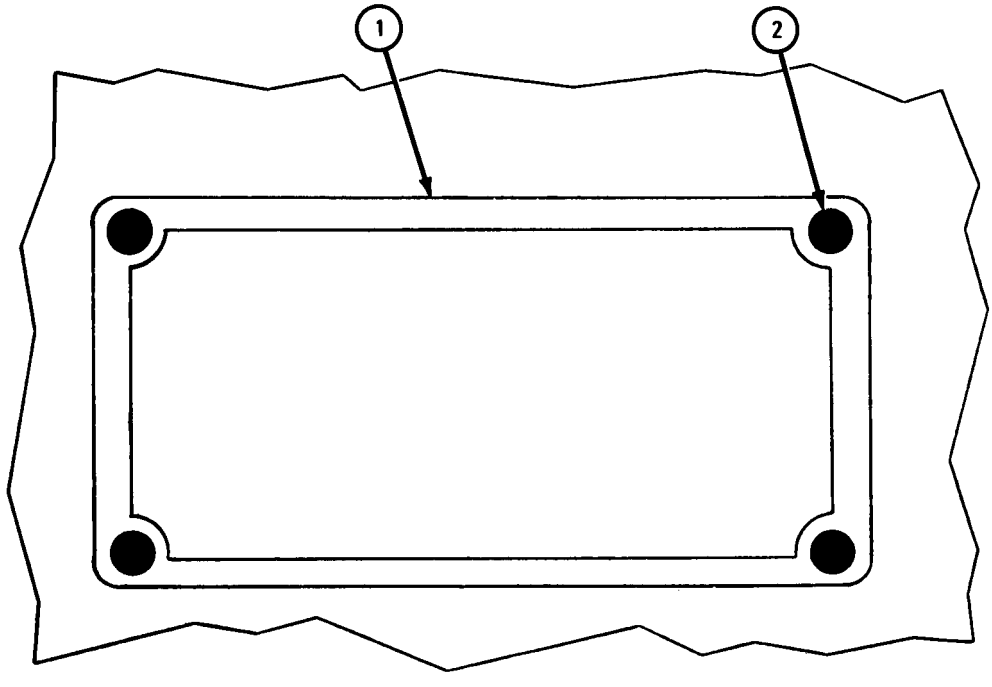
TA 048912

f. Replacement (Solid Rivets Type).

FRAME 1

1. Aline four holes in data plate (1) with holes in surfaces where plate is to be attached.
2. Put rivets in riveter and through data plate (1) and part data plate is being riveted to.
3. Using riveter, rivet data plate (1) tightly in place.

END OF TASK



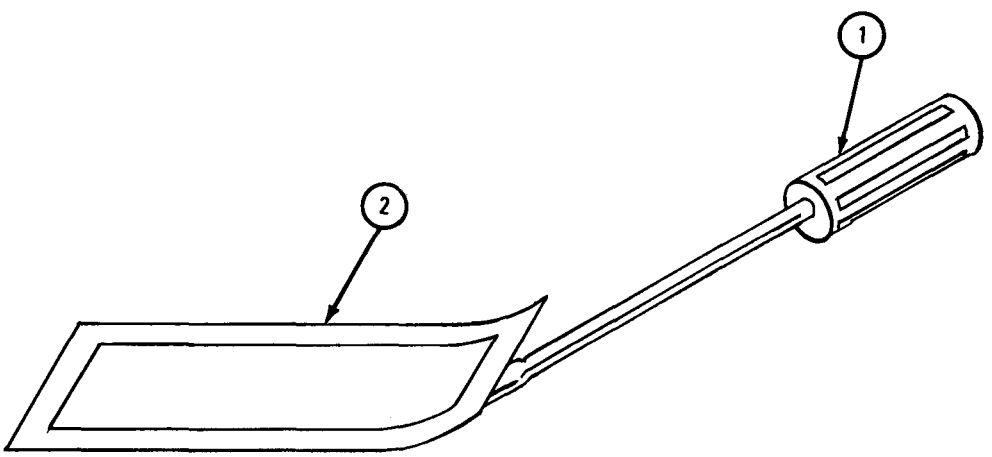
TA 048913

g. Removal (Adhesive Type)

FRAME 1

1. Using-flat tip screwdriver (1), pry up end of data plate (2) from surface where it is mounted.
2. Take off data plate (2).

END OF TASK



TA 048914

h. Replacement (Adhesive Type).

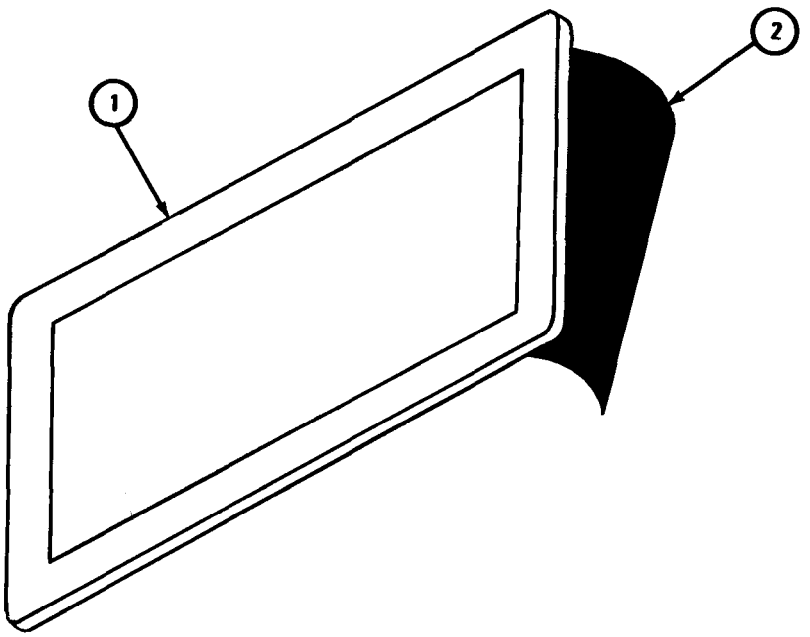
FRAME 1

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Used only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

1. Using solvent, clean and dry spot where data plate (1) is to be attached.
2. Peel off adhesive protective paper (2) from back of data plate (1).
3. Press on data plate (1).

END OF TASK



TA 048915

CHAPTER 20

NONELECTRICAL GAGES GROUP MAINTENANCE

Section I. SCOPE

20-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for nonelectrical gages for which there are authorized corrective maintenance tasks at the organizational maintenance level.

20-2. EQUIPMENT ITEMS NOT COVERED . All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. NONELECTRICAL GAGES

20-3. TACHOMETER AND SPEEDOMETER REMOVAL AND REPLACEMENT.

NOTE

This task is the same for the speedometer and tachometer. This task is shown for the tachometer.

TOOLS : Flat-tip screwdriver
3/4-inch wrench
3/8-inch wrench

SUPPLIES : None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

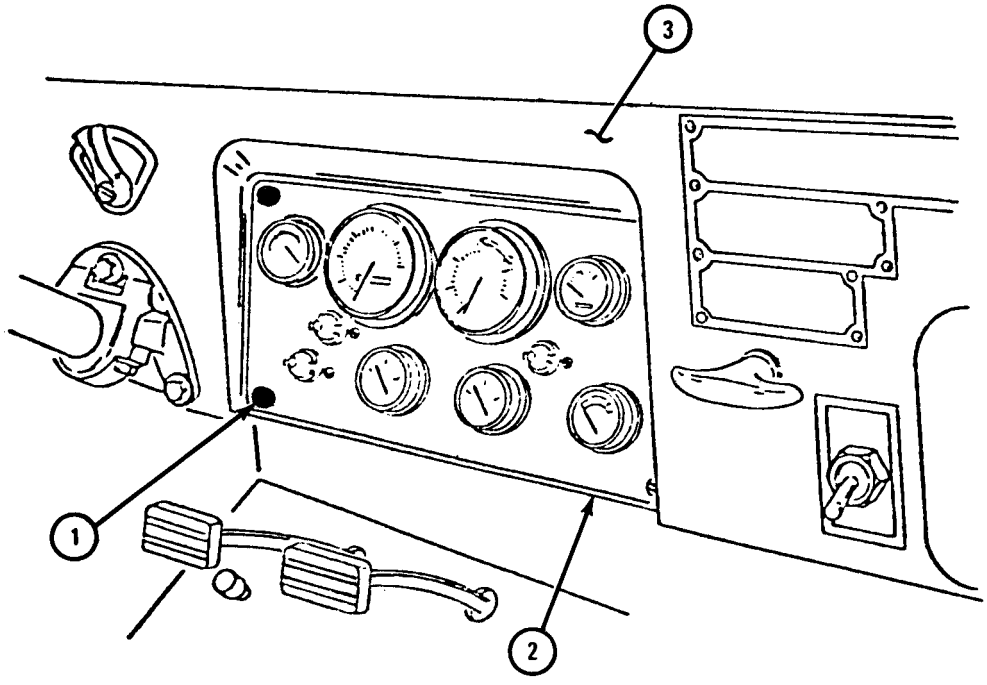
a. Preliminary Procedure. Disconnect battery ground. Refer to Part 1, para 7-44.

b. Removal.

FRAME 1

1. Using screwdriver, turn four lockscrews (1) 1/4 turn to left.
2. Pull instrument cluster (2) down away from instrument panel (3).

GO TO FRAME 2

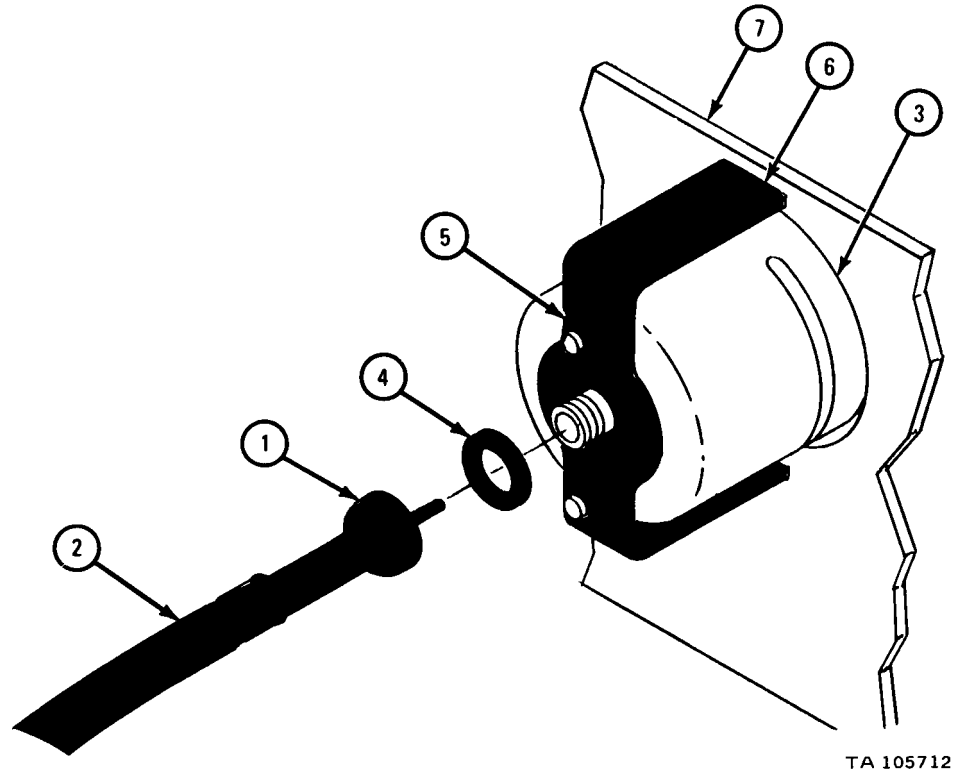


TA 105728

FRAME 2

1. Using 3/4-inch wrench, unscrew coupling nut (1) and pull flexible shaft assembly (2) away from tachometer (3).
2. Take off gasket (4).
3. Using 3/8-inch wrench, unscrew and take off two nuts and lockwashers (5). Pull clamp (6) off tachometer (3) and take tachometer out from front of instrument cluster (7).
4. Enter hours of operation shown on tachometer in vehicle equipment log if another tachometer is to be put in.

END OF TASK



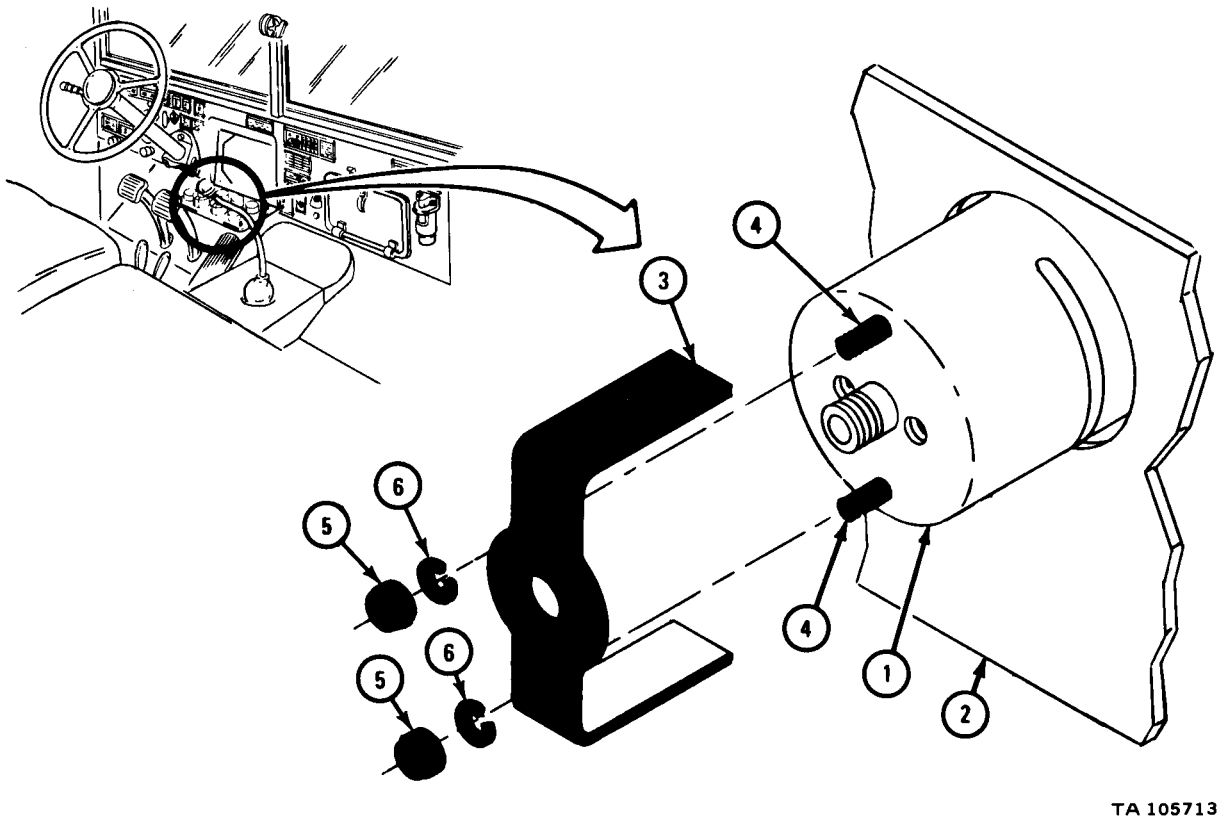
TA 105712

c. Replacement.

FRAME 1

1. Put tachometer (1) through hole from front of instrument cluster (2).
2. Place clamp (3) over studs (4) and screw on two nuts (5) with lockwashers (6).
3. Look at front of instrument cluster (2) and make sure tachometer (1) is straight.
4. Using 3/8-inch wrench, tighten two nuts (5).

GO TO FRAME 2

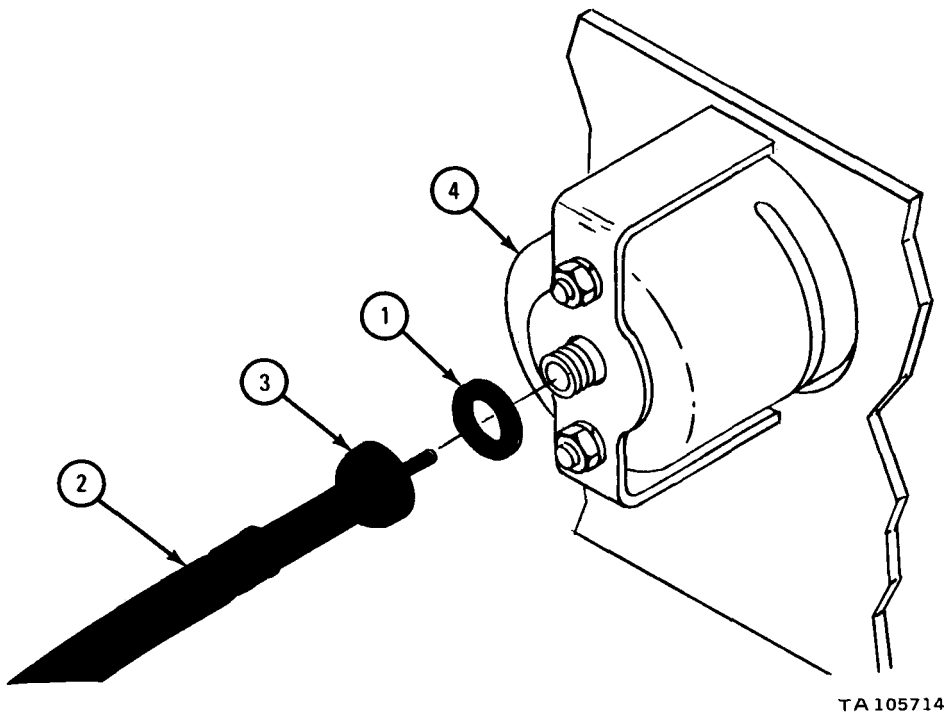


TA 105713

FRAME 2

1. Put gasket (1) over end of flexible shaft assembly (2) and press it into coupling nut (3).
2. Put flexible shaft assembly (2) into tachometer (4).
3. Using 3/4-inch wrench, screw on and tighten coupling nut (3).

GO TO FRAME 3



FRAME 3

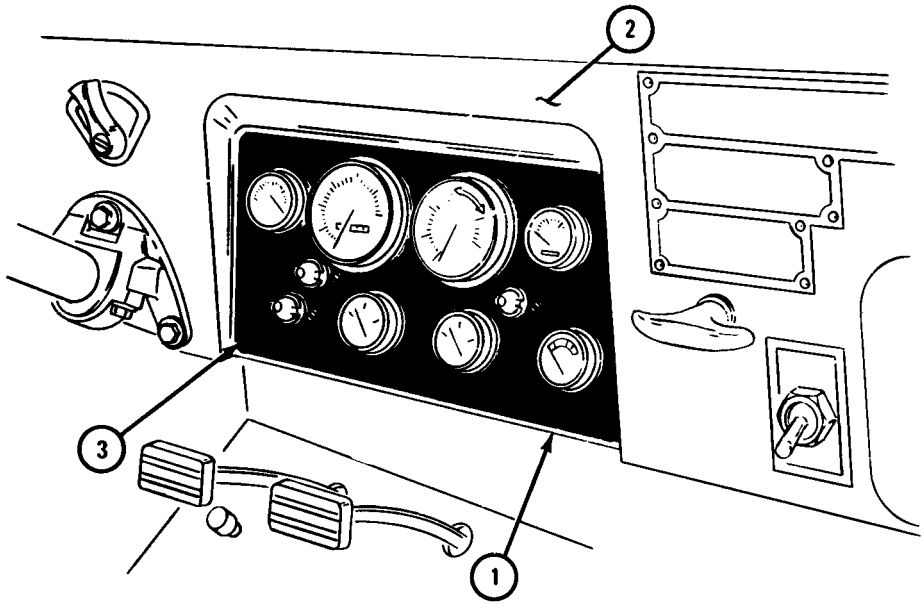
1. Place instrument cluster (1) on instrument panel (2).
2. Using screwdriver, turn four lockscrews (3) 1/4 turn to right.
3. Enter hours of operation shown on tachometer in vehicle equipment log if new tachometer was put in.

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground. Refer to Part 1, para 7-44.
2. Start engine and check tachometer operation. Refer to TM 9-2320-211-10.
3. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 105715

20-4. TACHOMETER DRIVE UNIT REMOVAL AND REPLACEMENT.

TOOLS: 1-inch wrench
7/8-inch wrench

SUPPLIES: Gear cover to drive adapter gasket

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

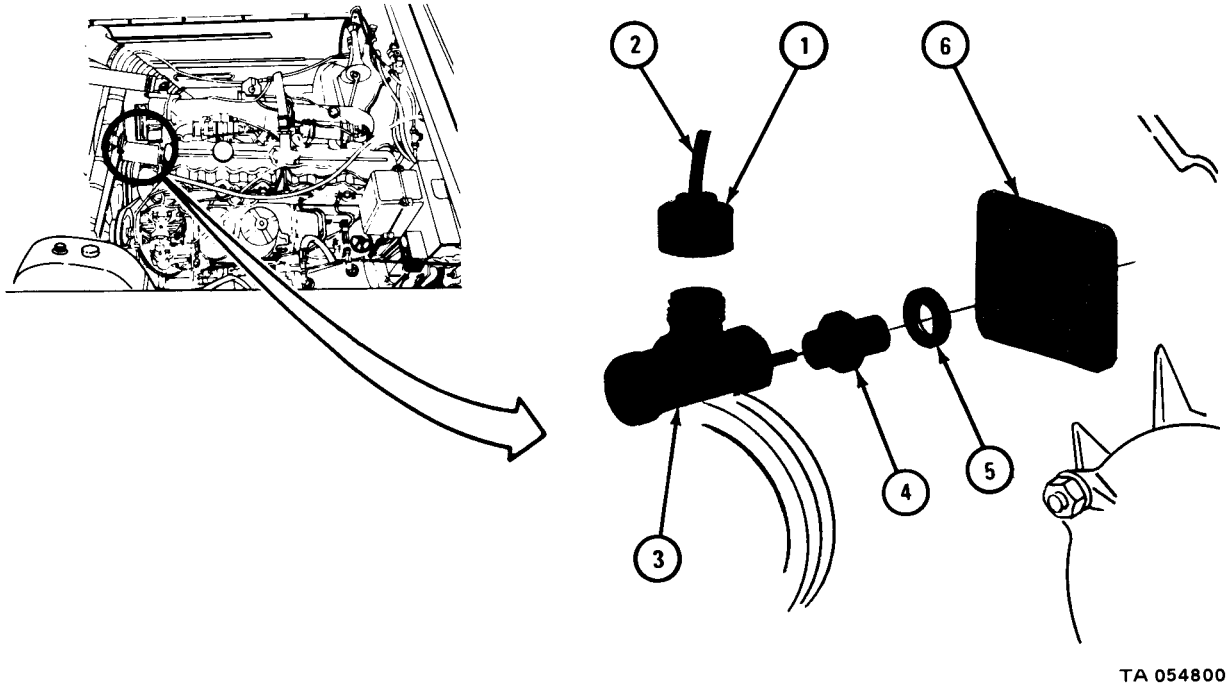
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 1-inch wrench, unscrew coupling nut (1).
2. Pull flexible shaft (2) from drive unit (3).
3. Using 1-inch wrench, unscrew and pull out drive unit (3).
4. Using 7/8-inch wrench, unscrew and take out adapter (4) and gasket (5) from front cover (6). Throw away gasket.

END OF TASK

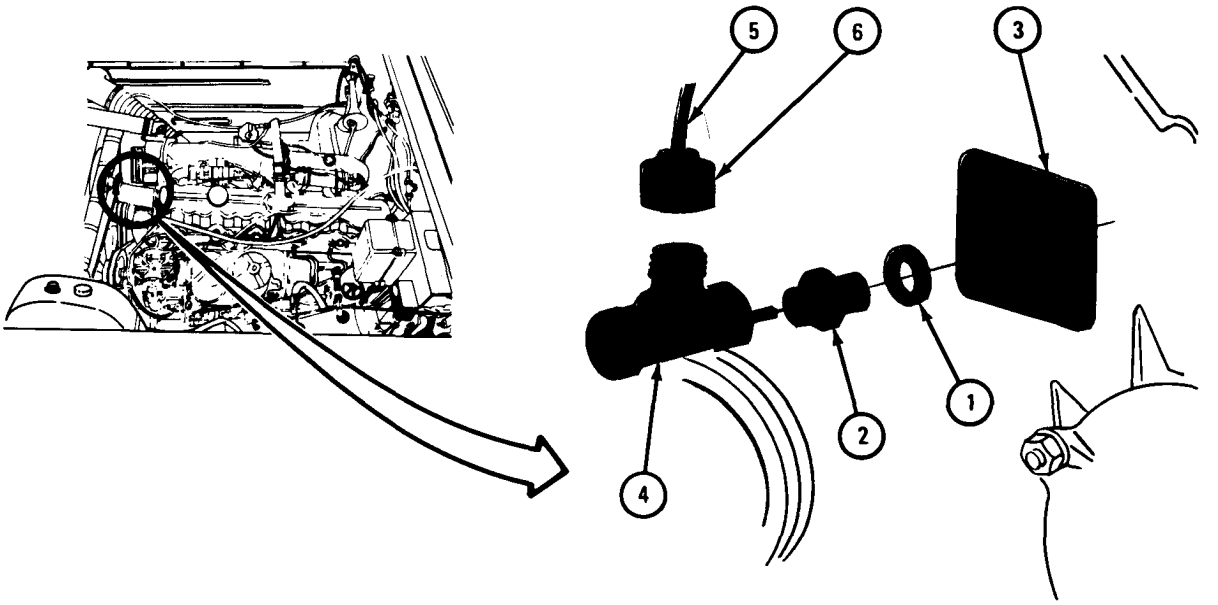


c. Replacement.

FRAME 1

1. Put gasket (1) on adapter (2) and using 7/8-inch wrench, screw in and tighten adapter into front cover (3).
2. Line up drive unit (4) with adapter (2).
3. Using wrench, screw in and tighten drive unit (4).
4. Push end of flexible shaft (5) into drive unit (4).
5. Using wrench, screw on and tighten coupling nut (6).

END OF TASK



TA 054801

20-5. TACHOMETER FLEXIBLE SHAFT ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench
7/16-inch wrench (2)

SUPPLIES: Tachometer flexible shaft gasket
Tachometer gasket

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Disconnect battery ground. Refer to Part 1, para 7-44.

(2) Open hood and left side panel. Refer to TM 9-2320-211-10.

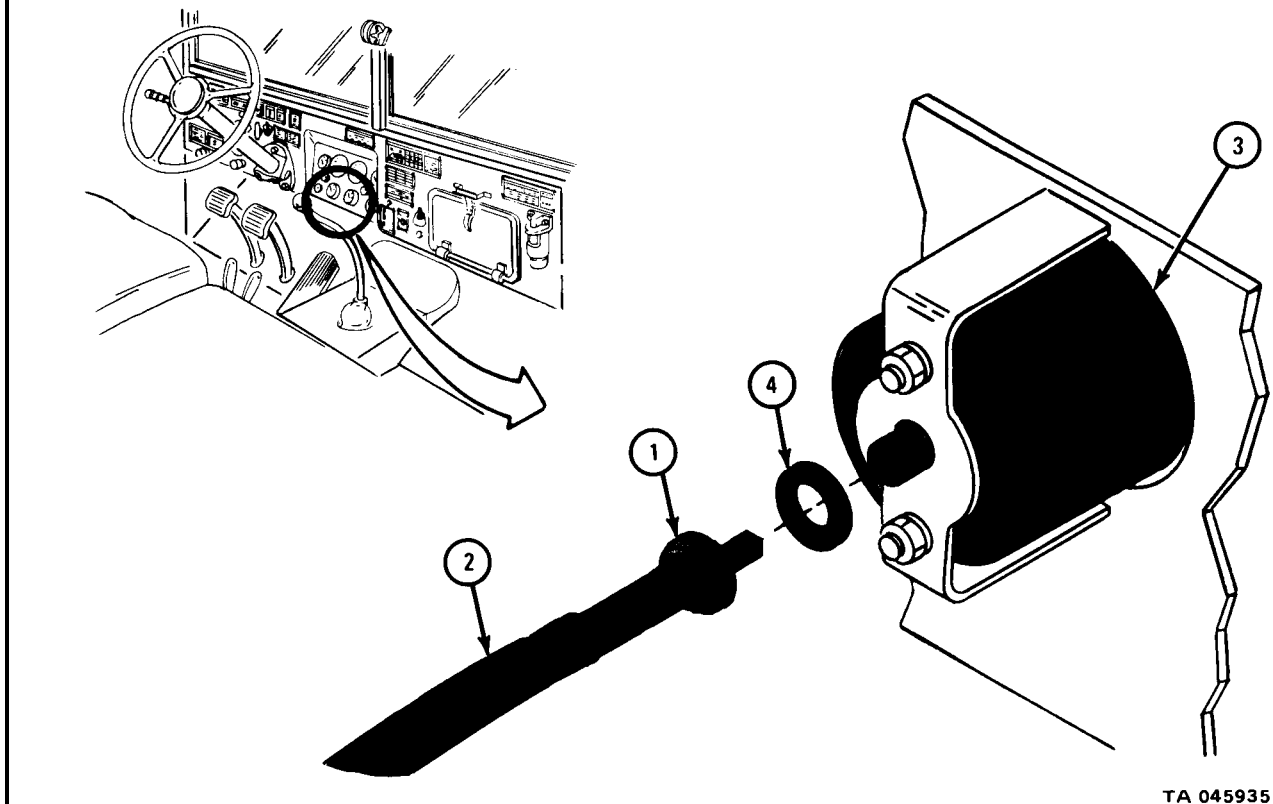
(3) Lower instrument cluster. Refer to Part 1, para 7-15.

b. Removal.

FRAME 1

1. Using 3/4-inch wrench, unscrew coupling nut (1) and pull flexible shaft assembly (2) away from tachometer (3). Take off gasket (4).

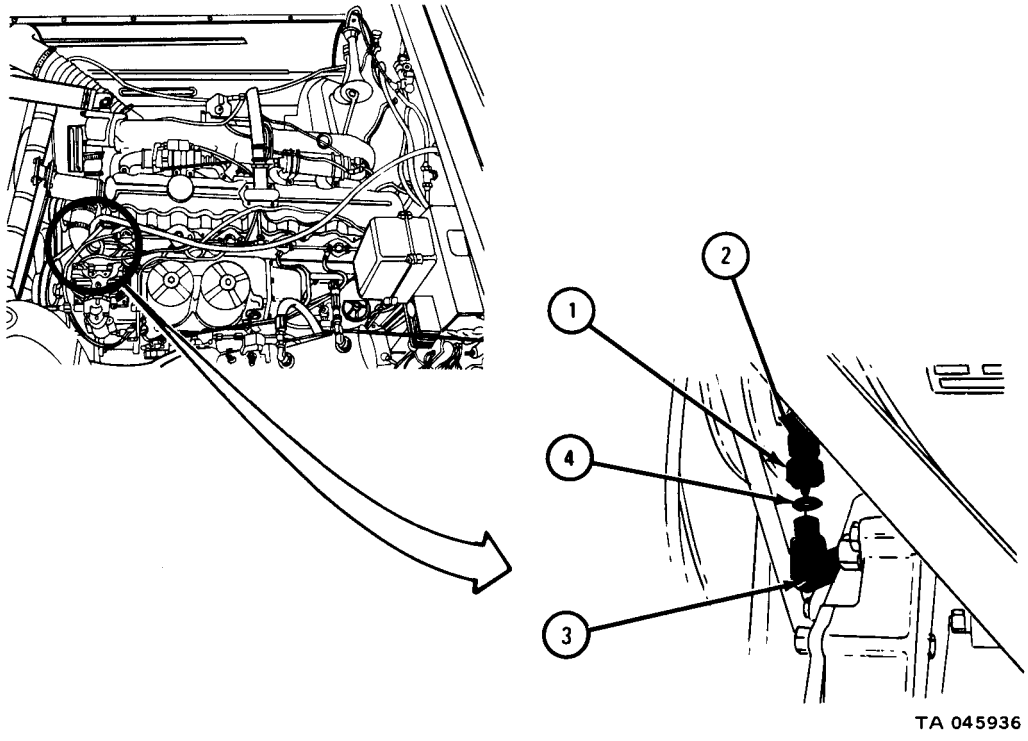
GO TO FRAME 2



FRAME 2

1. Using 1-inch wrench, unscrew coupling nut (1). Pull flexible shaft assembly (2) away from right angle adapter (3).
2. Take off and throw away gasket (4).

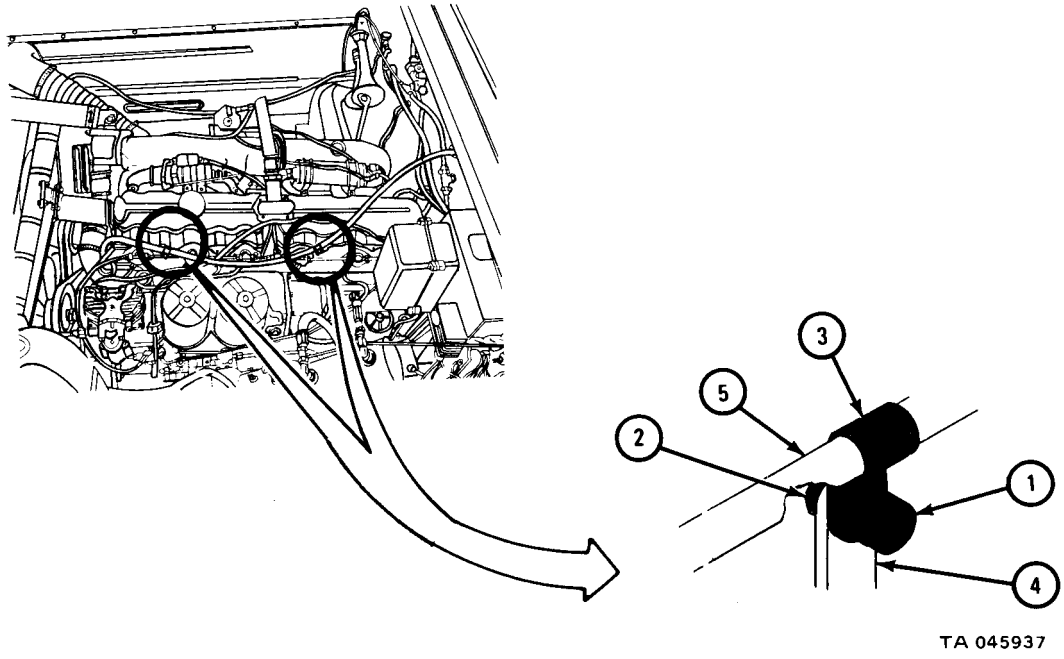
GO TO FRAME 3



FRAME 3

1. Using 7/16-inch wrenches, unscrew and take off two locknuts (1) and bolts (2).
2. Take two clamps (3) off brackets (4). Open clamps and take clamps off flexible shaft assembly (5).

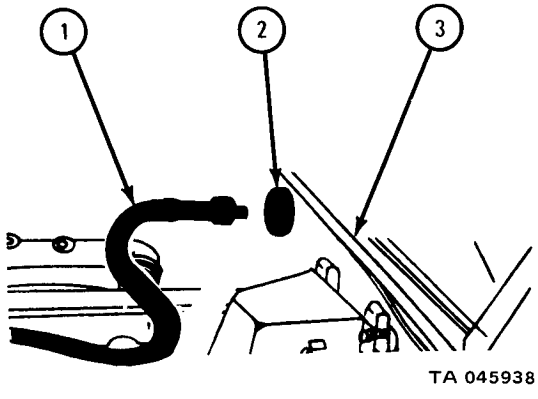
GO TO FRAME 4



FRAME 4

1. Pull end of flexible shaft assembly (1) out through grommet (2) in firewall (3).
2. Take grommet (2) out of hole in firewall (3).

END OF TASK



c. Replacement.

FRAME 1

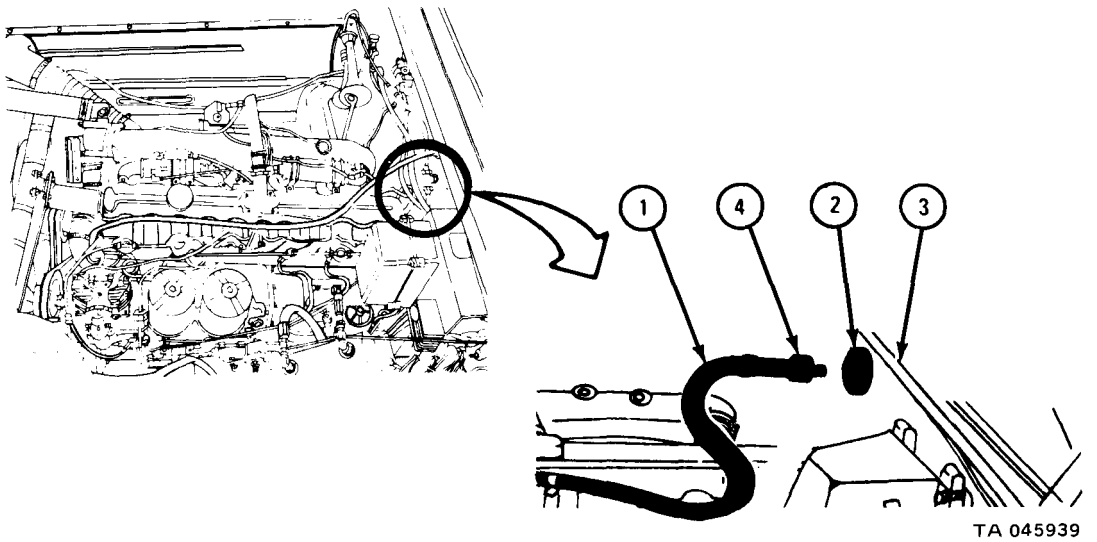
1. Place flexible shaft assembly (1) along top of engine as shown.
2. Put grommet (2) in hole in firewall (3).

NOTE

Tachometer end (4) of flexible shaft assembly (1) has square shank.

3. Put tachometer end (4) of flexible shaft assembly (1) through grommet (2) as shown.

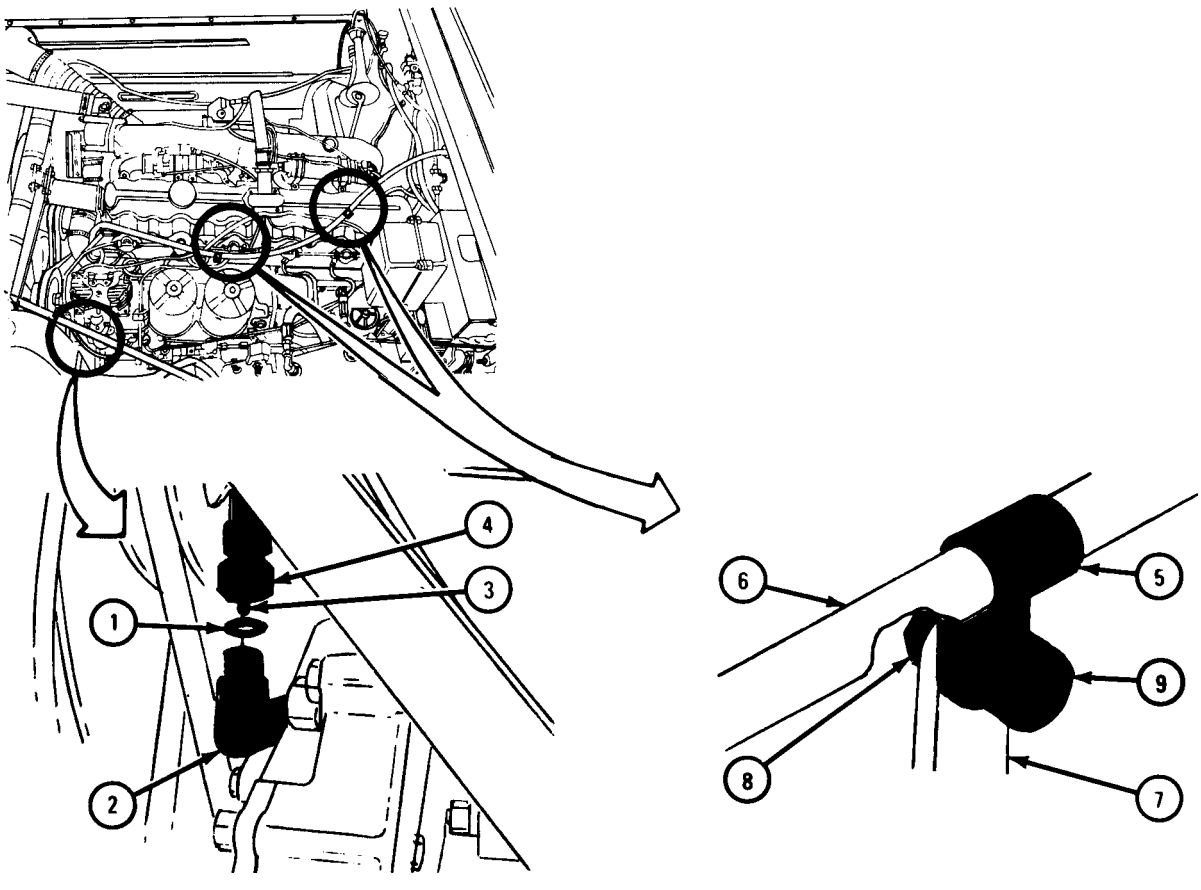
GO TO FRAME 2



FRAME 2

1. Place gasket (1) on angle drive adapter (2). Aline key (3) with keyway in angle drive adapter and screw on coupling nut (4). Using 1-inch wrench, tighten coupling nut.
2. Put two clamps (5) on flexible shaft assembly (6). Aline holes in clamps with holes in two brackets (7).
3. Screw in two bolts (8) and two locknuts (9). Using 7/16-inch wrenches, tighten locknuts.

GO TO FRAME 3



TA 045940

FRAME 3

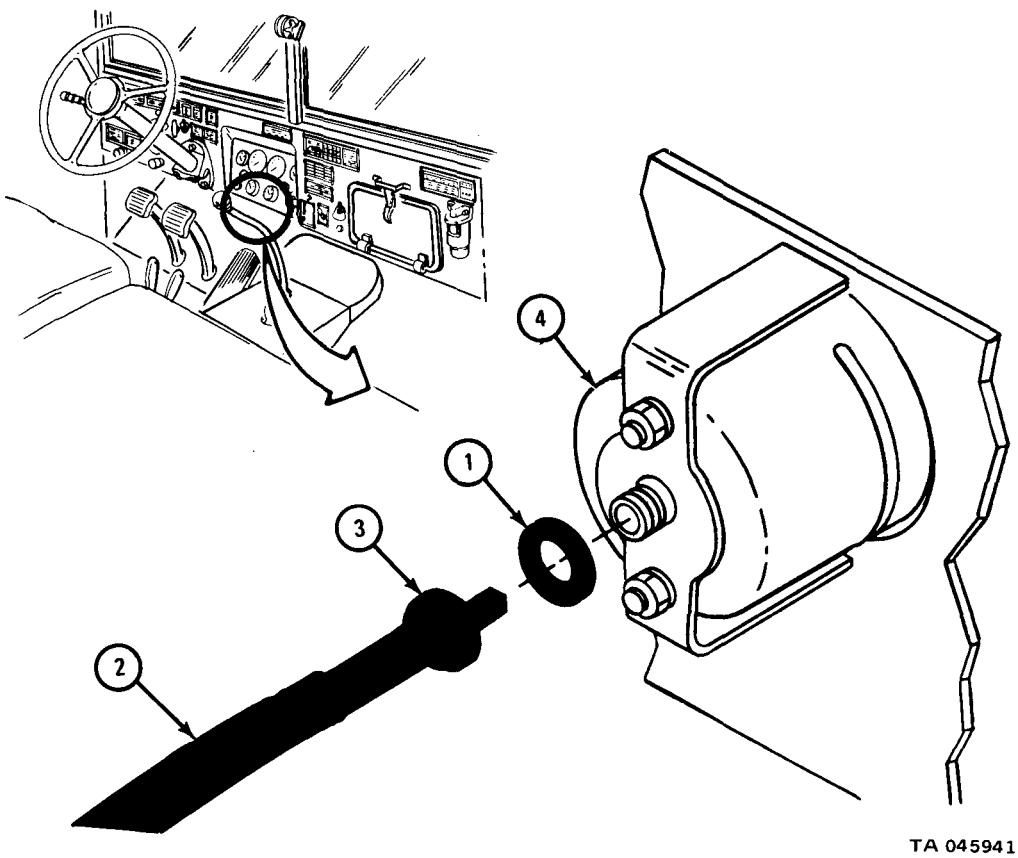
1. Put gasket (1) over end of flexible shaft assembly (2) and press it into coupling nut (3).
2. Put square end of flexible shaft assembly (2) into tachometer (4) and screw on coupling nut (3). Using 3/4-inch wrench, tighten nut.

NOTE

Follow-on Maintenance Action Required:

1. Raise instrument cluster. Refer to Part 1, para 7-15.
2. Reconnect battery ground. Refer to Part 1, para 7-44.
3. Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



TA 045941

20-6. TACHOMETER DRIVE ADAPTER REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: 1-inch wrench
1 7/16-inch wrench

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Tachometer drive adapter gasket
Clean dry rags
Crocus cloth
Taps

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

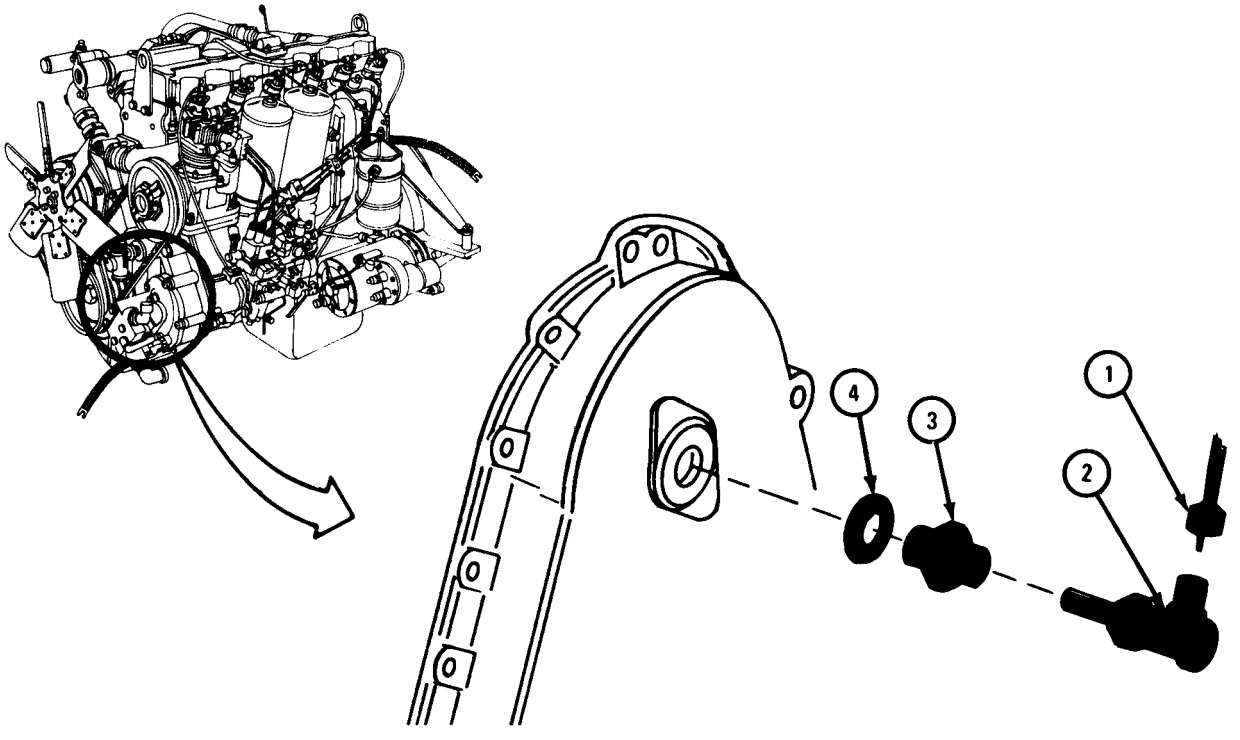
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 1-inch wrench, unscrew tachometer drive shaft (1) and lift it off.
2. Use 1-inch wrench, unscrew tachometer drive adapter (2) and take it out.
3. Using 1 7/16-inch wrench, unscrew tachometer takeoff adapter (3). Take out adapter with gasket (4). Throw away gasket.

END OF TASK



TA 102999

c. Cleaning, Inspection, and Repair.

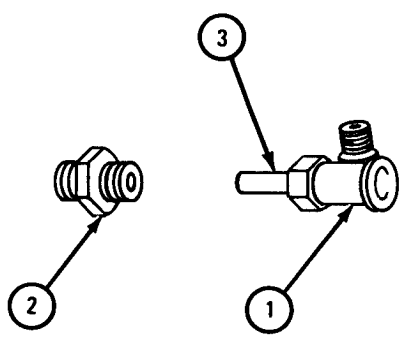
FRAME 1

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby at all times when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

1. Clean tachometer drive and adapter in dry cleaning solvent. Dry with clean rags.
2. Check that tachometer drive adapter (1) and takeoff adapter (2) have no damaged threads. Repair damaged threads by retapping.
3. Check that tachometer drive adapter (1) and takeoff adapter (2) have no cracks. If parts are cracked, get new ones.
4. Check that adapter shaft (3) has no burrs or nicks. Polish burrs and nicks with crocus cloth.
5. Put tachometer drive adapter (1) into takeoff adapter (2) and check that shaft (3) turns freely. Get a new adapter if shaft is bent.

END OF TASK



TA 103100

d. Replacement.

FRAME 1

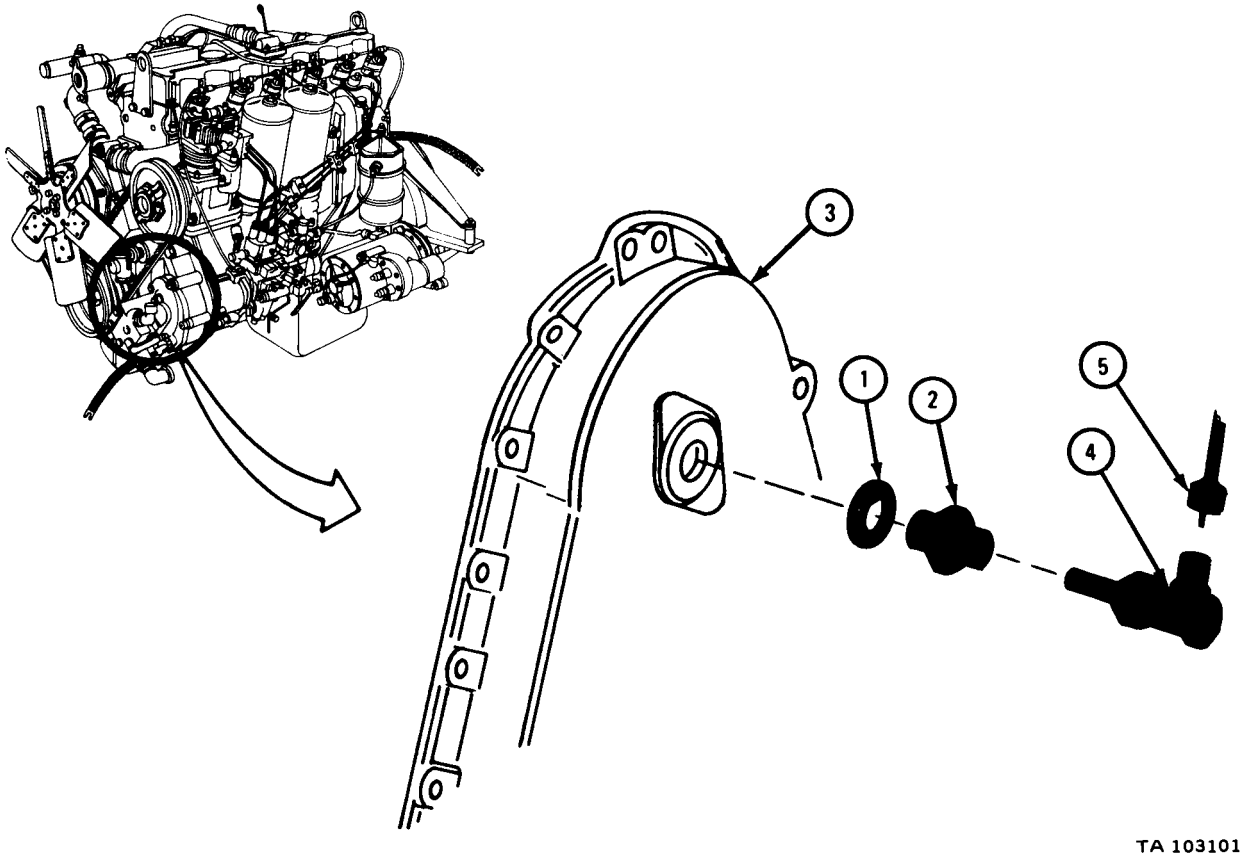
1. Put gasket (1) on takeoff adapter (2).
2. Using 1 7/16-inch wrench, screw takeoff adapter (2) into housing (3).
3. Using 1-inch wrench, screw tachometer drive adapter (4) into takeoff adapter (2).
4. Using 1-inch wrench, screw driveshaft (5) onto tachometer drive adapter (4).

NOTE

Follow-on Maintenance Action Required:

1. Check tachometer operation. Refer to TM 9-2320-211-10.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



20-7. SPEEDOMETER FLEXIBLE SHAFT AND CORE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
1/8-inch wrench (2)
9/16-inch wrench
Slip-joint pliers
3/4-inch wrench
1-inch wrench

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Disconnect battery ground. Refer to Part 1, para 7-44.

(2) Open hood and left side panel. Refer to TM 9-2320-211-10.

(3) Remove front and intermediate tunnels. Refer to para 17-5.

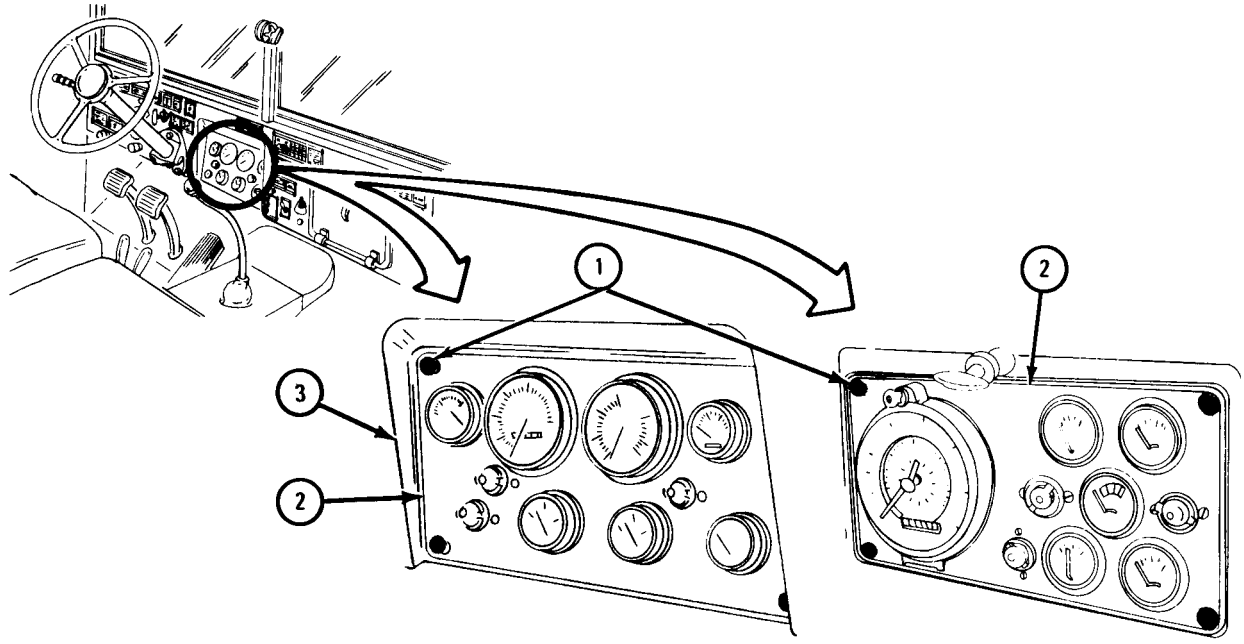
b. Removal.

(1) Flexible shaft assembly.

FRAME 1

1. Using screwdriver, turn four screws (1) 1/4 turn to left.
2. Slide instrument cluster (2) down from instrument panel (3).

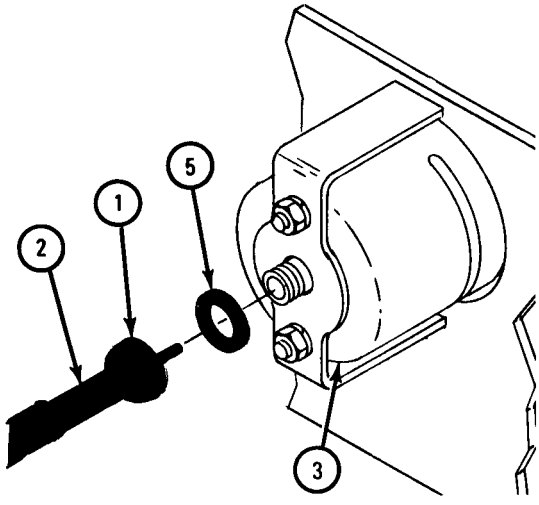
GO TO FRAME 2



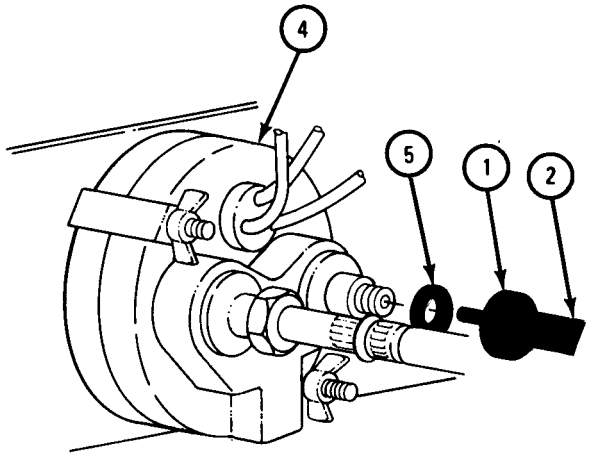
FRAME 2

1. Using 3/4-inch wrench, unscrew coupling nut (1) and pull flexible shaft assembly (2) away from speedometer (3) or tachograph (4).
2. Take out gasket (5).

GO TO FRAME 3



ON ALL TRUCKS
EXCEPT LATER MODEL
M52A2 TRACTORS



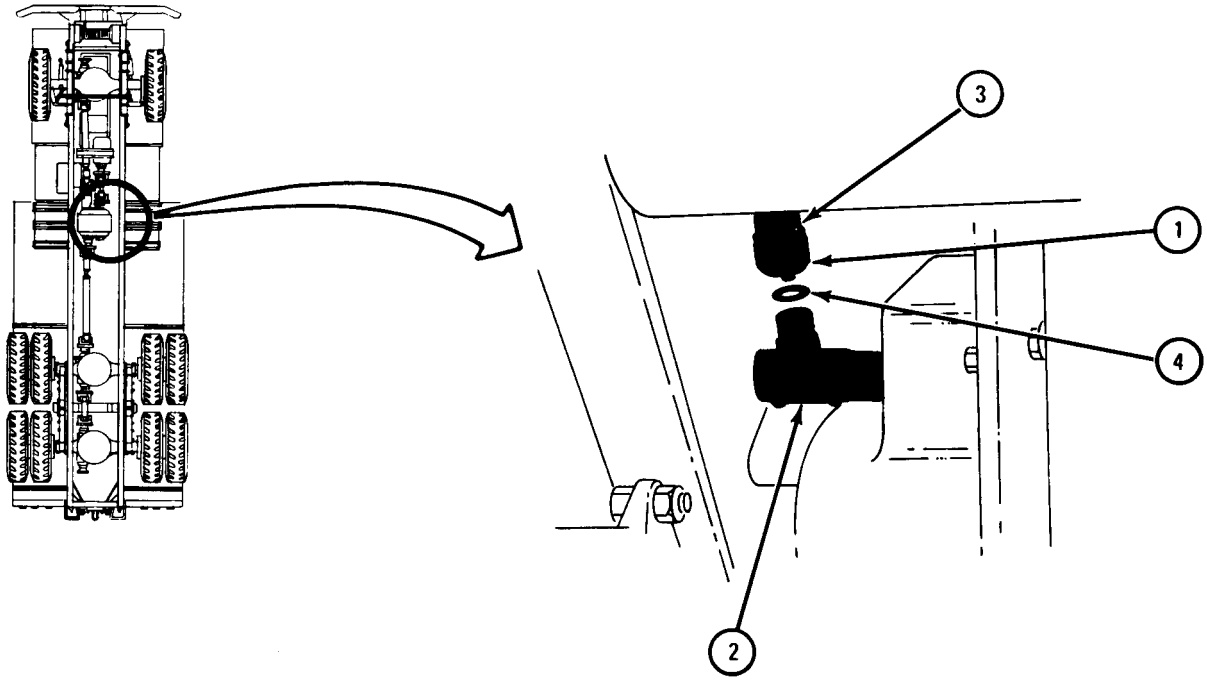
ON LATER MODEL
M52A2 TRACTORS

TA 045749

FRAME 3

1. Using 1-inch wrench, unscrew coupling nut (1) from adapter assembly (2).
2. Pull flexible shaft assembly (3) away from adapter assembly (2).
3. Take gasket (4) out of coupling nut (1).

GO TO FRAME 4



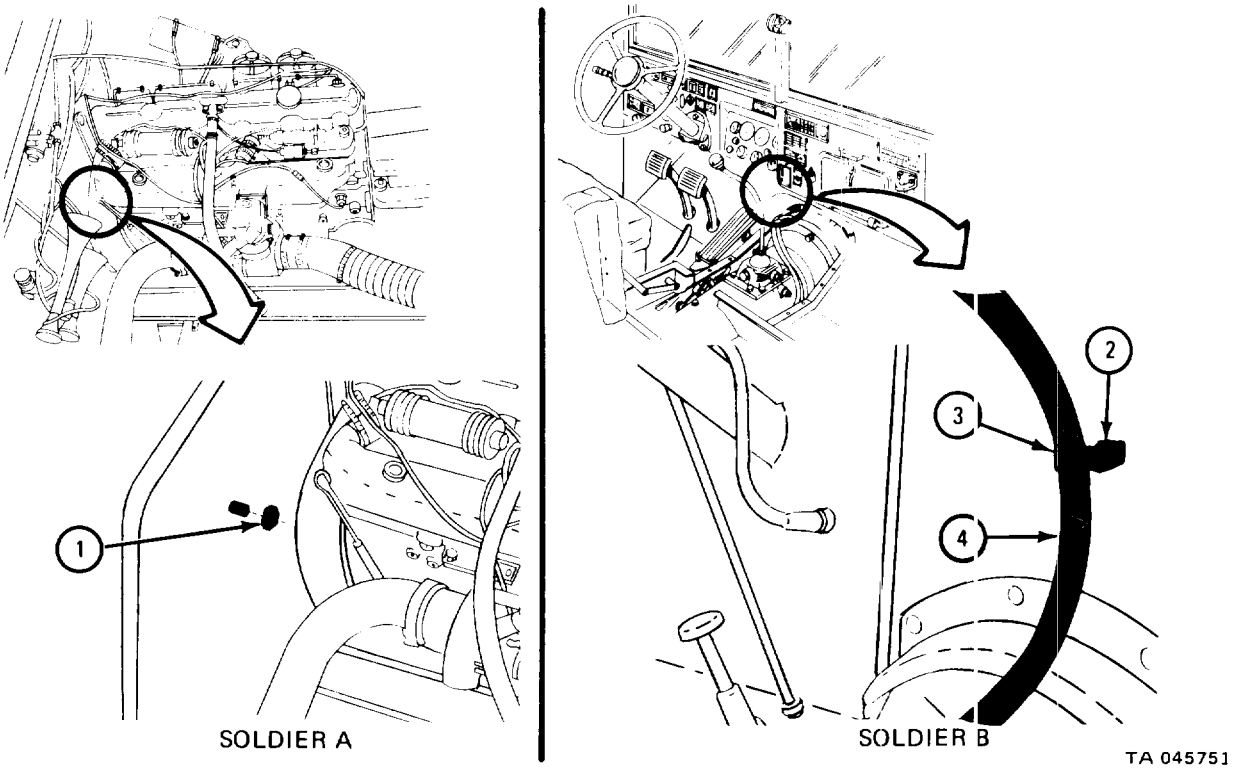
TA 045750

FRAME 4

Soldier A 1. Using 1/8-inch wrench, hold locknut (1). Tell soldier B when ready.

Soldier B 2. Using 7/16-inch wrench, unscrew and take off screw (2). Take clamp (3) off flexible shaft assembly (4).

GO TO FRAME 5



FRAME 5

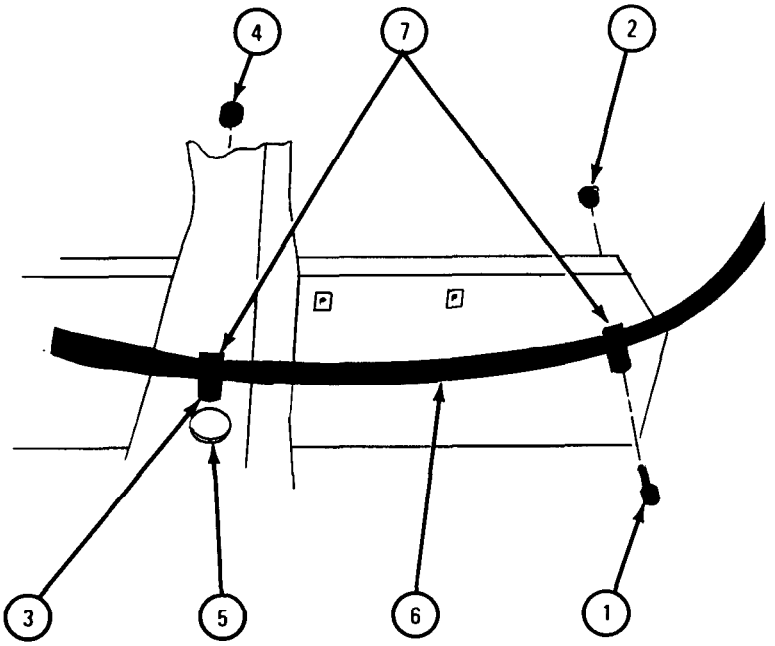
1. Using 9/16-inch wrenches, unscrew and take off screw (1) with locknut (2).
2. Using 9/16-inch wrenches, unscrew and take off screw (3) with locknut (4) through access hole (5).

NOTE

Note the way flexible shaft assembly (6) is routed so it may be put back the same way.

3. Pull out flexible shaft assembly (6) and take off two clamps (7).

END OF TASK



TA 045752

(2) Core assembly.

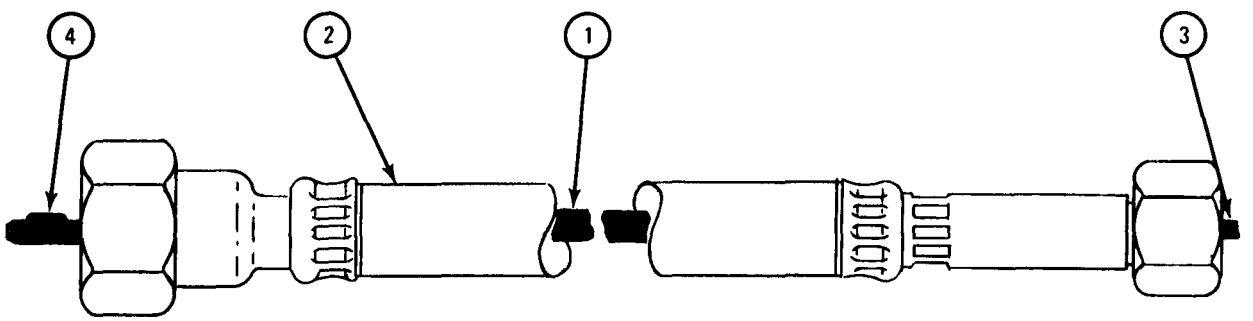
FRAME 1

NOTE

To takeout core assembly (1), flexible shaft assembly (2) does not need to be taken out of truck.

1. Take out C-clip from adapter side of flexible shaft assembly (2).
2. Using pliers, pull core assembly (1) out of flexible shaft assembly (2) from speedometer end (3).
3. If core assembly (1) is broken, using pliers, pull out other piece from adapter assembly end (4).

END OF TASK



TA 045753

c. Replacement.

(1) Core assembly.

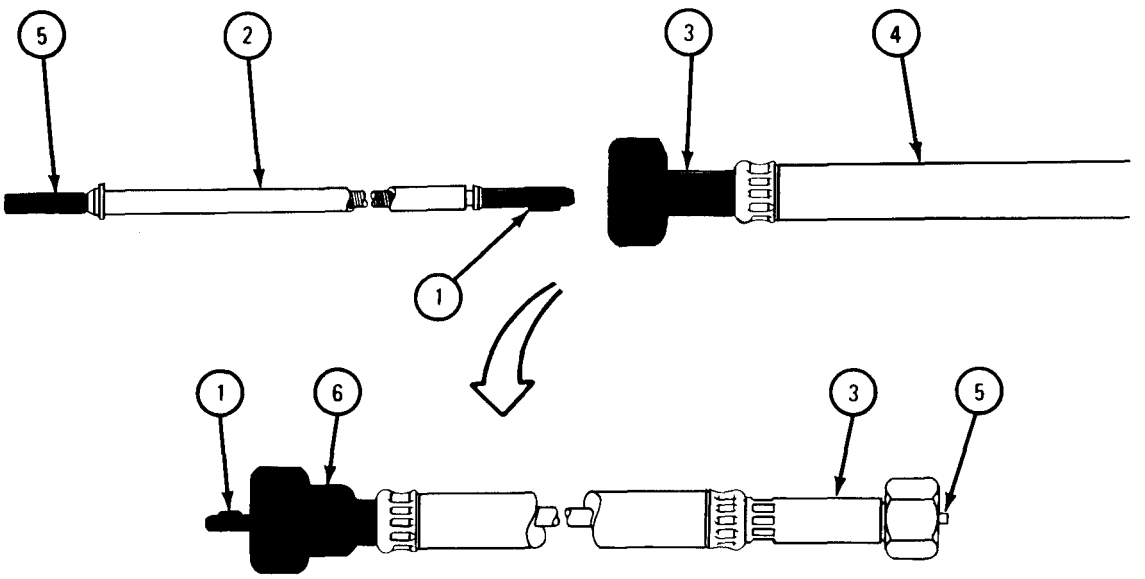
NOTE

Before putting in core assembly, check flexible shaft assembly for dents, sharp bends or other damage. If flexible shaft assembly is damaged, get new flexible shaft assembly and core assembly.

FRAME 1

1. Put keyed end (1) of core assembly (2) into speedometer end (3) of flexible shaft assembly (4). Speedometer end has smaller coupling nut.
2. Slowly push core assembly (2) through flexible shaft assembly (4) until squared end (5) seats in speedometer end (3) of flexible shaft assembly. Keyed end (1) should stick out of adapter assembly end (6) of flexible shaft assembly.
3. Put C-clip back on adapter side of flexible shaft assembly (4).

END OF TASK



TA 045754

(2) Flexible shaft assembly.

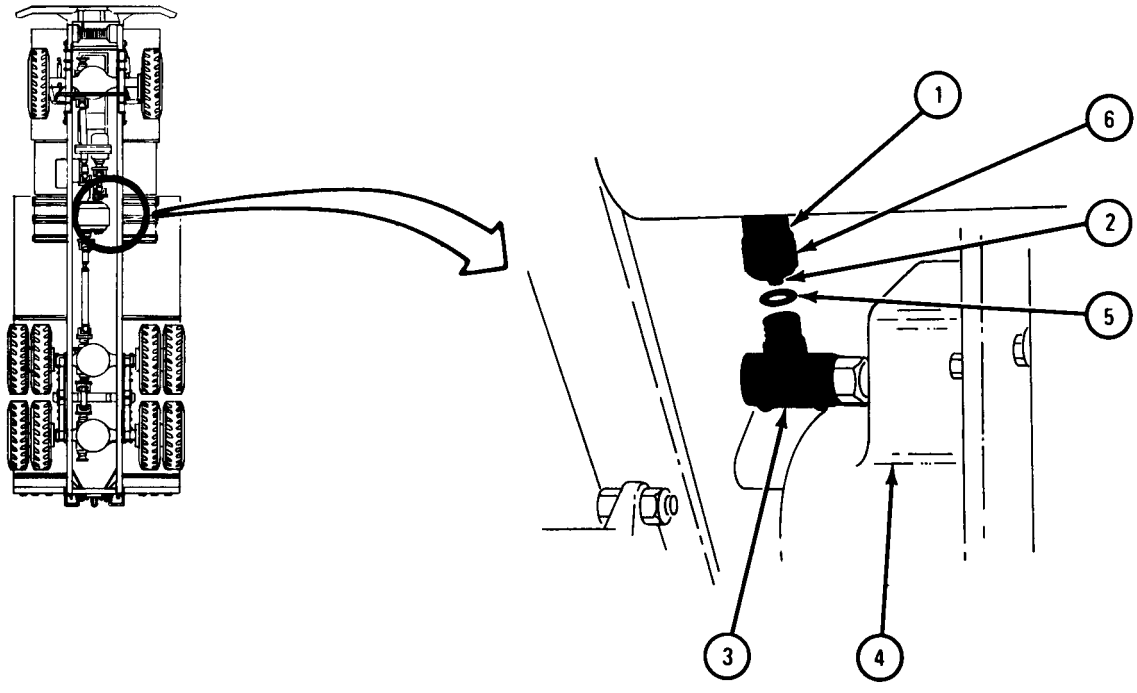
FRAME 1

NOTE

Flexible shaft assembly (1) routing under cab may be slightly different on some trucks. Route flexible shaft same way as noted in removal.

1. Put flexible shaft assembly (1) back in truck with keyed end (2) at adapter assembly (3) on transfer case (4).
2. Seat gasket (5) in coupling nut (6).
3. Aline keyed end (2) with keyway in adapter assembly (3).
4. Using 1-inch wrench, screw on and tighten coupling nut (6).

GO TO FRAME 2

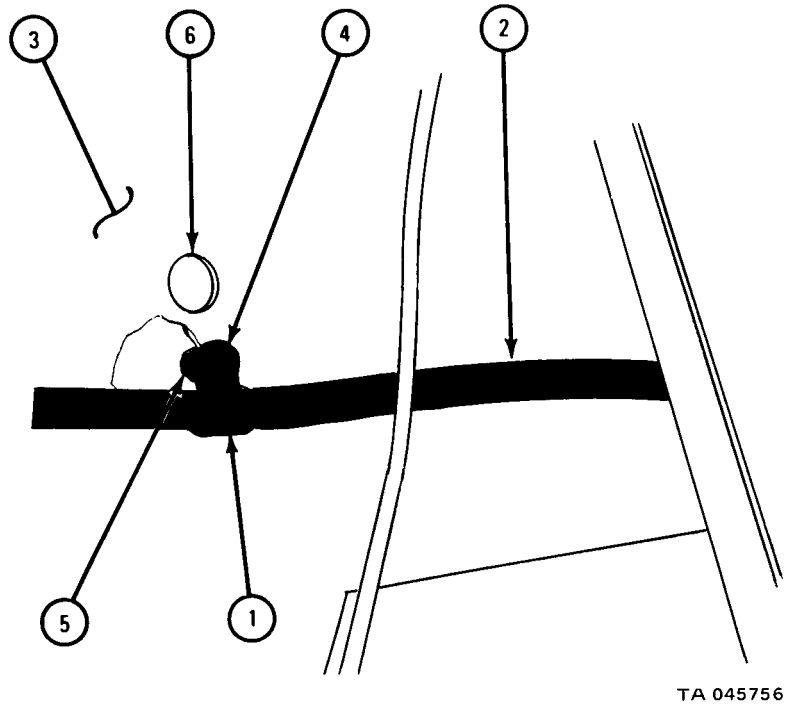


TA 045755

FRAME 2

1. Put clamp (1) on flexible shaft assembly (2).
2. Aline hole in clamp (1) with hole in cab floor (3).
3. Push screw (4) through hole in clamp (1).
4. Using 9/16-inch wrenches, screw on and tighten locknut (5) through access hole (6).

GO TO FRAME 3

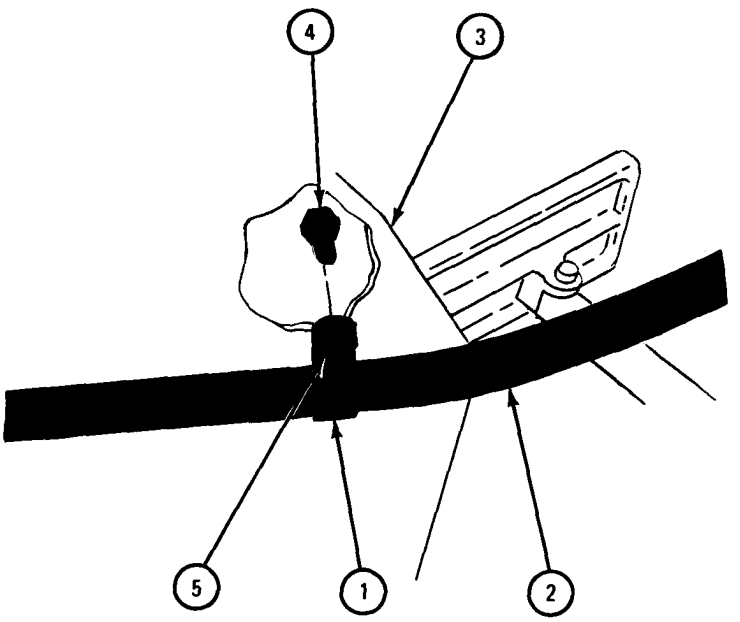


TA 045756

FRAME 3

1. Put clamp (1) on flexible shaft assembly (2).
2. Aline hole in clamp (1) with hole in floor (3).
3. Push screw (4) through hole in clamp (1).
4. Using 9/16-inch wrenches, screw on and tighten locknut (5).

GO TO FRAME 4



TA 045757

FRAME 4

CAUTION

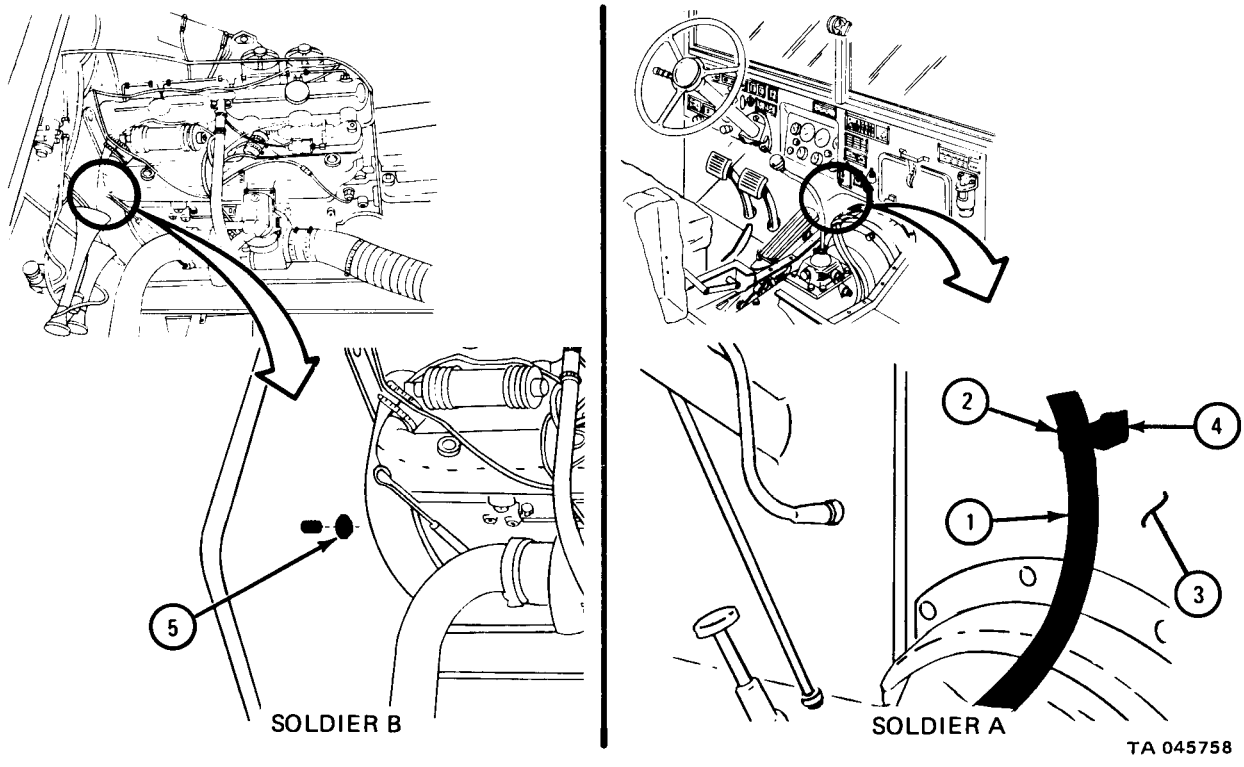
Check that flexible shaft assembly (1) is clear of all moving parts and free of sharp bends.

Soldier A 1. Put clamp (2) on flexible shaft assembly (1). Aline hole in clamp with hole in firewall (3). Push screw (4) through hole in clamp.

Soldier B 2. Screw locknut (5) on screw (4). Using 7/16-inch wrench, hold nut. Tell soldier A when ready.

Soldier A 3. Using 7/16-inch wrench, tighten screw (4).

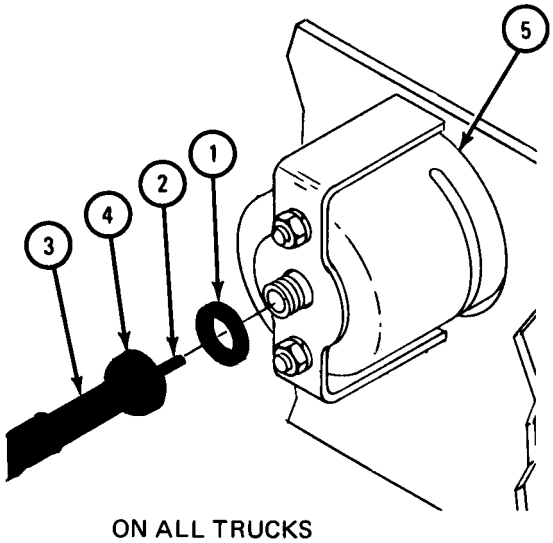
GO TO FRAME 5



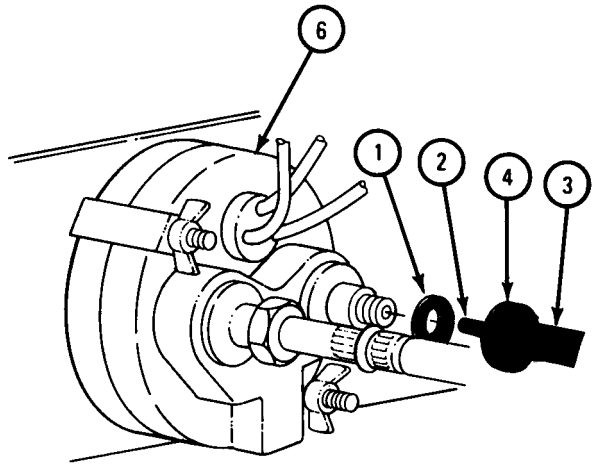
FRAME 5

1. Put gasket (1) in speedometer end (2) of flexible shaft assembly (3).
2. Using 3/4-inch wrench, screw on and tighten coupling nut (4) to speedometer (5) or tachograph (6).

GO TO FRAME 6



ON ALL TRUCKS
EXCEPT LATER MODEL
M52A2 TRACTORS



ON LATER MODEL
M52A2 TRACTORS

TA 045759

FRAME 6

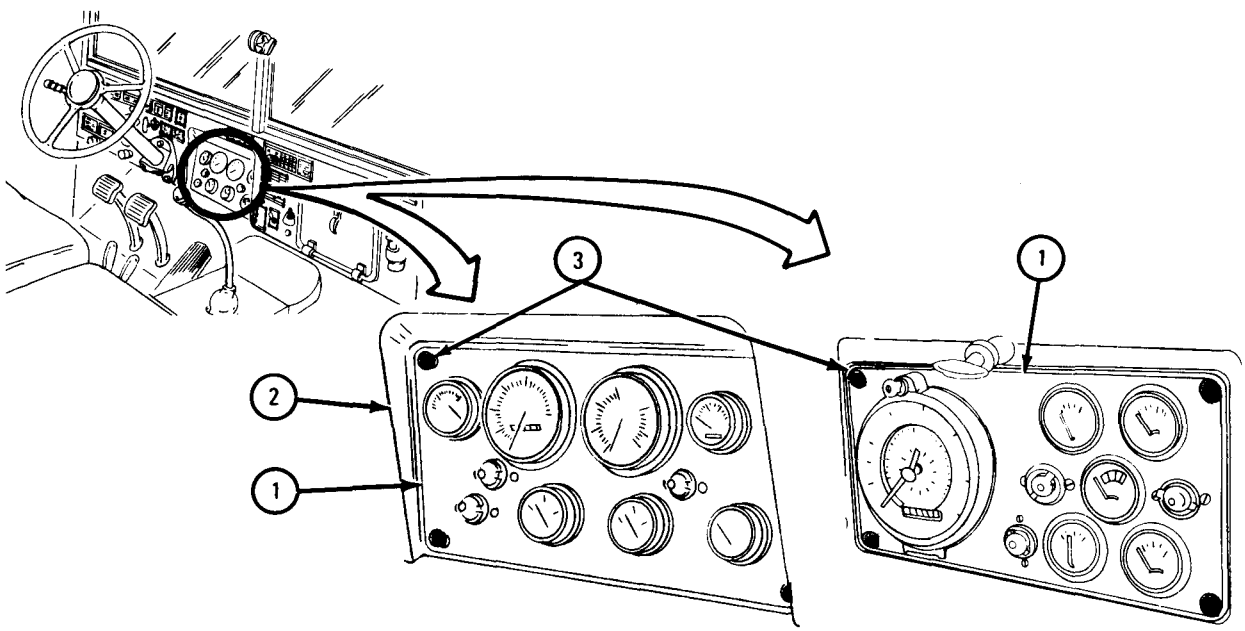
1. Put instrument cluster (1) on instrument panel (2).
2. Using screwdriver, turn four mounting screws (3) 1/4 turn to right.

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground. Refer to Part 1, para 7-44.
2. Close hood and left-side panel. Refer to TM 9-2320-211-10.
3. Replace intermediate and front tunnels. Refer to para 17-5.
4. Check operation of speedometer and odometer. Refer to TM 9-2320-211-10.

END OF TASK



ON ALL TRUCKS EXCEPT LATER MODEL M52A2 TRACTORS

ON LATER MODEL M52A2 TRACTORS

TA 045760

20-8. SPEEDOMETER SHAFT ADAPTER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 7/8-inch wrench
1-inch wrench
1 1/6-inch wrench

SUPPLIES: None

PERSONNEL: One

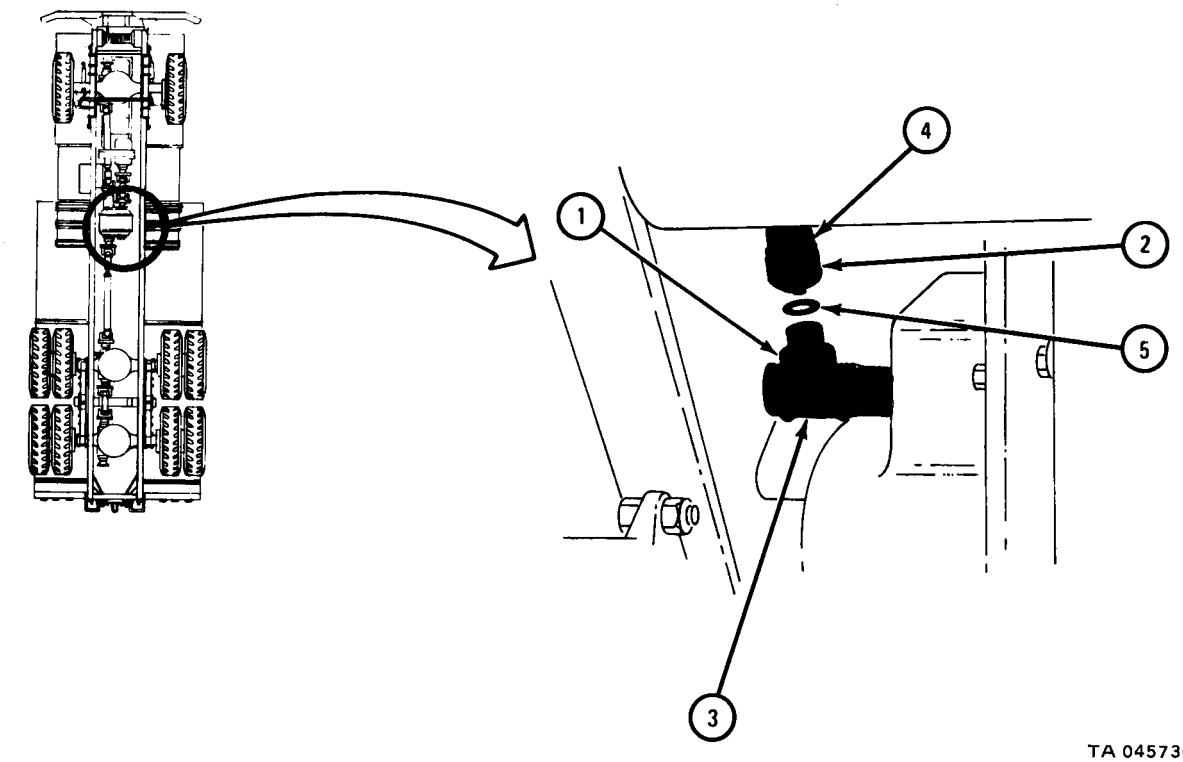
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Working under truck at transfer and using 1 1/16-inch wrench, hold adapter (1).
2. Using 1-inch wrench, unscrew coupling nut (2) from drive (3) on transfer case.
3. Pull flexible shaft assembly (4) away from drive (3).
4. Take off gasket (5).

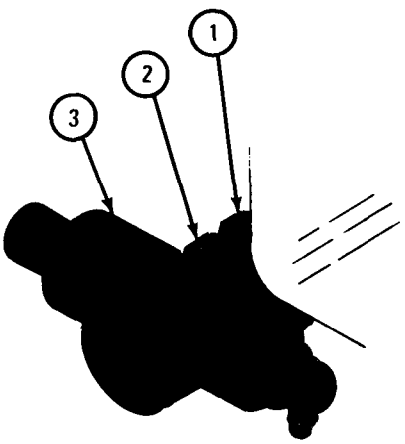
GO TO FRAME 2



FRAME 2

1. Using 7/8-inch wrench, hold coupling (1). Using 1-inch wrench, take off coupling nut (2).
2. Take off assembly (3).

GO TO FRAME 3

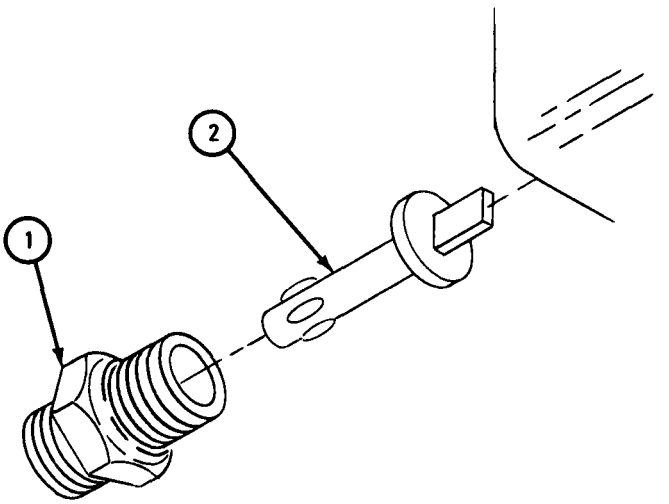


TA 045737

FRAME 3

1. Using 7/8-inch wrench, unscrew and take off coupling (1).
2. Take off drive adapter shaft (2).

END OF TASK



TA 102106

b. Replacement.

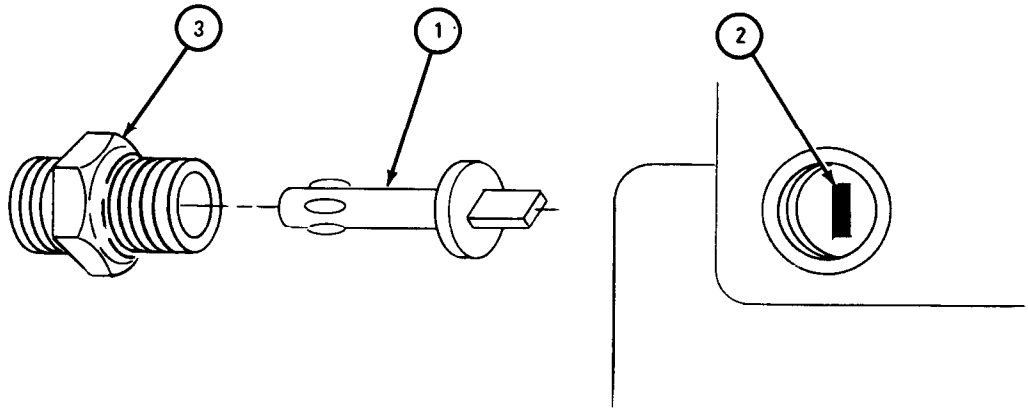
FRAME 1

NOTE

Different gear ratios are available. The part numbers used must be for specific vehicles. Refer to TM 9-2320-211-20P.

1. Put drive adapter shaft (1) in slot (2) in transfer case.
2. Using 7/8-inch wrench, screw in and tighten coupling (3).

GO TO FRAME 2

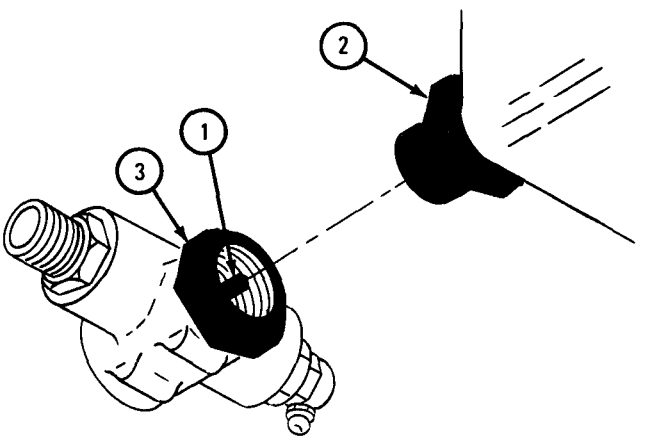


TA 045738

FRAME 2

1. Put drive joint shaft (1) in drive (2).
2. Screw on drive nut (3). Do not tighten at this time.

GO TO FRAME 3

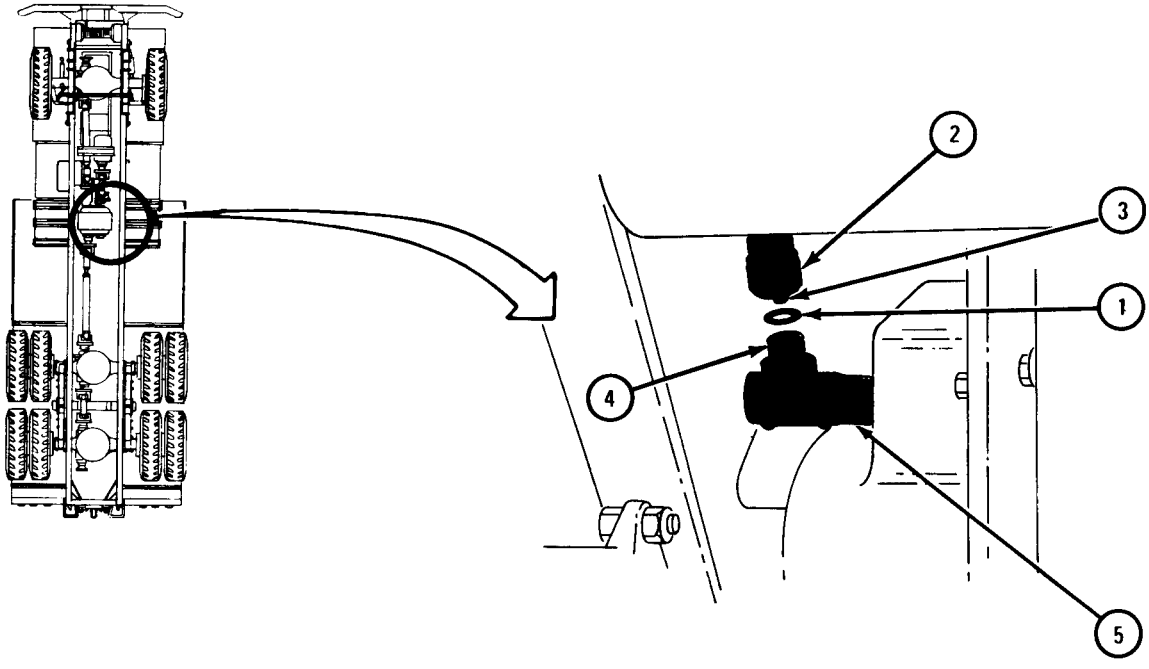


TA 045739

FRAME 3

1. Put gasket (1) in cable coupling nut (2).
2. Aline keyed end (3) of cable with keyway in drive (4).
3. Screw on nut (2). Do not tighten at this time.
4. Position drive (4) so no sharp bends are in speedometer drive cable.
5. Tighten nuts (2 and 5).

END OF TASK



TA 045740

20-9. SPEEDOMETER DRIVE JOINT ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 1-inch wrench

SUPPLIES: None

PERSONNEL: One

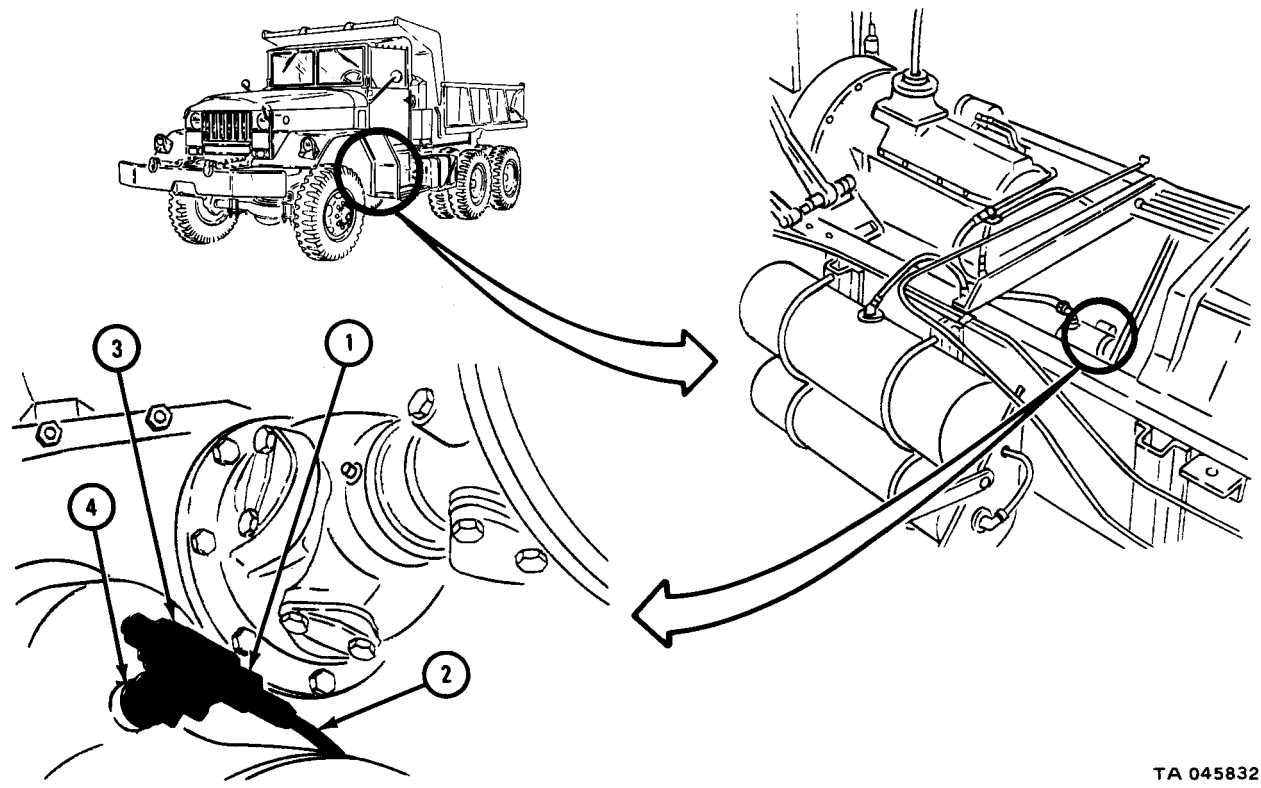
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using 1-inch wrench, unscrew coupling nut (1). Pull flexible shaft (2) from speedometer drive joint assembly unit (3).
2. Using 1-inch wrench, unscrew nut (4) and pull out speedometer drive joint assembly (3).

END OF TASK

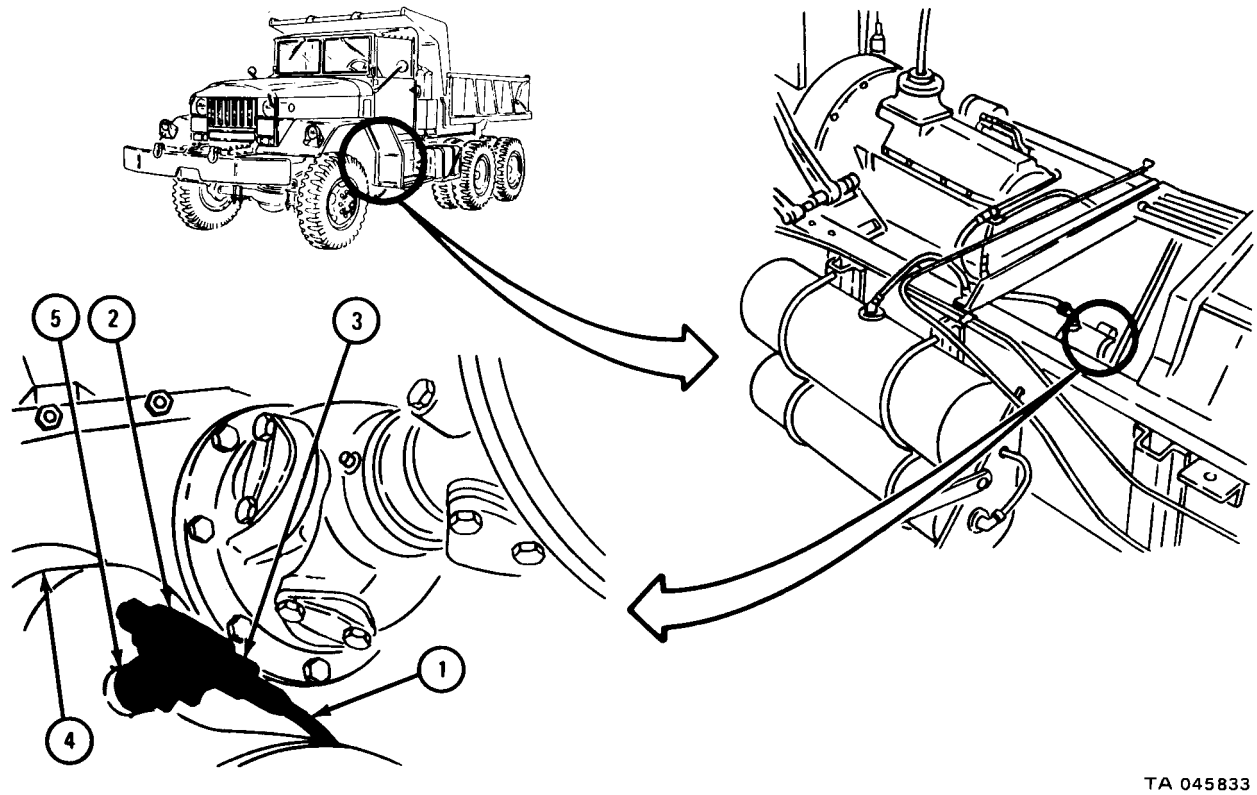


b. Replacement.

FRAME 1

1. Push end of flexible shaft (1) into speedometer drive joint assembly (2).
2. Using 1-inch wrench, screw on and tighten coupling nut (3).
3. Place speedometer drive joint assembly (2) into opening in transfer case (4).
4. Using 1-inch wrench, screw on and tighten nut (5).

END OF TASK



TA 045833

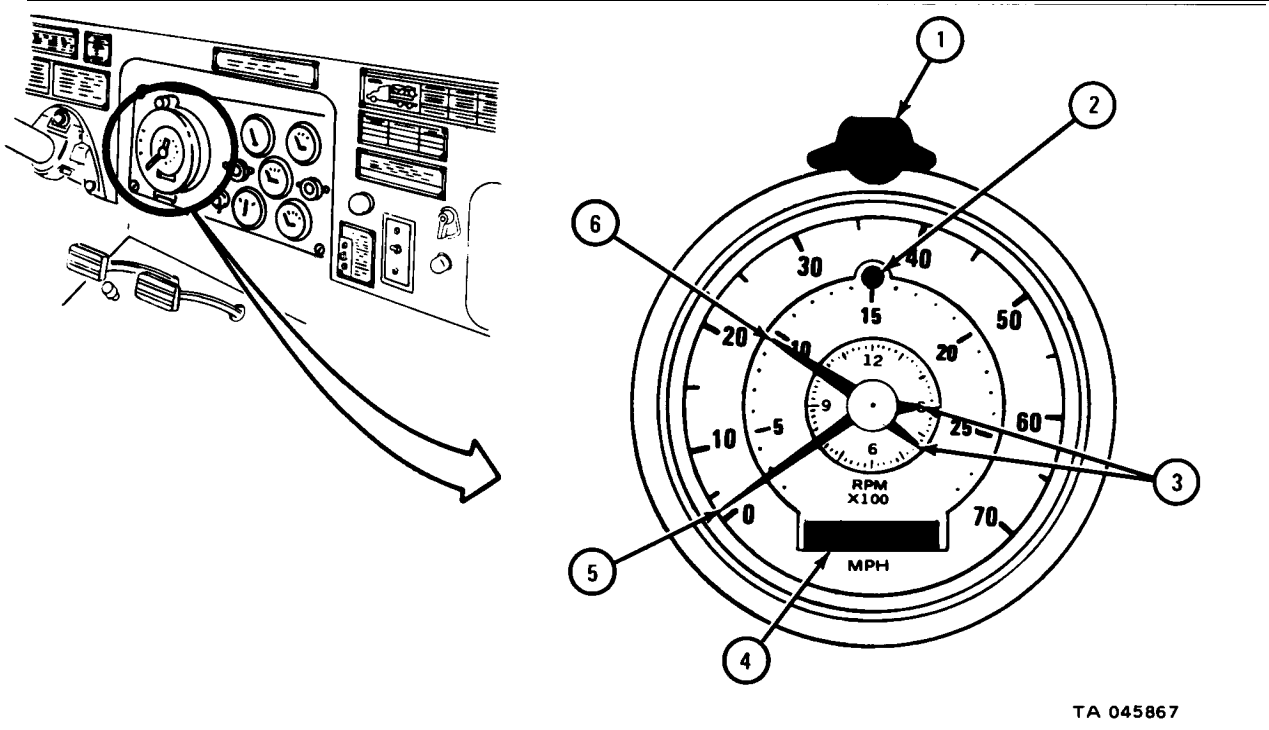
20-10. TACHOGRAPH (LATE MODEL TRUCKS).

a. Description. The tachograph is an instrument that has a speedometer, tachometer, odometer, engine revolution counter, and a 24-hour clock all in one unit. Inside the tachograph is a paper disk chart that is turned by the 24-hour clock. Readings of the instruments in the tachograph are recorded on the chart. The chart must be changed every 24 hours or whenever a truck driver is changed. Charts must be taken out of the tachograph and a new chart replaced at the end of each 24-hour period. If they are not, readings will be recorded over a second time and will be unclear.

Inside the tachograph behind the chart are two lamps that light the scales so the operator can see them during night operation. Location and function of the tachograph components are given as follows:

FRAME 1

1. Lock. Fasten paper disk chart behind instrument face.
2. Warning indicator. Lights at 2,300 rpm to show engine overspeeding.
3. Clock. Marks time during 24-hour period recorded on paper disk chart.
4. Odometer. Shows total vehicle mileage recorded on disk chart during 24-hour period.
5. MPH. Scale shows vehicle speed recorded on disk chart during 24-hour period.
6. RPM. Scale shows engine rpm recorded on disk chart during 24-hour period.



b. Removal.

TOOLS: Flat-tip screwdriver
9/16-inch open end wrench
7/16-inch open end wrench
3/4-inch open end wrench
Tachograph key

SUPPLIES: Tags

PERSONNEL: One

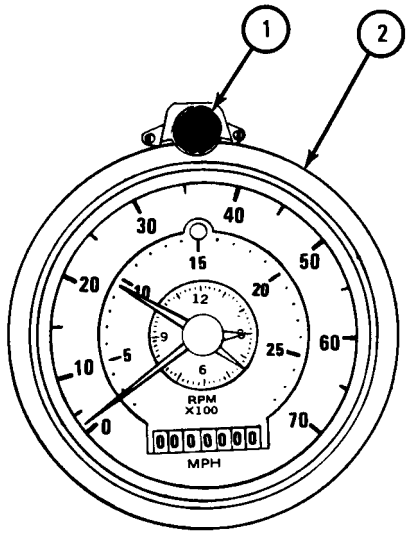
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

(1) Chart removal.

FRAME 1

1. Using tachograph key, turn lock (1) to left and using key as a handle, pull open tachograph (2).

GO TO FRAME 2



TA 045868

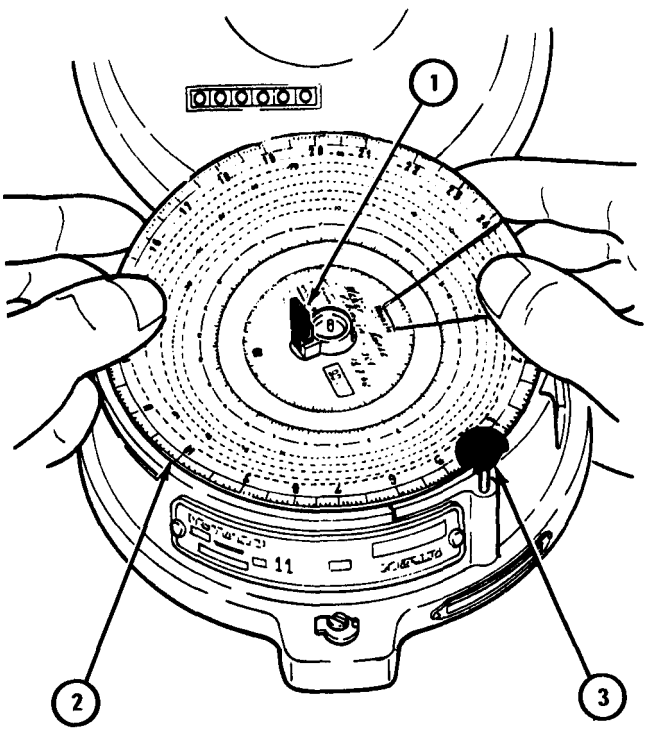
FRAME 2

1. Lift clamping lever (1).
2. Lift tachograph chart (2) straight up and over clamping lever (1) and out of RPM coupling (3). Take chart away from tachograph.

NOTE

Handle and store tachograph charts carefully. Do not fold, scratch or write on them. After chart is taken out of the tachograph, all readings from the chart must be written down on DA Form 2408-1. Charts that have unusual readings or were on a truck that had an accident should be handled with special care. These charts must be kept at the unit to back up actions on equipment improvement recommendations, warranty claims, and accidents.

END OF TASK



TA 050355

(2) Lamp removal.

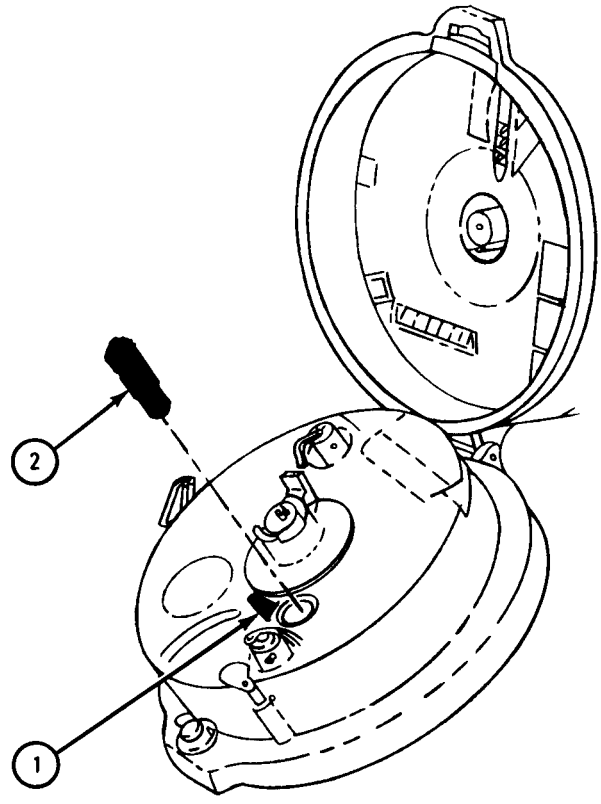
NOTE

There are three lamps inside the tachograph. The two red lamps are used to light the scales for night operation. The white lamp is used for the engine overspeeding indicator. Procedure is given in the following steps for the white lamp. The two red lamps are taken out the same way.

FRAME 1

1. Remove tachograph chart. Refer to para 20-10b.
2. Lift up brass strap (1). Take out lamp (2) by pulling it straight up.

END OF TASK



TA 050356

(3) Tachograph removal.

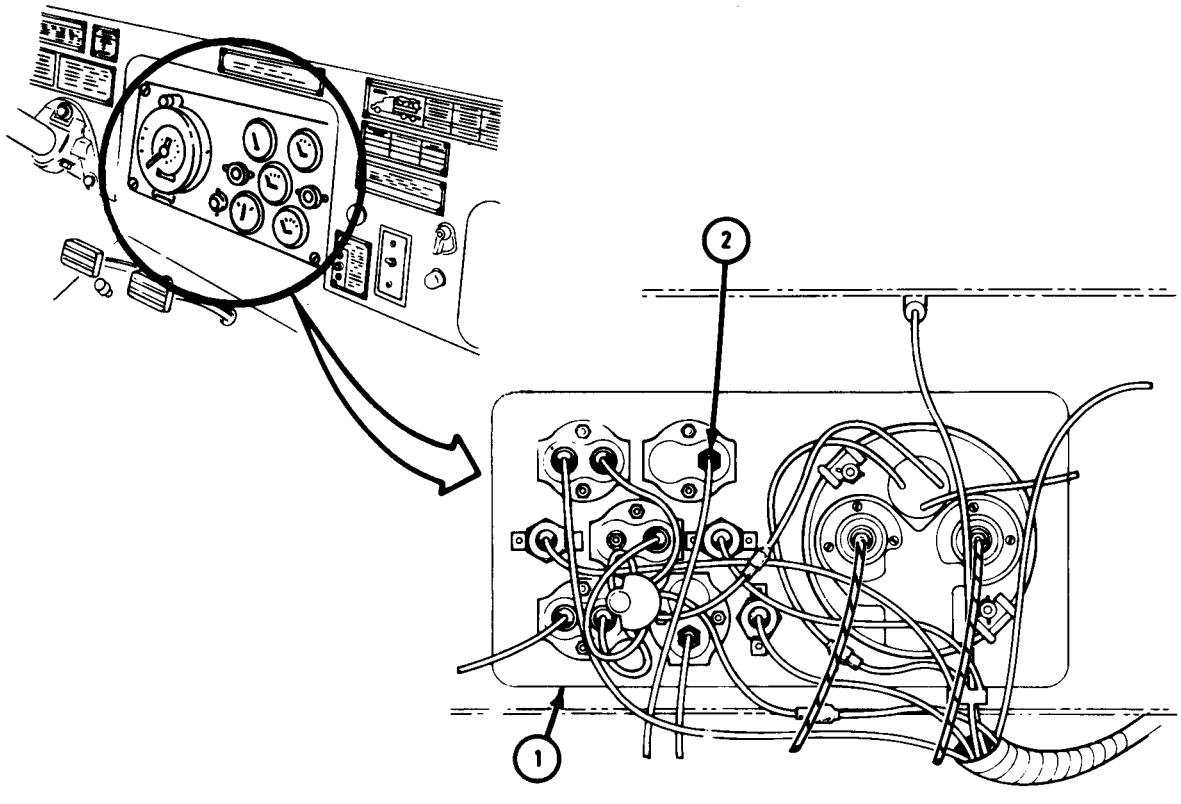
(a) Preliminary procedure. Disconnect battery ground cable. Refer to Part 1, para 7-44.

(b) Removal.

FRAME 1

1. Working from behind instrument cluster (1) using 9/16-inch open end wrench, unscrew and take off tube nut (2).

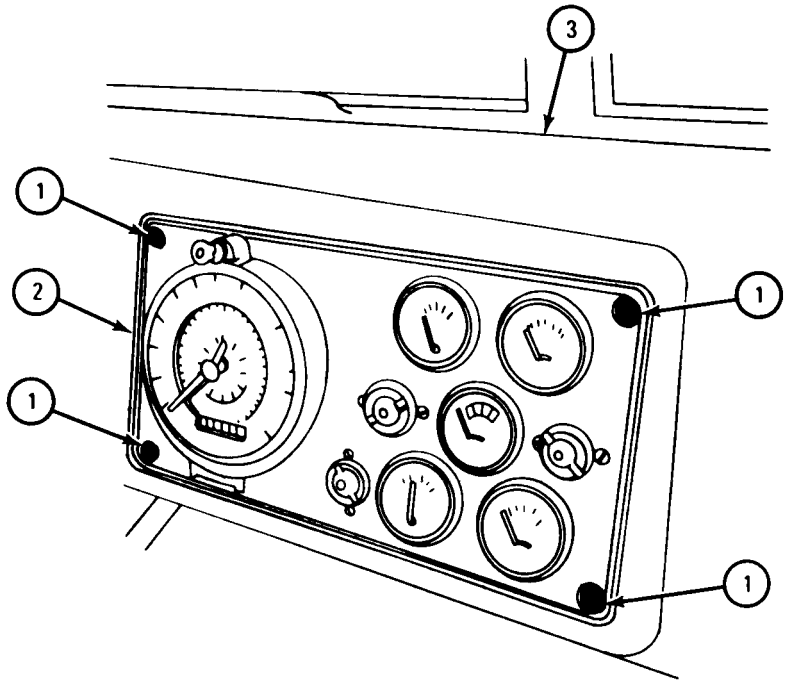
GO TO FRAME 2



FRAME 2

1. Using screwdriver, turn four mounting screws (1) 1/4 turn to left.
2. Pull instrument cluster (2) away from instrument panel (3) about two inches.

GO TO FRAME 3



TA 045870

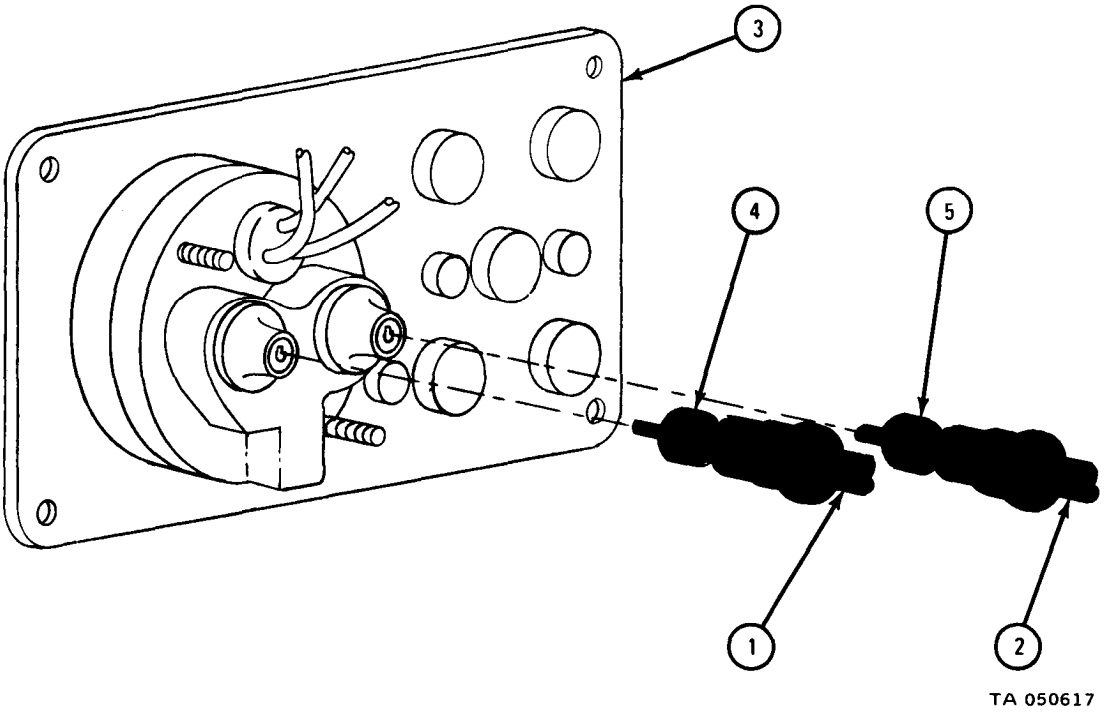
FRAME 3

NOTE

Tag driveshaft assemblies (1 and 2) so they will be put back in the right place.

1. Working from behind instrument cluster (3) and using 3/4-inch open end wrench, unscrew coupling nut (4) and take off tachometer driveshaft (1).
2. Using 3/4-inch open end wrench, unscrew coupling nut (5) and take off speedometer driveshaft (2).
3. Pull down instrument cluster (3).

GO TO FRAME 4



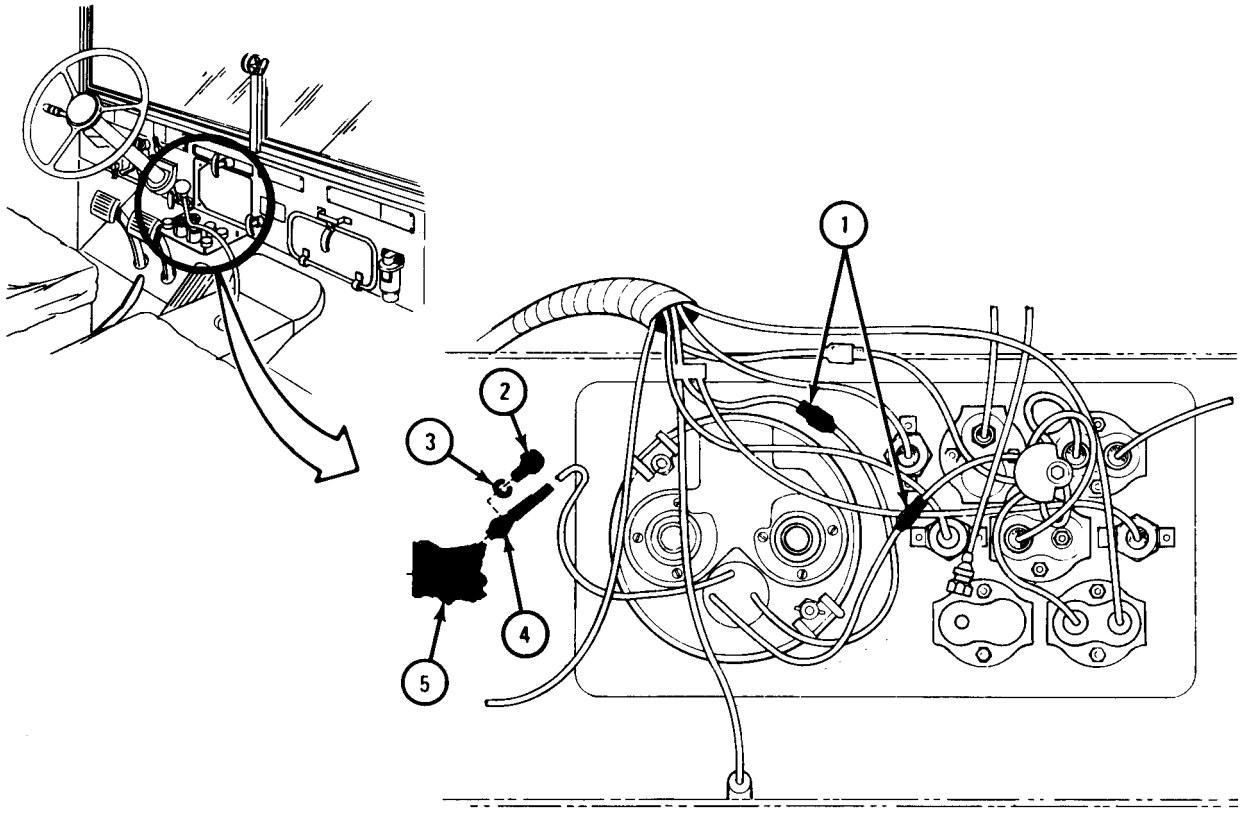
FRAME 4

NOTE

Tag all wires so they will be put back in the right place.

1. Unplug two electrical leads (1).
2. Using 7/16-inch wrench, unscrew and take off capscrew (2) and lockwasher (3).
3. Take off tachograph ground lead (4) from firewall (5).

GO TO FRAME 5

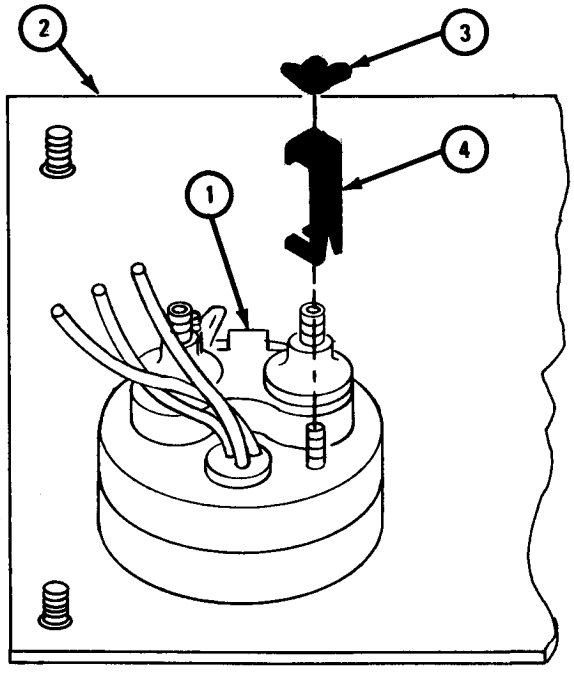


TA 050618

FRAME 5

1. Hold tachograph (1) in place from front of instrument cluster (2).
2. Unscrew and take off two wing nuts (3). Take off two clamps (4).
3. Take tachograph (1) out from front of instrument cluster (2).

END OF TASK



TA 051703

c. Replacement.

TOOLS: Flat-tip screwdriver
9/16-inch open end wrench
7/16-inch open end wrench
3/4-inch open end wrench
Tachograph key

SUPPLIES: New tachograph chart

PERSONNEL: One

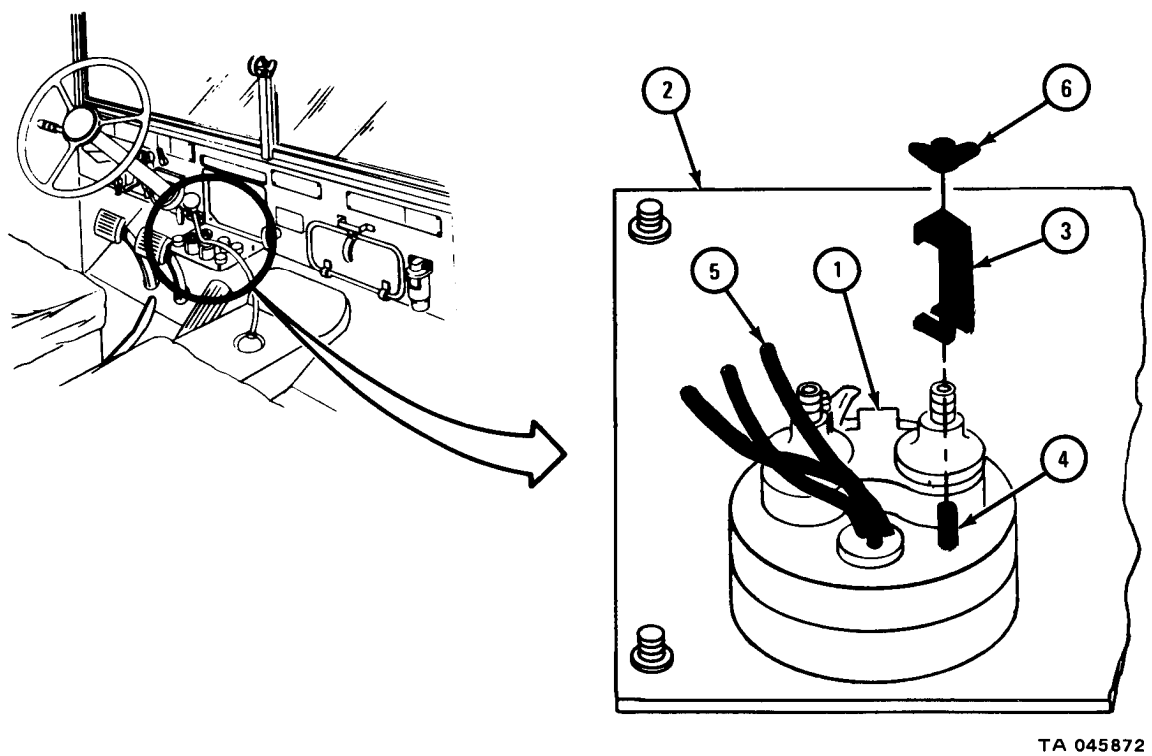
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

(1) Tachograph replacement.

FRAME 1

1. Put tachograph (1) in instrument cluster (2) from front of instrument cluster.
2. Put two clamps (3) on two studs (4).
3. Turn tachograph (1) so wires (5) are in position shown.
4. Screw on and tighten two wing nuts (6).

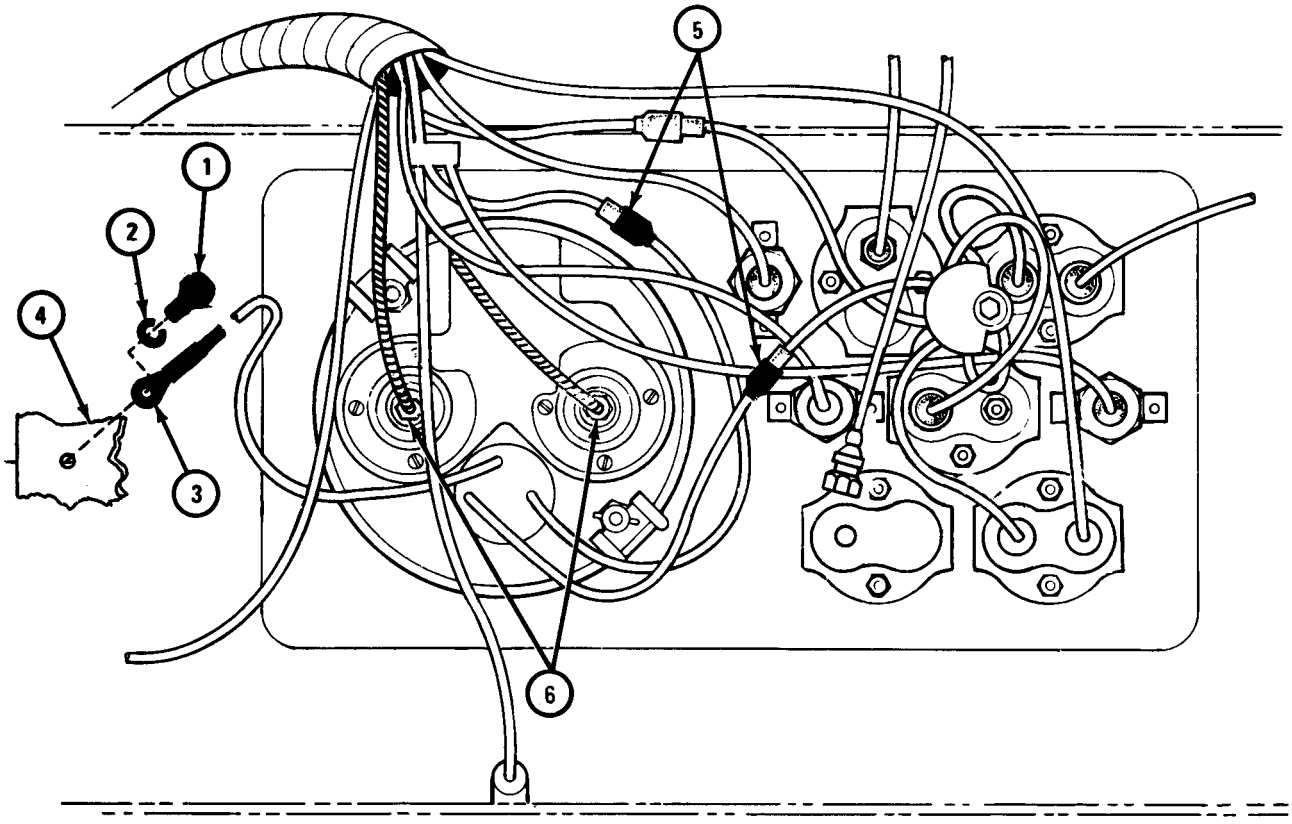
GO TO FRAME 2



FRAME 2

1. Put capscrew (1) and lockwasher (2) on tachograph ground lead (3). Using 7/16-inch wrench, screw in and tighten capscrew to firewall (4).
2. Plug in two electrical leads (5) as tagged. Take off tags.
3. Using 3/4-inch wrench, screw on and tighten two driveshaft assemblies (6) as tagged. Take off tags.

GO TO FRAME 3

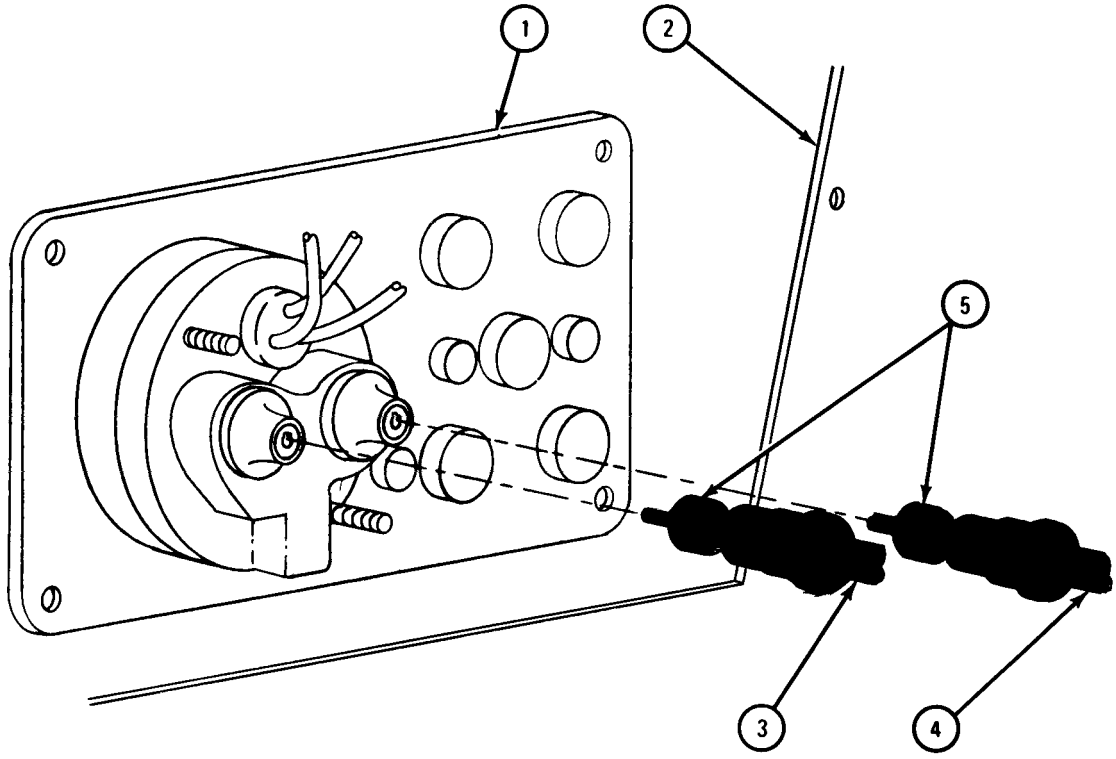


TA 051705

FRAME 3

1. Push instrument cluster (1) up to instrument panel (2) just enough to connect driveshaft assemblies (3 and 4).
2. Using 3/4-inch open end wrench, put two driveshaft assemblies (3 and 4) in place as tagged and screw on and tighten two coupling nuts (5).
3. Take off tags.

GO TO FRAME 4

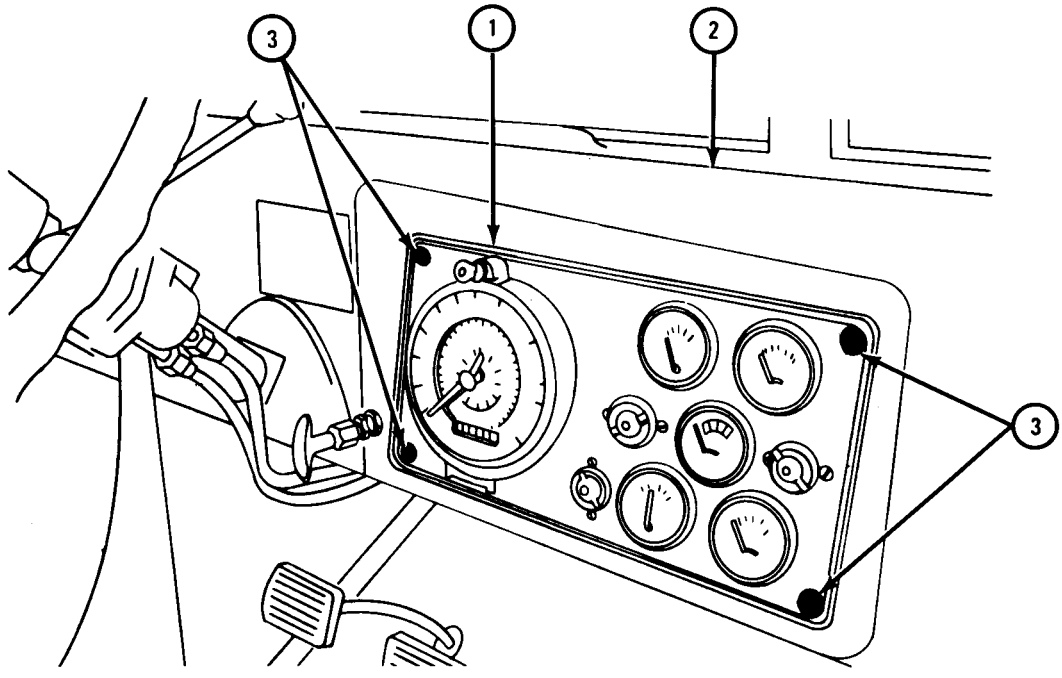


TA 050620

FRAME 4

1. Push instrument cluster (1) all the way up to instrument panel (2).
2. Using screwdriver, turn four mounting studs (3) 1/4 turn to right. Check to be sure instrument cluster (1) is held tightly in instrument panel (2).

GO TO FRAME 5



TA 045747

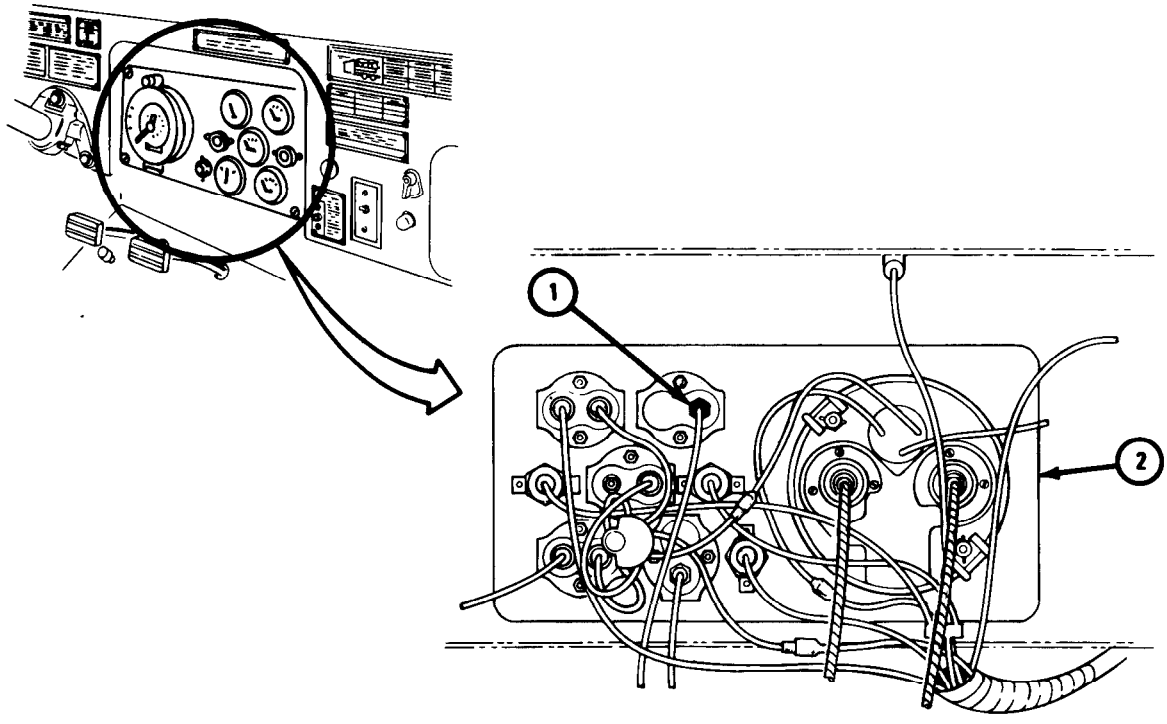
FRAME 5

CAUTION

Do not overtighten tube nut (1) or oil may leak out.

1. Working from behind instrument cluster (2) using 9/16-inch wrench, screw on and tighten tube nut (1).
2. Reconnect battery ground cable. Refer to Part 1, para 7-44.
3. Start engine. Refer to TM 9-2320-211-10.
4. Check tube nut (1) for oil leaks and tighten it if needed.
5. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



(2) Lamp replacement.

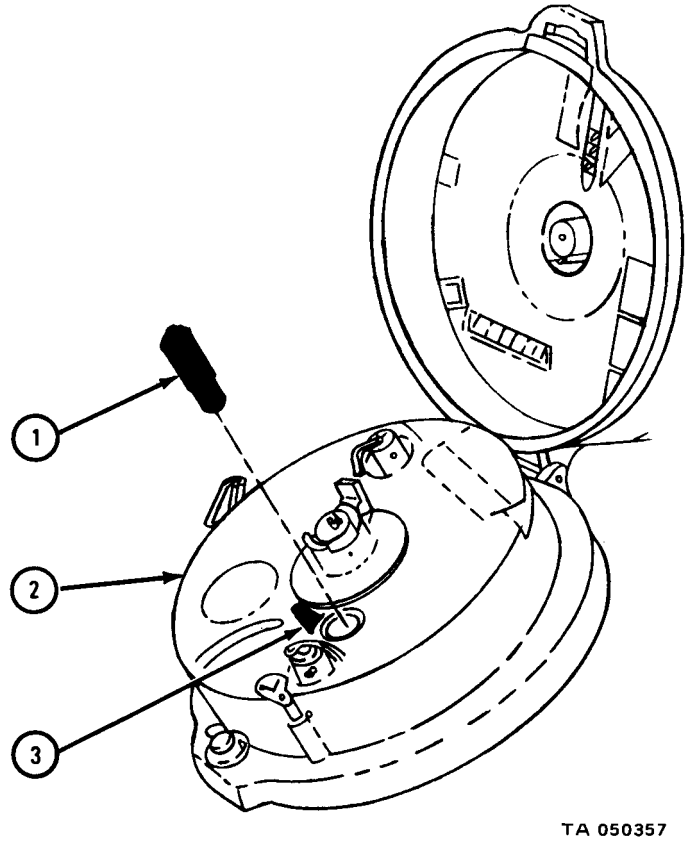
NOTE

There are three lamps inside the tachograph. The two red lamps are used to light the scales for night operation. The white lamp is used for the over-spending indicator. The procedure given in the following is for the white lamp. This task is the same for the two red lamps.

FRAME 1

1. Put lamp (1) in socket on tachograph (2) as shown.
2. Push down brass strap (3) so it touches end of lamp (1).
3. Put back tachograph chart. Refer to para 20-10c.

END OF TASK



TA 050357

(3) Chart replacement.

CAUTION

If you cannot get a new chart, put in a used one. Truck can be used this way until you can get a new chart. Do not drive truck without a chart or tachograph will be damaged.

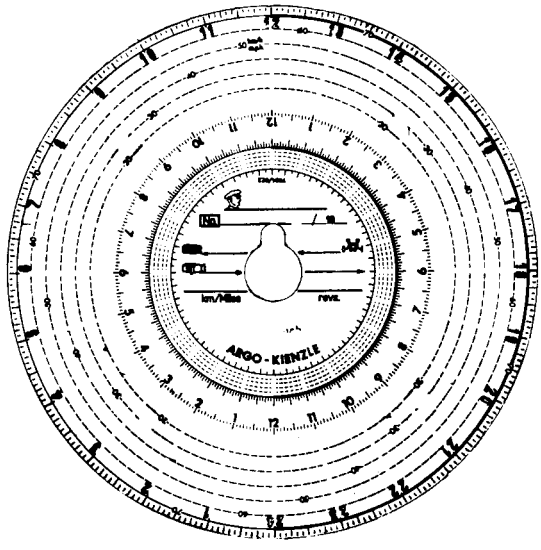
NOTE

Only put in charts with a speed range the same as the tachograph on the truck or the readings on the chart will be wrong.

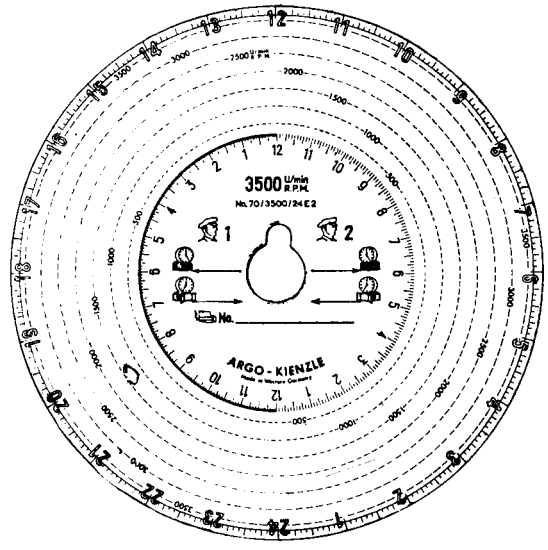
FRAME 1

1. Write in all information on both sides of new chart shown.
2. On green side, write driver's name, date chart is put in, beginning odometer reading, and engine revolution counter reading.
3. On blue side of chart, write truck serial number and starting time.

GO TO FRAME 2



FRONT VIEW - GREEN SIDE



BACK VIEW - BLUE SIDE

TA 050358

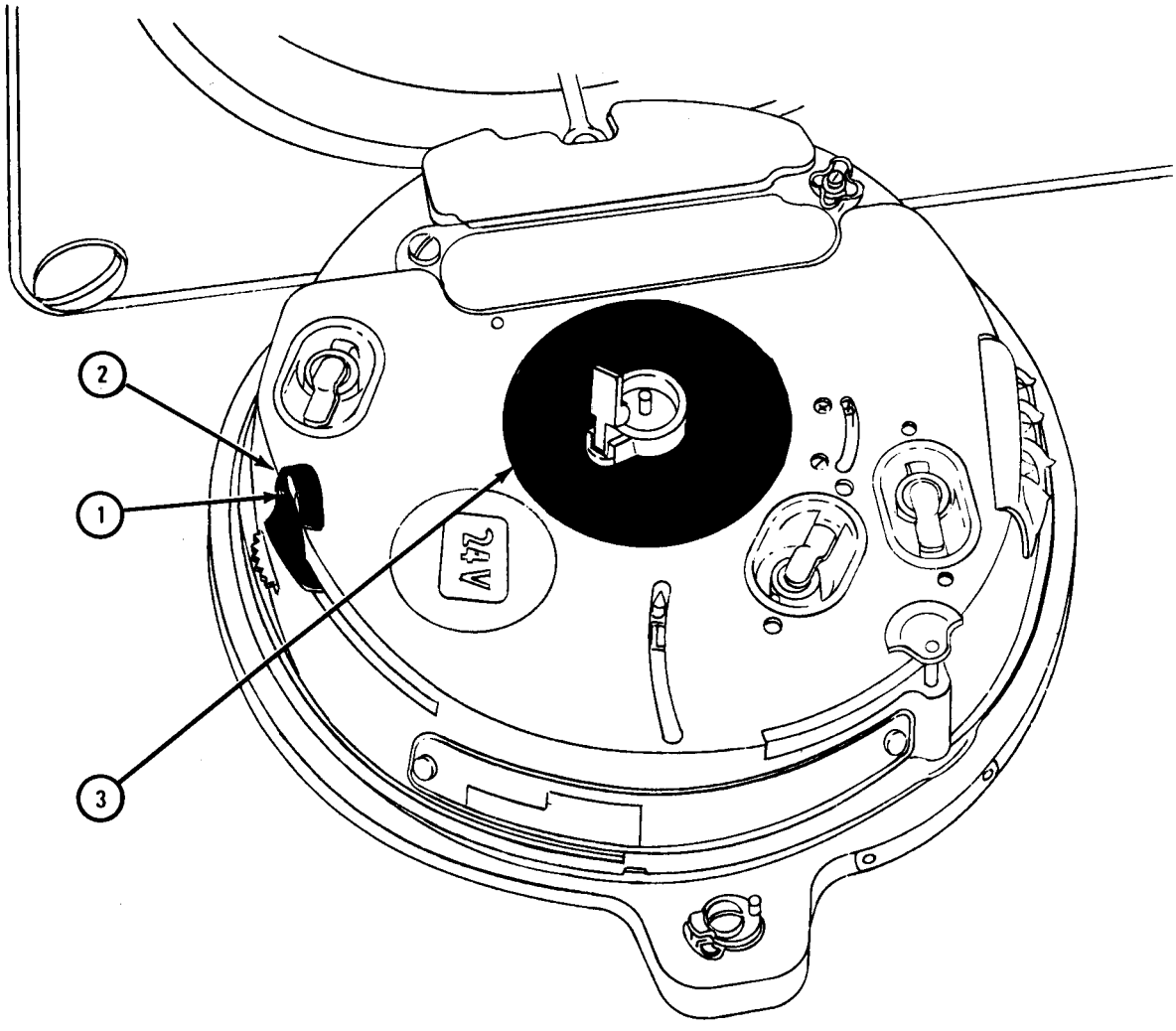
FRAME 2

NOTE

Clock should be wound each time a new chart is put in tachograph.

1. Wind clock by moving winding lever (1) back and forth until it hits the stop (2).
2. Set clock by turning chart support (3) to the left.

GO TO FRAME 3



TA 050359

FRAME 3

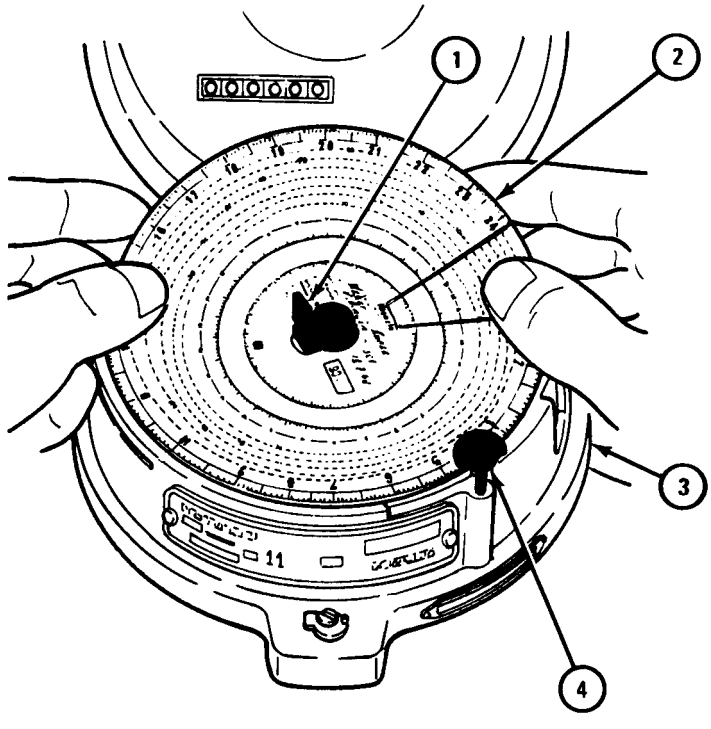
1. Lift up clamping lever (1).

NOTE

Put chart (2) on tachograph (3) with green side facing you.

2. Put edge of chart (2) under RPM coupling (4) and over clamping lever (1) as shown.
3. Push down clamping lever (1).

GO TO FRAME 4

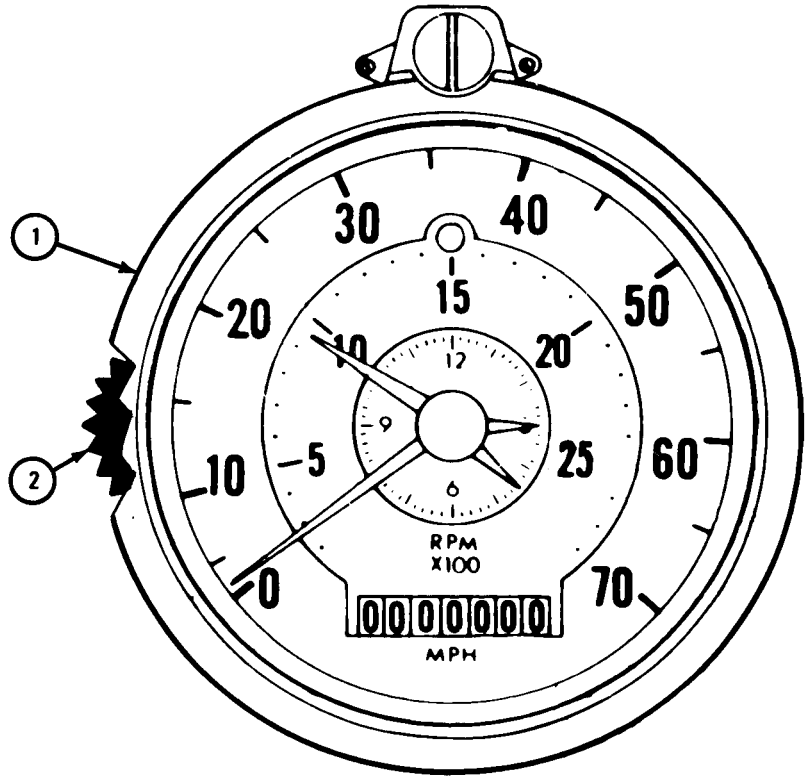


TA 050360

FRAME 4

1. Close tachograph (1) using tachograph key as a handle.
2. Using tachograph key, lock tachograph (1). Take out key.
3. Using lateral wheel (2), make final clock setting.

END OF TASK



TA 050361

d. Tachograph Adjustment.

NOTE

Personnel making tachograph adjustments must know how to figure out chart recordings. Refer to para 20-11 for these instructions.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

(1) Preliminary procedure. Open tachograph. Refer to para 20-10b (1), frame 1.

(2) Adjusting stop and go stylus.

FRAME 1

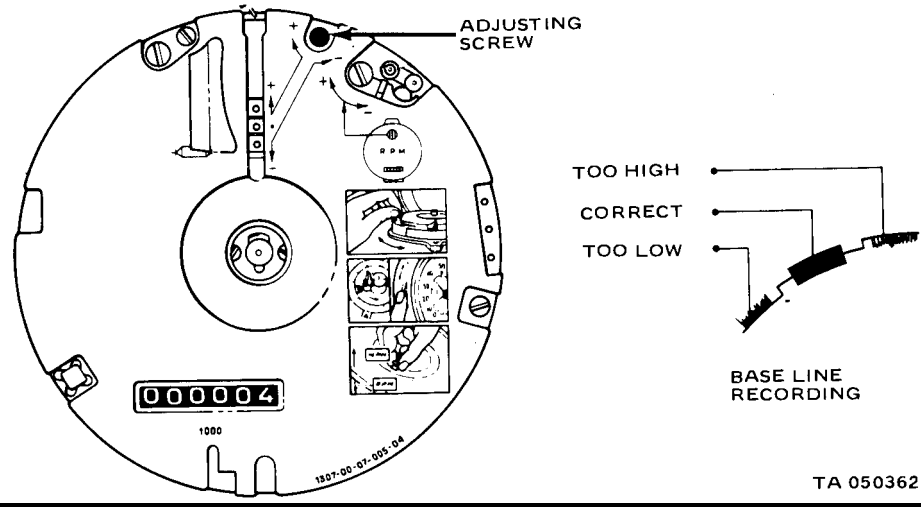
1. If base line reads too high on chart as shown, turn adjusting screw left.
2. If base line reads too low as shown, turn adjusting screw right.
3. Close tachograph. Refer to para 20-10c (3), frame 4.
4. Start engine, let it run for five minutes, then drive truck for at least five minutes. Refer to TM 9-2320-211-10.
5. Open tachograph. Refer to para 20-10b (1) frame 1.
6. Read stop and go field on chart for correct base line recording as shown.

NOTE

Follow-on Maintenance Action Required:

Close tachograph. Refer to para 20-10c (3), frame 4.

END OF TASK



(3) Adjusting engine RPM contact.

(a) Preliminary procedure. Open tachograph. Refer to para 20-10b (1), frame 1.

(b) Adjustment.

FRAME 1

NOTE

Warning indicator (1) should light at 2,300 rpm.

1. If during operation of truck, warning indicator (1) does not come on at 2,300 rpm, adjust as follows:

   a. If warning indicator (1) comes on below 2,300 rpm, turn adjusting screw (2) to the right.

   b. If warning indicator (1) comes on above 2,300 rpm, turn adjusting screw (2) to the left.

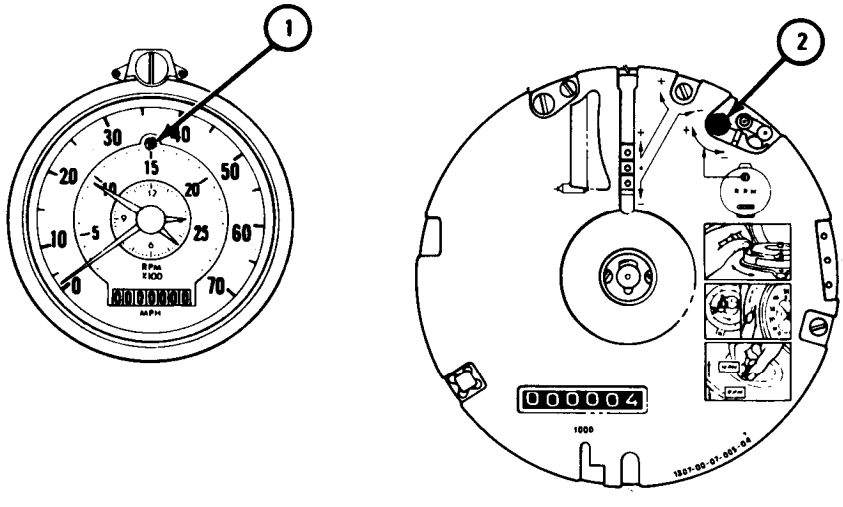
2. Close tachograph. Refer to para 20-10c (3), frame 4.

CAUTION

During road test, do not go faster or drive the truck continuously at the maximum allowable speeds shown on the truck instruction and caution data plate.

3. Road test truck. Refer to TM 9-2320-211-10. While driving truck, bring engine speed to 2,300 rpm for a short time. Warning indicator (1) should light. If indicator does not come on at rpm noted, adjust as given in step (a) or (b).

END OF TASK



TA 050363

(4) Adjusting clock movement.

(a) Preliminary procedure. Remove tachograph chart. Refer to para 20-10b.

(b) Adjustment.

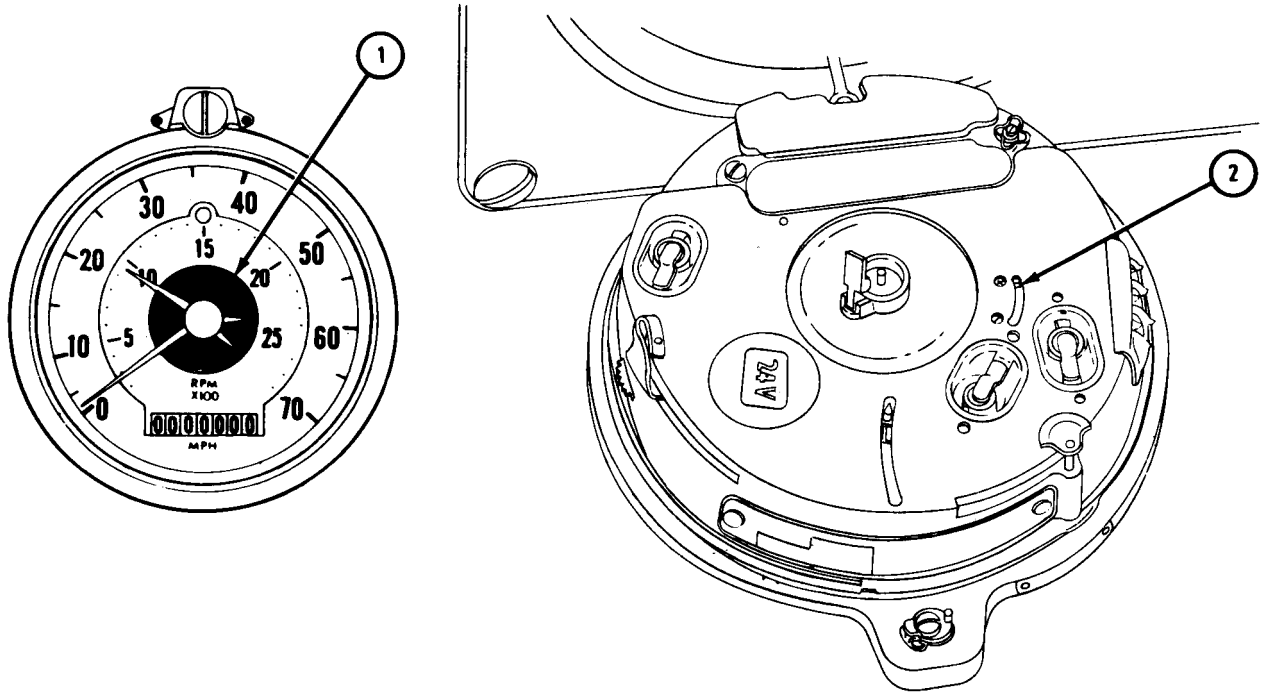
FRAME 1

1. If clock (1) is losing time, move adjusting lever (2) towards plus (+).
2. If clock (1) is gaining time, move adjusting lever (2) towards minus (-).

NOTE

Follow-on Maintenance Action Required:
Replace tachograph chart. Refer to para 20-10c.

END OF TASK



TA 050364

20-11. TACHOGRAPH CHART.

a. Description.

The chart is made of a strong red backing paper covered on both sides with a thin wax coating. Each tachograph stylus cuts a groove in the wax coating so the red backing paper shows. The red lines that show are the tachograph recordings.

The chart (fig. 20- 1) is divided into four recording fields by green and blue markings so that the red lines that the stylus makes can be read. The recording field printed on the front side is green; the field printed on the back side is blue.

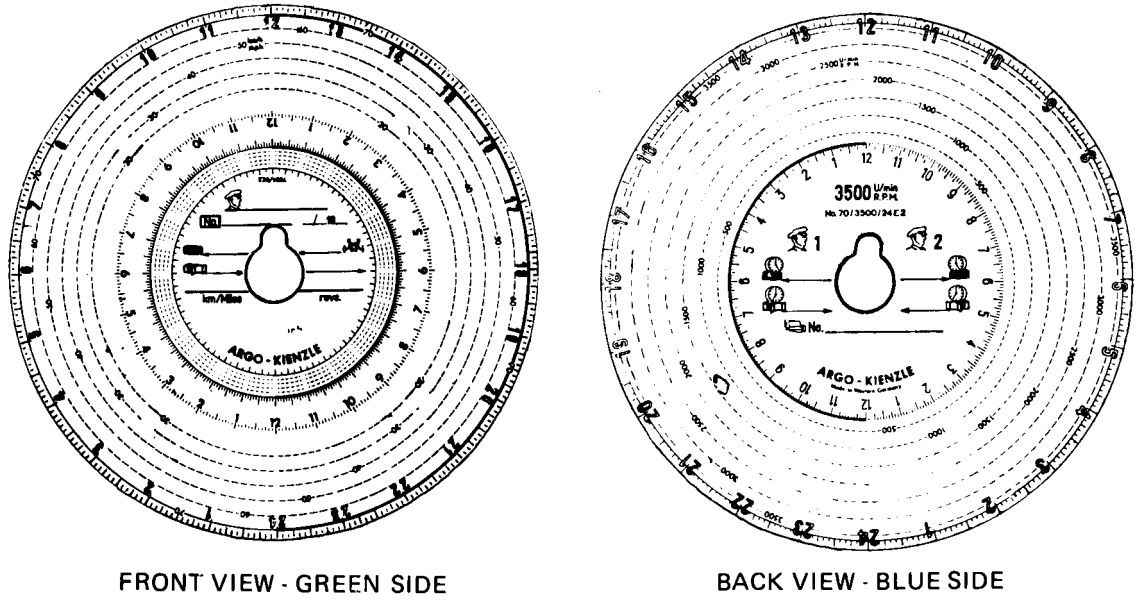


Figure 20-1. Front and Back View of Tachograph Chart

Four separate readings (Fig. 20-2) are recorded on the chart: truck speed, stop and go periods, distance traveled, and engine rpm (shown on blue side; green side is shown here). When the chart is put into the tachograph and the tachograph cover is closed, the styluses start to record on the chart. The time scales have five minute markings so the recordings from the styluses can be read according to each five minute mark.

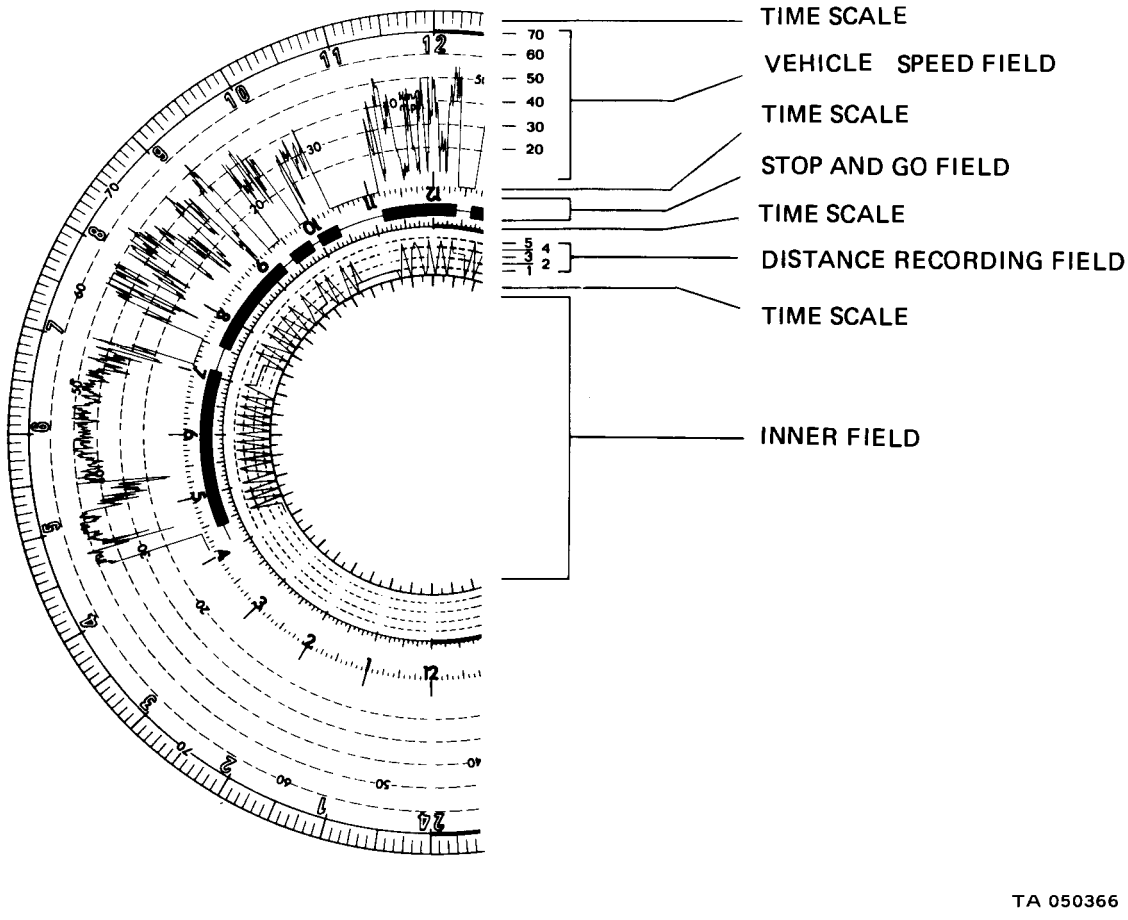


Figure 20-2. Tachograph Chart Divisions

b. Purpose.

(1) General. The chart contains important information as to how the truck is being driven. The recordings on the chart will give you the answers to questions, such as:

(a) How much is the truck used?

(b) How many stops did the truck make and how long were the stops?

(c) Was the truck speeding?

(d) Was the engine left idling too long?

(e) Was the engine warmed up correctly and shut off correctly?

(f) Was the truck driven in the right rpm range?

(g) Was the engine being over speeded?

(h) Was the transmission shifted into the correct gears at all times?

(i) What is the total engine rpm compared to total miles driven?

Tachograph automatically records the answers to these questions on the chart. Recordings on the chart just have to be read correctly.

(2) Time range for evaluation. The time needed to read the chart depends on which recordings are being read. A complete daily reading of the chart is not necessary to make an analysis for a year. Readings can be taken every day for one month, then these readings can be spread out to give a year reading. For a complete detailed reading, a time of one or two minutes a chart is all that is needed.

(3) Working times. A new chart is put into the tachograph at the start of duty hours. The beginning and end of the recordings on the chart should be within duty hours. By adding the parts of the times marked on the red band by the stop and go stylus, you will get the exact amount of driving, that was done during duty hours. The thin line recordings on the chart show pauses or breaks.

NOTE

Make sure trucks have not been used without permission after duty hours.

(4) Traveling periods. Traveling time is read by the length of broad bands on the stop and go field. These recordings show how much time the driver was at the wheel. The total amount of time traveled can be figured by adding broad bands in the stop and go field. It is also important in figuring average speed and how the truck is being driven.

(5) Stopped time. Thin lines between broad bands on the stop and go fields show the time the truck was stopped. The stopped time can be figured by adding the thin lines in the time periods. When the truck is used locally, there may be a lot of stopped time. Some reasons for a lot of stopped time periods are:

(a) Loading and unloading.

(b) Waiting at a loading space.

(c) Repairs, servicing or refueling.

(d) Pauses in work.

(6) Amount of use. The amount of truck use is the traveling time as compared to the total operating time. Take the total traveling time and divide it by the total clock time from the chart, then multiply the answer by 100. This answer will give you the amount of time the truck was used during the 24-hour period.

$$\text{Amount of use} = \frac{\text{Traveling time}}{\text{Total time}} \times 100$$

NOTE

The size of the load will affect the traveling time.

(7) Average speed. Average speed can be figured from chart readings. Take the miles traveled and divide them by the actual driving time in minutes from the chart, then multiply the answer by 60.

$$\text{Average speed} = \frac{\text{Miles traveled}}{\text{Actual driving time in minutes}} \times 60$$

MPH

(8) Legal speed limits. For certain types of trucks, the law limits how fast they may travel on public roads. Check charts from time to time to make sure these laws are obeyed.

(9) Distance traveled in miles. The amount of miles the truck has traveled can be found by the odometer reading and the chart reading. The mileage counter section of the distance recorder counts all miles traveled, even if the tachograph was left open. The day's journey or part journey can be read from the chart. At the start and the end of a journey, distance recorder readings must be written in the inner field of the chart. The distance traveled will be the reading on the odometer at the beginning of the journey subtracted from the odometer reading at the end of the journey. This reading must be the same as the distance recording field on the chart, unless the readings written on the chart were false or the tachograph was left open.

c. Reading of Chart.

(1) Vehicle speed field.

The speed field of the chart (Fig. 20-3) is divided by five circles. Each circle is equal to ten miles an hour. When the truck goes faster, the speed recording stylus moves up to show how fast the truck was driven. When the truck is stopped, a base line is recorded. The base line will record just above the time scale as shown. This line must run even with and above the inside time scale or the chart will not show the right truck speed. If the base line is below the position shown, it is possible the stylus was bent down to show the truck was driven more slowly than it really was.

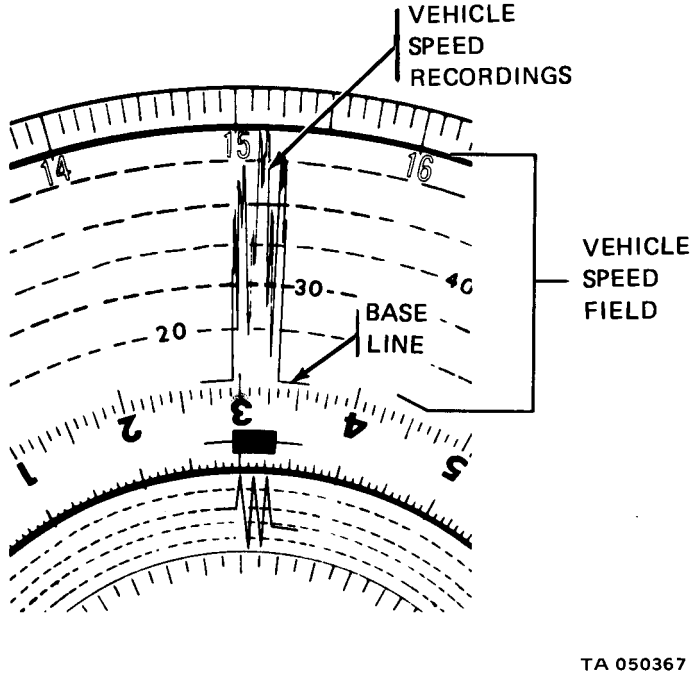


Figure 20-3. Vehicle Speed Recordings

(2) Stop and go field. The stop and go field (Fig. 20-4) is between the inside time scale and the distance recording field. The stop and go stylus records when the truck is moving or standing still. The recording mechanism is made up of an oscillating pendulum balanced by a spring. When the truck is moving, the pendulum vibrates, which makes the stop and go stylus move up and down. This up and down movement of the stylus makes a solid looking red bar about 1/16-inch wide. When the truck is stopped, the stylus will not move up and down, so a thin red line will be recorded. The vibrating pendulum records all vibrations of the truck without any connections to the drive train. This recording will work even if the drive cables are broken or taken off the tachograph.

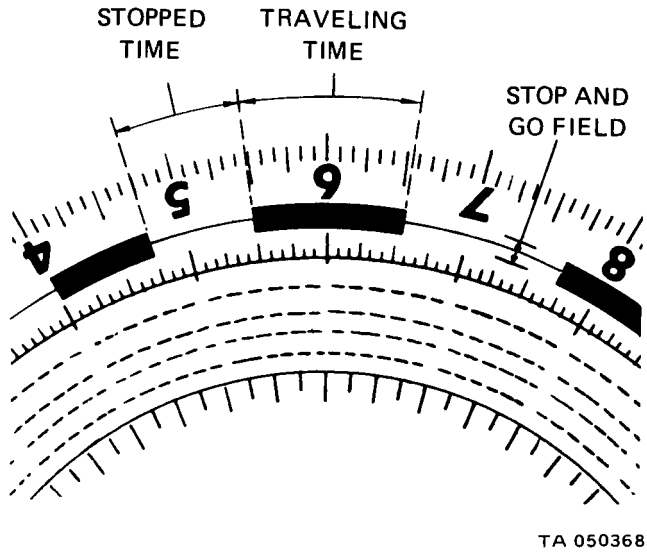


Figure 20-4. Stop and Go Recordings

(3) Distance recording field. The distance recording field (Fig. 20-5) below stop and go field is divided by five circles. The space between each circle is equal to driving exactly one mile. The distance recording stylus records how many miles were driven in how much time. One complete upward and downward line means the truck was driven ten miles. Thin straight lines show truck was stopped and for how long it was stopped.

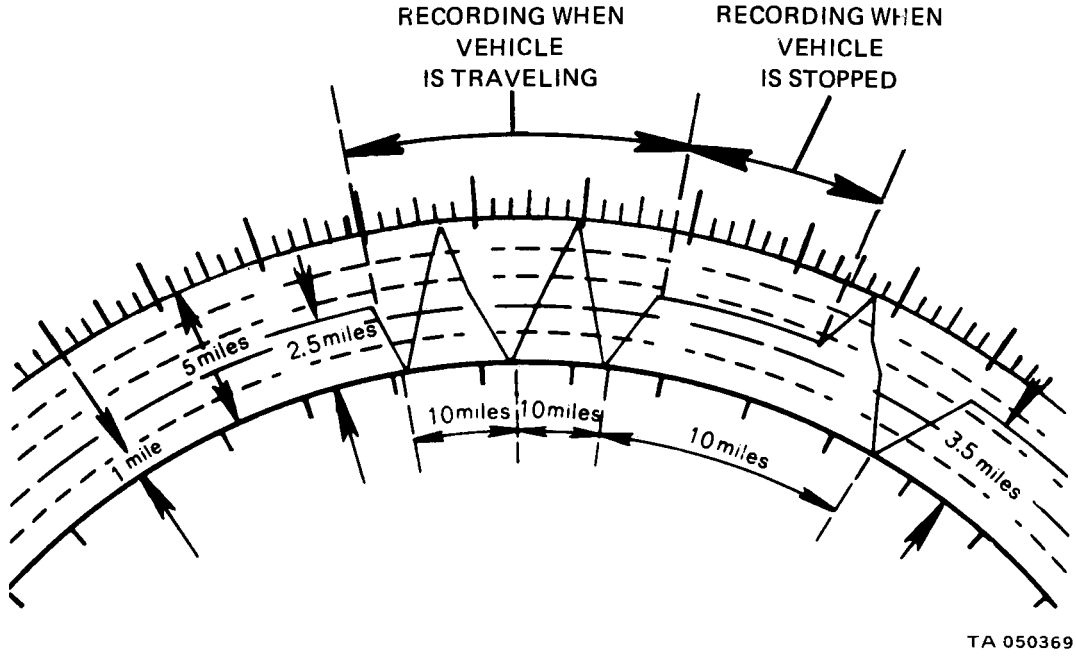


Figure 20-5. Distance Traveled Recordings

(4) Engine RPM field. The engine rpm is recorded on the blue side of the chart. The readings are recorded at the same time as the readings on the green side. The engine rpm field (Fig. 20-6) is divided by seven circles. Each circle is equal to 500 rpm. The base line is recorded just above the inside time scale and the 3500 rpm circle is just below the outside time scale. The base line is recorded as soon as the chart is put into the tachograph and is only recorded with the engine off. The rpm recording is made up of vertical arcs. The circle at the top of the arcs shows the top rpm of the engine at the time shown on the time scale.

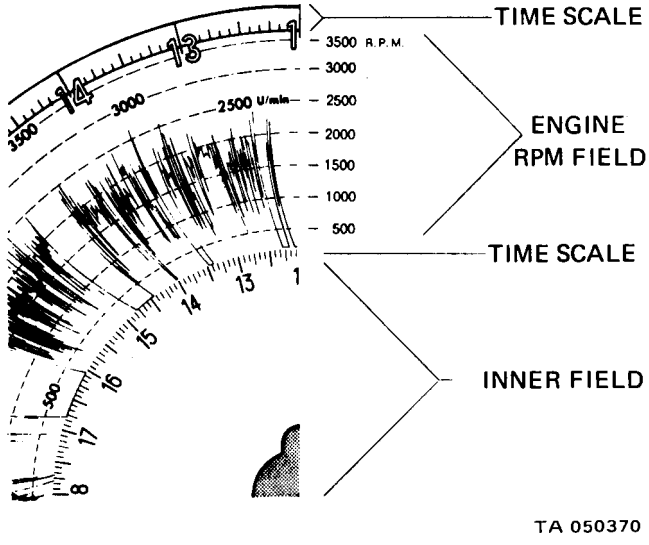


Figure 20-6. Engine RPM Recordings

d. Analyzing the Chart.

(1) General. After reading charts all the time, tests show that the driver takes charge of the economical operation of his truck. Charts show if the driver is driving the truck properly or if he needs some driving instructions. The chart can be figured out by reading the speed and engine rpm fields daily. The charts shown in this section show good and bad driving habits.

(2) Good driving speed chart. A good driving speed chart (Fig. 20-7) will show uniform driving and average speeds. The closer the highest speed reading comes to the average speed, the more uniform and economical the truck will be driven.

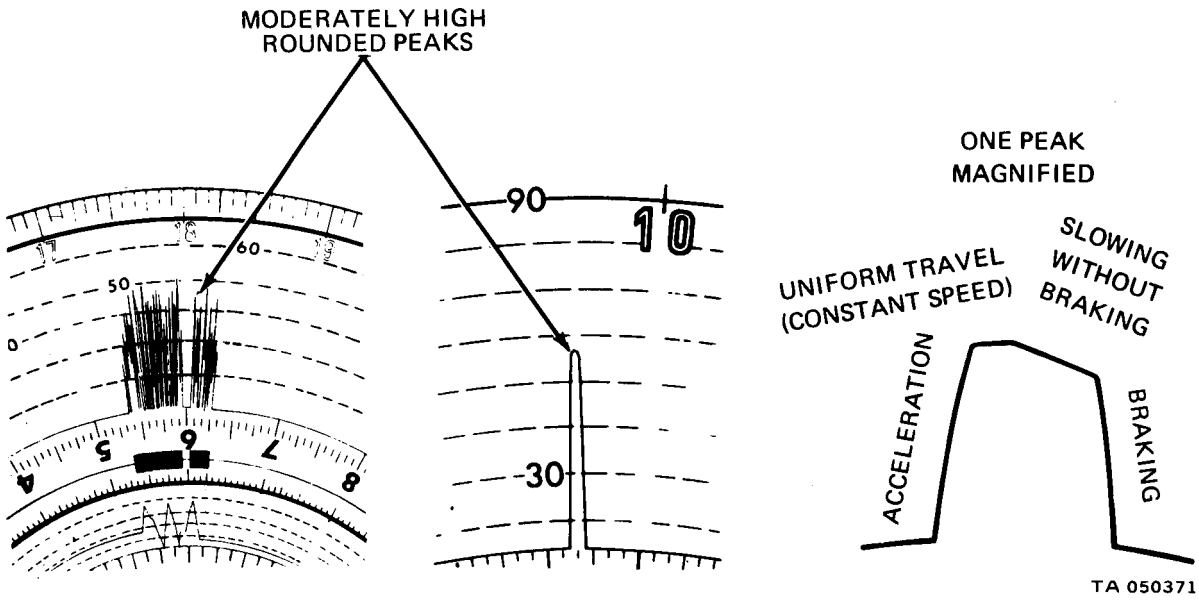


Figure 20-7. Good Driving Speed Chart

(3) Bad driving speed chart. High needle-shaped peaks in the vehicle speed field (Fig. 20-8) show the truck was speeded up and then braked suddenly. This is bad driving and is an important reason why the truck will not last long. When reading charts, always think about road and traffic conditions.

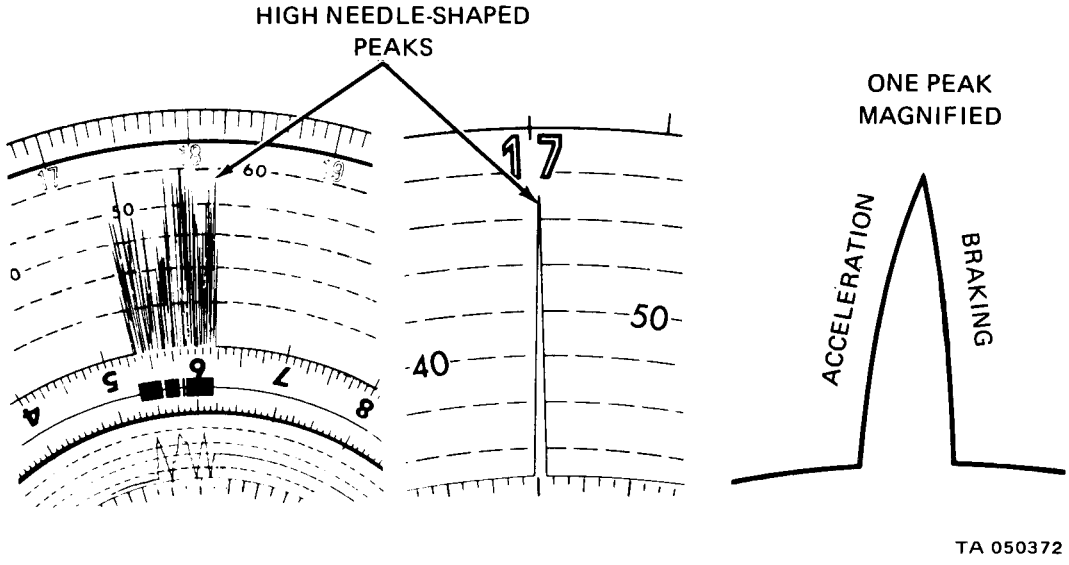


Figure 20-8. Bad Driving Speed Chart

(4) Good and bad driving over short distances. Reading the speed field alone will not give true operation of the truck. Heavy trucks used for short hauls in heavy traffic must also be covered. Even with law speed limits and heavy traffic, the driver still has control of the economy of his truck. Two different drivers driving the same route can have the same chart readings and still have different driving and economy readings. When the speed field is read with the engine rpm field, you can then figure out the way the truck is being driven. The charts in Fig. 20-9 show two trips on a scheduled route with good economy driving, and two trips with bad economy driving. The Speed field recordings show very little difference between each trip, but look at the rpm fields. In one case, the rpm recordings show good economy driving. In the other case, the engine was run at the highest rpm in each gear. There was only a very small difference in the time it took to finish the trips.

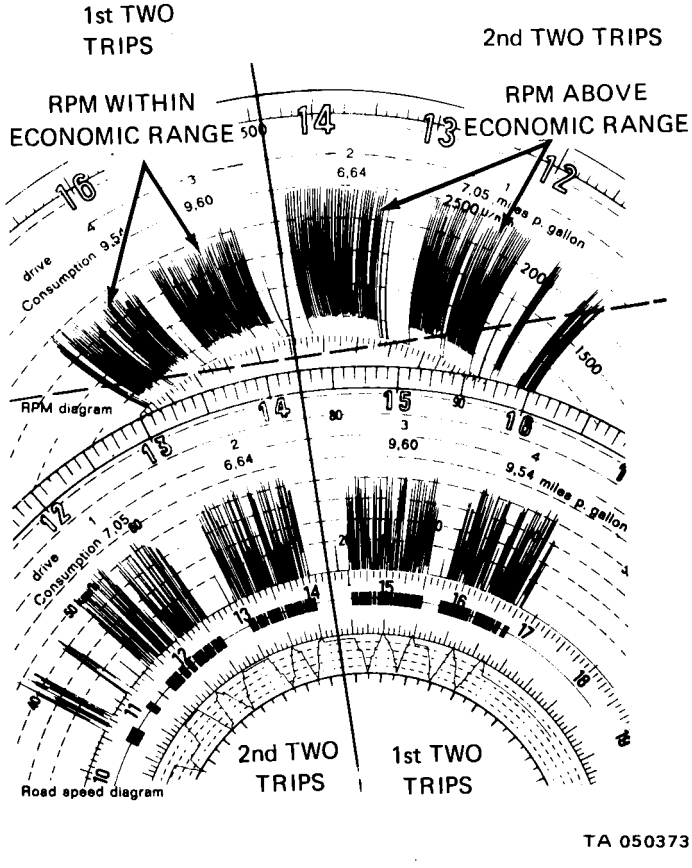


Figure 20-9. Good and Bad Driving Over Short Distances

(5) Driving downhill without gears engaged. This can easily be read on the speed field. Individual speed peaks (Fig. 20-10) will be seen above the maximum speed stated in the operating instructions for the truck. This condition can also be read on the rpm field by looking to see if the engine was idling during this time. If the engine was connected to the wheels at that time on chart, the rpm field would show an increase as the speed of the truck increased.

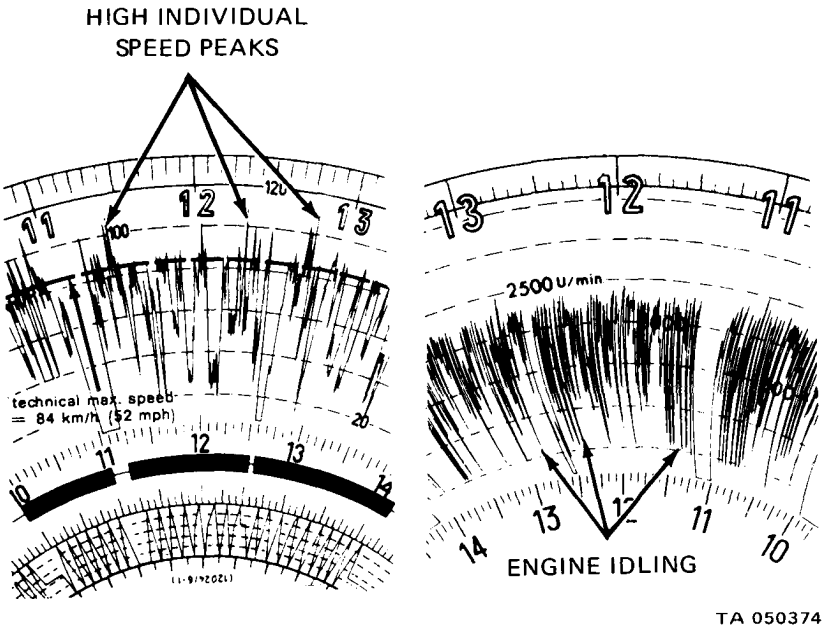


Figure 20-10. Driving Downhill without Gear Engaged

(6) Driving uphill in wrong gear. This speed field on the chart will not tell you which gear the truck was driven during this time period. However, the rpm field (fig. 20-11) will show that during this-time period, the engine was overloaded at low rpm. This kind of driving will cause major engine damage, and the driver of the truck must be told of this problem. Driving uphill in the correct gear will show in the rpm field maximum torque area (fig. 20-12).

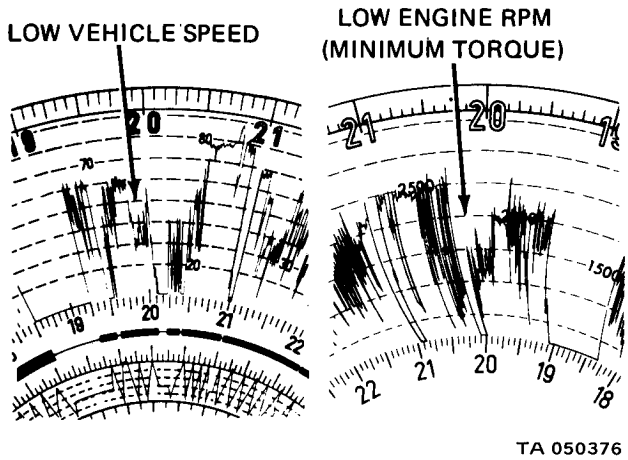


Figure 20-11. Driving Uphill in Wrong Gear

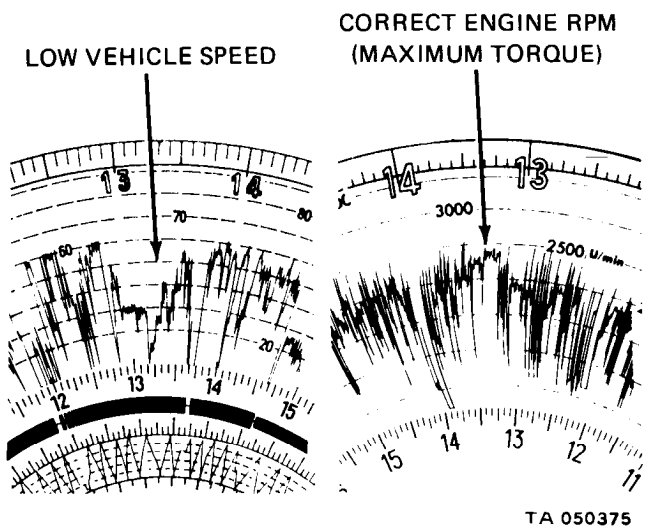


Figure 20-12. Driving Uphill in Correct Gear

(7) Driving downhill in wrong gear. The speed field (Fig. 20-13) will record truck speed that changes constantly because the weight of the truck will try to make the truck go faster. When the service brakes are put on, heavy stress is put on the brakes and the transmission components. The rpm field will also show constant change between high and low rpm. With this kind of driving the engine can easily run at very high rpms.

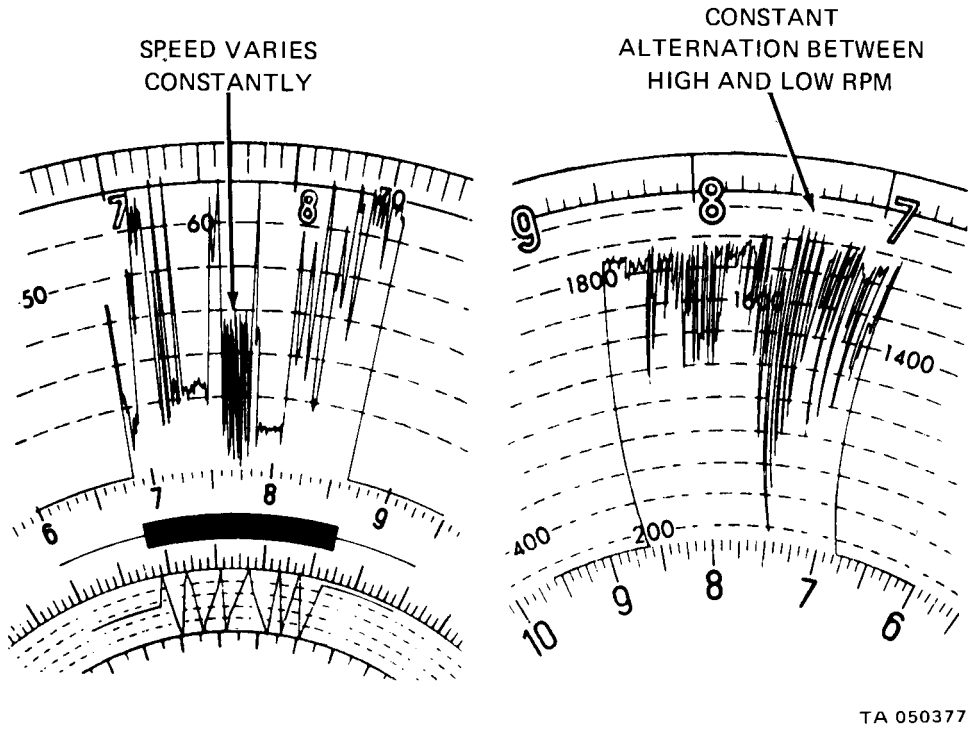


Figure 20-13. Driving Downhill in Wrong Gear

(8) Engine run at excessively high RPM. High rpms can be read on the rpm field. The rpm field (Fig. 20-14) will clearly show the allowable maximum rpm is constantly being exceeded.

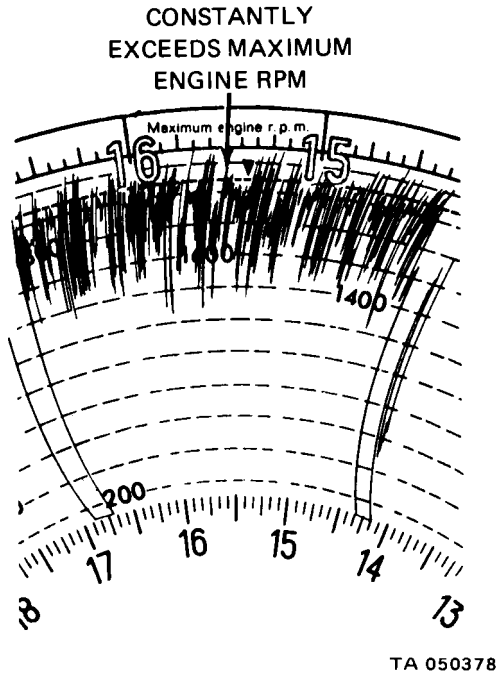


Figure 20-14. Engine Run at Excessively High RPM

(9) Excessive engine idling. The rpm field (Fig. 20-15) will clearly show if the engine has been idling for a period of several hours. Excessive engine idling will show as low engine rpm for periods of several minutes or hours, while during the same time period, the speed field will show the truck did not move.

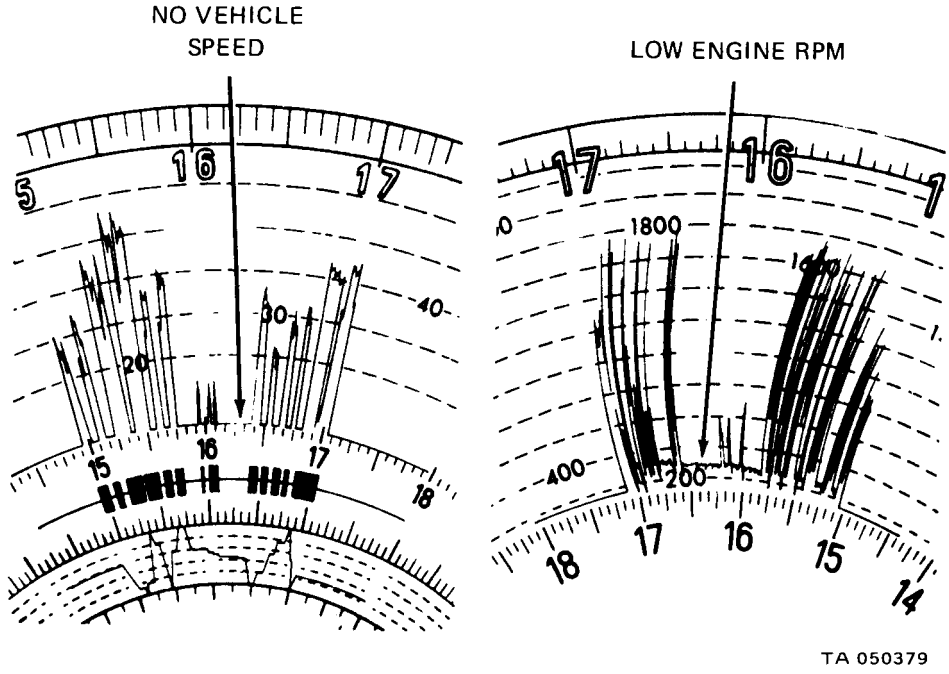


Figure 20-15. Excessive Engine Idling

(10) Cold starting and warming up the engine. The chart in Fig. 20-16 shows the engine was run at 2,300 rpm as soon as it was started. During the same time period, the speed field shows the truck was driven at 60 mph. Reading the two fields shows the engine was not warmed up before driving the truck. This kind of driving can cause damage to pistons and other engine parts. Again, the driver of the truck must be told to change this driving habit.

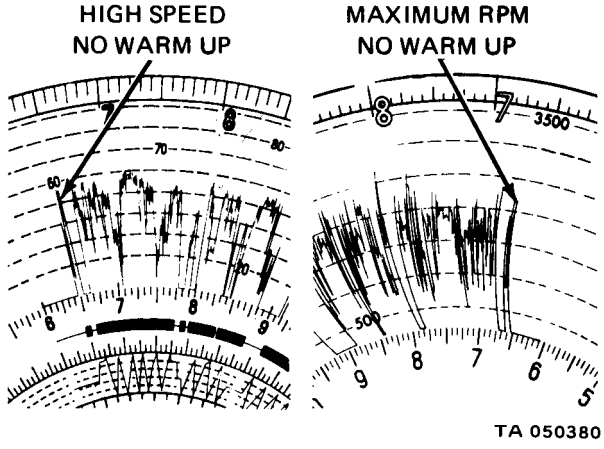


Figure 20-16. Poor Cold Starting Procedure

Recording of idling for several minutes on the rpm field (Fig. 20-17) shows good engine warm up. The speed field will record a base line which shows the truck was not driven during warm up, pointing out a good cold starting procedure.

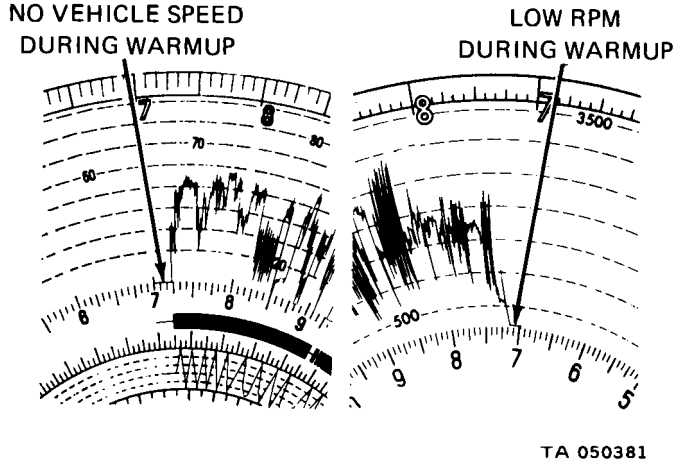


Figure 20-17. Good Cold Starting Procedure

e. Falsification and Irregularities.

(1) General. Some recordings on the chart fields may not be able to be read from the examples given so far. The reasons could be the driver may have done something to the tachograph to hide the true recordings or the tachograph may be broken. The tachograph was built so any readings that record on the chart can be read.

The tachograph has a lock and key and a knife-type pin on the door of the instrument. When the door is closed, a hole is punched in the chart. This arrangement will let only authorized personnel see the chart.

Taking off the speedometer or tachometer drive shafts makes the styluses draw base lines only, but the stop and go stylus still records and shows the truck was driven. Putting a weight or a rubber band on the speed stylus will record and show something was done on it. Bending the stylus will make it record below zero when the truck is stopped. The recordings cannot be taken off the chart. Grease can be washed off the chart but the readings will still be able to be read. False recordings are rare. The following examples show what to look for if any false readings show on the chart.

(2) Lowered speed.

(a) Problem. The speed stylus records the base line lower than what it should be.

(b) Cause. The speed stylus was bent down so the recording on the chart will show the truck was going slower than it really was. (See fig. 20-18.) To find the true speed of the truck, add the lower base line reading to the recorded reading. The tachograph will have to be adjusted so it will read correctly.

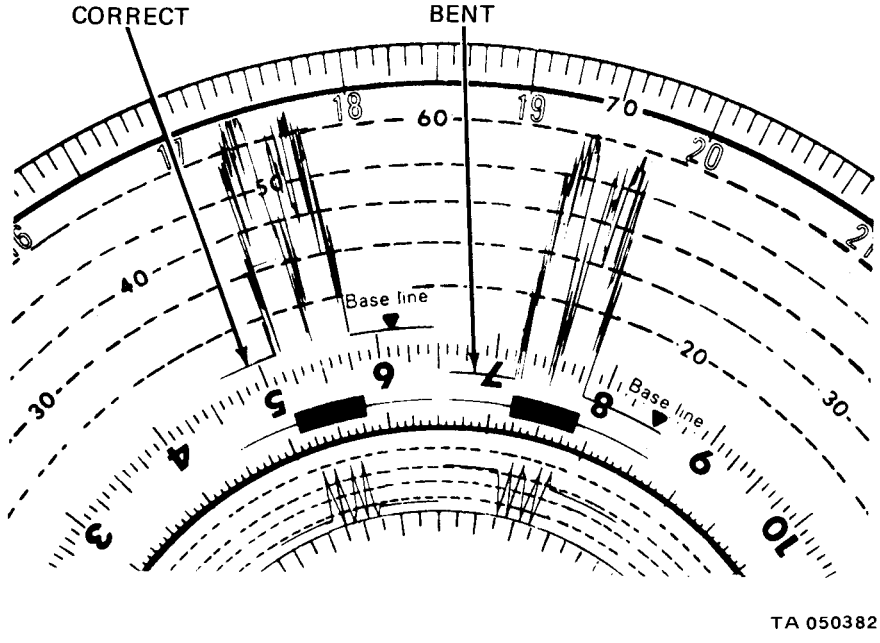


Figure 20-18. Speed Stylus Bent to Simulate Lower Speeds

(3) Deflection of speed and distance styluses.

(a) Problem. Only the stop and go field shows deflection, while the speed and distance fields show base line recordings.

(b) Cause. Speedometer drive shaft is broken or the drive shaft was taken out from the tachograph so the truck can be used without authorization. Reading the stop and go field (fig. 20-19) will show if truck was used.

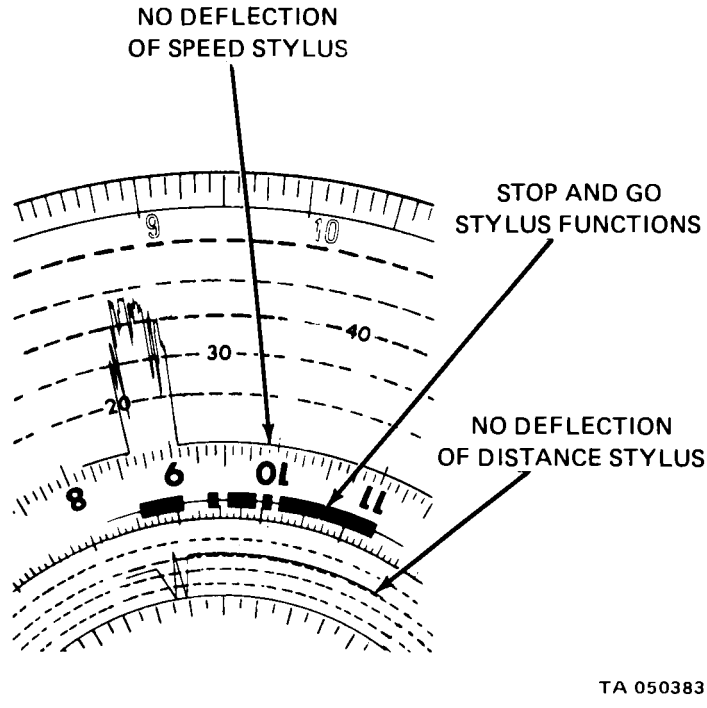


Figure 20-19. No Deflection of Speed and Distance Styluses

(4) Interrupted recordings on front side of chart.

(a) Problem. All recordings on the front side of the chart are interrupted, leaving a blank space for part of a trip.

(b) Cause. Tachograph was opened. Blank spaces will show on the chart because the recording styluses were not touching the chart (Fig. 20-20).

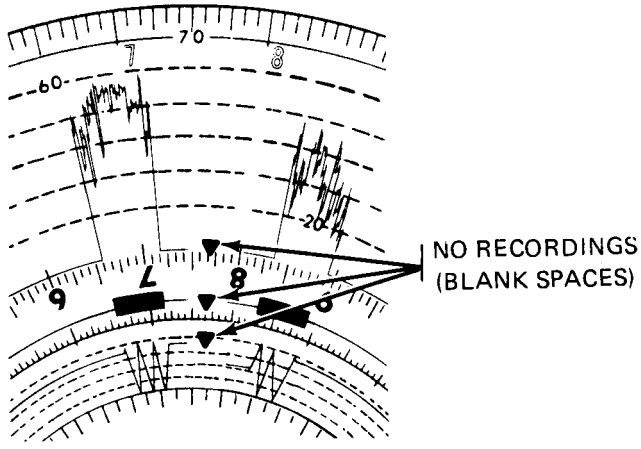


Figure 20-20. All Recordings on Front Side of Chart Interrupted

In addition, check final mileage figures on odometer with original mileage figures on next chart. If the figures are not the same, trips have been made between chart changes. Check the time used to take out one chart and put in another. This will be clearly recorded on the chart. Normally, a new chart should be put into the tachograph as soon as the used one is taken out. If distance does match, the chart may have been turned backwards to show different working times (Fig. 20-21).

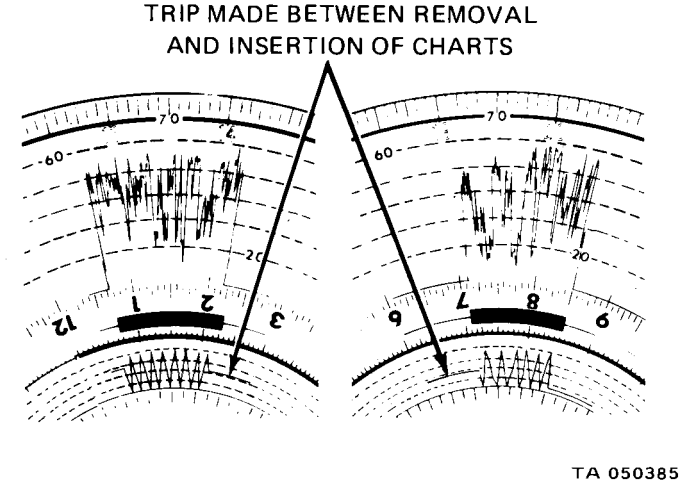


Figure 20-21. Trip Made Between Removal of Used Chart and Insertion of New Chart

(5) Superimposed recordings.

(a) Problem. Distance and speed recordings show the truck was stopped and moving at the same time.

(b) Cause:

1. The tachograph was opened and the chart was turned back so long stops were not recorded (Fig. 20-22, detail A).

2. The chart was in the tachograph more than 24 hours and the recordings of one day were made on top of the other recordings (Fig. 20-22, detail B). Check time the chart was put into the tachograph.

3. Recordings have been made by hand (Fig. 20-22, detail C). These recordings will not look like the recordings made by the tachograph.

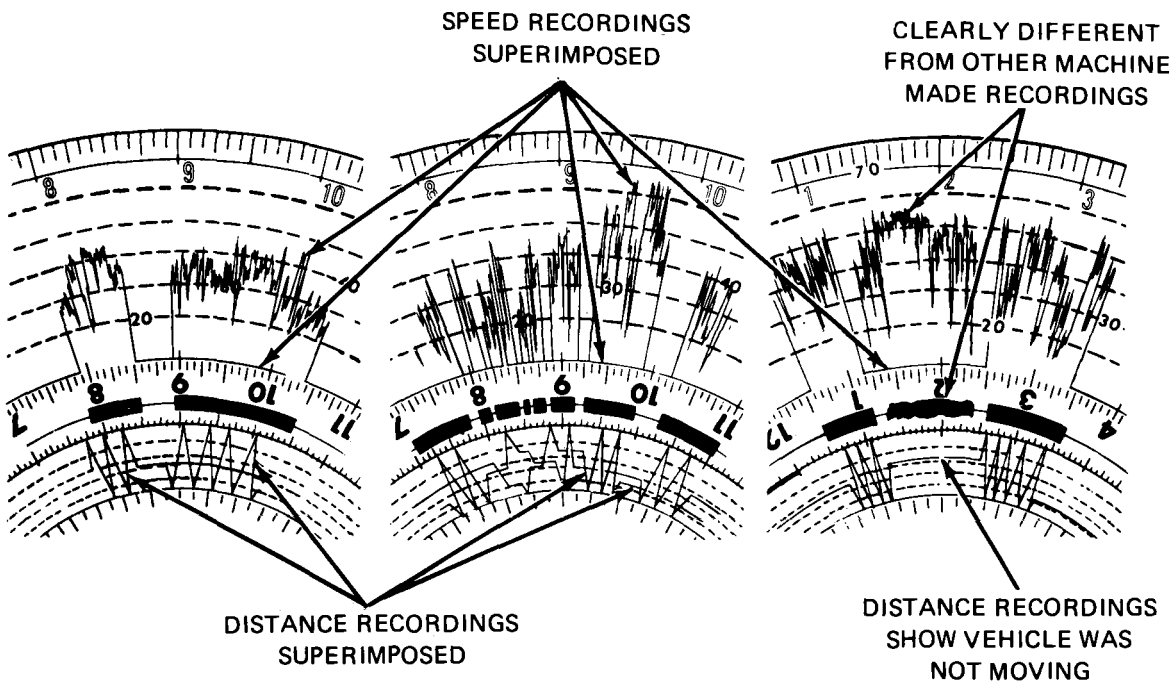


Figure 20-22. Superimposed Recordings

(6) Long periods of constant speed.

(a) Problem. The speed field recording shows long periods of constant speed. Constant speeds of this kind should not be used for long time periods.

(b) Cause. The speed stylus was stopped from moving up the scale by something being stuck into the tachograph. This will show the truck was moving slower than it really was. True speed may be found by figuring the average speed on the chart for the time the tachograph recorded constant speed (Fig. 20-23). The figure you get will usually be higher than the maximum speed allowed. The rpm field should also show constant rpm in this time period, but it probably will not.

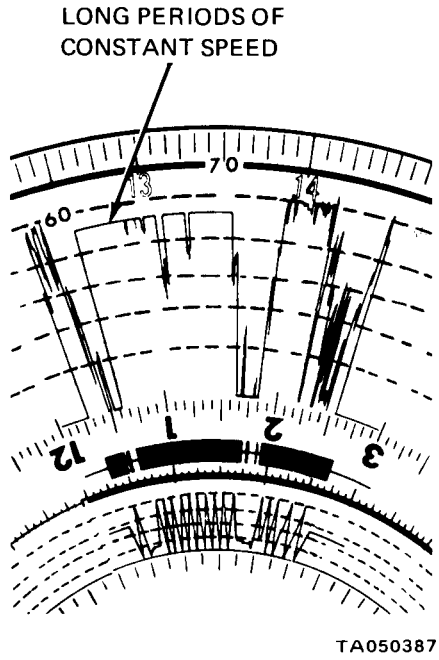


Figure 20-23. Speed Recording Runs for Unusually Long Period at a Uniform Level

(7) All styluses give vertical recordings. The clock was not wound and did not turn the chart, or the clock was stopped by something being stuck into it. The chart will not turn, so the styluses will record in the same place on the fields (Fig. 20-24).

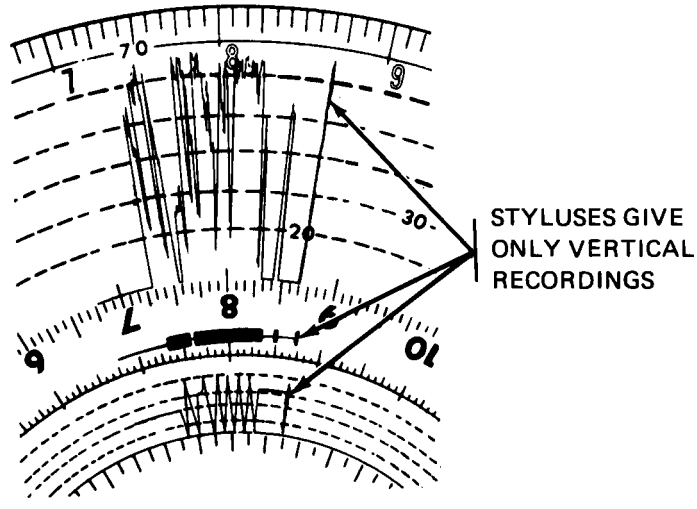


Figure 20-24. All Styluses Give Vertical Recordings Due to Stoppage

20-12. TACHOGRAPH DRIVE SHAFTS REMOVAL AND REPLACEMENT. For procedures to remove and replace the tachograph drive shafts, refer to speedometer drive shaft removal and replacement, para 20-7, and tachometer drive shaft removal and replacement, para 20-5.

CHAPTER 21
MAINTENANCE OF MATERIAL USED IN CONJUNCTION WITH MAJOR ITEMS

Section I. SCOPE

21-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for winterization kits, deep water fording kit, and special purpose kits for which there are authorized corrective maintenance tasks at the organizational maintenance level.

21-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Section II. WINTERIZATION KITS

21-3. PERSONNEL HEATER ELECTRIC FUEL PUMP REMOVAL, REPLACEMENT, AND TEST.

WARNING

Smoking, sparks, or open flame are not allowed within 50 feet of work area during this task.

TOOLS: General mechanic tool kit
Flat-tip screwdriver
6-inch pliers
1/2-gallon container

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Fuel pump cover gasket
Fuel pump cup gasket
Rags

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Disconnect battery ground cable. Refer to Part 1, para 7-44.

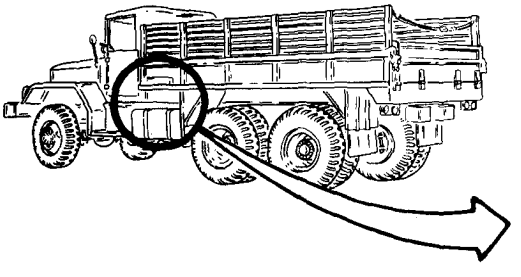
(2) Turn off personnel heater, powerplant heater, and shutoff cocks. Refer to TM 9-2320-211-10.

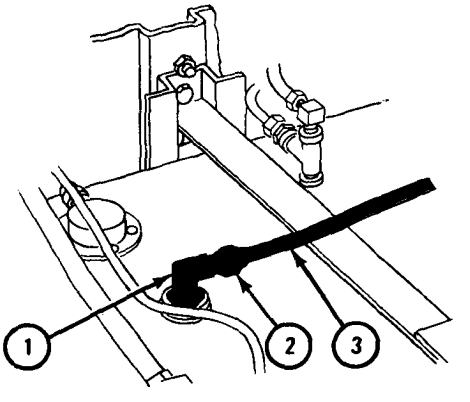
b. Removal.

FRAME 1

1. Using wrenches, hold tube fitting (1) and unscrew tube nut (2).
2. Pull tube (3) with tube nut (2) away from tube fitting (1).
3* Using rags, wipe up any fuel which drains from tube (3) and put rags in approved disposal area.

GO TO FRAME 2





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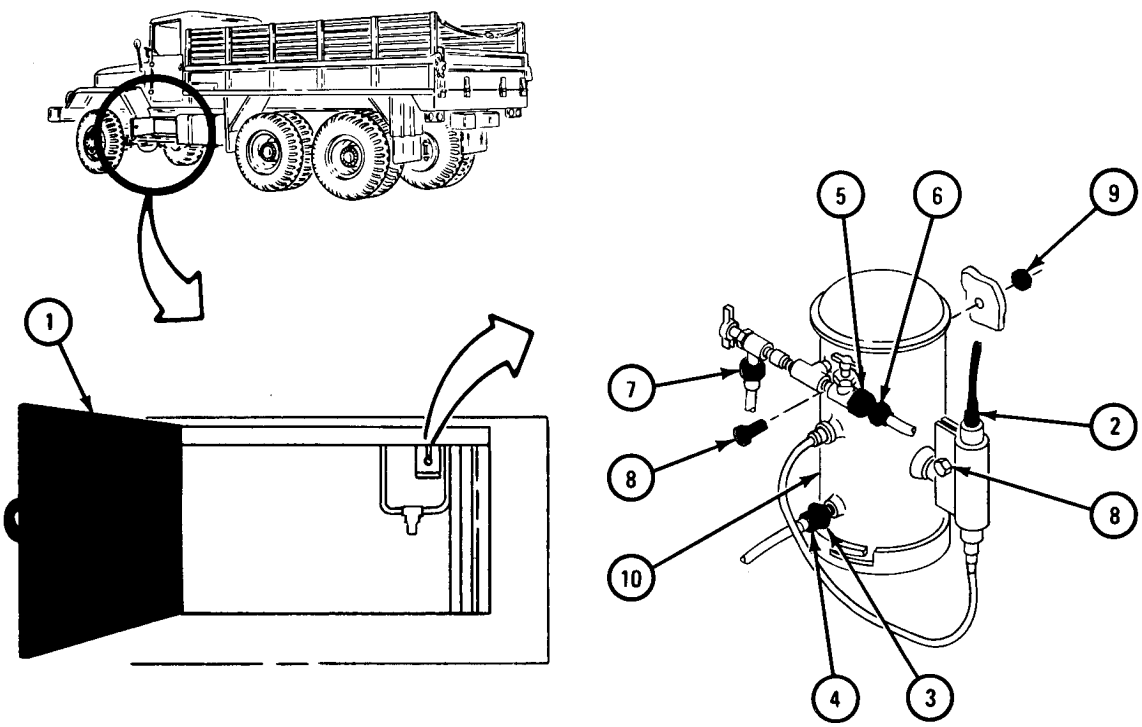
FRAME 2

NOTE

When taking off tubes, drain fuel into container and put fuel in approved disposal area.

1. Open tool compartment door (1).
2. Unplug electrical lead (2).
3. Using wrenches, hold tube fitting (3) and unscrew and take off tube nut (4).
4. Using wrenches, hold tube fitting (5) and unscrew and take off tube nut (6).
5. Using wrench, unscrew and take off tube nut (7).
6. Using wrench, unscrew and take off two capscrews (8) and nuts (9).
7. Take out fuel pump (10).

END OF TASK



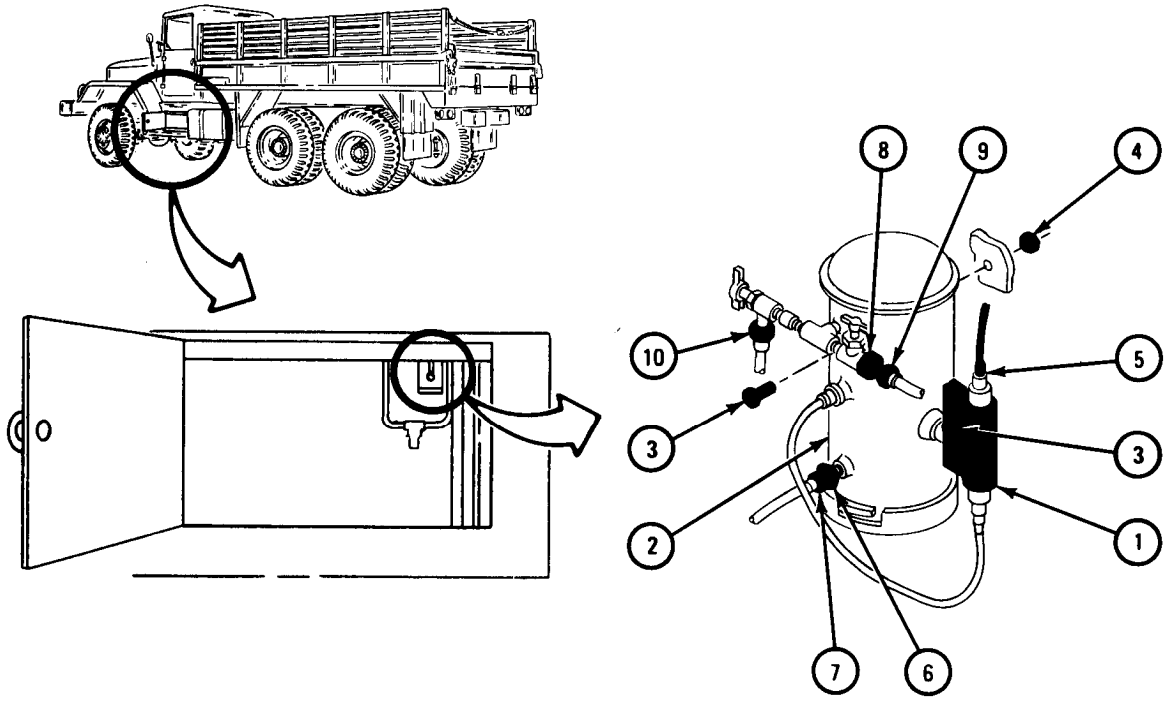
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c. Replacement.

FRAME 1

1. Aline screw hole in electrical lead clamp (1) with screw hole in fuel pump (2). Put fuel pump in place as shown. Using wrench, screw in and tighten two capscrews (3) and nut (4).
2. Plug in electrical lead (5).
3. Using wrenches, hold tube fitting (6) and screw in and tighten tube nut (7).
4. Using wrenches, hold tube fitting (8) and screw in and tighten tube nut (9).
5. Using wrench, screw on and tighten tube nut (10).
6. Close tool compartment door.

GO TO FRAME 2



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FRAME 2

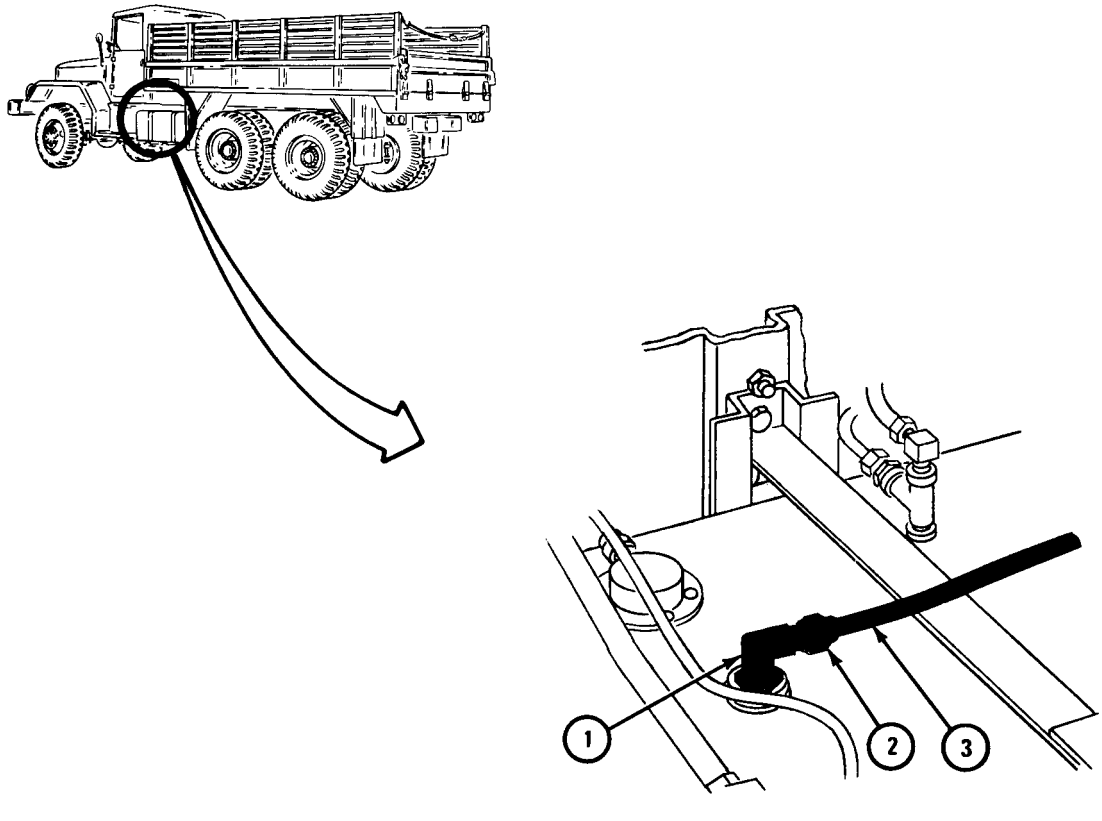
1. Using wrenches, hold tube fitting (1) and screw on and tighten tube nut (2) with tube (3).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to Part 1, para 7-44.

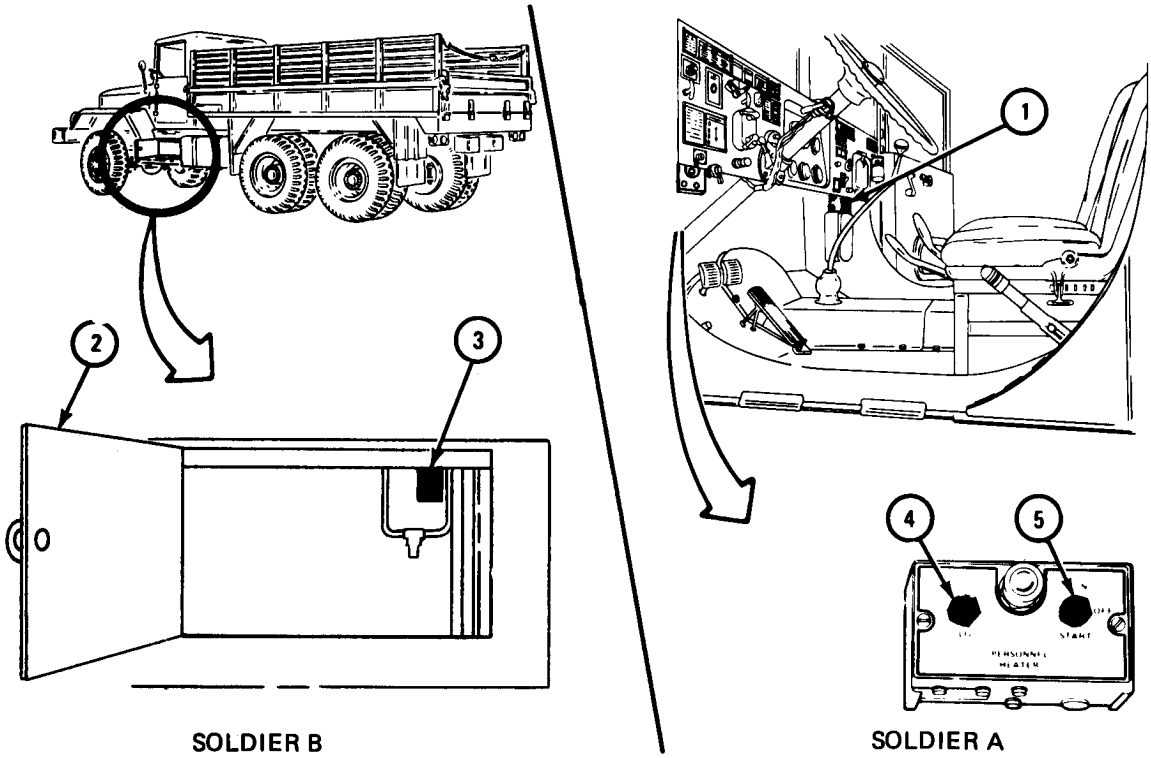
END OF TASK



d. Test.

FRAME 1

Soldier A 1. Check that emergency switch (1) is in ON position.
Soldier B 2. Open tool compartment door (2) and hold hand on fuel pump (3).
Soldier A 3. Set heater blower switch (4) to LO or HI position.
4. Hold RUN-OFF-START switch (5) to START position until indicator-light comes on and tell soldier B.
Soldier B 5. Tell soldier A if fuel pump (3) is running.
Soldier A 6. Let go of RUN-OFF-START switch (5).
Soldier B 7. Close tool compartment door (2).
END OF TASK



21-4. HOT WATER PERSONNEL HEATER INSPECTION AND FUNCTIONAL TEST.

TOOLS: None

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Inspection. Check all electrical wires for cracks, breaks, or worn or melted insulation. Pull apart each connector and check for dirt, rust, or corrosion. Tell direct support maintenance if any wire is damaged.

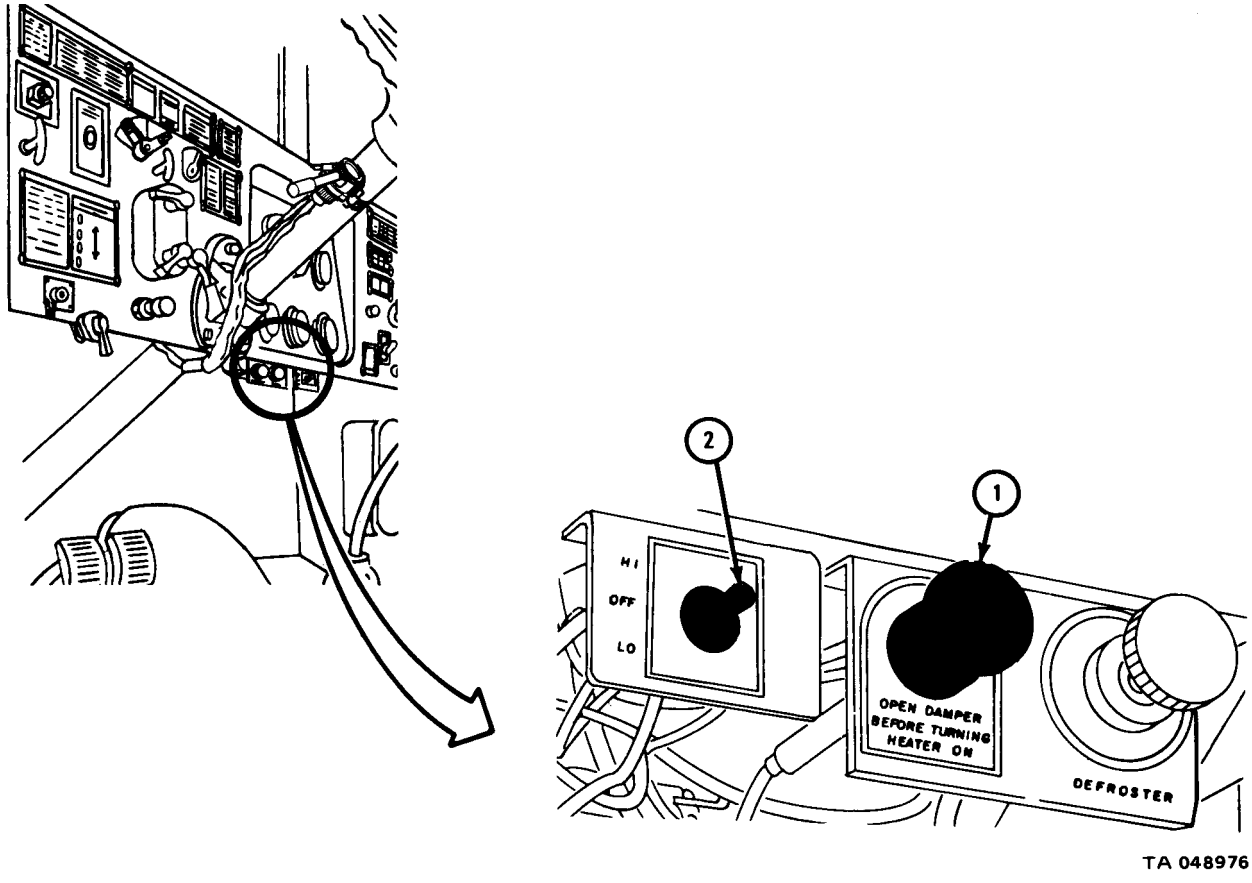
b. Preliminary Procedure. Start engine and bring it to operating temperature, Refer to TM 9-2320-211-10.

c. Test.

FRAME 1

1. Pull out AIR knob (1) until it stops.
2. Set heater switch (2) to LO position.

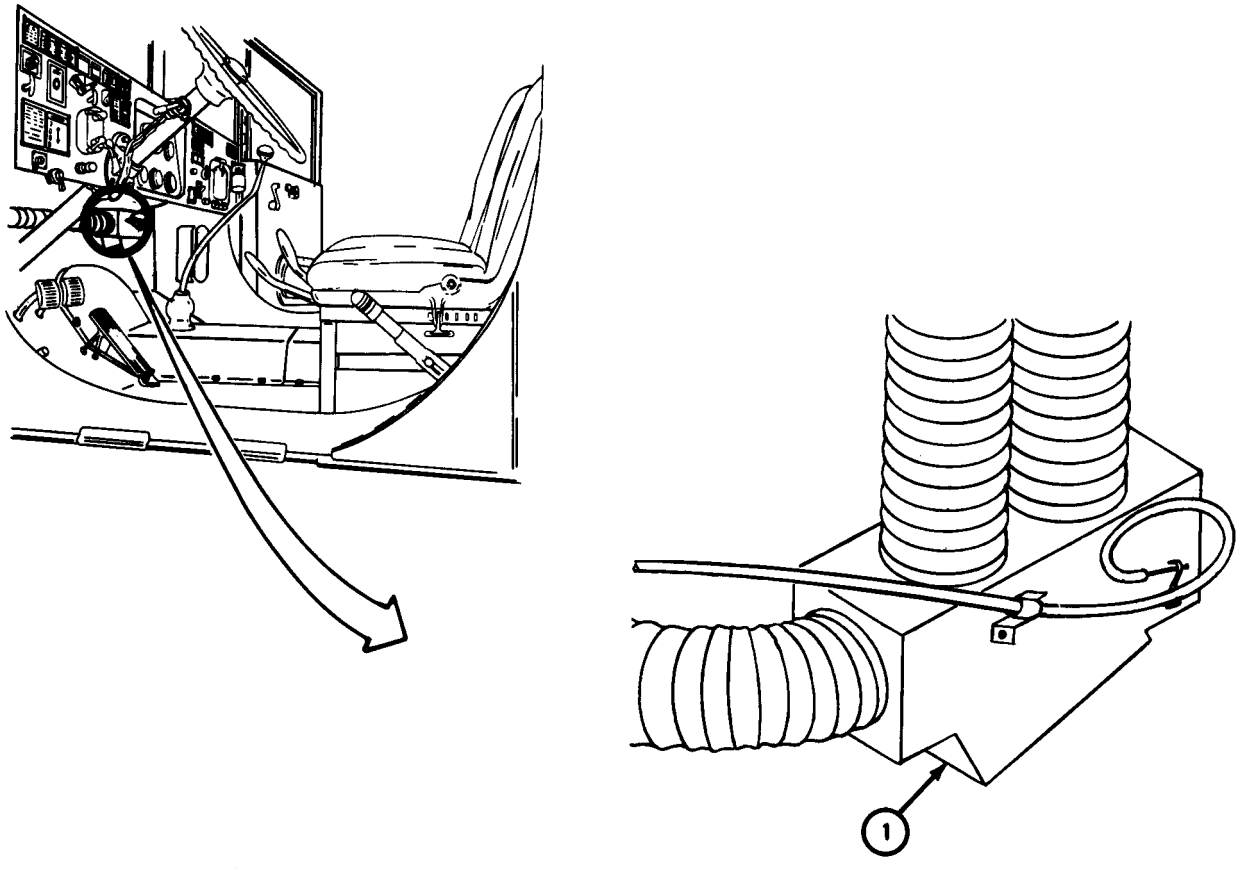
GO TO FRAME 2



FRAME 2

1. Put hand in front of heat diverter opening (1). Slight warm air flow should be felt.
2. If slight air flow is not felt, adjust cable. Refer to para 21-8.

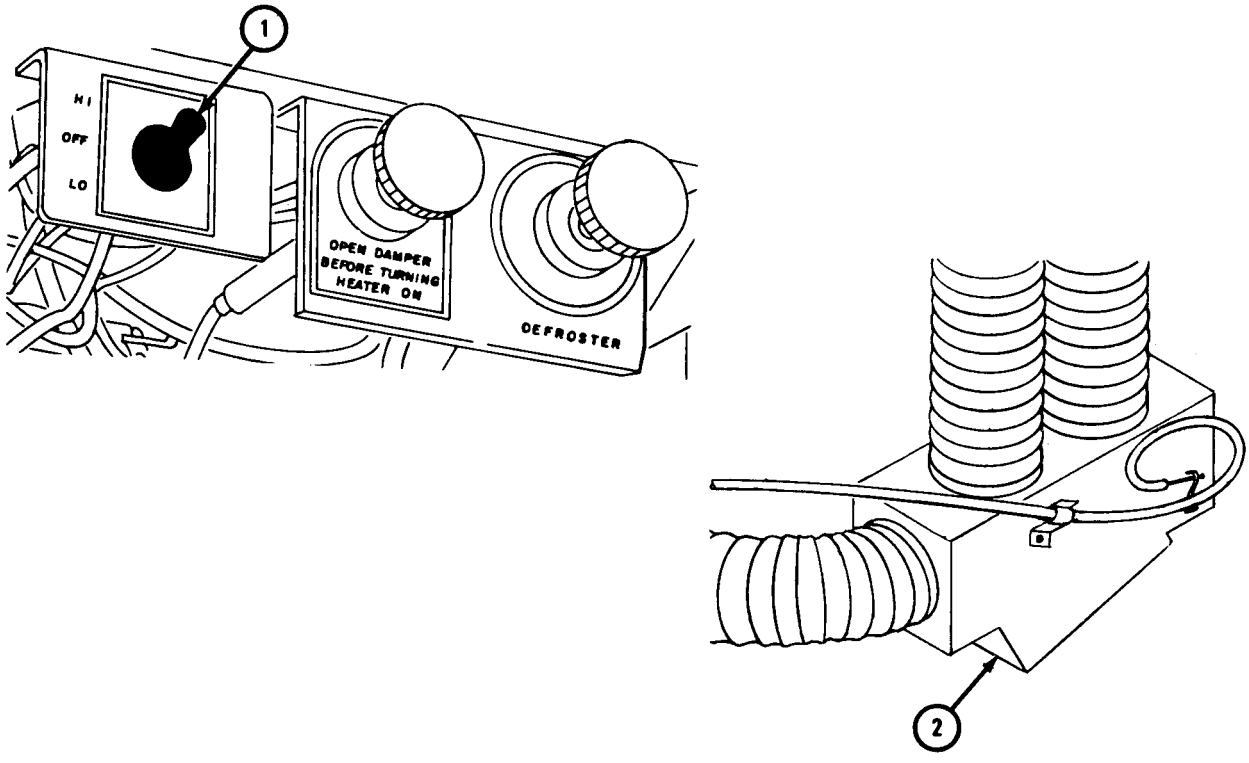
GO TO FRAME 3



FRAME 3

1. Set heater switch (1) to HI position.
2. Put hand in front of diverter opening (2). Strong warm air flow must be felt.
3. If strong air flow is not felt, adjust cable. Refer to para 21-8.

GO TO FRAME 4



FRAME 4

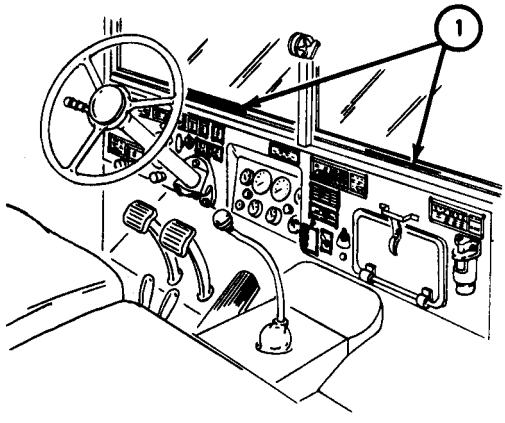
1. Put hands over defroster deflectors (1). Little or no warm air flow will be felt. If not, adjust cable. Refer to para 21-8.
2. Pull out DEFROSTER knob (2) until it stops.
3. Put hands over defroster deflectors (1). Strong warm air flow will be felt. If not, adjust cable. Refer to para 21-8.
4. Set heater switch (3) to OFF position.
5. Push in DEFROSTER knob (2) and AIR knob (4).

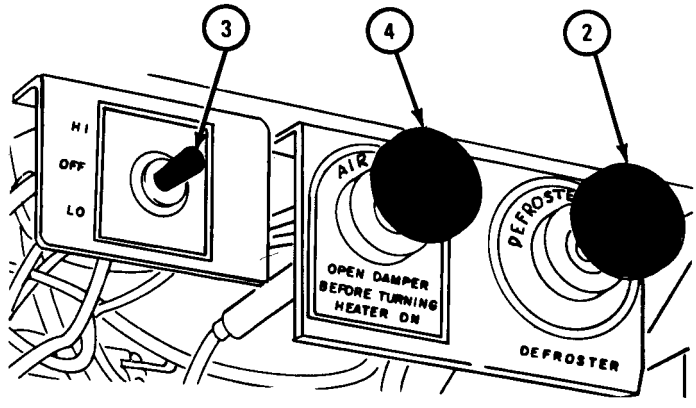
NOTE

Follow-on Maintenance Action Required:

Stop engine. Refer to TM 9-2320-211-10.

END OF TASK





TA 048980

21-5. HEATER CIRCUIT BREAKER REMOVAL, REPLACEMENT, AND TEST.

TOOLS: 11/32-inch open end wrench
Flat-tip screwdriver
Multimeter

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Remove heater control box. Refer to para 21-9.

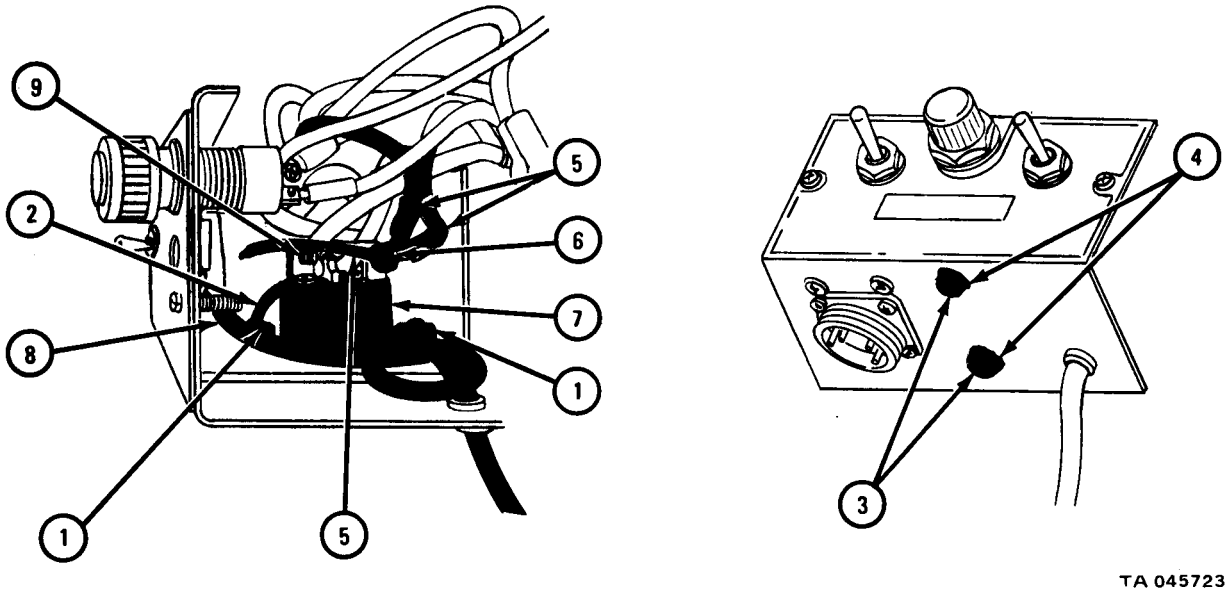
(2) Remove heater motor control switch. Refer to para 21-10.

b. Removal.

FRAME 1

1. Using screwdriver and 11/32-inch open end wrench, unscrew and take off two nuts (1), with ground wire (2). Take out two screws (3) and two spacers (4).
2. Tag three wire leads (5) so they can be put back in the same place. Using screwdriver, unscrew and take out screw (6).
3. Turn circuit breaker (7) to the right and tag wire lead (8).
4. Using screwdriver, unscrew and take out screw (9). Take out circuit breaker (7).

END OF TASK



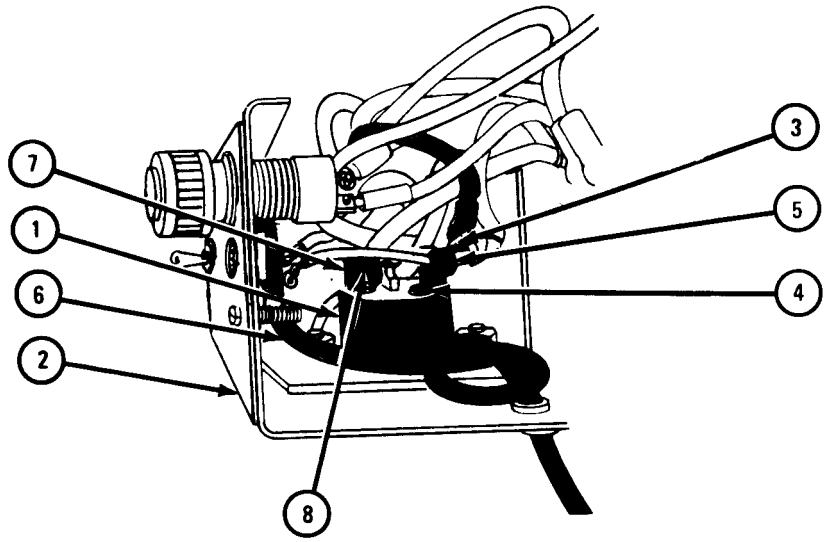
TA 045723

c. Replacement.

FRAME 1

1. Put circuit breaker (1) in control box (2).
2. Aline holes in three tagged wire leads (3) with hole in circuit breaker terminal (4).
3. Using screwdriver, screw in and tighten screw (5). Take off tags.
4. Turn circuit breaker (1) to the right. Aline hole in wire lead (6) with hole in circuit breaker terminal (7).
5. Using screwdriver, screw in and tighten screw (8). Take off tag.

GO TO FRAME 2



TA 045724

FRAME 2

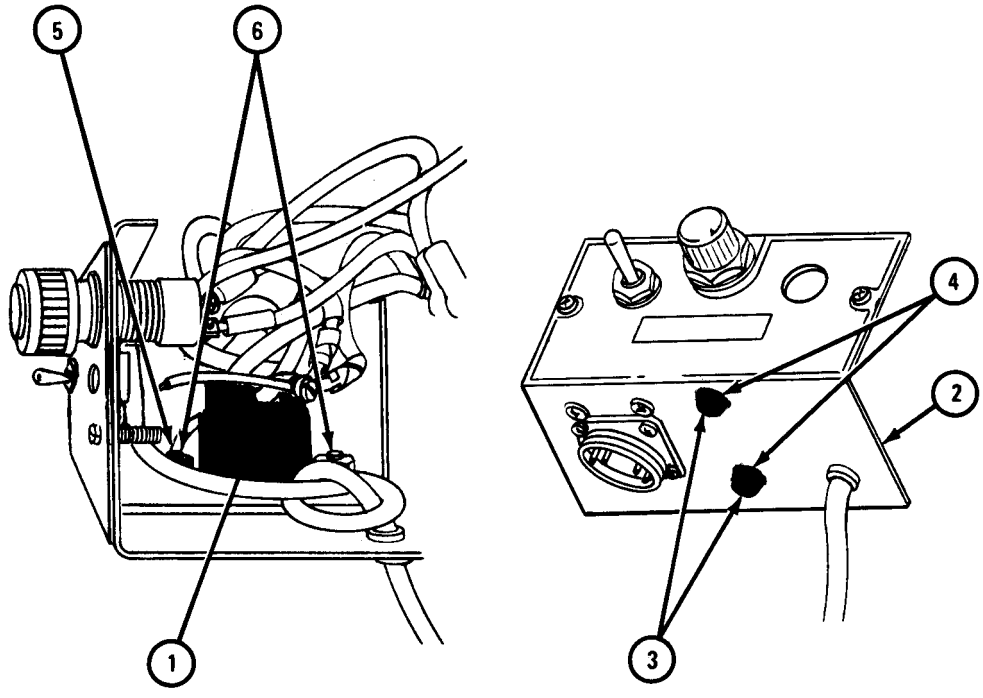
1. Aline two mounting holes in circuit breaker (1) with two holes in control box (2).
2. Push in two screws (3), with two spacers (4). Put on ground wire (5).
3. Using 7/16-inch wrench and screwdriver, screw on and tighten two nuts (6).

NOTE

Follow-on Maintenance Action Required:

Replace heater motor control switch. Refer to para 21-10.

END OF TASK



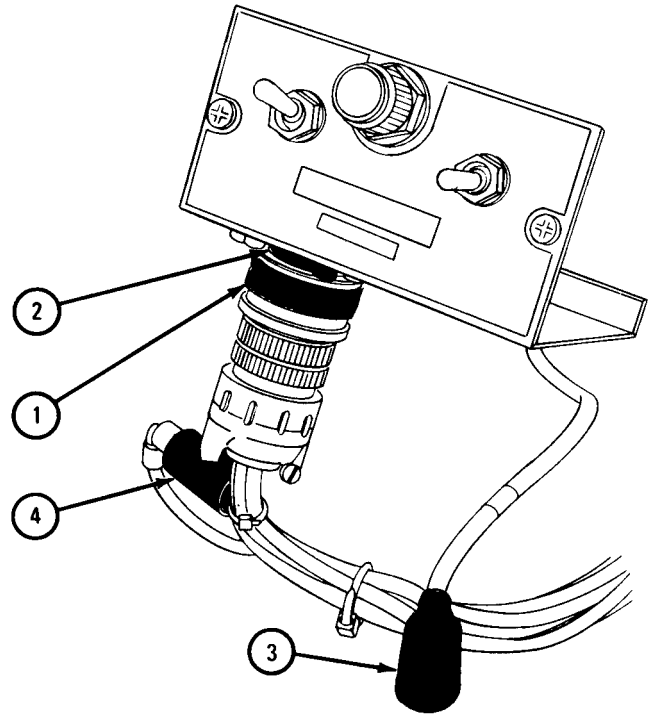
TA 045725

d. Test.

FRAME 1

1. Plug in and screw on control box harness (1) to control box receptacle (2).
2. Plug wire connector (3) into power lead (4).

GO TO FRAME 2



TA 045726

FRAME 2

WARNING

Rest control box on seat or nonmetallic object when battery switch is on to avoid electric shock and injury to personnel.

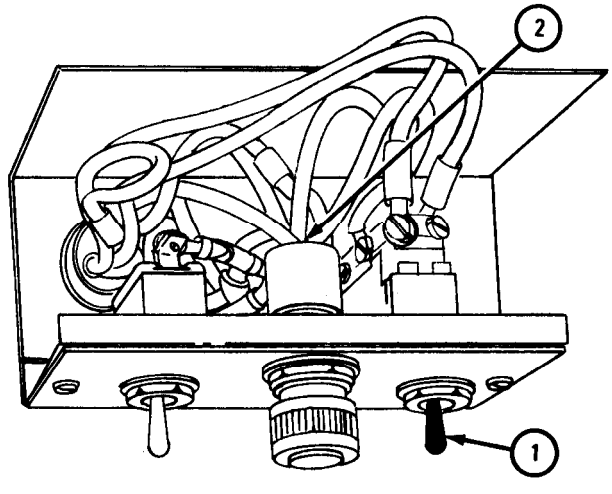
1. Turn on battery switch. Refer to TM 9-2320-211-10.
2. Move heater motor control switch (1) to RUN position.
3. Using multimeter, check circuit breaker (2) for 24 volts.
4. Move switch (1) to OFF position.
5. Turn off battery switch. Refer to TM 9-2320-211-10.

NOTE

Follow-on Maintenance Action Required:

Replace heater control box. Refer to para 21-9.

END OF TASK



TA 045727

21-6. BLOWER MOTOR EMERGENCY SWITCH REMOVAL, TEST, AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)
Offset flat-tip screwdriver
Ohmmeter

SUPPLIES: None

PERSONNEL: One

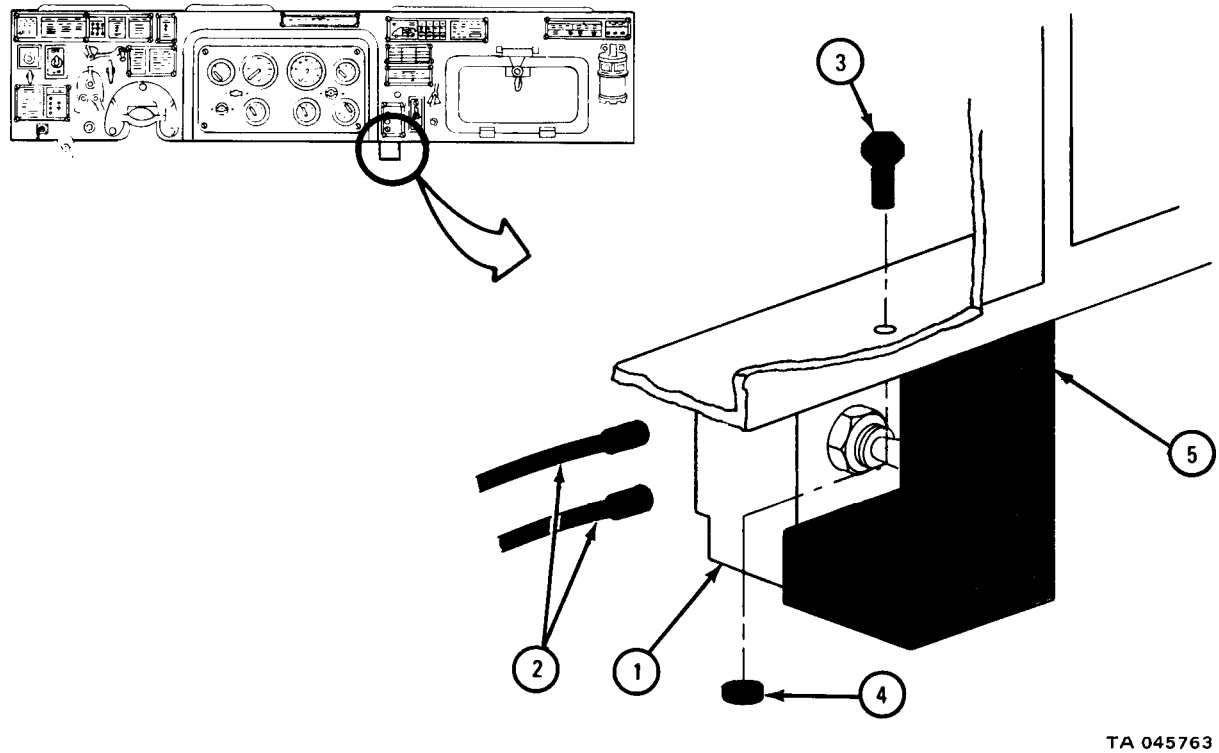
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Reach behind emergency switch (1) and pull off two connectors (2).
2. Using wrenches, unscrew and take out two screws (3) with nuts (4).
3. Take off protective guard (5) with emergency switch (1).

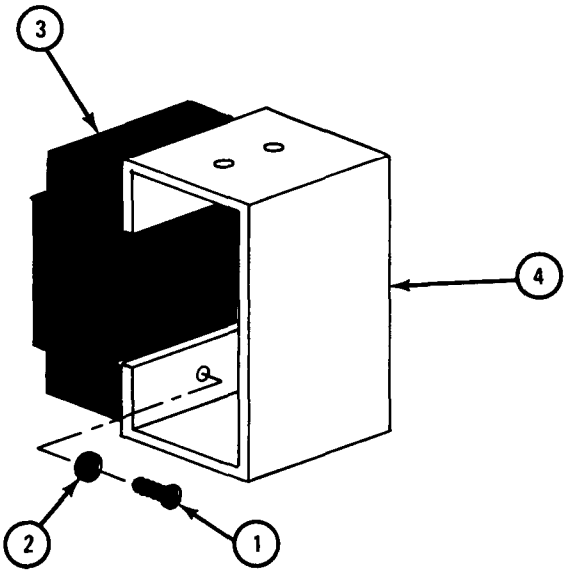
GO TO FRAME 2



FRAME 2

1. Using screwdriver, unscrew and take out two screws (1) with lockwashers (2).
2. Take off emergency switch (3) from protective guard (4).

END OF TASK



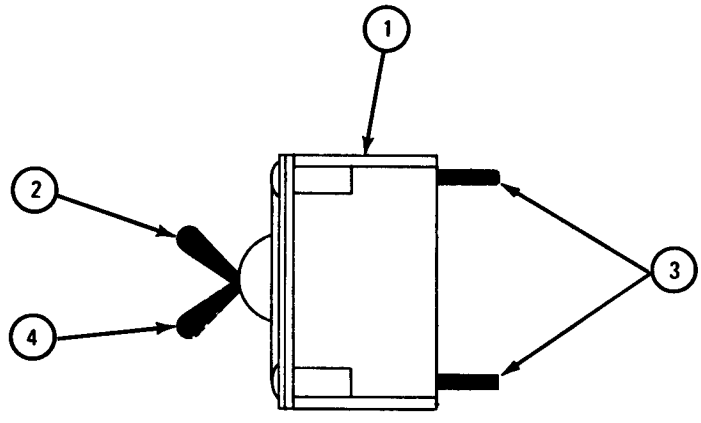
TA 045764

b. Test.

FRAME 1

1. Put emergency switch (1) in ON position (2).
2. Using ohmmeter on two connectors (3), check emergency switch (1) for closed circuit. Refer to vol 2, chapter 26.
3. Put emergency switch (1) in OFF position (4).
4. Using ohmmeter on two connectors (3), check emergency switch for open circuit. Refer to vol 2, chapter 26.

END OF TASK



TA 045765

c. Replacement.

FRAME 1

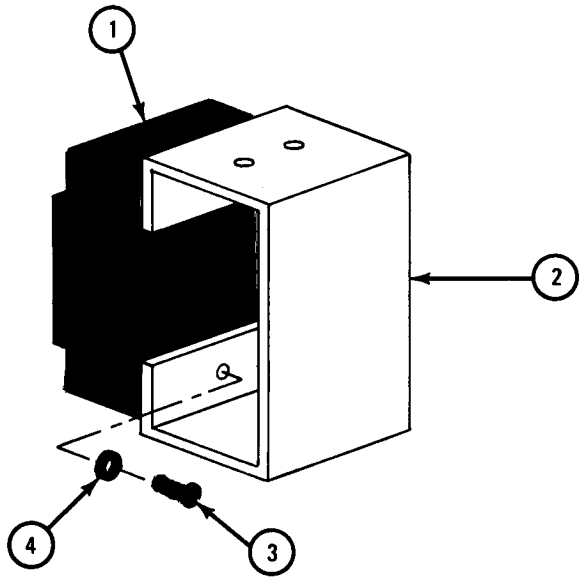
1. Aline holes in emergency switch (1) with holes in protective guard (2).

NOTE

Be sure emergency switch is in OFF (up) position.

2. Using screwdriver, screw in and tighten two screws (3) with lockwashers (4).

GO TO FRAME 2

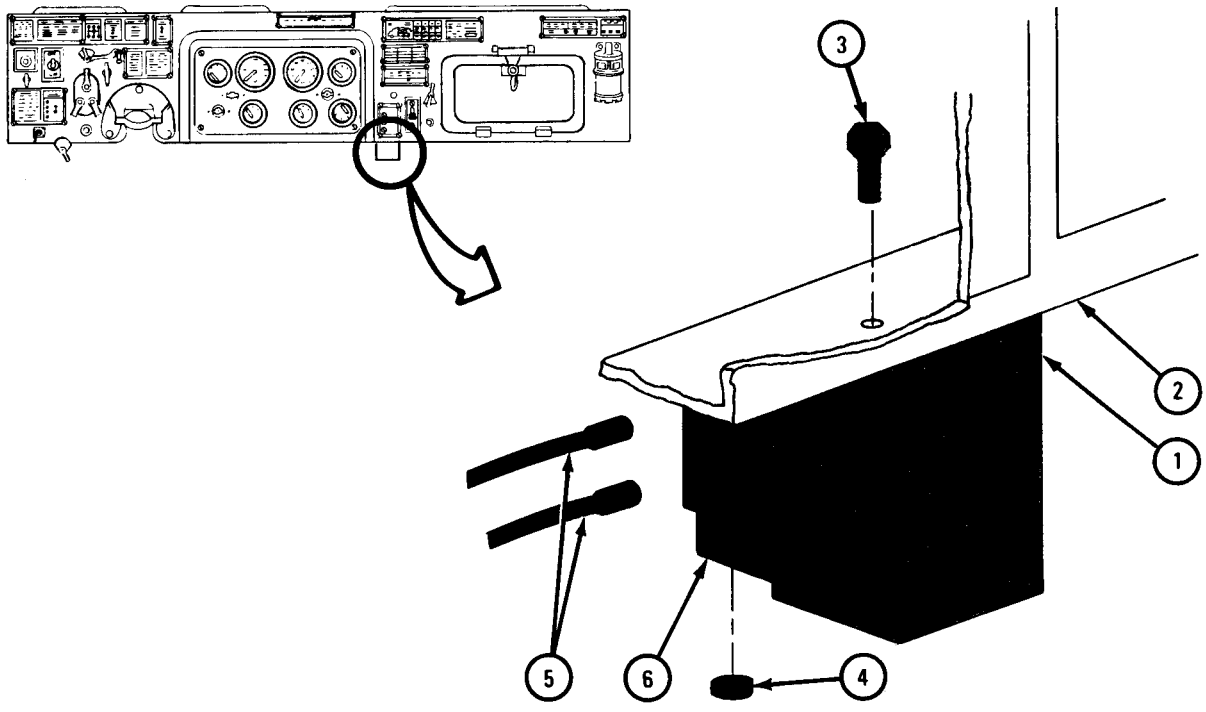


TA 045766

FRAME 2

1. Aline holes in protective guard (1) with holes in underlip of instrument panel (2).
2. Push two screws (3) through holes in instrument panel (2) and protective guard (1).
3. Using wrenches, screw on and tighten two nuts (4).
4. Push two connectors (5) into back of emergency switch (6).

END OF TASK



TA 045767

21-7. CONTROL VALVE RESISTOR ASSEMBLY (MODEL 8460-C24) REMOVAL, TEST, AND REPLACEMENT.

WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task.

TOOLS: Flat-tip screwdriver
11/32-inch socket wrench, 1/4-inch drive
13/16-inch wrench
7/16-inch wrench
3/8-inch wrench
Ohmmeter

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Open hood. Refer to TM 9-2320-211-10.

(2) Disconnect battery ground. Refer to Part 1, para 7-44.

NOTE

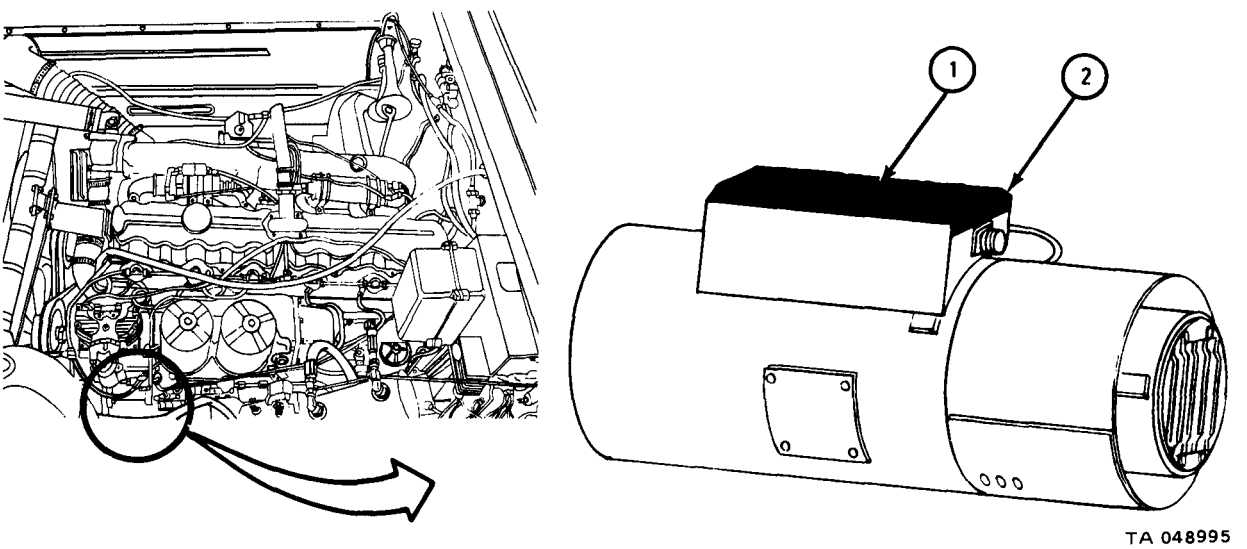
Tag all wires before taking them off so they can be put back in their right place.

b. Test.

FRAME 1

1. Using screwdriver, turn screw (1) 1/4 turn and take off guard (2).

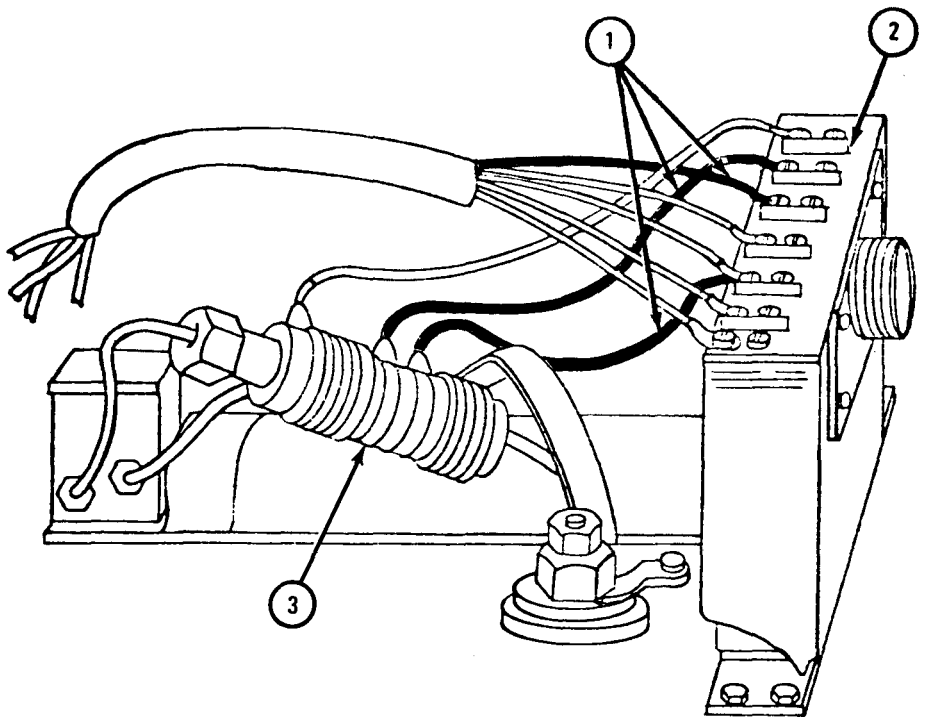
GO TO FRAME 2



FRAME 2

1. Using screwdriver, take off three wire leads (1) from terminal no. 4, 7, and 8 on terminal board (2).
2. Check resistor (3) for cracks or other damage.
3. Using ohmmeter, check resistor (3) for breaks in wire. Refer to vol. 2.
4. If resistor (3) is damaged, take it out and put in a new one. Refer to para 21-7c. If resistor is not damaged, using screwdriver, put wire leads (1) back on terminal board (2) as tagged. Take off tags.

END OF TASK



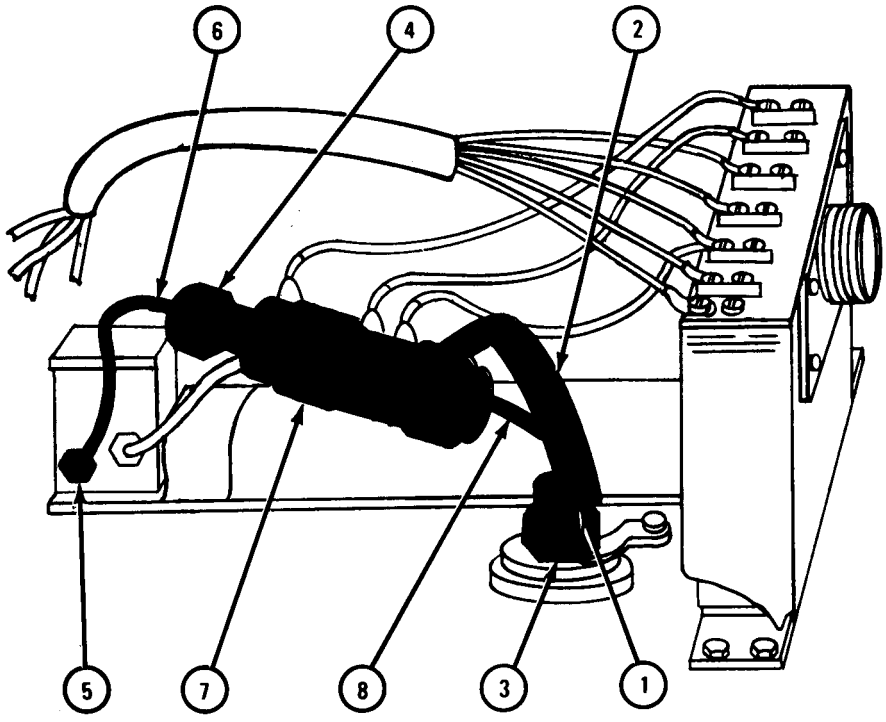
TA 048997

c. Removal.

FRAME 1

1. Using 11/32-inch socket wrench, unscrew and takeoff nut (1).
2. Take copper strap (2) off igniter (3) and push strap to one side.
3. Using 13/16-inch wrench, unscrew and takeout igniter (3).
4. Using 3/8-inch wrench, loosen nut (4). Using 7/16-inch wrench, takeoff nut (5) and take off primary fuel tube (6).
5. Slide control valve resistor assembly (7) off of primary standpipe (8).

END OF TASK



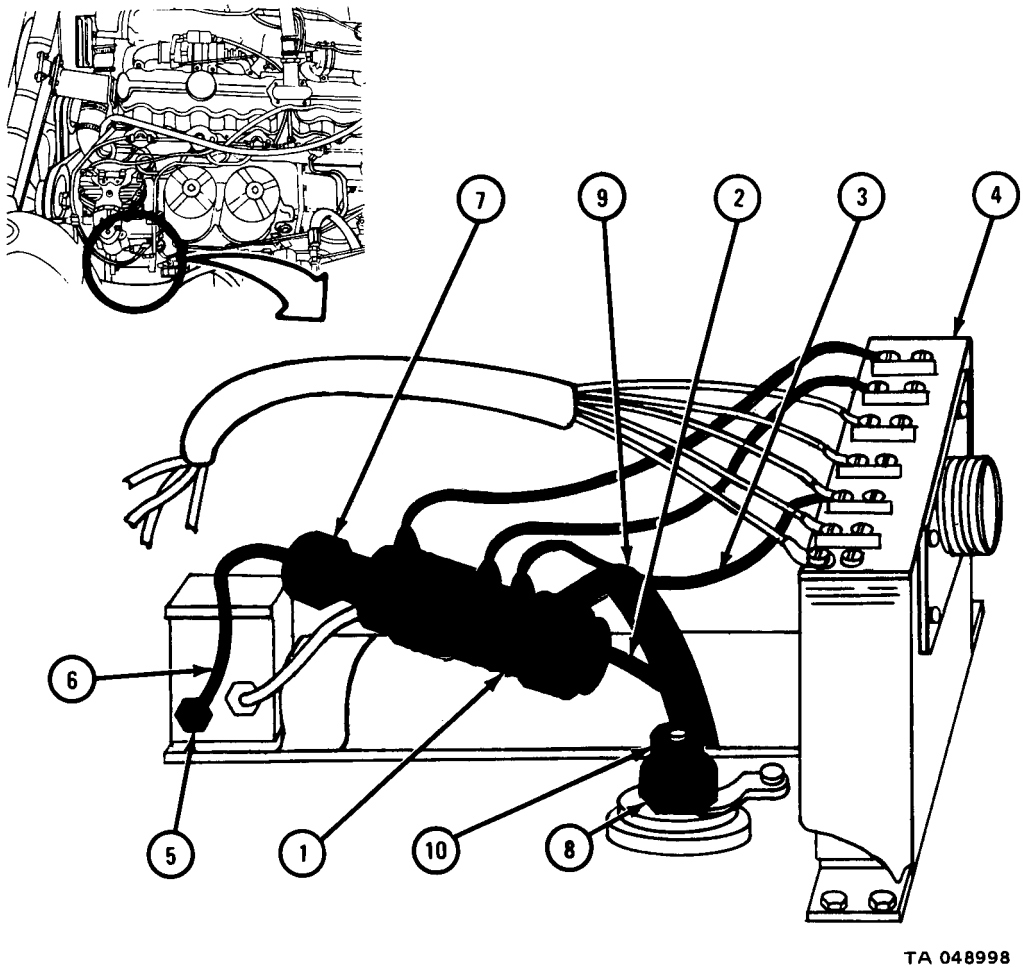
TA 048996

d. Replacement.

FRAME 1

1. Slide control valve resistor assembly (1) on primary standpipe (2).
2. Using screwdriver, put three wire leads (3) on terminal nos. 4, 7, and 8 on terminal board (4) as tagged. Take off tags.
3. Push primary fuel tube (5) into primary standpipe (2).
4. Using 7/16-inch wrench, tighten nut (6). Using 3/8-inch wrench, tighten nut (7).
5. Slide igniter (8) into position and, using 13/16-inch wrench, screw in and tighten igniter.
6. Place copper strap (9) on igniter (8).
7. Using 11/32-inch socket wrench, screw on and tighten nut (10).

GO TO FRAME 2



FRAME 2

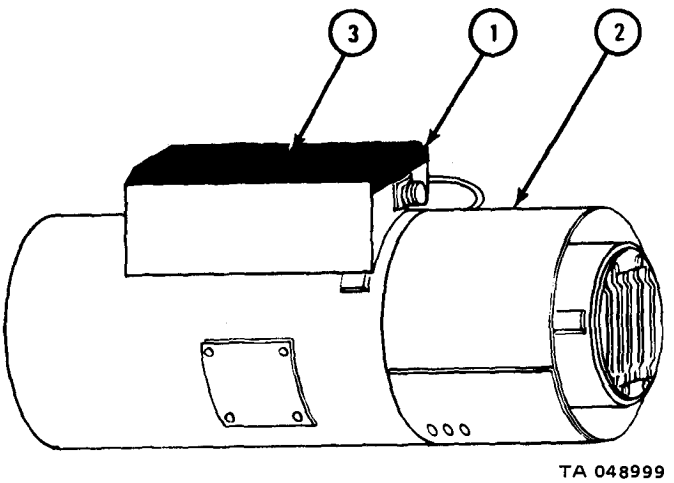
1. Place guard (1) into position on personnel heater (2).
2. Using screwdriver, turn screw (3) 1/4 turn.

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground. Refer to Part 1, para 7-44.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 048999

21-8. HOT WATER PERSONNEL HEATER CONTROL CABLES REMOVAL AND REPLACEMENT.

NOTE

This task is the same for the right and left heater control cables. This task is shown for the left heater controllable.

TOOLS: General mechanic's tool kit

SUPPLIES: None

PERSONNEL: One

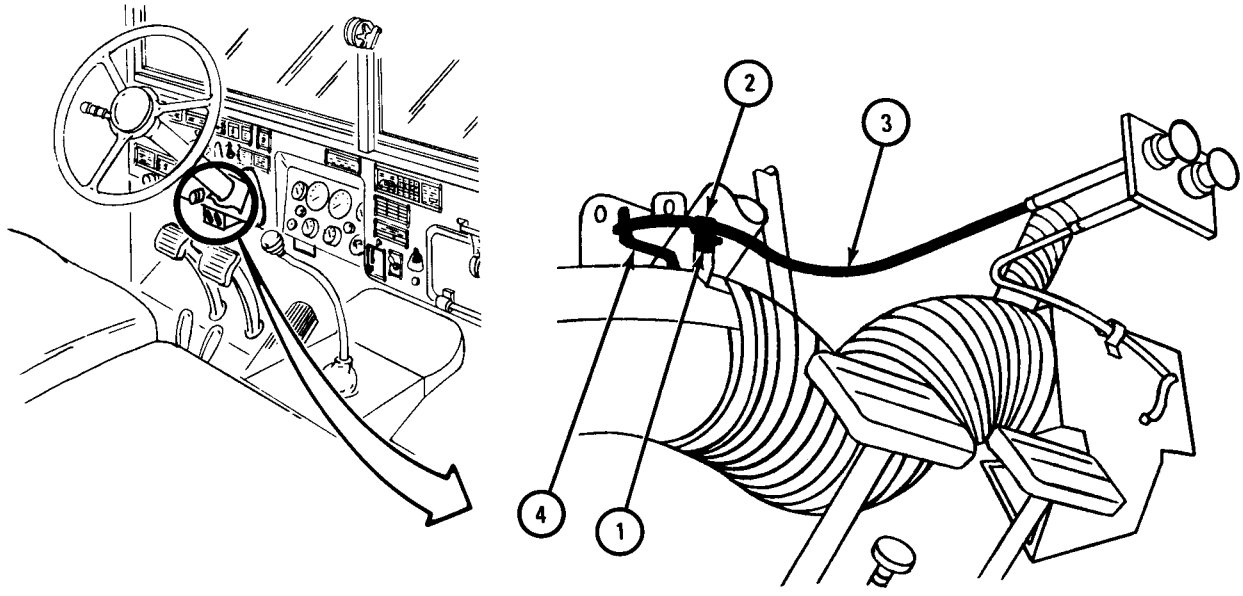
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using flat-tip screwdriver, unscrew and take out screw (1) and clamp (2).
2. Slide cable wire (3) up and off control arm (4).

GO TO FRAME 2

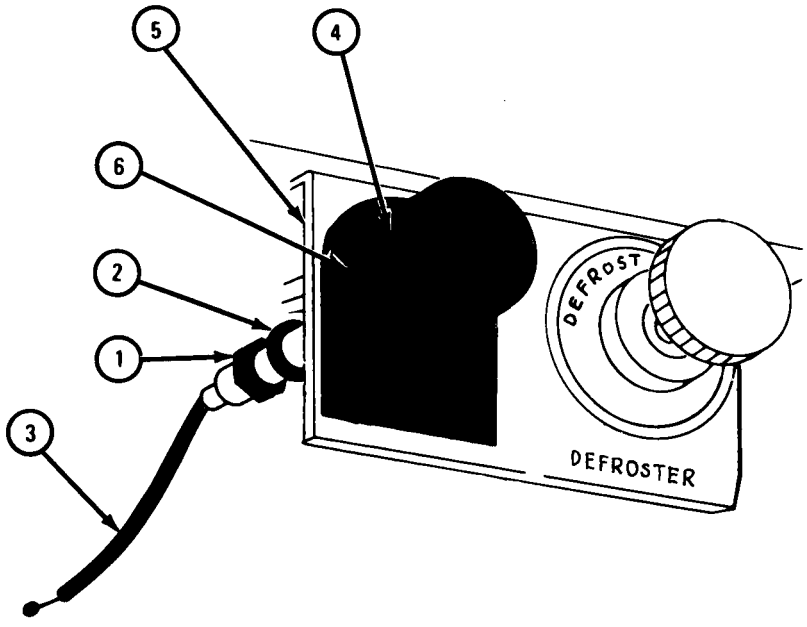


TA 045769

FRAME 2

1. Using open end wrench, unscrew nut (1).
2. Slide nut (1) and washer (2) offend of cable (3).
3. Pull control assembly (4) with cable (3) out from front of bracket (5).
4. Take off identification plate (6).

END OF TASK



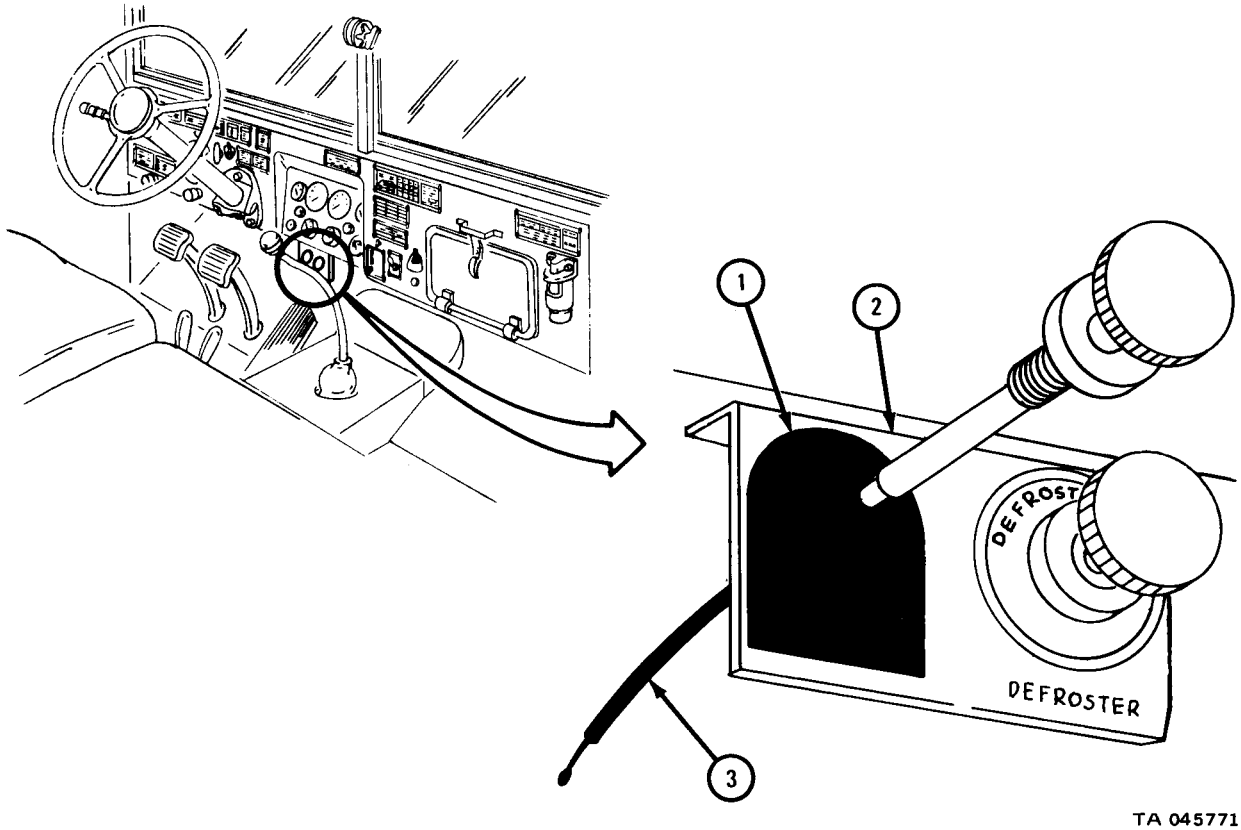
TA 045770

b. Replacement.

FRAME 1

1. Hold identification plate (1) in place on bracket (2).
2. Push control cable (3) through hole in identification plate (1) and bracket (2).

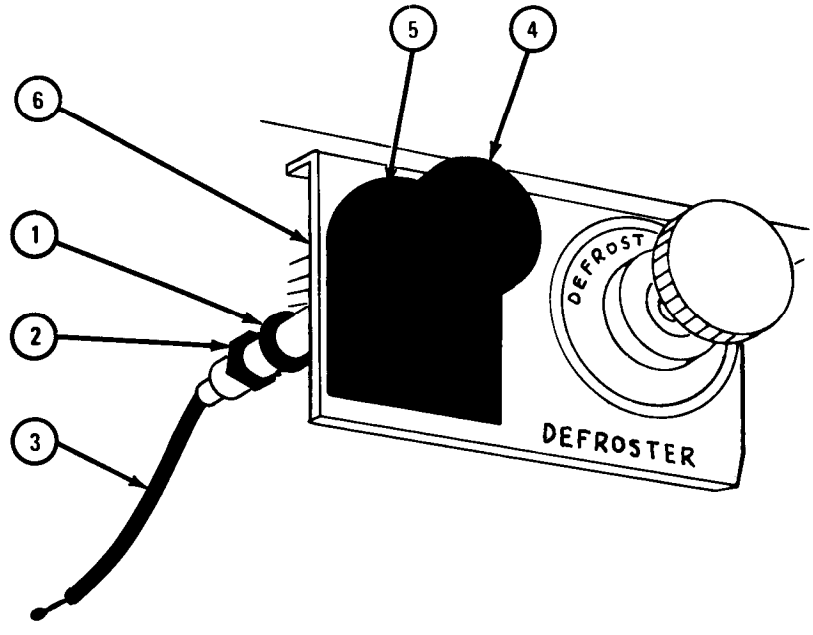
GO TO FRAME 2



FRAME 2

1. Slide washer (1) and nut(2) on cable (3).
2. Hold control assembly (4) and identification plate (5) in place against bracket (6).
3. Using wrench, screw on and tighten nut (2) and washer (1).

GO TO FRAME 3

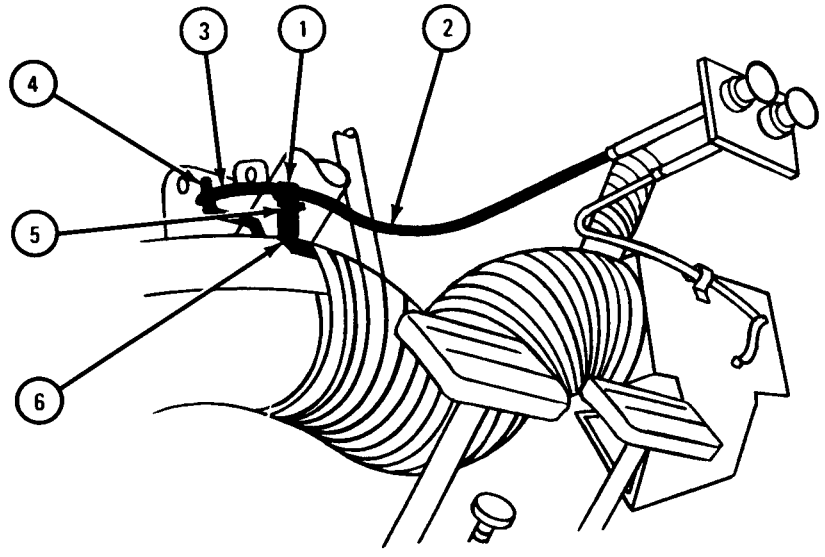


TA 045772

FRAME 3

1. Slide clamp (1) on control cable housing (2).
2. Push looped end of control wire (3) onto control arm (4).
3. Put screw (5) through clamp (1) and into hole in control cable bracket (6).

GO TO FRAME 4

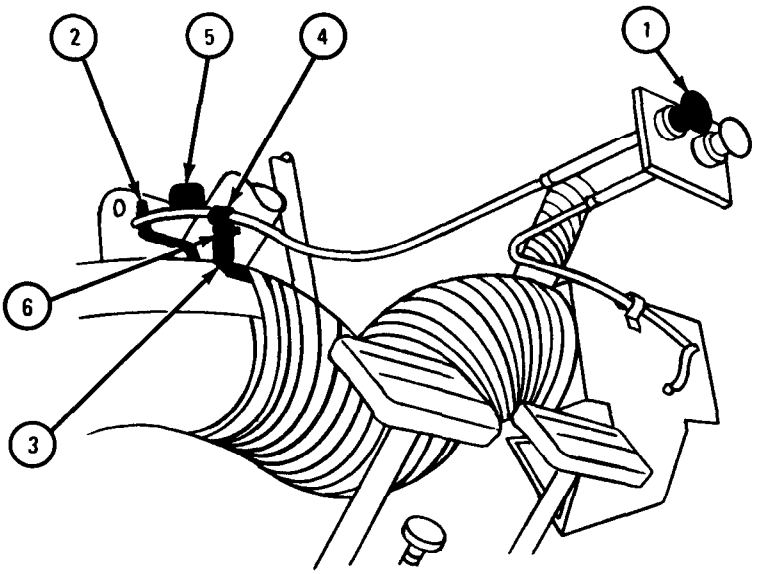


TA 045773

FRAME 4

1. Push control knob (1) all the way in.
2. Push control arm (2) away from control cable bracket (3) until it stops.
3. Slide cable (4) in clamp (5) so knob (1) and arm (2) stay in place.
4. Using flat-tip screwdriver, screw in and tighten screw (6).
5. Pull out and push in control knob (1) and check that control arm (2) moves back and forth without binding.

END OF TASK



TA 045774

21-9. HEATER CONTROL BOX ASSEMBLY REMOVAL AND REPLACEMENT.

NOTE

This task is the same for personnel heater control box and engine heater control box. Engine heater control box is under right side of instrument panel and personnel heater control box is under left side of instrument panel.

TOOLS: Flat-tip screwdriver
7/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

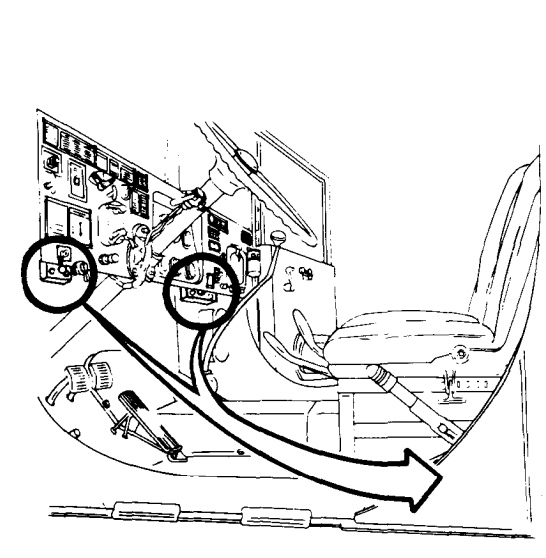
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

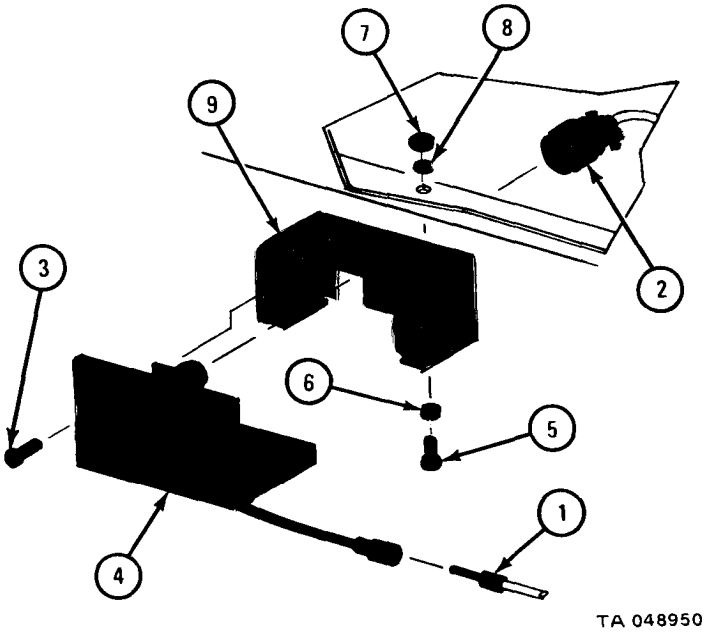
a. Removal.

FRAME 1

1. Unplug electrical sockets (1).
2. Unscrew and unplug electrical connector (2).
3. Using screwdriver, unscrew and take out two screws (3).
4. Slide out control box panel (4).
5. Using 7/16-inch wrenches, unscrew and take out two cap screws (5) with lockwashers (6) and nuts (7) with washers (8).
6. Take out control box case assembly (9).

END OF TASK





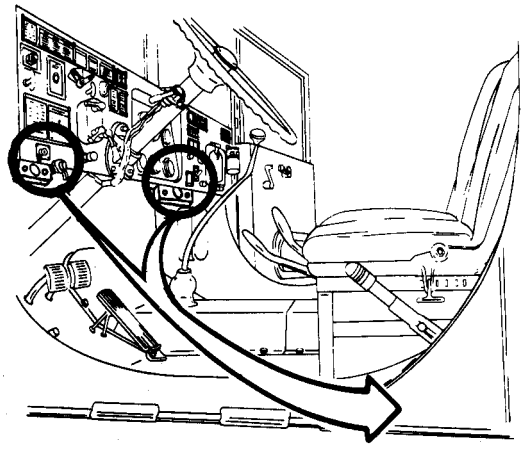
TA 048950

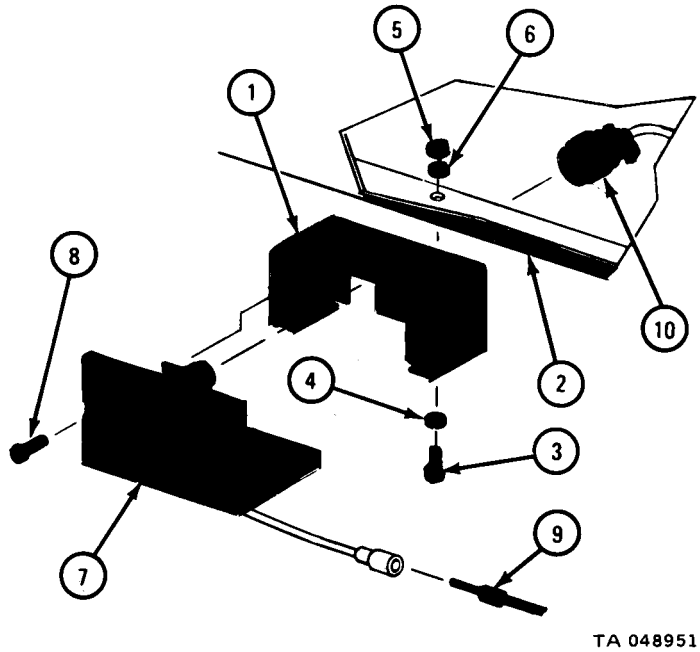
b. Replacement.

FRAME 1

1. Line up holes in control box case assembly (1) with holes in instrument panel (2).
2. Using 7/16-inch wrenches, screw in and tighten two capscrews (3) with lockwashers (4) and two nuts (5) with washers (6).
3. Slide in control box panel (7).
4. Using screwdriver, screw in and tighten two screws (8).
5. Plug in electrical sockets (9).
6. Line up pins on electrical plug (10) and plug into socket on control box assembly (1).
7. Screw in and tighten nut on plug (10).

END OF TASK





TA 048951

21-10. HEATER CONTROL BOX ASSEMBLY REPAIR AND TEST.

TOOLS: Flat-tip screwdriver
11/32-inch open end wrench
9/16-inch open end wrench
3/4-inch open end wrench

SUPPLIES: Tags

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure, Remove heater control box assembly. Refer to para 21-9.

b. Disassembly.

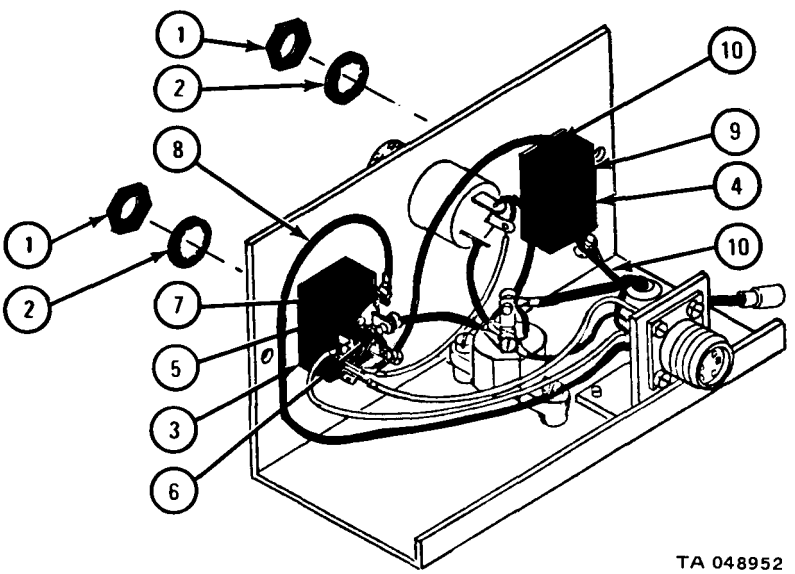
NOTE

Tag all wires before taking them off so they will be put back in the right place.

FRAME 1

1. Using 9/16-inch wrench, unscrew and take off two nuts (1) with washers (2).
2. Take out heater motor switch (3) and blower switch (4).
3. Using screwdriver, unscrew and take off six screws (5) from back of heater motor switch (3).
4. Take off connector jumper (6), connector (7), and six wires (8).
5. Using screwdriver, unscrew and take off two screws (9) from back of blower switch (4).
6. Take off two wires (10).

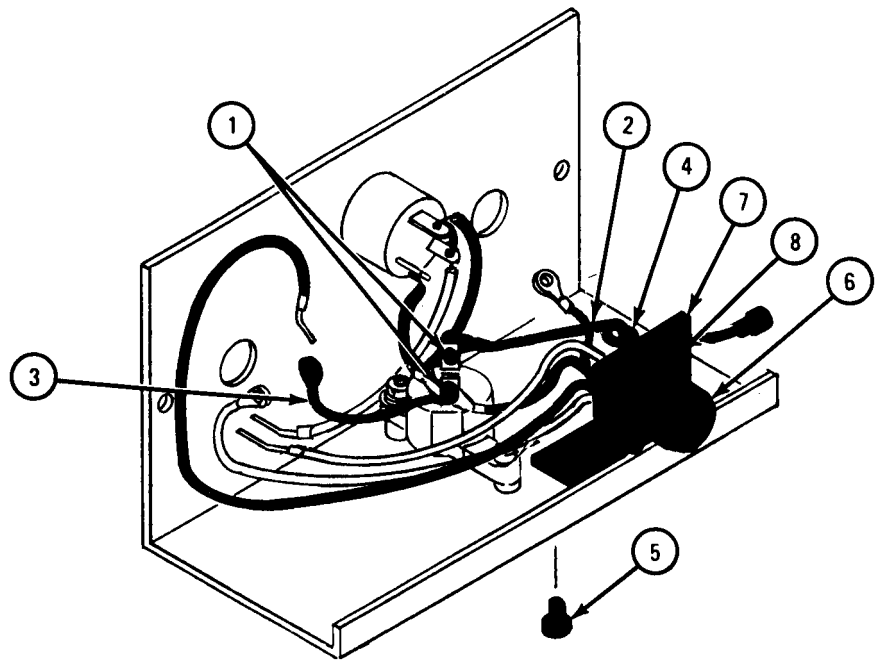
GO TO FRAME 2



FRAME 2

1. Using screwdriver, unscrew and take out two screws (1).
2. Takeoff wires (2 and 3) and push out grommet (4).
3. Using screwdriver, unscrew and take out two screws (5).
4. Take off electrical plug assembly (6) with angle bracket (7).
5. Using screwdriver, unscrew four screws (8) and take electrical plug assembly (6) off angle bracket (7).

GO TO FRAME 3

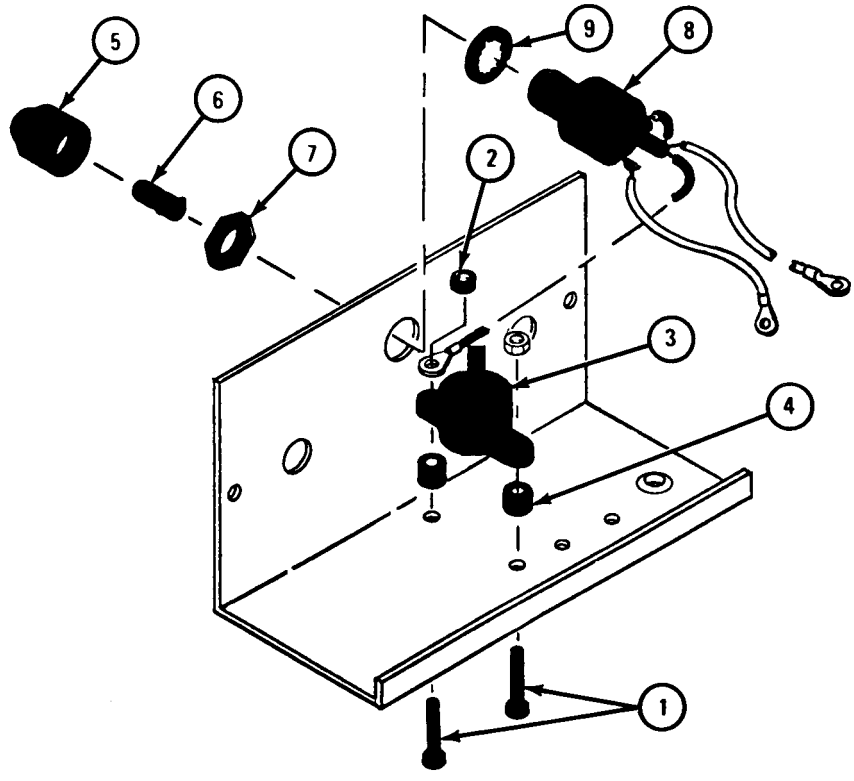


TA 048953

FRAME 3

1. Using screwdriver and 11/32-inch wrench, unscrew and take off two screws (1) and two nuts (2).
2. Take off circuit breaker (3) and two spacers (4).
3. Unscrew and take off lens cap (5).
4. Push in lamp (6), turn it to left, and pull it out.
5. Using 3/4-inch wrench, unscrew and take off nut (7).
6. Take out indicator lamp assembly (8) and washer (9).

END OF TASK



TA 048954

c. Repair.

(1) Check all threaded parts for stripped or damaged threads.

(2) Check all wires for cracked, burned or worn insulation.

(3) Check switches for damaged, burned or cracked terminals.

(4) Check to see if lamp is burned out.

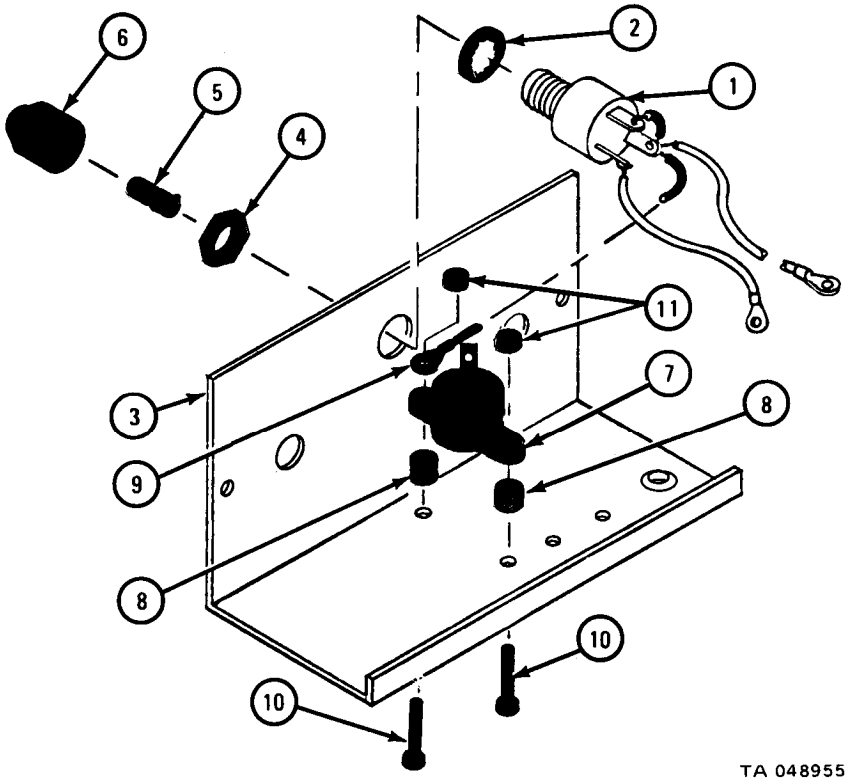
(5) Replace any damaged parts with new parts.

d. Assembly.

FRAME 1

1. Put indicator lamp assembly (1) with washer (2) into hole in center of control box panel (3).
2. Using 3/4-inch wrench, screw on and tighten nut (4).
3. Push in lamp (5) and turn it to right.
4. Screw on lens cap (6).
5. Line up holes in circuit breaker (7), two spacers (8), and lug (9) with holes in control box panel (3).
6. Using screwdriver and 11/32-inch wrench, screw in and tighten two screws (10) and two nuts (11).

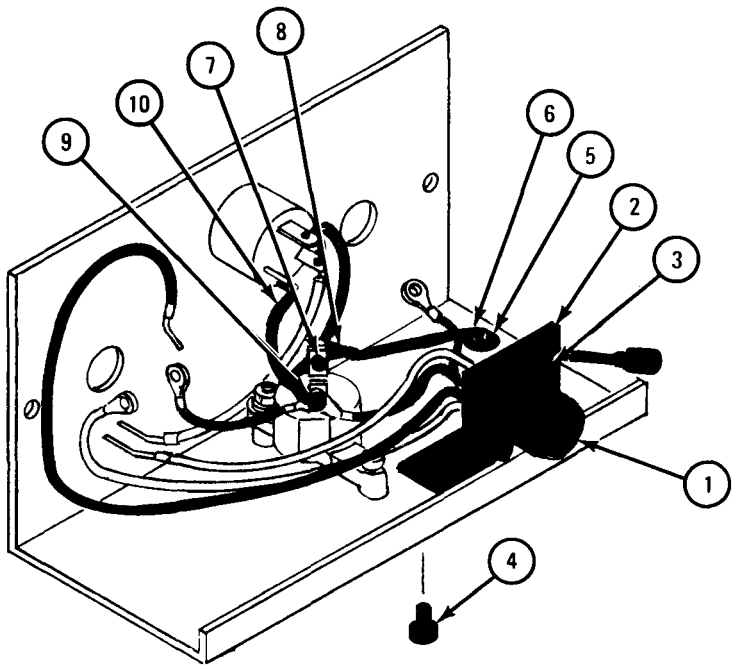
GO TO FRAME 2



FRAME 2

1. Put electrical plug assembly (1) into angle bracket (2) and line up holes.
2. Using screwdriver, screw in and tighten four screws (3).
3. Put angle bracket (2) in place as shown, and line up holes.
4. Using screwdriver, screw in and tighten four screws (4).
5. Put grommet (5) in hole as shown and put wire (6) through grommet.
6. Using screwdriver, screw in and tighten screw (7) with lug (8).
7. Using screwdriver, screw in and tighten screw (9) with three wires (10) as tagged. Take off tags.

GO TO FRAME 3



TA 048956

FRAME 3

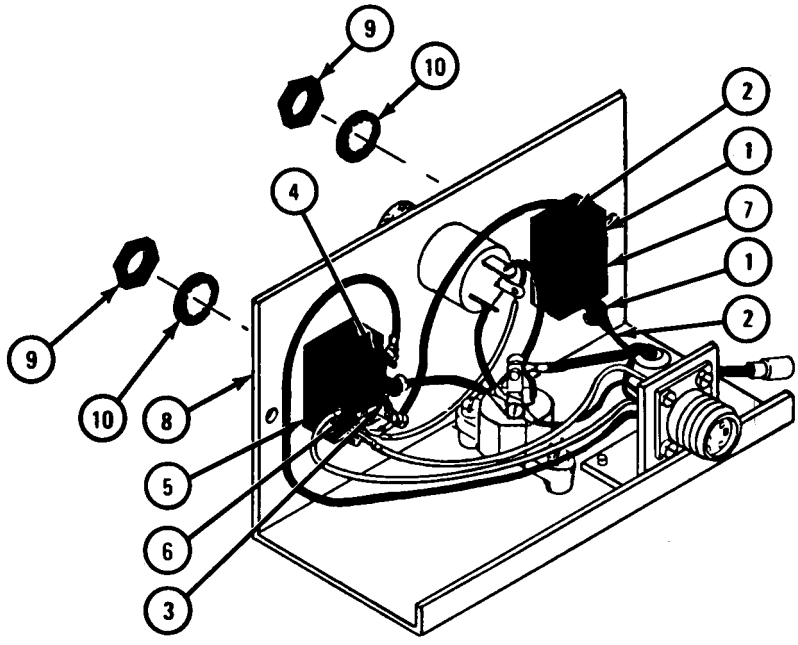
1. Using screwdriver, screw in and tighten two screws (1) with two wires (2) as tagged.
2. Put connector jumper (3) and connector (4) on back of heater motor switch (5) as shown.
3. Using screwdriver, screw in and tighten six screws (6) with six wires as tagged. Takeoff tags.
4. Put blower switch (7) through hole in control box panel (8) marked HI-LOW.
5. Put heater motor switch (5) through hole in control box panel (8) marked RUN-OFF-START.
6. Using 9/16-inch wrench, screw on and tighten two nuts (9) with washers (10).

NOTE

Follow-on Maintenance Action Required:

Replace heater control box assembly. Refer to para 21-9.

END OF TASK



TA 048957

e. Functional Test.

FRAME 1

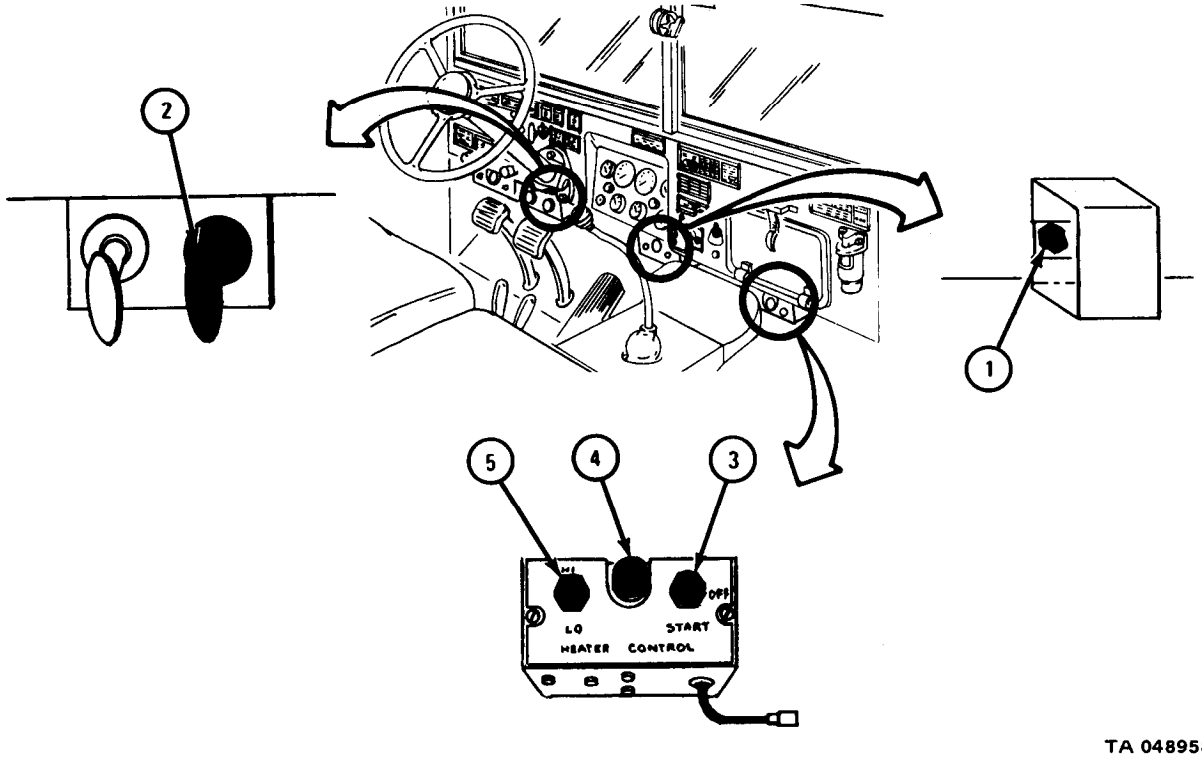
1. Make sure emergency switch (1) is in ON position.
2. Pull AIR control knob (2) all the way out.
3. Set heater motor switch (3) to START position. Hold switch in this position for at least 10 seconds or until indicator lamp (4) lights.
4. Set heater motor switch (3) to RUN position.

NOTE

If heater motor switch (3) is moved to RUN position before indicator lamp (4) lights, heater will not work.

5. Set blower switch (5) to LO position, then set switch to HI position.
6. A change in blower speed should be noted. Air coming from heater should be very warm.
7. Set heater motor switch (3) to OFF position.
8. Push in AIR control knob (2).

END OF TASK



21-11. HOT WATER PERSONNEL HEATER HOSES REMOVAL AND REPLACEMENT.

NOTE

This task is the same for heater inlet and outlet hoses, except outlet hose shutoff cock is at water pump end of hose. This task is shown for heater inlet hose.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off and cool, handbrake set.

a. Preliminary Procedure. Open hood and left side panel. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

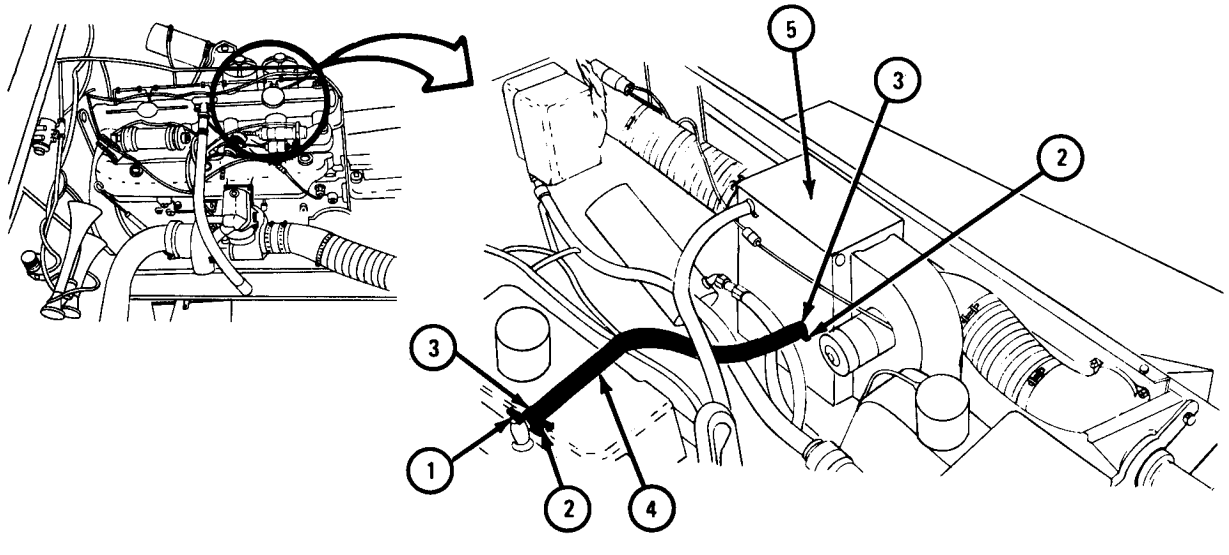
1. Turn shutoff cock (1) to right to close.
2. Using screwdriver, loosen two screws (2) on two clamps (3).
3* Slide back two clamps (3) from ends of inlet hose (4).

NOTE

Some coolant will drain from heater unit (5) and hose (4) when hose is pulled off.

4. Twist and pull off both ends of heater hose (4).

END OF TASK



c. Replacement.

FRAME 1

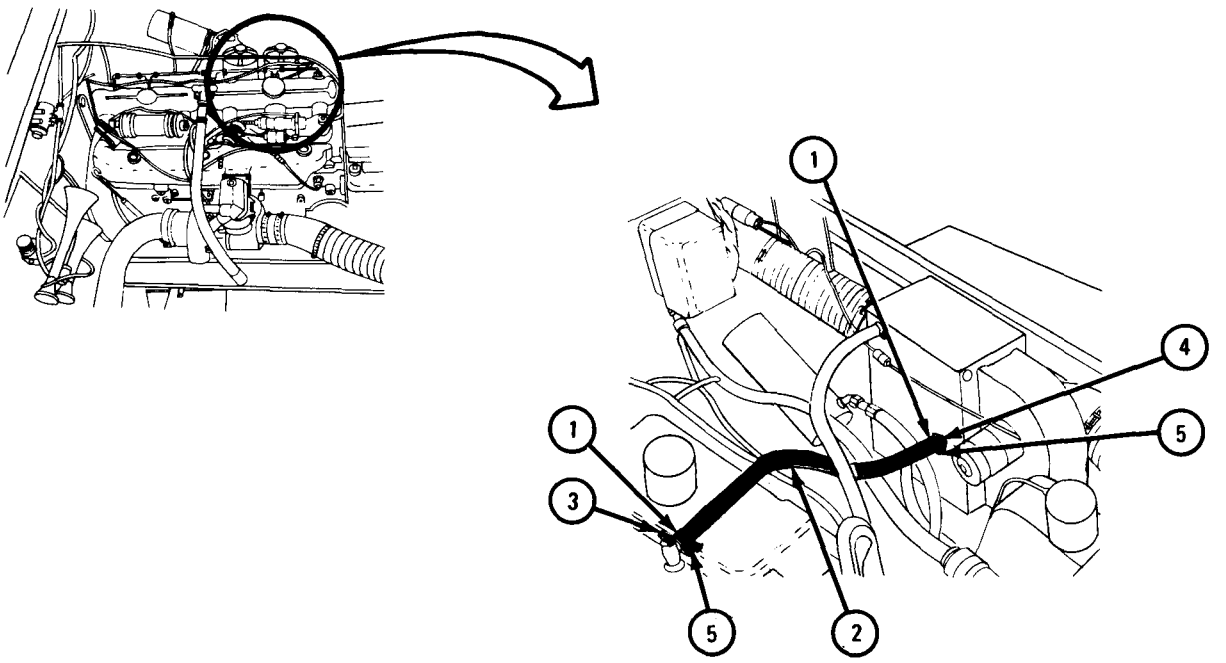
1. Put two clamps (1) on ends of inlet hose (2).
2. Put inlet hose (2) in place on shutoff cock (3) and heater inlet fitting (4).
3. Slide two clamps (1) to ends of inlet hose (2) and using screwdriver, screw in and tighten two screws (5).
4. Turn shutoff cock (3) left to open.

NOTE

Follow-on Maintenance Action Required:

1. Close hood and left side panel. Refer to TM 9-2320-211-10.
2. Add coolant to radiator as needed. Refer to Part 1, para 6-13.

END OF TASK



TA 045794

21-12. POWERPLANT HEATER FUEL FILTER REMOVAL AND REPLACEMENT.

NOTE

There are two fuel filters in the winterization kit. This task can be used for either one. Some trucks may have only one filter.

TOOLS: 1/2-gallon container
Fuel filter gasket

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Disconnect battery ground. Refer to Part 1, para 7-44.

(2) Turnoff powerplant heater. Refer to TM 9-2320-211-10.

b. Removal.

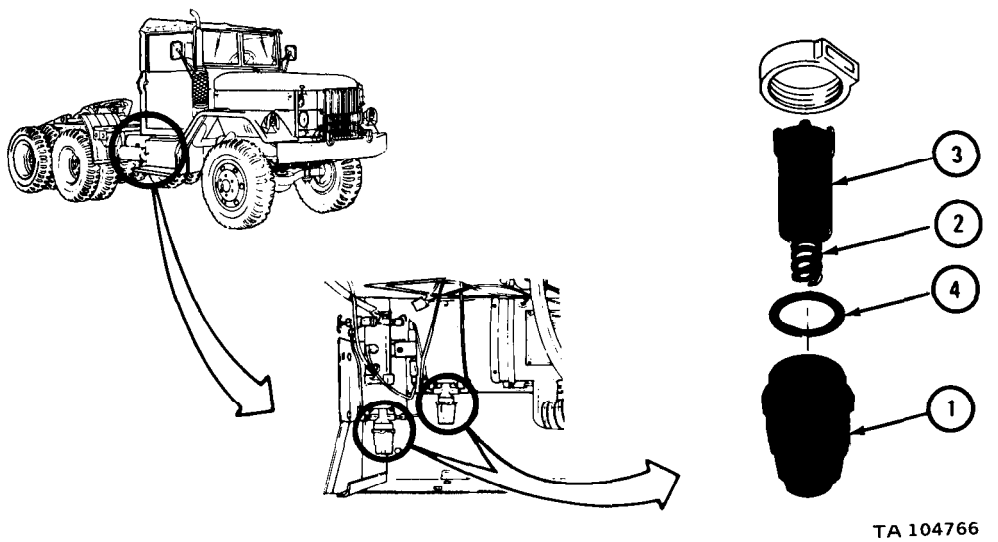
FRAME 1

WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during fuel filter service.

1. Put container under fuel filter bowl (1). Unscrew filter bowl and take off helical compression spring (2), filter element (3), and gasket (4). Empty fuel in filter bowl into container and put fuel in approved disposal area.
2. Throw away gasket (4).

END OF TASK



c. Replacement.

FRAME 1

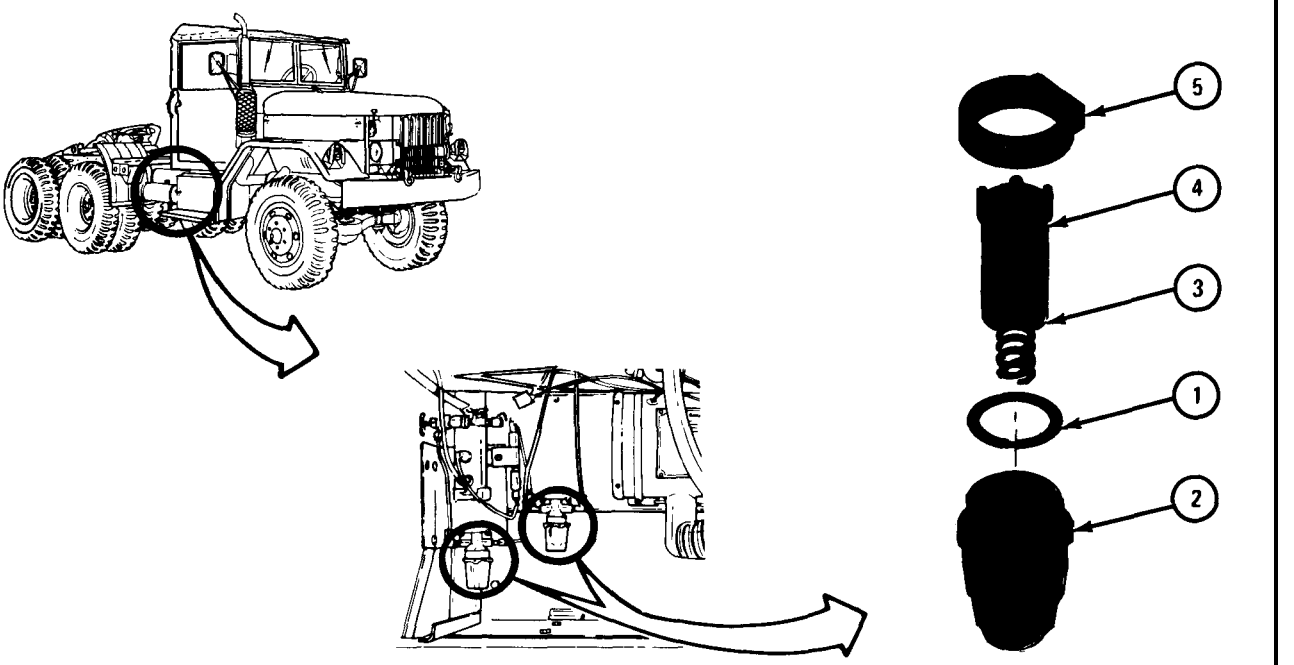
1. Put gasket (1) over threaded relief flange on filter bowl (2).
2. Put helical compression spring (3) and fuel filter element (4) into filter bowl (2).

CAUTION

Do not overtighten filter bowl (2) as gasket (1) may be damaged.

3. Screw in and hand tighten filter bowl (2) into head (5).
4. Reconnect battery ground. Refer to Part 1, para 7-44.
5. Start powerplant heater. Refer to TM 9-2320-211-10. Check filter bowl (2) for leaks.
6. Turn off powerplant heater. Refer to TM 9-2320-211-10.

END OF TASK



21-13. POWERPLANT HEATER FUEL LINES AND FITTINGS REMOVAL AND REPLACEMENT. For procedures to remove and replace the powerplant heater fuel lines and fittings, refer to fuel lines and fittings removal and replacement, Part 1, para 4-11.

21-14. POWERPLANT HEATER CONTROL BOX REMOVAL, REPAIR AND REPLACEMENT. For procedures to remove and replace the powerplant heater control box, refer to heater control box assembly removal and replacement, para 21-9. For procedures to repair and test the powerplant heater control box, refer to heater control box assembly repair and test, para 21-10.

21-15. BATTERY BOX HEATER KIT REMOVAL AND REPLACEMENT.

TOOLS: General mechanic's tool kit
5-quart container
Storage battery carrier

SUPPLIES: Tags

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedures.

(1) Remove companion seat. Refer to para 17-8.

(2) Open hood. Refer to TM 9-2320-211-10.

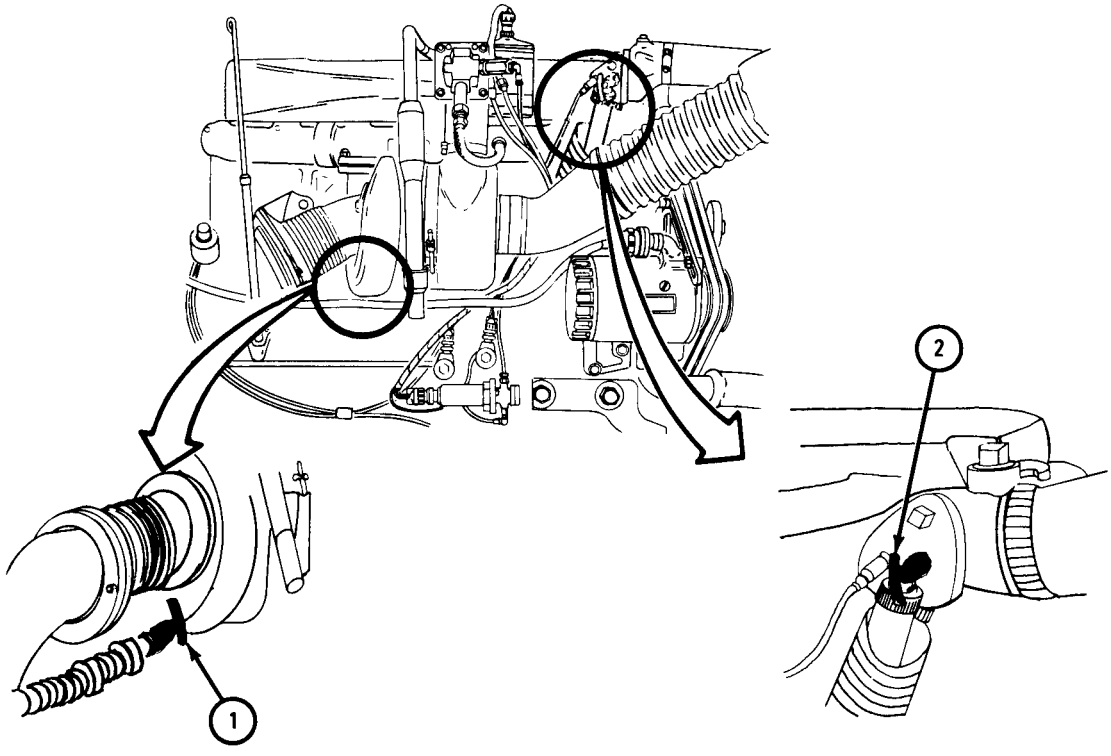
(3) Disconnect battery ground. Refer to Part 1, para 7-44.

b. Removal.

FRAME 1

1. Turn powerplant heater kit inlet coolant shutoff cock (1) and outlet coolant shutoff cock (2) all the way to the right to close them.

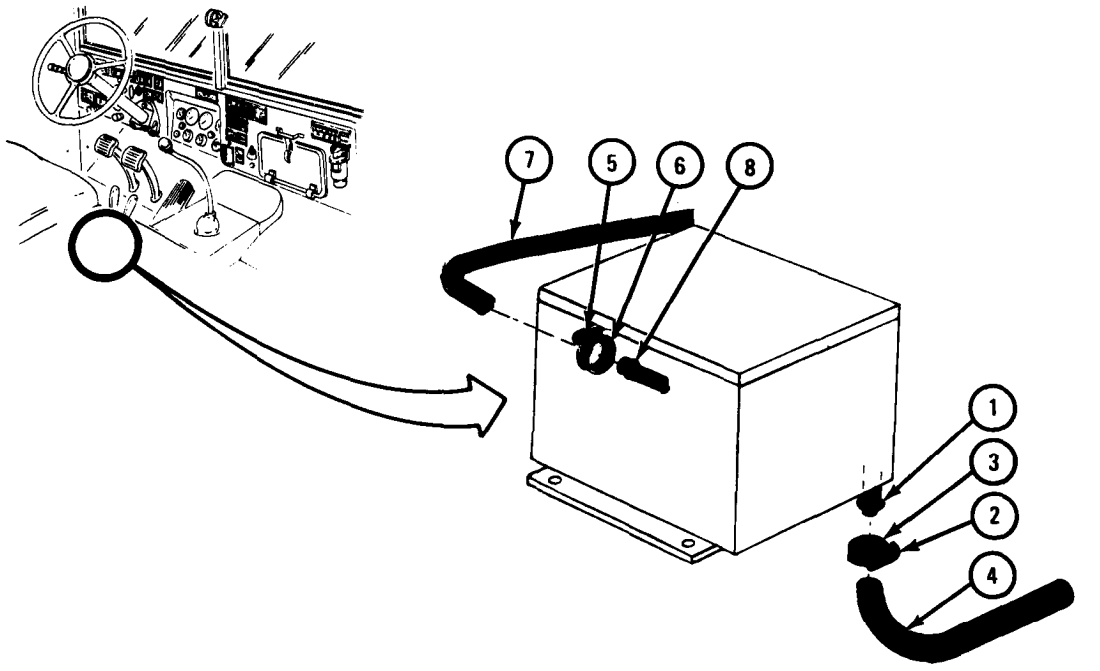
GO TO FRAME 2



FRAME 2

1. Place container under truck and under battery box heater coolant outlet connector (1).
2. From under truck and using flat-tip screwdriver, loosen screw (2) in clamp (3).
3. Push clamp (3) back on hose (4).
4. Pull hose (4) from connector (1) and put end in container.
5. After coolant has drained into container, using flat-tip screwdriver, loosen screw (5) on clamp (6).
6. Push clamp (6) back on hose (7) and pull hose from battery box heater coolant inlet connection (8).
7. Take container from under truck.

GO TO FRAME 3



TA 045842

FRAME 3

WARNING

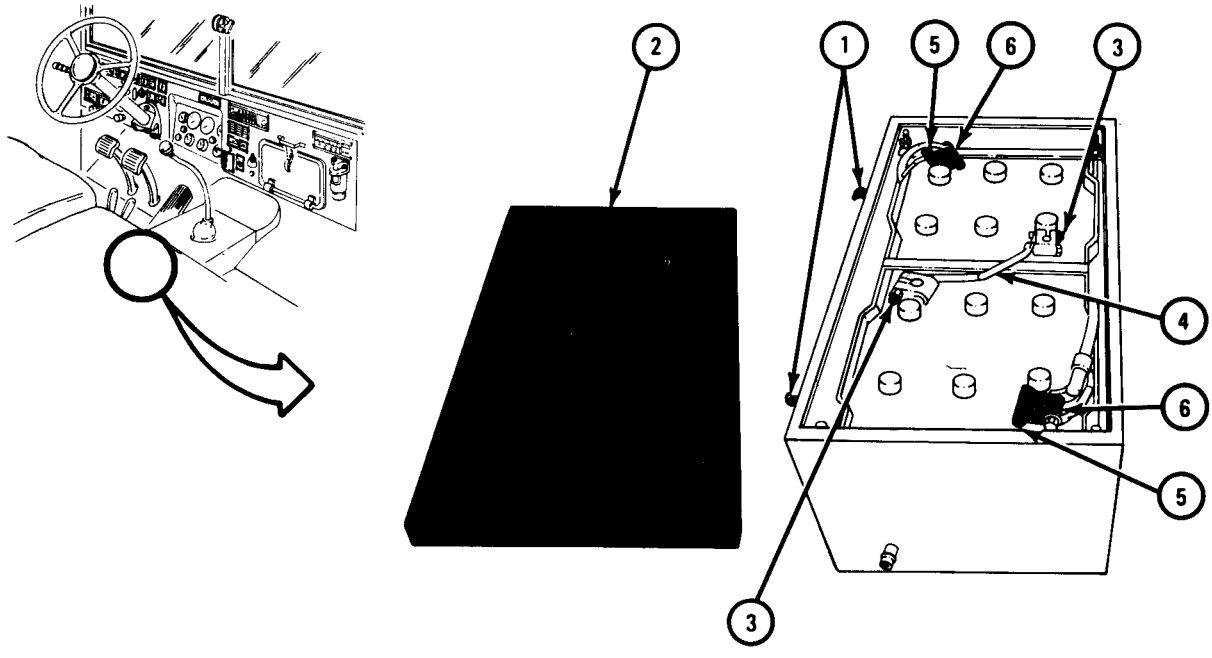
Do not let tool touch battery and truck. This will cause a direct short, arcing, tool will heat to red hot, and battery may explode. This can cause serious injury to personnel and damage to equipment.

NOTE

Tag all cables before taking them off so they are put back in the right place.

1. Open latches (1) and take off battery box cover (2).
2. Using wrenches, loosen screws (3) and take off jumper cable (4).
3. Using wrenches, loosen screws (5) and take off two battery cable lugs (6).

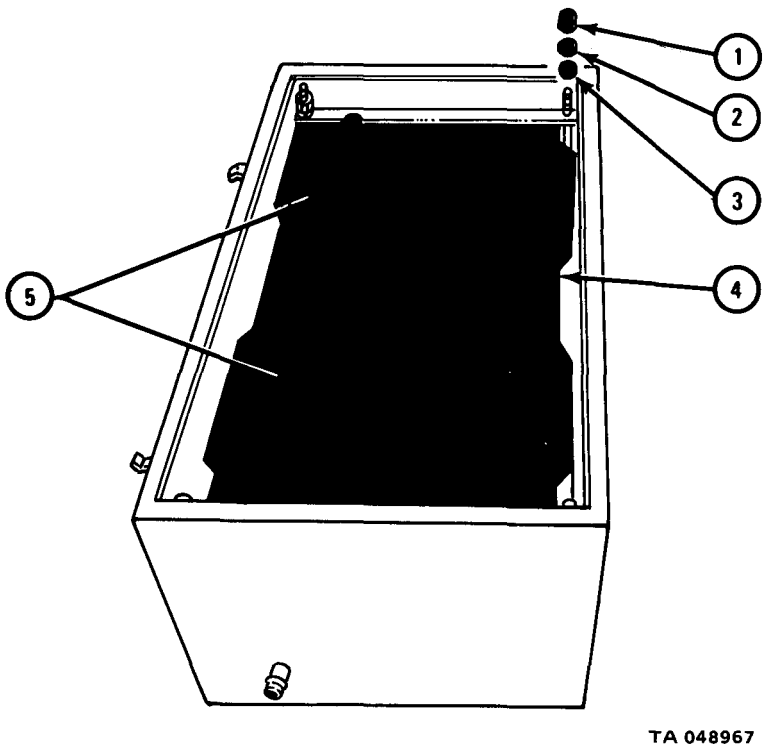
GO TO FRAME 4



FRAME 4

1. Using 5/8-inch wrench, unscrew and take off four nuts (1) with washers (2) and lockwashers (3).
2. Lift out hold down frame (4).
3. Using battery carrier, lift out two batteries (5).

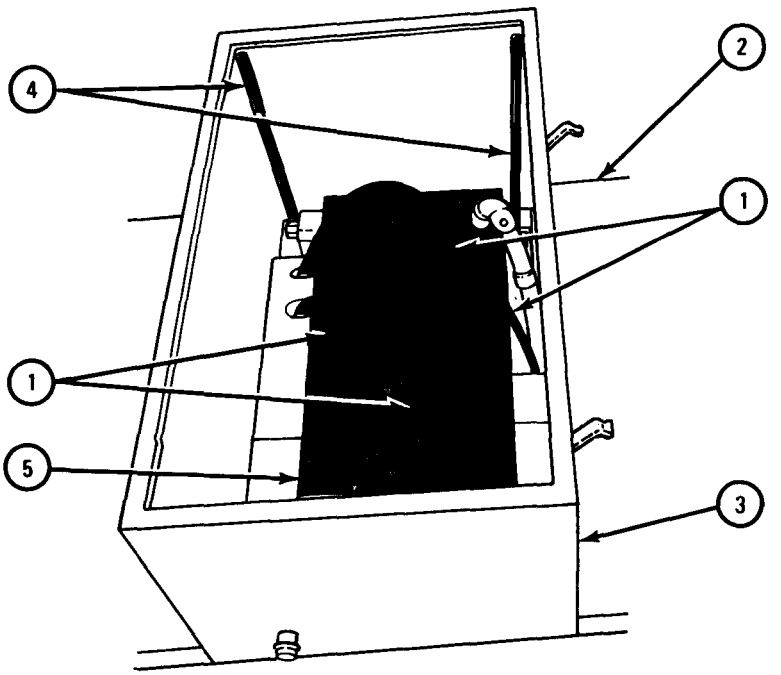
GO TO FRAME 5



FRAME 5

1. Pull battery cables (1) down through holes in floor (2) and bottom of battery box (3).
2. Unhook and take out four J-bolts (4).
3. Take out battery heat pad (5).

GO TO FRAME 6

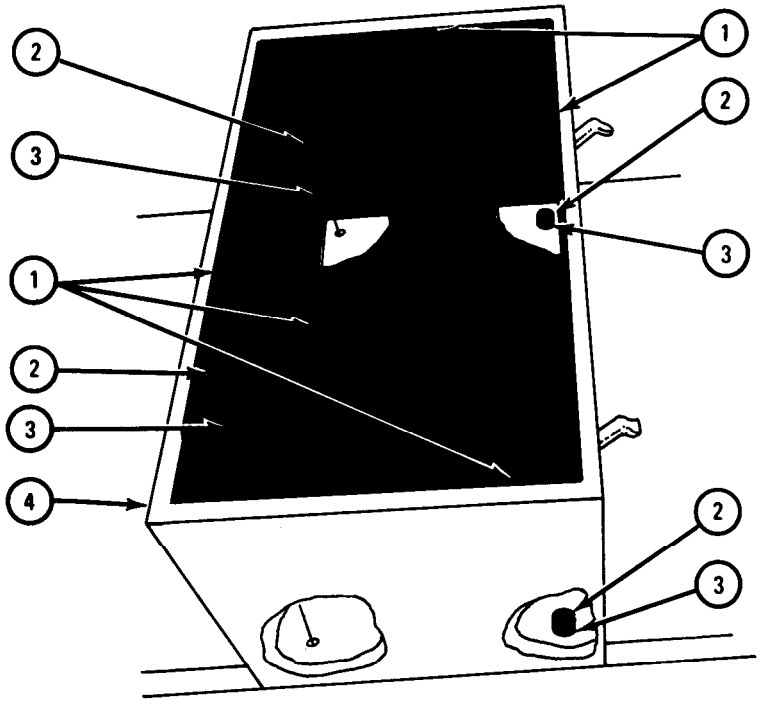


TA 048968

FRAME 6

1. Lift out five pieces of insulation (1).
2. Using 5/8-inch wrench, unscrew and take out four bolts (2) with washers (3).
3. Lift out battery box (4).

END OF TASK



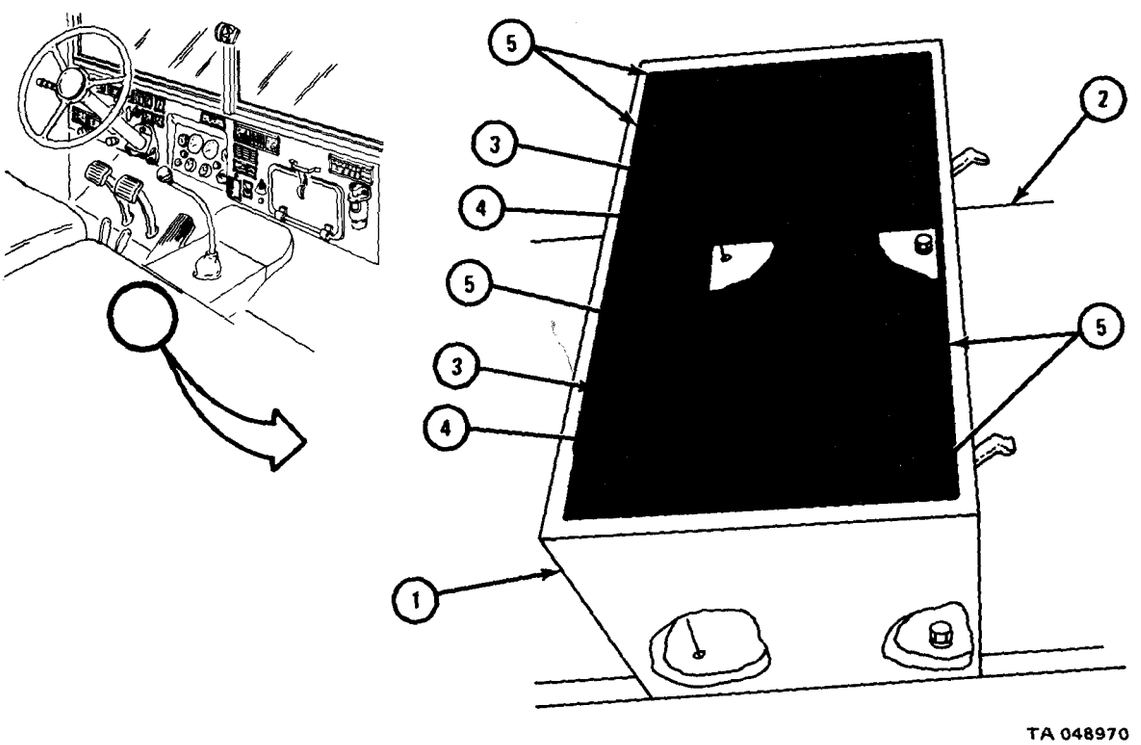
TA 048969

c. Replacement.

FRAME 1

1. Place battery box (1) on floor (2).
2. Aline holes in battery box (1) with holes in floor (2).
3. Using 5/8-inch wrench, screw in and tighten four bolts (3) with lockwashers (4).
4. Place five pieces of insulation (5) in battery box (1).

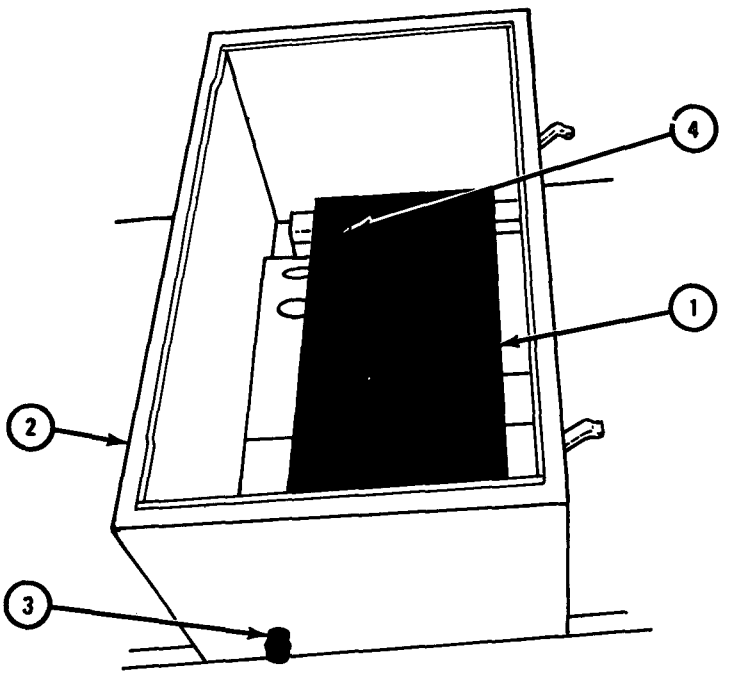
GO TO FRAME 2



FRAME 2

1. Slide battery heat pad (1) into bottom of battery box (2).
2. Pass inlet connection (3) through opening in left end of battery box (2).
3. Pass outlet connection (4) through hole in bottom of battery box (2) and cab floor.

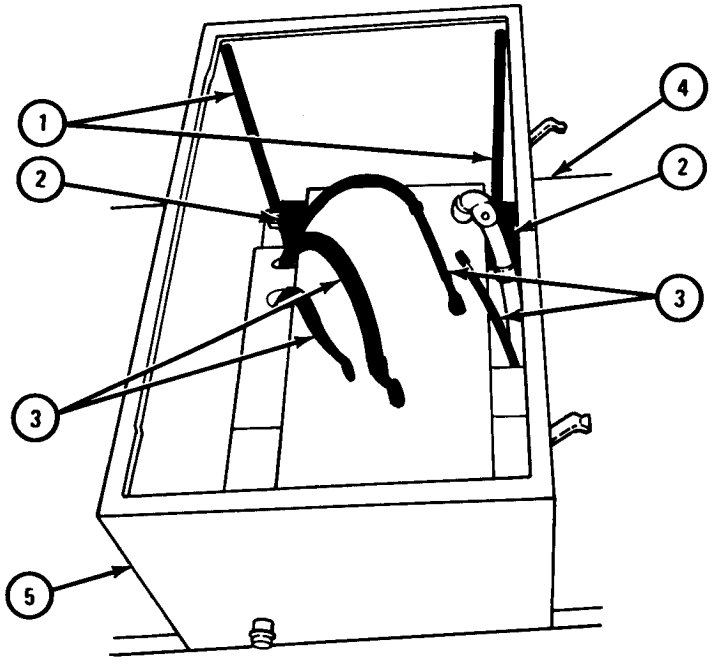
GO TO FRAME 3



FRAME 3

1. Hook four J-bolts (1) on straps (2).
2. Push battery cables (3) up through holes in floor (4) and bottom of battery box (5).

GO TO FRAME 4



TA 048972

FRAME 4

WARNING

Do not let tool touch battery and truck. This will cause a direct short, arcing, tool will heat to red hot, and battery may explode. This can cause serious injury to personnel and damage to equipment.

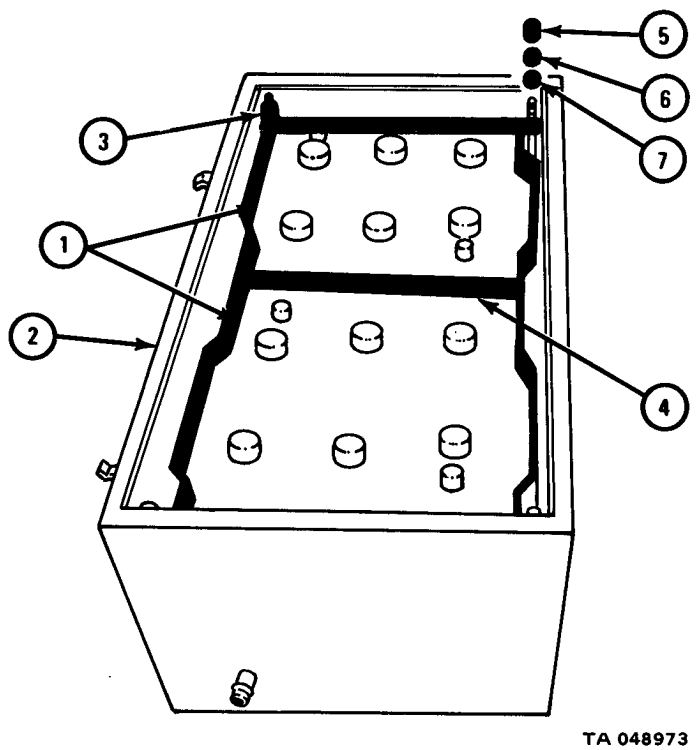
1. Using battery carrier, place two batteries (1) into battery box (2) with positive (+) terminals toward front of truck.
2. Place four J-bolts (3) through holes in hold down frame (4).

CAUTION

Do not tighten nuts on J-bolts too much or battery case may crack.

3. Using 5/8-inch wrench, screw on and tighten four nuts (5) with washers (6) and lockwashers (7).

GO TO FRAME 5



TA 048973

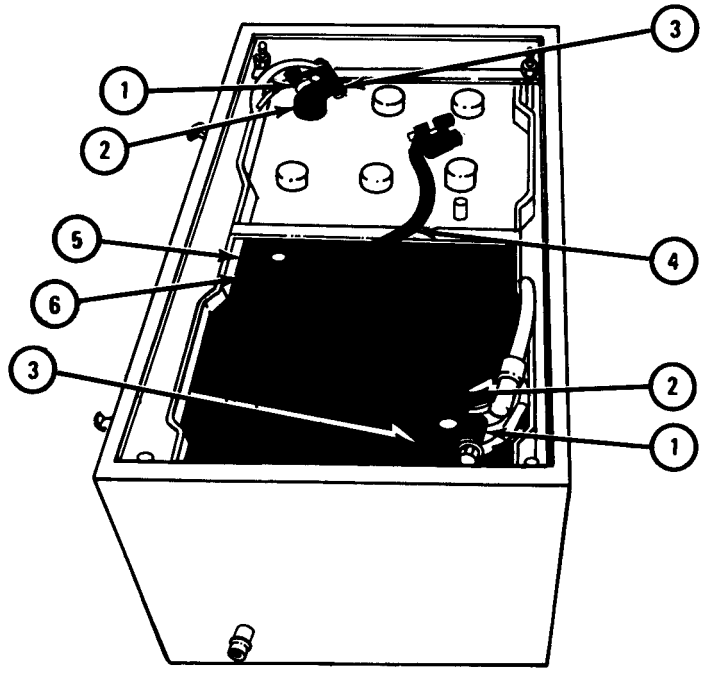
FRAME 5

CAUTION

Be sure battery cable lugs do not touch any part of battery box or hold down frame.

1. Slide battery cable lugs (1) on battery posts (2).
2. Using wrenches, tighten two screws (3).
3. Slide one end of jumper cable (4) on positive (+) terminal of one battery (5).
4. Using wrenches, tighten lug screw (6).

GO TO FRAME 6

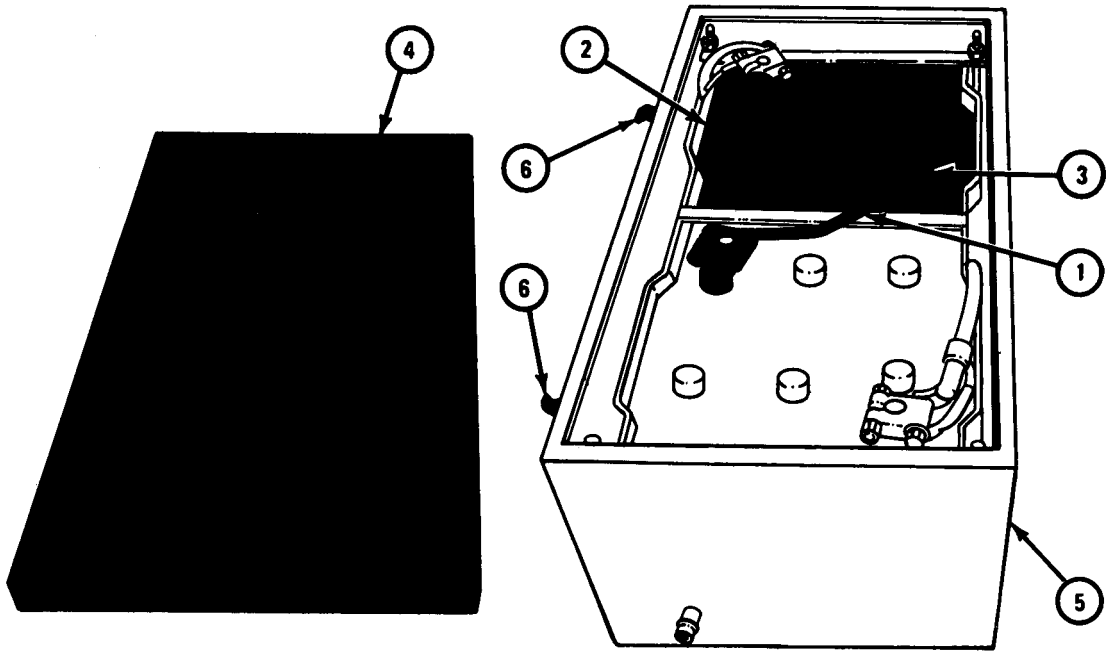


TA 048974

FRAME 6

1. Slide other end of jumper cable (1) on negative (-) terminal of second battery (2).
2. Using wrenches, tighten screw (3).
3. Put cover (4) on battery box (5) and close latches (6).

GO TO FRAME 7

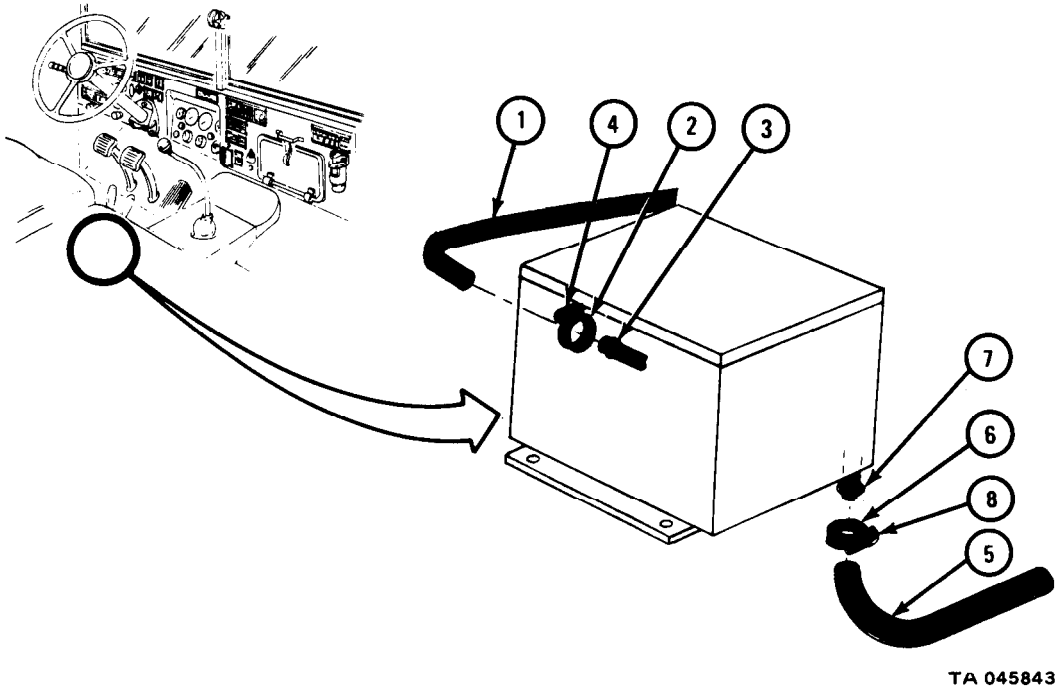


TA 048975

FRAME 7

1. Push hose (1) with clamp (2) on coolant inlet connection (3).
2. Place clamp (2) in position and using flat-tip screwdriver, tighten screw (4).
3. From under truck, push hose (5) with clamp (6) on coolant outlet connection (7).
4. Place clamp (6) in position and using flat-tip screwdriver, tighten screw (8).

GO TO FRAME 8



TA 045843

FRAME 8

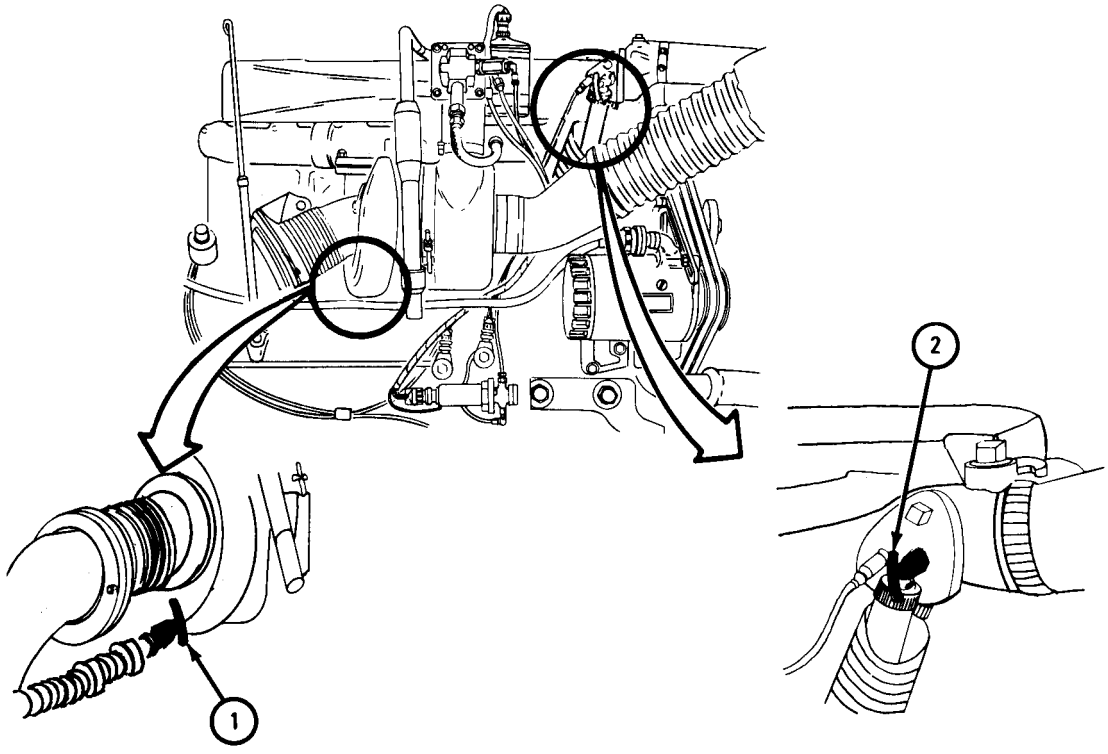
1. Turn Powerplant heater kit inlet coolant shut off cock (1) and outlet coolant shut off cock (2) all the way to the left to open them.

NOTE

Follow-on Maintenance Action Required:

1. Replace companion seat. Refer to para 17-8.
2. Replace coolant drained during removal. Add coolant if needed. Refer to Part 1, para 6-13.
3. Reconnect battery ground. Refer to Part 1, para 7-44.
4. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 045841

21-16. HOOD COVER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Remove radiator assembly. Refer to para 21-17.

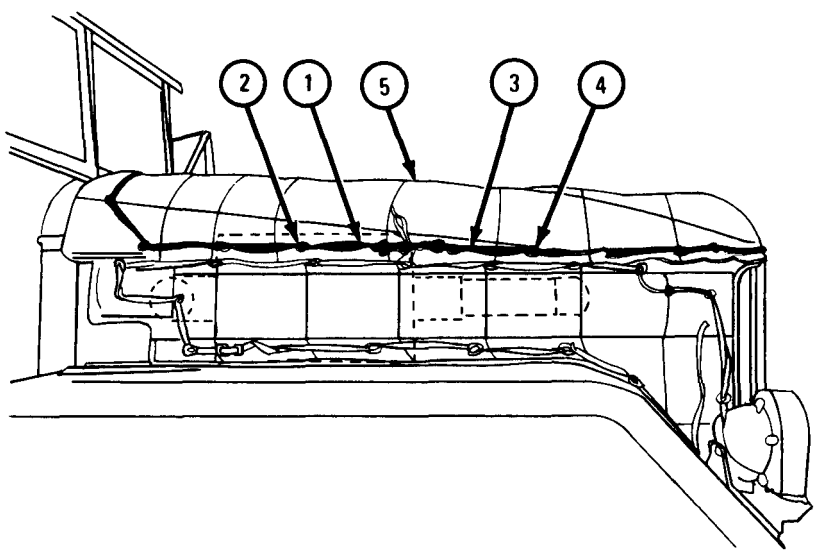
b. Removal.

(1) Hood cover.

FRAME 1

1. Open buckle on strap (1) and pull strap out of loops (2).
2. Open buckle on strap (3) and pull strap out of loops (4).
3. Do steps 1 and 2 again on other side of hood cover (5).
4. Take off hood cover (5).

END OF TASK



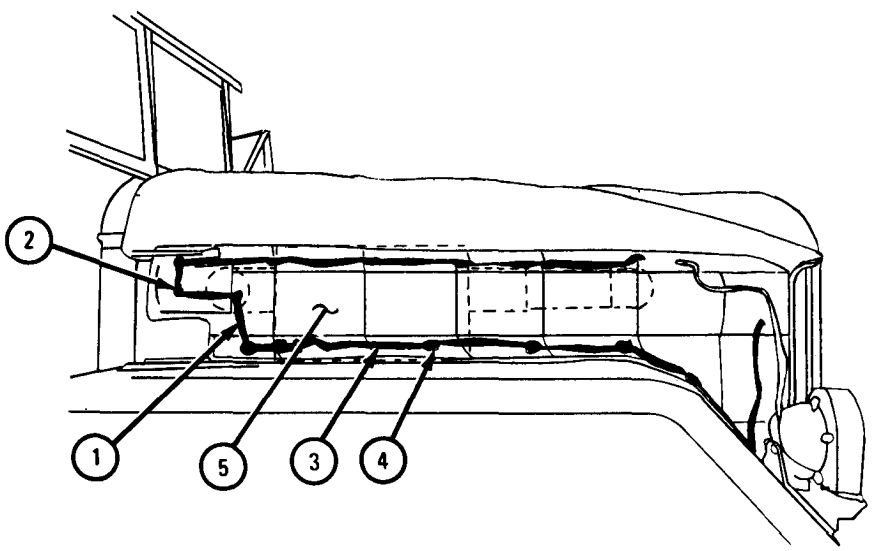
TA 103191

(2) Side panel covers.

FRAME 1

1. Open buckle on strap (1) and pull strap out of loops (2).
2. Open buckle on strap (3) and pull strap out of loops (4).
3. Take off side panel cover (5).
4, Do steps 1 through 3 again for side panel cover on other side of truck.

END OF TASK



TA 103192

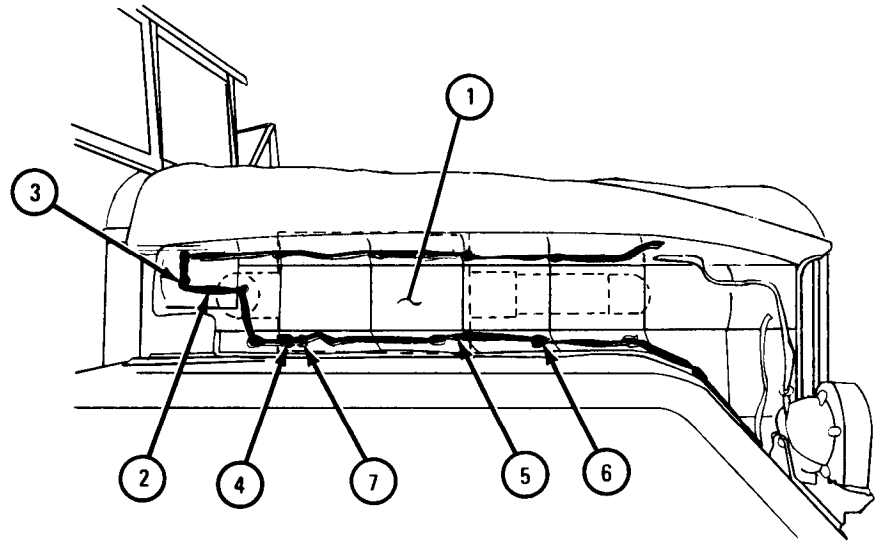
c. Replacement.

(1) Side panel covers.

FRAME 1

1. Put side panel cover (1) in place on truck as shown.
2. Lace strap (2) through loops (3) and close buckle (4).
3. Lace strap (5) through loops (6) and close buckle (7).
4. Do steps 1 through 3 again for side panel cover on other side of truck.

END OF TASK



TA 103193

(2) Hood cover.

FRAME 1

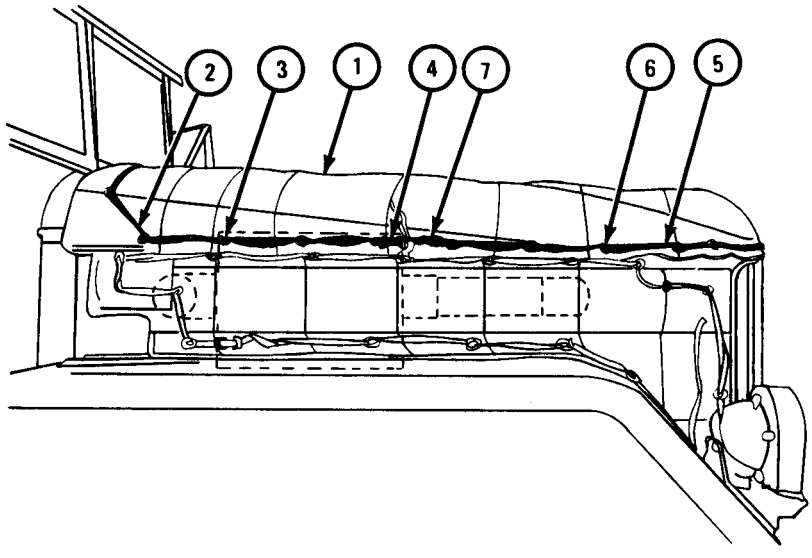
1. Put hood cover (1) in place on truck as shown.
2. Lace strap (2) through loops (3) and close buckle (4).
3. Lace strap (5) through loops (6) and close buckle (7).
4. Do steps 2 and 3 again on other side of hood cover (1).

NOTE

Follow-on Maintenance Action Required:

Replace radiator cover assembly. Refer to para 21-17.

END OF TASK



TA 103194

21-17. RADIATOR COVER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES: None

PERSONNEL: One

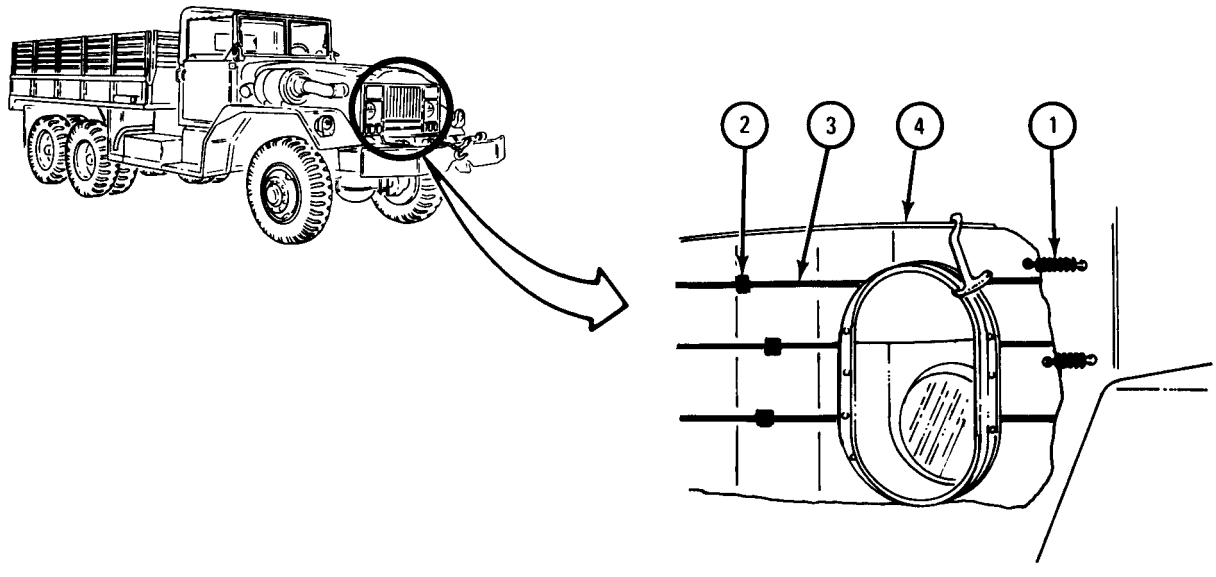
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Take off four retaining springs (1).
2. Slide off buckles (2) and unlace tie strips (3).
3. Take off radiator cover (4).

END OF TASK

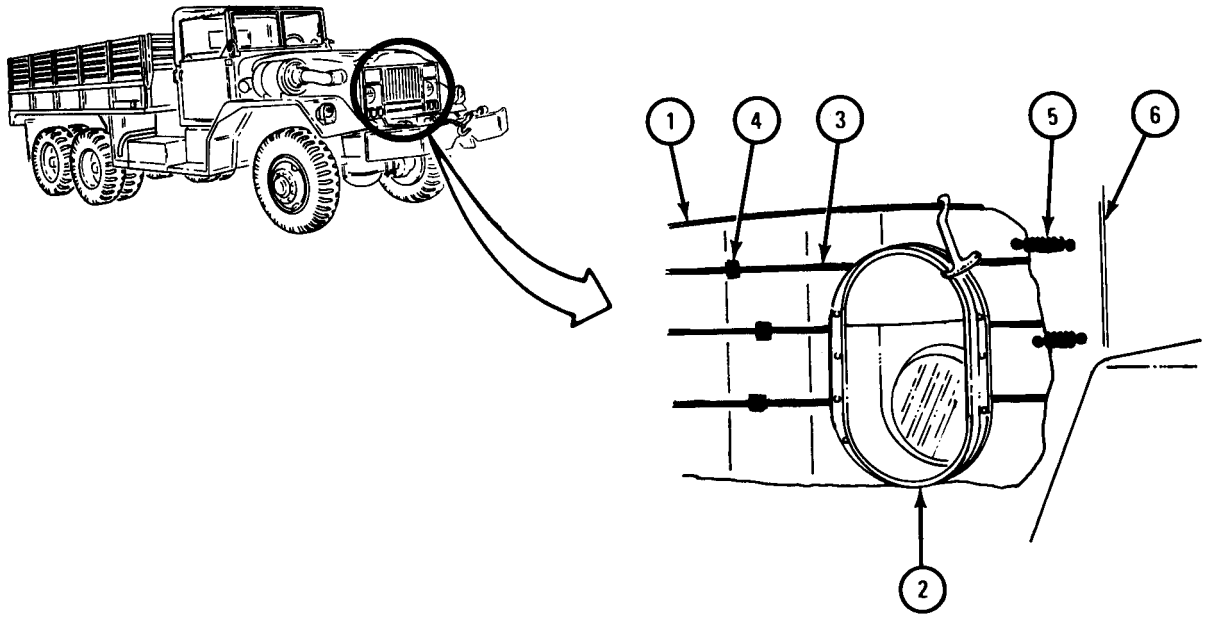


b. Replacement.

FRAME 1

1. Fit radiator cover (1) over mounting loops (2).
2. Lace tie strips (3) through mounting loops (2).
3. Slide buckles (4) over ends of tie strips (3) and pull tie strips tight.
4. Hook four retaining springs (5) into holes inside panel (6).

END OF TASK



21-18. GEARSHIFT LEVER COVER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

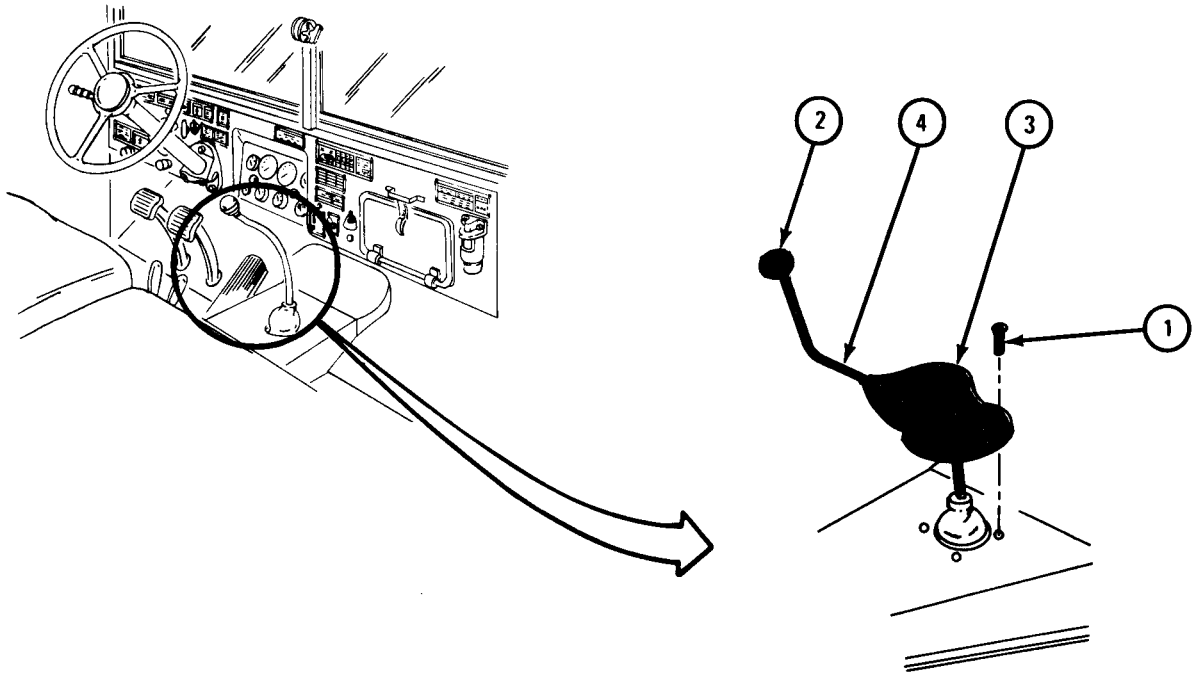
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using screwdriver, unscrew and take out four screws (1).
2. Unscrew and take off gearshift lever knob (2).
3. Lift out cover (3) over gearshift lever (4).

END OF TASK



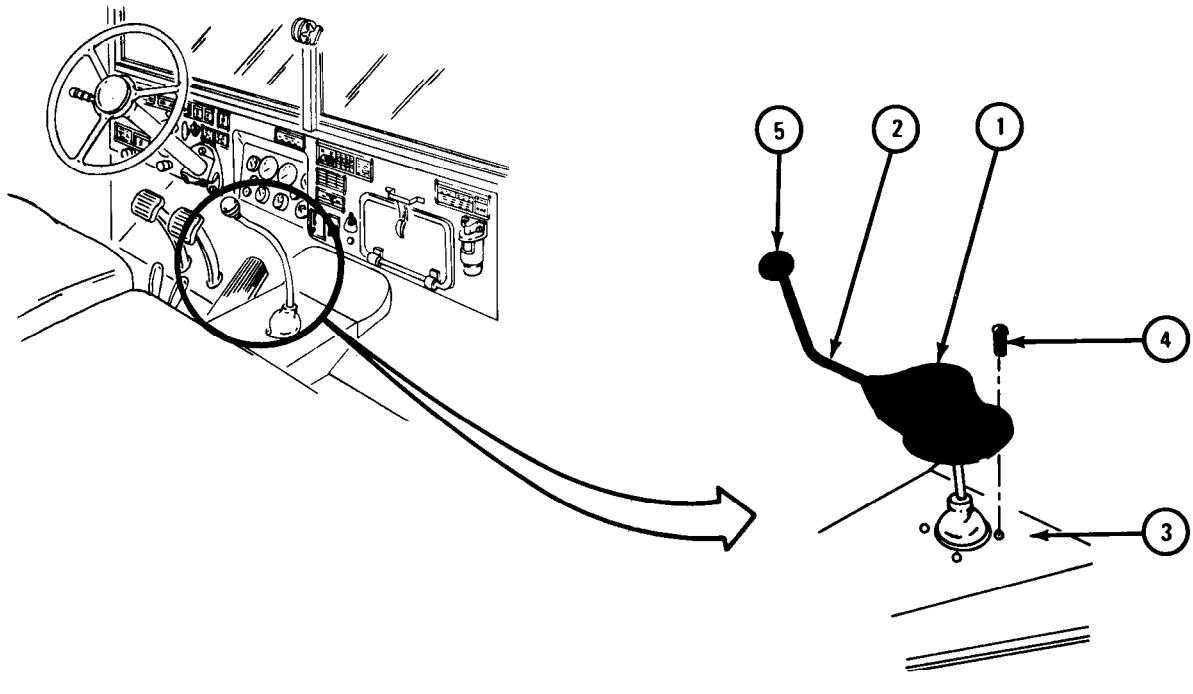
TA 045703

b. Replacement.

FRAME 1

1. Drop cover (1) over gearshift lever (2) with curved seam toward front of truck.
2. Aline holes in cover (1) with holes in transmission tunnel (3).
3. Using screwdriver, screw in and tighten four screws (4).
4. Screw on gearshift lever knob (5).

END OF TASK



TA 045704

21-19. TRANSFER CASE LEVER COVER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

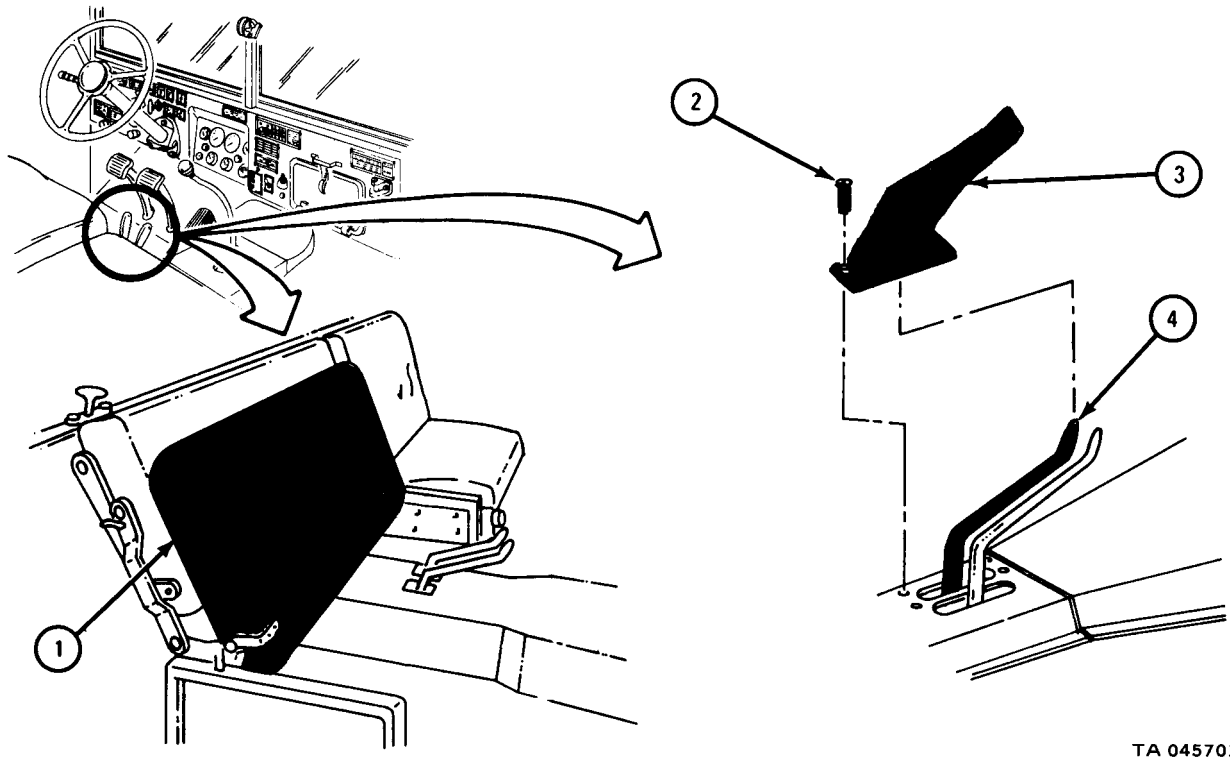
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, TRANSFER CASE lever in high range.

a. Removal.

FRAME 1

1. Tilt back companion seat cushion (1).
2. Using screwdriver, unscrew and take out four screws (2).
3. Lift out cover (3) over TRANSFER CASE lever (4).

END OF TASK

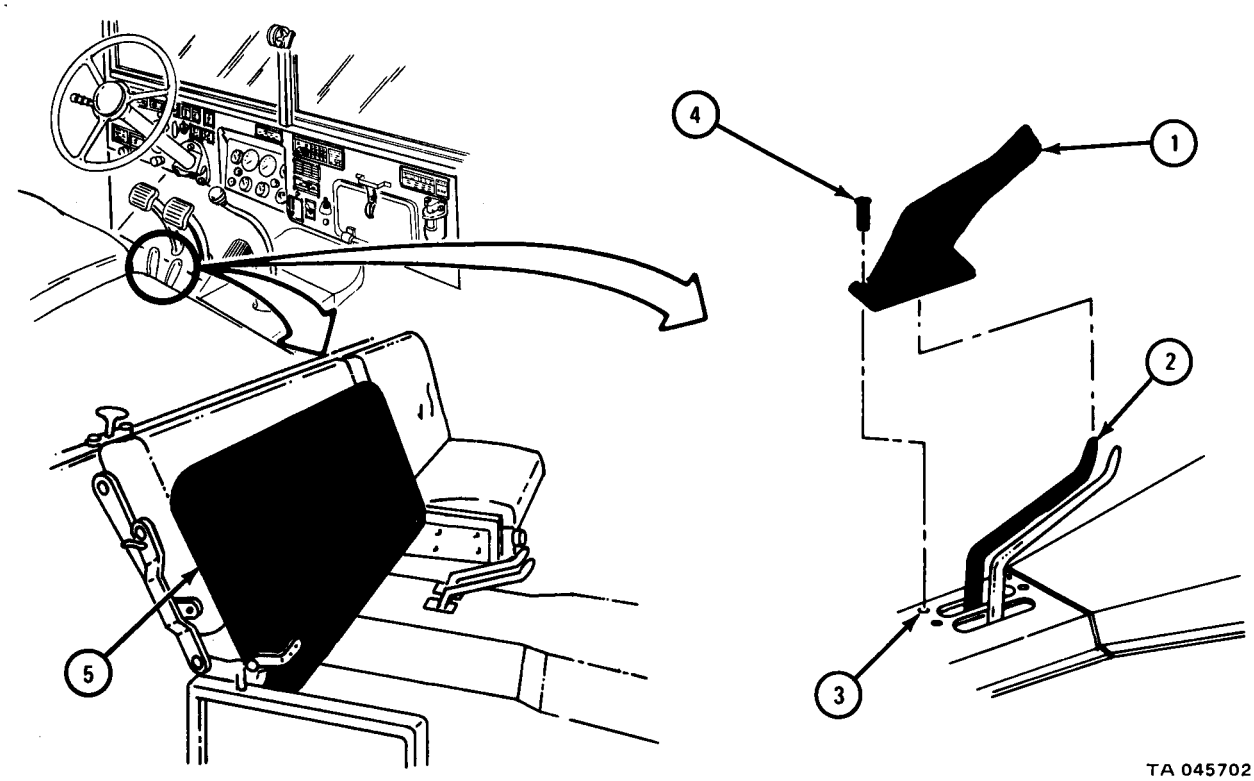


b. Replacement.

FRAME 1

1. Drop cover (1) over TRANSFER CASE lever (2) with seam toward front of truck.
2. Aline holes in cover (1) with holes in transmission tunnel (3).
3. Using screwdriver, screw in and tighten four screws (4).
4. Push companion seat cushion (5) down.

END OF TASK



21-20. ALCOHOL EVAPORATOR KIT REMOVAL, INSPECTION, AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)
1/2-gallon container

SUPPLIES: Gasket
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Alcohol, grade 3

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

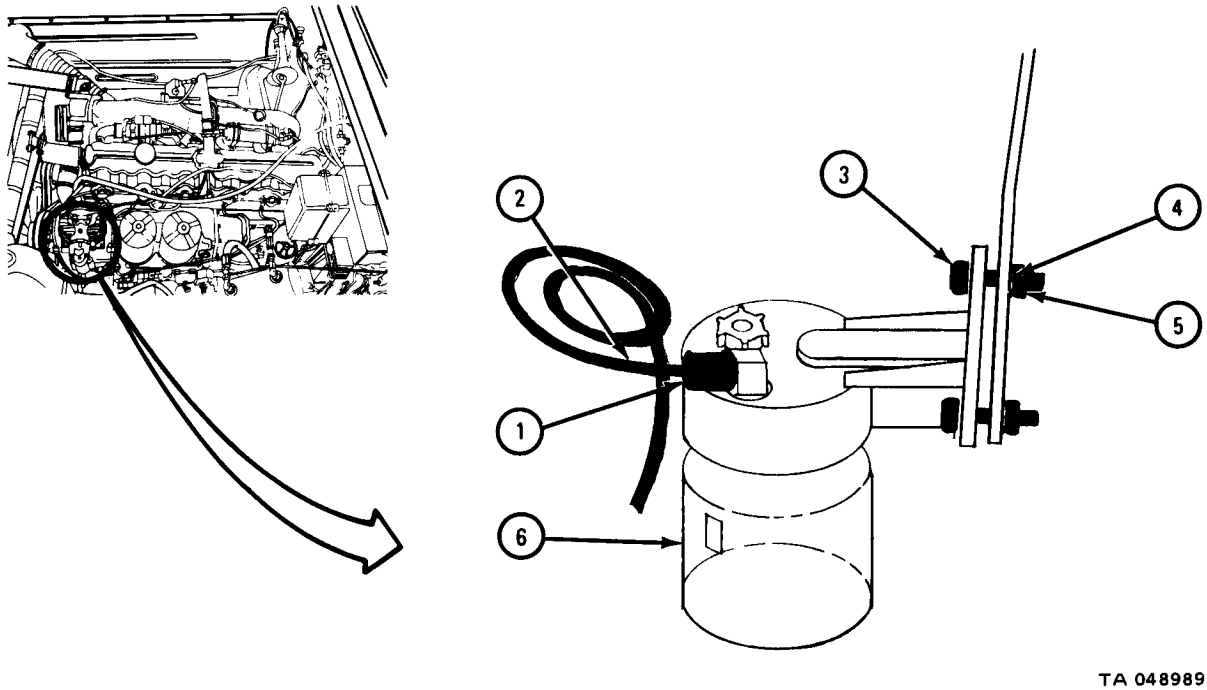
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using wrenches, unscrew fitting (1) and takeoff tubing (2).
2. Using wrenches, unscrew and take off three bolts (3) with lockwashers (4) and nuts (5).
3. Takeout alcohol evaporator assembly (6).

END OF TASK

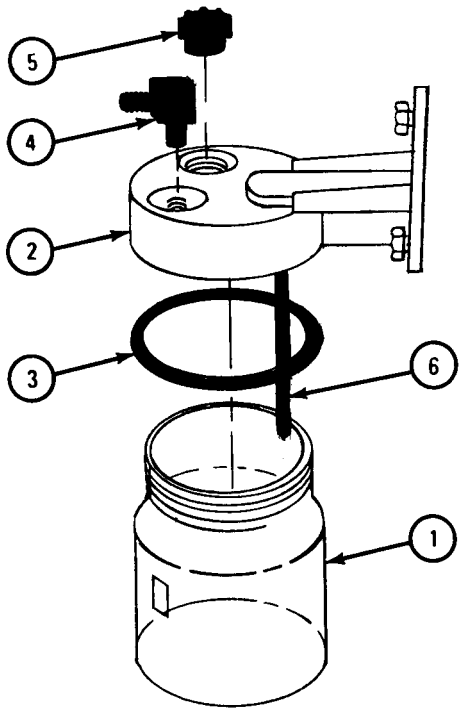


c. Disassembly.

FRAME 1

1. Unscrew glass jar (1) from strainer body (2) and take off and throw away gasket (3).
2. Empty alcohol from glass jar (1) into container. Put alcohol in approved disposal area.
3. Using wrench, unscrew and take out elbow (4).
4* Unscrew and take out filler cap (5).
5. Unscrew and take out plastic tube (6).

END OF TASK



TA 048990

WARNING

Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

Eye shields must be worn when using compressed air. Eye injury can occur if eye shields are not used.

d. Cleaning and Inspection.

(1) Wash all parts in solvent. Let parts dry.

(2) Blow out tube and ports with compressed air.

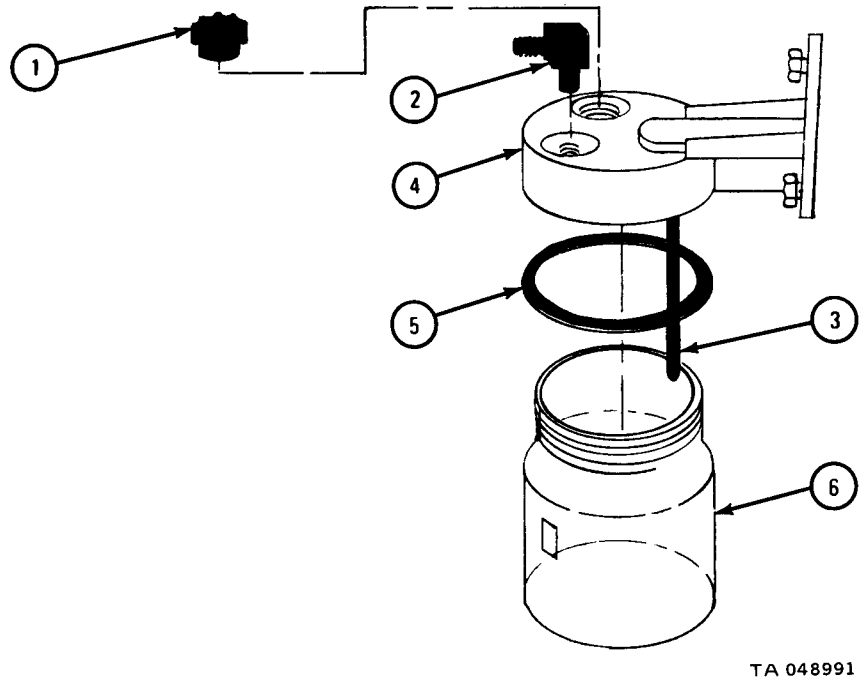
(3) Check all parts for cracks, stripped threads, or other damage. If parts are damaged, tell direct support maintenance.

e. Assembly.

FRAME 1

1. Screw in filler cap (1).
2. Using wrench, screw in and tighten elbow (2).
3. Screw in and tighten plastic tube (3) into strainer body (4).
4. Put gasket (5) into strainer body (4) and screw in and tighten glass jar (6).

END OF TASK



f. Replacement.

FRAME 1

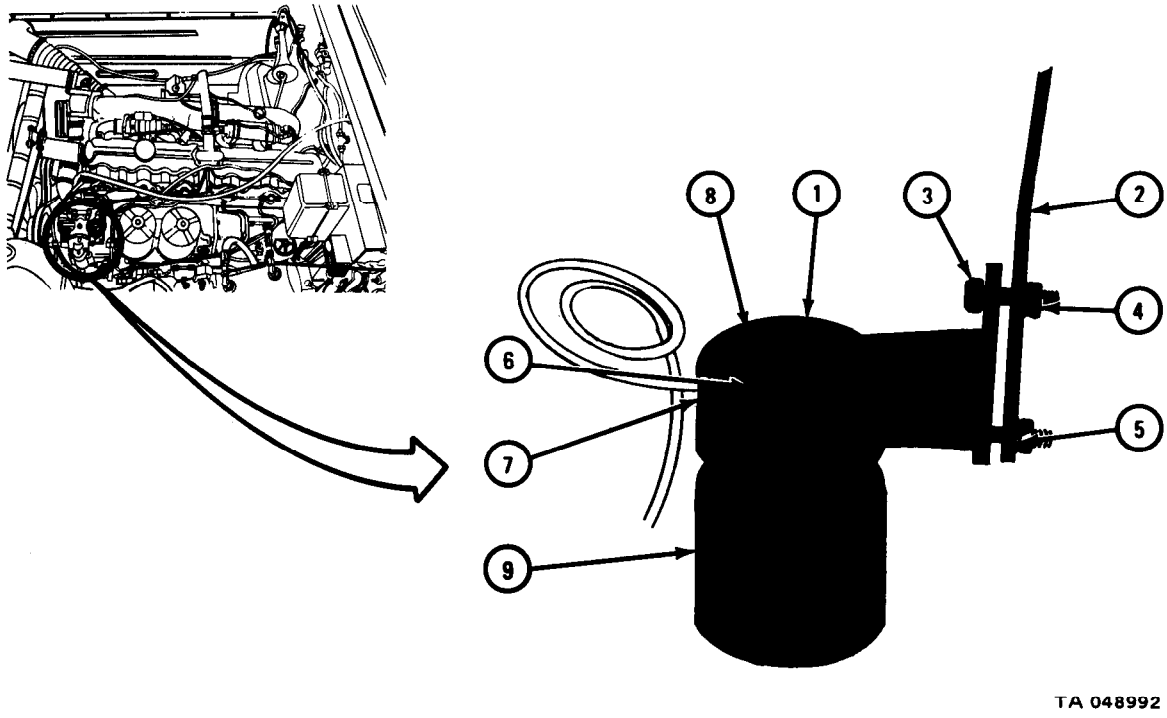
1. Line up holes in strainer body (1) with holes in bracket (2).
2. Push three bolts (3) through holes in strainer body (1) and bracket (2).
3. Using wrenches, screw on and tighten three nuts (4) with lockwashers (5).
4. Using wrench, turn elbow (6) to position shown and screw on and tighten fitting (7).
5. Unscrew filler cap (8) and fill glass jar (9) with alcohol. Screw on and tighten filler cap.

NOTE

Follow-on Maintenance Action Required:

Close hood. Refer to TM 9-2320-211-10.

END OF TASK



21-21. EVAPORATOR TUBE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

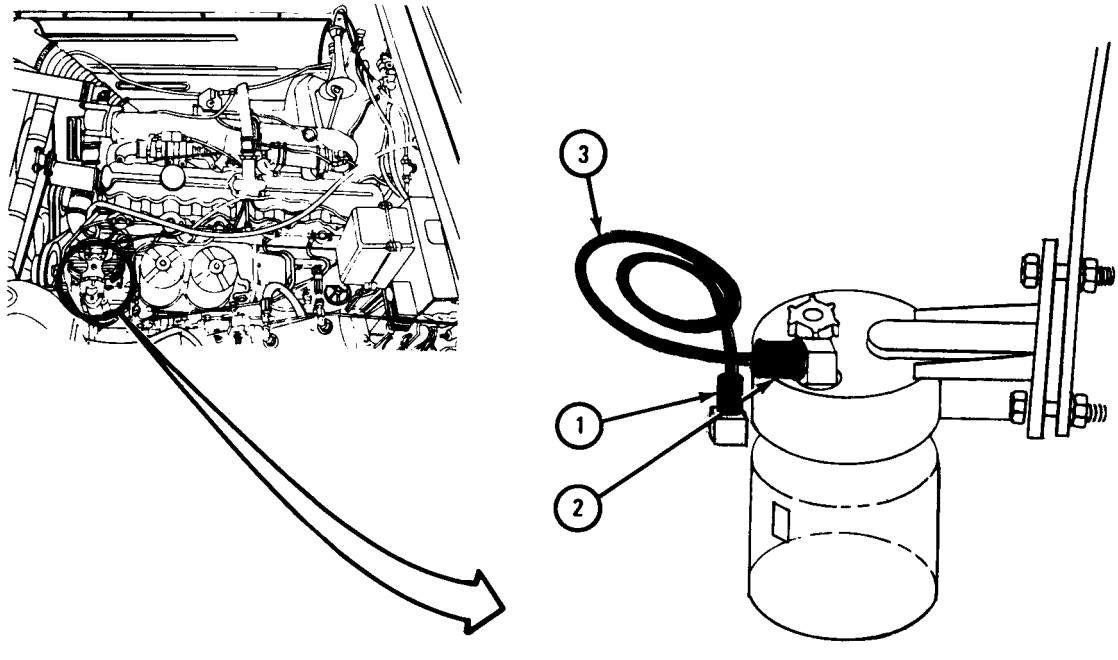
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using wrenches, unscrew two fittings (1 and 2).
2. Take off evaporator tube assembly (3).

END OF TASK



TA 048993

c. Replacement.

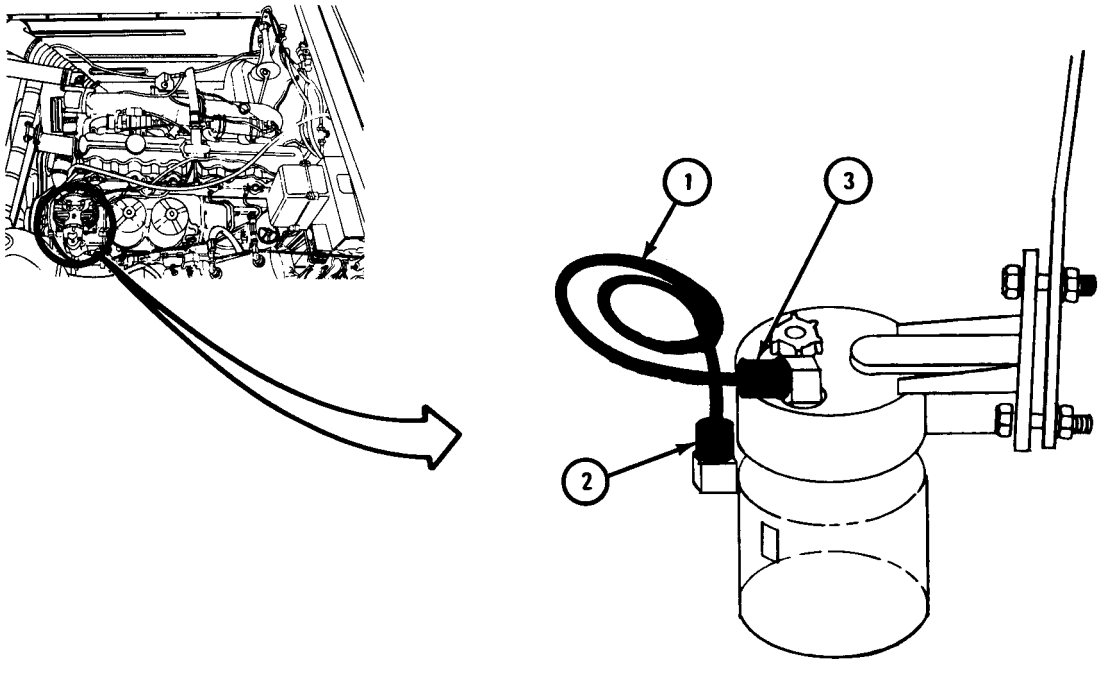
FRAME 1

1. Put evaporator tube assembly (1) in place as shown.
2. Using wrenches, screw on and tighten two fittings (2 and 3).

NOTE

Follow-on Maintenance Action Required:
Close hood. Refer to TM 9-2320-211-10.

END OF TASK



21-22. BATTERY SLAVE RECEPTACLE ASSEMBLY REMOVAL, REPAIR, TEST, AND REPLACEMENT.

TOOLS: 9/16-inch wrench
7/16-inch wrench (2)
Multimeter

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Disconnect battery ground. Refer to Part 1, para 7-44.

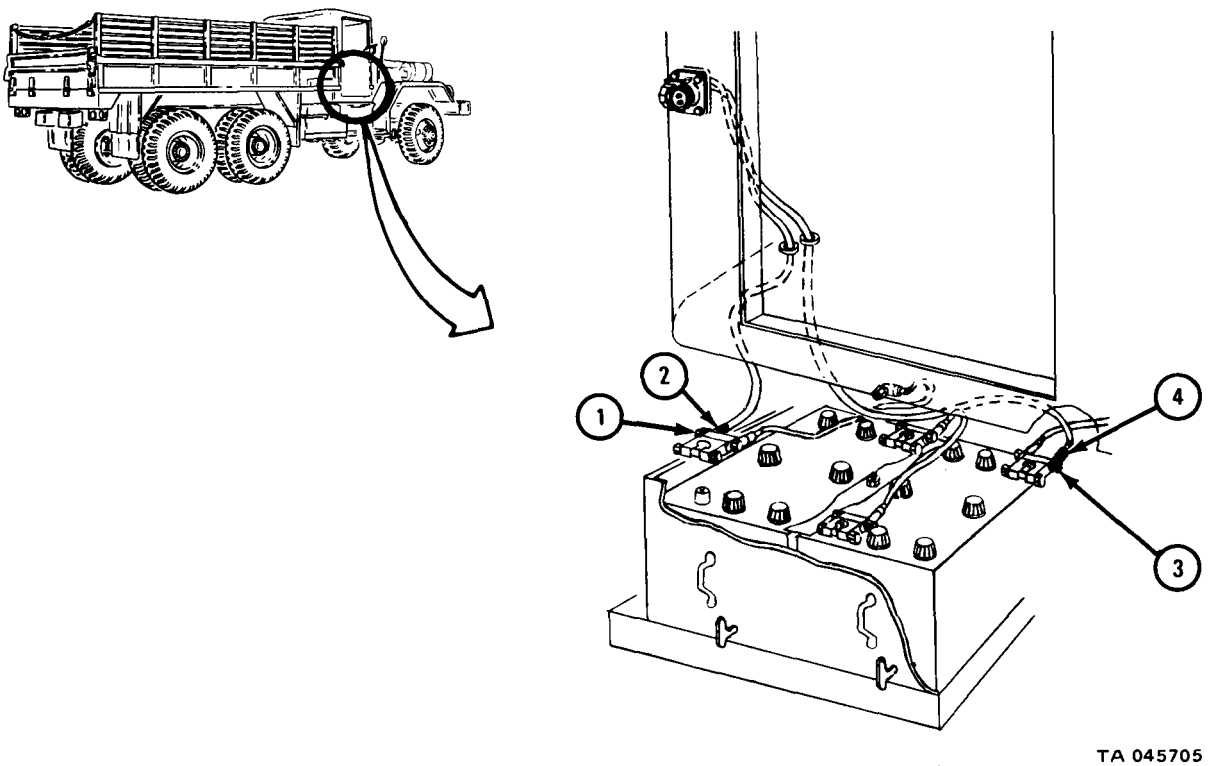
b. Removal.

(1) Trucks without powerplant coolant heater.

FRAME 1

1. Using 9/16-inch wrench, loosen nut (1) and take off cable lug (2).
2. Using 9/16-inch wrench, loosen nut (3) and take off cable lug (4).

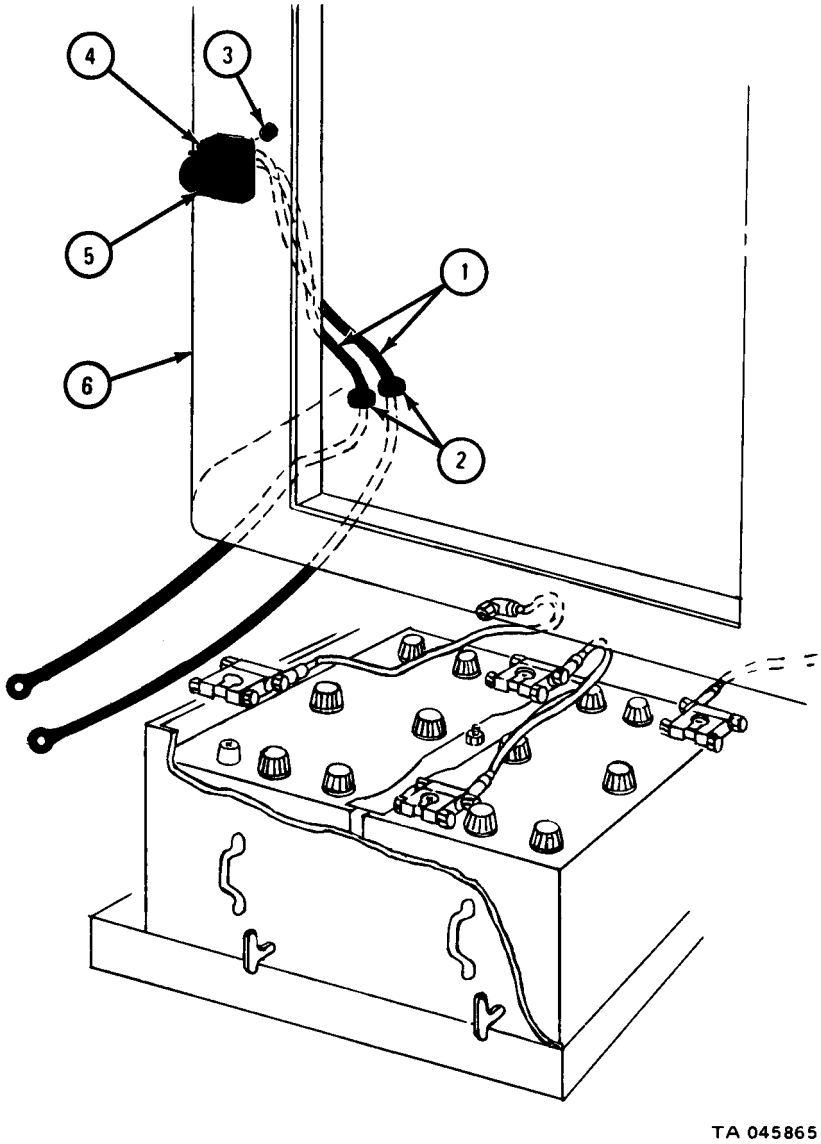
GO TO FRAME 2



FRAME 2

1. From inside cab, pull cables (1) through grommets (2) into cab.
2. Using 7/16-inch wrench, hold four nuts (3).
3. Using 7/16-inch wrench, unscrew and take off four capscrews (4) and nuts (3).
4. Pull receptacle (5) with cables (1) out of hole in cab (6).

END OF TASK

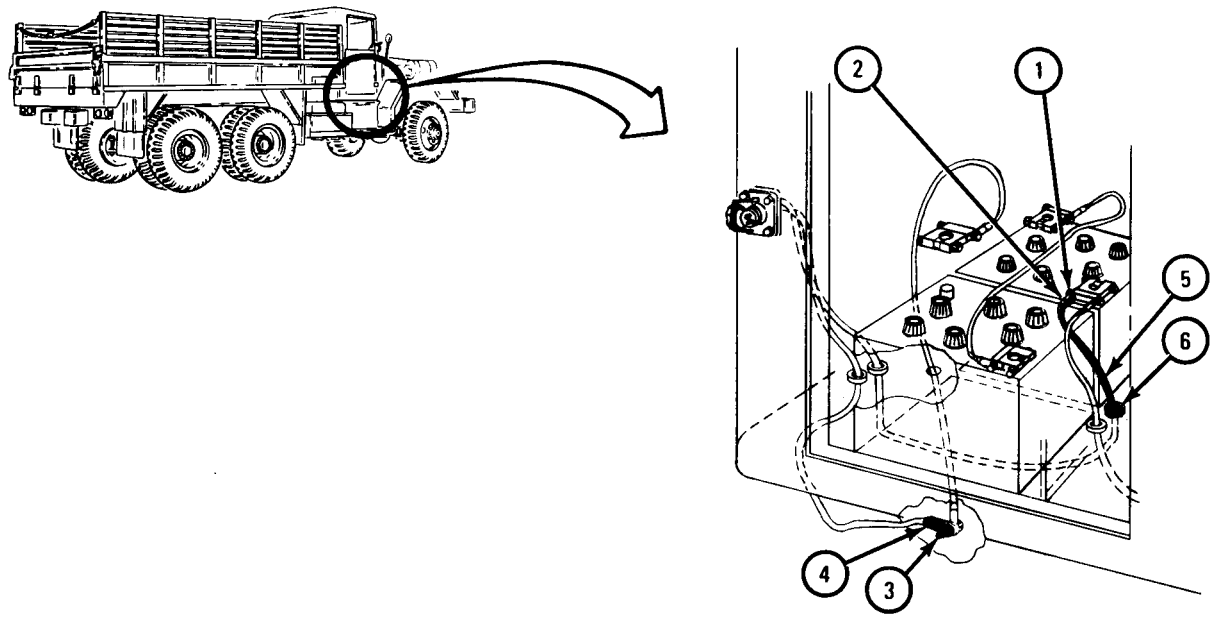


(2) Truck with powerplant coolant heater.

FRAME 1

1. Using 7/16-inch wrench, loosen nut (1) and take off cable lug (2).
2. Using 7/16-inch wrench, loosen nut (3) and take off cable lug (4).
3. Push cable lug (2) and end of cable (5) down through grommet (6) in cab floor.

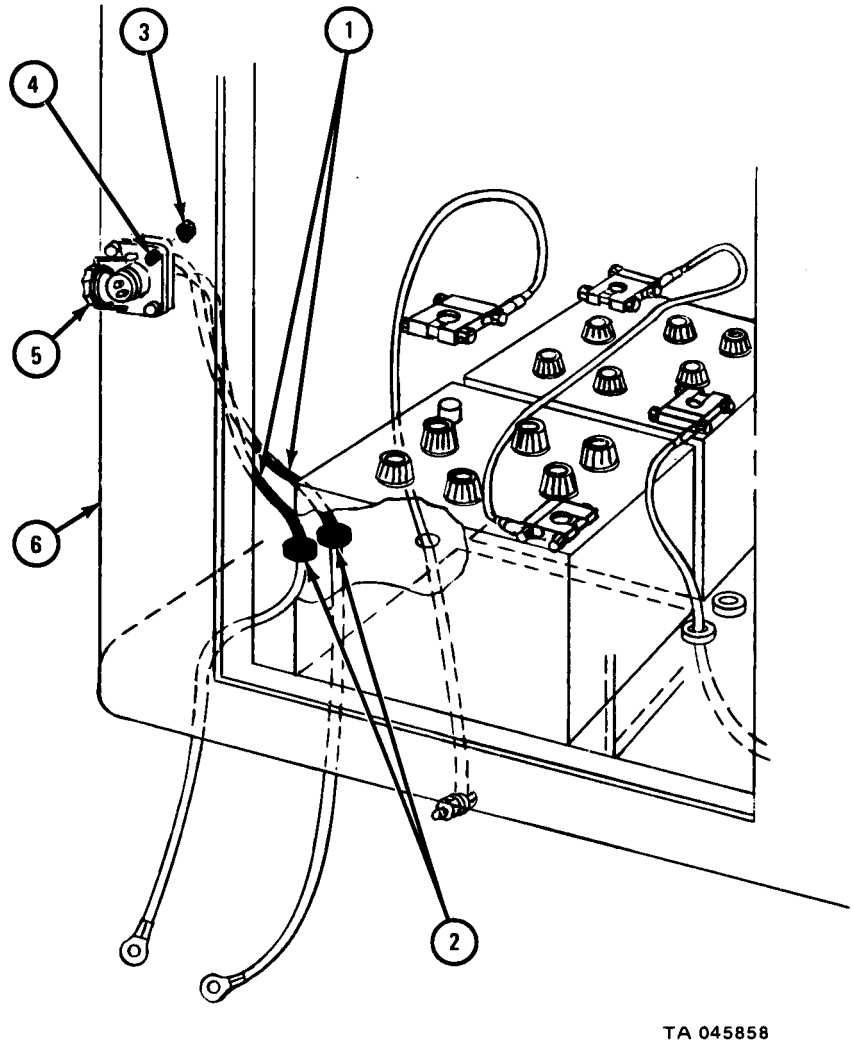
GO TO FRAME 2



FRAME 2

1. From inside cab, pull two cables (1) up through grommets (2) into cab.
2. Using 7/16-inch wrench, hold four nuts (3).
3. Using 7/16-inch wrench, unscrew and take off four capscrews (4) and nuts (3).
4. Pull receptacle (5) with cables (1) out of hole in cab (6).

END OF TASK



TA 045858

c. Repair. Check to see if receptacle is broken or cracked. If receptacle is broken or cracked, get a new slave receptacle kit.

d. Test. Using multimeter, check receptacle and wiring for contintity. Refer to vol. 2 for procedures for using smultimeter.

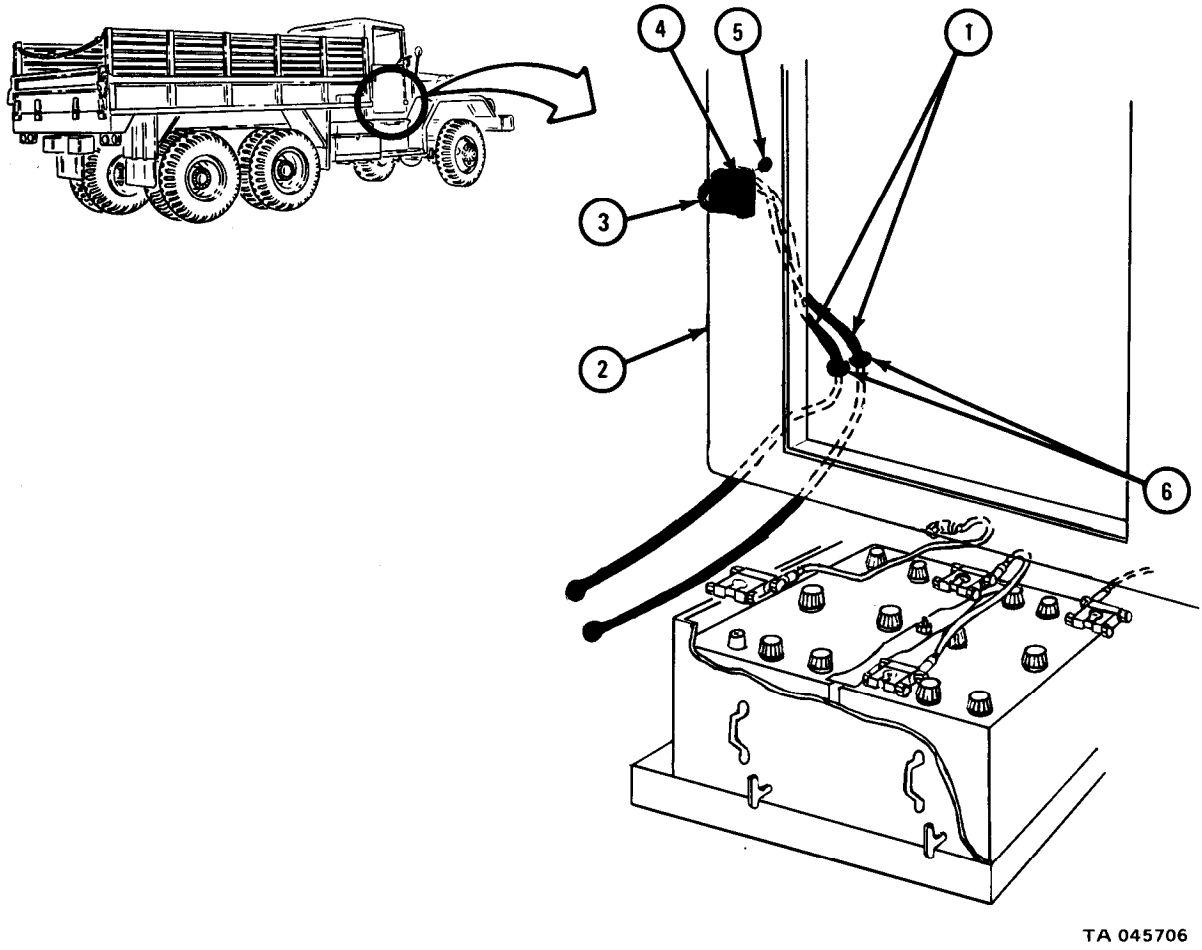
e. Replacement.

(1) Truck without powerplant coolant heater.

FRAME 1

1. Push cables (1) into hole in cab (2).
2. Aline mounting holes in receptacle (3) with holes in cab (2).
3. Push four capscrews (4) through holes in receptacle (3) and cab (2).
4. Screw on four nuts (5) onto four capscrews (4).
5. Using 7/16-inch wrench, hold four nuts (5).
6. Using 7/16-inch wrench, tighten four capscrews (4).
7. Push cables (1) down through grommets (6).

GO TO FRAME 2



FRAME 2

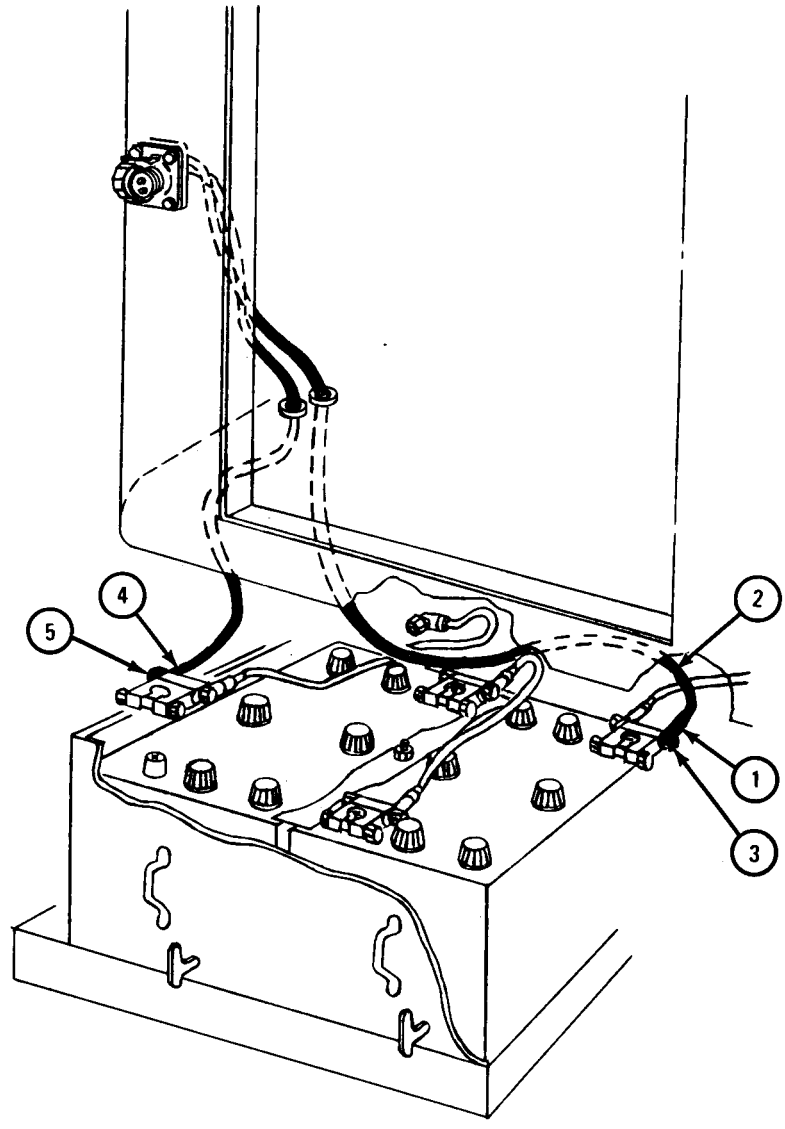
1. Place cable lug (1) of longer cable (2) behind nut (3). Using 9/16-inch wrench, tighten nut.
2. Place cable lug (4) behind nut (5). Using 9/16-inch wrench, tighten nut.

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground. Refer to Part 1, para 7-44.

END OF TASK



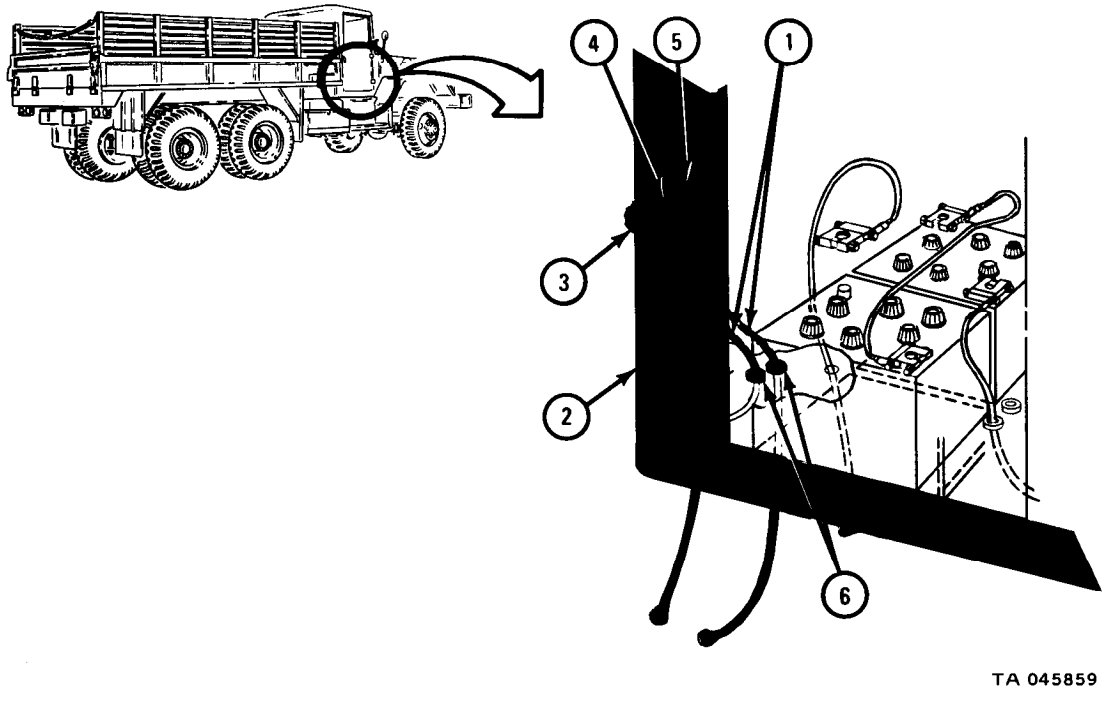
TA 045866

(2) Trucks with powerplant coolant heater.

FRAME 1

1. Push two cables (1) into hole in cab (2).
2. Aline mounting holes in receptacle (3) with holes in cab (2).
3. Push four capscrews (4) through holes in receptacle (3) and cab (2).
4. Screw on four nuts (5) onto four capscrews (4).
5. Using 7/16-inch wrench, hold four nuts (5).
6. Using 7/16-inch wrench, tighten four capscrews (4).
7. Push cables (1) down through two grommets (6).

GO TO FRAME 2



TA 045859

FRAME 2

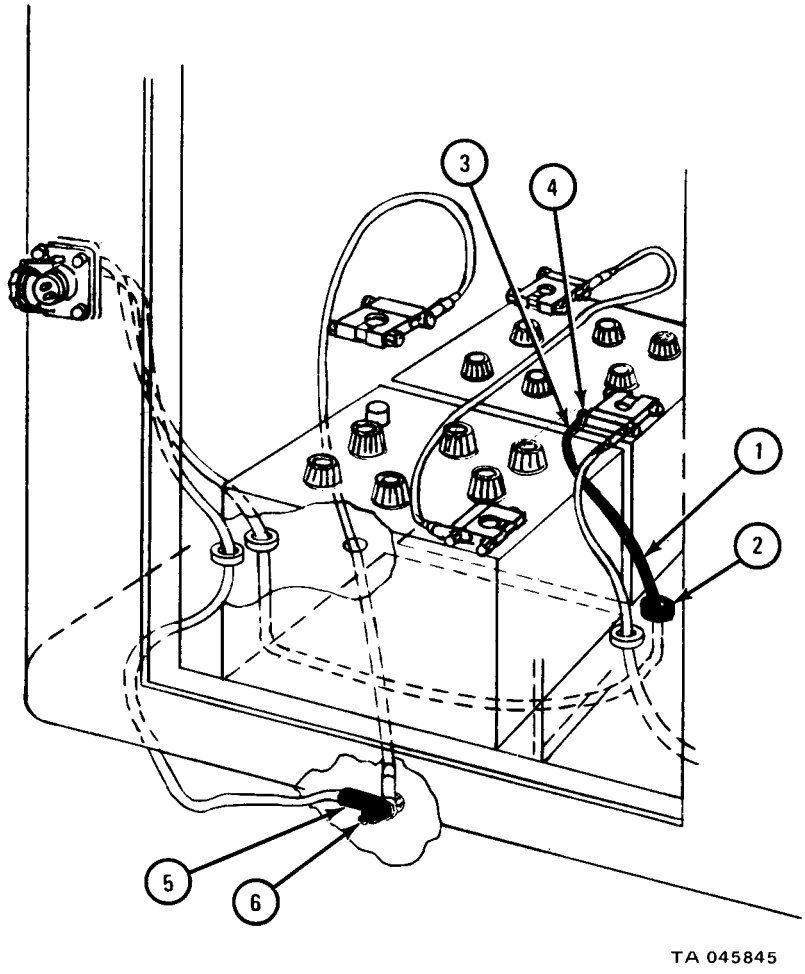
1. Push end of longer cable (1) up through grommet (2) into cab.
2. Place cable lug (3) behind nut (4). Using 7/16-inch wrench, tighten nut.
3. Place cable lug (5) behind nut (6). Using 7/16-inch wrench, tighten nut.

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground. Refer to Part 1, para 7-44.

END OF TASK



TA 045845

Section III. DEEP WATER FORDING KIT

21-23. DEEP WATER FORDING RELIEF VALVE REMOVAL AND REPLACEMENT.

NOTE

This task is the same for both relief valves.

TOOLS: Open end wrench set

SUPPLIES: None

PERSONNEL: One

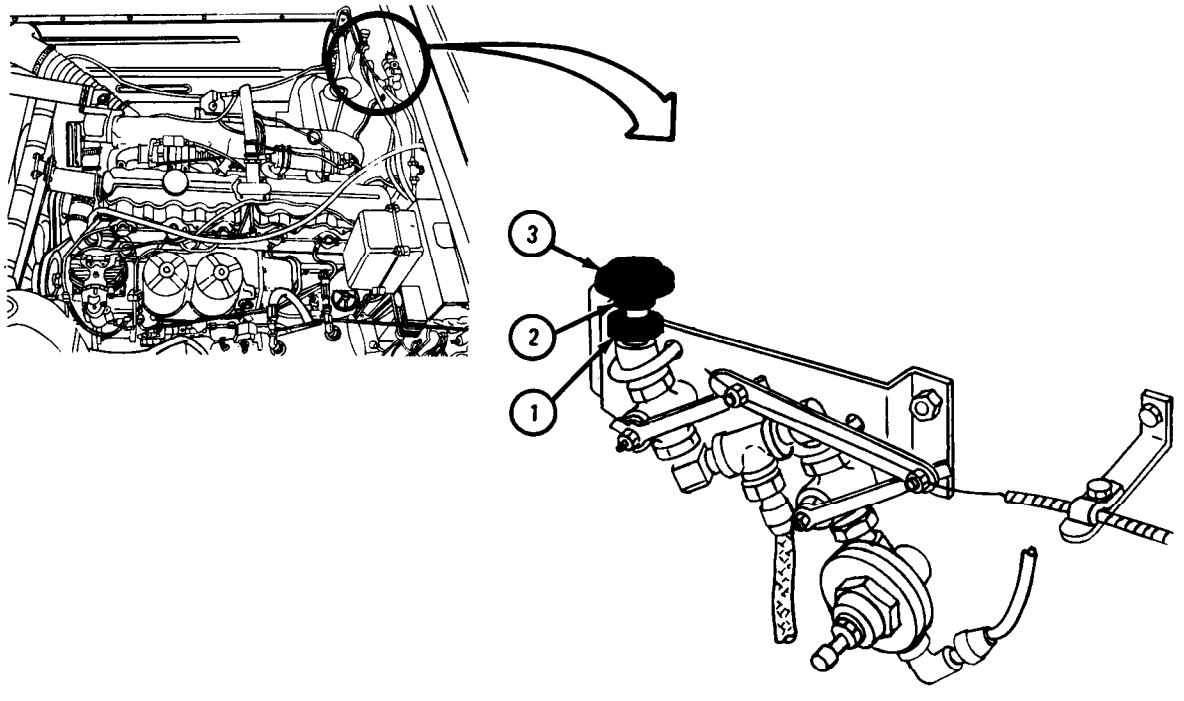
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

Removal.

FRAME 1

1. Using wrench, hold nut (1).
2. Using wrench, unscrew and take off nut (2) and valve (3).

END OF TASK

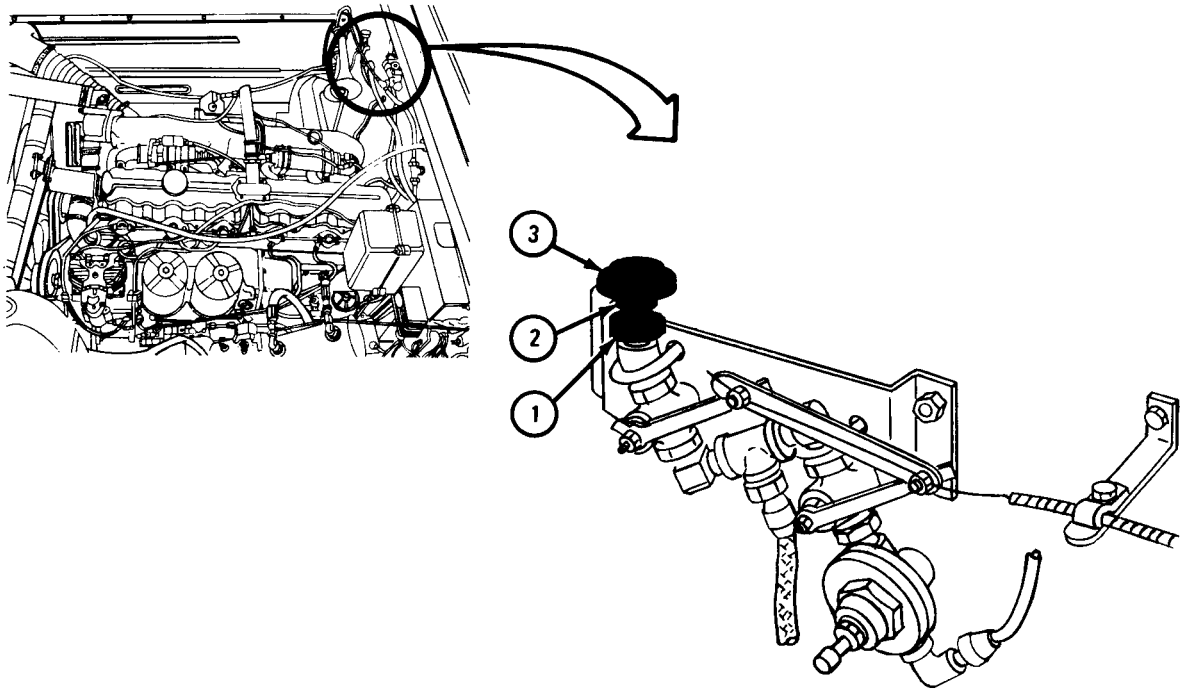


b. Replacement.

FRAME 1

1. Using wrench, hold nut (1).
2. Using wrench, screw on and tighten nut (2) and valve (3).

END OF TASK



TA 045812

Section IV. SPECIAL PURPOSE KITS

21-24. DECONTAMINATION APPARATUS MOUNTING BRACKET REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

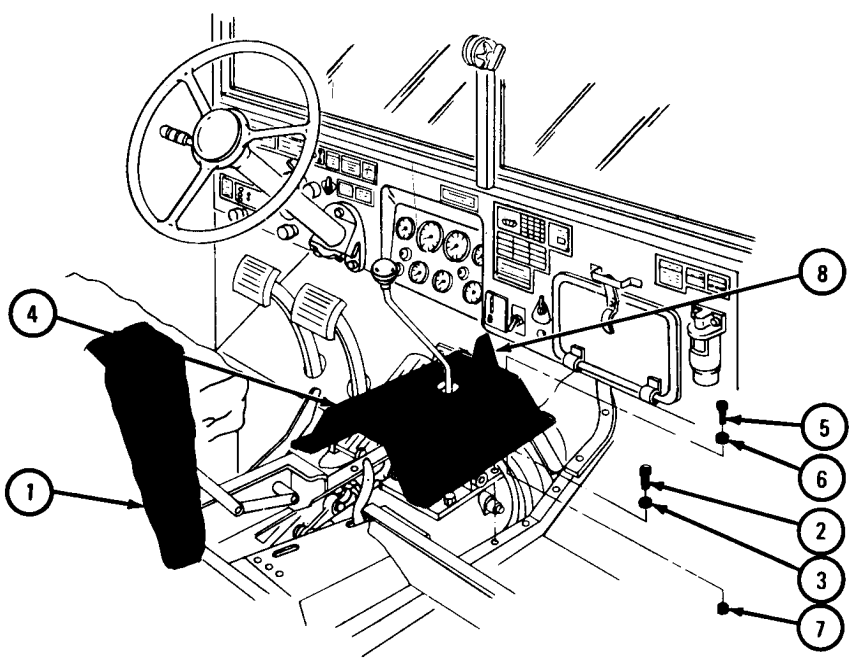
a. Preliminary Procedure. Remove decontamination apparatus. Refer to TM 3-4230-204-12&P.

b. Removal.

FRAME 1

1. Raise companion seat (1).
2. Using 7/16-inch wrench, unscrew and takeout 12 screws (2) with washers (3). Lift up tunnel (4).
3. Using 7/16-inch wrench, unscrew and take out three screws (5) with lockwashers (6) and nuts (7).
4. Takeout bracket (8).

END OF TASK



TA 103241

c. Replacement.

FRAME 1

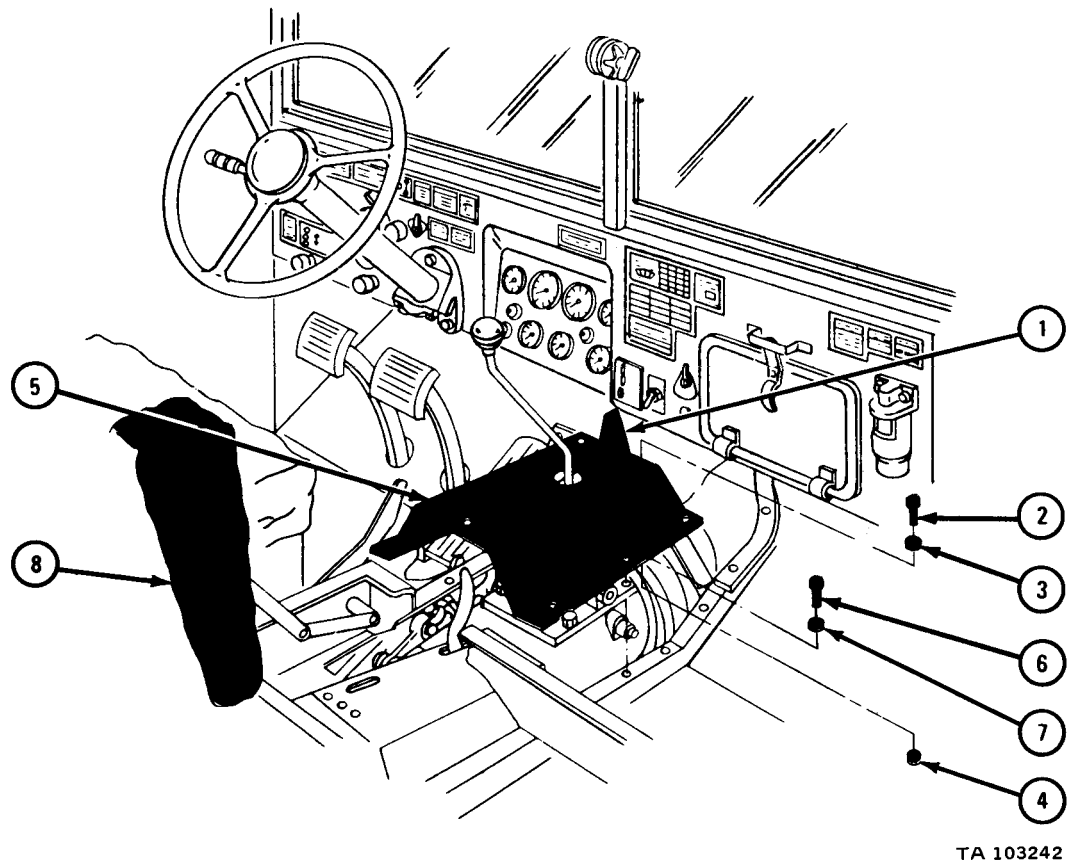
1. Put on bracket (1). Put in three screws (2) with lockwashers (3). Using 7/16-inch wrench, put on three nuts (4).
2. Set tunnel cover (5) in place. Using 7/16-inch wrench, screw in and tighten 12 screws (6) with lockwashers (7).
3. Lower companion seat (8).

NOTE

Follow-on Maintenance Action Required:

Replace decontamination apparatus. Refer to TM 3-4230-204-12&P

END OF TASK



TA 103242

21-25. TROOP SEAT KIT REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: Cross-tip screwdriver (Phillips type)
General mechanic's tool kit
3/8-inch drive socket wrench set
Mallet

SUPPLIES: None

PERSONNEL: Two

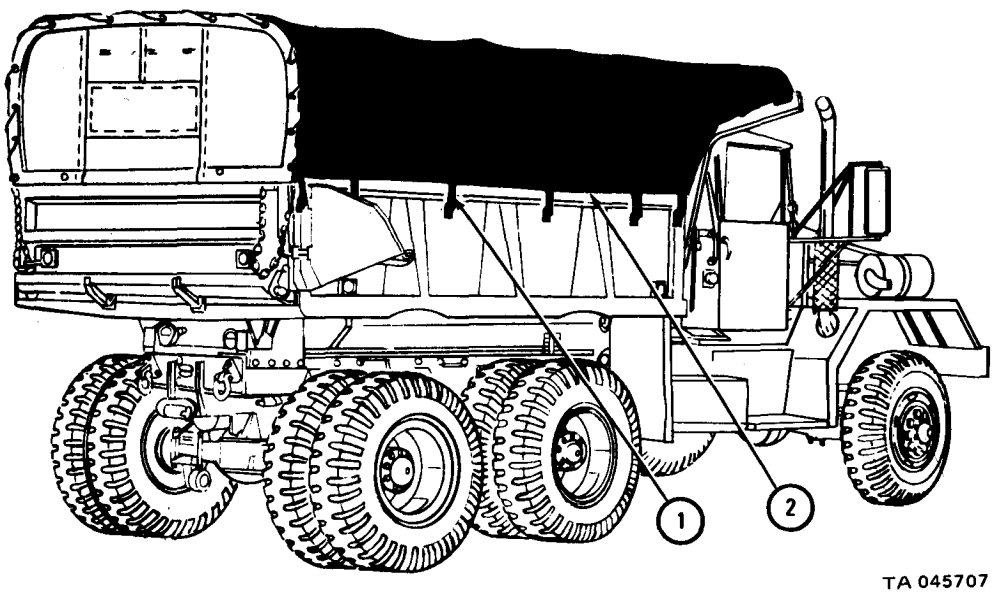
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

Soldiers A and B	1.	Untie six lashing ropes (1) on both sides of truck.
Soldier A	2.	Stand at front right side of cover (2).
Soldier B	3.	Stand at rear right side of cover (2).
Soldiers A and B	4.	Fold cover (2) up, making each fold about two feet wide. Stop folding at top center of cover.
	5.	Do steps 2 through 4 again for left side of cover (2).
	6.	Lift cover (2) up and take it off truck.

GO TO FRAME 2

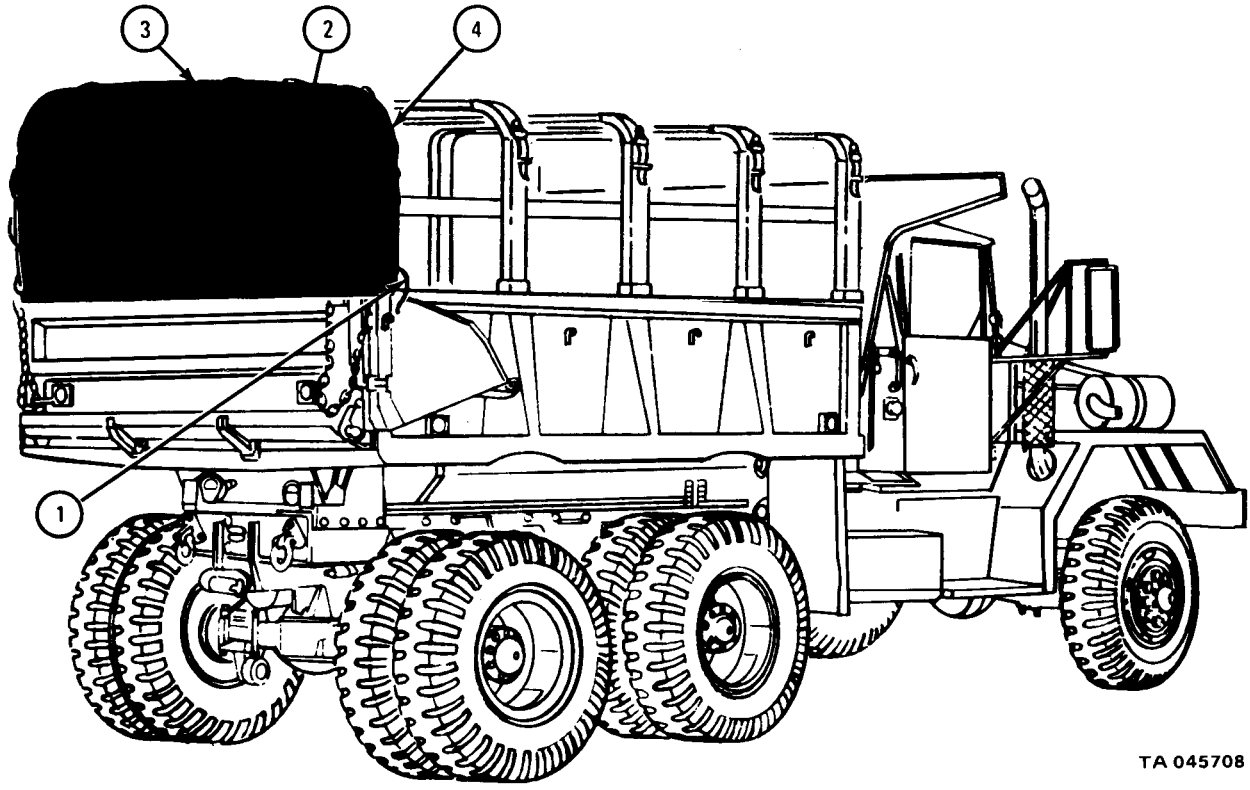


TA 045707

FRAME 2

1. Untie lashing rope (1) on both sides of rear curtain (2).
2. Pull lashing rope (1) from eyelets (3) and bow (4) on right side of rear curtain (2).
3. Do step 2 again for left side of rear curtain (2).
4. Take rear curtain (2) off truck and fold it up.

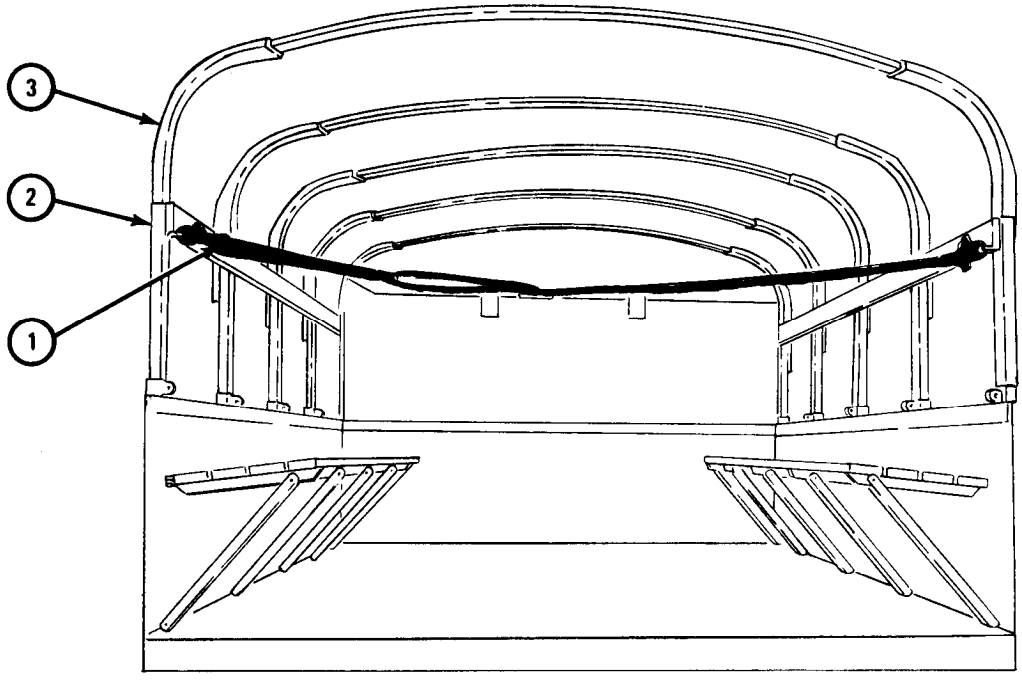
GO TO FRAME 3



FRAME 3

1. Unhook safety strap assembly (1) from rack stake (2) on both sides of truck and take safety strap assembly from truck.
2. Working inside dump body, pull up on left side of bow assembly (3) and take it out of rack stake (2).
3. Do step 2 again for right side of bow assembly (3).
4. Do steps 2 and 3 again for other four bow assemblies (3).

GO TO FRAME 4

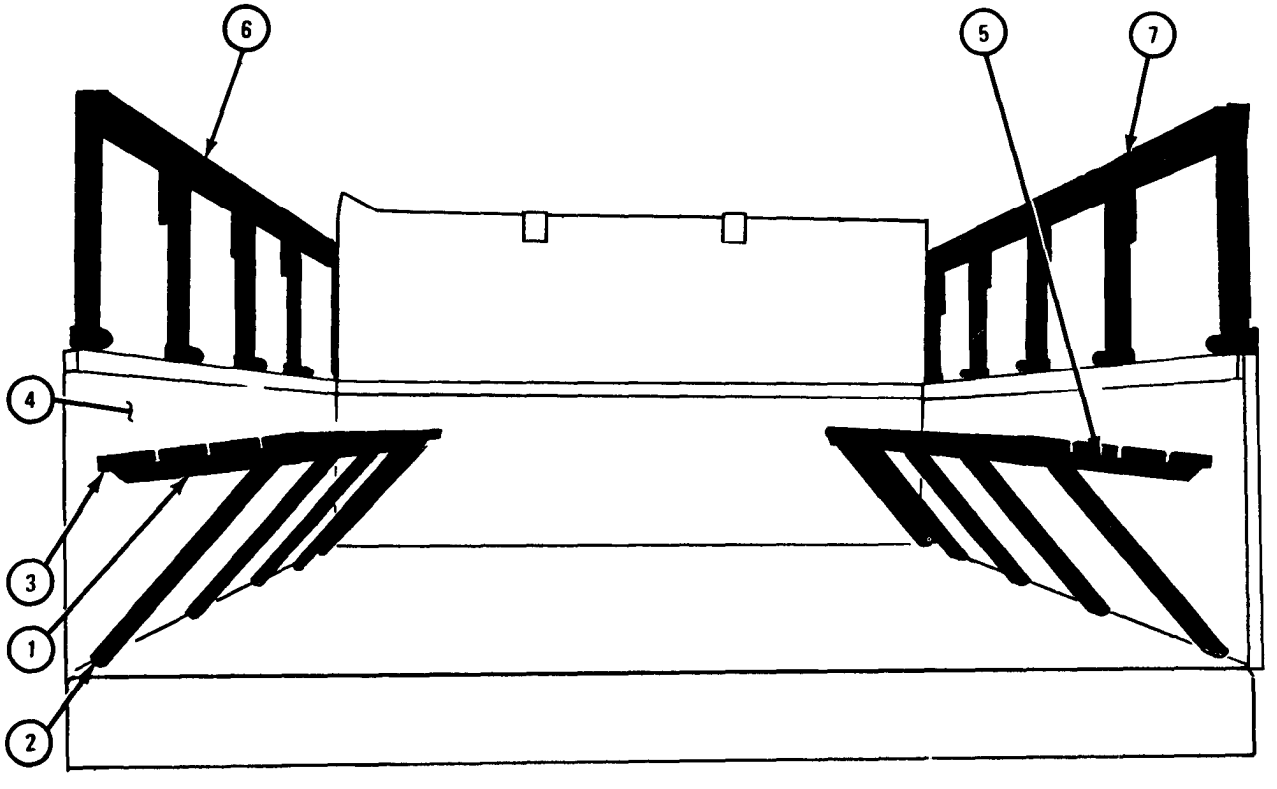


TA 045709

FRAME 4

1. Pull up front edge of left seat assembly (1) and swing five legs (2) out from under seat.
2. Lift up back edge of seat assembly (1) and take hook ends (3) out of slots in body (4).
3. Take left seat assembly (1) out of truck.
4. Do steps 1 through 3 again for right seat assembly (5).
5. Push up on left rack assembly (6) and take it off truck.
6. Push up on right rack assembly (7) and take it off truck.

END OF TASK



TA 045710

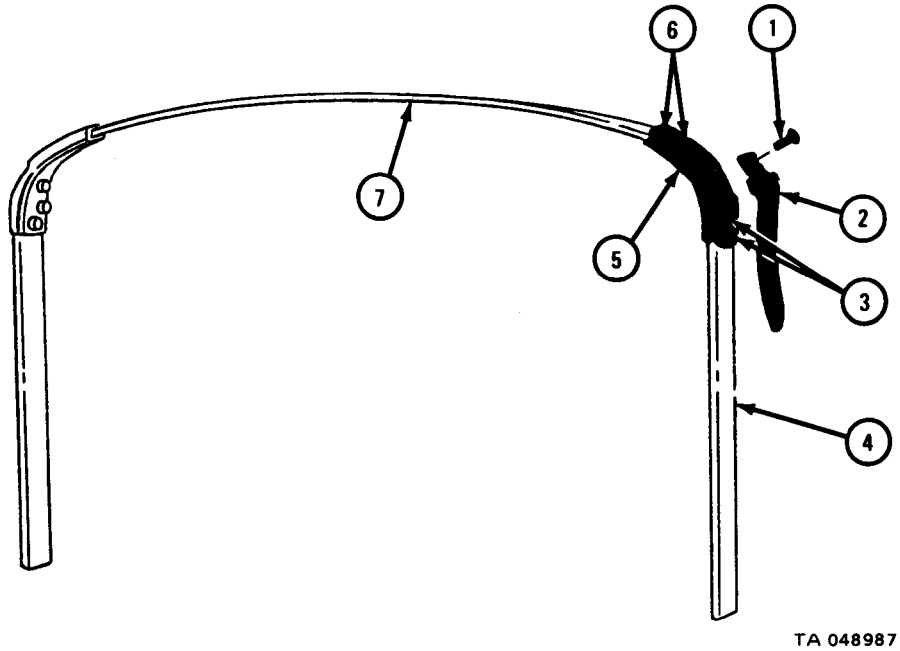
b. Disassembly.

(1) Bow assembly.

FRAME 1

1. Using screwdriver unscrew and take off screw (1). Take off strap (2).
2. Using screwdriver unscrew and take off two screws (3). Pull bow stake (4) out of bow corner (5).
3. Using screwdriver unscrew and take off two screws (6). Pull bow corner (5) off of bow top (7).
4. Do steps 1 through 3 again on other side of bow top (7).

END OF TASK

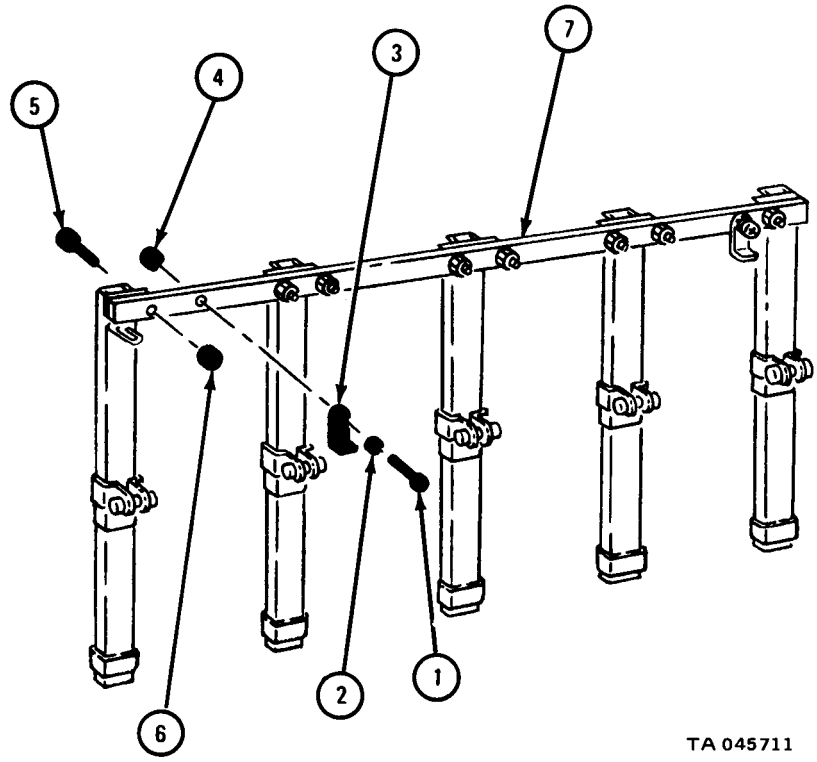


(2) Rack assembly.

FRAME 1

1. Using screwdriver and wrench, unscrew and take off two screws (1), washers (2), clamps (3), and nuts (4).
2. Using wrenches, unscrew and take off eight bolts (5) and nuts (6). Take off back board (7).

END OF TASK

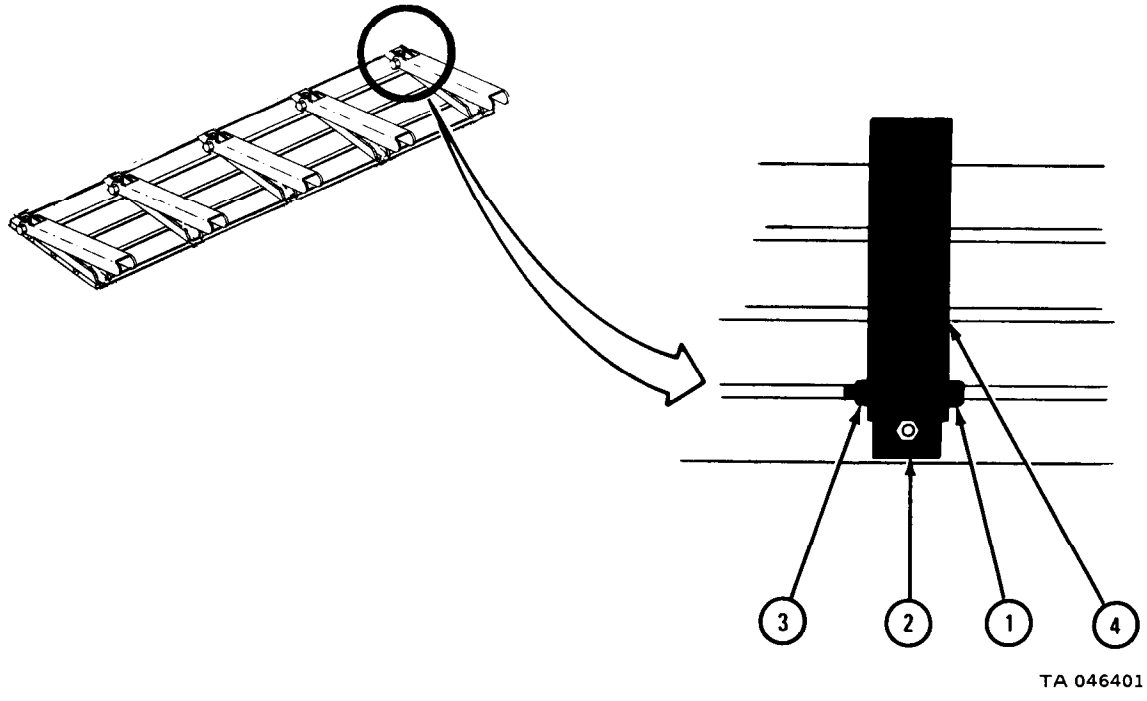


(3) Seat assembly.

FRAME 1

1. Using wrench, hold machine screw (1) at each of five channels (2). Using wrench, unscrew and take off five nuts (3). Take out screws and five legs (4).

GO TO FRAME 2

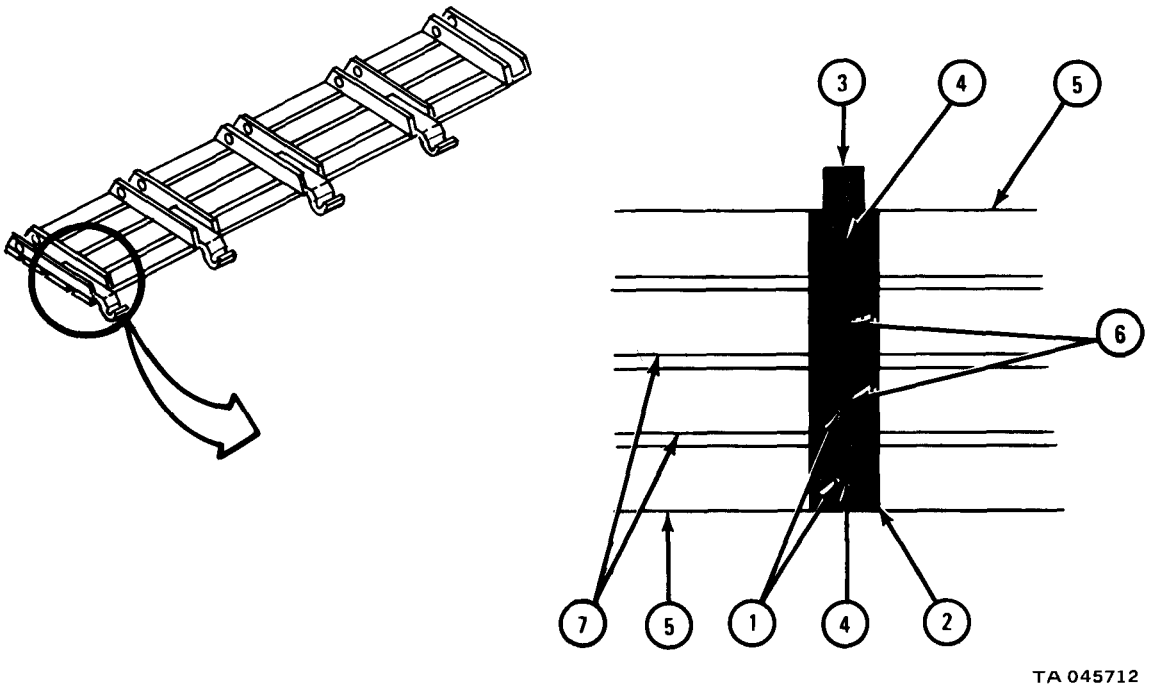


TA 046401

FRAME 2

1. Using socket wrench, unscrew and take off four nuts (1) from each of five channels (2).
2. Take off four hook hinges (3).
3. Take off five channels (2).
4. Using mallet, hammer five screws (4) out of each outside board (5).
5. Using mallet, hammer five screws (6) out of each inside board (7).

END OF TASK



c. Inspection.

(1) Check that all metal parts are not bent, broken or damaged. Get new parts in place of damaged ones.

(2) Check that all wood parts are not cracked, splintered or warped. Get new parts in place of damaged ones.

(3) Check that all cloth and rope parts are not torn, cut or frayed. Get new parts in place of damaged ones.

d. Assembly.

(1) Seat assembly.

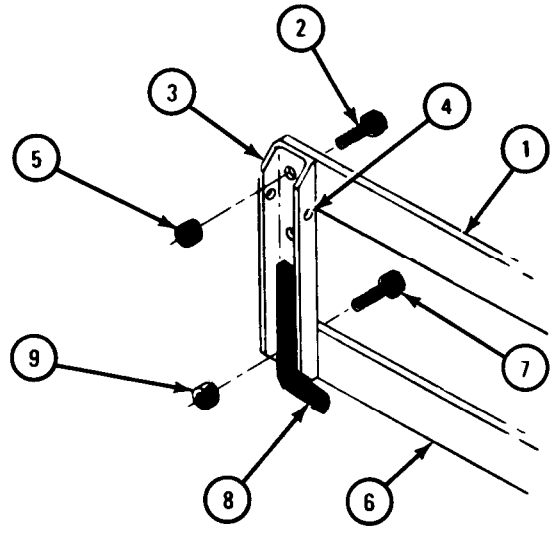
FRAME 1

NOTE

The top part of boards (1 and 6) has clearance around the screw holes to sink the screw head. The bottom part of boards does not have clearance around the screw holes.

1. Find top part of outside board (1). Put five screws (2) through holes in outside board so screw heads are on top side. Put channels (3) onto screws with holes (4) to outside board.
2. Using socket wrench, screw on and tighten nuts (5) onto five screws (2). If screws do not come through enough to screw on nuts, using mallet, hammer screws in.
3. Find top part of outside board (6). Put five screws (7) through holes in outside board so screw heads are on top side. Put screws through screw holes in channels (3).
4. Put hook hinges (8) onto four rear screws (7) with hook part of hinge to top of outside board (6).
5. Using wrench, screw on and tighten nuts (9) onto screws (7). If screws do not come through enough to screw on nuts, using mallet, hammer screws in.

GO TO FRAME 2



TA 045713

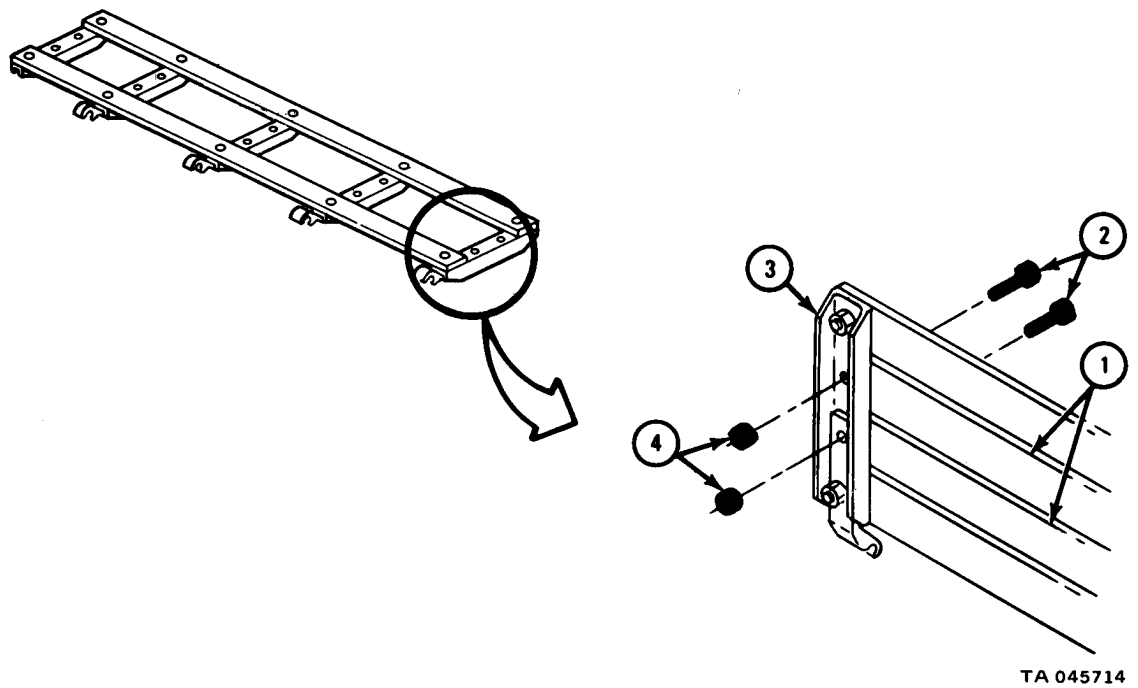
FRAME 2

NOTE

The top part of boards (1) has clearance around the screw holes to sink the screw head. The bottom part of boards does not have clearance around the screw holes.

1. Find top part of inside boards (1). Put ten screws (2) through holes in each inside board so screw heads are on top side.
2. Put screws (2) through holes in channels (3). Using socket wrench, screw on and tighten ten nuts (4) on screws. If screws do not come through enough to screw on nuts, using mallet, hammer screws in.

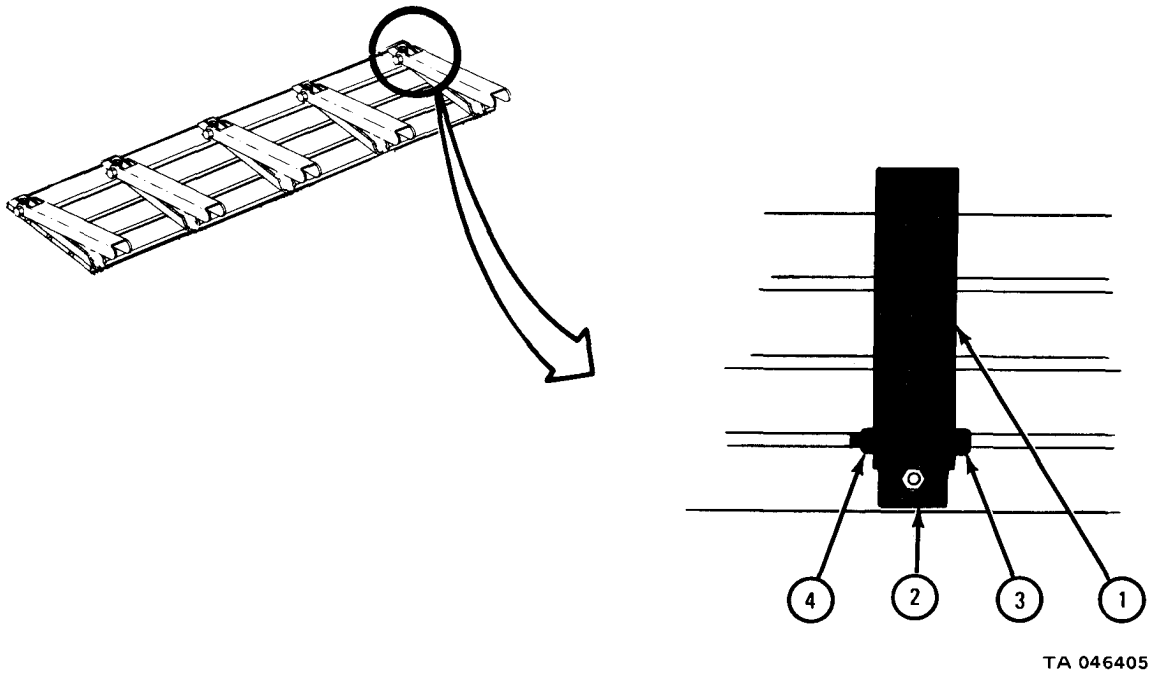
GO TO FRAME 3



FRAME 3

1. Put legs (1) onto channels (2) alining holes for five machine screws (3). Put machine screws through holes in channels and legs and using wrench, hold them.
2. Using wrench, screw on five nuts (4), until they are just snug and do not keep legs (1) from moving easily.

END OF TASK

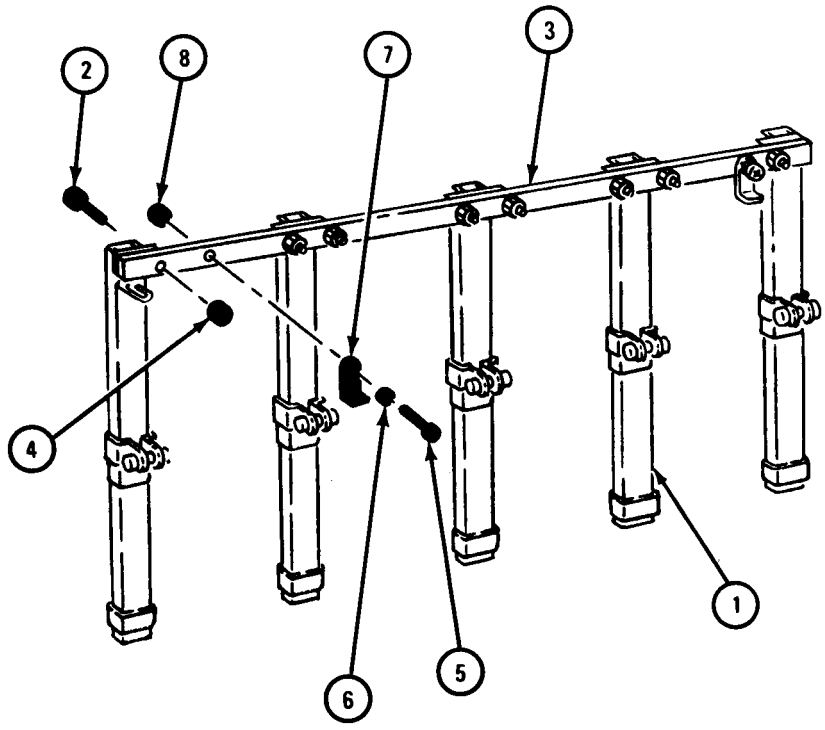


(2) Rack assembly.

FRAME 1

1. Layout five rack stakes (1) as shown and put in eight screws (2).
2. Put back board (3) on five rack stakes (1) and fit eight screws (2) into holes in back board.
3. Using wrenches, screw in and tighten eight nuts (4) and screws (2).
4. Using screwdriver and wrench, screw in and tighten two screws (5), washers (6), clamps (7), and nuts (8).

END OF TASK



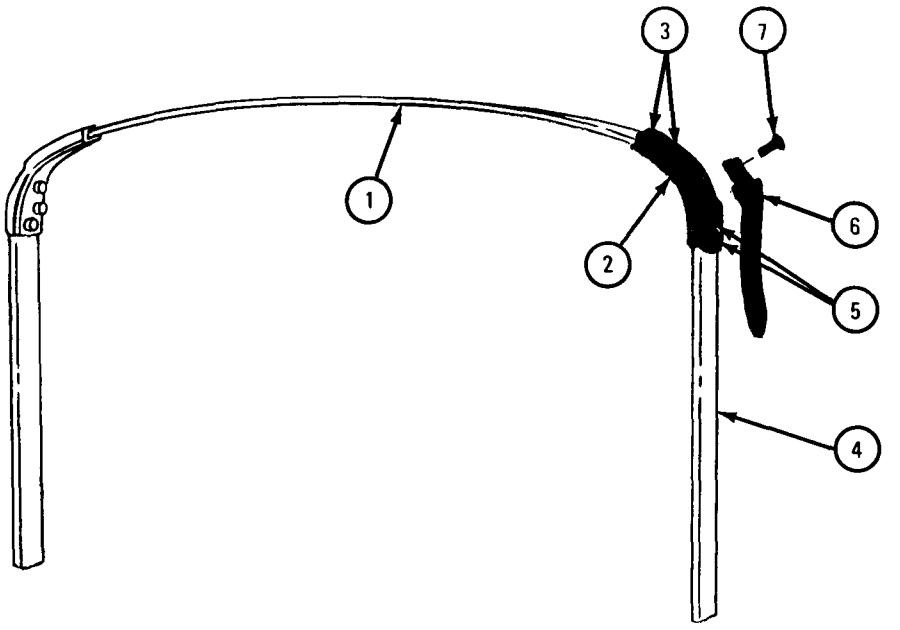
TA 045715

(3) Bow assembly.

FRAME 1

1. Push bow top (1) into bow corner (2) as shown and aline holes. Using screwdriver, screw in and tighten two screws (3).
2. Push bow stake (4) into bow corner (2) as shown and aline holes. Using screwdriver, screw in and tighten two screws (5).
3. Put strap (6) against bow corner (2). Aline holes and hold in place. Using screwdriver, screw in and tighten screws (7).
4. Do steps 1 through 3 again for other side of bow top (1).

END OF TASK



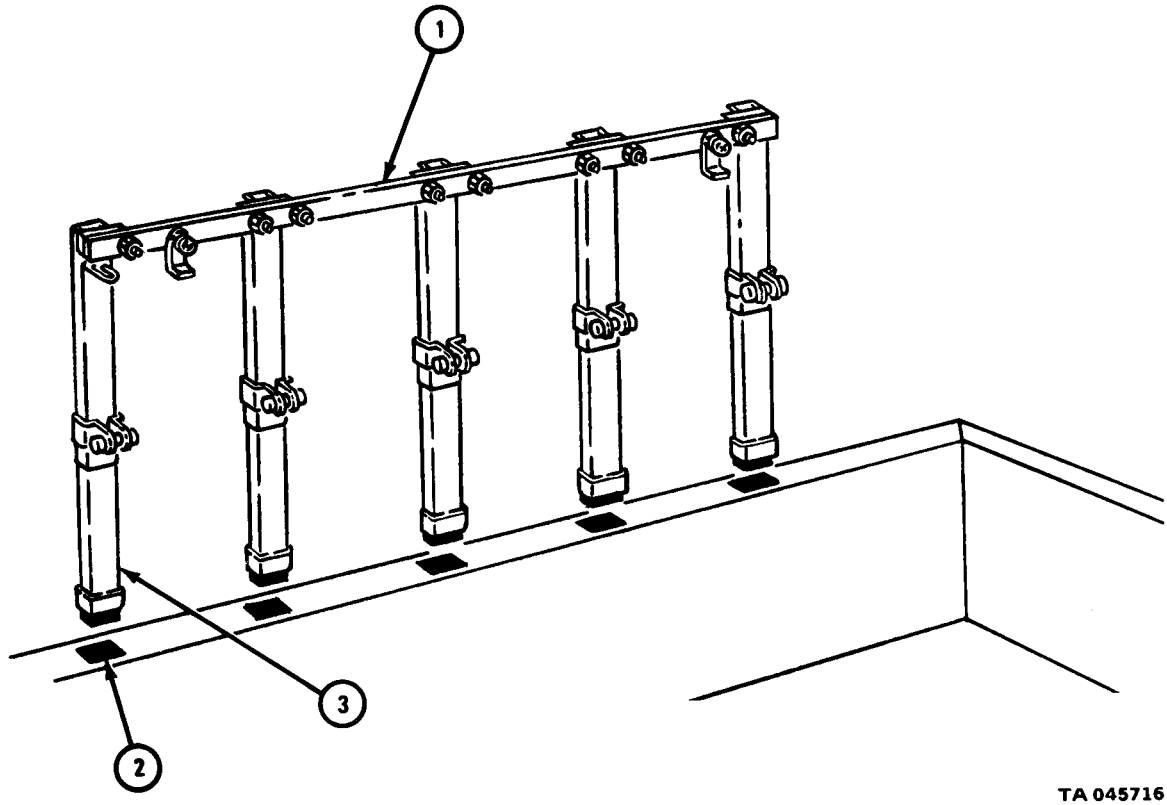
TA 048988

e. Replacement.

FRAME 1

1. Put left rack assembly (1) in place over stake holes (2) as shown. Push down on rack assembly so stakes (3) are seated.
2. Do step 1 again on other side of truck.

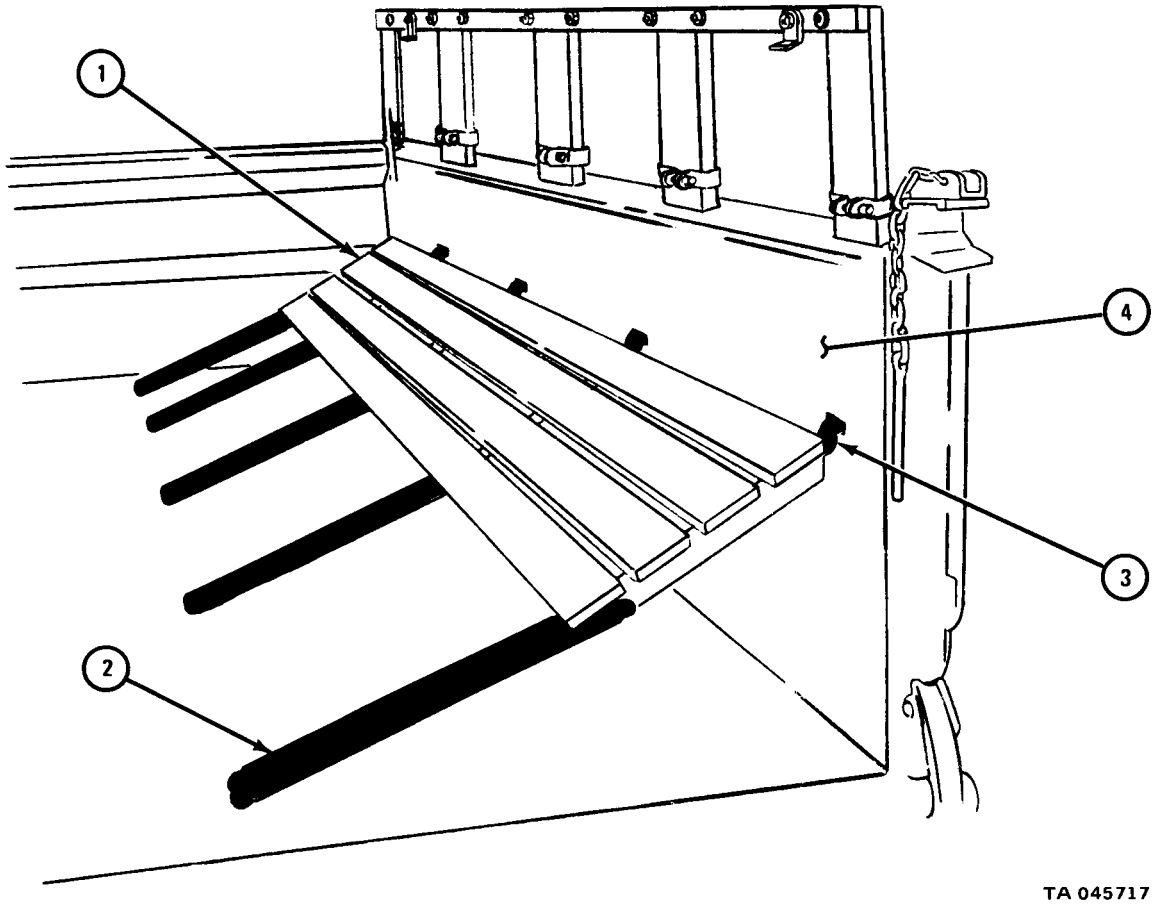
GO TO FRAME 2



FRAME 2

1. Lay right seat assembly (1) on floor of truck with five legs (2) out as shown.
2. Lift rear edge of seat assembly (1) and put four hook hinges (3) into slots in body (4).
3. Lift front edge of seat assembly (1) and fold five legs (2) under seat assembly (1). Move bottom of legs to corner where side meets floor of body.
4. Do steps 1 through 3 again on other side of truck.

GO TO FRAME 3

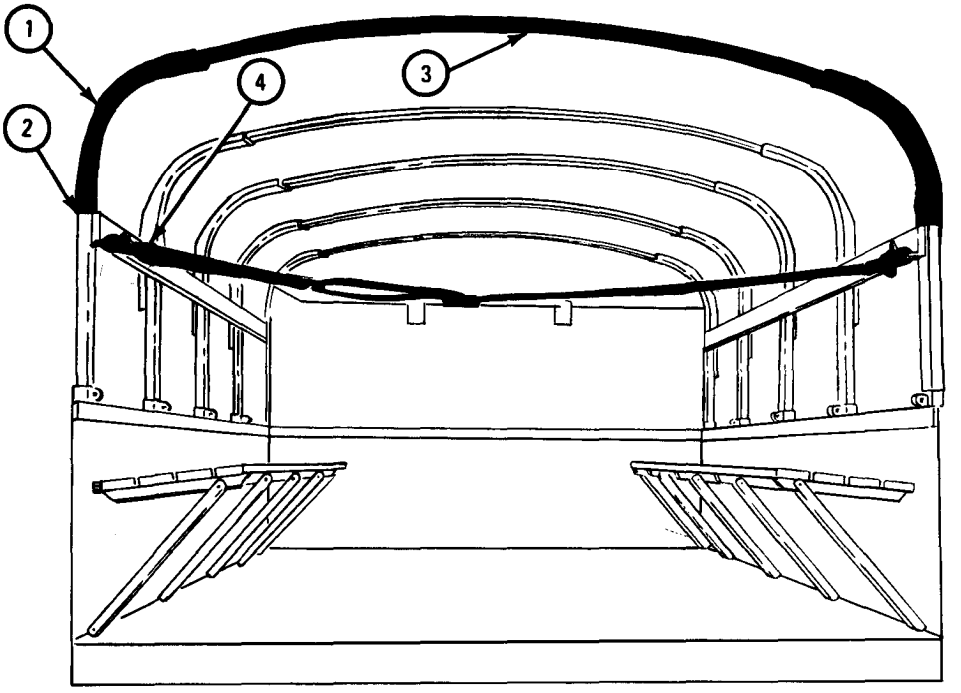


TA 045717

FRAME 3

1. Put left bow stake (1) into pocket of rack stake (2). Push bow stake down until it is seated.
2. Do step 1 again for right side of bow assembly (3).
3. Do steps land 2 again for other four bow assemblies (3).
4. Hook safety strap assembly (4) into place on rack stakes (2) on both sides of truck.

GO TO FRAME 4

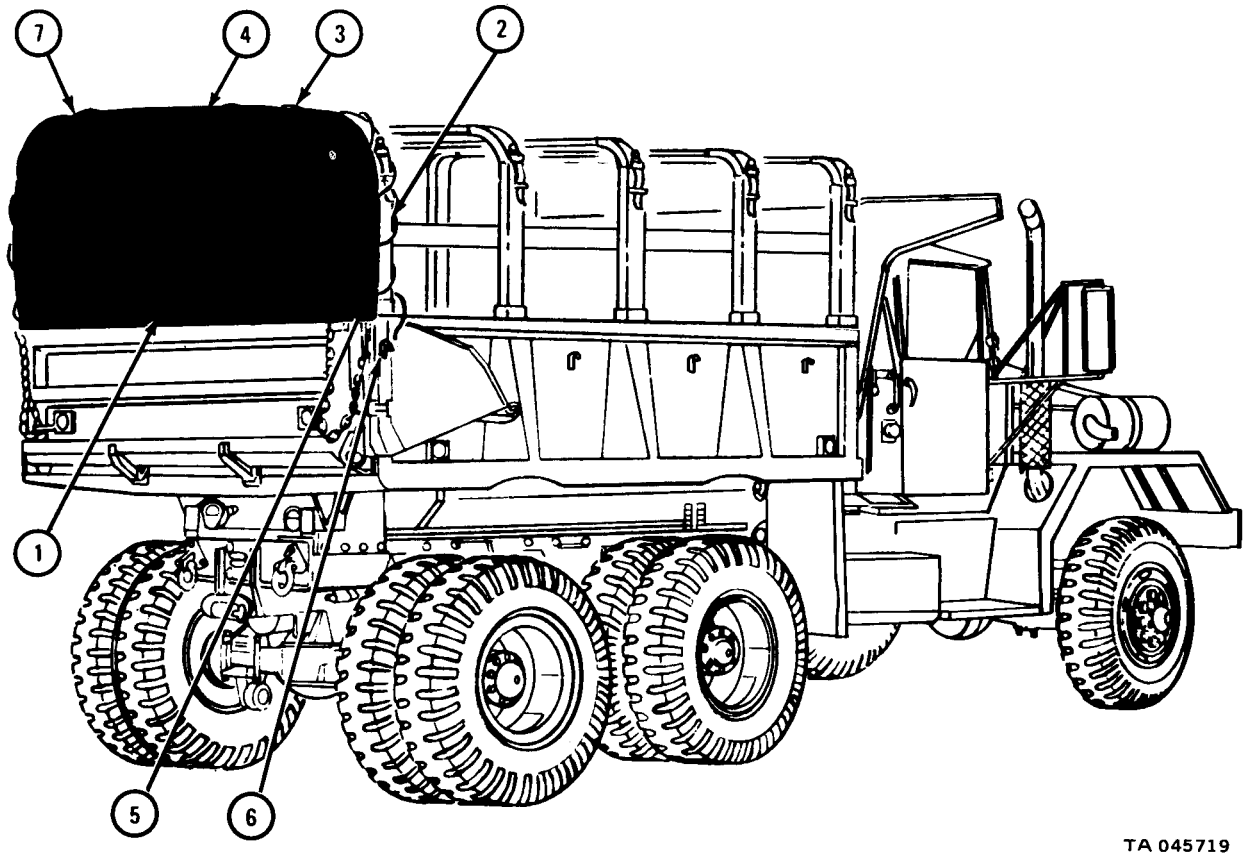


TA 045718

FRAME 4

1. Put rear curtain (1) up against end bow assembly (2) as shown.
2. Thread end of lashing rope (3) through top center eyelet (4), then wind rope around end bow assembly (2). Keep threading and winding until last eyelet (5) is reached. Tie rope to lashing hook (6).
3. Do step 2 again with lashing rope (7) on other side of rear curtain (1).

GO TO FRAME 5

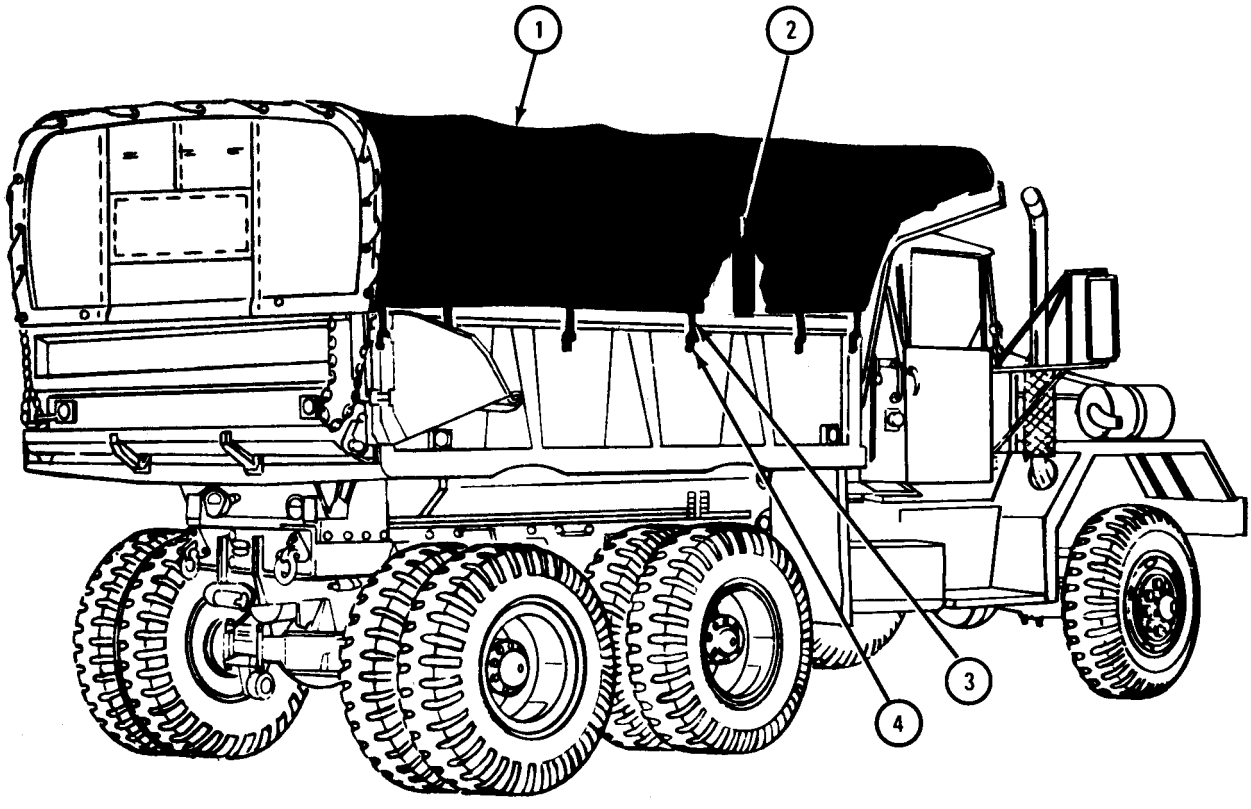


TA 045719

FRAME 5

Soldiers A and B	1.	Lay folded cover (1) overtop center of five bow assemblies (2) with folds up. Front of cover must face front of truck.
Soldier A	2.	Stand at right front of cover (1).
Soldier B	3.	Stand at right rear of cover (1).
Soldiers A and B	4.	Unfold cover (1) down right side of bow assemblies (2) as shown.
	5.	Do steps 2 through 4 again for left side of cover (1).
	6.	Tie six lashing ropes (3) to six lashing hooks (4) on both sides of truck.

END OF TASK



TA 045720

APPENDIX A

REFERENCES

A-1. PUBLICATION INDEXES AND GENERAL REFERENCE.

Indexes should be checked often for the latest changes or revisions of references given in this appendix and for new publications on materiel covered in this technical manual.

a. Military Publications Indexes.

Index of Army Motion Pictures and Related Audio-Visual Aids	DA Pam 108-1
Index of Administrative Publications	DA Pam 310-1
Index of Blank Forms	DA Pam 310-2
Index of Doctrinal Training and Organizational Publications	DA Pam 310-3
Military Publications:	
Index of Technical Manuals, Technical Bulletins, Supply Bulletins, and, Lubrications Orders	DA Pam 310-4
Index of Supply Catalogs and Supply Manuals (excluding types 7, 8, and 9)	DA Pam 310-6
Index of Modification Work Orders	DA Pam 310-7
Common Tools and Equipment Supply Manuals	DA Supply Manuals SC-4910-95-CL-A01, A02, A50, A63, A64, A65, A67, A68, A72, A73, and A74. SC-4910-950CL-A31 and -A32

b. General Reference.

Authorization Abbreviations and Brevity Codes	AR 310-50
Dictionary of United States Army Terms	AR 310-25

A-2. FORMS.

The following forms are for this materiel (refer to DA pamphlet 310-2 for index of blank forms and to TM 38-750 for explanation of their use).

Recommended Changes to Publications	DA Form 2028
Maintenance Request - Continuation Sheet	DA Form 2407-1
Equipment Log Assembly (Records)	DA Form 2408
Processing and Reprocessing Records for Shipment, Storage, and Issue of Vehicles and Spare Engines	DD Form 1397

A-3. OTHER PUBLICATIONS.

a. Vehicle.

Lubrication Order	LO 9-2320-211-12
Operator's Manual	TM 9-2320-211-10-1
Direct Support and General Support Maintenance Manual (Multifuel Engine)	TM 9-2320-211-34
Organizational Maintenance Repair Parts and Special Tool List	TM 9-2320-211-20P
Direct Support and General Support Maintenance Repair Parts and Special Tool List	TM 9-2320-211-34P
Rustproofing for Tactical Vehicles	TB 43-0123

b. General.

Chemical, Biological, and Radiological (CBR) Decontamination	TM 3-220
Chemical, Biological, Radiological, and Nuclear Defense	FM 21-40
Safety Inspection and Testing of Lifting Devices	TB 43-0142
Rigging	TM 5-725
Accident Reporting and Records	AR 385-40
Basic Cold Weather Manual	FM 31-70
Cooling Systems: Tactical Vehicles	TM 750-254
Manual for the Wheeled Vehicle Driver	TM 21-305
Driver Selection and Training (Wheeled Vehicles)	TM 21-300
Deepwater Fording of Ordnance Materiel	TM 9-238
Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment, and Materials Handling Equipment	TB 43-0209
Security of Tactical Wheeled Vehicles	TM 9-2300-422-20

Fording Kits for Combat and Transport Vehicles MIL-F-3201

Maintenance Assistance and Instruction Team (MAIT) Program ..... AR 750-51

Transportability Guidance, Trucks, 5 ton, 6 x 6 ..... TM 55-2320-211-15-1

Army Motor Transport Operations ..... FM 55-30

Mountain Operations ..... FM 31-72

Northern Operations ..... FM 31-71

Operation and Maintenance of Ordnance Materiel in Cold Weather (0°F to -65°F) ..... TM 9-207

Painting Instruction for Field Use ..... TM 43-0139

Petroleum Handling Equipment and Operation ..... TM 10-1101

Preservation-Packaging, Methods of MIL-P-116

Principles of Automotive Vehicles ..... TM 9-8000

Prevention of Motor Vehicle Accidents ..... AR 385-55

Organizational Maintenance: Spark Plugs Used on Ordnance Materiel ..... TM 9-8638

Functional Grouping Codes - Combat, Tactical, and Support Vehicles and Special Purpose Equipment ..... TM 750-93-1

The Army Management System ..... TM 38-750

Administrative Storage of Equipment ..... TM 740-90-1

c. Maintenance and Repair.

Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems . . . . . TB 750-651

Organizational Care, Maintenance and Repair of Pneumatic Tires and Inner Tubes. . . . . TM 9-2610-200-20

Combat Vehicles and Tactical Transport Vehicles: Procedure for Starting Engines With Slave Cable ..... TB ORD 537

Description, Use, Bonding Techniques, and Properties of Adhesives ..... TB ORD 1032

General Supply: Winterization Kits for Army Tank-Automotive Materiel . . . . . SB 9-16

Inspection, Care and Maintenance of Antifriction Bearings ..... TM 9-214

Purging, Cleaning and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks . . . . . TB 43-0212

Operator and Organizational Maintenance Manual for Lead-Acid Storage Batteries . . . . . TM 9-6140-200-12

Army Materiel Maintenance Concepts and Policies . . . . . AR 750-1

Operator's Manual: Welding Theory and Application . . . . . TM 9-237

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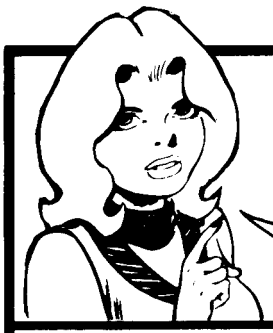
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IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

FRAME 5, step 4 reads "Using torque wrench with 3/4-inch socket wrench, tighten capscrews (4) to 50 to 65 pound-feet." Should read "Using torque wrench with 3/4-inch socket wrench, tighten capscrews (4) to 81 to 104 pound-feet."

Change illustration labels.
Reason: labels for OIL RESERVOIR and STEERING GEAR HOUSING are reversed.

FRAME 4, step 4 reads "Stow cab cover and crossbars (4) behind cab seats." Should read "Stow cab cover, crossbars (4), and pillar posts (1) behind cab seats."

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

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

WEIGHTS

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

LIQUID MEASURE

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

SQUARE MEASURE

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

CUBIC MEASURE

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

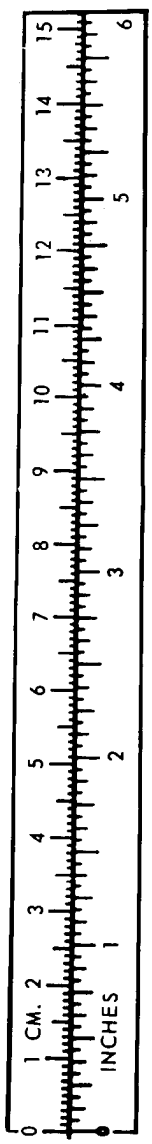
TEMPERATURE

$5/9\ (^0F - 32) = {}^0C$
212^0 Fahrenheit is equivalent to 100^0 Celsius
90^0 Fahrenheit is equivalent to 32.2^0 Celsius
32^0 Fahrenheit is equivalent to 0^0 Celsius
$9/5\ C^0 + 32 = F^0$

APPROXIMATE CONVERSION FACTORS

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

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



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